

USSR

YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

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9/9

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--PLATINUM, II, ETHYLENEDIAMINETETRAACETATE SOLUTIONS -U-  
AUTHOR--(03)--YEZERSKAYA, N.A., KISELEVA, I.A., ZHADANOV, B.V.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM. 1970, 15(4), 1046-50  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PLATINUM COMPLEX, POLAROGRAPHIC ANALYSIS, ETHYLENEDIAMINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/1152 STEP NO--UR/0078/70/015/004/1046/1050  
CIRC ACCESSION NO--AP0128574  
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0121574

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ABSENCE OF AN EXCESS OF CL  
NEGATIVE CONCN. IN THE SOLN., PTH SUB4 YCL SUB2 (I) (Y PRIME NEGATIVE4  
EQUALS ANION OF ECTA) CONVERTS IN AQ. SOLNS. (AT PH LESS THAN 2) TO PTH  
SUB4 Y(H SUB2 U) SUB2 PRIME POSITIVE2 AND PTH SUB2 Y. PT PRIME  
NEGATIVE2, HAVING TETRADENTATE Y, FORMS ON DEPROTONATION OF PTH SUB2 Y.  
I EXIST IN SOLNS. CONTG. MORE THAN 1M NaCl AND ON INCREASE OF PH OF THE  
SOLN. FROM PH 2 TO PH 8 IT DEPROTONATES TO PTYCL SUB2 PRIME NEGATIVE4  
HAVING BIDENTATE Y. IN THE PRESENCE OF NaClO SUB4, THE POLAROGRAPHIC  
CURVE OF I HAS 2 WAVES (WITH E SUB1 HALF MINUS 0.30 AND MINUS 0.54 V)  
AND IN THE PRESENCE OF NaCl, ONLY 1 WAVE. FACILITY: INST.  
OBSHCH. NEORG. KHIM. IM. KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

## Theoretical Physics

USSR

YEZHELA, V. V., LOGUNOV, A. A., and MESTVIRISHVILI, M. A., Institute of High-Energy Physics

"Unitary Condition and Decrease in Differential Cross-Section of Multiple Production Process With Energy Increase"

Moscow, Teoreticheskaya i Matematicheskaya Fizika, Vol 6, No 1, Jan 71, pp 42-54

Abstract: The article studies the differential cross section of multiple production  $d\sigma/d \cos \Theta d\varphi$ , where  $\Theta$  is the angle of escape of particle  $C$ , relative to the direction of the relative momentum  $\mathbf{p}$  of colliding particles in the center-of-mass system and  $\varphi$  is the angle between planes passing through vectors  $\mathbf{p}$ ,  $\mathbf{p}_{c1}$  and  $\mathbf{p}_{c2}$ . For this purpose use is made of the integral expression

$$F_m(s, \cos \theta, \xi_i) = \frac{1}{2\pi i} \oint_{\Gamma} \frac{dz}{\sqrt{R}} \frac{G_m(s, z, \xi_i)}{z^{|m|}} \left( \cos \frac{\theta}{2} + \sin \frac{\theta}{2} z \right)^{|m|}$$

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USSR

YEZHELA, V. V., et al., Teoreticheskaya i Matematicheskaya Fizika,  
Vol 6, No 1, Jan 71, pp 42-54

where

$$t = \frac{z - \cos \theta - \sqrt{R}}{i \sin \theta}, \quad R = z^2 - 2z \cos \theta + 1,$$

for the amplitude of the inelastic process. This expression is a generalization of the integral expression for scattering amplitude obtained by KINOSHITA-LOEFFEL-MARTIN (Phys. Rev., 135B, 1464, 1964). In the particular case in which the projection of a moment equals zero the integral expression changes to the KINOSHITA-LOEFFEL-MARTIN expression.

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YEZHELA, V. V., et al., Teoreticheskaya i Matematicheskaya Fizika, Vol 6, No 1, Jan 71, pp 42-54

On the basis of the above integral expression it is shown, by means of the condition of unitarity and analyticity, that the multiple production cross section decreases with energy increase, and the upper bound of its decrease is found: viz.

$$\frac{d\sigma_{inel}}{d\cos\theta d\varphi} \leq \frac{\text{const} \ln^2(s/s_0)}{s \cdot (\sin\theta)^4 (\sin\varphi)^4}$$

The unitarity condition is an important element for obtaining the above inequality. To obtain the upper bound it is assumed, in using the unitarity condition, that the partial waves making a contribution to the multiple production process reach saturation.

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USSR

YEZHELA, V. V., et al., Teoreticheskaya i Matematicheskaya Fizika,  
Vol 6, No 1, Jan 71, pp 42-54

The authors thank N. N. BOGOLYUBOV, G. G. VOLKOV, S. S.  
GERSHTEYN, R. M. MURADYAN, A. I. OKSAK, YU. G. STROGANOV, G. L.  
RCHEYLISHVILI, A. N. TAVKHELIDZE, and O. A. KHRUSTALEV for fruit-  
ful discussions.

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1/2 010 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--EFFECT OF CONDITIONS FOR THE PREPARATION OF A POLY VINYL ALCOHOL  
SOLUTION ON THE PROPERTIES OF POLYVINYL BUTYRAL -U-  
AUTHOR-(04)-PIASTRO, O.V., YEZHENKOVA, L.L., TYAZHLO, N.I., ROZENBERG,  
M.E.  
COUNTRY OF INFO--USSR  
SOURCE--PLAST. MASSY 1970, (2), 13-14  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POLYVINYL ALCOHOL, AQUEOUS SOLUTION, SAPONIFICATION,  
ALKYLATION, POLYMER CROSS LINKING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/1690 STEP NO--UR/0191/70/000/002/0013/0014  
CIRC ACCESSION NO--AP0112684  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0112684

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF THE DISSOLN. CONDITIONS OF POLY(VINYL ALC.) (I) IN H SUB2 O AND THE COOLING OF THE AQ. SOLN. ON THE PROPERTIES OF POLY(VINYL BUTYRAL) (II) WERE STUDIED. REPEATED SAPON. OF I SOLNS., USE OF A COOLING AGENT (TEMP. MINUS 3DEGREES) PRIOR TO ACETALATION OF I WITH PRCHG, AND PROLONGED COOLING INCREASED THE VISCOSITY AND CAUSED FORMATION OF INSOL. II PARTICLES (DUE TO CROSSLINKING). THUS, CROSSLINKING OF DISSOLVED I NEAR THE COOLED SURFACE OF THE REACTOR FACILITATED INTERMOL. ACETALATION WHICH, IN TURN, GAVE INSOL. II PARTICLES.

UNCLASSIFIED

USSR

YEZHNIK, I. I. (Khar'kov Polytechnical Institute)

"Mechanism of Shock Luminescence in X-Rayed KCl Crystals"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy: Fizika; February, 1971; pp 11-6

ABSTRACT: The author discusses the mechanism of the direct conversion of mechanical pulses into light pulses in X-rayed KCl crystals containing impurities. A zonal method for explaining the occurrence of shock luminescence is presented. The discussion is divided into two sections: (1) on crystals containing only F-centers and (2) on crystals containing F<sup>+</sup>-, R-, M-, and F-centers of coloration. The article includes two figures.

There are 7 bibliographic references.

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AT9040706

CHEMICAL ABST. 10-69 UR 0139

75398k Properties of  $TiBiX_2$  thin films, where X is sulfur, selenium, and tellurium. Tsytko, A. S.; Dembovskii, S. A.; Ezhik, I. I.; Bazakutsa, V. A. (Khar'kov, Politekh. Inst. in Lenina, Khar'kov, USSR). *Izv. Vyssh. Ucheb. Zaved., Fiz.* 1969, 12(6), 154-7 (Russ). The thin films of  $TiBiS_2$ ,  $TiBiSe_2$ , and  $TiBiTe_2$  were obtained by vacuum evapn. on glass. The thickness of films could be change in the range 0.04-0.7  $\mu$  by changing the speed and time of deposition. X-ray investigation of these films proved the amorphous state of films. The E.P.R. spectra of films were measured in 3-cm. wavelengths band. From the E.P.R. spectra it follows that the concn. of paramagnetic centers in the films  $TiBiSe_2$  and  $TiBiS_2$  is increased as compared with the original substance. This increase can be caused by the interruption of some bands or by the change of structure of condensed films (in comparison with the original substance). For the investigation of the elec. properties, the films were condensed on the glass with Al or In electrodes deposited in advance by vacuum evapn. The sp. resistance of the films was:  $TiBiS_2 = 3.9 \times 10^4$ ,  $TiBiSe_2 = 1.2$ ,  $TiBiTe_2 = 2.2 \times 10^{-1}$  ohm-cm. The temp. dependence of the sp. resistance has exponential form typical for semiconductors. To det. the width of the forbidden band and character of interband transitions

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the ir spectra in the region 0.4-2.1  $\mu$  were measured. The energy of optical activation was detd. The thermoemf. was measured with respect to Pt at 300-500°K. A linear dependence on temp. was found. In the visible band of spectrum the investigated films have low photo-sensitivity at room temp. Only the samples with macroinhomogeneous structure were photosensitive. These particularities are obviously connected with the existence of p-n transitions or heterotransitions in the inhomogeneous regions. All investigated films are typical semiconductors and can be used as thermolec. materials.

V. Vetterl *al*

*Bh*

*2/2*

*1943 1240*

USSR

UDC 621.371.029.55

BENEDIKTOV, Ye. A., GETMANTSEV, G. G., YEZHOV, A. I., KOROBKOV, Yu. S., MALYSHEV, S. K., MATYUGIN, S. N., MIZYAKOV, N. A., SAZONOV, Yu. A., CHERNOV, V. A., BEN'KOVA, N. P., BEREZIN, Yu. M., BUKIN, G. V., KOLOKOLOV, L. Ye., and PEREKHVATOV, Yu. K.

"Results of an Experiment in Shortwave Radio Propagation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3--collection of works) "Nauka," 1972 pp 73-76 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A367)

Translation: Results of experiments on investigating the characteristics of wave propagation in the decameter range (5.7-15.0 MHz) are analyzed; the communications took place between the following magnetically adjacent points: an ionospheric station in Gor'kiy and two science research ships in the Indian Ocean. In particular, the possibility of communication over the Peterson beam was estimated. Two illustrations, bibliography of one. N. S.

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1/2 034 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--COMPLEXES OF SCANDIUM OXALATE WITH O PHENANTHROLINE -U-  
AUTHOR--(05)-IVANOVEMIN, B.N., GRIDASOVA, R.K., ZAYTSEV, B.YE., VALKARSEL,  
G., VEZHOV, A.I.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 674-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--METAL COMPLEX COMPOUND, CRYSTAL STRUCTURE, ORGANOMETALLIC  
COMPOUND, ORGANIC COMPLEX COMPOUND, IR SPECTRUM, BENZENE DERIVATIVE,  
OXALATE, SCANDIUM COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1993/0678 STEP NO--UR/0078/70/015/003/0674/0677  
CIRC ACCESSION NO--AP0113549  
UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0113549

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

ABSTRACT. A MIXT. OF 1:1 MOLE RATIO OF  
NASC(C SUB2 O SUB4) SUB2.2-H SUB2 O WITH PHEN (O PHENANTHROLINE) IN AQ.  
SOLN. GAVE CRYST. SC SUB2 (C SUB2 O SUB4) SUB3 2PHEN (I) AS PPT., WITH  
ALPHA 1.514 AND GAMMA 1.616. THE IR SPECTRUM OF I REVEALS THAT C SUB2 O  
SUB4 PRIME2 NEGATIVE AS WELL AS PHEN ARE COORDINATED TO SC. A STRUCTURE  
IS PROPOSED FOR I.

