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PRIMARY SOURCE: Kolloidnyy Zhurnal, 1970, Vol 32, Nr 1,
pp 49-55

STUDY OF STRUCTURE FORMATION IN AQUEOUS CASEIN SOLUTIONS

Zholbolsynova, A. S.; Izmaylova, V. H.; Pankratova, M. N.

Summary

Structures formation in aqueous alkaline casein solutions involves disordering of casein molecules, transition to the statistical coil conformation and further aggregation leading to the formation of a three-dimensional structure. The strength of this structure is mainly due to the hydrogen bonds and van-der-Waals (hydrophobic) bonds. According to the classification proposed by P. A. Rehbinder, the casein gels structure can be classified as a coagulation-condensation structure.

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PROCESSING DATE--09OCT70

TITLE--STRUCTURE FORMATION IN GELATIN GELS -U-

AUTHOR--(03)--IZMAYLOVA, V.N., DOBROVA, L.YE., REBINDER, P.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSR 1970, 190(4), 876-9 (PHUS CHEM)

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PROCESSED ANIMAL PRODUCT, GEL, MOLECULAR STRUCTURE, LIGHT SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1989/1574

STEP NO--UR/0020/70/190/004/0876/0879

CIRC ACCESSION NO--AT0107994

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0107994

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE STRUCTURE FORMATION IN GELATIN (I) GEL IS REGULATED BY THE SAME BASIC PRINCIPLES AS STRUCTURE FORMATION IN SOLNS. OF A LOW MOL. WT. COMPD. THIS IS RELATED TO THE BIPHYLICITY OF THE PROTEIN AND WITH THE HIGH ORDER OF ITS MACROMOL. THE DEPENDENCE OF THE LIGHT SCATTERING INTENSITY ON I CONCN. IN 0.15M NaCl AND 8M UREA SOLNS. IS GIVEN GRAPHICALLY. THE RATE OF LIGHT SCATTERING INCREASE IN SATD. I SOLNS. IS HIGHER AT LOW TEMP. (AT INCREASING SUPERSTN. OF I SOLNS.). HEAT OF I GEL FORMATION IS 49-58 KCAL-MOLE. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 681.333

IZMENI, T. M.

"A Method of Simulating Electric Power Systems"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 285370, class 42, filed 2 Jul 69, published 29 Oct 70, pp 125-126

Translation: This Author's Certificate introduces a method of simulating electric power systems by using electric circuit elements to represent the elements of the system being simulated. As a distinguishing feature of the patent, AC and DC simulation is simplified by using resistors in the model to simulate inductive reactances in electric power systems, while elements with an S-shaped voltage-current curve are used to simulate the capacitive reactances of electric power systems, and inductance coils are used to simulate the resistances in electric power systems. The patent also covers a modification of this method distinguished by the fact that circuit realization is simplified by using capacitors to simulate the resistances in electric power systems.

IZMENI, T.M., Soviet Patent No. 285370.

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USSR

UDC 621.791.052.011:669.14.018.8 + 669.14.018.44

SHMAKOV, V. M. (Cand. of Techn. Sciences), IZMIRLIYEVA, A. N., and LADZIN, Yu.S. (Engineers)

"Properties of Weld Joints of EI654 Stainless Steel With EP202 High-Temperature Alloy"

Moscow, Svarochnoye proizvodstvo, No 6, June 72, p 34

Abstract: A study has been made of the properties of weld joints of EI654 Ni-base stainless steel with EP202 heat-resistant alloys. Automatic helium welding with EP367 filler wire is shown to have produced a good weld of EI654 steel with EP202 alloy. Metallographic examinations of the weld indicate good shaping with smooth transition to the base metal without any defects. There were no visible microstructural changes and cracks in both the welds and the weld-affected areas following testing at various temperatures. Special assemblies were made for structural strength tests by hydraulic loads to failure. All assemblies passed the rated failure pressure. The weld joints appear to have fairly good strength properties at higher (up to 700°C) and below-zero (-100°C) temperatures with no visible tendency to crack formation. (2 illustrations)

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USSR

UDC 577.1:615.7/9

SAFONOVA, G. M., IZMOZHEPOV, N. A.

"Determination of the Shielding Effect of Various Substances on the Molecular and Cellular Level"

Moscow, V sb. Ultraviolet. izlucheniye (Ultraviolet Radiation--collection of works), No 5. "Meditsina," 1971, pp 28-32
(from RZh-Biologicheskaya Khimiya, No 21, Nov 71, Abstract No 21F2192)

Abstract: One of three classes of substances was added to monolayer cultures of hamster cells: acridine derivatives and adenine (UV absorption maximum 260 nm). chrysoidine and benzhydrol (210-220 nm) and eosin (visible region of the spectrum). Concentration of the substances was $0.5 \cdot 10^{-5}$ M. After two hours, the cells were exposed to ultraviolet radiation (dose of 500 ergs/mm^2). In model experiments, a solution of a commercial preparation of DNA in a mixture with one of the investigated substances (concentration 10^{-5} M) was exposed and analyzed on a spectrophotometer. The protector action of the substances was evaluated from the

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SAFONOVA, G. M., et al, V sb. Ultraviolet. izlucheniye, No 5,
"Meditsina," 1971, pp 28-32

survival rate of the irradiated cells. All the investigated substances with the exception of benzhydrol showed a pronounced correlation between protector action and electron-acceptor capacity, which is confirmed by EPR analysis of complexes of these substances with p-phenylene diamine (the electron-donor standard). The authors hypothesize that the shielding effect against UV damage to cells and DNA is due to the electron-acceptor properties of the UV protectors.

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- 5 -

USSR

UDC 577.1:615.7/9

IZMOZHEROV, N. A.

"Relationship Between the Physicochemical Properties of Organic Compounds and Their Antitumor Effectiveness"

Izv. Yestestvennonauchn. in-ta pri Permsk, un-te (News of the Institute of Natural Sciences, Perm University), 1970, 14, No 10, pp 113-116 (from RZh-Biologicheskaya Khimiya, No 9, May 71, Abstract No 9 F1897 by M. Shuster)

Translation: Simulated experiments using the electron paramagnetic resonance method showed that when cystaphos, thiourea, histamine, serine, cysteine, methionine, asparagine, arginine, biotin, norvaline, or norleucine is paired with electron acceptors (riboflavin, chloranil), some of these substances are capable of forming charge transfer complexes, an indication that they have donor properties. Radioprotectors (Rp) proved to be electron donors. Experiments with water irradiated with Co⁶⁰ gamma rays and with substances presumed to be Rp showed that these substances possess donor activity. According to the authors, these findings can be used for rapid screening of Rp and directed synthesis thereof.

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Pharmacology and Toxicology

UDC 577.1:615.7/9

USSR

GILEV, Yu. V., and IZMOZHEROV, N. A.

"Study of the Antineoplastic Effectiveness of Several Diphenylcarbinol Derivatives"

Izv. Yestestvennonauch. in-ta pri Permsk. un-te (News of the Institute of Natural Sciences, Perm University), 1970, 14, No 10, pp 121-125 (from RZh-Biologicheskaya Khimiya, No 9, May 71, Abstract No 9 F1905 by M. Sh.)

Translation: Study of the radioprotective properties of diphenylcarbinol (I) derivatives possessing one to three radicals of $N(CH_3)_2$ and $N(C_2H_5)$ joined to the I molecule in the P position. There is a correlation between the number of donor radicals and the radioprotective effect in going from two radicals to three.

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USSR

UDC 577.1.:615.7/9

IZMOZHEROVA, Ye. L., GRAYFER, A. L., and KHOLODENKO, D. R.

"Effect of Some Diphenylcarbinol Derivatives on Hematopoiesis in Irradiated and Intact Animals"

Izv. Yestestvennonauchn. in-ta pri Permsk. un-te (News of the Institute of Natural Sciences, Perm University), 1970, 14, No 10, pp 127-142 (from RZh-Biologicheskaya Khimiya, No 9, May 71, Abstract No 9 F1906 by M. Sh.)

Translation: Experiments involving intraperitoneal injection of irradiated rats with diphenylcarbinol (I) derivatives containing one to three radicals showed that the radioprotective effect (bone marrow hematopoiesis) was highest when three radicals of $N(CH_3)_3$ were present in the I molecule.

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- 47 -

IZNAR, A. N.

OPTO-ELECTRONIC INSTRUMENTS

OPTO-ELECTRONIC INSTRUMENTS FOR SPACECRAFT

PART I

Translation of the Russian-language book by A. N. Iznar, A. V. Pavlov, and B. L. Fedorov: Optiko-Elektronnyye Prihody Kosmicheskikh Apparatov, 1972, signed to press 23 August 1972, Izdatel'stvo Mashinostroyeniya, Moscow, 568 pages.

JPRS 60199-1

4 October 1973

CONTENTS

PAGE

ABSTRACT..... 1

INTRODUCTION..... 2

PART I: PRINCIPLES OF CONSTRUCTING OPTO-ELECTRONIC INSTRUMENTS FOR SPACECRAFT

Chapter 1: Radiation Sources and Their Characteristics..... 4

Chapter 2: Propagation of Radiation in the Atmosphere and Outer Space.. 35

Chapter 3: Optical Systems of Opto-Electronic Instruments for Spacecraft..... 36

Chapter 4: Radiation Receivers..... 63

Chapter 5: Analyzing and Scanning Devices for Opto-Electronic Instruments..... 109

Chapter 6: Opto-Electronic Orientation Instruments for Spacecraft..... 172

Chapter 7: Spectral Opto-Electronic Instruments for Spacecraft..... 233

Chapter 8: Opto-Electronic Locators With Lasers..... 248

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[1 - USSR - A]

Acc. Nr:

AP0048425

Abstracting Service:

INTERNAT. AEROSPACE ABST. 57-2-4 R 0376

Ref. Code:

A70-25302 # Solution of the Liapunov problem of stability with respect to a first approximation (Reshenie zadachi Liapunova ob ustoichivosti po pervomu priblizheniiu). R. E. Vinograd (Moskovskii Gornyi Institut, Moscow, USSR). and N. A. Izobov. *Differentsial'nye Uravneniia*, vol. 6, Feb. 1970, p. 230-242. In Russian.

Development of an algorithm for constructing, from a Cauchy matrix, a first-approximation system for a central index of order m possessing the properties that the highest index of any perturbed system with an m -perturbation does not exceed the value of the central index, while the zero solution to this system is asymptotically stable for values of the central index less than zero. It is assumed that m -perturbations realizing the central index exist. In this study the term 'highest index of a perturbed system' is taken to mean a certain

limiting value of the exact upper bound of a set of indices of solutions to the perturbed system, while the noncharacteristic number plus infinity is regarded as the index of a solution which cannot be continued indefinitely to the right.

A.B.K.

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USSR

UDC 621.373.531

VISHNEVSKIY, V. N., IZOKH, V. V., and KUBASOV, A. A.

"Nanosecond Range Pulse Shaper Based on Semiconductor Devices"

V sb. Tunnel'n. diody v vychisl. i izmerit. tekhn. (Tunnel Diodes in Computer and Measurement Technology — collection of works), Riga, "Zinatne", 1972, pp 217-223 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 G134)

Translation: The authors study the possibility of forming nanosecond duration pulses from voltage differentials. Real shaper circuits are given based on tunnel diodes, semiconductor diodes with charge accumulation, and their combinations with semiconductor triodes. Comparative characteristics are presented for the shapers along with their experimental data. Resume.

