

USSR

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YEDOVIN, Ya. M., KERNATSKA, G. M., and GURTSKAYA, N. S., Journal of Applied  
of Steel and Alloys

"Epitaxial Growing of Layers of CoAl<sub>3</sub> and In<sub>2</sub>Co<sub>3</sub> on Fe-10%Ni Alloy"

Moscow, Investiya Akademi Nauk SSSR, Neorganicheskaya Khimiya, No. 4,  
Jun 70, pp 1095-1098

Abstract: The process of growing highly alloyed epitaxial CoAl<sub>3</sub> and In<sub>2</sub>Co<sub>3</sub> solutions of the system InAs-CoAl<sub>3</sub> on basis of palladium arsenide was investigated by the method of epitaxial from liquid metal solutions. The epitaxial films grow at sufficiently high growing rate at relatively low temperatures and are obtained. In addition, high-alloyed metal-solvent films can be prepared when the metal-solvent at the same time serves as an alloying substrate. The thickness of the films increases with increasing initial epitaxial temperature, and also with an interval of cooling. The growing rate of epitaxial films increases with increasing temperature, which is connected with a change in the surface energy of the substrate. The dependence of the metal solution composition on the initial composition of the phase compound in the system In-As-CoAl<sub>3</sub> is experimentally determined. It is shown that the films are highly annealed. An intermetallic compound in the film results in a small electron mobility.

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USSR

UDC 669.295

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GEGER, V. E., CHEPRASOV, I. M., DMITRIYEV, V. N., FEDOTOV, Ye. I.,  
GAFUROVA, N. Sh.

"The Mechanism of the Interaction of Titanium Tetrachloride with Magnesium"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Svedeniy, Tsvetnaya  
Metallurgiya, No 4, 1972, pp 59-63.

Abstract: The mechanism of magnesium-thermal reduction of titanium is studied by quick cooling of the reaction products. The discovery of sponge titanium on the cover of a commercial reactor in specially cooled recesses and analysis of the structure of the sponge indicate that the sponge structure of titanium is a result of secondary processes occurring following the chemical reactions. The appearance of the primary peculiarities of thermal combustion during magnesium thermal reduction of titanium allows us to look upon the occurrence of this process from the standpoint of the theory of combustion.

1/1

USSR

UDC 620.193.01

PALEOLOG, Ye. N., FEDOTOVA, A. Z., and DERYAGINA, O. G., Academy of Sciences USSR, Institute of Physical Chemistry

"Kinetics of Reduction-Oxidizing Reactions on  $TiO_2$  and NiO Single Crystals and on the Oxidized Surface of Metals"

Moscow, Zashchita Metallov, Vol 9, No 2, Mar-Apr 73, pp 176-178

Abstract: The distribution of interfacial differences of potentials on passive Ni and Ti surfaces was determined on the basis of previously measured kinetic parameters of reduction-oxidizing reactions on surfaces of Ni and Ti, of their compact oxides, and of platinum.  $TiO_2$  single crystals were produced by the Verneil method and treated in vacuum at  $750^\circ$ ; NiO single crystals were alloyed with lithium. The potentiostatic anodic oxidation of Ni and Ti shows a principally different mechanism. The logarithmic oxidation rule of Ti is for Ni realized at the potential  $\varphi = 0.30$  v. At more positive potentials (0.5 and 0.7 v), the growth of the film follows the logarithmic rule only in the beginning; later on it changes to the parabolic type. The differences in the oxidation mechanism and kinetics of Ni and Ti meet the evaluation results of the potential distribution in the systems. Two figures, six bibliographic references.

174

USSR

UDC: 8.74

PETROV, V. G., FEDOTOVA, D. Ye.

"Formulation and Methods of Solving Problems in the Field of Programmed Checking and Diagnosis of Digital Systems"

V sb. Vychisl. mashiny i programmir. (Computers and Programming--collection of works), Moscow, 1971, pp 5-25 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V515)

Translation: The authors consider a set of program facilities and methods of organizing data processing which ensure effective utilization of the technical components of programmed control systems. Methods of organizing programmed control systems are divided into four classes: 1) the system of algorithms and programs which is inherent in all programmed control systems regardless of operating conditions; 2) formal (artificial) languages which are the basis of systems of program automation; 3) operational systems which determine the conditions of processing information in the programmed control system; 4) operational systems which determine the conditions of checking and diagnosis. The system of algorithms and programs contains finished algorithms and programs, a library of standard subprograms, and programs for solving various unique and repeated problems. The formal

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PETROV, V. G., FEDOTOVA, D. Ye., Vychisl. metody i programir., Moscow, 1971, pp 5-25

languages include two classes of languages: computer oriented and algorithmic. The operational systems which determine the conditions of processing information are subdivided into non-monitored (with manual control of computational processes) and monitored (with automatic coordination of the work of components of the computational process). The operational systems which determine the conditions of checking and diagnosis are divided into 1) systems for functional monitoring with tolerance check and with check by characteristic feature, and 2) preventative monitoring systems. The particulars of construction of the basic programmed methods for checking and diagnosing programmed control systems are considered.