UNCLASSIFIED

USSR

YEZHOV, G. A.

UDC 8.74

"Logical Recognition of Objects"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Technology -- Collection of Works), No. 10, Moscow, "Mashinostroyeniye", 1972, pp 241-256 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V658)

Translation: Certain theoretical assumptions concerning the logical (linguistic) method of pattern recognition are discussed. It is proposed, on the basis of experimental studies, that the sample be described by using a numbering of the primary symbols and that they be selected on the basis of an analysis of the informative quality of words of a proposition describing this standard, with subsequent formalization of the natural Russian language. The functions connecting the primary symbols (words) i.e., the grammar are based on the logic of the connections of the words in the proposition and analysis of the logical possibilities of the problem. A technique for raising the informative capacity of generalized symbols by logical joining of less informative words is presented. An example of a description of a

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USSR

YEZHOV, G. A., Avtomat. upr. i vychisl. tekhn., No. 10, Moscow, "Mashinostroyeniye", 1972, pp 241-256

standard and recognition algorithm with self-teaching elements in the use of the "frequency" and "essence" of the symbols in the standard is presented. Authors abstract.

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USSR

UDC 8.74

YEZHOV, G. A.

"Logical Pattern Recognition"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Engineering -- collection of works), Vyp. 10, Moscow, Mashinostroyeniye Press, 1972, pp 241-256 (from RZh-Kibernetika, No 9, Sep 72; Abstract No 9V658)

Translation: A study was made of some of the theoretical principles of the logical (linguistic) method of pattern recognition.

On the basis of an experimental investigation, a description of a standard using a list of primary attributes, the procedure for selecting them on the basis of analysis of the informativeness of the words of a sentence describing this standard with subsequent formalization of the natural Russian language are presented.

The functions of the relation between the primary attributes (words), that is, the grammar, are based on the logic of the relations of the words in the sentence and the analysis of the logical possibilities of the problem. A procedure for increasing the informativeness of the generalized attributes by logical combination of the less informative ones is discussed.

An example of description of the standard and the recognition algorithm with adaptation elements using the "frequency" and "essence" of the attributes in the standard are proposed. The bibliography has 16 entries.

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USSR

UDC: 519.2

YEZHOV, I. I., ZAKHARIN, A. M.

"Concerning a Class of Controllable Random Walks With a Boundary"

Kiev, Upravlyayemyye sluchayn. protsessy i sistemy--sbornik (Controllable Random Processes and Systems--collection of works), 1973, pp 205-221 (from RZh-Kibernetika, No 5, May 73, abstract No 5V100 by the authors)

Translation: Various schemes for control of whole-number Markov processes are considered. The problem is solved for a linear and a nonlinear object by using the stochastic principle of the maximum. The resultant solution corresponds to a local criterion -- maximizing the derivative of a functional at the elapsed time. A comparison is made with a terminal equation for the same conditions. Examples are given.

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USSR

UDC: 519.217

YEZHOV, I. I., KUKOLEVSKAYA, L. I.

"On Distribution of the Maximum Length of a Queue in a Single-Channel Queuing System"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, vyp. 4, pp 86-94 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V140)

Translation: An explicit expression is derived for distribution of the maximum length of a queue in an M/M/1 queuing system in the case of a non-ordinary flow of demands. V. Prelov.

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USSR

UDC 519.21

YEZHOV, I. I.

"The Distribution of Time of the First Passage Through a Fixed Level for One Class of Random Sequences. II."

Teoriya Veroyatnostey i Mat. Statist. Mezhd. Nauch. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], No 2, 1970, pp 76-97 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V53 by the author).

Translation: For Part I, see Abstract 3 V52. The second part studies the same problems as in the first part, but for sequences of sums of random quantities controlled by a homogeneous Markov Chain with a finite number of states.

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USSR

UDC 519.217

YEZHOV, I. I.

"The Distribution of Time of the First Passage Through a Fixed Level for One Class of Random Sequences. I."

Teoriya Veroyatnostey i Mat. Statist. Mezhd. Nauch. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], No 2, 1970, pp 55-75 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V52 by the author).

Translation: The distribution is studied of the time of the first transition through a fixed level by a sequence of sums of independent, identically distributed random quantities with a geometric component (we will state that the random quantity has a geometric component if it can be represented as the sum of two independent random quantities, at least one of which has a geometric distribution). It is proven that: a) the degree by which the fixed level is exceeded does not depend on the time of passage through the level and has a geometric distribution; b) the generating function of the number of the first positive sum satisfies a certain functional equation, the solution of which exists and is unique; c) the generating function of the time of first passage through a fixed level can be very simply expressed through the generating function of the number of the first positive sum.

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USSR

YEZHOV, I. I., YUDYTS'KYY, Ya. A.

UDC: 519.2

"Concerning the Constructive Synthesis of a Markov Trajectory"

Visnyk Kiyiv. un-tu. Ser. mat. ta mekh. (Kiev University Herald. Mathematics and Mechanics Series), 1972, No 14, pp 15-18 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V75 [authors' abstract])

Translation: The two-dimensional Markov sequence  $\{\xi_n \tau_n\}$  is considered in which the first component assumes no more than a denumerable set of values, while the second increases. A random process is constructed whose values are equal to  $\xi_n$  between the times  $\tau_n$  and  $\tau_{n+1}$ . Conditions are indicated which it is necessary and sufficient to impose on the transitional probabilities of a two-dimensional Markov sequence in order that the process synthesized in accordance with this sequence be a stochastically continuous Markov chain.

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UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--DIRECT PROCESSES IN THE (N,2N) REACTION ON HEAVY NUCLEI --U-

AUTHOR--(04)--YEZHOV, S.N., OLKHOVSKIY, V.S., PROKOPETS, G.A., STRIZHAK, V.I.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(1), 122-30

DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEUTRON SCATTERING, HEAVY NUCLEUS, DIFFERENTIAL CROSS SECTION, BISMUTH, LEAD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1976/0429

STEP NO--UR/0367/70/011/001/0122/0130

CIRC ACCESSION NO--AP0042465

UNCLASSIFIED

CIRC ACCESSION NO--AP0042465  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT. THE REACTION  $(N,2N)$ , AT E SUBN  
EQUALS 14 MEV, ON HEAVY NUCLEI IS REGARDED AS A DIRECT SCATTERING  
PROCESS, WITH KNOCK OUT, BY USING THE DISTORTED WAVE METHOD, IN THE BORN  
APPROXN., AND BY TAKING INTO ACCOUNT THE IDENTITY OF THE N. GENERAL  
FORMULAS ARE DERIVED, THEREFROM, FOR THE REACTION AMPLITUDE T SUBFI.  
THE FORMULA IS PHYS. IN ACCORDANCE WITH THE DIRECT KNOCK OUT OF THE N  
FROM THE NUCLEUS TARGET BY THE IMPINGING N, IN THE DISTORTED EFFECTIVE  
FIELD OF ALL THE OTHER N, BY TAKING INTO ACCOUNT PAULI'S PRINCIPLE. THE  
DOUBLE DIFFERENTIAL CROSS SECTION FPR TJE MIC;EO RD,E209 BI AND  
PRIME208 PB IS CALCD. AND COMPARED TO EXPTL. VALUES. THERE IS A GOOD  
CORRELATION BETWEEN THEORETICAL AND EXPTL. RESULTS. FACILITY:  
KIEV. GOS. UNIVL, KIEV, USSR.

UNCLASSIFIED

USSR

PRUSAKOV, V. N., and YEZHOV, V. K.

UDC: 541.123

"The Physico-Chemical Properties of Heavy Metal Fluoride Mixtures"  
Moscow, Atomnaya energiya, Vol 28, No 6, June 1970, p 496

Abstract: This is the third article on the subject with emphasis on the state diagram of the uranium hexafluoride-niobium pentafluoride system. The authors studied the liquid-vapor and liquid-solid states of equilibrium of the uranium hexafluoride-niobium pentafluoride system. Experimental data showed that a region of limited mixing exists at 0.23-0.74 mol. fraction concentration of  $UF_6$ . The upper critical temperature of stratification is  $122 \pm 2^\circ C$ . The presence of an area of stratification was checked visually. The composition and eutectic point determined by extrapolation of the experimental data are 0.75 mol. fractions of  $UF_6$  and  $51.0 \pm 0.5^\circ C$ . The uranium hexafluoride-niobium pentafluoride system complies with the Pauli rule in the region of low niobium pentafluoride concentrations. Elsewhere the system shows a positive deviation from ideal behavior. The experimental results are in agreement with the theory of isometric solutions. Third-order Van Laar equations can be used for describing the  $UF_6 - NbF_5$  system.

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USSR

UDC: 541:123

YEZHOV, V. K., PRUSAKOV, V. N., and CHAYVANOV, B.B.

"The Physico-Chemical Properties of Heavy Metal Fluoride Mixtures"  
Moscow, Atomnaya energiya, Vol 28, No 6, Jun 70, p 497

Abstract: This is the fourth article on the fusibility curve of the xenon difluoride-uranium hexafluoride system. The authors used the differential thermography method for studying the fusibility curve of the  $\text{XeF}_2\text{-UF}_6$  system. The obtained diagram shows a mixture with unlimited mutual solubility of the components in the liquid state and crystallization of chemical compounds without solid solution formation. The diagram shows one dystetic point corresponding to the formation of the congruently fusible  $\text{XeF}_2\cdot\text{UF}_6$  compound of stoichiometric composition. The melting point of this compound is  $120 \pm 5^\circ\text{C}$ . An evaluation of the stability of  $\text{XeF}_6\cdot\text{UF}_6$  showed that the degree of dissociation of the  $\text{XeF}_2\cdot\text{UF}_6$  does not exceed 20 percent within its melting temperature range. A schematic representation of the structure of  $\text{XeF}_2\cdot\text{UF}_6$  is given.

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YEZHOV, YU. A.

SPRS 59268

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IX-8a. THE MECHANISM AND KINETICS OF THE GAS-PHASE DEPOSITION OF Si-SiC FROM  $Cl_3SiCl_2$  +  $H_2$  WITH RADIATION HEATING

SESSION IX

Article by Yu. A. Yezhov, B. G. Pevnev, O. G. Pashov, A. N. Ryzenkov, Lenina Street, Khabarovsk, U.S.S.R. Journal of Polymer Science: Polymer Chemistry Edition, 12:17 June 1974, p 1231

The growth of monocrystalline layers of Si-SiC on SiC substrates from a gas mixture of  $Cl_3SiCl_2$  +  $H_2$  in the presence of radiation heating is distinguished by a number of characteristic features weakly exhibited for other methods of heating the substrate. However, there are grounds for assuming that the mechanism of chemical reactions and the mechanism of crystallization layers in several features do not depend on the method of heating the substrate.

Direct experimental observations indicate the course of crystallization played by the silicon. The surface nature of the radiation heating and the dependence of the heating on the optical properties of the substance deposited on the side of the substrate turned toward the radiator cause proven anomalies of the Si-SiC layers.