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USSR

IZOKH, V. V., SALOV, P. L., YEMEL'YANENKOV, V. I.

"Realization of the Operation $q' \equiv q(\text{mod } R)$ in Recirculating Generators"

Vestn. Belorus. Un-ta [Belorussian University Herald], 1972, Ser. 1, No 1,
pp 78-80 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973,
Abstract No 6V605, by the authors).

Translation: A functional element is produced, performing the operation
 $q' \equiv q(\text{mod } k)$, the complexity of which is independent of k . An estimate of the
speed is presented. The code of the number is represented by a time interval.

Organometallic Compounds

USSR

UDC 541.6:543.422.4:547.1'119:547.22

SHAGIDULLIN, R. R., IZOSIMOVA, S. V., CHERNOKAL'SKIY, V. D., and VOICE'YEVA, L. A., Kazan' State University imeni V. I. Ul'yanov-Lenin; Institute for Organic and Physical Chemistry imeni A. Ye. Arbuzov, 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 Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 695-697

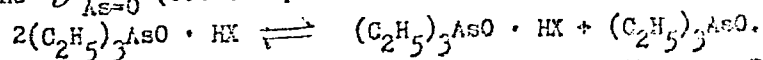
Abstract: The IR spectra of $\int R_3AsO \int_2HX$ do not distinguish between the forms $R_3 - \underset{\substack{| \\ OH}}{As} - O - \underset{\substack{| \\ X^-}}{As}^+ R_3$ (form A) and $\int R_3As \rightarrow O \dots H^+ \dots O \leftarrow AsR_3 \int$

(form B). We attempted to elucidate the correlation between the structure of these compounds and their IR spectra, using the systems $\int (CH_3)_3AsO \int_2HI$ (compound I); $\int (C_2H_5)_3AsO \int_2HX$, for $X = I$ (compound IIa), $X = Br$ (compound IIb), and $X = Cl$ (compound IIc); $\int (C_3H_7)_3AsO \int_2HI$ (compound III); and 1/2

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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 $\text{X} = \text{Br}$ (compound IVa) and $\text{X} = \text{ClO}$ (compound IVb). Wide intense diffuse absorption bands between 550 and 1800 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 $\nu_{\text{As=O}}$ (880 cm^{-1}) was observed, indicating the following dissociation



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

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- 17 -

USSR

UDC 581.6:615.779.934:547.56

VICHKANOVA, S. A., RUBINCHIK, M. A., ADGINA, V. V., IZOSIMOVA, S. B.,
MAKAROVA, L. V., SHIPULINEA, L. D., and GORYUNOVA, L. V., All-Union
Institute of Medicinal Plants

"Antimicrobial and Antiviral Activity of Some Natural Coumarins"

Leningrad, Rastitel'nyye Resursy, No 3, 1973, pp 370-379

Abstract: The bacteriostatic, fungistatic, and protistostatic activity of 33 natural coumarins of plant origin was investigated by the method of serial dilutions of the compounds in appropriate nutrient media. The microorganisms studied were Staphylococcus aureus, Escherichia coli, Mycobacterium tuberculosis, Microsporum lanosum, Candida albicans, Entamoeba histolytica, and Trichomonas vaginalis. The activity of the coumarins against herpesvirus and influenza APR-8 virus was also investigated. Fourteen of the compounds were active against M. tuberculosis, parasitic protozoans, and gram-negative bacteria. None was effective against any of the viruses. The terpenoid and 3-alkyl-substituted coumarins offer the most promise as bacteriostatic and fungistatic agents.

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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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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 ethyliodide 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.

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USSR

UDC 547.242

ABALONIN, B. YE. CHERNOMAL'SKIY, B. D., SHACIDULLIN, R. R.,
IZOSIMOVA, S. V., ZYKOVA, 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 8, Aug 70,
pp 1612-1617

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 CO₂ 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 CO₂
atmosphere, yielding the same product. By these reactions other
alkyl halides reacted with esters of dialkyl- and phenylalkylar-
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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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1/2 051 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--EFFECT OF NUCLEAR RADIATION ON THE PHYSICOMECHANICAL PROPERTIES OF
PAINT ENAMEL COATINGS -U-
AUTHOR--KNYAZEV, V.K., NOVIKOV, V.S., IZOTOV, G.I., GLUSHCHENKO, V.M.,
SEREGINA, G.P.
COUNTRY OF INFO--USSR
SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (1) 42-4
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PROTECTIVE COATING, PLASTIC COATING, RADIATION EFFECT, GAMMA
IRRADIATION, HARDNESS, POLYVINYL CHLORIDE, EPOXY RESIN, ENAMEL, AMINE
DERIVATIVE, RADIATION RESISTANT PLASTIC/(U)GF020 UNDERCOATING, (U)AG10S
UNDERCOATING, (U)PF220 ENAMEL, (U)NK05 NITRATED GLYPTAL RESIN, (U)EP74T
EPOXY MELAMINE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/0549

STEP NO--UR/0303/70/000/001/0042/0044

CIRC ACCESSION NO--AP0107154

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107154

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STABILITY WAS STUDIED OF MULTILAYERED COATINGS AGAINST GAMMA IRRADN. AT DOSES OF SMALLER THAN OR EQUAL TO 100 MEGARADS APPLIED AT 10 PRIMES R-HR. THE COATINGS WERE COMPOSED OF GF-020, FL-03K, OR AG-10S UNDERCOATINGS AND 1-2 COATS OF THE FOLLOWING ENAMELS: PF-220 (POLYPHTHALATES) WITH ML-25 (MELAMINE ALKYD RESIN), 2062F GLYPTAL RESIN, NKO-6 (NITRATED GLYPTAL RESIN), EP-74T (EPOXY-MELAMINE RESIN), OR KHSE-23(CHLORINATED POLY(VINYL CHLORIDE) RESIN). NONE OF THESE COATINGS WITHSTOOD 100 MEGARAD DOSES. THE MOST RESISTANT, AS DETD. BY MEASURING HARDNESS, ELASTICITY, AND IMPACT STRENGTH BEFORE AND AFTER THE IRRADN., WERE GLYPTAL RESINS AND PF 220.

UNCLASSIFIED

USSR

UDC 621.372.44:621.018.134

CHURKIN, V.I., CHELISHCHEV, N.N., IZOTOV, V.A.

"An Experimental Study Of The Interaction Of A Nonlinear Ferrite Resonator With The Field Of A Short-Circuited Waveguide"

Radiotekhnika i elektronika, Vol XVII, No 5, May 1972, pp 1076-1077

Abstract: The results are presented of a study of the amplitude and phase characteristics of the interaction of a nonlinear ferrite resonator with the microwave field of a short-circuited waveguide. The case is considered where coupling of the resonator with the transmission line in a linear regime is most critical. The experiment was conducted at a frequency of 3000 MHz at room temperature when the maximum of absorption for a monocrystalline spherical specimen of yttrium iron garnet coincides with the ferromagnetic resonance. 2 fig. 4 ref. Received by editors, 28 April 1971.

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Mechanical Properties

USSR

UDC 669.14.018.8:620.18:620.17

VOZNESENSKAYA, N. M., IZOTOV, V. I., UL'YANOVA, N. V., POPOVA, L. S., and
POTAK, YA. M.

"Structure and Properties of High-Strength 1Kh15N4AM3 Stainless Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, 1971, pp
32-35

Abstract: The article describes results of a study of the effect of tempering temperature on the structural state and mechanical properties of 1Kh15N4AM3 (EP-310) stainless steel of the transition austenitic-martensitic class. Industrial electroslog-refined steel was used for the study. It was found that after tempering at 200° C the steel has higher mechanical properties (ductility, impact strength, and crack propagation energy) than widely-used structural high-strength steels (30KhGSNA) or maraging steels. The high strength is determined by a high dislocation density, the presence of twins, and the retention of a sufficient quantity of carbon and nitrogen in the solid solution. Tempering at 300-350° C causes a certain decline in strength and an increase in ductility and impact strength as a result of reduced car-

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USSR

VOZNESENSKAYA, N. M., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, 1971, pp 32-35

bon and nitrogen content of the solid solution, with retention of high dislocation density and distortions of the second kind. No precipitations are found with the decrease in the number of interstitial atoms in the solid solution. At 450-500° C there is secondary hardening, consisting in the formation of highly dispersed particles of the chromium carbonitride M_2X , accompanied by a slight reduction in ductility and impact strength and a significant decrease in crack propagation energy. The structure is characterized by a decrease in the dislocation density and a significant decrease in distortions of the second kind. At 550-650° C there is reverse $\alpha \rightarrow \gamma$ transformation. The transformation begins at about 575° C, with the maximum amount of stable austenite forming after heating to 625-650° C for 1-2 hours. At 650-700° C there is a decrease in strength, with formation of the carbides $M_{23}C_6$ along grain body and boundaries.

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ON THE DEPENDENCE OF MARTENSITE MORPHOLOGY
ON THE TEMPERATURE OF THE ISOTHERMAL
TRANSFORMATION OF Fe-24Ni-3Mn ALLOY

UDC 620.183.2:669.15.194

V. V. Galitskaya and V. I. Lopyrev, Institute of Metallography and Physics of
Metallic Materials Scientific Research Institute of Ferrous Metallurgy, Leningrad
1. P. Baidin, submitted to press 14 June 1972 page 1121-1126

As is known [1], the diagram of isothermal transformation of austenite in the martensite region for a Fe-24Ni-3Mn alloy has a C-shaped form. In reference [12], devoted to an investigation of the structure of martensite in this alloy, the martensite in the specimen was accumulated by warming from -196°C to room temperature, passing through the entire diagram indicated, and no values were assigned to the possible change of the structure with the temperature, working from the premise that its type is basically determined by the kinetics of the transformation.

In this work a metallographic investigation of the morphological features of martensite formed in an alloy of Fe-23.85% Ni-3.0% Mn-0.014% C after hardening at 1150°C for four hours in water and subsequent cooling in isothermal conditions at various temperatures was performed.

After transformation at -40° (in the upper region of the C-shaped curve), martensite of two morphological varieties is ascertained: rack-type, in the form of colonies, consisting of fragments with irregular boundaries (Figure 1, a) and oblique-martensite (according to the terminology of reference [3]) in the form of oblique series of crystals, divided by an interlayer of austenite (Figure 1, b). It is noted that after brief soakings (up to 30 minutes) the colonies of rack-type martensite are grouped primarily at the boundaries of the austenite grains, which, apparently, are the place of their origin.

Handwritten notes:
5.10.72, Leningrad (2)
Mikhailov 318.56.61
to Mikhailov (1972)
24.10.72, Leningrad
19.08.72, 19.10.72

After soaking at -60°C to -70°C , the fraction of martensite in the form of oblique series (rows) increases, and after soaking at -90°C to -100°C , in the region of the maximum of the C-shaped curve it becomes predominant (Figure 1, c). The origin of crystals at the beginning of transformation also begins primarily from the boundaries of the grains of austenite.

