

2/2 025

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--A0130654

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. DEPENDENCE WAS INVESTIGATED OF ELEC. COND. OF CSI SINGLE CRYSTALS CONTG. COMBINED CATIONIC AND ANTONIC IMPURITIES, AS WELL AS THE EFFECT OF HIGH TEMP. ANNEALING IN VACUUM AND IN O ON THE COND. OF CSI WITH CATIONIC IMPURITIES, AND THERMAL CYCLE ON SPECIMENS WITH ANIONIC IMPURITIES. THE RESULTS CAN BE WELL EXPLAINED IN TERMS OF AN ANIONIC MECHANISM OF COND. IN CSI.

FACILITY: L'VOV. GOS. UNIV. IM. FRANKO, LV0V, USSR.

UNCLASSIFIED

1/2 005

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--ABSORPTION SPECTRA OF NI PRIME2 POSITIVE AND CO PRIME2 POSITIVE IN
CADMIUM TUNGSTATE -U-

AUTHOR--(03)-NOSENKO, A.YE., PASHKOVSKIY, M.V., FUTORSKIY, D.L.

P

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 297-301

DATE PUBLISHED-----70

SUBJECT AREAS--NONE

TOPIC TAGS--ABSORPTION SPECTRUM, NICKEL, COBALT, CADMIUM COMPOUND,
TUNGSTEN COMPOUND, SINGLE CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/1319

STEP NO--UR/0051/70/028/002/0297/0301

CIRC ACCESSION NO--AP0049481

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0049481

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ABSORPTION SPECTRA OF CDWO
SUB4 SINGLE CRYSTALS ACTIVATED BY NI PRIME2 POSITIVE AND CO PRIME2
POSITIVE IONS ARE INVESTIGATED IN THE ENERGY REGION 4000-25,000CM PRIME
NEGATIVE1 AT 300 AND 90DEGREEK. THE OBTAINED EXPTL. RESULTS CORRELATED
WITH THE SCHEME OF ENERGY TRANSITIONS CALCD. BY THE METHOD OF CRYSTAL
FIELD THEORY FOR A HAMILTONIAN OF ORTHORHOMIC SYMMETRY.

UNCLASSIFIED

Acc. Nr:

AP0048423

Abstracting Service:

INTERNAT. AEROSPACE ABST

Ref. Code:

5-70 21R0376

A70-23925 # A mixed problem for the Tricomi equation
(Odná smeshannáá zadacha dlia uravneniia Trikomii). V. I. Pashkovskii (Akademiia Nauk SSSR, Institut Matematiki, Novosibirsk, USSR). *Differentsial'nye Uravneniia*, vol. 6, Jan. 1970, p. 200-203. 9 refs. In Russian.

Discussion of a problem of the Tricomi equation which differs from the regular Tricomi problem in that not the value of the solution is given on the characteristic of the problem but the sum of the solution and its derivative with respect to the unknown x . The existence and uniqueness of a smooth solution to this mixed problem are proved with the aid of a priori estimates.

V.Z.

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REEL/FRA
19800131

USSR

UDC: 621.834.634

ANDREYEV, V. G., PASHKOVSKIY, V. V.

"A Cylindrical Cavity Resonator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 32, 1970, Soviet Patent No 284197, Class 21, filed 23 Jun 69, pp 62-63

Abstract: This Author's Certificate introduces a cylindrical cavity resonator which contains conducting discs with drift tubes. As a distinguishing feature of the patent, the design provides for excitation of an electrical field along the resonator axis in the $\pi/2$ standing wave mode and for increased coupling between individual cells of the resonator by installing conducting diaphragms in the middle of the spaces between the conducting discs, the diameter of the openings in the diaphragms being less than the diameter of the discs.

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- 69 -

UDC: 681.325.65:525

USSR

VITKALOV, B. G., TRUNOV, L. I., ~~PASHOLOK, I. T.~~

"A Fluidic Discrete Amplifier"

USSR Author's Certificate No 309354, filed 19 May 70, published 13 Aug 71
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7,
Jul 72, Abstract No 7A52 P)

Translation: A fluidic discrete amplifier is proposed which contains supply and control channels, output channels with a splitter between them, and also channels which are open to the atmosphere. To increase the amplification factor the walls of all channels of the amplifier, except for the controlling channels, are sloping and narrowed toward the lower part of the element, while the controlling channels are made shallower and are located in the lower part of the element. One illustration.

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USSR

UDC 619:616.988.23:616.831.8-07:636.4

PRITULIN, P. I., Professor, PASHOV, T. V., Doctor of Veterinary Sciences, NASTENKO, V. D., Candidate of Veterinary Sciences, and MILANKO, A. Ya., Candidate of Biological Sciences, All Union Institute of Experimental Veterinary Medicine, and Poltava Zone Scientific Research Veterinary Station

"Respiratory Form of Aujeszky's Disease in Hogs"

Moscow, Veterinariya, No 8, Aug 70, pp 55-56

Abstract: Respiratory diseases are common among hogs; on some farms, they represent 50-90% of all swine diseases. To identify the pathogen of enzootic pneumonia, cultures inoculated with lung tissues from diseased hogs were cultured and a very active cytopathogenic virus was isolated. Rabbits, guinea pigs, and white mice infected with this virus, which was free of bacterial contamination, died within a short period. Hogs infected with the virus developed a chronic type of pneumonia which was defined as the respiratory form of Aujeszky's disease. The virus was neutralized in vitro with specific serum. Passive immunization with the serum had no prophylactic effect in rabbits, but protected guinea pigs from Aujeszky's disease after infection with the cultured virus. It is recommended that the respiratory form of Aujeszky's disease be taken into consideration in the differential diagnosis of enzootic viral pneumonias.

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PASHKUDENKO, V. I.

IPK 5 59308
6-73

XV-6. STUDY OF THE SURFACE STRUCTURE OF EPITAXIAL SILICON USING THE METHOD OF SLOW ELECTRON DIFFRACTION

Article by D. S. Bunt, V. I. Pashkudenko, I. Kh. Dzhamaaladinov, V. V. Khar-chenko, Tashkent; Zhovshchinsk, III Simpozium po Fizicheskoy Teorii i Sintezu Poluprovodnikov, Prilozhenie I, Pisco, Kazansk, 12-17 June 1972, p 217

In using the slow electron diffraction procedure on the (111) surface of epitaxial silicon grown in the chloride process, the superstructure of (111)-2 x 3 was detected. It was demonstrated that its occurrence at first from the presence of chlorine. It is characteristic that the 5 x 3 superstructure is not observed on the silicon surface grown from a melt, including sam-

ple etched with hydrogen chloride. The chlorine content in the silicon is determined to a significant degree by the growth conditions, and it correlates with the laws of existence of the 5 x 3 superstructure. Relations were made of the effect of existence of certain crystallographic planes on the chlorine content by the epitaxial layers of silicon during the growth process.

PASHKUDENKO, V.P.

5PKS 59208
6-73

V-5L. EFFECT OF NITROGEN ADMIXTURE ON THE GROWTH OF EPITAXIAL LAYERS OF SILICON IN THE CHLORIDE PROCESS

Article by V. P. Pashkudenko, V. V. Kharchenko, Tashent: Koveshtbrak, III Sibirskiy pol'noimenniy Route 1 Sibirskiy Poluprovodnikoviy Kristallov I Plantok, Krasnoyarsk, 12-17 June, 1972, p 56j

A study was made of the comparative kinetics of the epitaxial growth of silicon in pure hydrogen and in hydrogen with microdosed (10⁻²%) injection of high-purity nitrogen. The temperature functions of the growth rate obtained in pure hydrogen independently of the microdoses of the process are linear in the entire temperature range. The nitrogen admixture has an effect on the crystallization rate both in the kinetic region and in regions where the process rate is limited to one degree or another by the mass transport. The strongest effect of nitrogen is noted for small concentrations of silicon tetrachloride (0.04 percent) where the growth rate decreases by 3-1.5 times for higher chloride concentrations. The difference in growth rates will become more noticeable in the high temperature region on the Arrhenius curves on injection of nitrogen. Nonlinear sections are observed which are described in the literature. The probable mechanism of the effect of the nitrogen admixture on the process is discussed.

PASHKUDENKO, V. P.

SPRS 59268
6-73

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V-4. KINETICS OF THE INITIAL GROWTH STAGE OF EPITAXIAL LAYERS

Articles by B. M. Abdurakhmanov, M. B. Geynsikh, V. P. Pashkudenko, V. V. Pashchenko, Teshkent; Novosibirsk, III Simpozium po Probleмам Rosta i Sintezu Poluprovodnikov Kristallov i Plazm, Novosibirsk, 12-17 June, 1972, p 541

A study was made of the phenomenon of increasing of the silicon deposition rate during the growth process. The silicon growth kinetics in the initial stages where this phenomenon is observed were studied in a broad range of crystallization conditions (the deposition temperature, the SiCl₄ concentration and the flow rate). The experimental results show that the growth rate in the initial stages is higher than under steady-state conditions. The ratio of the silicon crystallization rates in the first and tenth minutes of deposition decreases with an increase in the SiCl₄ concentration, and for SiCl₄ 0.15 percent is in 5:1 and for SiCl₄ 5.0 percent it is 1:8. At a high deposition temperature, the establishment of the stationary growth rate takes place more rapidly.

The instrument analysis of the gas phase deposition with respect to thermal conductivity and with respect to infrared absorption spectrum permitted selection of the periods of nonstationarity of the vapor-gas mixture composition in the reactor in the case of admission and shut-off of silicon tetrachloride. In the case of the data obtained, calculated estimates were made which demonstrated that the observed effect of nonstationarity of the growth rate in the initial stages is not determined by the nonstationarity of the gas phase composition but is caused by the effect of surface properties of the substrate on the crystallization process.

PASHKUDENKO, V.P.

SPRS 59208
6-73

V-5a. ACTIVATION ENERGY OF THE PROCESS OF REDUCING SILICON TETRACHLORIDE BY HYDROGEN

(Article by V. V. Kharchenko, V. P. Pashkudenko, Yashent; Novosibirsk, III Symposium on Processes and Kinetics of Silicon Polymers, Polymers and Silicon, Moscow, 12-17 June, 1971, p. 51)

Many researchers have tried to estimate the magnitude of the activation energy of the process of hydrogen reduction of $SiCl_4$. For its calculation they used the expression $(2 \ln V/2I)^{1/2}$, that is, they investigated the variation of the process rate with invariant concentration of the components in the reaction space. In this case even for simple reactions it is possible to obtain only the values of the "apparent" activation energy. The specific function E_{app} and E_{true} follows from the form of the kinetic equation, the nature of its constants and the reaction mechanism. In practice finding the equation of the constants reaction encounters serious difficulties.

A study was made of the growth kinetics of silicon in the region of antimony. In this case the process rate is described by a third order equation $v = k_3 C_1 C_2^2$. The temperature functions were obtained for the process rate constants for a number of values of the vapor-gas mixture flux in the form $k = k_0 e^{-E/RT}$. The values of k_0 and E for linear flow rates exceeding 3 cm/sec (kinetic conditions) coincide and are equal to $7.5 \cdot 10^2$ cm³/mole-sec and 12 kcal/mole respectively. The process mechanism and the relation between the "true" and "apparent" activation energies are discussed.

PASHKUDENKO, V. P.

Types 69008

C-73

X-3a. EFFECT OF THE CRYSTALLIZATION CONDITIONS ON THE TRANSFER OF PHOSPHORUS AND ANTIMONY IMPURITIES FROM THE SUBSTRATES INTO THE EPITAXIAL LAYERS OF SILICON

Article by A. S. Lyudskov, Z. Kh. Khodzhalipov, V. P. Pashkudenko, V. V. Kharchenko, M. R. Grevnukh, Sh. Sh. Shamsidov, Tashkent, Uzbekistan, V. V. Simoniuk, M. R. Grevnukh, Sh. Sh. Shamsidov, Tashkent, Uzbekistan, III International Conference on Semiconductor Crystals, Tashkent, 1972, p. 110

With the application of a layer of radioactive analysis, studies made of the distribution profiles of antimony and phosphorus in epitaxial layers of silicon as a function of the growth conditions. The epitaxial layers were obtained by the method of hydrogen reduction of silicon tetrachloride. The growth process temperature and the concentration of silicon tetrachloride were varied. The distribution profiles of the antimony and phosphorus are satisfactorily described by diffusion equations with effective diffusion coefficients determined for different growth conditions. The relative diffusion coefficient in single crystals and found in our experiments depend essentially on the temperature, the growth rate and growth time. With an increase in the growth rate the diffusion coefficients of both impurities increase for all crystallization temperatures (for the deposition temperature of 1,260°C, the variation takes place in the range of $3 \cdot 10^{-11}$ to $4 \cdot 10^{-10}$ cm²/sec for phosphorus and $3 \cdot 10^{-12}$ to 10^{-10} cm²/sec for antimony). The values found for the diffusion coefficients as a function of the growth conditions of the layers can exceed the values known for single crystals. They can be equal and have smaller values.