The composition of the products of the deposition process of Si-SiC is well-described by the schematic of the chemical reactions constructed on the basis of a thermodynamic analysis. After the initial decay of the methyl trichlorosilane, the parallel branches of the chemical reactions take place — silicon and carbon. These branches are characterized by various kinetic dependences on the temperature, the flow rate of the gas mixture and other process parameters. The proposed schematic for the process explains the interdependence of the dependence of the layer growth rate on the deposition parameters from the investigation of the process mechanism and kinetics, the paths of optimizing the set of process conditions follow.

YEZHOV, YU A.

SPES 59208  
6-73

5

IX-86. EPITAXIAL DEPOSITION OF  $\beta$ -SiC LAYERS FROM THE GAS PHASE WITH RADIATION HEATING

Article by N. A. Brilliantov, Yu A. Yezhov, B. G. Penkov, O. G. Penkov, A. N. Boyenov, Leningrad; Novosibirsk; III. Sibirskom Po Prirochnom, Rossiya SSSR; Poluprovodnikov Khimicheskoye Prilozheniya, Moscow, 12-17 June 1972, p 1221

$\beta$ -SiC layers were deposited on the (100) faces of the planar  $\alpha$ -SiC crystals in a horizontal type reactor; the initial substances were  $CH_4$  and  $H_2$ . Radiation heating of the substrate was used which permitted them to be heated to the required temperatures without auxiliary elements. In order to realize the deposition process and its investigation, a special device was built which provides for broad variation of the deposition conditions (the mixture component concentrations, substrate temperature, gas flow rate, pressure in the reactor), automatic regulation of the basic parameters and analysis of the gas mixture in the course of the process. Special attention has been given to ensuring high purity of the initial substances and clean deposition conditions.

The growth of the monocrystalline layers of  $\beta$ -SiC was observed only in a narrow range of values of the basic process parameters. The formation of the liquid layer and silicon drops on a substrate disappearing during the course of the process and also on reduction of the flow rate through the reactor was observed. With constancy of the basic process parameters, the growth rate of the layer was not constant usually. It decreased with time, and in a number of cases the transition was noted from growth of the layer to etching of it. The greatest thickness of the epitaxial film was 70 microns. A study was made of the structure, the surface morphology and the uniformity of the layers.



YEZHOV, Yu. S.

SOJARS 54153  
29 SEP 71

UDC: 616.1-089.5:615.216.5]-  
059:16.15.216.5.015.25

COMPARATIVE EVALUATION OF ANTIDOTES FOR NONDEPOLARIZING MUSCLE RELAXANTS IN PATIENTS WITH CARDIOVASCULAR PATHOLOGY

(Article by Yu. S. Yezhov (deceased), V. S. Gmitin, Institute of Cardiovascular Surgery, USSR Academy of Medical Sciences, Tsvetl A.N. Bekulev, Moscow; Yoscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 7, 1971, pp 59-63)

Investigation of the distribution of tubocurarine in the human organism revealed that by the time adequate breathing is restored 75 percent of the dose administered is still present in the blood (Chern et al.); and this agent is still excreted in urine for ten hours (Ealov). Churchill-Davidson, V.A. Kovalev and Yu. S. Khmelevskiy, on the basis of electromyographic investigation of antidepolarizing neuromuscular blocks, established that neuromuscular conduction does not revert to normal for 1-2 hours after restoration of spontaneous breathing. For this reason, many anesthetologists believe it is necessary to accelerate removal of the residual neuromuscular block by using various curare antidotes (Charentil-Davidson and Wiesse; V.A. Kovalev and Yu. S. Khmelevskiy). Although Faldes (1957), Rizzi (1958), and Yu. S. Sumnin (1960) prefer to administer prolonged artificial ventilation.

A number of agencies have been proposed for the purpose of decararization which have an anticholinesterase action (procaine, kalamiflumar, meathion), as well as a group of agents which improve neuromuscular conduction by intensifying blood supply and metabolic processes (halimenes and vitamins).

In spite of the extensive literature dealing with the mechanism of action of various antidotes and means of administration following anesthesia, the problem of safe removal of an antidepolarizing neuromuscular block has not yet been solved. In view of its importance and timeliness as well as of the lack of agreement on this score, we deem it necessary to voice our views. We had 169 patients under observation with various cardiovascular pathology; they had undergone surgery under anesthesia with total curarization (tubocurarine in doses of 15-90 mg). Most of the patients had suffered protracted heart and aortic disease so that, in spite of their relatively young age, their condition was rather serious. A rather large group consisted of elderly patients with atherosclerotic lesions to the major vessels and concomitant age-related changes in the internal organs. The patients with lesions to the vessels of the lower extremities were in relatively satisfactory condition.

MEDICINE

UDC 681.3.06:51  
BOTOVA, R. F., YEZHOVA, E. A., ZALIZNYAK, M. A., RODINOVA, L. A., CHERKASHNEVA,  
K.

"Translator for the "ARAGATs" Computer"

Uch. Zap. Perm. Un-t, [Scientific Writings of Perm' University], 1970, No 220,  
pp 149-160, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971,  
Abstract No. 5V642, unsigned).

Translation: The translator for the "ARAGATs" computer is based on the TA-1  
translator for the M-20 computer. The input language is ALGOL-60 with some  
limitations.

1/2 021

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--BACTERIOPHAGE CONVERSION OF C. DIPHTHERIAE IN VIVO. REPORT 1.  
REPRODUCTION OF BACTERIOPHAGE CONVERSION OF DIPHTHERIA BACILLI ON CHICK

AUTHOR--YEZHOVA, G.G.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 4,  
PP 65-68  
DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BACTERIOPHAGE, DIPHTHERIA, TISSUE CULTURE, ANTITOXIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1990/1537

STEP NO--UR/0016/70/000/004/0065/0068

CIRC ACCESSION NO--AP0109597

UNCLASSIFIED

2/2 021

CIRC ACCESSION NO--AP0109597

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR REPRODUCED THE PHENOMENON OF BACTERIOPHAGE CONVERSION OF C. DIPHTHERIAE ON CHICK EMBRYOS. IT WAS SHOWN BY SUBSEQUENT INFECTIONS FROM EMBRYO TO EMBRYO THE BACTERIOPHAGE CONVERSION OF C. DIPHTHERIAE OCCURRED IN THE EMBRYOS IN VIVO. THE METHOD USED WAS AS FOLLOWS: 14 DAY EMBRYOS WERE INFECTED WITH NONTOXIGENIC C. DIPHTHERIAE AND DIPHTHERITIC PHAGOLYSATE PC 29; ON THE 4TH DAY THEIR EMBRYONIC FLUID WAS INJECTED TO 9 DAY EMBRYOS. A TOXIC EFFECT OF PHAGOLYSATE PC 29 ON CHICK EMBRYOS WAS PREVENTED BY ADMINISTRATION OF SPECIFIC ANTITOXIC SERUM.

UNCLASSIFIED

USSR

UDC 536.46:533.6

YEZHOVSKIY, G. K., MOCHALOVA, A. S., OZEROV, Ye. S., YURINOV, A. A.

"Ignition and Combustion of Magnesium Particles"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works),  
Moscow, "Nauka", 1972, pp 234-240 (from RZh-Mekhanika, No 3, Mar 73, Abstract  
No 3B939)

Translation: The results and methods of an experimental study of the characteristics of ignition and combustion of single suspended and flying particles of magnesium are presented. The kinetic constants of the heterogeneous oxidation reaction of magnesium in an aqueous vapor and in oxygen are calculated on the basis of the experimental data. The limiting combustion temperature and the induction time of a magnesium particle is calculated as a function of the various parameters of the medium with the aid of the constants obtained. A semiempirical formula is given for the constant of the rate of combustion of the magnesium particle as a function of the concentration of oxidizer in the medium and the pressure of the medium. 5 ref. Authors' abstract.

1/1

YEZHOUVSKIY, Yu. K.

JPRS 59208

G-73

V-12. EPITAXY OF FILMS OF CHALCOGENIDE COMPOUNDS OF CADMIUM IN A QUASI-CLOSED SPACE

(Article by Yu. K. Yezhovskiy, I. P. Kalinkin, K. K. Kurav'yeva, V. B. Alshvernskiy, Leningrad; Novosibirsk. III Sbornik na Prolegsskaya tema, S. 107-117 Poluprovodnikovaya Elektronika I Fiziol. Kustan, 12-17 June, 1972, p 63)

A study was made of the epitaxial growth of sulfide, selenide and telluride compounds of cadmium on mica muscovite by condensation from the gas phase in a quasi-closed space in the temperature range of T = 50-700°C, P<sub>total</sub> = 400-350°C.

1. The film morphology and structure, the phase composition of the films as a function of T and P<sub>total</sub> were investigated. The growth regions of the cubic, hexagonal and mixed (cubic plus hexagonal) monocrytalline films were investigated. It was demonstrated that in the quasi-closed volume it is possible to synthesize epitaxial films at low substrate temperatures. Under conditions close to thermodynamic equilibrium, films grow the electrophysical properties of which are close to the properties of single crystals.

2. The dependence of the growth rate (G) of the epitaxial films on T; G w = f(T) for P<sub>total</sub> = const is of a complex nature and is satisfactorily explained beginning with the theory of the growth kinetics of semiconductor films developed by L. N. Aleksandrov.

3. The proposed method of synthesizing the films permitted quantitative tracing of the effect of the excess pressure of each of the gas phase components (cadmium, sulfur, selenium, tellurium) on the epitaxy of the cadmium chalcogenide films. A study was made of the interrelation between a) G w = f(T, G) (for T = const, P<sub>total</sub> = const) and the gas phase composition; b) the gas phase composition and the film morphology.

USSR

UDC 519.1

ALFEROVA, Z. V. and YEZZHEVA, V. P.

"Use of the Theory of Graphs in Economic Calculations"

Moscow, *Primeneniye teorii grafov v ekonomicheskikh raschetakh* (cf English title above), "Statistika", 1971, 150 pp, il., 45 kopecks (from *Referativnyy Zhurnal -- Matematika*, No 6, June 71, Abstract No 6V398 K, by V. Kozyrev)

Translation: The use of graphs in examining control applications, analyzing survey materials, analyzing algorithms of problems and determination of the number of operations, and examining information and calculating object flow is described.

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27

USSR

UDC 678.5.06:539.3+539.4

GUNYAYEV, G. M., ZHIGUNM I. G., SORINA, T. G., and YKAUSHIN, V. A., All-Union Scientific Research Institute of Aviation Materials, Moscow; Institute of Mechanics of Polymers of the Academy of Sciences Latvian Soviet Socialist Republic, Riga

"Shearing Strength of Composites Based on Whiskered Fibers"

Riga, Mekhanika Polimerov, No 3, May-Jun 73, pp 492-501

Abstract: A study was made of the elastic and strength characteristics of unidirectional carbon plastics based on carbon fibers whiskered by silicon nitride filament crystals from the gaseous phase and titanium dioxide from aerosol. The advantages in bending properties of these composites are shown. For an approximate evaluation of the elastic properties of unidirectional composites based on whiskered fibers, summation formulas can be used which take into account the characteristics of the ruggedization of the filamentary crystals of the anisotropic matrix. Eight figures, five tables, thirteen bibliographic references.