At a temperature of -190°C (in the lower region of the C-shaped curve) in the structure of the alloy the fraction of crystals in the form of oblique rows decreases, the crystals become larger, as if individual fragments were joining into one whole fragment (Figure 1, d). Morphologically, the large crystals in this alloy are similar to the partially faceted crystals of athermic martensite of Fe-Ni-C and Fe-C alloys [4].

Metallographic investigations demonstrated that together with the oblique-angled contacts of the crystals, occurring in the entire temperature range of the transformation, in the structure of a Fe-24 Ni-4 Mn alloy after cooling at -150°C , acutely-angled contacts and even "flaming bottom", characteristic for athermic martensite, are observed (Figure 1, e). Such a change in the morphology of martensite, as a function of the transformation temperature of the alloy and the same composition is apparently associated with the temperature dependence of such properties of austenite as the energy of packing defects, magnetic properties, and, especially, the stresses of its flow during deformation. As was demonstrated in reference [5], for the majority of iron alloys the dependence of the morphology of martensite upon the magnitude of the yield point of austenite at the transformation temperature is observed. In this case, if the yield point at M_s is less than a value of 20-25 kilograms per square millimeter, the martensite has a rack-like morphology, and if it is greater, a lamellar morphology. According to data in reference [6], the yield point of alloy Ni-31Cr, close in composition to the alloy investigated, at -60°C amounts to ~ 15 kilograms per square millimeter, and at -190°C ~ 25 kilograms per square millimeter. Consequently, we may expect changes in the morphology of martensite as the alloy cools, analogous to the way this was observed by us.

In the entire temperature range of the transformation, at its initial stages the martensite crystals are grouped in a few grains of austenite, which, probably, is caused by the autocatalytic nature of the transformation in case of rack-type martensite. The autocatalytic nature of the transformation is manifested in the packet method of the grouping of crystals, when the crystals are arranged in sequence one to the other. For Fe-Ni alloys with a $M_s \approx 200^{\circ}\text{C}$ to 400°C , the transformation into rack-type martensite occurs at such a high speed that we can even speak of its "explosive" nature [7]. For athermic-martensite, autocatalyticity is manifested not

Task

UBC 069.393:62.77.02

SAVLOV, I. M., KIMOV, V. A., MAUSTIN, Yu. I., INCTOV, V. V., PRIMETIVY, Ye. M.,
YEL'AMINOV, V. M., and KALICOV, A. S.

"Some Problems in the Manufacture of Welded Pipes"

Moscow, Izvestnyye Metally, No 3, Mar 71, pp 50-52

Abstract: The cost of seamless pipe from niobium and its alloys is high due to the low percentage of pipe fit for service (10--15%). The present study describes a more economical production technology for thin-walled pipe from niobium. Niobium ingots alloyed with titanium and zirconium were used as the starting material. The mechanical properties of the plates and the electron-beam welded parameters are given in tabular form. The mechanical test data show that preliminary vacuum annealing of the parent metal slightly reduces the strength properties (by 12--15%) and considerably increases elongation per unit length (1.5 to twofold). The strength properties of the welds are somewhat lower than those of the parent material whereas elongation per unit length remains at the same level. Metallographic analysis revealed coarse-grained lamellar structure (for the weld area) with dark inclusions. The microhardness is uniform in both the weld and parent metal and ranges from 210 to 330 kg/mm². The elongation of electron-beam welds is about the same as that of arc-welded joints. Prior to

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
USSR

PAVLOV, I. M., Tsvetnyye Metally, No 3, Mar 70, pp 50-52

rolling the billets were annealed at 1200°C. For 11.6-and 12-mm pipes the usual deformation was 40 to 60%; for 20 mm pipes -- 33%. The pipes passed flattening tests to the point of wall contiguity. The new technology of the process makes it possible to reduce by 2 to 2.5 times the cost of the finished product, with the physicomachanical properties remaining the same.

2/2

- 109 -

1/2 012 UNCLASSIFIED
TITLE--DEASPHALTIZATION OF ACID SLUDGE -U-  PROCESSING DATE--13NOV70 

AUTHOR--(05)--MIKHAYLOV, I.A., LEVINSON, S.Z., OROCHKO, D.I., IZOTOVA, P.P.,
TIMOFEYEVA, K.M.
COUNTRY OF INFO--USSR

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UNCLASSIFIED

2/2 012
CIRC ACCESSION NO--AA0132980

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACID SLUDGE UNDERWENT
COUNTERCURRENT ADSORPTION TREATMENT IN SOLN. FACILITY: ALL
UNION SCIENTIFIC RESEARCH INSTITUTE OF THE PETROLEUM INDUSTRY.

UNCLASSIFIED

USSR

UDC 615.23:547.789.5

MIRYAN, N. I., TRINUS, F. P., IZOTOVA, P. V., FADEICHEVA, A. G.,
and LISUNKIN, YU. I., Kiyev Scientific Research Institute of
Pharmacology and Toxicology

"Biological Activity of Some Thiazole Derivatives"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 7, No 8, Aug 73,
pp 17-20

Abstract: Some thiazole derivatives act as breathing stimulators and as antagonists to morphine, nicotine and to barbiturates. One of the more active agents of this group is 2,4-diamino-5-phenylthiazole hydrochloride (I) -- the so called daptazol. A simplified synthetic method for this compound with slightly improved yield has been developed, and using this method, two new derivatives were synthesized: 2,4-diamino-5-(p-fluorophenyl)thiazole hydrochloride (II), and 2,4-diamino-5-(o-nitrophenyl)thiazole hydrochloride (III). Biological studies were carried out which showed that replacement of the amino groups in the 2 and 4 positions of the thiazole ring by hydroxyl groups resulted in disappearance of the characteristic antimorphine action. The toxicity was increased. Introduction of substituents in the phenyl ring does not change the hypotensive activity of these compounds.
1/1

ISRAEL, YU. A.

FORMATION OF RADIOACTIVE PARTICLES IN NUCLEAR EXPLOSIONS

Selected articles from the Russian-language Journal Trudy Instituta
Experimental'noy Meteorologii, No. 21, 1971, Moscow.

JPRS 60185
2 October 1973

CONTENTS

Page

Formation of Radioactive Particles in Tropospheric Nuclear Explosions (Yu. A. Izrael', A. A. Ter-Sakoy)	1
Calculation of Effects of Fractionation in Atmospheric Nuclear Explosions (Yu. A. Izrael')	9
On the Formation of Secondary Aerosols in the Atmosphere During a Ventilated Underground Nuclear Explosion (V. N. Petrov, A. A. Ter-Sakoy)	15
Investigation of the Distribution of Highly Active Particles According to Dimensions in the Troposphere in September- December 1967 (Ya. I. Galyuk, et al.)	18

[1 - USSR - N]

USSR

UDC 614.78:663.1

IZRAYL, L. I., and FEOKTISTOVA, R. P., Department of Hygiene and Occupational Diseases, Central Scientific Research Laboratory, Riga Medical Institute

"Justification for Health Protection Zones Around Some Enzyme-Producing Plants"

Moscow, Gigiyena i Sanitariya, No 6, 1970, pp 80-81

Translation: The development of the microbiological industry has enhanced the importance of industrial biological agents which, despite the introduction of advanced technology, mechanization and automation, are released into the atmosphere and pollute it. Standards for the content of injurious substances in the environment are set with special regard for their toxic properties. These methods are unacceptable for biological factors because the body may react to them even before the initial toxic manifestations become apparent. We have reference to the sensitizing effect of biological atmospheric pollutants and their influence on human immunobiological reactivity. It is essential, therefore, to ensure the complete safety of the people who live in the vicinity of microbiological enterprises which use live microorganisms as starting material.

We set out to substantiate the need for a protective zone around an enzyme-producing plant that uses the fungi *Asp. oryzae* and *awamori* as producers of enzyme preparations. We selected for this purpose a plant that produces about
1/6

USSR

IZRAYLET, L. I., et al, Gigiyena i Sanitariya, No 6, 1970, pp 80-81

600 metric tons of enzymes a year. It uses a less advanced method of growing fungi, the surface method which is fairly widespread in the technological process of obtaining enzymes. When in operation, such plants may pollute the air not only with chemical compounds (formalin, chlorine, and so forth) but with the mold spores.

We analyzed atmospheric air at a time of intensive activity in the plant. Since it is located in an area isolated from other sources of industrial effluents, we were able to relate any pollution in the area to this particular plant. The study was carried out within a radius of 1.5 k from the plant.

In a bacteriological examination of the air* 500 m from the plant, we cultured about 1,320 colonies. More than 500 m away, the amount of atmospheric pollution was negligible and at certain times of the day fungi could not be detected.

*The analyses were made by the Republic Sanitary Epidemiological Station under the direction of N. R. Karpova.

USSR

IZRAYLET, L. I., et al. Gigiyena i Sanitariya, No 6, 1970. pp 80-81

We were also interested in the health of the people living both in the zone where cultures (500 m) were constantly discharged into the air and in a radius of 1,000 m beyond. We examined three groups: (1) 28 workers in the plant; (2) 91 persons living within a radius of 1.5 km; (3) 19 workers in another plant, 2 to 2.5 km away from the enzyme-producing plant, who served as a control. These workers were not exposed to the same occupational hazards. All the groups were virtually identical in sex and age.

More than 75% of the workers in the enzyme-producing plant complained of fatigue, general weakness, pains in the joints, itchy rashes, intermittent cough, transient rhinitis, and so forth. All these phenomena could be linked to the allergenic effect of the enzymes. Those who lived near the plant also had allergic reactions (66.6%). Persons living 300 to 500 m from the plant (29.6% of those examined) presented similar complaints but to a lesser degree. Persons living 500 m further away did not have such complaints.

Data on anamnesis were confirmed by an objective examination: persons tested manifested an allergic rash, an asthmata-like condition, eosinophilia of the peripheral blood, rhinitis, and other allergic symptoms.

3/6

USSR

IZRAYLET, L. I., et al, Gigiyena i Sanitariya, No 6, 1970, pp 80-81

To study the effect of the fungi on the people's health, other than sensitization, we used immunobiological tests because the level of immunobiological reactivity reflects overall health. Shifts in immunobiological reactivity, according to the data obtained by many investigators, occur well before the first pronounced objective pathological changes become evident (V. K. Navrotsky et al.; Ye. G. Moskalenko). Immunobiological tests are known to be a sensitive means of evaluating the effect of harmful factors on the body (A. D. Ado; O. G. Alekseyeva). We determined the phagocytic activity of neutrophils in peripheral blood and the bactericidal capacity of the skin and its deep microflora.

Individuals living within a radius of 500 m from the plant exhibited a shift in phagocytosis that was manifested by a distortion of the first phase of the process, the capacity of neutrophils to ingest microbes. These subjects also experienced a shift in the main index of phagocytosis, the phagocytic index, which characterizes the level of natural immunity. This index was 4.2 ± 0.5 microbes per neutrophil counted (in the control group, 5.4 ± 0.6 microbes per neutrophil counted). The phagocytic number, i.e., the number of microbes ingested by each phagocyte, decreased by 21.1%. The second stage of phagocytosis, intracellular digestion

4/6

USSR

IZRAYLET, L. I., et al, Gigiyena i Sanitariya, No 6, 1970, pp 80-81

(completion of the process) is the more important, for it establishes phagocytosis as a protective reaction of the body. The percent of microbes digested in the main group of residents was 66.7% compared with 70.8% in the control group. In other words, intracellular destruction of the ingested microbes was 5.8% less in persons living near the plant than in the control group.