PASHKUDENKO, V.P.

SPAS 58905

C-73

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K-36. STUDY OF THE DISTRIBUTION OF ALLOYING AD MIXTURES IN EPITAXIAL LAYERS OF SILICON WITH THE APPLICATION OF RADIOACTIVE ANALYSIS

Article by A. S. Lyuchich, V. P. Pashkudenko, V. V. Kharchenko, E. Kh. Khodakova, Sh. Sh. Shamsidov, Tashkent, Novosibirsk, Ill. Sibirskiy Institut po Prosvetpovaniyu i Sibirskiy Poluprovodnikoviy Institut, Novosibirsk, 1977, 11 p. (Russian)

The idea of this experiment consisted in using alloying admixtures of various chemical nature and varying the crystallization conditions to estimate the contribution of the growth (segregation) effects and the diffusion processes to the final distribution of the admixtures. The epitaxial layers of silicon were obtained by the method of hydrogen reduction of SiCl₄ in a broad concentration range of SiCl₄ and alloying components. The alloying admixtures were introduced into the system in the form of chlorides from a separate source. In order to determine the distribution profiles of the admixture concentration, the procedure of layered neutron-activated analysis was used. It was demonstrated that the admixture profile in the investigated specimens is characterized by the presence of two sections: 1 -- the section with uniform concentration distribution (the plateau), 2 -- the section where the admixture concentration is nonuniform, depending on the growth conditions, the rate of mixture in the plateau region, and the effect of the concentration of the admixture, the concentration of the SiCl₄, the PCl₃ and SbCl₃ in the gas phase on the alloying level of the epitaxial layer. In the case of low concentration of silicon tetrachloride in the gas phase in some samples the admixture concentration is in practice absent. In a number of specimens, a sharp increase in admixture concentration is noted in the thin surface layer. This is observed especially frequently in specimens alloyed with antimony. The admixture profiles are essentially different. However, the purely diffusion equations conditions are essentially different. The values of which under various crystallization conditions of the formation of the profiles will be doubtful in connection with the fact that the metallurgical thickness of the epitaxial layers defined experimentally by the packing defects does not coincide with the thickness corresponding to a concentration of N₀/2 which was assumed in the calculations. The contribution of the diffusion and segregation phenomena to the distribution profile of the admixture in region 1 is discussed.

PASHKUDENKO, V.P.

ИРПС 59308
6-73

ATV-3. EFFECT OF CRYSTALLIZATION CONDITIONS ON THE MORPHOLOGY OF EPITAXIAL LAYERS OF SILICON

Article by S. R. Boyko, V. P. Pashkudenko, V. V. Marchenko, Izhmekt: Sovetsk. Akad. Nauk, Seriya Fiz. i Khim. Nauch. Issled., 1972, p. 1053

The epitaxial layers of silicon were obtained by the method of reducing SiCl₄ in an atmosphere of pure hydrogen in a broad growth temperature range (1,000-1,300° C) and SiCl₄ concentration range in the gas phase (0.06-14 percent by volume). The basic morphological characteristics of the surface of these layers are as follows: the regions of retarded growth -- holes and regions of accelerated growth -- pyramids and trapezoids, presence of certain SiCl₄ concentration depends on the crystallization conditions. Deriving the equivalent to increasing the crystallization temperature and leads to a decrease in the defect density of all types. On the basis of the experimental data of different types are defined, these data are presented in the diagram. The occurrence of a crystal defect is connected with the mechanism of crystallization of epitaxial layers.

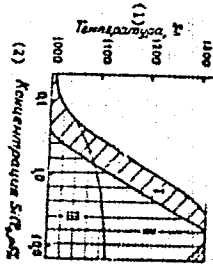


Diagram. Region of occurrence of holes, pyramids (II) and trapezoids (III)
Key: 1. temperature, °C
2. concentration of SiCl₄, % by volume
- 200 -

UDC 542.91:547.1'118

USSR

REZNIK, V. S., SHVETSOV, YU. S., and PASHKUROV, N. G., Institute of Organic and Physical Chemistry imeni A. E. Arbuzov, Academy of Sciences USSR

"Synthesis and Properties of Pyrimidinylalkylphosphonic Acids. Communication 5. The Synthesis of β -(Oxypyrimidinyl-N)-Ethylphosphonic Acids"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 2, 1973, pp 402-406.

Abstract: Several methods were investigated for the synthesis of β -(oxypyrimidinyl-N)-ethylphosphonic acids. The reaction of 3-(β -chloroethyl)-6-methyluracil with triethyl phosphite (I) at 150-155°, resulted in the formation of 2,3,4,5-tetrahydro-5-oxo-7-methyloxazolo[3,2-a]-pyrimidine and diethylphosphoric acid. 1,3-bis-[β -(diethylphosphono)-ethyl]-6-methyluracil was synthesized by the reaction of I with 1,3-bis-(β -chloroethyl)-6-methyluracil at 160-165°. β -(3,6-dimethyl-2,4-dioxo-1,2,3,4-tetrahydropyrimidinyl-N-1)-ethyl p-toluenesulfonate (II) was prepared by the addition of 5.5 g of p-toluenesulfonyl chloride to 5 g of 3,6-dimethyl-1-(β -hydroxyethyl)uracil in 12 g of triethylamine, with

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USSR

REZNIK, V. S., et al., Izvestiya Akademii Nauk SSR, Seriya Khimicheskaya, No 2, 1973, pp 402-406

the temperature not exceeding 40°. 2.2 g of II were obtained, with a m.p. of 153.5-155.5° (from benzene). The dibutyl ester of β -(3,6-dimethyl-2,4-dioxo-1,2,3,4-tetrahydropyrimidinyl-1-N)-ethylphosphonic acid (III) was obtained in a 36% yield by the addition of II to Na dissolved in dibutyl phosphite, and boiling. III is a bright-yellow oily solution highly soluble in benzene and CCl_4 (n_D^{20} 1.4895; IR spectrum (ν , cm^{-1}): 1,675, 1703 (C=O), 1270 (P=O), 1000, 1025 (P-O-C)). The formation of III indicates that the presence of a tautomeric OH group in 3-(β -hydroxyethyl)- or 3-(β -chloroethyl)-6-methyluracil on the 2 position of the pyrimidine ring makes possible the closure of the 5-membered oxazole ring. For the formation of 4-oxopyrimidinyl-N-ethylphosphonic acids, studies were undertaken on the reaction of the tosylate of 3-(β -hydroxyethyl)-6-methyluracil (IV) and 2-amino-3-(β -hydroxyethyl)-4-oxo-6-methyl,3,4-dihydroopyrimidine (V) and with triphenyl phosphite (VI). The reaction of IV with VI proceeds at 230-240° with a 51% yield of β -(2-oxy-4-oxo-6-methyl-3,4-dihydropyrimidinyl-3)-ethylphosphonic acid (amorphous powder, insoluble in alcohol, highly soluble in water; IR spectrum (ν , cm^{-1}): 930+1250, maximum 2/3

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USSR

REZNIK, V. S., et al., Izvestiya Akademii Nauk SSR, Seriya Khimicheskaya, No 2, 1973, pp 402-406

at 1215, 2250-3600 (diffuse, P-OH and N-H), 1660 and 1715 (C=O)). The reaction of V and VI commences at 160° and attains 230° and results in a yield of 42% of β -(2-amino-4-oxo-6-methyl-3,4-dihydro-pyrimidinyl-3)ethylphosphonic acid (amorphous substance, soluble in water but not alcohols; IR spectrum (ν , cm^{-1}): 1080, 1175, 1230, and diffuse absorption at 2300-3500), and a 36% yield of 2,3,4,5-tetrahydro-5-oxo-7-methylimidazo [3,2a]pyrimidine (VII). The formation of VII was attributed to an attack of the amino group of the pyrimidine ring on the β -carbon atom, whose electrophilic properties were enhanced by the inductive effect of the oxyphosphoryl group. VII is a crystalline substance, highly soluble in water and moderately in hot n-butanol, and insoluble in acetone. IR studies of VII showed that $\nu_{\text{N-H}}$ appeared at 3060-3125 cm^{-1} , and $\nu_{\text{C=O}}$ at 1670 cm^{-1} . The reaction of VI with 1,3-bis-(β -oxyethyl)-6-methyluracil at 160-165°, following hydrolysis, gave a 33% yield of 1,3-bis-(β -phosphonoethyl)-6-methyluracil and a 21% yield of 1,3-bis-(β -phenoxyethyl)-6-methyluracil.

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USSR

UDC 547.26'118 + 547.854.1

REZNIK, V. S., and PASHKUROV, N. G., Kazan' Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Academy of Sciences

"Interaction of the Chloroalkyl Esters of the Phosphorus Acids With Salts of Oxypyrimidines"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,441-2,446

Abstract: As the authors demonstrated in 1967, the reactions between N(β -hydroxyalkyl)pyrimidines, which have basic properties, and the phosphorus acid chlorides, are unsatisfactory in that many of them will not yield the corresponding phosphorus acid esters. This prompted a search for a new means of synthesizing these esters, some of which had never been obtained before. Sodium 2-hydroxy-4,6-dimethylpyrimidine reacted with tris-(β -chloroethyl) phosphate and 1,2-dichloroethane, thus producing 1,2-bis(2'-oxo-4',6'-dimethyldihydropyrimidinyl-N)ethane and 1,2-bis(2'-oxo-4',6'-dimethyldihydropyrimidinyl-N)ethane. Sodium 2-amino-4-hydroxy-6-methylpyrimidine reacted with hexyl (α -chloropropylene glycol) phosphite, producing 2-amino-3-(β , γ -dihydroxypropyl)-6-methyl-3,4-dihydropyrimidone-4. Sodium 6-methyluracil reacted with ω -chlorohexyl ester of methylphosphonic acid, producing ω -(2,4-dioxo-6-methyl-1,2,3,4-tetrahydropyrimidinyl-3)hexyl ester of bis-chloromethylphosphonic acid. Physico-chemical constants and procedural details are given.

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USSR

UDC 542.91:661.718.1

RESNIK, V. S., and PASHKUROV, N. G., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Some Phosphorus-Containing Esters of N-Hydroxyalkylpyrimidones"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 9, Sep 71, pp 2010-2012

Abstract: The article describes the synthesis of pyrimidone derivatives containing a C-O-P bond in the N-alkyl side chain. The reaction of N-hydroxy-alkyl-6-methyluracils with alkyl(aryl)phosphoric and phosphinic acid chlorides proceeds in different ways, depending on the reaction conditions and the number of chlorine atoms in the acid chloride. Best results are obtained in the reaction of 3-N-(β -hydroxyethyl)-6-methyluracils with phosphorus acid chlorides in an inert solvent (dioxane is best) in the presence of an equimolar quantity of pyridine at 30-60°. It was not possible to find a convenient method for the synthesis of esters of phosphorus acids and 2-amino-3-(hydroxyalkyl)-6-methyl-3,4-dihydro-4-pyrimidones.