1/1



USSR

UDC 595.771-167:576.893.161.13

YLISEYEV, I. N., and STRELKOVA, M. V., Department of Medical Protozoology and Karsh Anti-Leishmaniasis Expedition, Institute Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

"Evaluation of the Capacity of Sandflies (Phlebotomidae) to Transfer Leishmania Tropica Major Among Greater Gerbils (Rhombomys opimus)"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 3, May/Jun 70, pp 284-293

Abstract: A series of experiments on the feeding of sandflies on greater gerbils, to determine their capacity for transfer of Leishmania was conducted in Kashkadar'ya oblast Uzbek SSR, under natural conditions during 1968 and 1969. The rate of transfer of Leishmania from diseased animals to healthy animals was: Phlebotomus caucasicus, 59-75%; Ph. papatasi, 53%; Sergentomyia arpaklensis, 7-21%; and S. grekovi, 24%. The more serious the leishmani lesion on ear skin of the gerbil donors on which sandflies had their first bite, the greater was the percentage of infection transmitted to healthy animals. The clinical incubation period in great gerbils after infective blood-sucking was 13-15 days. The sandflies picked up the Leishmania parasite immediately after the termination of the incubation period.

1/1

1/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--PURIFICATION OF WASTE IN BIOFILTERS -U-  
AUTHOR--(03)-SAYFUTDINOV, K.Z., YOKIMIS, E.G., DUDNIKOVA, R.V.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1) 14-16  
DATE PUBLISHED-----70  
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--WASTE WATER CONVERSION, WATER PURIFICATION, FILTRATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1990/1753 STEP NO--UR/0064/70/046/001/0014/0015  
CIRC ACCESSION NO--AP0109714  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109714

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NEUTRALIZED AND FILTERED WASTE WATERS FROM VARIOUS PETROCHEM. PROCESSES (WITH A TOTAL BOD OF UP TO 500 MG-L.) WERE PURIFIED BY PASSING THROUGH A BIOCHEM. FILTER 2 M HIGH IN WHICH THE TOTAL BOD WAS REDUCED TO 16-80 MG O-L. AFTER 5 DAYS. THE BIOFILM IN THE UPPER LAYER OF THE FILTER CONSISTED OF ZOOGLUEA AND A DENSE NETWORK OF FUNGIN HYPHA; THE UPPER FILM CONTAINED DIFFUGIA AND CALLIDINE, WHILE FLAKES OF OOZE AS WELL AS NEMATODES AND PINNULARIA WERE FOUND AT A DEPTH OF 0.75 M AND EUGLYPHA WERE FOUND AT A DEPTH OF 1.45 M. THE MAX. OXIDN. CAPACITY OF A FILTER WITH A CROSS SECTION OF 25 TIMES 25 CM WAS 156 G O-(M PRIME3 DAY).

UNCLASSIFIED

## Organophosphorous Compounds

②

USSR

UDC 632.95

BLIZNYUK, N. K., KVASHA, Z. M., SPLINTSEVA, L. M., FADEYEV, YU. N., UNTERBERGER, V. K., and YOLOVA, M. N., All-Union Scientific Studies Institute of Phytopathology

"Process for Preparing Mixed Dialkyl Esters of the Higher Alkylphosphorous Acids"

Author's Certificate No 340665, filed 22 Jun 70, published 29 Jun 72, (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8N470P by T. G. Chekareva)

Translation: Compounds having the general formula  $RP(O)(OR')OR''$  (I) ( $R = \text{alkyl}$ ,  $R'$  and  $R'' = C_1 \text{ to } C_6$ ) have acaricidal activity to the stable and sensitive form of vegetation mites. They are prepared by the reaction of  $RP(O)(OR')OH$  (II), with a 5-10-fold excess of  $R''OH$ . For example,  $Cl_2$  is passed through a solution of 0.03 moles of II ( $R = C_9H_{19}$ ,  $R' = C_6H_{13}$ ) and 0.15 moles of absolute BuOH in 20 ml of  $CH_2Cl_2$  until the appearance of a yellow-green color. It is then concentrated and product I ( $R = C_9H_{19}$ ,  $R' = C_6H_{13}$ ,  $R'' = Bu$ ) is obtained, having  $n_D^{20} = 1.4435$ ,  $d_4^{20} = 0.9211$ , a boiling temperature of  $176 \text{ to } 178^\circ$  at 1 (?) mm, a yield of about 100%. Other analogous compounds were prepared.  $R, R'$  and  $R''$

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USSR

BLIZNYUK, N. K., et al., Author's Certificate No 340665, filed 22 Jun 70,  
published 29 Jun 72

are given together with the boiling temperature in  $^{\circ}\text{C}/\text{mm}$ ,  $n_D^{20}$ ,  $n_4^{20}$  :

$\text{C}_9\text{H}_{19}$ ,  $\text{C}_6\text{H}_{13}$ , Et, 166-8/1, 1.4418, 0.9277;

$\text{C}_9\text{H}_{19}$ ,  $\text{C}_6\text{H}_{13}$ , Me, 160-2/1, 1.4430, 0.9425;

$\text{C}_9\text{H}_{19}$ ,  $\text{C}_6\text{H}_{13}$ , Pr, 172-4/1, 1.4430, 0.9270;

$\text{C}_6\text{H}_{13}$ , Bu, Et, 124-6/1, 1.4320, 0.9512;

$\text{C}_6\text{H}_{13}$ : Bu, 118-20/1, 1.4350, 0.9443;

$\text{C}_9\text{H}_{19}$ ,  $\text{C}_5\text{H}_{11}$ , Et, 158-60/1, 1.4400, 0.9446.

2/2

1/2 027

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--DIFFERENCES IN THE THICKNESS OF THIN CLADDING DURING THE PRODUCTION OF A CLAD WIRE -U-

AUTHOR--(05)-MASTEROV, V.A., ANDRYUSHCHENKO, T.A., SUVOROV, I.K., YORGAYEV, YU.A., YEFREMOVA, P.M.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(2), 52-4

Y

DATE PUBLISHED-----70

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

TOPIC TAGS--METAL DRAWING, CLAD METAL, COPPER WIRE, SILVER, DEFORMATION RESISTANCE, THICKNESS GAGE, METAL CLADDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1922

STEP NO--UR/0136/70/043/002/0052/0054

CIRC ACCESSION NO--APO108251

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0108251

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS AND THE POSSIBILITY OF DECREASING THE THICKNESS DIFFERENCES OF THIN CLADDINGS WERE INVESTIGATED FOR THE CU PLUS AG PAIR DURING THE PRESSING OF RODS AND DURING THE DRAWING FROM THEM OF WIRES SMALLER THAN OR EQUAL TO 150 MU IN DIAM. AND HAVING A COATING THICKNESS OF SIMILAR TO 7 MU. DURING THE PRESSING ON A VERTICAL 600 TON PRESS, THE ROLE OF PRIOR WELDING OF THE BAR, THE TOGL LUBRICANT, THE SHAPE OF THE DIE, AND THE HEATING AND DRAWING TEMPS., WAS INVESTIGATED. FOR THE SELECTION OF THE PROPER TEMP., THE RESISTANCE TO DEFORMATION OF CU AND OF AG WAS STUDIED. IN ORDER TO DET. THE MIN. THICKNESS OF THE COATING, STATISTICAL METHODS MUST BE USED WHICH MEANS THAT A LARGE NO. OF MEASUREMENTS MUST BE TAKEN, WHICH IS OF SOME DIFFICULTY BECAUSE OF THE THINNESS OF THE COATINGS.

UNCLASSIFIED

172 043

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--DEVELOPMENT OF A SEMIEMPIRICAL TUBULENCE THEORY FOR DILUTE POLYMER SOLUTIONS -U-

AUTHOR--YOSELEVICH, V.A.



COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDKOSTI I GAZA, MAR.-APR. 1970, P. 136-146

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--TURBULENT FLOW, LINEAR POLYMER, SOLUTION PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1335

STEP NO--UR/0421/70/000/000/0136/0146

CIRC ACCESSION NO--AP0124985

UNCLASSIFIED



2/2 043

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0124985

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF A SEMIEMPIRICAL THEORY OF TURBULENT FLOW OF DILUTE LINEAR POLYMER SOLUTIONS IN SMOOTH AND ROUGH TUBES. THE APPROACH EMPLOYED IS BASED ESSENTIALLY ON THE USE OF THE REYNOLDS EQUATIONS (WHICH CONTAIN THE AVERAGED VELOCITIES AND PRESSURES AS WELL AS AN ADDITIONAL STRESS TENSOR), AND ON CLOSING THIS SYSTEM OF EQUATIONS WITH THE AID OF EXPERIMENTALLY VERIFIED ASSUMPTIONS CONCERNING THE RELATIONSHIP BETWEEN THE ADDITIONAL STRESS TENSOR AND THE CHARACTERISTICS OF AVERAGED MOTION. BY MAKING EXTENSIVE USE OF EXPERIMENTAL DATA, THIS APPROACH MAKES IT POSSIBLE TO UTILIZE THE CONCEPTS ASSOCIATED WITH MECHANISM OF TURBULENT MIXING WHICH FORMS THE BASIS OF MANY SEMIEMPIRICAL THEORIES. A COMPARISON WITH EXPERIMENTAL DATA SHOWS THAT THE THEORY PROPOSED GENERALIZES THE CONCEPTS OF THE MOTION OF HOMOGENEOUS FLUIDS AND THAT IT IS SUITABLE FOR PREDICTING QUANTITATIVELY THE INFLUENCE OF POLYMER ADDITIONS ON FLOW RESISTANCE IN TUBES.

UNCLASSIFIED

UDC: 621.378.9:533.9.02 4

USSR

YAMANAKA, S., YAMANAKA, T., KANG, H., SASAKI, T., YOSHIDA, K.,  
UEDA, K., HONGYO, M., WAKI, M., Electrical Engineering Depart-  
ment, Osaka University, Institute of Plasma Physics, Nagoya Uni-  
versity, Japan

"Plasma Generation and Heating by Lasers"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972,  
pp 45-52

Abstract: The paper gives the results of research on destruction of laser glasses by powerful radiative emission, on using liquid lasers as light amplifiers, and also on using powerful lasers for heating a plasma. A method is proposed for high-speed measurements of plasma temperature and density based on the Thomson scattering of light. A complex structure is detected in the central ion peak in the scattered radiation spectrum. The recording equipment shows twenty neutrons occurring in a burst. [The paper is an abbreviated version of an article presented to the editors by the organizational committee of the International

1/2

USSR

YAMANAKA, S. et al., Kvantovaya Elektronika, Sbornik Statey,  
No 2(8), 1972, pp 45-52

Conference on Laser-Produced Plasma held in Moscow in 1970.  
Translation by V. A. Gribkov]. Six illustrations, bibliography  
of ten titles.

2/2

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USSR

UDC 612.014.2+616.-92.3

PRAKAPCHUK, A. Ya (Deceased), GRYNGAUZ, M. Ya., YBOMENKA, S. A.,  
and KORSUN, U. F.

"The State of Histochematic Barriers in Guinea Pigs After the  
Action of Ionizing Radiation on the Organism"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh  
Nauk, No 1, 1971, pp 79-81

Abstract: Cutaneous permeability with respect to radioactive isotopes of phosphorus, sulfur, and arsenic was studied under certain physiological and pathological conditions of the organism. Sixty-eight guinea pigs were used. Prior to the beginning of the experiments the animals were subjected to x-ray irradiation with total doses of 500 and 900 rad. Twenty-four to 48 hours later, the isotopes (in doses of 1.8 millicurie in ointment bases) were applied to shaved skin. It was established that the skin is permeable to these isotopes, the degree of permeability depending on the activity of the isotope, the duration of skin exposure to the action of the isotope, and the type of the ointment base  
1/2

USSR

PRAKAPCHUK, A. Ya (Deceased), GRYNGAUZ, M. Ya., YROMENKA, S. A.  
and KORSUN, U. F., Izvestiya Akademii Nauk BSSR, Sviyatskaya  
Biologicheskikh Nauk, No 1, 1971, pp 79-81

used. The largest accumulation of isotopes in the brain, in  
diminishing order of radioactivity, were found in the hypophysis,  
gray matter, cerebellum, medulla oblongata, spinal cord, and  
white matter.