At the same time, we observed an increase in those living near the plant in the total number of microorganisms on the skin (2.5 times above normal), as well as a shift in the qualitative composition of the microflora due to the appearance of biochemically active pathogenic strains of Staphylococci (three to four times above normal levels). However, the bactericidal capacity of the skin in this group remained within normal limits. The immunobiological state of those residing some distance from the plant was essentially the same as in the control. It is interesting to note that the sensitization and immunobiological tests became normal while the plant was undergoing major repairs, during a period of several months when no fungi were released into the air.

We discovered, therefore, that people living within a radius of 500 m from an enzyme-producing plant were affected by the fungi *Asp. oryzae* and *awamori*. Our data show that sensitization occurred along with a weakening of the body's defenses against infection.

5/6

USSR

IZRAYLET, L. I., et al, Gigiyena i Sanitariya, No 6, 1970, pp 80-81

Conclusions

1. The degree of sensitization and immunobiological state of the body may serve as a basis for establishing health protection zones around plants using fungi as raw material.

2. To protect against plants with an enzyme-producing capacity of up to 600 metric tons a year, the zone should be at least 500 m wide.

6/6

acc. Nr.: APO029433

Ref. Code: UR 0391

PRIMARY SOURCE: Gigiyena Truda i Professional'nyye Zabolevaniya,
1970, Nr 1, pp 10-14

BASIC OCCUPATIONAL HAZARDS AT PLANTS MANUFACTURING ANTIBIOTICS

Izraylat, L.I.

Summary

Principal adverse industrial factors at a plant engaged in production of antibiotics are the dust of producing fungi and of their spores, along with the dust engendered by ready-made products. Antibiotics concentration in the blood of workers reaches bacteriostatic dosages. Among these workers proportionally important are allergic diseases of the heart, bronchial asthma, toxico-allergic affections of the liver, etc. The immunobiological reactivity of the workers' organism is modified and the latter becomes subject to sensitization. The blood sera demonstrate a fall of the anti-influenza antibodies. At the time of occupational admission screening particular attention should be focussed on contraindications to admittance. The categories of persons subject to periodical medical examinations should be broadened. In this connection it is expedient to employ methods apt to evaluate the state of immunobiological reactivity and sensitization of the organism which can disclose early signs of alterations occurring in the organism under the effect of occupational factors before the onset of marked pathological changes.

REEL/FRAME

19681030

USSR

UDC: 621.393.03

MIKUFSKIY, G. V., ~~IZRAILEV, R. A.~~ and SKITAL'TSEV, V. S. [All-Union Scientific Research Institute of Electric Power]

"Device for Frequency-Division Multiplex"

USSR Author's Certificate No 291365, filed 24 Jul 69, published 24 Feb 71 (from Rzh-Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 12, 1971, Abstract No 12A242P)

Translation: A device is patented for frequency division multiplex of high-frequency communication channels for the transmission of telephone, telemetering, and automation signals from dispersed objects, by an energy system containing transmitters, receivers, and filters of telemetering and automation signals. The device differs in that, for the purpose of providing independence of the telephone, telemetering, and automation signals with a reduction in the amount of individual equipment of the channels, the transmitters are connected to the intermediate frequency strip of the communication equipment at a point between the output of the filter and the input of the second modulator, while the receivers are connected to a point between the output of the first modulator and the input of the i-f filter; the frequencies of the telemetering and automation channels are put in the i-f spectrum of the communications equipment in the interval between the extremes of the telephone communication channel bands.

1/1

USSR

UDC 681.325.3:612.377.622.13

GEYSHIS, M. I., YEVTEYEV, F. Ye., IZRAILEV, Yu. S., KUSHLIN, V. I., and
PLOTKIN, M. A.

"On Achieving a High-Precision, High-Speed Matrix System"

Izv. Leningr. Elektrotekhn. In-ta (News of Leningrad Electrical Engineering
Institute), No 92, 1971, pp 47-50 (from Referativnyy Zhurnal -- Avtomatika,
Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 88376,
by B. K.)

Translation: A decoding matrix system for use in digital-analog converters
which function in communication systems with pulse-code modulation is de-
scribed. The decoding matrix consists of a nine-bit ohmic divider of the
R-2R type and sources of current, which are controlled by symmetric diode
keys. The sources of current are formed by switching on the sources in
series with a source of standard voltage of resistors with a resistance of
20 kilohms. An expression for evaluating the admissible root-mean-square
deviation of the resistances of the matrix is derived. The basic technical
data is presented for the matrix system, which is made in the form of a
functionally completed assembly based on thin-film technology. It is pointed
out that the time needed for establishment of a transient process in the
1/2

USSR

GEYSHIS, M. I., et al., Izv. Leningr. Elektrotekhn. In-ta (News of Leningrad Electrical Engineering Institute), No 92, 1971, pp 47-50 (from Referativnyy Zhurnal — Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B376, by B. K.)

system does not exceed $5 \cdot 10^{-9}$ seconds, given a root-mean-square voltage error of $(0.088-0.16) \delta$, where δ is the quantization size. 1 illustration.

2/2

- 45 -

USSR

UDC 681.327.67(088.8)(47):681.326.35

IZRAYLIT, I. M.

"A Device for Storage of Information in Code Generators"

USSR Author's Certificate, No 278753, Filed 12 May 69, Published 3 Dec 70
(from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya
Tekhnika, No 8, 1971, Abstract No 8B190 P)

Translation: A device for storage of information in code generators is suggested. It contains a master clock, a distributor, a relaxation generator, a flip-flop, and a coincidence circuit. In order to simplify the collection of information and to increase the volume of information being stored, the output of the master clock is connected to the input of the distributor, to one of the inputs of the coincidence circuit, and to one of the inputs of the relaxation generator. The other input of the relaxation generator is connected to the outputs of the information pulse sequence of the distributor. The output of the supporting sequence of the distributor is connected to one of the inputs of the flip-flop, and the other input of the flip-flop is connected to the output of the relaxation generator. The output of the flip-flop is connected to the other input of the coincidence circuit. 1 illustration.

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Communications

USSR

UDC 621.395.3

IZRAYLIT, I.M.

"Automatic Code-Former For Telephone Call"

USSR Author's Certificate No 254576, filed 15 May 68, published 9 Mar 70 (from RZh--Elektrosvyaz', No 2, February 1971, Abstract No 2.64.276P)

Translation: An automatic code-former for a telephone call is patented, which contains a pulse generator, a plugboard with a nominal key set, and a final control unit. With the object of increasing the operating stability and assuring simultaneous forming of subscriber's numbers of various significance (znachnost) to it, the output of the pulse generator is connected across a counter-analog converter to one of the inputs of a comparator circuit, parallel to the second of the inputs of which is connected a cutoff unit with an "exclusion" circuit in a loop for over-all "start-up."

1/1

Metrology, Mapping, Surveying, Graphics

USSR

UDC 536.5.081(100):[536.421.4:669.21]

IZRAILOV, K. S.

"Significance of Gas Thermometer Measurements at the Solidification Point of Gold for Construction of the IPTS [International Practical Temperatures Scale]"

Tr. Metrol. In-tov. SSSR [Works of Metrological Institutes, USSR], 1972, No 131(191), pp 5-10 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 12, 1972, Abstract No 12.32.898).

Translation: The solidification point of gold is one of the primary bench marks of the IPTS. A new, improved temperature scale has now been suggested -- IPTS-68. According to this scale, the solidification point of gold is at 1064.43°C (in place of 1063.0°C according to IPTS-48), found by averaging the results of new gas thermometer studies performed in the USSR (All-Union Scientific Research Institute for Metrology) and FRG (RTV) on the basis of improved measurement techniques. In connection with the introduction of IPTS-68, the most important parameters of the apparatus, sources of error and results of determination of the thermodynamic temperature at the solidification point of gold performed at the Institute of Metrology in 1965-1966 using a

1/2

USSR

Izrailov, K. S., Tr. Metrol. In-tov. SSSR, 1972, No 131(191), pp 5-10.

standard gas thermometer No 3 and a new metho -- the method of direct immersion of the reservoir -- are analyzed. 1 table, 7 biblio. refs.

USSR

UDC: 519.3:62-50

IZRAILOVICH, M. Ya.

"Problem of Controlling the Final State When There are Constantly Acting Perturbations"

Tr. Mosk. in-t neftekhim. i gaz. prom-sti (Works of the Moscow Institute of Petrochemistry and the Gas Industry), 1970, vyp. 84, pp 52-58 (from RZh-Matematika, No 7, Jul 70, Abstract No 7B564)

Translation: This paper considers application of the method of dynamic programming to a continuous problem of optimum control. Author's abstract.

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7433

CSO: 1863-W

- END -

- 115 -

USSR

UDC 534.014

BABITSKIY, V.I. and IZRAILOVICH, M.YA.

"Synthesis of a Self-Oscillating Vibration-Shock System"

Moscow, Mashinovedeniye, No 3, May-Jun 71, pp 11-18

Abstract: The synthesis of self-oscillating systems in relation to changes of basic parameters from nominal was investigated. Formulas and graphic analyses were compiled to show relative effects of mutual changes of parameters including period to coefficient of restoration, shock velocity to coefficient of restoration, and impulse to coefficient of restoration, all of which depend on the slope of a switching function. For certain desired parameters, it is possible to derive remaining parameters from the formulas and graphs. Derived parameters include a sensitivity coefficient related to the departure magnitude of the coefficient of restoration from nominal values. A method was described for decreasing the system sensitivity to changes in the coefficient of restoration. This method is shown to consist of selecting those optimum parameters from the synthesized formulas which will afford the desired results for a given oscillating system.

1/1

USSR

UDC: 632.954:632.911

SOKOLOV, M. S., IZUREKO, V. V., MAKHEYEVA-GUR'YANOVA, L. T., NIKITIN, N. V.,
and TEREKHOV, V. I.

"Determining the Absorption of Herbicides by Plants With the Use of
Artificial Irrigation"

Moscow, Khimiya v Sel'skom Khozyaystve, no 11, Nov 70, pp 48-52

Abstract: In agricultural practice, rains falling immediately after the treatment of seedings generally necessitate repeated application of herbicides. The effectiveness of systemic herbicides largely depends on their rate of penetration. It also depends on the composition, form, dose of the toxic agent, the development of the plants, their sensitivity to the agent and the characteristics of the cover tissue of the plant. It was found that the rate of penetration of hydrophilic toxic agents and the rain resistance of herbicides can be readily established using

USSR

SOKOLOV, M. S., et al, Khimiya v Sel'skom Khozyaystve, no 11, Nov 70,
pp 48-52

artificial sprinkling to imitate rain with an intensity of 0.85 mm/min at a precipitation norm of 10 mm. The herbicide absorption is arbitrarily characterized by its semilethal dose penetration time. The rate of penetration of aqueous solutions of herbicides in ready-to-use solutions is higher than that of their chemically pure form. The experimental data on the penetration rate and wash-off of 2,4-D sodium salt were confirmed by the microquantitative determination of the toxic agent absorbed by the plants. Tables in the original article cite data on absorption and retaining of the triethanolamine salt of 2,4-D with irrigation and those on the sodium salt of 2,4-D with irrigation and wash-off.