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USSR

UDC 533.9

VISHNEVETSKIY, V. N., VOYTENKO, D. A., VOLKOV, YE. D., DIKIY, A. G., ZALKIND, V. H., KONOTON, P. I., MOISEYEV, S. S., PAVLICHENKO, O. S., PASHNEV, V. K., SUPRUNENKO, V. A., TOLOK, V. T., TERESHCHENKO, F. F., TONKOPRYAD, V. H., and TARASENKO, V. P., Physico-Technical Institute of Academy of Sciences Ukrainian SSR, Kharkov

"Energy Losses of Plasma in a 'Uragan' Stellarator With Large Shear"

Kiev, Ukrainskiy Fizicheskij Zhurnal, Vol 16, No 8, Aug 71, pp 1320-1323

Abstract: Investigations of the rate of energy losses in plasma have shown that the holding time of particles significantly exceeds the energy life time when the plasma is of collision type. This article discusses the results of investigations on the rate of energy losses of collision-type plasma for the "Uragan" stellarator. The authors study the dependence of energy life time of the plasma on the amount of shear and the angle of conversion. They make extensive use of graphs to illustrate their findings and find that the experimental points lie on a straight line. The authors conclude that the results may be explained on the basis that a temperature-drift instability develops in the plasma. The article contains 5 figures and 8 bibliographic entries.

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PASHUN, A. D.

TECHNICAL TRANSLATION

FTIC-ET-23- 1983-71

ENGLISH TITLE: Some Electrical and Thermal Electrical Properties of Gels - GDS SOLID solutions

FOREIGN TITLE: Nekotoryye Elektricheskiye I Termoelektricheskiye Svoystva Tverdykh Esterov Gels - GDS

AUTHOR: Voytekhovskiy, A. V.
~~Pashun, A. D.~~

SOURCE: Izvestiya Vsesoyuznogo Nauchnogo Tsentra - Fizika No. 5 (96), 1970, pp 153-155

Translated for FSIC by Leo Komar Associates

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1/2 017

TITLE--INTERACTION OF GALLIUM ARSENIDE WITH COMPOUNDS OF THE AIIIBVI TYPE
-U- UNCLASSIFIED PROCESSING DATE--16OCT70

AUTHOR--(03)-VOYISEKHOVSKIY, A.V., PASHUN, A.D., MITYUREV, V.K.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, NEORGANICHESKIE MATERIALY, VOL. 6,
FEB. 1970, P.379, 380.
DATE PUBLISHED-----70

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SUBJECT AREAS--MATERIALS

TOPIC TAGS--GALLIUM ARSENIDE, CADMIUM SULFIDE, SELENIDE, TELLURIDE, ZINC
COMPOUND, SOLID SOLUTION, INTERMETALLIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/0952

STEP NO--UR/0363/70/006/000/0379/0380

CIRC ACCESSION NO--AP0118118

UNCLASSIFIED

2/2 017

CIRC ACCESSION NO--AP0118118

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE POSSIBILITY OF PRODUCING SOLID SOLUTIONS OF GAAS WITH INTERMETALLIC COMPOUNDS COMPOSED OF ELEMENTS OF THE SECOND B AND SIXTH A GROUPS OF THE PERIODIC SYSTEM. THE GAAS ALLOYS CONTAINING UP TO 20 MOL PERCENT CDS, CDSE, CDTE, ZNS, AND ZNTE WERE SUBJECTED TO INVESTIGATIONS USING METALLOGRAPHIC AND X RAY ANALYSES. THE RESULTS OBTAINED ARE TABULATED. FACILITY: KIEVSKII GOSUDARSTVENNYI PEDAGOGICHESKII INSTITUT, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

USSR

UDC 591.1.15

PASHUTO, T. F., and NASONOVA, N. V.

"Effect of Glutamic Acid on Exchange of Gamma-Aminobutyric Acid at 40 Roentgens"

Vestn. Belorus. un-ta (Hearld of Belorussian University), 1973, Series 2, No 1, pp 37-40 (from RZh-Biologicheskaya khimiya, No 11, Jun 73, Abstract No 11 F1417)

Translation: The effect of L-glutamic acid (I) on the activity of glutamate decarboxylase and gamma-aminobutyrate transaminase (II, III) in the brain tissue of white rats was investigated at a dosage of 40 roentgens as a function of the initial state of the adrenal cortex. Increased activity of ferments was noted after the administration of I before and after the removal of the cortex. It is concluded that the effect of I on II and III depends on the initial functional state of the hypophysial adrenal system.

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1/2 038

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--STUDY OF A SYSTEM OF RADIATING HEAT CONDUCTING ANNULAR RIBS -U-

AUTHOR--(02)-GRODZOVIY, G.L., PASICHNIK, Z.V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK UKRAINS'KOI RSR, DOPOVIDI, SERIIA A FIZKO-TEKHNICH I MATEMATICHNI NAUKI, VOL. 32, FEB. 1970, P. 147-152

DATE PUBLISHED---FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RADIATIVE HEAT TRANSFER, SPHERIC SHELL STRUCTURE, BLACK BODY RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0909

STEP NO--UR/0441/70/032/000/0147/0152

CIRC ACCESSION NO--AT0112073

UNCLASSIFIED

2/2 038

CIRC ACCESSION NO--AT0112073

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL STUDY OF THE COOLING OF A SPHERICAL SPACE BOUNDED BY A SYSTEM OF 3 IDENTICAL SPHERICAL RINGS OF VARIABLE THICKNESS, INTERSECTING EACH OTHER AT RIGHT ANGLES IN THREE MUTUALLY PERPENDICULAR PLANES. IT IS ASSUMED THAT THE HEAT CONDUCTION COEFFICIENT OF THE MATERIAL OF THE RINGS IS CONSTANT AND THAT THE SURFACE OF THE RINGS IS A GREY DIFFUSELY RADIATING BODY WITH A CONSTANT LEVEL OF BLACKNESS. IT IS ASSUMED FURTHER THAT THE THERMAL FLUXES ARE PARALLEL TO THE SYMMETRY PLANES OF THE RINGS, THAT THE INTERSPACES BETWEEN THE RINGS ARE SO SMALL THAT THEIR RADIATION OUTPUT IS ZERO, AND THAT THE AMBIENT MEDIUM IS AN ABSOLUTELY BLACK BODY WITH ZERO TEMPERATURE. EQUATIONS DESCRIBING THE RADIATIVE HEAT TRANSFER IN THIS SYSTEM ARE DERIVED AND ANALYZED. FACILITY: KIIVS*KII DERZHAVNII UNIVERSITET, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

USSR

UDC 8.74

PASIKA, L. I., SANNIKOV, V. N., POSOKHOVA, N. A.

"System of Standard Operators for Algorithmizing and Programming Economic Problems"

V sb. Probl. sistemotekhniki. Vyp. 1 (Problems of Systems Engineering. Vyp. 1-- collection of works), Sudostroyeniye, 1972, pp 154-167 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V444)

Translation: A procedure is described for selecting the system of standard operators for algorithmizing and programming economic problems. The basis for the procedure is the criterion of reducing the expenditures of time on programming with restrictions on the computation time and the ready-access memory size of the computer. The standard operator system comprises the following:
1) the file input operators (the file in machine code from the ready-access memory, the formation of annotations in the information file, the writing of the annotation into the information library catalog; 2) groups of decision operators (information search, preparation of it for operation in the nonstandard module, output to the nonstandard module, conversion and allocation of the results);
3) the groups of sorting operators (ordering the files in the ready-access memory and in the external memory by a given word); 4) the groups of control operators (the memory allocation, the control of the solution of the problem flow);
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USSR

PASIKA, L. I., et al., Probl. sistemotekhniki. Vyp. 1, Sudostroyeniye, 1972, pp 154-167

5) the group of servicing operators (symbol-by-symbol processing of the annotation, editing, symbol-by-symbol processing of the sentence). Examples of algorithmization and programming problems in the standard operator system are presented. The bibliography has 3 entries.

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1/2 026 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DEPENDENCE OF THE EQUILIBRIUM LONG RANGE ORDER ON THERMODYNAMIC
PARAMETERS -U-
AUTHOR--PASKAL, YU.I. P
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(2), 528-33
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--THERMODYNAMIC EQUILIBRIUM, THERMODYNAMIC PROPERTY, ORDERED
ALLOY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0062 STEP NO--UR/0181/70/012/002/0528/0533
CIRC ACCESSION NO--AP0105159

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0105159
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANAL. IS GIVEN OF OSME OF THE
POSTULATES OF THE LANDAU THERMODYNAMIC THEORY OF ORDERING.
FACILITY: TOMSK. GOS. UNIV., TOMSK, USSR.

1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ANALYSIS OF THE GORSKII BRAGG WILLIAMS MODEL. 1. TRANSITION ORDER.
PHASE ABILITY BOUNDARIES -U-
AUTHOR-(02)-PASKAL, YU.I., VALOVSKAYA, L.I.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(1), 101-7
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PHASE TRANSITION, PHASE EQUILIBRIUM, CRYSTAL STRUCTURE,
STOICHIOMETRY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0915 STEP NO--UR/0139/70/013/001/0101/0107
CIRC ACCESSION NO--AT0112079
UNCLASSIFIED

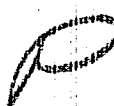
2/2 024
CIRC ACCESSION NO--AT0112079

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EXPRESSION HAS DERIVED FOR THE EQUIL. OF ORDERED PHASES OF VARIOUS TYPES OF SUPERSTRUCTURE. THE TITLE MODEL WAS ANALYZED BY USING THIS EXPRESSION AND BY CONSIDERING ORDER DISORDER TRANSITIONS. THE BOUNDARIES OF ORDERED AND DISORDERED STATES WERE DETD. FOR SUPERSTRUCTURES OF EQUIAT. STOICHIOMETRY. THEY COINCIDE WITH A 2ND ORDER TRANSITION CURVE. FACILITY: SIB. FIZ.-TEKH.
INST. IM. KUZNETSOVA, TOMSK, USSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--ANALYSIS OF THE GORSKY BRAGG WILLIAMS MODEL -U-
AUTHOR--PASKAL, YU.I., PUGACHEVAVALOVSKAYA, L.I. 
COUNTRY OF INFO--USSR
SOURCE--UKR. FIZ. ZH. (RUSS. ED.) 1970, 15(1), 143-5
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ORDERED ALLOY, BINARY ALLOY, THERMODYNAMIC ANALYSIS, HEAT OF
FORMATION, ENTROPY, FREE ENERGY, MATHEMATIC MODEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/1339 STEP NO--UR/0185/70/015/001/0143/0145
CIRC ACCESSION NO--AP0107812

2/2 026

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107812

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A GENERAL EXPRESSION FOR THE ENERGY AND ENTROPY OF MIXING IN A BINARY ORDERED SOLN. WITH TWO TYPES OF NODES, WITHIN THE FRAME OF THE GORSKY BRAGG WILLIAMS MODEL, IS OBTAINED. A FORMAL EXTENSION OF THIS MODEL IS PROPOSED AND, ON THE BASIS OF THE THERMODYNAMIC THEORY OF ORDERING, A POSSIBLE TYPE OF FREE ENERGY DEPENDENCE ON THE ORDER DEGREE, IS DETD. AN ANAL. OF THE FORMALLY ENLARGED MODEL PREDICTIONS, REGARDING THE KIND OF THE ORDER DISORDER TRANSITION IS MADE.

USSR

UDC 539.3

PASKALENKO, A. A. and POPOV, G. Ya. (Odessa)

"The Problem of an Elastic Semi-Infinite Cover Plate Coupled to a Linearly Deformable Base"

Moscow, Mekhanika Tverdogo Tela, No 3, May-Jun 73, pp 79-86

Abstract: An exact solution of the contact problem concerning an elastic semi-infinite cover plate coupled to an elastic half-plane has been obtained by various means. An exact solution of this problem is given for a linearly deformable base of the general type and, in particular, for a base in the form of a half-plane with a modulus of elasticity that varies in accordance with a power law. A numerical realization of the obtained exact solution is given. 1 table. 11 references.

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USSR

UDC 539.384

PASKALENKO, A. A., (Odessa)

"Two-Dimensional Problem on Flexure of Semi-Infinite Beam on a Linearly Deformable Support"

Moscow, Prikladnaya Matematika i Mekhanika, Vol 36, No 1, 1971, pp 94-105

Abstract: An exact solution of a problem on flexure of a semi-infinite beam supported by an elastic, inhomogeneous semi-space, with variable in depth modulus of elasticity $E = E_0 z^{\nu}$ ($0 \leq \nu \leq 1$) has been obtained. A numerical solution of this problem applied to the case of a beam loaded at its end with a force or a moment is presented and the results are given in tabular form. An unexpected increase, with respect to absolute value, of the maximum reduced bending moment with the support stiffness parameter ν , is revealed. The results show that the maximum positive (extended lower fiber) reduced moment decreases with increasing ν , while the maximum, with respect to absolute value negative moment, increases.