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USSR

UDC: 577.4

PETROV, V. G., FEDOTOVA, D.YE.

"Expanded Method of D-Cubes as a Basis of Constructing Tests for Combination Schemes"

V sb. Vychisl. mashiny i programir. (Computers and Programming--collection of works), Moscow, 1971, pp 26-56 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V363)

Translation: The concepts of the table of coverings, the table of minimum coverings and the table of D-cubes are introduced for functions of logic algebra. The first two coincide with the concepts of disjunctive normal forms and minimum disjunctive normal forms for functions of logic algebra. In this paper an algorithm is developed for obtaining a table of minimum coverings for arbitrary functions of logic algebra, and a comparative analysis is given of the effectiveness of assigning a function by means of a table of coverings. Tables of coverings and tables of D-cubes are presented for functions of two variables. The authors point out that the apparatus of D-cube calculus is used for diagnosing digital systems. Kh. Madatyan.

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USSR

UDC 577.4

MIRONOV, G. A., FEDOTOVA, D. E.

"Algorithm for Analyzing Circuits with Memory"

V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works), Moscow, Nauka Press, 1972, pp 233-236 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V413)

No abstract

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USSR

UDC 531.74.(017)(083.76)

BOGUSLAVSKIY, M. G., ELIASHBERG, B. M., SHAROVA, Ye. Ye., and FEDOTOVA, L. I.

"State Primary Standard Unit of a Plane Angle -- the Radian"

Moscow, Izmeritel'naya Tekhnika, No 7, 1972, pp 9-10

Abstract: A complex of equipment for reproducing and storing the unit of a plane angle equal to  $2\pi$  rad, or a part thereof, and for transmitting the size of the unit, by means of secondary standards and standard measurement facilities, to operating measurement facilities, was developed and tested in 1970. The State primary standard unit of a plane angle comprises a complex of the following measuring equipment: a 36-faced prism, produced at the All-Union Scientific Research Institute of Metrology in 1958; a standard gonionic-electric autocollimation unit consisting of photoelectric autocollimators with an electronic digital readout device, and a device for holding and turning the polyhedral prism. 36-faced prism No 1 has been certified on the State primary standard. The mean-square error of the measurement result did not exceed 0.02". The new primary standard facility has been ratified in January, 1972 at a meeting of the Comstandart, USSR as the State primary standard unit of a plane angle. 4 figures.

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USSR

UDC 669.15.018.8(088.8)

FEDOTOVA, L. S., ALEKSEYENKO, M. F., POTAK, YA. M., BELYAKOVA, V. A., ORZHEKH-OVSLIKY, YU. F., SHEPETOV, V. A., TOPILIN, V. V., DORONIN, V. M., KLYUYEV, M. M.

"Stainless Steel"

USSR Author's Certificate No 276434, Filed 25 Jul 68, Published 13 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 41637P)

Translation: A steel for operation at temperatures up to 600° is proposed with the following composition (in %): C 0.05-0.09, Cr 10.5-12, Ni 1.4-1.8, Mo 0.35-0.5, Nb 0.06-0.15, V 0.15-0.25, Si < 0.6, Mn < 0.6, Ce < 0.02. The ratio of the alloying elements satisfies the formula  $0.68\% Cr + (\% Mo + \% V + \% Si) + 0.5\% Nb - (30\% C + \% Ni + 0.5\% Mn) < 6.6$ . After quenching from 1,000° and tempering at 570°, at 20, 500, and 550° the steel has  $\sigma_B$  of 120, 70, and 55 kg/mm<sup>2</sup>,  $\sigma_T$  of 100, 75, and 55 kg/mm<sup>2</sup>,  $\delta$  of 12% and  $\psi$  of 60-65%, respectively;  $\sigma_{500}^{100}$  and  $\sigma_{550}^{100}$  are 56 and 32 kg/mm<sup>2</sup>, respectively.