2/2

USSR

UDC 576.358.098.396.332.083.1

GAYTSKHORI, V. S., YERSHOV, F. I., KISELEV, O. I., KEN'SHIKH, L. K., ZAYTSEVA O. V., YRYVAYEV, L. V., ZHDANOV, V. M., and MEYFAKH, S. A., Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad, Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

"Replication of Infectious Viral RNA in Isolated Mitochondria. Report I: Penetration of Viral RNA Into Mitochondria and Its Effect on Mitochondrial Synthesis"

Moscow, Voprosy Virusologii, No 3, May/Jun 71, pp 269-273

Abstract: Isolated rat liver mitochondria were incubated in a medium promoting oxidative phosphorylation and protein and RNA biosynthesis.  $H^3$ -RNA of Venezuelan equine encephalitis virus was added. It was found that after incubation, approximately 72% of the introduced radio-activity was in the mitochondria. It was concluded that the emergence of  $H^3$ -RNA of the virus in the mitochondria is not due to adsorption of RNA on the surface of these structures; instead, the cell fluid and actinomycin D stimulated RNA penetration. The distribution of viral RNA in mitochondrial subfractions was studied. Approximately 64% of the labeled RNA was found in the internal membrane and matrix fraction. Inhibition of RNA synthesis of mitochondrial protein was observed. The fraction of actinomycin-resistant protein synthesis 1/2

USSR

GAYTSKHOKI, V. S., et al., Voprosy Virusologii, No 3, May/June 71, pp 269-273

increases sharply. It was concluded that there maybe a link between the restructuring of mitochondrial ribosomes and the synthesis of mitochondrial proteins and virus-specific syntheses.

2/2

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UDC 911.3.616.988.43(571.13)

USSR

YPIFANOV, G. F., and KVASHNIN, N. P.

"The Epizootic Distribution of Foot-and-Mouth Disease in Omskaya Oblast"

Nauch. tr. Omsk. vet. in-t. (Scientific Works of the Omsk Veterinary Institute)  
1970, 27, No 2, pp 41-42 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71.  
Abstract 1.36.103)

Translation: Foot-and-mouth disease in Omskaya Oblast is distributed through the south and east where cattle-raising is more intensive. It occurs only rarely in the north; the Ust'-Ishimskiy rayon, for example, has had no cases for the last 25 years. In the oblast types of foot and mouth disease are: type 0, variant O<sub>2</sub>, type A, variant A<sub>7</sub>, while in 1967 the foot-and-mouth disease epizootic was caused by type A virus, variant A<sub>22</sub>. The study of viral type over the last 11 years yields data indicating that virus types change every 3-4 years. In 1963-1968 there was a significant decrease in the disease distribution. By November 1967, foot-and-mouth disease type 0 and A--variant A<sub>7</sub> were eradicated in the oblast.

1/1

- 64 -



USSR

UDC 621.382.2

ADIROVICH, E. I., ATABAYEVA, A. N., RUBINOV, V. M., YUABOV, YU. M.

"Silicon as a Material for Dielectric Electronics"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 5, No 11, 1971, pp 2052-2057

Abstract: An experimental study was made of the conditions under which dielectric conditions occur in silicon, that is, the current is determined by the electrode emission instead of the carrier concentration in the material itself. The method of two-way diffusion alloying was used to introduce copper from an aluminum melt into plates of high-resistant silicon ( $\rho \sim 10^4$  ohms-cm)  $\sim 100$  microns thick. This method insured the possibility of controllable and reproducible production of a thin ( $\sim 10$  microns) layer of high-resistant silicon between two  $p^+$ -type regions acting as emitting electrodes. The conditions for a space charge limited emission current were realized in the region of quite low voltages (0.1-10 volts) with variation of the current by 3-4 orders ( $10^{-5}$ - $10^{-2}$  amps).

A series of control experiments is described showing that in  $n-p^+-p^+-n$  structures manufactured by this method, space charge limited currents actually occur. Effective devices for dielectric electronics can be built on the basis of silicon and other ideal monocrystalline semiconductors with high mobility.

1/1

USSR

UDC 539.293+621.362.81

ADIROVICH, E. I., Academician of the Academy of Sciences Uzbek SSR;  
YUABOV, YU. M., and YAFUDAYEV, G. R., Physicotechnical Institute  
~~Imeni S. V. Starodubtsev~~ of the Academy of Sciences Uzbek SSR,  
Tashkent

"Thin-Film Photodiode Matrices Based on nCdS-pCdTe Heterojunctions"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 4, 1 June 1970,  
pp 764-767

Abstract: A thin-film photodiode matrix is described that is based on nCdS-pCdTe heterojunctions, the characteristics of which (voltage, current, luxvoltage, spectral, and frequency) were described previously by the authors (Fiz. i Tekhn. Poluprovodnikov, Vol 3, No 1, 1969, p 81). The use of heterodiodes as light receivers is possible mainly due to the fact that they have a wide band of spectral sensitivity with an almost constant quantum yield, which is very essential in processing an optical signal. The matrix consists of an nCdS-pCdTe heterostructure with two mutually perpendicular systems of screen electrodes: bands of SnO<sub>2</sub> through which the structure is illuminated  
1/2

USSR

ADIROVICH, E. I., et al, Doklady Akademii Nauk SSSR, Vol 121, No 4, 1 June 1970, pp 764-767

and bands of copper serving as upper electrodes. Film matrices with  $1111$  photodiodes per  $\text{cm}^2$  were prepared with an active area of the element  $0.25 \text{ mm}^2$ . The density of elements achieved in these laboratory samples is by no means the technological limit. Care was taken to ensure identical parameters of the photodiodes forming the matrix. The minimum light intensity for which the photocurrent of all elements will be identical is approximately 100 lux. A study of volt-ampere characteristics showed that the dependence of current on voltage and temperature for nCdS-pCdTe heterojunctions does not correspond to the diffusion, emission, and recombination models but is in agreement with the tunnel-recombination theory of Riben and Faucht. It is concluded that the direct current through the heterojunction is caused by a tunnel-recombination mechanism, since a quantitative comparison of experiment and theory shows that the passage of carriers through the heterojunction has a multistep character.

2/2

- 65 -

USSR

UDC: 621.396.677.73(088.8)

TERESHIN, O. N., YEROKHIN, G. A., YUAKO, A. N., Moscow Electrical Engineering Institute of Communications

"An Antenna"

USSR Author's Certificate No 263693, filed 24 Sep 68, published 4 Jun 70 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12B77 P)

Translation: This Author's Certificate introduces an antenna in the form of a rectangular horn with ribbed walls in the aperture section. The antenna is excited through a waveguide junction which widens out in the H plane. The ribbed walls of the horn are a continuation of the wide walls of the junction; the grooves are rectangular and parallel to the wide walls of the feeder; the spacing of the grooves is 0.1 of a wavelength in free space. The depth of the grooves varies with respect to the length of the antenna in such a way that the envelope of the ribs is described by a parabolic law. This design provides a radiation pattern of plateau or cosecant shape in the E plane. One illustration. N. S.

1/1

- 9 -

YUCHENKOVA, T. V.

ELECTROMAGNETIC RADIATION SAFETY

JPRS 58783  
18 April 1973

Complete translation of the Russian-language book by V. A. Krylov and T. V. Yuchenkova, Zashchita ot elektromagnitnykh izlucheniy, 1972, Moscow, Radio i Svyaznoye Radio.

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- 4 -  
[I - USSR - 2]

USSR

UDC 538.4

BERMINOV, A. I., BUM, D. A., KOVALEV, L. K., YUDAS, V. I., Moscow

"Two-Dimensional Magnetic Fields in Magnetohydrodynamic Channels with Steel Walls with Finite Magnetic Reynolds Numbers"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 5, 1971, pp 3-11.

ABSTRACT: A study is made of the planar problems of the distribution of a two-dimensional magnetic field in magnetohydrodynamic channels with ferromagnetic walls with real Reynolds magnetic numbers and fixed hydrodynamic flow. A complex function describing the field from a unique point is used to construct an integral representation for the full magnetic induction, allowing any approximation to strict solution of the problem to be produced by digital computer. The influence function can be defined for various channels using mirror reflections and conformal mappings. The method is illustrated by numerical calculation of the distribution of the magnetic field as a conducting fluid flows along a flat, ferromagnetic wall and a fluid flows in the band between ferromagnetic walls. The influence of the external circuit and heterogeneous transverse velocity profile on distribution of the magnetic field is calculated.

1/1

- 46 -

USSR

UDC 518

YUBEREV, N. N., Izhevsk

"Concerning the Stability of a Difference Scheme Which Approximates a Periodic Boundary-Value Problem of a Differential Equation"

Kazan', Izvestiya VUZov: Matematika, No 3(130), Mar 73, pp 107-111

Abstract: The paper presents the conditions of stability of the periodic difference scheme

$$L_h[u_x^h] \equiv \frac{\partial^2 u_x^h}{\partial x^2} + p(t_x) \frac{\partial u_x^h}{\partial x} + q(t_x) u_x^h = f_x^h,$$

$$l_h[u_x^h] \equiv u_i^h - u_{i+N}^h = 0 \quad (i = 0, 1),$$

which approximates the periodic boundary-value problem

$$L[u] \equiv u'' + p(t) u' + q(t) u = f(t),$$

$$l_i[u] \equiv u^{(i)}(0) - u^{(i)}(w) = 0 \quad (i = 0, 1),$$

1/2

USSR

YUBEREV, N. N., Izvestiya VUZOV: Matematika, No 3(130), Mar 73, pp 107-111

where  $p(t)$  and  $q(t)$  are continuous periodic functions of period  $\omega$ , and  $h = \omega/N$  ( $N$  is a natural number greater than 2),  $t_x = xh$  ( $x$  is any integer),

$$\delta u_x^h = u_{x+1}^h - u_{x-1}^h, \quad \delta^2 u_x^h = u_{x+1}^h - 2u_x^h + u_{x-1}^h.$$

In conclusion, the author thanks A. L. Teptin for discussing the work.

2/2

- 11 -



USSR

AZIMOV, S. A., BEYSEMBAYEV, R. U., MULLADZHANOV, E. ZH.,  
CHUDAKOV, V. M., YUDASHBAYEV, T. S., Institute of Nuclear  
Physics, Academy of Sciences, Uzbek SSR

"Azimuthal Relations and Fireballs"

Moscow, Yadernaya Fizika, Vol 11, No 6, 1970, pp 1248-1254

Abstract: Azimuthal correlations are detected in nuclear inter-  
actions at energies of hundreds of Gev. From the point of view  
of a model of a single fireball, the cause of the correlations  
may be its formation and "rotation."