2/2

USSR

UDC 621.316.345:621.387.322.3

ANTIPOV, B.L., IZUMRUDOV, O.A., LAZAREVA, N.P., SAVEL'YEV, G.A.

"Production Of Multicolor Electroluminescent Panels"

Izv. Leningr. elektrotekhn. in-ta (Journal Of The Leningrad Electrical Engineering Institute), 1972, Issue 108, pp 175-179 (from RZh:Elektronika i yeye primeneniye, No 11, Nov 1972, Abstract No 11B356)

Translation: A variation was developed of a photographic method of producing electroluminescent panels. A glass substrate with a transparent electrode of stannic oxide is covered by a thin (10--15 micron) layer which is easily dissolved in organic solvents of lacquer (e.g., nitrocellulose). On the surface of the lacquer film a protective stencil is established by the method of photochemical treatment of a photoresist based on polyvinyl alcohol, which cuts off specific sections of the lacquer film. Subsequently, a continuous layer of an electroluminophor with a specified color of luminescence is deposited onto the surface of the substrate. Fixing of the luminophor on the shield photoresist sections is achieved with treatment by the vapors of a lacquer solvent. The unbound luminophor is easily withdrawn from the shielded sections, after which the shield stencil is removed and at the sections of lacquer films which had become exposed the process of fixing a luminophor of another color is repeated.

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USSR

ANTIPOV, B.L., et al., Izv. Leningr. elektrotekhn. in-ta, 1972, Issue 108, pp 175-179

Multicolor panels 0.1--0.2 mm wide can be produced by this method. The merit of the method is the almost total absence of losses of luminophor because the luminophor removed from the sections unrestrained at the substrate is not contaminated by the bonding and can be used a second time without additional cleaning. I.V.

2/2

- 114 -

USSR

UDC:622.243.144.2

MUKHITDINOV, K. M., TURAPOV, M. K., IZUMRUDOVA, T. V.

"New Washing Solutions for Drilling Deep Wells Under Difficult Geological Conditions"

Tashkent, Uzbekskiy Geologicheskii Zhurnal, No. 6, 1970, pp. 11-14

Abstract: Various difficulties arise in the drilling of oil and gas wells in Uzbekistan, depending on the age, lithology and structure of the deposits. Although the assortment of chemical diluting agents is rather great, a need is still felt for an agent which can meet the demands for chemical activity without excessive foam formation. The authors have produced three new types of nitrated sulfite-alcohol-wash agents, found to be superior to both untreated and condensed agents of the same type used earlier. The optimal concentration of the new agent to improve the rheological properties of the solution is 2-4 times less than that of agents used earlier, and is independent of the composition of the clay solutions and temperature. The new agent shows particular great improvement in properties under conditions of unusually high stratal pressures.

1/1

- 99 -

IZUTKIN, A. M.

BIOLOGICAL AND SOCIAL ELEMENTS IN MAN AND MEDICINE

SOI:PRS 53272
02 June 71

UDC: 599.9:61

Article* by A. M. Izutkin, N. V. Turovskiy, Moscow, Vsesoyuznaya Akademiya Meditsinskikh Nauk SSSR, Moscow, no. 4, April 1971, pp 64-70]

Theoretical analysis of the problems in medicine at the center of the scientific interests not only of medical personnel but also philosophers working on methodological issues in natural sciences. An example of this is the article by N. B. Turovskiy whose purpose is defined as a formulation of the problem of logical substantiation of medical theories (p 383).

If, of course, such a declaration must only be welcomed, and it merits the most serious scrutiny, since modern medicine, as never before, needs profound theoretical generalizations. It is also clear how great is the responsibility of those who tackle logical substantiation of pathology theories. This applies all the more to the representatives of dialectical materialism, whose opinion is acquiring an increasingly important and conspicuous character in this century of scientific technological revolution.

The focal issue discussed in this article is the nature of man. The author speaks out decisively against the concept of "biological adaptation," as applied to man, in the belief that "man is a primeval whose activity is entirely deprived of biological characteristics of behavior" (italicized by the authors, p 373), that "man, in all of his features without exception is society" (italicized by the authors, p 369). By virtue of this, "theory of any science dealing with man cannot be constructed on the concept of biological relation, since man's relation to the environment is not biologically biological" (italicized by the authors, p 370). In other words, medicine, in its theory of human existence under normal and pathological conditions, cannot be a theory dealing with biological relations and links.

Such a unilateral interpretation of man, rejecting all biological relations in his vital activity, is in our opinion invalid, contradicting dialectical materialism and the advances of the natural sciences.

* With Reference to the article by N. V. Turovskiy "On the Question of Social Content of the Concept of Disease".

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--OPTIMIZATION OF BASIC PARAMETERS OF THERMAL DESALTING PLANTS WITH
ADIABATIC EVAPORATION -U-
AUTHOR--(C3)--KORNEICHEV, A.I., IZVEKOV, A.V., MYAGKOV, A.A.
COUNTRY OF INFO--USSR
SOURCE--DESALINATION: 7: 179-86(FEB 1970)
DATE PUBLISHED--FEB70

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

TOPIC TAGS--DESALINATION, ADIABATIC PROCESS, EVAPORATION, PARAMETER,
COMPUTER CALCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2120

STEP NO--NE/0000/70/007/000/0179/0186

CIRC ACCESSION NO--AP0125704

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125704

ABSTRACT/EXTRACT--(U) CP-0- ABSTRACT. A METHOD IS PRESENTED FOR COMPLEX OPTIMIZATION OF THE PARAMETERS OF DESALINATION PLANTS WITH ADIABATIC EVAPORATION. THE COMPUTATION OF OPTIMAL PARAMETERS OF SINGLE, AS WELL AS DUAL, PURPOSE DESALINATION PLANTS BY THE PROPOSED METHOD IS NOT COMPLICATED. THE COMPUTATIONAL PROGRAM OF THE OPTIMAL PARAMETERS IS EASILY CARRIED OUT ON ELECTRONIC COMPUTERS. FACILITY: GOVERNMENT COMMITTEE ON THE UTILIZATION OF NUCLEAR ENERGY, MOSCOW.

UNCLASSIFIED

USSR

UDC 547.756 + 541.67

TSUKERMAN, S. V., BUGAY, A. I., IZVEKOV, V. P., and LAVRISHIN, V. F.,
Khar'kov State University imeni A. M. Gor'ki

"Dipole Moments of Indole Analogs of Chalcone"

Riga, Khimiya Geterotsiklicheskikh Soyedinaniy, No 8, Aug 72, pp 1083-1086

Abstract: On the basis of dipole moment measurements, the most probable conformations of 22 indole analogs of chalcone have been established; in respect to the substituents on the vinyl group they are trans-isomers, and considering the orientation of the aliphatic double bond with respect to the carbonyl group, they represent s-cis-conformers. The predominant rotational isomer appears to be the anti-s-cis form, although not exclusively so. Introduction of electron donating and electron accepting substituents onto the phenyl ring of the 1-(indolyl-3)-3-phenylpropenones leads to a slight decrease of the dipole moments. This change in the dipole moment correlates to some extent with the Hammett σ -constants. When the phenyl ring in isomeric 1-(indolyl-3)-3-phenylpropenones is substituted by a furyl, thienyl or selenylenyl group a small increase in the dipole moment is observed.

1/1

- 41 -

USSR

UDC 550.343.62

GEL'FAND, I. M., Corresponding Member of the USSR Academy of Sciences, GUBERMAN, SH. A., IZVEKOVA, M. A., KEYLIS-BOROK, V. I., RANTSMAN, YE. YA.

"High Seismicity Criteria"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 6, 1972, pp 1317-1320

Abstract: A study was made of the problem of finding points in the eastern part of Central Asia where earthquakes with a magnitude of $M > 6.5$ are possible. A figure is presented showing that all the epicenters of the 22 such earthquakes occurring since 1835 lie at disjunctive nodes with active movements in modern times (the last ~25 million years, beginning with the Neogene). It is proposed that earthquakes with $M > 6.5$ can occur only at such nodes, in particular, at the 16 nodes where they have already occurred. The problem then reduces to finding at which of the remaining 25 nodes earthquakes with $M > 6.5$ are possible. The problem was solved by means of the KORA-3 recognition program [H. M. Bongart, et al., *Geologiya i geofizika*, No 6, 1966; "Complex Interpretation of Geophysical Data on Computers," *Tr. Moskovsk. inst. neftekhimich. i gazovoy prom. in. I. M. Gubkina*, No 62, 1965]. A table is presented showing the variation of the recognition results during the course of seismic history. The conclusion is drawn that earthquakes with $M > 6.5$ are possible at fixed nodes: Fayzabad, Alayskiy, Zaalayskiy, Obi-Khingou-Surkhob, Sarydzhaz and Kun'lun'. The

1/2

USSR

GEL'FAND, I. M., et al., Doklady Akademii Nauk SSSR, Vol 202, No 6, 1972, pp 1317-1320

reliability of this conclusion was evaluated experimentally. The six nodes have one common feature -- they are all located in the zones of latest contrast movements at the boundaries of mountainous areas.

2/2

- 31 -

Acc. Nr: **AP0047163**

Ref. Code: UR 0246

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikiatrii, 1970,
Vol 70, Nr 2, pp 177-181

MATHEMATICAL PROGNOSIS OF OUTCOMES IN HEMORRHAGIC
STROKES WITH THE PURPOSE OF DETERMINING
INDICATIONS TO SURGICAL TREATMENT

Gelfand, I. M.; Guberman, S. A.; Izvekova, M. E.;

Kandel', E. I.; Lebedeva, N. V.; Lunev, D. K.;

Nikolayeva, I. F.; Chebotareva, N. M.

The purpose of the convened study was to elaborate methods of mathematical prognosis in hemorrhagic strokes to define the indications to surgical treatment. The authors analyzed 124 case histories (52 case histories of living patients and 72 case histories of deceased) with hemorrhages into the brain hemisphere, following hypertensive disease and atherosclerosis. In such cases 56 items were considered which were the most significant for prognosing hemorrhagic strokes. Among them were different clinical symptoms and their development during 12 hours after admission to hospitals. An analysis of these items permitted to establish a correct prognosis in relation to survival during the first 5 days with exactness to 95%. The next stage of the study presumes an elaboration of methods for prognosis of hemorrhagic strokes in surgical treatment. This may be of aid in deciding the expediency of operations in each separate case.

REEL/FRA
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USSR

UDC: 621.315.592

BORDOVSKIY, G. A. and IZVOZCHIKOV, V. A.