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USSR

UDC 616.45-001.113-092.9-07:616.15-07

GORIZONTOV, P. D., and FEDOTOVA, M. I.

"Hematological Shifts in Rats Induced by Repeated Application of a Weak Stimulus: The Stress Problem"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 15, No 4, Jul/Aug 71, pp 35-38

Abstract: The stress reaction to weak stimuli was studied in young rats. Repeated (3-19) intravenous injections of 0.25 ml of a sterile, isotonic sodium chloride solution constituted the weak stimulus, because such injections are often performed on animals serving as controls. This stimulation precipitated a distinct stress reaction, involving loss of body weight, hypertrophy of the adrenal glands, involution of the thymolymphatic system, and a gradually progressing bone marrow hypoplasia. Contrary to the stress reaction observed in rats after daily application of strong electric stimuli, the weak stimulus used in this investigation produced no leukocytosis, no increase in the number of lymph cells in the bone marrow, and no activation of myelopoiesis in the mobilization stage, as well as no transitory marrow hypertrophy in the resistance stage. However, 1/2

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GORIZONTOV, P. D., and FEDOTOVA, M. I., *Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya*, Vol 15, No 4, Jul/Aug 71, pp 35-38

the injections induced a reduction in the number of parenchymal cells in the thymus and in the lymph node as well as an activation of lymphopoiesis and an increase in the number of lymph cells in the spleen. The results suggest that the physiological significance of the above-mentioned organs varies depending on the circumstances.

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USSR

UDC 541.64:547.551/.554

KATSARAVA, R. D., KORSHAK, V. V., RUSANOV, A. I., KOLESNIKOV, G. S., FEDOTOVA, O. YA., and PARESISHVILI, O. I., Institute of Hetero-organic Compounds of the USSR Academy of Sciences

"Synthesis and Investigation of Polybenzoylenebenzimidazols Based on the Dianhydride of bis-(3,4-dicarboxyphenyl)phenylphosphine Oxide and Some Aromatic Tetraamines"

Moscow, Vysokomolekulyarnyye soyedineniya, Vol 14, No 10, 1972, pp 2065-2078

Abstract: Polybenzoylenebenzimidazols (PBB) were synthesized on the basis of the dianhydride of bis-(3,4-dicarboxyphenyl)phenylphosphine oxide and some bis-(o-phenylenediamines). A comparative study was made of the properties of the PBB and polyimides obtained on the basis of the above-mentioned dianhydride by solid-phase cyclodehydration of prepolymers. The PBB synthesized by cyclization of polyaminoamide acids in the solid state are insoluble in all of the solvents used. The data from studying model reactions indicate that PBB obtained by solid-phase cyclization of polyaminoamide acids have a three-dimensional structure. The possible reactions for the formation of the three-dimensional polymers and a method of obtaining PBB soluble in 1/2

USSR

KATSARAVA, R. D., et al., *Vysokomolekulyarnyye soyedineniya*, Vol 14,  
No 10, 1972, pp 2065-2078

organic based on the dianhydride of bis(3,4-dicarboxyphenyl)phenylphosphine  
oxide are proposed. The infrared and nuclear magnetic resonance spectra of  
the synthesized polymers are discussed, and their solubilities in seven  
organic solvents are tabulated.

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USSR

UDC 541.64:536.4

FEDOTOVA, O. YA., GOROKHOV, V. I., PARESISHVILI, O. I., KARETNIKOV, G. S.,  
and ROLESNIKOV, G. S. (deceased), Moscow Chemical Technological Institute  
Imeni D. I. Mendeleev

"Study of the Thermal Degradation and Thermal Oxidation of Phosphorus Con-  
taining Polyimides"

Moscow, Vysokomolekularnyye Soyedineniya, Vol 14, No 6, Jun 72, pp 1256-1266

Abstract: A study has been carried out on thermal and thermal-oxidative degradation of polyimides using the model reaction of the anhydride of di-(3,4-dicarboxyphenyl)-phenylphosphine oxide with various aromatic diamines. It has been shown that the thermal stability of phosphorus containing polyimides depends on the thermal stability of the imide cycle, whose stability in turn depends on the structure of the diamine. The low molecular weight products of thermal degradation consist of hydrogen, CO, CO<sub>2</sub>, benzene, methane, ammonia, water, and traces of ethylene. Using EPR method, it was shown that in the solid products of thermal and thermal oxidation degradation the rate of the accumulation of paramagnetic centers depends on the structure of the diamine radical. Increasing concentrations of paramagnetic

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USSR

FEDOTOVA, O. YA., et al, Vysokomolekularnyye Soyedineniya, Vol 14, No 6,  
Jun 72, pp 1256-1266

centers in the polymer lead to higher thermal degradations. Resistance to thermal oxidative degradation depends on the structure of diamino used in the synthesis of polyimides: introduction of compounds with polyconjugated systems results in a sharp increase in the oxidation rate of the polymer.