1/1

-1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--USE OF A GAMMA ACTIVATION METHOD FOR THE QUANTITATIVE DETERMINATION  
OF NITROGEN AND PHOSPHORUS IN MODIFIED CELLULOSE PREPARATIONS -U-  
AUTHOR--(05)-YUDASHEV, A.YU., MILLER, R.A., KHAKIMOV, M., MURATOVA, U.M.,  
SADYKOV, M.M.  
COUNTRY OF INFO--USSR

SOURCE--VYSOKEMLL. SCEDIN., SER. A 1970, 12(4), 957-9.

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--QUANTITATIVE ANALYSIS, NITROGEN ISOTOPE, PHOSPHORUS ISOTOPE,  
CELLULOSE, X RAY RADIATION, NEUTRON ACTIVATION ANALYSIS, GAMMA  
RADIATION, RADIOACTIVE DECAY, PHOTONUCLEAR REACTION.

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1380

STEP NO--UR/0459/70/012/004/0957/0959

CIRC ACCESSION NO--AP0135034

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70  
CIRC ACCESSION NO--AP0135054  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRRADN. OF MODIFIED CELLULOSE  
CONTG. P AND N WITH GAMMA RAYS OF 15,MEV ENERGY CAUSES THE FOLLOWING  
PHOTONUCLEAR PROCESSES: PRIME14 N PLUS GAMMA YIELDS PRIME13 N PLUS N  
(ABOVE 10.5 MEV THRESHOLD) AND PRIME31 P PLUS N (ABOVE 12.05,MEV  
THRESHOLD). PRIME12 C AND PRIME16 O REQUIRE ENERGIES GREATER THAN 15  
MEV TO REACT. SINCE THE HALF LIVES OF PRIME13 N AND PRIME30 P ARE 10.08  
AND 2.5 MIN, RESP., MEASUREMENT OF THE RADIOACTIVITY DECAY AFTER IRRADN.  
GIVES A MEANS FOR RAPID DETN. OF P AND N. FACILITY: TASHKENT.  
GOS. UNIV. IM. LENINA, TASHKENT, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--REACTION OF SOME EPOXIDES OF OLEFINS WITH HYDROGEN BROMIDE -U-  
AUTHOR--(03)--MALINOVSKIY, M.S., YUDASINA, A.G., KUZENTSOVA, L.N.  
COUNTRY OF INFO--USSR  
SOURCE--IKR. KHIM. ZH. 1970, 36(2), 183-6  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--EPOXIDE, ALKENE, HYDROGEN BROMIDE, PROPYLENE OXIDE, UV LIGHT,  
CHROMATOGRAPHY  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/2017 STEP NO--UR/0073/70/036/002/0183/0186  
CIRC ACCESSION NO--AP0125605  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125605

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE REACTION OF HBR WITH  
PROPYLENE OXIDE AND 3 SUBSTITUTED PROPYLENE OXIDES, THE MAJOR PRODUCT  
WAS A SECONDARY ALC. AND NO APPRECIABLE DIFFERENCE WAS MADE BY THE  
PRESENCE OF PEROXIDES, UV LIGHT, OR BOTH. THE FOLLOWING PERCENT OF  
SECNDARY ALC. BASED ON VAPOR PHASE CHROMATDG. WERE OBTAINED  
(SUBSTITUENTS AND RANGE IN PERCENT FOR THE VARIOUS TYPES OF RUN GIVEN):  
H, 75.2-8.4; CL, 97.7-8.95; AND CL SUB3, 97.1-100. FACILITY:  
DNEPRPETROVSK. GOS. UNIV., DNEPROPETROVSK, USSR.

UNCLASSIFIED

1/2 045

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--CHARACTERISTICS OF HEAT TRANSFER NEAR THE STAGNATION POINT FOR A  
TURBULENT JET IMPINGING ON A PLATE SITUATED NORMAL TO THE FLOW -U-

AUTHOR--(05)-ANDREYEV, A.A., DAKHNO, V.N., SAVIN, V.K., TSIRLIN, O.V.,  
YUDAYEV, B.N.

COUNTRY OF INFO--USSR

SOURCE--MASHINOSTROENTE, NO. 3, 1970, P. 57-60

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HEAT TRANSFER RATE, STAGNATION POINT, TURBULENT JET, FLAT  
PLATE, PARAFFIN WAX, FLOW VISUALIZATION, FLOW VELOCITY, VORTEX FLOW,  
BOUNDARY LAYER FLOW, TWO PHASE FLOW

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/0865

STEP NO--UR/0418/70/000/003/0057/0060

CIRC ACCESSION NO--AP0131452

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 045

CIRC ACCESSION NO--AP0131452

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

ABSTRACT. DISCUSSION OF EXPERIMENTS IN WHICH PARAFFIN COATED PLATES WERE USED TO VISUALIZE THE FLOW PATTERN FORMED BY AN IMPINGING TURBULENT AIR JETS EXPELLED FROM TWO DIMENSIONAL (135 TIMES 15 MM) AND AXISYMMETRIC (30 MM DIAM) NOZZLES. THE VELOCITY OF THE JETS VARIED BETWEEN 30 AND 100 M-SEC. THE JET TEMPERATURE WAS 100 DEG C. THE RESULTS INDICATE THAT THE INCREASED HEAT TRANSFER RATE AT THE FORWARD STAGNATION POINT (SPREADING LINE) IS ASSOCIATED WITH THE FORMATION OF STABLE VORTEX SYSTEM IN WHICH THE VORTICES ARE ORIENTED ALONG THE LINES OF FLOW. UNDER THE ACTION OF THIS SYSTEM, THE TWO DIMENSIONAL BOUNDARY LAYER FLOW BECOMES A THREE DIMENSIONAL FLOW, LEADING TO A SUBSTANTIAL INCREASE IN THE HEAT TRANSFER RATE.

UNCLASSIFIED

1/2 050 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--INVESTIGATION OF HEAT TRANSFER IN A GRADIENT FLOW REGION FOR PLANE  
TURBULENT JET IMPINGING ON PLATE SITUATED NORMAL TO THE FLOW -U-  
AUTHOR--(04)-ANDREYEV, A.A., DAKHNO, V.N., SAVIN, V.K., YUDAYEV, B.N.

COUNTRY OF INFO--USSR

SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, APR. 1970, P. 631-637

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HEAT TRANSFER, TURBULENT FLOW, LAMINAR BOUNDARY LAYER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1753

STEP NO--UR/0170/70/018/000/0631/0637

CIRC ACCESSION NO--AP0125370

UNCLASSIFIED



2/2 050

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125370

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL DETERMINATION OF THE BOUNDARY CONDITIONS REQUIRED FOR THE SOLUTION SYSTEM OF EQUATIONS OF MOTION, DISCONTINUITY EQUATION, AND ENERGY EQUATION DESCRIBING HEAT TRANSFER IN THE GRADIENT FLOW REGION ARISING WHEN A PLANE ISOTHERMAL TURBULENT JET IMPINGES ON PLATE SITUATED NORMAL TO THE FLOW. THE BOUNDARY CONDITIONS ARE OBTAINED IN THE FORM OF A UNIVERSAL RELATION BETWEEN THE VELOCITY AT THE OUTER BOUNDARY OF THE BOUNDARY LAYER, THE COORDINATE ALONG THE PLATE, AND THE SPACING BETWEEN THE PLATE AND THE NOZZLE. FORMULAS FOR CALCULATING THE HEAT TRANSFER COEFFICIENT IN A LAMINAR BOUNDARY LAYER ARE DERIVED. A SUBSTANTIAL DISCREPANCY IS FOUND TO EXIST BETWEEN THE EXPERIMENTAL AND THEORETICAL RESULTS. AN ANALYSIS OF THE CHANGES IN THE EXPERIMENTAL HEAT TRANSFER COEFFICIENT NEAR THE SPREADING LINE AS A FUNCTION OF THE SPACING BETWEEN THE NOZZEL AND THE PLATE, AND THE INFLUENCE OF THIS SPACING ON THE DEGREE OF TURBULENCE INDICATES THAT THE RELATION BETWEEN THIS COEFFICIENT AND THE DEGREE OF TURBULENCE MAY BE CONSIDERED TO BE LINEAR IN THE FIRST APPROXIMATION. THIS RESULT IS USED AS A BASIS FOR DERIVING FORMULAS FOR THE HEAT TRANSFER COEFFICIENT IN THE GRADIENT FLOW REGION UNDER CONSIDERATION.

FACILITY: NAUCHNO-ISSLEDOVATEL'SKII INSTITUT STROITEL'NOI FIZIKI; MOSKOVSKOE VYSSHEE TEKHNICHESKOE UCHILISHCHE, MOSCOW, USSR.

UNCLASSIFIED

172 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--STABILITY IN A BANACH SPACE IN THE PRESENCE OF CONSTANTLY ACTING  
PERTURBATIONS BOUNDED IN THE MEAN -U-  
AUTHOR--YUDAYEV, G.S.  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK KAZAKHSKOI SSR, IZVESTIIA, SERIIA FIZIKO  
MATEMATICHESKAIA, VOL. 8, JAN.--FEB. 1970, P. 62-65  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATHEMATICAL SCIENCES  
TOPIC TAGS--PERTURBATION, DIFFERENTIAL OPERATOR, EXISTENCE THEOREM,  
UNIQUENESS THEOREM, DIFFERENTIAL EQUATION SOLUTION, ASYMPTOTIC SOLUTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1996/1499 STEP NO--UR/0361/70/008/000/0062/0065  
CIRC ACCESSION NO--AP0118486  
UNCLASSIFIED

272 019  
CIRC ACCESSION NO--AP0118486  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. STUDY OF THE PERTURBED DIFFERENTIAL OPERATOR EQUATION  $DX-DT$  EQUALS  $X(T,X)$  PLUS  $R(T,X)$ , WHERE  $R(T,X)$  IS AN OPERATOR FUNCTION CHARACTERIZING RANDOM AND CONSTANTLY ACTING PERTURBATIONS. THE CONDITIONS OF EXISTENCE AND UNIQUENESS OF THE CONTINUOUS SOLUTION TO THE UNPERTURBED EQUATION ARE CITED. GERMAIDZE AND KRAZOVSKII'S (1957) THEOREM CONCERNING THE STABILITY OF AN ASYMPTOTICALLY STABLE ZERO SOLUTION (UNIFORM WITH RESPECT TO THE INITIAL DATA) TO THE UNPERTURBED EQUATION IN THE PRESENCE OF CONSTANTLY ACTING PERTURBATIONS BOUNDED IN THE MEAN IS EXTENDED TO THE AFOREMENTIONED DIFFERENTIAL OPERATOR EQUATION. A THEOREM CONCERNING INSTABILITY IN THE PRESENCE OF CONSTANTLY ACTING PERTURBATIONS BOUNDED IN THE MEAN IS PROVEN.

UNCLASSIFIED

## Biochemistry

USSR

UDC 547.964.4+577.17



SHVACHKIN, YU. P., VDOVINA, R. G., POZNYAK, M. G., VOLUYSKAYA, YE. N.,  
RYABTSEV, M. N., KRIVTSOV, V. F., GRACHEVA, A. K., KRASNOSHCHERKOV, S. P.,  
NOVSELOV, V. A., GRUZDEV, V. S., OLEYNIK, A. M., KALINKINA, Z. B., FEDOTOV,  
V. P., IVANOV, A. I., YUDAYEV, N. A.