"Investigating the Mechanism of Space-Charge Limiting Currents in Nonuniform Semiconductors by the Method of Conductance Thermal Stimulation"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol. 4, No. 6, 1970, pp 1171-1173

Abstract: In uniform semiconductors, the mechanism of currents limited by the space charge is easily clarified by investigating the dependence of the voltage at the beginning of the current-voltage characteristic curve on the distance between the electrodes. This method gives results which do not correspond to experimental results when applied to nonuniform semiconductors, however. The authors have therefore developed the method of thermal stimulation of current for the investigation of the mechanism in PbO monocrystals. This thermal stimulation is observed after the voltage at the first sharp rise of the characteristic curve is applied without optical excitation; the space-charge limited currents are then determined by the filling of the traps and not by their ionization. The authors present tables and curves giving the results of their experiments, and conclude by expressing their gratitude to V. A. Bordovskiy for his assistance with the experimental work.

1/1

1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--TRAPPING LEVELS IN HETEROGENEOUS SYSTEMS STUDIED BY MEANS OF
THERMOSTIMULATED CURRENTS -U-
AUTHOR--(02)-GASANOV, O.K., IZVOZCHIKOV, V.A.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 375-7
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRON TRAPPING, PN JUNCTION, SILVER, LEAD OXIDE, TIN OXIDE,
PHOTOELECTROMOTIVE FORCE, ELECTRON TRAP, SEMICONDUCTOR MATERIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1996/1853 STEP NO--UR/0449/70/004/002/0375/0377
CIRC ACCESSION NO--AP0118817
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0118817

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE SANDWICH FILMS (AG-P80-SNO
SUB2: WITH P-N OR P-I-N JUNCTIONS), HAVING PHOTOEMP. 0.2 AND 0.5 V, AT
77 AND 300DEGREEK, RESP., WERE STUDIED AT 77-350DEGREEK. THE METHOD
USED MAKES IT POSSIBLE TO DET. BOTH DISCRETE LEVELS AND QUASICONTINUOUS
GROUPS OF TRAPS (NAMELY 0.16 AND 0.2, 0.31, 0.58, 0.65, AND 0.67 EV,
RESP.). IF A BIAS VOLTAGE IS APPLIES, THE ELECTRON TRAPS CAN BE
DISTINGUISHED (0.16, 0.31, AND 0.65 EV IN THIS CASE). FACILITY:
LENINGRAD. GOS. PEDAGOG. INST. IM. GERTSENA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF AN ELECTRIC FIELD AND ILLUMINATION ON THE KINETICS OF THE
PHOTOCONDUCTIVITY OF LEAD OXIDE LAYERS -U-
AUTHOR-(04)-GASANOV, D.K., IZOVOSCHIKOV, V.A., KOZLOV, V.A., TIMOFEYEV,
O.A.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(3), 558-60
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--LEAD OXIDE, ELECTRIC FIELD, PHOTOCONDUCTIVITY, LAMINATED
STRUCTURE, CRYSTAL ORIENTATION, PN JUNCTION, TIN OXIDE, SILVER,
RELAXATION PROCESS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0099 STEP NO--UR/0449/70/004/003/0558/0560
CIRC ACCESSION NO--AP0105185
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105185

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PBO LAYERS WITH AG STRIPE ELECTRODES WERE INVESTIGATED IN THE TRANSVERSE REGIME (LIGHT BEAM PERPENDICULAR TO THE ELEC. FIELD) AND SUB-PBO-AG SANDWICH LAYERS IN THE LONGITUDINAL REGIME. THE PBO LAYERS WERE 1-10 MU THICK AND WERE EVAPD. IN VACUO AT LESS THAN 10 PRIME NEGATIVE2 MM HG. DURING THE VACUUM ANNEAL, A P-N JUNCTION WITH A HIGH OHMIC INTRINSIC REGION WAS FORMED IN THE SANDWICH SAMPLES. APART FROM THE NORMAL PHOTOCOND. RELAXATION MECHANISM AFTER SWITCHING OFF THE LIGHT, THERE WAS A TYPICAL "OVERSHOOTING" IN THE INITIAL PART OF THE RELAXATION CURVES. IN THE TRANSVERSE SAMPLES, THIS OVERSHOOTING INCREASED WITH INCREASING VOLTAGE, WHILE IN THE LONGITUDINAL ONES IT DECREASED; IN STRONG FIELDS, THIS OVERSHOOTING BECAME S SHAPED. IN THE TRANSVERSE SAMPLES, THE OVERSHOOTING IS DUE TO CHARGE REDISTRIBUTION AMONG THE IMPURITY CENTERS DURING THE ILLUMINATION, AND THE S SHAPE IS A CONSEQUENCE OF TRAPPING EFFECTS DURING THE GENERATION PROCESS. THE VOLTAGE DEPENDENCE OF THE EFFECT IS DUE TO THE VOLTAGE DEPENDENCE OF THE SPACE CHARGE D. AROUND THE ELECTRODES. IN THE LONGITUDINAL SAMPLES, THE MECHANISM IS EXPLAINED BY THE PECULIARITIES OF THEIR P-I-N STRUCTURE. FACILITY: Leningrad. Gos. Pedagog. Inst. Im. Gertsena, Leningrad, USSR.

UNCLASSIFIED

USSR

UDC 538.574.8

ARMAND, N. A., IZYUMOV, A. O., and SOROLOV, A. V.

"Fluctuations of Submillimeter Radio Waves in the Turbulent Atmosphere"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 8, Aug 71, pp 1333-1341

Abstract: This paper deals with the study of fluctuations of electromagnetic signals in the atmosphere in the presence of appreciable absorption. The problem of propagation of a plane monochromatic wave in the submillimeter band in a layer of turbulent atmosphere close to the ground is considered, and formulas are found for the intensity of fluctuations in the levels of received signals with regard to the absorption of the incident radiation. It is found that fluctuation intensity is suppressed when absorption is present. The measuring equipment is described as well as the procedure and results of measurements of fluctuations in received signal levels in the 0.86-0.99 mm band, and theoretical and experimental data are compared. It was experimentally found that the amplitude of fading in the center of the absorption line at 0.921 mm is 1/5 that on the wavelength of 0.985 mm. This phenomenon is attributed to a lens effect due to nonhomogeneities in the turbulent atmosphere. An analysis of the effect shows that absorption reduces fading 1/2

USSR

ARMAND, N. A., et al., Radiotekhnika i Elektronika, Vol 16, No 8, Aug 71,
pp 1333-1341

only in the zone of geometric optics, and that the intensity of the reduction
in amplitude fading is most pronounced when the effects of lens action and
changes in optical thickness are comparable.

2/2

- 47 -

USSR

UDC: 621.391.2:621.396.96

BABKIN, Yu. S., ZIMIN, N. N., IZYUMOV, A. O., ISKHAKOV, I. A., SOKOLOV, A. V.,
STROGANOV, L. I., SUKHONIN, Ye. V., SHABALIN, G. Ye.

"Measurement of Rain Attenuation on a 0.96 mm Wave Over a 1 km Route"

Moscow, Radiotekhnika i Elektronika, Vol 15, No 12, Dec 70, pp 2451-2453

Abstract: An investigation is made into attenuation in rains of varying intensity and a relationship is found between the attenuation and the mass of water precipitated in a given time interval. The transmitter was a frequency-stabilized unit based on a backward-wave oscillator, and the receiver used an indium antimonide detector cooled to liquid helium temperatures. Rotating one-meter Cassegrain antennas were used. Rainfall was registered by three P-2 recording rain gauges placed at both ends and in the middle of the 1 km transmission path. Temperature, pressure, humidity and wind speed were also measured. Attenuation on a 0.96 mm wave was determined from the change in signal level at the receiver during rains. For rain intensity of 0.12 mm/hr (covering more than 99% of all cases) the attenuation on a 0.96 mm wave in decibels per kilometer is approximately $1.53 \cdot I^{0.038}$, where I is rain intensity in mm/hr. This is 2.5-3 times the attenuation observed on a wave of 8.6 mm.

1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--STRUCTURE OF GELATINE GELS -U-
AUTHOR--(03)-SLONIMSKIY, G.L., TOLSTOGUZOV, V.B., IZYUMOV, D.B.
COUNTRY OF INFO--USSR
SOURCE--VYSOKOLMOL. SOEDIN., SER. B 1970, 12(2), 160-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--GEL, MOLECULAR STRUCTURE, PLASTICITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1987/1199 STEP NO--UR/0460/70/012/002/0160/0165
CIRC ACCESSION NO--AP0104565
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104565

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PLASTICITY OF GELS CONTG. 10PERCENT GELATINE (I) AND 0.2-1.0PERCENT CA ALGINATE (II) WAS MEASURED BY MEANS OF A MODIFIED DYNAMOMETER AT 10-50DEGREES AND A STRESS OF 3700 DYNES-CM PRIME2. THE PLASTICITY OF THE I-II SYSTEM INCREASED IN THE RANGE OF 29-35DEGREES REACHING A MAX. AT 34-80DEGREES, THEN DECLINED, AND AT 42-40DEGREES CORRESPONDED TO THE PLASTICITY OF II GEL OF SIMILAR CONCN. MAX. PLASTICITY OF THE SYSTEM SHIFTED ON COOLING TOWARDS THE LOWER TEMPS. AND WAS A FUNCTION OF THE COOLING RATE. THE ANOMALOUS BEHAVOIR OF I-II GELS WAS ATTRIBUTED TO A BREAKDOWN OF THE SUPRAMOL. STRUCTURE, WHILE THE MAGNITUDE OF THE MAX. WAS A FUNCTION OF MEASUREMENT CONDITIONS.

UNCLASSIFIED

USSR

UDC: 621.372.85

IZYUMOVA, T. I., POHEL'NIKOV, Yu. N.

"A Splitter-Amplifier Based on a Traveling Wave Tube"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1971, vyp. 1, pp 138-140 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B149)

Translation: The paper presents the design of a matching device based on coupled helices for splitting the signal at the output of a traveling wave tube; frequency responses are given for a two-channel splitter. The authors show how loading affects the frequency dependences of the gain in both channels. Three illustrations. Resumé.

1/1

- 6 -

UDC 547.341.07

USSR

KAABAK, L. V., VARSHAVSKIY, S. L., MYAGKAYA, M. YE., KOSHECHKINA, L. A.,
KALITINA, M. I., and KABACHNIK, M. I.

"Process for the Preparation of Tri-Secondary-Alkylphosphine Oxide"

USSR Author's Certificate No 362024. Filed 18 Jan 71, published 13 Dec 71
(from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 2, 1873, p 54)

Translation: This process is improved in that white phosphorous reacts with
secondary halide alkyls and magnesium or zinc while being heated, with the
subsequent treatment of the reaction mixture with alkali. The desired
product can be separated by known methods.

2. The process in number 1 is improved in that the mixture is heated to a
temperature of 120-210°C.

3. The processes described in number 1 and 2 are improved in that the
treatment of the reaction mixture with alkali is carried out at 270°C.

1/1

UDC: 543.4:082.025.4

USSR.

BOYKO, V. V., KAABAK, M. Ya.

"Classification of Analytic Methods, Instruments and Measurement Systems for Optical Composition Analyzers"

Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971, pp 3-9 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, NO 2, 1972, Abstract No 2.32. 1088 by V. S. Krasnova)

Translation: It is pointed out that the analytic methods and instruments used at the present time can be looked upon as a two-dimensional set, in which each instrument and each method can be characterized by the method of physical-chemical conversion of the specimen and physical parameters determined. A general system for a composition analyzer is suggested, encompassing titrometric and optical analyzers with direct and differential methods of measurement, with open and closed tracking systems, with the feedback signal sent to the first or intermediate measuring circuits of the converter. Composition analyzers can be used for regulation of processes of physical and chemical conversions of specimens in specimen analyzer-specimen conversion device systems with feedback. Optical composition analyzers

1/2

-- 121 --

USSR.