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Acc. Nr:

AP0052524

Abstracting Service:  
CHEMICAL ABST. 5-7c

Ref. Code:

UR 0459

101168c Synthesis and studies of aromatic-aliphatic polyamides containing ether bonds in the monomer unit. Kolesnikov, G. S.; Fedotova, O. Ya.; Donetskii, I. A.; Fokina, L. T. (Khim. Tekhnol. Inst. im. Mendeleeva, Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 106-19 (Russ). The condensation of  $\text{HO}_2\text{C}(\text{CH}_2)_x\text{ORO}(\text{CH}_2)_y\text{CO}_2\text{H}$  with  $\text{H}_2\text{N}(\text{CH}_2)_z\text{NH}_2$  in 98% iso-PrOH or dioxane gave  $[\text{O}_2\text{C}(\text{CH}_2)_x\text{ORO}(\text{CH}_2)_y\text{CO}_2\text{NH}(\text{CH}_2)_z\text{NH}_2]_n$  (I). These salts were neutral in alc. solns. and were easily hydrolyzed. Heating I at 130-320° during 3-5 hr in vacuo or Ar gave 69-97%  $[\text{OC}(\text{CH}_2)_x\text{ORO}(\text{CH}_2)_y\text{CONH}(\text{CH}_2)_z\text{NH}]_n$  (II) (R: x, y given): 1,4- $\text{C}_6\text{H}_4$ , 6, 2; 1,4- $\text{C}_6\text{H}_4$ , 6, 6; 1,4- $\text{C}_6\text{H}_4$ , 6, 10; 1,3- $\text{C}_6\text{H}_4$ , 6, 10; 1,3- $\text{C}_6\text{H}_4$ , 6, 6; 1,3- $\text{C}_6\text{H}_4$ , 6, 10; 1,3- $\text{C}_6\text{H}_4$ , 6, 2; 4,4'- $\text{C}_6\text{H}_4\text{C}_6\text{H}_4$ , 6, 2; 4,4'- $\text{C}_6\text{H}_4\text{C}_6\text{H}_4$ , 6, 6; 4,4'- $\text{C}_6\text{H}_4\text{C}_6\text{H}_4$ , 6, 10; 4,4'-isopropylidenediphenylene (III), 4, 2; III, 6, 2; III, 8, 2; III, 10, 2; III, 4, 6; III, 6, 6; III, 8, 6; III, 10, 6; III, 6, 10. The optimum prepn. conditions of I and II were established. All II had high surface hardness, formed elastic fibers from their melts, were insol. in common org. solvents, and stable  $\leq 300^\circ$  in the air.

CPJR

REEL/FRAME  
19821167



Acc. Nr.

A0041735

Abstracting Service:  
CHEMICAL ABST.

4-70

Ref. Code:

UR0459

79591m Degradation of aromatic-aliphatic polyamides.

Kolesnikov, G. S.; Fedotova, O. Ya.; Trezvoy, V. V.; Gorokhoy, V. I. (Mosk. Khim. Tekhnol. Inst. im. Mendeleeva, Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 177-81 (Russ).

The thermal and oxidative thermal degradation of polyamides derived from  $H_2N(CH_2)_2NH_2$  and aromatic dicarboxylic acid chlorides such as terephthaloyl chloride and 4,4'-bis(chloroformyl)biphenyl were studied by following the gas evolution and loss in wt. during heating. Paramagnetic centers were detected in the polyamides  $>340^\circ$  and were apparently due to the formation of conjugated structures arising from secondary reactions. An induction period of 10-40 min was obsd. for the formation of the paramagnetic centers. The centers apparently catalyzed the thermal degradation since degradation was more rapid in resins contg. greater concns. of such centers. A thermal degradation mechanism is discussed.