## "New Synthesis of Human Insulin"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 216-217

Abstract: Human insulin was synthesized on the basis of obtaining A and B chains by the solid phase method [R. B. Merrifield, J. Am. Chem. Soc., No 85, 2149, 1963; J. Stuart, et al., Tverdogazny sintez peptidov, Moscow, Mir, 1971] and subsequently combining the synthetic chains into the complete molecule of the biologically active hormone. Here, a new version of the synthesis is realized which permits exclusion of treatment of the chains with sodium in liquid ammonia which eliminates the danger of undesirable side reactions caused by this reagent [A. Marglin, et al., J. Am. Chem. Soc., No 88, 5051, 1966]. The A and B chains of human insulin were synthesized on an automated device using a spherical chloromethylated copolymer of styrene with 1% divinyl benzene as the insoluble carrier. All operations were performed in a nitrogen atmosphere. The derivatives of the L-amino acids used in the synthesis of the A and B chains are listed. The fluorohydrates of the chains were con-  
1/2

## Biochemistry

USSR

UDC 547.964.4\*577.17

(11)

SHVACHKIN, YU. P., VDOVINA, R. G., POZNYAK, M. G., VOLUYSKAYA, YE. N.,  
RYABTSEV, M. N., KRIVTSOV, V. F., GRACHEVA, A. K., KRASNOSHCHERKOV, S. P.,  
NOVSELOV, V. A., GRUZDEV, V. S., OLEYNIK, A. M., KALINKINA, Z. B., FEDOTOV,  
V. P., IVANOV, A. I., YUDAYEV, N. A.

"New Synthesis of Human Insulin"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 216-217

Abstract: Human insulin was synthesized on the basis of obtaining A and B chains by the solid phase method [R. B. Merrifield, J. Am. Chem. Soc., No 85, 2149, 1963; J. Stuart, et al., Tverdogazny sintez peptidov, Moscow, Mir, 1971] and subsequently combining the synthetic chains into the complete molecule of the biologically active hormone. Here, a new version of the synthesis is realized which permits exclusion of treatment of the chains with sodium in liquid ammonia which eliminates the danger of undesirable side reactions caused by this reagent [A. Marglin, et al., J. Am. Chem. Soc., No 88, 5051, 1966]. The A and B chains of human insulin were synthesized on an automated device using a spherical chloromethylated copolymer of styrene with 1% divinyl benzene as the insoluble carrier. All operations were performed in a nitrogen atmosphere. The derivatives of the L-amino acids used in the synthesis of the A and B chains are listed. The fluorohydrates of the chains were con-  
1/2.

UDC 577.17

USSR

YUDAYEV, N. A., SHVACHKIN, Yu. P., et al., Institute of Experimental  
Endocrinology and Hormone Chemistry, Academy of Medical Sciences USSR, Moscow

"A New Laboratory Synthesis of Human Insulin"

Moscow, Biokhimiya, No 1, 1973, pp 221-223

Abstract: Description of a complete laboratory synthesis of human insulin based on obtaining A and B chains by a solid phase method and subsequently combining the synthetic chains into the whole molecule of the biologically active hormone. Upon completion of the solid-phase synthesis, the polypeptide chains are separated from the polymer-carrier by treatment with anhydrous liquid hydrogen fluoride. Using a combination of protective groups makes it possible to combine in a single working stage the separation of the chains from the insoluble polymer-carrier and their complete release. The procedure eliminates the need to treat the chains with sodium in liquid ammonia, thereby preventing the dangerous side effects caused by this reagent. The purified A and B synthetic chains are then recombined both with natural chains and with one another. The preparations obtained as a result of the recombination reaction exhibit specific insulin activity.

1/1

- 1 -

1/3 032

TITLE--DATA ON THE FORECAST OF DEVELOPMENT OF ENDOCRINOLOGY IN THE NEXT  
15-20 YEARS -U-

AUTHOR--YUDAYEV, N.A.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR, 1970, VOL 25, NR 6, P 88

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ENDOCRINOLOGY, HORMONE, BIOSYNTHESIS, METABOLISM, ENDOCRINE  
SYSTEM DISEASE, PROTEIN, GENETICS, EPIDEMIOLOGY, MEDICAL R AND D

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605008/B09 STEP NO--UR/0248/70/025/006/0088/0088

CIRC ACCESSION NO--AP0139943

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

2/3 032

CIRC ACCESSION NO--AP0139943

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

ABSTRACT. ENDOCRINOLOGY IS ONE OF THE

RELATIVE YOUNG, AND INTENSIVELY DEVELOPING MEDICOBIOLOGICAL DISCIPLINES.

ITS FORMATION AS AN INDEPENDENT BRANCH OF SCIENCE WAS COMPLETED IN THE SECOND QUARTER OF OUR CENTURY. NEVERTHELESS, TO DATE IT HAS ATTAINED A HIGH LEVEL OF DEVELOPMENT.

THE IMPORTANCE OF ENDOCRINOLOGY IN MODERN MEDICINE IS DETERMINED BY THE PHYSIOLOGICAL ROLE OF THE ENDOCRINE SYSTEM WHICH IS INVOLVED IN THE INITIATION OF PRACTICALLY ALL VITAL FUNCTIONS OF THE ORGANISM, AND BY THE HIGH DEGREE OF SPECIFICITY AND BREADTH OF THE SPECTRUM OF BIOLOGICAL ACTION OF HORMONES, WHICH PERMITS THEIR USE IN THE TREATMENT NOT ONLY OF ENDOCRINE BUT ALSO NUMEROUS NONENDOCRINE DISEASES.

ANALYSIS OF THE DEVELOPMENT OF ENDOCRINOLOGY IN THE LAST 20-25 YEARS REVEALS THAT THE MOST IMPORTANT ADVANCES INSTRUMENTAL IN SIGNIFICANT SUCCESS IN INVESTIGATION OF THE PHYSIOLOGY OF THE DIFFERENT ENDOCRINE GLANDS, THEIR INTERACTION AND CORRELATIVE LINKS, PATTERNS OF PERFORMANCE OF REGULATORY FUNCTIONS OF THE ENDOCRINE SYSTEM, MECHANISMS OF FORMATION OF ENDOCRINE PATHOLOGY, AND DEVELOPMENT OF EFFECTIVE MEANS OF DIAGNOSING AND TREATING ENDOCRINE DISEASES WERE LINKED MAINLY WITH ISOLATION OF HORMONES IN PURE FORM, ESTABLISHMENT OF THEIR CHEMICAL STRUCTURE, AND INVESTIGATION OF BIOSYNTHESIS AND METABOLISM THEREOF IN THE ORGANISM.

THE CONSTANTLY GROWING INTENSITY OF SCIENTIFIC RESEARCH WORK IN THE FIELD OF EXPERIMENTAL AND CLINICAL ENDOCRINOLOGY OBSERVED IN ALL DEVELOPED COUNTRIES OF THE WORLD, AND THEIR HIGH RETURN, GIVE CAUSE TO EXPECT SOME THEORETICALLY AND PRACTICALLY SUBSTANTIAL ACHIEVEMENTS IN THE NEXT 15-20 YEARS.

UNCLASSIFIED



1/2 025  
 UNCLASSIFIED  
 TITLE--COMPARATIVE STUDY OF ESTROGEN AND ANDROGEN ACTION ON RNA  
 BIOSYNTHESIS IN RAT UTERUS -U-  
 AUTHOR-(02)-POKROVSKIY, B.V., YUDAYEV, N.A.  
 COUNTRY OF INFO--USSR  
 SOURCE--BIOKHIMIYA 1970, 35(1), 72-8.  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
 TOPIC TAGS--ANDROGEN, ESTROGEN, TESTOSTERONE, RNA, BIOSYNTHESIS,  
 REPRODUCTIVE SYSTEM, HYPERTROPHY  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--1984/0859  
 CIRC ACCESSION NO--AP0055559  
 UNCLASSIFIED  
 PROCESSING DATE--18SEP70  
 STEP NO--UR/0218/70/035/001/0072/0078

2/2 . 025

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055559

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TESTOSTERONE PHENYLPROPIONATE ADMINISTERED S.C. (1 MG 7 TIMES AT 2 INJECTIONS PER DAY) TO OVARECTOMIZED RATS SIGNIFICANTLY STIMULATED THE INCORPORATION OF ADENINE-8-PRIME14 C INTO THE NUCLEAR RNA OF THE UTERUS IN VIVO. 17BETA-ESTRADIOL ADMINISTERED S.C. (0.05 MUG, 7 TIMES AT 2 INJECTIONS PER DAY) CAUSED IDENTICAL HYPERTROPHY OF THE UTERUS AND TESTOSTERONE DECREASED OR DID NOT CHANGE THE SPECIFIC RADIOACTIVITY OF NUCLEAR RNA. DISTRIBUTION OF RAPIDLY LABELED UTERINE NUCLEAR RNA IN A SUCROSE DENSITY GRADIENT WAS HETEROGENEOUS AND WAS NOT CORRELATED WITH DISTRIBUTION OF RNA AS DETD. BY UV ABSORBANCE. HETEROGENEOUS UTERINE NUCLEAR RNA WAS NOT EXTRACTABLE WITH 2M LICL AND HAD THE MOST READILY EXCHANGEABLE FRACTION IN THE 8-16 S. REGION. PART OF THE RAPIDLY METABOLIZING UTERINE RNA SYNTHESIZED DURING ANDROGEN TREATMENT REMAINED IN THE NUCLEUS AND WAS NOT TRANSMITTED TO THE CYTOPLASM.

UNCLASSIFIED

USSR

UDC: 66.05

YUDAYEV, V. F., Candidate of Technical Sciences, KOKOREV, D. T.,  
Doctor of Technical Sciences and SOPIN, A. I., Aspirant (Moscow  
Institute of Chemical Machine-Building)

"On Determination of Geometric Parameters of Hydrodynamic Siren  
Type Devices"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye,  
No 6, 1972, pp 80-85

Abstract: The present article deals with closed containers in which  
pressure pulsations are produced in order to intensify various physical-  
chemical processes. The inner wall of the stator container is a cylinder  
of radius  $R$ , the outer wall is a cylinder of radius  $2R$ . The rotor is a  
cylinder located inside the inner cylinder of the stator. The inner wall

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USSR

YUDAYEV, V. F., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 6, 1972, pp 80-85

of the stator and the rotor are provided with slots. The number of rotor slots is a multiple of the number of stator slots.

The liquid is flowing from the rotor to the stator through the overlapping slots. The rotation of the rotor interrupts periodically the flow. If the rotating speed is such that the time between slot openings is less than the time required for a pressure wave to travel the distance  $2R$ , then a hydraulic hammer takes place and the amplitude of pressure pulsations increases sharply. For a given rotational speed this amplitude is proportional to the flow.

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- 111 -

YUDAYEV, V. I.

5 PPS 59308  
6-73

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VII-4b. EFFECT OF GROWTH CONDITIONS AND GAS ETCHING ON THE CARRIER DISTRIBUTION IN THE GALLIUM ARSENIDE LAYERS

[Article by V. M. Zaitsev, G. I. Livhin, V. I. Yudayev, Yu. G. Sidoren, Novosibirsk, III Simposium na Vysishcheyshiyatskaya i fizicheskaya Poluprovodolbovyykh Kristallov (Leningrad, 1972, p. 91)]

The methods of electric breakdown with respect to a skew section, measurement of the volt-ampere characteristics for interstitial etching of the film and Hall measurements were used to investigate the effect of the conditions of formation of gallium arsenide epitaxial layers in the open chloride system on the electrophysical properties and the concentration profile of these layers. The n<sup>+</sup> substrates were used alloyed with tellurium, tin and silicon. The layers grown on high-resistance substrates were also investigated.