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USSR

UDC 616.988.73-022.39:598.4

KAMENOV, Ye. K., NIKOLOV, Z. V., NEDELICHEVA, S. B., MATEVA-STOYEVA, Yel. V.,
NEDELICHEVA, N. P., BASKALEVA, M. G., DENCHEV, St. I., and TURLAKOV, I. G.,
Chair of Epidemiology, Institute for Specialization and Advanced Training of
Physicians, Republic Antiepidemic Station, and Zoological Institute and Museum
of the Bulgarian Academy of Sciences, Sofia, Bulgaria

"Aquatic and Swamp Birds -- Carriers of Agents of Infectious Diseases. Com-
munication I: Ornithosis"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 71, pp 437-441

Abstract: Since Bulgaria lies along one important flight route of migrant aquatic and swamp fowl, a serological investigation was performed on 350 wild birds caught along Bulgaria's Black Sea shore and Danube River. Specific antibodies against ornithosis were found in specimens belonging to the orders Ardiiformes, Podicipidiformes, Lariformes, Ralliformes, and Charadriiformes. In some areas densely populated by wild ducks, antibodies against ornithosis virus were found in 21.8% of wild ducks, in 44.7% of domestic ducks on neighboring farms, and in 54.5% of people. These findings support the previously advanced hypothesis that migrating aquatic and swamp birds play an important role in the epidemiology ornithosis in natural foci and in the transmission of this disease to domestic fowl and to humans.

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1/2 009 UNCLASSIFIED
TITLE—VERKHOYAN'E ROCK CRYSTAL -U-

PROCESSING DATE—30OCT70

AUTHOR—(02)—KRYATOV, B.M.; PASKEVICH, G.P.

COUNTRY OF INFO—USSR

SOURCE—PRIRODA (MOSCOV) 1970, (2), 104-5

DATE PUBLISHED—70

SUBJECT AREAS—EARTH SCIENCES AND OCEANOGRAPHY, PHYSICS

TOPIC TAGS—QUARTZ CRYSTAL, PIEZOELECTRIC PROPERTY, GEOLOGIC FORMATION

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—2000/0357

STEP NO—UR/0026/70/000/002/0104/0105

CIRC ACCESSIGN NO—AP0124114

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124114

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE CENTRAL REGIONS OF THE
TITILE MOUNTAINS (SIBERIA), LARGE QUARTZ CRYSTALS ("ROCK CRYSTALS") ARE
FOUND; IMPORTANT IN ELECTRONIC APPLICATIONS, OWING TO THEIR PIEZOELEC.
PROPERTIES. THE CRYSTALS WERE FORMED DURING MILLIONS OF YEARS, STARTING
AT THE BOTTOM OF AN ANCIENT SEA IN THIS AREA, WHICH HAS RISEN TO BECOME
THE MOUNTAINS OF TODAY. QUARTZ VEINS, OFTEN CONTG. RARE AND PRECIOUS
METALS, DO NOT INCLUDE ROCK CRYSTALS, BECAUSE THE VEINS WERE FORMED AT
RELATIVELY HIGH TEMPS., WHEREAS THE FORMATION OF ROCK CRYSTALS REQUIRES
TEMPS. SMALLER THAN 100-200DEGREES.

UNCLASSIFIED

USSR

UDC: 621.372.061

PASKALOV, A. I., TIMOFEYEV, Yu. A.

"Results of Investigations of the Process of Self-Cophasing of a Follow-up Filter Circuit"

V sb. Metody pomekhoustoychivogo priyema ChM i FM (Methods of Interference-Free FM and PM Reception--collection of works), Moscow, "Gov. radio", 1970, pp 97-101 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A149)

Translation: The authors describe the process of self-cophasing of a follow-up filter in the case of locking on a wide-band FM signal. The method of mathematical modeling is singled out as the principal method which is applicable to analysis of the dynamic properties of the proposed circuit, and the conditions and idealizations under which this method is used are given. The follow-up filter circuit is described and its characteristics are given as well as standard oscillograms of signals demodulated by the circuit. In all cases where the passband of the equivalent frequency response was 3-6 times as great as that of the follow-up filter and the level of the FM signal at the input of the circuit was higher than the limit threshold, the circuit was reliably self-cophased. Resumé.

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USSR

UDC 547.963.3:577.391

PASKEVICH, I. F., Institute of Medical Radiology, Kharkov

"Matrix Activity of Deoxyribonucleoproteins of Chromatin from Organs of Irradiated Animals"

Moscow, Doklady Akademii Nauk SSR, No 5, 1973, pp 1223-1226

Abstract: Experiments were performed on rats to elucidate the mechanism of postradiation repair of DNA and DNP in relation to the dose and time after exposure. DNP₀, DNP_{0.6}, DNP_{2.0}, and DNA isolated from rat liver and spleen were used as matrices for RNA synthesis. The matrix activity of DNP₀ and DNP_{0.6} increased significantly in the liver 24 and 48 hours after irradiation at 800 r while the level of RNA synthesis with DNP_{2.0} and DNK used as matrices was the same as the control. However, 120 hours after irradiation RNA synthesis markedly decreased. In the spleen, RNA synthesis decreased in the DNP and DNA matrices at all the observation times. Matrix activity of DNP fractions from the liver increased 24 and 48 hours after irradiation regardless of the dose, but the magnitude of the changes were clearly dose-related.

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USSR

PASKEVICH, I. F., Doklady Akademii Nauk SSR, No 5, 1973, pp 1223-1226

The level of RNA synthesis decreased after 120 hours; matrix activity decreased sharply compared to the control after irradiation at 800 r but was close to the control when nonlethal or sublethal doses were used. RNA synthesis was also restored in the control after doses of 400 and 600 r, but a lethal dose caused a progressive decline in matrix activity of DNP. In both spleen and liver, restoration of the level of RNA synthesis was most pronounced after irradiation at 400 r.

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I/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--RNA SYNTHESIS IN RAT LIVER AND SPLEEN IN THE EARLY STAGES OF ACUTE
RADIATION INJURY -U-
AUTHOR--(04)-PASKEVICH, I.F., VASILYEVA, YE.S., TODOROV, I.N., SHANTYR,
V.I.
COUNTRY OF INFO--USSR
SOURCE--RADIOBIOLOGIYA 1970, 10(1), 19-24
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--X RAY RADIATION BIOLOGIC EFFECT, RADIATION DOSAGE, RAT, RNA,
LIVER, SPLEEN, PHOSPHORUS ISOTOPE, CHEMICAL LABELLING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0452 STEP NO--UR/0205/70/010/001/0019/0024
CIRC ACCESSION NO--AP0121126
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121126

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RNA SYNTHESIS IN RAT LIVER AND SPLEEN WAS DETD. 2, 12, AND 24 HR AFTER WHOLE BODY X IRRADN. WITH A DOSE OF 800 R (197 KV, 10 MA, FILTER 0.5 MM CU PLUS 1 MM AL, FOCUS DISTANCE 40 CM, DOSE RATE 26.5 R-MIN). NA SUB2 H PRIME32 PO SUB4 WAS INJECTED INTO RATS 1 HR BEFORE KILLING THE ANIMALS. RNA WAS EXTG. FROM HOMOGENIZED LIVER AND SPLEEN BY A THERMAL PHENOL METHOD IN TEMP. INTERVALS OF 0-10DEGREES, 45-55DEGREES, 45-65DEGREES, AND 55-65DEGREES. THE RADIOACTIVITY OF RNA PREPNS. WAS MEASURED BY LIQ. SCINTILLATION TECHNIQUES. AN ACITVATION OF RNA BIOSYNTHESIS IN THE LIVER AND AN INHIBITION IN THE SPLEEN WERE OBSD. IN THE EARLY STAGES OF ACUTE RADIATION INJURY, ESP. 2 HR AFTER IRRADN.; A TENDENCY TO NORMALIZATION OCCURRED IN THE LATER TIME INTERVALS. FACILITY: NAUCH.-ISSLED. INST. MED. RADIOL., MOSCOW, USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--FINISHING TECHNOLOGY AND TYPES OF FABRICS MADE FROM POLYURETHANE
ELASTOMER THREADS -U-
AUTHOR-(03)-BLAZAYTIS, G., KAPLANAS, V., PASKEVICIUS, V.
COUNTRY OF INFO--USSR
SOURCE--KHI. VOLOKNA 1970, (2), 65-7
DATE PUBLISHED--70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--FABRIC, ELASTOMER, POLYURETHANE RESIN, CELLULOSE RESIN,
ACETATE, NYLON, CLOTHING, DYE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0820 STEP NO--UR/0183/70/000/002/0065/0067
CIRC ACCESSION NO--AP0124487
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124487

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRODUCTION AND PROPERTIES ARE DESCRIBED OF ELASTIC CORDS CONSISTING OF A POLYURETHANE CORE AND 2 WINDINGS, THE INNER TYPICALLY OF CELLULOSE ACETATE AND THE OUTER OF NYLON 6 THREADS. SUCH CORDS CAN BE DYED BY USING STD. EQUIPMENT AND ARE ESP. SUITABLE FOR THE MANUF. OF SWIM SUITS, WOMEN'S UNDERGARMENTS, AND SPECIALITY SPORT CLOTHES. FACILITY: LITOV. NAUCH.-ISSLED. INST. TEKST. PROM., USSR.

UNCLASSIFIED

Lasers / Masers

USSR

UDC 621.373:530.145.6

GUREVICH, G. L., PASKHIN, V. M.

"Steady State Conditions of Mode Synchronization in a Laser with a Saturable Absorber"

Gor'kiy, Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV, No 2, 1972, pp 221-226

Abstract: It has been demonstrated previously [G. L. Gurevich, Izv. vyssh. uch. zav., Radiofizika, Vol 13, No 7, 1019, 1970; G. L. Gurevich, et al., ZhTF, Vol 40, No 12, 1566, 1970] that instability in the intermode beat frequencies usually occurs for smaller amounts of absorber than required for instability of slow modulations. Thus, the development of instability in the intermode beat frequencies leads to the establishment of periodic conditions with a characteristic modulation time less than or on the order of L/c (L is the length of the resonator, c is the speed of light) which can be interpreted as the mode synchronization conditions. The basic characteristics of these periodic conditions are determined here. There is a simple correspondence between the form of the radiation in the steady state mode synchronization conditions and the known solution of the single-mode problem. The dependence of the amplitude and shape of the pulses on the amount of absorber is defined. Correspondence of the forms of the single mode and multimode solutions is

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USSR

GUREVICH, G. L., et al., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
Vol XV, No 2, 1972, pp 221-226

correct also for a saturable absorber for which the inertia is significant. Actually, the shape of the radiation pulses is determined by the generating solution which, in turn, depends on an arbitrary constant — the pulse amplitude. The absorber characteristics only affect this amplitude. Therefore, for identical amplitude, the pulses in a laser both with an inertia and an inertialess absorber have identical duration. The inertia of the saturable absorber is felt only in the amount of the absorber required to obtain pulses of the given amplitude.

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USSR

UDC 8.74

PASKHIN, YE. N., and ZHOGOLEV, YE. A.

"Concrete Representation of Internal SIMPR [Modular Programming System] Language on BESM-6"

Sb. rabot Vychisl. tsentra Mosk. un-ta (Collection of Works of Computer Center of Moscow University), 1971, vyp. 17, pp 149-153 (from RZh-Matematika, No 5, May 72, Abstract No 5V521)

Translation: The article describes the concrete representation of the Internal SIMPR Language for the BESM-6 computer. The authors give the representation of the basic Internal Language symbols used in the determination of rows of description tables and pseudo instructions. A row of the description table takes one machine word in the computer, while a pseudo instruction occupies two machine words.

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USSR

UDC: 8.74

PASKHIN, Ye. N., ZHOGOLEV, Ye. A.

"Specific Representation of the SIMPR Internal Language on the BESM-6"

Sb. rabot Vychisl. tsentra Mosk. un-ta (Collected Works of the Computing Center at Moscow University), 1971, vyp. 17, pp 149-153 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V521)

Translation: The paper describes the specific representation of the internal language for a system of modular programming (SIMPR) for the BESM-6 computer. A representation is given of the principal symbols of the internal language which are used in defining the lines of tables of descriptions and pseudocommands. A line of the table of descriptions in the computer takes up a single machine word, and a pseudocommand takes up two machine words.