DBJR

F B

REEL/FRAME  
19751612

7

1/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--POLYMIC ACIDS -U-  
AUTHOR--(03)-FEDOTOVA, G.YA., SHILMAN, M.I., KOLESNIKOV, G.S.  
COUNTRY OF INFO--USSR F  
SOURCE--U.S.S.R. 258,583  
REFERENCE--OTKRYTIYA, IZDBRET., PROM. OBRATZSY, TOVARNYE ZNAKI 1969,  
DATE PUBLISHED--03DEC69  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CARBOXYLIC ACID, ANHYDRIDE, DIAMINE, CHEMICAL PATENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REL/FRAME--1992/0217 STEP NO--UR/0482/69/000/000/0000/0000  
CIRC ACCESSION NO--AA0111411  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AA0111411

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYAMIC ACIDS ARE PREPD. BY  
TREATING TETRACARBOXYLIC ACID DIANHYDRIDES WITH A MIXT. OF PRIMARY AND  
SECONDARY DIAMINES.

UNCLASSIFIED

89

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SYNTHESIS AND STUDY OF AROMATIC POLYAMIDES -U-  
AUTHOR--(04)-KOZYREVA, N.M.; FEDOTOVA, O.YA., KERBER, M.L., KOLESNIKOV,  
G.S.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 230-4  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--ORGANIC SYNTHESIS, POLYAMIDE RESIN, INTERFACIAL  
POLYCONDENSATION, CHLORINATED ORGANIC COMPOUND, PHTHALIC ACID  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0685 STEP NO--UR/0460/70/012/003/0230/0234  
CIRC ACCESSION NO--AP0124357  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE—30OCT70

CIRC ACCESSIGN NO—AP0124357

ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. SEVERAL AROMATIC POLYAMIDES (I) WERE PREPD. FROM 4,4 PRIME DIAMINODIPHENYLMETHANE, 4,4 PRIME DIAMINO 3,3 PRIME DIMETHYLDIPHENYLMETHANE, 2,2 BIS(4 AMINOPHENYL)PROPANE AND ISOPHTHALOYL AND TEREPHTHALOYL CHLORIDES BY INTERFACIAL POLYCONDENSATION AND (OR LOW TEMP. POLYCONDENSATION IN ACNME SUB2. THE LATTER METHOD GAVE I HAVING A SP. VISCOSITY 10 TIMES AS GREAT AS THAT OF POLYMERS OBTAINED BY THE INERFACIAL POLYCONDENSATION (AT THE SAME MONOMER CONCNS.). THE SOFTENING POINT OF I RANGED FROM 200 TO 300DEGREES.  
FACILITY: MOSK. KHIM. TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--THERMAL AND OXIDATIVE THERMAL DEGRADATION OF AROMATIC AND AROMATIC  
ALIPHATIC POLYAMIDES AND POLYUREAS -U-  
AUTHOR-(05)-~~FEDOTOVA, D.YA.~~, CHIBISOVA, YE.I., KOLESNIKOV, G.S., GOROKHOV,  
V.I., KOVARSKAYA, B.M.  
COUNTRY OF INFO--USSR

F

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(1) 26-30

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL DEGRADATION, OXIDATIVE DEGRADATION, POLYAMIDE  
COMPOUND, POLYUREA, DIAMINE, ORGANIC ISOCYANATE, COPOLYMERIZATION,  
POLYMER CROSSLINKING, POLYCONDENSATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1195