It was found that in the growth temperature range of 750 to 750°C the carrier concentration in the layers decreases with temperature. The dependence of the nature of the concentration distribution of the carriers in the epitaxial layers of gallium arsenide from one of substrates alloyed with different admixtures was presented as a function of the crystallization temperature of the films.

UDC 621.382.002

USSR

SCRISLINA, L.V., ZVORYGIN, D.B., KABANOV, A.N., ~~YUDAYEV, V.N.~~

"Electron Lithography"

Tr. Kost. in-ta elektron.mashinostr. (Works Of The Moscow Institute Of Electrical Machine Building), 1970, No 9, pp 5-31 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 23541)

Translation: The possibility and methods are discussed of using an electron beam in the production of semiconductor devices. Results are compared which are obtained with the aid of positive and negative, native and foreign photoresists based on oxide protective films, and also without use of photoresists (in this case organosilicon compounds are used as protective films). Two methods are compared of obtaining an electron image -- the scanning beam and the microshadow method. Use of electron diffraction examination makes it possible to obtain on SiO<sub>2</sub> a line with a width down to 0.6 micrometer. 7 ill. 1 tab. 39 ref. K.K.

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UDC 621.9.048

USSR

KABANOV, A.N., KARAFOV, A.A., YUDAYEV, V.N.

"Guns For Electron-Beam Microprocessing Of Material"

Tr.Mosk.in-ta elektron.mashinostr. (Works Of The Moscow Institute Of Electrical Machine Construction), 1970, No 9, pp 52-55 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 24442)

Translation: The optical, energetical, and operational characteristics are discussed of triode electron guns which are used in electron beam units for microprocessing of materials. Particular attention is paid to the properties of electron guns with a tungsten directly-heated cathode operating in a regime of heavy currents on the order of 10-20 ma at accelerating voltages of 50-100 kv. M.V.

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1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--AUTOMATIC REGULATION OF PREPOLYMER TEMPERATURE DURING THE BULK  
POLYMERIZATION OF STYRENE -U-  
AUTHOR--(02)-KAPUSTIN, V.N., YUDAYEV, V.YE.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. UKR. 1970, (1), 36  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--POLYMERIZATION, IMPACT STRENGTH, POLYSTYRENE RESIN, AUTOMATIC  
CHEMICAL PROCESS CONTROL, TEMPERATURE REGULATOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/0757 STEP NO--UR/0436/70/000/001/0036/0036  
CIRC ACCESSION NO--AP0119664  
UNCLASSIFIED



2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119664

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HIGH VISCOSITY OF THE POLYMN. MIXT. IN THE MANUF. OF HIGH IMPACT POLYSTYRENE, HINDERS THE HEAT TRANSFER FROM THE REACTING MASS TO THE COLLING JACKET OF THE REACTOR. AN AUTOMATIC REGULATOR WAS DEVELOPED FOR THE TEMP. REGULATION WITH PLUS OR MINUS 0.5PERCENT ACCURACY. THE TEMP. IS DET. AT 2 LOCATIONS: HALF WAY BETWEEN THE REACTOR WALL AND THE STIRRER AND AT THE COOLING WATER EXIT. THE THERMOMETERS ACTIVATE THE COOLING WATER AND STEAM VALVES WHICH ARE ALTERNATIVELY CLOSED OR OPENED MAINTAINING THE REQUIRED TEMP. FACILITY: GORLOV. KHIM. KOMB., GORLOVKA, USSR.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--POLAROGRAPHIC DETERMINATION OF NITRATE ION IN PHOSPHORIC ACID AND  
ITS SALTS -U-  
AUTHOR--(03)-TRUKHACHEVA, V.A., ZAKHARCHUK, N.F., YUDELEVICH, I.G.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. SIB. OTD. AKAO. NAUK SSSR, SER. KHIM. NAUK 1970, (1), 157-60  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--NITRATE, PHOSPHORIC ACID, POLAROGRAPHIC ANALYSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3008/1002 STEP NO--UR/0289/70/000/001/0157/0160  
CIRC ACCESSION NO--AP0138030  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138030

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A 1-G SAMPLE WAS MIXED WITH 6 ML OF H SUB2 SO SUB4, 1 ML OF A SOLN. OF 2,6,XYLENOL IN HOZC (1.2203 G IN 100 ML), AND 3 ML H SUB2 O, AND HEATED ON THE WATER BATH FOR 15 MIN. THE SOLN. COOLED, TRANSFERED TO THE POLARGGRAPHIC CELL, AND FREED OF O BY N BUBBLING, AND THE CATHODIC WAVE WAS RECORDED FROM MINUS 0.3 TO MINUS 0.7 V VS. MERCURIC SULFATE ELECTRODE. CL DOES NOT INTERFERE. THE SENSITIVITY WAS 10 PRIME NEGATIVE 4PERCENT, THE VARIATION COEFF. WAS LESS THAN 6PERCENT. FACILITY: INST. NEORG. KHIM., NOVOSIBRISK, USSR.

UNCLASSIFIED

1/2 036 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--METHODS OF OPTICAL FLAME DIAGNOSTICS -U-  
AUTHOR--(02)-PREOBRAZHENSKIY, N.G., YUDELEVICH, I.G.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL PRIKLADNOI SPEKTROSKOPII, VOL. 12, JAN. 1970, P. 3-7  
DATE PUBLISHED--JAN70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--FLAME STRUCTURE, FLAME EMISSION, EMISSION SPECTRUM, FLAME  
TEMPERATURE, PYROMETRY, TEMPERATURE DISTRIBUTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1978/1214 STEP NO--UR/0368/70/012/000/0003/0007  
CIRC ACCESSION NO--AP0046137  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--09OCT70

2/2 036

CIRC ACCESSION NO--AP0046137

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF A METHOD FOR PYROMETRIC DIAGNOSTICS OF INHOMOGENEOUS, OPTICALLY DENSE, HIGH TEMPERATURE FLAMES BASED ON THE APPLICATION OF A MODIFIED KIRCHHOFF FORMULA. IN CONTRAST TO METHODS BASED ON THE CONVENTIONAL KIRCHHOFF LAW, THIS METHOD DOES NOT REQUIRE THE REDUCTION OF THE OBSERVED SPECTRAL LINE CONTOURS TO THE CONDITIONS OF A TRANSPARENT LAYER. GENERAL EXPRESSIONS ARE OBTAINED FOR THE INTEGRAL INTENSITY AND THE EQUIVALENT WIDTH OF THE FLAME SPECTRAL LINES. THE PHYSICAL MEANING OF A PROCEDURE FOR AVERAGING THE LOCAL TEMPERATURES ALONG THE LINE OF SIGHT IS EXPLAINED, SHOWING THAT THE EQUIVALENT LENGTH OF THE SPECTRAL LINE BEING STUDIED DETERMINES THE AVERAGING INTERVAL. THE TRUE TEMPERATURE PROFILES OF A HYDROGEN FLUORIDE FLAME ARE COMPARED WITH AVERAGED PROFILES BY COMPUTER CALCULATIONS.

UNCLASSIFIED

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USSR

UDC 532.522.2

AVDUYEVSKIY, V. S., IVANOV, A. V., KARPMAN, I. M., TRASKOVSKIY, V. D., and  
YUDELOVICH, M. Ya.

"The Structure of Turbulent Underexpanded Jets Discharging Into a Flooded  
Space and a Concurrent Stream"

Moscow, Izvestiya Akademii Nauk, SSSR, Mekhanika Zhidkosti i Gaza, No 3, 1972,  
pp 15-29

Abstract: The results of an experimental investigation of the geometric structure of the initial sector of underexpanded jets are presented, and consideration is given to the principal features of flow in the mixing zone on the boundary of a greatly underexpanded jet during a turbulent flow regime along the entire length of the initial sector of the jet. A concurrent supersonic stream exerts an essential qualitative and quantitative influence upon the configuration of the initial sector of underexpanded jets. The most essential feature of a jet in the concurrent stream consists in "degeneration" of the central shock wave at Mach numbers of the concurrent stream  $M_2 > 2$ . The transverse and longitudinal dimensions of the initial sector of an underexpanded jet in a concurrent stream with numbers  $M_2 > 1.5-2$  decrease with the increase of  $M_2$ . The established features of the structure of concurrent jets

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AVDUYEVSKIY, V. S., et al., Izvestiya Akademii Nauk, SSSR, Mekhanika Zhidkosti i Gaza, No 3, 1972, pp 15-29

make it impossible, in the general case, to substitute the concurrent jet by an equivalent flooded jet. Approximate relationships are presented, which make it possible to take into account the influence of a concurrent stream upon the basic characteristic dimensions of the initial sector of the jet. The characteristic regions of flow in the compressed viscous layer of an underexpanded jet are isolated. The self-similarity of fields of the gas-dynamic parameters is established. Data are presented on the position of the mixing zone in the space, the total-head profiles, the stagnation pressure, and the dimensionless excess stagnation temperature in greatly underexpanded jets. 14 figures. 3 tables. 8 references.

USSR

AVDUYEVSKIY, V. S., IVANOV, A. V., KARPMAN, I. M., TRASKOVSKIY, V. D.,  
YUDELOVICH, M. Ya.

"The Flow in a Supersonic Viscous Underexpanded Jet"

Moscow, Mekhanika Zhidkosti i Gaza, No 3, 1970, pp 63-69

Abstract: An experimental investigation is made of the flow at the initial sector of an underexpanded supersonic jet flowing out into the immersed space and the concurrent stream at Mach numbers  $M_0 \leq 10$ . The determining effect of viscosity upon the nature of flow in the jet is established. The basic rules governing the flow are defined. In addition, the results of investigation of the basic dimensions of the initial sector of a turbulent underexpanded jet flowing out into the immersed space are set forth in detail.

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1/2 029 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--ELECTROCHEMICAL POLISHING OF NONFERROUS METALS -U-  
AUTHOR--(03)-MAYTAK, G.P., YUDENKOVA, I.N., DRZD, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 264,092  
REFERENCE--OTKRYTIYA, IZOBRET., PRJM. OBRAZTSY, TUVARNYE ZNAKI 1970,  
DATE PUBLISHED--10FEB70  
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, CHEMISTRY, MATERIALS  
TOPIC TAGS--CHEMICAL PATENT, ELECTROLYTE, COPPER, BRASS, CORROSION  
INHIBITOR, ETHANOL, AMINO DERIVATIVE, ELECTROCHEMICAL EFFECT,  
ELECTROLYTIC METAL POLISHING/(U)P85 CORROSION INHIBITOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3004/1838 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0132103  
UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--20NOV70  
CIRC ACCESSION NO--AA0132103  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NONFERROUS METALS, EG., CU AND  
BRASS, ARE ELECTRO OCHEM. POLISHED IN A ELECTROLYTE OF H SUB3 PO SUB4, H  
SUB2 SO SUB4, CORROSION INHIBITOR PB,5, AND TRIETHANOLAMINE (5-12 VOL.  
PERCENT OF THE ACID MIXT.) AT 20-40DEGREES AND 3-75 A-DM PRIME2.  
FACILITY: INSTITUT OBSHCHEY I NEORGANICHESKOY KHMII AN UKRAINSKOY SSR.

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