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USSR

UDC 617-001.4-085.462

NESTEROVA, N. V., PASKINA, L. P., and PEREPPEL'KIN, V. P., All-Union Scientific Research Institute of Medical Polymers, Moscow

"Polymer Coatings for the Treatment of Wounds and Burns (Survey of the Literature)"

Moscow, Khimiko-Farmatsevticheskii Zhurnal, Vol 4, No 11, Nov 70, pp 5-11

Abstract: The article describes the state-of-the-art in the development of polymer coatings for the treatment of wounds and burns in the USSR and abroad. A survey of the literature indicates the following two basic trends:

1. Finished coatings, i. e. coatings performed as film or foam. Film-type and especially foam-type synthetic finished polymer coatings have significant advantages over ordinary dressings, mainly because of the lack of adhesion to the wound surface. Finished polymer coatings also include biological films, such as the fibrin films suggested by A. N. FILATOV. The use of all finished

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USSR

NESTEROVA, N. V., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 4, No 11, Nov 70, pp 5-11

coatings necessitates secondary fixing dressings, which limits their potential applications.

2. Film-forming composites. Foreign companies working on the problem of creating liquid dressings include Aktibolaget Bofors (Sweden) and Johnson and Johnson (U.S.). Interesting work has been done in the last few years in Hungary, Czechoslovakia, West Germany and other countries. Of this group of preparations, collodion and cleol are widely known in the USSR. However, coatings obtained with the use of these preparations possess low skin adhesion and are insufficiently elastic. In 1959 the Pharmacopeic Committee of the Ministry of Health approved the preparation Furaplast based on chlorinated polyvinyl chloride resin with a plasticizer in a mixture of chloroform-acetone solvents. Composites based on chlorinated polyvinyl chloride resin dissolved in butyl acetate (solution No. 1) and polyvinyl butyral dissolved in ethyl alcohol (solution No. 2) have been suggested. Methylene

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USSR

NESTEROVA, N. V., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 4, No 11, Nov 70, pp 5-11

chloride has been added to accelerate drying and novocaine and anesthesin have been used as anesthetics. However, coatings based on these preparations are also insufficiently elastic, crack and come off the skin in two days. The All-Union Scientific Research Institute of Medical Polymers has developed film-forming compositions -- SBV-14 (product of lacquer polymerization of butyl methacrylate) and BMK-5 (solution of butyl methacrylate-methacrylic acid copolymer in a mixture of chloroform with acetone and the addition of a plasticizer). Coatings based on SBV-14 and BMK-5 are strong, elastic, transparent, possess good skin adhesion, do not impede the healing of covered wounds and stay on the skin for over eight days. Clinical tests show that protective films based on these preparations can be successfully used for the pre-operative preparation of the skin, as well as for closing postoperative sutures, the skin around fistulas and minor skin injuries. However, the compositions cannot be applied to wound or burn surfaces because of the presence of organic solvents in them, which cause considerable pain on an open

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USSR

NESTEROVA, N. V., et al., Khimiko-Farmatsevticheskii Zhurnal, Vol 4, No 11, Nov 70, pp 5-11

wound (burn), and such coatings possess negligible moisture permeability. These shortcomings make it impossible to use such lacquer compositions for the closing of wounds and burns. The foreign literature contains reports to the same effect.

The search for dressings possessing high film-forming properties and skin adhesion combined with painlessness of application has led to aqueous film-forming compositions. The All-Union Scientific Research Institute of Medical Polymers has done research on film-forming compositions based on water dispersions of polymers and aqueous solutions of polymers. Animal (rabbit) experiments have shown that latex BK is fast-setting on a dried wound surface and retains good adhesion during healing. However, when latex is applied to a burn surface under liberal exudation, it has been found that the low moisture permeability of the latex film prevents conditions for the runoff of the exudate. The liquid being released accumulates under the film,

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USSR

NESTEROVA, N. V., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 4, No 11, Nov 70, pp 5-11

which rules out the possibility of using latex films as liquid surgical dressings. Little information exists on aqueous solutions of film-forming polymer compositions. The film formation in such polymers is based on the self-elimination of water (evaporation) by analogy with film formation based on lacquer solutions of polymers. This stretches out the process of the formation of a protective film. The All-Union Scientific Research Institute of Medical Polymers has developed a composition based on alginic acid salts. Animal experiments have shown that alginate compositions do not cause pain and form on a wound surface a coating which coalesces in 24 hours with live tissue and remains until complete epithelization and gives good protection to the wound and young epidermis. The general healing pattern under an alginate film indicates that alginate films have the same effect as biological plates, while possessing distinct advantages over the latter.

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1/2 020

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--KINETICS OF THE INHIBITION OF TRYPSIN ACTIVITY BY A HEAT AND ACID
STABLE INHIBITOR FROM RABBIT SERUM -U-
AUTHOR-(02)-NARTIKOVA, V.F., PASKHINA, T.S.

P

COUNTRY OF INFO--USSR

SOURCE--BIOKHEMIYA 1970, 35(1), 187-95

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRYPSIN, INHIBITION, RABBIT, BLOOD SERUM, ESTER, HYDROLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--1996/0648

STEP NO--UR/0218/70/035/001/0187/0195

CIRC ACCESSION NO--AP0117874

UNCLASSIFIED

PROCESSING DATE--16OCT70

UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--AP0117874

ABSTRACT. A HEAT AND ACID STABLE TRYPSIN INHIBITOR PURIFIED 800 FOLD FROM RABBIT SERUM HAD A MOL. WT. OF SIMILAR TO 23,000. THE PREPN. RAPIDLY INHIBITED THE TRYPSIN CATALYZED HYDROLYSIS OF N,BENZOYL,L,ARGININE ET ESTER (BAEE) AND N,BENZOYL,DL,ARGININE,P,NITROANILIDE (BAPA). THE DEGREE OF INHIBITION DID NOT INCREASE WITH INCREASING LENGTH OF PREINCUBATION WITH THE ENZYME IN THE RANGE 0.5-15 MIN. CHANGES IN THE PH FROM 2.0 TO 9.4 DURING PREINCUBATION AND FROM 6.0 TO 9.2 DURING THE REACTION DID NOT SIGNIFICANTLY AFFECT THE INTERACTION OF INHIBITOR WITH TRYPSIN. INHIBITION WAS COMPETITIVE WITH 0.0005M BAE AS SUBSTRATE AND NONCOMPETITIVE WITH BAPA. IN THE LATTER CASE THE DEGREE OF INHIBITION DID NOT CHANGE WITH CHANGES IN BAPA CONC. OVER THE RANGE 10 PRIME NEGATIVE3 MINUS 3 TIMES 10 PRIME NEGATIVE3 M. THE K SUBM FOR BAPA WAS 8.3 TIMES 10 PRIME NEGATIVE4 M WITH TRYPSIN. THE K SUBI WAS SIMILAR TO 6.0 TIMES 10 PRIME NEGATIVE8 M. THE K SUBI VARIED INVERSELY WITH TEMP. IN THE RANGE 10-37DEGREES. AN INCREASE IN ENTROPY INDICATED CHANGES IN THE CONFORMATION OF TRYPSIN DURING INTERACTION WITH THE INHIBITOR.

FACILITY: INST. BIOL. MED. CHEM., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11 SEP 70,

1/2 024

TITLE--THE CONTENT AND ACTIVITY OF BASIC COMPONENTS OF KININ SYSTEM IN
BLOOD SERUM OF PATIENTS WITH RHEUMATISM -U-
AUTHOR--~~PASKHINA, I.S.~~ YAROVAYA, G.A., LAUFER, A.L., GULIKOVA, O.M.,
TRAPEZNIKOVA, S.S.
COUNTRY OF INFO--USSR

P

SOURCE--VOPROSY MEDITSINSKOY KHIMII, 1970, VOL 16, NR 2, PP 152-161

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--RHEUMATIC DISEASE, BLOOD CHEMISTRY, CHROMATOGRAPHY, ENZYME
ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1986/0766

STEP NO--UR/0301/70/016/002/0152/0161

CIRC ACCESSION NO--AP0102730

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102730

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACTIVITY AND CONTENT OF BASIC COMPONENTS OF KININ SYSTEM KININOGEN, KALLIKREIN, KININASE AND TOTAL BAEF ESTERASE AND ANTITRYPTIC ACTIVITY IN BLOOD SERUM OF 30 HEALTHY MEN AND 17 PATIENTS WITH RHEUMATISM HAS BEEN STUDIED. THE ACTIVITY OF KALLIKREIN IN BLOOD SERUM WAS DETERMINED BY MEANS OF ORIGINAL CHROMATOGRAPHIC METHOD AND WAS AMOUNTED TO 30 PLUS OR MINUS 9 MKE-ML IN THE CONTROL, I. E. 6,9 PLUS OR MINUS 1,7PERCENT FROM TOTAL BAEF ESTERASE ACTIVITY. THE ACTIVITY OF THIS ENZYME IN BLOOD SERUM OF PATIENTS WITH RHEUMATISM IN ACUTE STAGE OF THE DISEASE IS ELEVATED AT AVERAGE BY 6-7 TIMES. THE TOTAL BAEF ESTERASE ACTIVITY OF BLOOD SERUM REFLECTING THE ACTIVITY OF PROTEINASES OF TRYPSIN TYPE (AND KALLIKREIN) TENDS TO INCREASE IN PATIENTS WITH RHEUMATISM. BLOOD SERUM KININOGEN CONTENT IN PATIENTS WITH RHEUMATISM (II AND III STAGES OF RHEUMATIC PROCESS) WAS DIMINISHED FROM 4.6 (CONTROL) TO 3.5 MUG OF BRADYKININ PER ML. THE ACTIVITY OF KININASE (CARBOXYPEPTIDASE N) WAS UNCHANGED. ANTITRYPTIC ACTIVITY OF BLOOD SERUM OF PATIENTS WAS DECREASED DURING THE III RD STAGE OF THE PROCESS ONLY; IN PATIENTS WITH I AND II STAGES THE ACTIVITY WAS AT THE NORMAL LEVEL OR EVEN SLIGHTLY INCREASED. THE ANALYSIS OF RESULTS INDICATES TO SOME CORRELATION BETWEEN CHANGES IN CHARACTERISTICS OF KININ SYSTEM COMPONENTS AND THE EXTENT OF RHEUMATIC PROCESS ACTIVITY. THE FALL IN KININOGEN CONTENT AND INCREASE IN KALLIKREIN ACTIVITY BOTH TESTIFY TO THE ACTIVATION OF KININ SYSTEM AT RHEUMATISM.

UNCLASSIFIED

USSR

UDC 539.3

AZARKHIN, A. M., PAS'KO, D. A.

"Machine Solution of the Mixed Method of Calculating Ribbed Shells"

V sb. Prostranstv. konstruktsii v Krasnoyarsk. kraye (Three-Dimensional Structures in the Krasnoyarsk Region -- Collection of Works), Krasnoyarsk, 1972, pp 60-66 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V119)

Translation: A program is described by calculating ribbed shells by a mixed method using finite-difference equations obtained by the authors. An outstanding feature of the given version of the mixed method is the use of continuous stress functions. Authors' abstract.

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- 30 -

PAS'KO, P.G.

SPAS 67068
L-73

3

1-11. GROWTH OF ZINC OXIDE CRYSTALS IN THE ZnO solid-H₂-O₂-H₂ and ZnO solid-H₂-O₂-H₂ system

(Article by T. D. Levitskaya, P. G. Pas'ko, B. I. Kildyrov, Novosibirsk; *Sovetskaya Fizika*, Tbilisi, 1972, p. 621)

A thermodynamic analysis was performed on the ZnO solid-H₂-O₂-H₂ system, and an experimental study was made of the crystallization process in this system.

The hydrogen flow diluted with nitrogen passes over sintered zinc oxide, reducing it and transporting it into the crystallization zone to which the mixture of oxygen and nitrogen is fed. The quantity, size and perfection of the zinc oxide crystals depend on the process temperature and the oxygen and hydrogen concentrations.