UDC: 543.4:082.025.4

BOYKO, V. V., KAABAK, M. Ya., Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971, pp 3-9 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.1088 by V. S. Krasnova)

include devices for determination of the optical parameters regardless of the presence of physical-chemical converters and feedback. The measuring system of an optical analyzer can be characterized by the number of spectral intervals and radiation flexes, measurement method, type of tracking system and modulation.
4 biblio refs.

2/2

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor)

Sbornik Nauchnykh Trudov Estonskoy Sel'skokhozyaystvennoy Akademii (Collection of Scientific Reports, Estonian Agricultural Academy), Tartu, 1970, 258 pp

Translation: Partially Expanded Table of Contents

Page

I. Survey of reports

TAMM, O. M., and VASIL'YEVA, K. A., Materials on the investigation of parasitic diseases and diseases with natural foci in the environment of the Estonian SSR 3

BIZYULYAVICHYUS, S., The dynamics of infection by intestinal protozoa among the population of Latvia 5

YYGISTE, A. K., and KALYAKIN, V. N., Some aspects of the study of the epidemiology and natural focus characteristics of toxoplasmosis 6

SANGAYLA, I., KAYRYUKSHTIS, I., and BIZYULYAVICHYUS, S., Several aspects of the work of the interdepartmental committee on combatting helminthiasis in the Lithuanian SSR 9

BURAKAUSKAS, A., and KAYRYUKSHTIS, I., Experience in combatting helminthiasis of livestock in the Lithuanian SSR 11

1/7

- 83 -

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor), Sbornik Nauchnykh Trudov
Estonskoy Sel'skokhozyaystvennoy Akademii, Tartu, 1970, 258 pp

	Page
NURMIK, A., The state and problems of veterinary parasitology in the Estonian SSR	13
MEDZYAVICHYUS, A. K., A new system of management of pig breed- ing — a method of combatting helminthiasis in pigs	15
II. Helminthiasis	18
III. Protozoiasis	87
IV. Parasites of Wild Animals and Plants	127

Translation:

I. Survey Reports

Data of the Study of Parasitic Diseases and Diseases with Natural Foci as
Found in the Estonian SSR, by O. M. Tamm and K. A. Vasil'yeva, Republic
Sanitary Epidemiological Station, Ministry of Public Health, Estonian SSR

In the Estonian SSR, just as in other Baltic republics with analogous flora
and fauna and similar social circumstances, the occurrence of a number of
parasitic and natural focus diseases is still observed.

2/7

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor), Sbornik Nauchnykh Trudov Estonskoy Sel'skokhozyaystvennoy Akademii, Tartu, 1970, 258 pp

A study is being carried out at the Tallin Scientific Research Institute of Epidemiology, Microbiology and Hygiene of various questions relating to medical parasitology. Candidate of medical sciences, A. K. Yygiste has now completed a doctoral dissertation devoted to problems of morphogenesis of the fetus and of its characteristics as related to the virulence of the pathogen of toxoplasmosis. In 1969, E. A. Peykre completed and defended his candidate's dissertation entitled "A Study of the Natural Foci of Ornithosis in the Estonian SSR."

On the basis of morbidity data and from various studies of tickborne encephalitis (E. M. Raudam, 1955; 1967; A. Ye. Karapetyan, V. Ya. Zasyupkin, 1959; K. A. Vasil'yeva, 1957; K. A. Vasil'yeva, M. B. Shamardin, 1961), it is known that the southeastern section of the republic has natural foci of tickborne encephalitis, which appear to be active but not intensive. This is confirmed by various cases of tickborne encephalitis registered almost yearly in the Estonian SSR. Because of the importance of this, research was continued in 1968-1969 (by K. A. Vasil'yeva and M. G. Chernysheva) and virological research methods were used more widely. Research was conducted

3/7

- 84 -

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor), Sbornik Nauchnykh Trudov Estonskoy Sel'skokhozyaystvennoy Akademii, Tartu, 1970, 258 pp

at a laboratory for tickborne encephalitis at the Institute of Polymyelitis and Viral Encephalitides of the AMN SSSR (Ye. S. Sramanova, M. E. Bychkova). As a result of a study conducted on ticks collected from the territory of the focus (Yygevaskiy and Tartu regions), in 1968, two strains of tickborne encephalitis virus were isolated, EK-13 and EK-14, and another in 1969, EK-29.

These results confirm an active focus of tickborne encephalitis, and consequently, the urgency of this problem for the republic. The magnitude of this problem is defined by the wide distribution of Ixodid ticks in the Estonian SSR.

Various helminthiases have also spread significantly among the population, to 1.1% in 1969. Helminthiasis infestation decreases from year to year; for example; in 1960, 4.9% of the population was infested; in 1965, 2.5% of those studied. Nevertheless, the rate of decrease has noticeably slowed in recent years.

The most widespread is ascariasis, the incidence of which was 0.69% in 1969; 61.9% of the reported cases of helminthiasis were of this type. Ascariasis

4/7

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor), Sbornik Nauchnykh Trudov Estonskoy Sel'skokhozyaystvennoy Akademii, Tartu, 1970, 258 pp

has general circulation in the republic, while in various regions there is a low degree of infestation, there are small territorial foci and microfoci with higher morbidity.

A marked incidence still remains of broad tapeworm -- in 1969, 0.33% of those studied. On the whole the decrease of infestation is insignificant.

The incidence of taeniasis (infestation by *Taeniarhynchus*) among the population of the republic stands at 0.003% of those examined and has remained at this level since 1963. The low degree of infestation, 0.28 per 10,000 indicates that taeniasis has been eliminated in the republic as a mass disease, yet it cannot be considered completely eradicated, as no decrease in the incidence of *Cysticercus bovis* has been observed. Taking into consideration the importance of the detection of all actual taeniarsis foci, the urgency of this problem in the republic has not decreased, and consequently neither has the necessity for further research with the aim of total eradication of taeniasis in the republic.

5/7

- 85 -

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor), Sbornik Nauchnykh Trudov Estonskoy Sel'skokhozyaystvennoy Akademii, Tartu, 1970, 258 pp

Taking into account that an isolated, insular focus of tularemia exists in the republic, the possibility of the presence of potential natural foci cannot be ruled out. In 1969, a study was conducted (by the Republic Sanitary Epidemiological Station) of the natural immune layer among the agricultural population in two regions of the republic. A zoological-parasitological examination of rodents and domestic animals was also conducted. The results of this work showed that none of those studied appeared to be immune to tularemia. Positive results (low titers) were obtained during the serological investigation of rodents in individual cases; however, they cannot be considered specific, and consequently it is necessary to further investigate this problem.

Because of the importance of the protozoan group and the fact that it has not been sufficiently studied, except for trichomoniasis of the urogenital tract, new problems have arisen such as amebiasis, a disease which is increasing and acquiring general significance in infection pathology, and even balantidiasis, which still circulates among the livestock of the republic.

6/7

USSR

KOZLOV, N., (Chairman), and KAARDE, I., (Editor), Sbornik Nauchnykh Trudov
Estonskoy Sel'skokhozyaystvennoy Akademii, Tartu, 1970, 258 pp

In 1969, for the first time in the Estonian SSR, a case of trichinosis in humans was registered. It was caused by ingesting contaminated wild boar meat, which indicates the circulation of *Trichinella* strains among the wild animals of the republic. Plans for prophylaxis of these diseases in the future must include a study of this problem involving specialists from scientific research and practical institutes of the republic, organs of public health, and veterinary services. Consultation with leading Soviet scientists is recommended, and also the exchange of work experience and coordination of research with other Baltic republics.

7/7

- 86 -

USSR

UDC 621.396.619.13:021.574.7.01.01

BAKULIN, Yu. B., KASNIK, V. T., BAKOV, M. A., Institute of Applied Electronics,
Academy of Sciences of the USSR

"A Frequency Divider"

USSR Author's Certificate No 256399, Filed 7 Jun 68, Published 27 Mar 70 (from
RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D62 P)

Translation: This Author's Certificate introduces a frequency divider which contains
a magnetotransistorized flip-flop and a single-core divider. To expand the functional
possibilities of the device, the input circuits of the single-core divider and the
magnetotransistorized flip-flop are connected in series through a shaping element.

1/1

UDC: 51

USSR

KAAZIK, Yu. TYAKHT, R.

"A Method of Solving a Boolean Problem of Linear Programming"

Tr. vychisl. tsentr. Tartus. un-t (Works of the Computing Center. Tartu University), 1971, vyp. 22, pp 35-40 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V421)

Translation: The authors consider the following problem:

$$f(X) = \sum_{j=1}^m \sum_{i=1}^n a_{ij}x_i \rightarrow \max, \quad (1)$$

$$\sum_{i=1}^n a_{ij}x_i \leq 1, \quad j=1, 2, \dots, m, \quad (2)$$

$$x_i = 0 \text{ or } 1, \quad i=1, 2, \dots, n. \quad (3)$$

Here all coefficients a_{ij} are equal to 0 or 1.

It is pointed out that there are a number of practical problems which are reducible to model (1)-(3). For the solution of problem (1)-(3) the authors construct some relatively simple combinatoric algorithms. This

1/2

- 23 -

USSR

KAAZIK, Yu., TYAKHT, R., Tr. vychisl. tsentra. Tartus. un-t, 1971, vyp. 22, pp 35-40

article describes that algorithm which was found to be the most effective in practical calculations -- the algorithm of ordered sorting which utilizes the specifics of the problem. A flowchart is given.

Another approach to problem (1)-(3) (with the goal function of general

form $\sum_{i=1}^n c_i x_i$) was proposed by V. A. Trubin (RZh-Mat, 1970, 6V518; 1969, 9V296). Yu. Finkel'shteyn.

2/2

USSR

UDC: 51

KAAZIK, Yu. Ya. and PREEM, M. K.