STEP NO--UR/0459/70/012/001/0026/0030

CIRC ACCESSION NO--AP0104561

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104561

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYAMIDES (PREPD. BY INTERFACIAL POLYCONDENSATION) AND POLYUREAS (PREPD. BY COPOLYMN. OF DIAMINES WITH DIISOCYANATES SUCH AS HEXAMETHYLENE DIISOCYANATE), E.G., POLY(DITOLYL,METHANEFUMARAMIDE) (I), POLY(DITOLYL-N,N'-DIETHYLFUMARAMIDE) (II), POLY(DITOLYLMETHANE-N,N'-DIETHYLADIPAMIDE) (III), POLY(DITOLYLMETHANEHEXAMETHYLENEUREA) (IV) AND POLY(DITOLYLMETHANEFUMARAMIDE) (I), POLY(DITOLYL-N,N'-DIETHYLFUMARAMIDE) TOLYLMETHANE MOIETY IS DERIVED FROM 4,4'-METHYLENE-DI-O-TOLUIDINE OR FROM 4,4'-METHYLENEBIS(N-ETHYL-O-TOLUIDINE)) WERE DEGRADED AT 200-320DEGREES, I, II, AND III WERE MORE STABLE THAN IV OR V. I AND II EXHIBITED HIGHER THERMAL STABILITY THAN III. THE OXIDN. OF POLYAMIDES AND POLYUREAS (BASED ON A PRIMARY DIAMINE) WAS ACCOMPANIED BY CROSSLINKING. CO, CO SUB2, H SUB2 O, AND ACH (IDENTIFIED BY POLAROGRAPHY AND CHROMATOG.) RESULTED FROM THE OXIDATIVE THERMAL DEGRADATION OF THE CITED POLYMERS.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SYNTHESIS OF AROMATIC POLYAMIDES BASED ON 2,4 AND 2,2 PRIME  
DIAMINOBIPHENYLS -U-  
AUTHOR--(04)-KOLESNIKOV, G.S., FEDOTOVA, O.YA., MATVELASHVILI, G.S.,  
GUTSALYUK, E.V.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDN., SER. A 1970, 12(3), 528-35  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POLYAMIDE COMPOUND, AMINE, POLYNUCLEAR HYDROCARBON, THERMAL  
STABILITY, POLYMER STRUCTURE, POLYCONDENSATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1995/1186 STEP NO--UR/0459/70/012/003/0528/0535  
CIRC ACCESSION NO--AP0116651  
UNCLASSIFIED



2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116651

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AROMATIC POLYAMIDES (I) WERE PREPD. BY LOW TEMP. POLYCONDENSATION IN ACNME SUB2 OF 2,2 PRIME DIAMINOBIPHENYL AND 2,4,DIAMINOBIPHENYL AND SEVERAL AROMATIC ACID CHLORIDES, E.G., ISOPHTHALOYL AND TEREPHTHALOYL CHLORIDES AND 2,6, PYRIDINEDICARBOXYLIC ACID DICHLORIDE. I HAD SOFTENING POINTS OF 110-300DEGREES. POLY(2,4,BIPHENYLENE AMIDES) AND POLY(2,2 PRIME BIPHENYLENE AMIDES) (E.G. II) EXHIBITED SUPERIOR THERMAL STABILITY AND RESISTANCE TO OXIDATIVE THERMAL DEGRADATION. THE EFFECTS OF POLYMER STRUCTURE ON PHYSICOMECH. AND CHEM. PROPERTIES ARE DISCUSSED. FACILITY: MOSK. KHIM. TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--SYNTHESIS AND STUDIES OF POLYMERS WITH PHENANTHRIDINE AND  
DIAZAPYRENE RINGS -U-  
AUTHOR-(03)-KOLESNIKOV, G.S., ~~FEQOTOVA~~, O.YA., MATVELASHVILI, G.S.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN. SER A 1970, 12(3), 536-47  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--HETEROCYCLIC NITROGEN COMPOUND, POLYNUCLEAR HYDROCARBON,  
POLYAMIDE COMPOUND, POLYMER, CHLORINATED ORGANIC COMPOUND, THERMAL  
STABILITY, THERMAL DEGRADATION, PLASTIC MECHANICAL PROPERTY, POLYMER  
STRUCTURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1995/1201 STEP NO--UR/0459/70/012/003/0536/0547  
CIRC ACCESSION NO--AP0116666  
UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116666

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CYCLODEHYDRATION OF POLY(2,4,BIPHENYLENE AMIDES) (I) AND POLY(2,2,BIPHENYLENE AMIDES) (II) (PREPD. FROM 2,4 AND 2,2,DIAMINOBIPHENYL AND TEREPHTHALOYL CHLORIDE) WAS STUDIED IN THE PRESENCE OF POCL SUB3 IN PHNO SUB2 AT 100-30DEGREES FOR 1-5 HR. CYCLODEHYDRATION OF I AND II GAVE POLY(PHENANTHRIDINYLENE AMIDE) (III) AND POLY(4,9,DIAZAPYRENYLENE ARYLENE) (IV) OF HIGH THERMAL STABILITY AND RESISTANCE TO OXIDATIVE THERMAL DEGRADATION. THERMAL CYCLODEHYDRATION OF I AND II IN VACUO AT 250-320DEGREES GAVE SOME PHENANTHRIDINE RINGS. THE MECH. PROPERTIES, SOLY., AND THERMAL STABILITY OF III AND IV WERE MAINLY DETD. BY THE STRUCTURE OF THE STARTING AMINES. FACILITY: MOSK. KHIM.-TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 034 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--THERMAL CYCLIZATION OF PHOSPHORUS CONTAINING HOMO AND MIXED  
AROMATIC POLYAMIC ACIDS STUDIED FROM INFRARED ABSORPTION SPECTRA -U-  
AUTHOR--(04)-KULESNIKOV, G.S., FEDOTOVA, O.YA., PARESISHVILI, O.I.,  
BELEVSKIY, S.F.  
COUNTRY OF INFO--USSR  
SOURCE--VVSOKOMOL SOEDIN., SER. A 1970, 12(2), 317-22  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CYCLIZATION, ORGANIC PHOSPHORUS COMPOUND, IR SPECTRUM,  
PYROMELLITIC ACID, THERMAL EFFECT, ACTIVATION ENERGY, IMIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1995/1223 STEP NO--UR/0459/70/012/002/0317/0322  
CIRC ACCESSION NO--AP0116685  
UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116685