The feeding of water vapor together with hydrogen into the reduction zone prevents a decrease in the number of fine acicular crystals and growth of larger perfect crystals. With a duration of the process of 30-70 hours, well faceted crystals of aciculi were obtained which are elongated along the c axis 3-4 mm in diameter and 20-30 long.

The replacement of oxygen by water in the oxidation zone changes the crystallographic direction of the predominant crystal growth; the crystals have the shape of a three-sided prism extended along the a-axis and with dimensions of 3 x 3 x 30 mm.

In the general case where a flow of hydrogen, water and nitrogen passes over the sintered zinc oxide and oxygen, water, nitrogen are fed into the crystallization zone, the form of crystal growth is determined by the ratio of the component concentrations in both flows.

The process temperature of crystallization of quite perfect crystals is reduced to 1200°C by comparison with 1300°C-1400°C used in similar processes.

USSR

UDC: none

ALAVIDZE, G. R., PASKONOV, V. M.

"Investigation of Nonstationary Flows in a Magnetohydrodynamic Generator Channel"

Sb. rabot Vychisl. tsentra Mosk. un-ta (Collection of Works of the Computing Center of Moscow University), 1970, vyp. 15, pp 103-109 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B32)

Translation: Nonstationary subsonic flow of an ideal inviscid electrically conductive gas is theoretically analyzed in an infinitely subdivided channel of constant cross section in a magnetohydrodynamic power generator. In contrast to the work by A. L. Genkin and L. A. Kudryashova (Zh. prikl. mekhan. i tekhn. fiz., 1967, No 2, pp 41-44 -- RZh-Mekh., 1967, 10B38), the nonlinear gasdynamic equations are solved by the method of finite differences simultaneously with the equation for the current in the external electric circuit including resistance and inductance. It is shown as a result of the calculations that effects due to unsteadiness of processes in the MHD generator are appreciable. Thus a transition from no-load

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ALAVIDZE, G. R., PASKONOV, V. M., Sb. rabot Vychisl. tsentra Mosk. un-ta,
1970, vyp. 15, pp 103-109

to power generating conditions leads to development of temporary gas-heating regions in the channel. A rapid increase in stagnation pressure at the input to the channel causes considerable gradients of the electrode potential and hydrodynamic parameters. The inductance in the external circuit causes aperiodic damped oscillations of gasdynamic and electrical parameters. Increasing this inductance increases the time of transient processes and the amplitude of the oscillations. Yu. N. Denisov.

1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--MATHEMATICAL DESCRIPTION OF THE THERMAL CONTACT PREPARATION OF HYDROGEN -U-

AUTHOR--OPRISHKO, A.A., AMERIK, B.K., ZHOROV, YU.M., PASKUDSKAYA, L.A., YAKUNIN, O.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 38-40

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMODYNAMICS, THERMAL DECOMPOSITION, METHANE, ETHANE, ETHYLENE, ACETYLENE, INDUSTRIAL PRODUCTION, HYDROGEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT GLASS--UNCLASSIFIED STEP NO--UR/0065/70/015/003/0038/0040

PROXY REEL/FRAE--1990/2039

CIRC ACCESSION NO--AP0109971

UNCLASSIFIED

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USSR

UDC 628.163

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PASKUPSKAYA, L. N., Candidate of Technical Sciences, and DRAGINSKIY, V. L., Engineer

"Use of VA-2 Cation Flocculant in Purifying Drinking Water"

Moscow, Vodosnabzheniye i Sanitarnaya Tekhnika, No 1, 1970, pp 15-19

Abstract: Conventional flocculants (notably aluminum sulfate) raise the pH and the alkalinity level of treated water to the point where damage to metal pipes and concrete is possible.

The newly developed VA-2 flocculant, based on the bonding of suspended and colloidal particles by a polymer molecule, has been tested in various waters of the Soviet Union with good results. Several advantages of VA-2 are noted: 1) the pH and alkalinity of the water are not affected; 2) no additional mineral flocculants need be added; 3) sedimentation and clarification of turbid water are considerably more rapid than with use of mineral coagulants; and 4) the filtration cycle is more prolonged, allowing increased filtration speeds. On the negative side, the use of VA-2 is not effective in the purification of stained water. Graphs and tables accompany the article.

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- 122 -

1/2 038 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--STIMULATED SCATTERING OF ULTRASHORT LIGHT PULSES -U-
AUTHOR-(02)-BESPALOV, V.I., P PASMANIK, G.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., RADIOFIZ. 1970, 13(1), 148-50
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--LIGHT SCATTERING, SIMULATION, UV LASER, LASER PULSE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1987/0166 STEP NO--UR/0141/70/013/001/0148/0150
CIRC ACCESSION NO--AT0103845
UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0103845

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A THEORETICAL DISCUSSION IS GIVEN OF THE EFFECTS AND PECULIARITIES OF STIMULATED SCATTERING (TEMP. SCATTERING DETD. BY ONE PHOTON LIGHT ABSORPTION AND MANDELSTAM BRILLOUIN SCATTERING) OF ULTRASHORT LASER PULSES. FACILITY:
NAUCH.-ISSLED. RADIOFIZ. INST., GOR'K. UNIV., GORKI, USSR.

UNCLASSIFIED

Acc. Nr: **170038051**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 309-323

**STIMULATED MANDELSTAM — BRILLOUIN AND STIMULATED
ENTROPY BACKSCATTERINGS OF LIGHT PULSES**

V. I. Bespalov, G. A. Pismanik

A theory of stimulated Mandelstam — Brillouin and entropy backscatterings of light is developed in the prescribed pumping field approximation by taking into account fluctuation processes in the medium. The intensity and spectral distribution of light scattered by laser pulses whose duration is either greater or smaller than the time of traversal of the scattering volume by light are determined. Accumulative effects arising on scattering of a set of ultrashort pulses are discussed. In particular narrowing of the scattered light spectrum with growth of number of the exciting pulse is considered.

REEL/FRAME
19731095

21

043

USSR

UDC 621.325.684

PASHANNIK, V. I., KISELEV-DMITRIYEV, M. V., and MEL'NIKOV, Yu. I.

"Multi-Gap Resonator for a Klystron Amplifier"

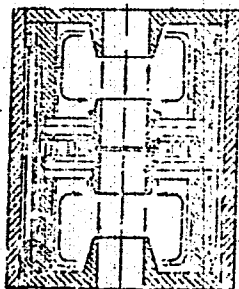
Moscow, Otkrytiya, izobreneniya, promyshlennyye obraztsy, tovarnyye znaki, No. 33, 1971, pp 171-172

Abstract: The resonator, consisting of a casing with hoods and electron transit tubes joined to the casing by means of radial rods, operates in out-of-phase oscillation. The distinctive feature of the resonator is that the casing is formed of external and internal cylinders with ring gaps between their ends. This improves the operational stability of the device. For easing the resonator tuning, the middle transit tubes are divided into two equal parts connected with the corresponding internal cylinder. A cross-sectional diagram of the klystron resonator is shown.

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USSR

PASMANHIK, V. I., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, № 33, 1971, pp 171-172



MULTI-GAP RESONATOR
FOR KLYSTRON AMPLIFIER

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- 3 -

USSR

UDC: 621.385.623.4(088.8)

PAVLOV, O. I., PASMANNIK, V. I.

"A Multicavity Drift Klystron"

USSR Author's Certificate No 275239, filed 13 Jun 68, published 22 Oct 70
(from RZh-Elektronika i yeye Primeneniye, No 6, Jun 71, Abstract No 6A159P)

Translation: This Author's Certificate introduces a multicavity drift klystron which contains output and intermediate cavities and a multiple-gap output cavity made in the form of a system of coupled cavities. In order to increase the efficiency by additional grouping of electron bunches, one or more auxiliary cavities which are not electromagnetically coupled to the output cavity are placed between each pair of coupled cavities.

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USSR

UDC 621.385.6

PAVLOV, G.I., PASMANNIK, V.I., ARTYUKH, I.G.

"Characteristics of a System of Combined Resonators with Intermediate Automodulation of Electron Flow in a Low-Signal Approximation"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 2, pp 11-25 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8A17)

Translation: In the case of a system of combined resonators with intermediate automodulation of electron flow, expressions are obtained for computation of the equivalent interaction factor and total electron conductivity. The computed curves are presented. The effect is investigated of the geometry of the system and tuning of the resonator on the characteristic mentioned. The dependence is shown of the equivalent interaction factor and electron conductivity on the magnitude of the space charge parameter. In comparison with known one- and multi-gap resonators, the system described has better modulation properties and a large magnitude of inserted electron conductivity. It is possible to use this system as the bunching section of an electron device. 9 ill. 4 ref. G.B.

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USSR

P
UDC 621.372.833.1

SUKHODOLETS, L. G., PAVLOV, O. I., PASMANNIK, V. I., PRIYEZZHEV, G. M.

"A Waveguide-to-Coaxial Adapter"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzy, Tovarnyye Znaki,
No 23, Author's Certificate No 276182, Filed 28 Mar 69, p 63

Abstract: This author's certificate introduces a waveguide-to-coax adapter for tapping the energy of electronic rf vacuum devices. The unit contains an antenna and a section of rectangular waveguide. As a distinguishing feature of the patent, the possibility of an electronic vacuum discharge is eliminated by making the waveguide walls close to the antenna in the form of metallic grids which shield the additional spaces which form electron trapping chambers.

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USSR

UDC 621.385.63:621.385.65

SUKHODOLETS, L.G., PAVLOV, O.I., PASMANNIK, V.I., PRIYETZHEV, G.M.

"Waveguide--Coaxial Junction"

USSR Author's Certificate No 276182, filed 28 Mar 69, pub 12 Oct 70 (from RZh--Elektronika i yeye primeneniya, No 4, April 1971, Abstract No 4A169P)

Translation: The proposed waveguide--coaxial junction for lead-out of the energy of high-frequency electrovacuum devices contains an antenna and a section of rectangular waveguide. With the object of eliminating the possibility of development of an electron discharge in a vacuum, the waveguide walls near the antenna are made in the form of metal grids which screen the additional space, producing a chamber--trap for the electrons.

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UDC: 621.385.624

USSR

PAVLOV, O. I., PASMANNIK, V. I.

"A Multiple-Resonator Drift-Tube Klystron"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, 1970, Soviet Patent No 275239, Class 21, filed 13 Jun 68, p 58

Abstract: This Author's Certificate introduces: 1. A multiple-resonator drift-tube klystron which contains input and intermediate resonators and a multigap output resonator made in the form of a system of coupled resonators. As a distinguishing feature of the patent, additional subgrouping of electron bunches is provided to improve efficiency. Between each pair of coupled resonators is one or more auxiliary resonators which are not electromagnetically coupled to the output resonator. 2. A modification of this klystron distinguished by the fact that some or all of the auxiliary resonators are tuned to higher harmonics of the fundamental frequency. 3. A modification of this klystron with the distinguishing feature that phase correction of the flight of the electron bunches into the gaps of the output resonator is provided by selecting the distances between the gaps of this resonator so that they differ in accordance with the sequential change in the velocity of the electron bunches after passing through each of the gaps.

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USSR

UDC: 621.385.624

PAVLOV, O. I., PASMANNIK, V. I., KHABI, V. S.

"A Klystron"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 24, 1970, Soviet Patent No 277116, Class 21, filed 28 Feb 68, p 63

Abstract: This Author's Certificate introduces: 1. A klystron which contains resonators with distributed interaction made up of a housing and drift tubes fastened at the center to the housing by means of radial metal rods. As a distinguishing feature of the patent, the operating stability and efficiency of the klystron are improved by connecting the metal rods to the housing through coaxial matched SHF loads which are fastened to the housing of the resonators. 2. A modification of this klystron distinguished by the fact that the coaxial matched SHF loads are made in the form of a long line coiled into a semicoaxial structure in which the outer and inner conductors are covered with a conducting paste.

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USSR

UDC 621.385.623

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PASMANNIK, V. I.

"Towards a Calculation for Klystrons With Multigap Resonators"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron SVCh. (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 1, pp 58-73
(from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A130)

Translation: On the basis of the linear one dimensional theory of a klystron, a formula is obtained for the amplification factor of a klystron with multigap resonators. Each of the resonators has an arbitrary number of gaps in which electrons interact with microwave fields and operate at any mode of oscillation characteristic of the corresponding phase angle between neighboring gaps. It is assumed that the cycle of the system of gaps and the width of the gaps is fixed within the limits of each resonator. The results obtained make possible an approximate calculation of the stress of the klystron in a low signal regime.
6 ref. Summary.