"The Problem of Finding Routes"

Tr. Vychisl. tsentra. Tartus. un-t (Transactions of the Computer Center, Tartu University) No 28, 1973, pp 3-18 (from RZh--Matematika, No 1, 1974, Abstract No 1V512)

Translation: In each of m warehouses K_1, \dots, K_m is one of K forms of goods $T(K_i)$. A particular form of goods $T(O_i)$ must be shipped to each of n customers O_1, \dots, O_n . We are given an $m \times n$ matrix, $C = (c_{ij})$ distances from the warehouses to the customers. We are required to set up an economical round trip $Ki_1Oj_1Ki_2Oj_2 \dots Ki_qOj_qKi_1$ covering the customers no more than once and with the warehouse and its customer corresponding always to the same goods, $T(Ki_r) =$

$T(Oj_r)$, while all the warehouses in the route differ. Refinement of the concept of route economy originating from the desire to improve it to the point where it is better than the shipping plan constructed on the principle of shuttle delivery, warehouse--customer--warehouse leads to the following formal statement of the problem: Suppose we are now given numbers a , D , and s ; a
1/4

USSR

KAAZIK, Yu. Ya and PREEM, M. K., Tr. Vychisl. tsentra. Tartus. un-t, No 28, 1973, pp 3-18

set H_j of indices for those warehouses K_i for which $T(K_i) = T(O_j)$; a set L_i of indices for those customers O_j for whom this equality is satisfied; and let $S_j = \min_{i \in H_j} c_{ij}$. We are required to find all such index sequences

$$i_1, j_1, i_2, j_2, \dots, i_r, j_r, i_1 \quad (1)$$

where $i_h \neq i_g$ and $j_h \neq j_g$ for $i \neq g$, $j_h \in L_{i_g}$ ($h = 1, 2, \dots, r$) and $0 < r \leq s$ for which the following inequalities are satisfied:

$$\sum_{h=1}^r (c_{i_h j_h} + c_{i_{h+1} j_h}) \leq a \sum_{h=1}^r S_{j_h}$$

and

$$\frac{\sum_{h=1}^r c_{i_{h+1} j_h}}{\sum_{h=1}^r (c_{i_h j_h} + c_{i_{h+1} j_h})} \leq D.$$

2/4

- 85 -

USSR

KAAZIK, Yu. Ya. and PREEM, M. K., Tr. Vychisl. tsentra. Tartus. un-t, No 28, 1973, pp 3-18

It is proposed to solve this problem by an algorithm of limited choice. Excluding the part of the routes of the form (1) and limiting the choice to the routes of form (1) here considered which, for each $p = 1, 2, \dots, r$, satisfy the condition

$$\sum_{h=1}^p (c_{i_h j_h} + c_{i_{h+1} j_h}) \leq a \sum_{h=1}^p S_{j_h}, \quad (3)$$

justified by the fact that, for each route satisfying inequality (2), one can find a cyclical permutation in which it also satisfies condition (3). The existence of such a permutation follows from this result:

Theorem: If the following condition is satisfied:

$$\sum_{i=1}^r a_i \leq \sum_{i=1}^r b_i,$$

3/4

USSR

KAAZIK, Yu. Ya. and PREEM, M. K., Tr. Vychisl. tsentra. Tartus. un-t, No 28, 1973, pp 3-18

such j ($1 \leq j \leq r$) can be found that, for each $p = j, \dots, r$, the following condition is satisfied:

$$\sum_{i=j}^p a_i \leq \sum_{i=j}^p b_i.$$

A detailed block diagram of the algorithm is given, as well as a program realizing the algorithm in the ALGOL-60 language. It is reported that for the "Minsk-32" computer the programs for realizing this algorithm are also composed in the MALGOL (for the case in which $s = 2$) and SSK (for the general case) languages. Ye. Gabovich.

4/4

- 86 -

USSR

UDC 542.91+541.69:547.1'118

ABDUVAKHABOV, A. A., GODOVIKOV, N. N., KABACHNIK, M. I., KRIVOROTOVA, L. S.,
MEKHAYLOV, S. S., and ROZENGART, V. I., Institute of Heteroorganic Compounds,
Academy of Sciences USSR, and First Leningrad Medical Institute imeni I. P.
Pavlov

"Reaction of O-n-Alkyl S-(β -ethylmercaptoethyl) Methylthiophosphonates and
Their Methylsulfomethylates With Acetylcholinesterase"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, May 72,
pp 1169-1172

Abstract: The authors studied the reaction of acetylcholinesterase with
O-n-alkyl S-(β -ethylmercaptoethyl) methylthiophosphonates and their methyl-
sulfomethylates to determine whether there is a hydrophobic site in the region
of the esterase center of this enzyme. It was found that there is one hydro-
phobic site in the immediate vicinity of the esterase center of AChE, with
alkyl radicals of the alkoxyl group sorbed at this site. The overall extent
of this site corresponds to the n-butyl radical. The ability of these compounds
to react with AChE depends to a considerable extent on their sorbability on the
enzyme active surface, both through hydrophobic interactions and through ionic
sorption.

1/1

- 42 -

USSR

UDC [661.7:547.297.2]+661.718.1

KOLPAKOVA, I. O., ~~KABACHNIK, M. I.~~, MEDVED', T. YA., LASTOVSKIY, R. P.,
KRINITSKAYA, L. V., URINOVICH, YE. M., and SMIRNOVA, V. A.

"Simultaneous Production of Acetyl Chloride and Hydroxyethylenediphosphonic
Acid"

Moscow, Khimicheskaya Promyshlennost', No 8, 1972, pp 576-578

Abstract: Results are reported of the study of optimal reaction conditions for the simultaneous production of acetyl chloride and hydroxyethylenediphosphonic acid (HEDPA). The yield of HEDPA reached 84% when phosphorus trichloride was reacted with a mixture of acetic acid and acetic anhydride. The structure of HEDPA was proven by parallel synthesis from acetyl phosphonic acid diethyl ester and diethyl phosphite. Further proof was obtained by infrared spectroscopic analysis and potentiometric titration.

1/1

- 41 -

USSR

UDC 542.91:547.1'118

MASTRYUKOVA, T. A., SUYERBAYEV, KH. A., and ~~KARACHNIK~~ M. I., Institute of Heteroorganic Compounds, Academy of Sciences USSR

"Synthesis of Methyldiphenyl- β -keto- γ '-diphenylphosphinylpropylphosphonium Salts"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, May 72, pp 1216-1217

Abstract: The article describes the synthesis of methyldiphenyl- β -keto- γ '-diphenylphosphonylpropylphosphonium chloride, from which the borofluoride, perchlorate and tetraphenylborate are obtained by exchange reactions. The corresponding phosphorane is obtained by the action of aqueous Na_2CO_3 on the chloride, borofluoride or perchlorate. Phosphonium acetate and trifluoroacetate are obtained from the phosphorane by the addition of trifluoroacetic and acetic acids.

1/1

USSR

UDC 661.718.1:541.133

KABACHNIK, M. I., MATROSOV, Ye. I., MEDVED', T. Ya., PISAREVA, S. A., and ROMANOVA, I. B.; Institute of Organoelemental Compounds, Academy of Sciences USSR, Moscow

"Acid-Base Properties of Tetraalkyl(Aryl)alkylenediphosphine Dioxides"

Kiev, Teoreticheskaya i Eksperimental'naya Khimiya, Vol 8, No 3, 1972, pp 361-365

Abstract: Potentiometric titration was carried out with perchloric acid in nitromethane of three series of alkylene-diphosphine dioxides with different numbers of methylene links in a bridge of a general formula $R_2P(O)-(CH_2)_n-P(O)R_2$ (where: $n = 1-4$, $R = C_6H_5$, C_4H_9 , C_2H_5). Protonation proceeds in all cases through a stage of ring formation with an intramolecular hydrogen bond and participation of the both phosphoryl groups. On the curves of potentiometric titration of the phosphine dioxides with propylene and butylene bridges ($n = 3, 4$) there appears in the acidic region the second potential jump, which, apparently, corresponds to a process connected with ring cleavage and protonation of the second phosphoryl group. The values of pK_a (CH_3NO_2) of the second stages substantially differ from the first ones. In this respect the investigated phosphine dioxides exhibit a definite similarity to the

1/2

USSR

KABACHNIK, M. I., et al., Teoreticheskaya i Eksperimental'naya Khimiya, Vol 8, No 3, 1972, pp 361-365

behavior of dibasic carboxylic acids in which the formation in monoanions of intramolecular hydrogen bonds leads to a considerable difference of K_1 and K_2 .

2/2

- 33 -

USSR

UDC 542.91:547.1'118:541.69

KRESTKIN, A. P., VOLKOVA, R. I., GODOVIKOV, N. N., KABACHNIK, M. I.,
KARDANOV, N. A., Institute of Organoelemental Compounds of the Soviet
Academy of Sciences; Institute of Evolutionary Physiology and Biochemistry
imeni I. M. Sechenov of the Soviet Academy of Sciences

"Interaction of S-(β -Alkylmercaptoethyl)diphenylthiophosphinates,
O-(β -Alkylmercaptoethyl)diphenylphosphinates and Their Iodomethylates
With Butyrylcholinesterase"

Moscow, Izv. An SSSR: Ser. Khimicheskaya, No 3, Mar 73, pp 622-627

Abstract: The paper gives the results of research on the kinetics of
inhibition of butylcholinesterase by S- β -alkylmercaptoethyl diphenyl-
thiophosphinates, O- β -alkylmercaptoethyl diphenylphosphinates and their
methiodides. It is found that these substances have a combination type
of inhibiting action which increases with the length of the alkyl radical
bound to the sulfide or sulfonium sulfur atom.

1/1

- 21 -

USSR

UDC 547.26'118

MASTRYUKOVA, T. A., BUTORINA, L. S., and KABACHNIK, M. I., Institute of Metal Organic Compounds, Academy of Sciences USSR

"Reactions of Phosphorus Monothioacids With Diazoacetone"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 2083-2084

Abstract: It was established that diazoacetone reacts with phosphorus monothioacids at room temperature in benzene solution much slower than the diazomethane, forming exclusively the thio derivatives. No effect was noted on this reaction by changing the polarity of the solvent or the substituents on the monothio acids.

1/1

- 32 -

USSR

UDC 542.91:547.1'118:547.558.1:547.564.4

TIKHONINA, N. A., GILYAROV, V. A., and KABACHNIK, M. I., Institute of Organometallic Compounds, Academy of Sciences USSR

"Reaction of Triphenyl Phosphite With o-Aminophenol"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 73, p 1426

Abstract: A mixture of 13.67 g o-aminophenol and 4.95 g triphenylphosphite heated for 4 hrs at 160-175° in a stream of argon yielded 2,3,7,8-dibenzo-1,6-dioxa-4,9-diaza-5-phosphaspiro-[4,4]-nonane, m.p. 155-155.5°.

1/1

- 20 -

USSR

UDC 542.91:541.69:547.1'118:547.9

VOLKOVA, R. I., KARDANOV, N. A., BRESTKIN, A. P., GODOVI'KOV, N. N., and KABACHNIK, M. I., Institute of Organoelemental Compounds, Academy of Sciences USSR and Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenova, Academy of Sciences USSR

"Reaction of S-(ω -Ethylmercaptoalkyl)diphenylthiophosphinates, O-(ω -Ethylmercaptoalkyl)diphenylphosphinates and Their Methyl Iodates With Cholinesterase From the Serum of Horse Blood"

Moscow, Seriya Khimicheskaya, 9, 1973, pp 2114-2119

Abstract: The kinetic constants were determined for the combined inhibition of butyrylcholinesterase by the diphenylthiophosphinates $(C_6H_5)_2P(O)S(CH_2)_nSC_2H_5$ and their methyl iodates $(C_6H_5)_2P(O)S(CH_2)_nS^+(CH_3)C_2H_5 \cdot I^-$ for $n = 2$ to 6. The constant for the reversible inhibition by the analagous oxygen ethers was also determined. The ability of the diphenylthiophosphinates, diphenylphosphinates and their methyl iodates to reverse the sorption on the active sites of the increases with increasing number of (CH_2) units. The rate constant for the nonreversible inhibition does not change significantly as n increases for the sulfide thioethers but in the sulfonium thioethers, it decreases with a decrease in the rate constant for their base hydrolyses.

1/1

- 30 -