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THERMAL CYCLIZATION OF P CONTG. AROMATIC POLYAMIC ACIDS (G. S. KOLESNIKOV ET AL., 1968) INTO THE CORRESPONDING POLYIMIDES AND THE CYCLIZATION OF POLY(PYROMELLITAMIC ACID) INTO POLY(PYROMELLITIMIDE) WERE STUDIED BY SPECTROSCOPY AT 1390-780 CM PRIME NEGATIVE1. THE POLYAMIC ACIDS CYCLIZED SLOWLY AT 110-20DEGREES, BUT RAPIDLY AT HIGH TEMPS. IMIDIZATION FOLLOWED 1ST ORDER KINETICS, CHARACTERIZED BY A RATE CONST. WHICH WAS UNCHANGED UP TO A CERTAIN DEGREE OF CYCLIZATION BUT WHICH RAPIDLY DECREASED THEREAFTER WITH INCREASING TEMP. A DECREASE IN THE C-C-N ANGLE CAUSED AN INCREASE IN THE APPARENT ACTIVATION ENERGY. FACILITY: MOSK. KHIM.-TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

ASHURLY, Z. I., BABAYAN, V. G., YEREM'YANOV, Yu. M., KONDROVA, N. P.,  
~~FEDOTOVA, T. A.~~

"Effect of the Frequency on the Ignition Voltage in an Ozonezer"

Moscow, Khimiya i Fizika Nizkoteraturnoy Plazmy, Moscow University  
Press, 1971, pp 121-125

Abstract: The authors investigate the ignition voltage as a function of frequency in an ozonezer with a 3 mm discharge gap at frequencies of 50, 500, 1000, 2000, and 3000 Hz. The reactor was a flat ozonezer of special design which led the gas into the discharge zone of the ozonezer. The dielectric barriers were glass plates ground on both sides 1 mm thick and 100 mm in diameter with plexiglass rings glued to the edges to prevent breakdown on the glass surface. Ground aluminum electrodes (10 mm in diameter) were applied to the glass plates. It was found that the ignition voltage decreases from 6900 to 5800 volts when the frequency increases from 50 to 3000 Hz. The experimental results agree satisfactorily with theoretical calculations. Two figures, one table, bibliography of ten titles.

1/1

USSR

UDC [537.226+537.311.33]:539.16.04

BEGUCHEV, V. P., ~~FEDOTOVA, T. N.~~ and MECHETIN, A. M.

"Longitudinal Cathodoconductivity of Cadmium Telluride Layers"

V sb. Tonkiye plenki soyedineniy tellura s metallami podgrupp tsinka i galliya (Thin Films of Tellurium Compounds With Metals of the Zinc and Gallium Subgroups -- Collection of Works), Vil'nyus, 1970, p 91 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE998 by authors)

Translation: The authors investigated the cathodoconductivity (CC) of 0.5 to 5-micron-thick CdTe layers in an Al-CdTe-SnO<sub>2</sub> "sandwich" system. The layers were obtained by vacuum evaporation on a heated substrate and had a specific resistance of  $10^9-10^{10}$  ohm·cm. CC was investigated during electron-beam excitation with an energy of 5-25 kev and current density  $i_{excit}=10^{-7}-10^{-10}$  a/sq cm, with constant or alternating bias voltage fed to the layer under investigation. The selective character of CC dependence on the velocity of the exciting beam is determined by the relation between film thickness and the depth of penetration of the electrons under investigation. The relation between the practical path of the electrons in the layers and their initial velocity is determined, as well as the dependence of CC on exciting current  $1/2$