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- 330 -

PASOV, V. M.

SRAS 55893
4 May 72

NUMERICAL EXPERIMENTS WITH RESPECT TO COMPILING THE LONG-RANGE SPRING CROP HARVEST FORECAST

UDC 551.50:631.175

Article by Candidate of Geographic Sciences, V. M. Pasov, Institute of Experimental Meteorology, Moscow, Vestnik Vsesoyuznogo Nauchnogo Tsentra Akademiya Nauk SSSR, No 2, 1972, submitted 19 July 1971, pp 71-78]

Results are presented from numerical experiments on the basis of which the conclusion of the theoretical possibility of compiling the spring crop harvest forecast before beginning to plant the crop is drawn. The characteristics of the state of the atmosphere (according to L. A. Vitel's and G. Ya. Vangonenko) during the months preceding the vegetative period are used as the predictors.

The existing methods of forecasting the farm crop harvest are based on considering the state of the plants and the data on the accumulated weather conditions by a certain point of the vegetative period. The possibilities of using such forecasts are highly limited inasmuch as they are compiled during the period when the crop is already growing. In this case, it does not appear possible to reduce the seeding areas occupied by a low-yield crop in the given year and to expand the planting of another the harvest of which is expected to be higher.

At the same time, the annual correction of the structure of the planted areas considering the expected productivity of the primary grain crops in different farm regions could have a significant effect on the increase in the grain harvest in the country. Consequently, a method of forecasting the yield of primary farm crops which will permit estimation of the productivity of these crops before beginning to plant them is necessary [7].

The productivity of spring crops is determined to a significant extent by the meteorological conditions of the spring-summer period. It is clear that the farm crop harvest forecast compiled before planting the crops must consider the expected characteristics of the growing conditions in the given year. Obviously, it is inexpedient to develop methods of forecasting the harvest using the results of weather forecasts as the initial data inasmuch as this can lead to large errors (the forecast based on the forecast has low reliability).

PAZOYAN, J.G.

Biophysics

UNCLASSIFIED

DIRM

SECTION III

PCS-89
June 71

18

Name: Institute of Biophysics, Pushchino
Description:

(U) During this quarterly reporting period, 13 new articles were located from the Institute of Biophysics at Pushchino. On the basis of these articles, it was possible to associate 19 new persons with the Institute. These persons are listed below together with the subjects and dates of the articles:

Name	Subject	Date
<u>Baourmanov, O. K.</u>	endocrine system	1970 (17)
<u>Berezhnevskiy, G. H.</u>	phospholipids	1970 (18)
<u>Gaziyev, A. I.</u>	DNA	1970 (19)
<u>Ivanilova, A. G.</u>	plant physiology	1969 (20)
<u>Kashelev, Ye. Ye.</u>	muscle physiology	1970 (21)
<u>Kravchenko, N. A.</u>	EPR spectra	1970 (22)
<u>Markanov, A. A.</u>	radiation effects	1970 (23)
<u>Panov, A. A.</u>	endocrine system	1970 (17)
<u>Panoyan, V. G.</u>	EPR spectra	1970 (22)
<u>Pocotikov, V. I.</u>	muscle physiology	1970 (21)
<u>Postnikova, G. B.</u>	chromatography	1970 (24)
<u>Razhin, V. D.</u>	phospholipids	1970 (18)
<u>Rovin, A. R.</u>	radiation effects	1970 (23)
<u>Sukhoruchikina, L. V.</u>	chromatography	1970 (24)
<u>Tirsher, K. S.</u>	Plant Physiology	1969 (20)
<u>Masllov, Yu. Y.</u>	radiation effects	1970 (23)
<u>Zaklin, A. N.</u>	hydrogen peroxide	1970 (25)
<u>Zakhrayevskaya, D. T.</u>	DNA	1970 (19)
<u>Zuzin, A. M.</u>	DNA	1970 (19)

UNCLASSIFIED

PROCESSING DATE--L3NGV70

1/2 013

TITLE--THE NATURE OF PARAMAGNETIC CENTERS AND THEIR PHOTOCHEMICAL
TRANSITIONS IN MONOCRYSTAL OF HYDROCHLORIDE L TYROSINE AT 77DEGREEK

AUTHOR--(03)-PASEYAN, V.G., PULATOVA, M.K., KAYUSHIN, L.P.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 15(1): 12-19. ILLUS. 1970

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TYROSINE, GAMMA RADIATION, ELECTRON PARAMAGNETIC RESONANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0921

STEP NO--UR/0217770/015/001/0012/0019

CIRC ACCESSION NO--AP0129986

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129986

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WORK DEALS WITH THE EPR STUDY OF THE NATURE OF PARAMAGNETIC CENTERS ARISING UNDER GAMMA IRRADIATION AT 77 K IN SINGLE CRYSTALS OF HYDROCHLORIDE L TYROSINE. THE EPR SPECTRUM OF A GAMMA IRRADIATED SINGLE CRYSTAL OF HYDROCHLORIDE L TYROSINE IS COMPOSED OF 4 COMPONENTS, A BROAD ASYMMETRIC DOUBLET, A SINGLET, AND A MULTIPLY. THE PARAMAGNETIC CENTER RESPONSIBLE FOR THE 1ST EPR SIGNAL IS O₁. AT 77 K THE IONIZATION OF THE MOLECULE TAKES PLACE, WHICH RESULTS IN THE FORMATION OF ANION RADICALS (EPR SINGLET) OF TYROSINE WITH THE LOCALIZATION OF UNPAIRED ELECTRONS ON THE BENZENE RING. THE BREAKAGE OF THE C-N BOND IS A SECONDARY ONE DUE TO THE TRAPPING OF THE ELECTRON BY THE CHARGED AMINO GROUP OF THE TYROSINE MOLECULE (EPR MULTIPLY). FACILITY: INST. BIOL. PHYS., ACADE. SCI. USSR, PUSHCHINO-ON-OKA, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--DAILY DIURESIS AND DYNAMICS OF LEPTOSPIRA EXCRETION BY ROOT VOLES
MICROTUS OECONOMUS -U-
AUTHOR--(04)-KARASEVA, YE.V., PASSOVA, O.M., LITVIN, V.YU., KOKOVIN, I.I.
COUNTRY OF INFO--USSR
SOURCE--ZOOLOGICHESKIY ZHURNAL, 1970, NR 3, PP 435-439
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--RODENT, LEPTOSPIRA, URINE, EXCRETION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1384 STEP NO--UR/0439/70/000/003/0435/0439
CIRC ACCESSION NO--AP0136738
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136738

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE DAILY DIURESIS AND EXCRETION OF LEPTOSPIRA IN THE URINE OF MICROTUS DECONOMUS SHOWED THAT THE DAILY URINE VOLUME VARIED FROM 8.1-30.1 ML (AVERAGE 18.3 ML) AND INDIVIDUAL URINE SAMPLES AVERAGED 0.72 ML. URINE WAS PASSED 11-38 TIMES A DAY (25 AVERAGE). THE NUMBER OF LEPTOSPIRA EXCRETED IN THE URINE IN 24 HOURS VARIED FROM 1 TO 10 OUT OF 70-80 MICROSCOPE FIELDS. DURING THE DAY THERE WERE GAPS IN LEPTOSPIRA EXCRETION IN THE URINE, WHILE AT NIGHT DIURESIS WAS INTENSIFIED (URINE WAS PASSED MORE TIMES), AND CONSEQUENTLY THE NUMBER OF LEPTOSPIRA IN THE URINE INCREASED. MICROTUS DECONOMUS WAS THE MAIN CARRIER OF L. GRIPPOTYPHOSA IN NATURAL LEPTOSPIROSIS FOCI. THE VOLES WERE ARTIFICIALLY INFECTED WITH L. GRIPPOTYPHOSA, STRAIN MICROTUS DECONOMUS 475, AND URINE VOLUMES WERE COLLECTED IN THE LABORATORY. IN INITIAL STAGES OF LEPTOSPIROSIS, FEW LEPTOSPIRA WERE EXCRETED, WITH LEVELS INCREASING ON THE FOURTH AND NINTH DAYS IN TWO VOLES STUDIED. FACILITY: INSTITUT EPIEMIOLOGII I MIKROBIOLOGII, AMN SSSR; INSTITUT MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDITSINY, MINISTERSTVA ZHRAVOOKHRANENIYA, SSSR, MOSCOW.

UNCLASSIFIED

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UDC 541.121:547.581.9'241.057

RUDZIT, G. P., ~~PASTARE, S. YA.~~, and YANSON, E. YU., Latvian "Order of the Red Banner of Labor" State University imeni P. Stuchka

"Tetraphenylphosphonium Salts of α -Furandithiocarboxylic, Dithiopiperonylic and 2-Hydroxydithiobenzoic Acids"

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, Seriya Khimicheskaya, No 2, 1972, pp 163-166

Abstract: The spectrophotometric method was used to determine the ionization constants of thiolthionic groups in α -furandithiocarboxylic acid ($pK_{\text{CSSH}} = 2.04$) and dithiopiperonylic acid ($pK_{\text{CSSH}} = 2.29$). Using radioactive isotopes, the authors studied the time dependence of the degree of extraction of zinc, nickel and trivalent iron compounds, with tetraphenylphosphonium salts of α -furandithiocarboxylic acid, dithiopiperonylic acid and 2-hydroxydithiobenzoic acid serving as reactants. It was found in all cases that equilibrium is reached slowly due to the hydrophobic nature of the tetraphenylphosphonium ion.

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UDC: 539.16.08

YEROKHINA, K. I., LEMBERG, I. Kh., PASTERNAK, A. A., Physicotechnical Institute imeni A. F. Ioffe, Soviet Academy of Sciences

"Attenuation of the Doppler Shift of the Energy of Gamma Rays Emitted as a Result of Coulomb Excitation"

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya, Vol 37, No 8, Aug 73, pp 1595-1608

Abstract: Ge(Li) gamma-ray detectors with their inherent high resolution give additional information on the lifetimes τ of excited states based on measurements of attenuation of the Doppler shift of gamma-ray energy. Comparison of data on the partial lifetimes $\tau(E2)$ obtained in research on Coulomb excitation by measuring the absolute yields of gamma rays with the values of τ obtained in these same studies as a result of measurements of Doppler shift attenuation gives the possibility of computing the reduced probabilities $B(M1)$ of magnetic dipole transitions. In this paper the theoretical shape of the Doppler-shifted gamma line is calculated by approximating the exact distribution function using a convenient expression which is true for any directions of the recoil nuclei. A comparison of

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YEROKHINA, K. I. et al., Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya, Vol 37, No 8, Aug 73, pp 1595-1608

the experimental shape of the Doppler-shifted line with the expression given in this paper for the theoretical shape of the line showed satisfactory agreement. More than fifty lifetimes of levels in thirty nuclei with mass numbers from 52 to 133 were determined. The range of measured values of τ was from 0.05 to 3 ps. The average time for computer processing of one gamma line was 15-20 minutes. The lifetimes were measured for the first time for 25 of the excited states.

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Hydrobiology

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UDC 59(093.32)

KOVALEVSKAYA, N. V., BEKKER, V. E., and PASTERNAK, F. A., Institute of Oceanology,
Academy of Sciences USSR, Moscow

"Biological Studies During the First Voyage of the Scientific Research Ship
'Dmitriy Mendeleev' in the Western Tropical Atlantic"

Moscow, Zoologicheskii Zhurnal, Vol 49, No 3, 1970, pp 478-479

Translation: The new scientific research ship of the Institute of Oceanology, Academy of Sciences USSR, "Dmitriy Mendeleev" left on 21 February 1969 on her first voyage from the port Kaliningrad. The trip lasted 61 days, during which 70 stations were visited covering about 14,900 nautical miles, with one stop at Montserrat and two entries into the ports -- Port-of-Spain (Trinidad) and Gibraltar. The main goal of the voyage was to take instrument readings of the eastward current from the ridge of the Lesser Antilles. Concurrently, biological experiments were carried out, including collection of benthic fauna, fish, and ichthyoplankton, as well as several attempts at artificial fertilization of fish roe and incubation in an aquarium. These studies were conducted by the authors of this paper at 60 stations of the trip.

Fish collection produced about 100 different species belonging to 80 genera
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and 46 families, and in addition a considerable quantity of fish ova and larvae (determination of quantity was impossible during the voyage). The collection yielded 28 shore types and 68 ocean ones (43 bathy- and mesopelagic and 25 epipelagic). The most diverse are the mesopelagic family Myctophidae (8 genera and 18 species) and those from epipelagic Exocoetidae (6 genera and 11 species). The remaining 44 families were represented by 1-2, or occasionally by 3 species. Quantitatively, the most numerous was the collection of flying fish (Exocoetidae).

The collection of deep sea fish was quite diverse, but most types were represented only by single examples. The only exception were several types of Myctophidae which came to the surface at night and could be relatively easily caught by surface catching equipment. For example, when the ship was stationed at Montserrat Island, about 200 examples of *Diaphus dumerili* and *D. garmani* were caught with dip nets. It is also interesting that real mesopelagic types, which reside during the day at depths of 300-500 m, could be found in large quantities at night at a depth of about 20 m. Finally, it should be noted that these types were caught at one station only in the immediate proximity of the island. All

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other Myctophidae found at night on the surface were discovered at considerable depths (1000 m and more). These include the only example of *Myctophum selenops*, a species known by only a few examples.

From the zoogeographic point of view, an interesting catch was made at 8° north latitude and 53°16' west longitude -- one example of *Electrona rissoi* (Myctophidae), which is well-known in the eastern Atlantic but not found in the past west of 40° west longitude. Catches of several rare and poorly studied types were also interesting (*Heterophotus ophistoma* [Astronesthidae], *Lepidophanes supralateralis* [Myctophidae] and some others).

Most numerous were catches of epipelagic fish, made at night with electrical illumination, using dip nets and a Savilov pleustonic trawl net; Oxyporhamphidae and Exocoetidae comprised this group. Most numerous forms in these groups were *Oxyporhamphus micropterus*, *Parexocoetus brachypterus*, *Exocoetus volitans*. *Prognichthys gibbifrons*, *Hirundichthys affinis* and *H. speculiger*. These types, except for *P. brachypterus*, were found at almost all stations, while the latter was found up to the 300 mile limit from the shores.

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Roe and larvae of *Oxyporhamphus micropterus* and *O. meristocystis* (the latter only near the Tobago and Barbados Islands) were found in the ichthyoplankton catch. Up to now it was believed that the first -- the oceanic type -- was widely scattered in tropical areas of all three oceans, and the second -- the neustic -- only in Pacific and Indian oceans. The roe and larvae of *O. micropterus* were caught both near the shore and far away from them, but the largest catch was made at a station northeast of the Guiana shores. In the same region, intensive spawning of one of the most numerous types of flying fish, *Exocoetus volitans*, took place (up to 880 larvae in one 20 min catch with the pleustonic trawl net). In March, 1969, northeast of the Lesser Antilles, these two types did not spawn, and the offspring observed there were most probably carried over by the Guiana and Antilles streams. Spawning of other flying fish was also observed in this region. Northeast of Desirad Island, developing roe of *Cheilopogon furcatus* was found, and at Montserrat Island, running males and females of *Ch. lutkeni* were caught.

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In recent years (mainly due to the efforts of Soviet expeditions) a systematic quantitative study was carried out of the benthic fauna of the Pacific, Indian and Southern oceans. Charts of quantitative distribution (quite detailed for many regions) were prepared, and some interesting principles were determined for the distribution of benthic fauna in these areas. As paradoxical as it seems, no such studies were carried out in the Atlantic ocean. Currently only isolated data exist on the quantitative distribution of benthos around the shores of Central and South Africa, along the meridian cross section from the shores of Greenland to the equatorial zone, and along the cross section from North America to Bermuda. Therefore, even these unpretentious results, obtained during the first voyage of the scientific research ship "Dmitriy Mendeleev" are quite interesting.

The poorest development of benthic fauna on the meridian cross section mentioned above is found in the southern part of the tropical zone, where it is represented by a single foraminifera. Extreme paucity of benthos was also observed in the northern zone. There the benthos biomass reached only 0.002-0.005 g/m². At the same latitude but somewhat closer to the Antilles ridge islands, at a depth

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of 4600 m we found a considerable increase of the benthos biomass, up to 0.03 g/m², mainly due to vitreous sponges and polychaeta, Aricidae and Moldanidae. Evidently this is due to a slight upwelling in the region of that station.

Several quantitative samples of benthos were collected at the cross section along the ridge of the Antilles Islands. There, at a depth of 1500-2000 m, its biomass was 0.3-1.9 g/m². These indicators, considering the depths and locations of the stations along the north portion of the tropical zone, are considered to be quite high. Even more interesting and actually somewhat unexpected results were obtained along the cross section of the upper and lower parts of the South American continental incline and its foothill zone south of the Orinoco delta. Here a very diversified and rich benthic fauna was found at four stations. At 400 m, the biomass of bivalve mollusks, polychaeta, nematoda and crustaceans reached 34.24 g/m². Lower down the incline, at a depth of 800 m, the benthic fauna becomes poorer, but even here the polychaeta, crustaceans and bivalve mollusks gave a biomass of 25.52 g/m². Even in the middle portion of the incline, at a depth of 1200 m, a dense population of the brittle stars of the

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Amphiura types were found, which together with the polychaeta, isopoda crabs and bivalve mollusks gave a biomass of 18.24 g/m². At the same station, several examples of pogonofora were found. These are noteworthy data. Expeditions in past years determined the high productivity of the benthos fauna of the continental incline of the Pacific and Atlantic oceans at moderate latitudes. The fact that benthos values for the bathyal zone of the tropical belt obtained by us are fully comparable with those of the continental incline of moderate latitudes, is a very unique phenomenon requiring intensive studies. In the region studied, a distinct stratification of waters is to be expected, as well as a possible deep layer of oxygen minimum. This circumstance, together with the strong shore run-off carrying considerable organic and mineral material, should favor accumulation and rapid preservation of unoxidized organic material in the bottom. Even at the deepest station (4650 m), remote from the shore, terrigenous residues were found, inhabited by relatively rich fauna of polychaeta, oenotera, and sea lilies, with a total biomass of 0.39 grams per square meter.

The study of the benthos of deep sea channels began comparatively recently, but a lot was already accomplished. Ultraabyssal invertebrates were found in almost 7/8

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all channels of the Pacific Ocean. In this respect the Atlantic Ocean was studied much less than the Pacific Ocean. Before our study in the Puerto Rico channel, one trawling was carried out at a depth of 7000 m, and two at a depth of 6000 m, but to this date the results of these studies have not been published. Therefore, from the trawling test-runs of this voyage, the most valuable is the trawling in the western part of the Puerto Rico channel, at a depth of 6300 m. The trawling yielded more than 25 types of various benthos invertebrates -- polychaeta, bivalve mollusks, and holothurioida (a total of about 80 examples). The almost total absence of isopoda crabs was noteworthy, even though it is a usual component of ultraabyssal communities. Undoubtedly the results of this trawling will turn into a special intensive study.

During our stay at Port-of-Spain, we visited the West Indies University and Fishing Station, and learned about their activities. An exchange of collection and demonstration materials took place.

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1/2 032 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--CLINICAL PICTURE AND PATHOMORPHOLOGY OF CERVICAL VEGETATIVE
GANGLIONITIS IN VIBRATION SICKNESS -U-
AUTHOR-(04)-MODEL, A.A., RAPORPORT, M.B., TIMOFEYEVA, N.T., PASTERNAK,
G.A.
COUNTRY OF INFO--USSR
SOURCE--KLINICHESKAYA MEDITSINA, 1970, NR 3, PP 74-78
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOLOGIC VIBRATION EFFECT, GANGLION, RAT, MORPHOLOGY, SPINAL
CORD, SPINAL NERVE, CENTRAL NERVOUS SYSTEM

CONTROL MARKING--NC RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1742

STEP NO--UR/0497/70/000/003/0074/0078

CIRC ACCESSION NO--AP0136983

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136983

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS A RESULT OF OBSERVATION OF 29 PATIENTS SUFFERING FROM VIBRATION SICKNESS, THE CLINICAL SYMPTOMS OF AFFECTION OF THE CERVICAL SYMPATHETIC GANGLION WERE ANALYZED. IN A NUMBER OF CASES THE AFFECTION OF CERVICAL VEGETATIVE FORMATIONS WERE ACCOMPANIED BY DEGENERATIVE AND DYSTROPHIC CHANGES OF THE SPINE. THE AUTHORS CARRIED OUT HISTOLOGICAL INVESTIGATIONS OF CERVICAL VEGETATIVE GANGLIA USING RATS SUBJECTED TO INTERMITTENT OVERALL VIBRATION FOR THREE HOURS DAILY DURING A PERIOD OF THREE MONTHS. MORPHOLOGICAL CHANGES OF PRE AND POST GANGLIONIC FIBERS WERE FOUND, AS WELL AS CHANGES OF NERVE CELLS OF SYMPATHETIC GANGLIA. IT IS BELIEVED THAT IN THE DEVELOPMENTAL MECHANISM OF CERVICAL VEGETATIVE GANGLIONITIS OF VIBRATION ETIOLOGY, AN IMPORTANT ROLE IS PLAYED BY PATHOLOGICAL IMPULSION FROM THE PERIPHERY AS WELL AS BY DISTURBANCES OF THE CENTRAL NERVOUS SYSTEM. IT IS ASSUMED THAT THE CHANGES OF THE SPINE ARE OF SECONDARY NATURE CAUSED BY THE AFFECTION OF THE CERVICAL SYMPATHETIC GANGLION. FACD;OTU"
KIYEVSKIY NAUCHNO-ISSLEDOVATELSKIY INSTITUT GIGIYENY TRUDA I
PROFESSIONAL'NYKH ZABOLEVANIY.

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UDC: 616.839.19-002-02:613.644

MODEL', A.A., RAPOFORT, M.B., TIMOFEYeva, N.T., and PASTERNAK, G.A., Kiev
Scientific Research Institute of Labor Hygiene and Occupational Diseases

"The Clinical Picture and Pathomorphology of Cervical Autonomic Ganglionitis
in Vibration Sickness"

Moscow, Klinicheskaya Meditsina, No 3, 1970, pp 74-78

Abstract: Clinical symptoms of cervical autonomic ganglionitis in patients exposed to local and/or general whole body vibration consisted of headache, eye and ear disturbances, and disturbances of the central nervous system. In a number of cases disturbances of cervical autonomic structures were concurrent with degenerative and dystrophic changes in the spine. Histological studies were conducted in animals subjected to whole-body vibration, pathological changes were found in pre- and post-ganglionic fibers, and in the cells of the sympathetic ganglia. The dominant factor in the etiology of ganglionitis may be pathological impulses from the peripheral nerves and disturbances of the central nervous system. Changes in the spine are of secondary nature and are apparently due to affection of the cervical sympathetic ganglia.

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UDC 669.15*24*25-192:621.78

GULYAYEV, A. P., and PASTERNAK, I. I., Moscow

"Martensitic Transformation in Kovar-Type Alloys"

Moscow, Izvestiya Akademii Nauk USSR, Metally, No 4, Jul-Aug 72, pp 159-163

Abstract: A study was made of the process of martensitic transformation in Fe-Ni-Co alloys of the Kovar type (29NK), containing 27-29% Ni, 17-18% Co, and the remainder iron. A characteristic of these alloys is their proximity to the boundary of the ($\beta \rightarrow \alpha$) transformation on the structural diagram. This means that, even when there are insignificant deviations from the strictly specified chemical composition of Kovar, a martensitic transformation can occur in these alloys by cooling them below room temperature, and this results in an abrupt change of their properties. The investigation results are discussed by reference to diagrams of the magnetic hysteresis of the Kovar alloy with 28.5% Ni and 17.5% Co in continuous cooling (to -196°C), continuous heating (to Curie temperature), and room temperature after tempering (initial condition - cooling to -196°C). The regions of direct and inverse ($\beta \rightarrow \alpha$) transitions in the alloys were established as a function of their Ni and Co contents. It is shown that the β -phase formation goes with the electric resistance drop and with the increase of hardness, magnetization of saturation, and

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