USSR

BEGUCHEV, V. P., et al., Tonkiye plenki soyedineniy tellura s metallami podgrupp tsinka i galliya (Thin Films of Tellurium Compounds With Metals of the Zinc and Gallium Subgroups -- Collection of Works), Vil'nyus, 1970, p 91 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE993 by authors)

density. On CdTe layers an amplification factor  $k_{\text{ampl}}$  (ratio of CC current to exciting current) up to  $5 \cdot 10^3$  was obtained for electron velocity of 15 kev and bias voltage of 10 v. An even higher  $k_{\text{ampl}}$  (up to  $10^5$ ) was observed in layers obtained by cosputtering of CdTe and CdS.

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USSR

UDC 621.762.004.2

FEDOTOVA, V. S.

"Method of Studying the Minimum Energy for Ignition of Metal Powders"

Problemy inzhenernoy okhrany truda [Problems of Engineering Protection of Labor], (Moscow Institute of Steels and Alloys, 63), Moscow, 1970, pp. 49-55, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1; 1971, Abstract No 1 'G507 by the author).

Translation: A brief analysis is presented of existing methods for the study and analysis of expressions for the quantitative determination of the minimum ignition energy. A description is presented of the method suggested, along with a list of parameters which can be determined using the method. 1 figure; 13 biblio. refs.

1/1

- 54 -

USSR

UDC 621.382.3

FEDOTOV, YA. A., SIDOROV, V.G., GUSEV, V.A., VASIL'YEV, A.P., REMIZOVA, G.V.

"Definition Of The Determinant Factors During Physico-Mathematical Investigation Of The Quality Of Alloy-Type Low-Power Transistors"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, No 1(51), pp 3-24 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B176)

Translation: A method is proposed for analysis of the quality of alloy-type low-power transistors with the aid of physico-mathematical methods which define the determinate factors effecting the change of the individual parameters. Author's Summary.

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USSR

UDC 621.382

FEODTGV, YA. A., SOFCV, O.V., ABRAMOVA, L.I., CHERNYAVSKIY, I.A.

"Investigation Of The Parameters Of Boundary States In Oxide-Semiconductor Structures"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, No 1(51), pp 140-151 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B106)

Translation: The density and energy distribution of the boundary states in Si-SiO<sub>2</sub> structures were studied. From a comparison of the theoretical volt-farad dependence, constructed on the basis of the ideal theory of Garretts--Brattena, and the experimental volt-farad dependence, the distribution was found of the magnitude of the charge captured by the boundary states as a function of the surface potential of the semiconductor. It is shown that the boundary states have a different energy distribution in the forbidden band of the semiconductor. It is revealed that different technological operations on the MOS structures have an uneven effect on boundary states with a different energy position. 6 ref. Summary.

1/1

USSR

Ya. A. Fedotov (ed.)

"Semiconductor Devices and Their Application" (Poluprovodnikovyye pribory i ikh primeneniye)

Moscow, 1970, Izd-vo Sovetskoye Radio, No 32, 19,000 copies, 328 pages

Abstract: The collection of articles is devoted to semiconductor devices and apparatuses of the microwave range. It examines parametric diodes of gallium arsenide and of germanium with a higher Q-factor and the characteristics of avalanche and limiting microwave diodes. Considerable attention is given to multiplier diodes and the investigation of multiplication frequencies and to transistor-varactor multiplier circuits. The presentation of a survey of the methods for determining the electrophysical parameters of semiconductor materials and films for microwave use will be of considerable interest for the reader. A series of articles is devoted to microwave circuits for semiconductor devices.

The collection is intended for a wide circle of radio engineers and university students.

Titles and authors of the articles are as follows:

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USSR

Ya. A. Fedotov (ed.) Izd-vo Sovetskoye Radio; No 32, 19,000 copies, 328 pages

Methods of determining the Parameters of Semiconductors and Semiconductor  
Films for Microwave Use, Ye. M. Gershenzon, L. B. Litvak-Gorskaya, L.  
Plokhova, T. S. Zarubina

3

Microwave Diodes With Increased Q-Factor, V. M. Val'd-Perlov, V.V. Veyts,  
I. M. Martirosov

49

Semiconductor Limiter Diode For the Microwave Band, V. A. Shpirt

64

Semiconductor Diodes For Frequency Multiplication, V. I. Pil'don,  
A. A. Vizel'

82

Frequency Multipliers of Super-High Multiplicity, A. I. Sobolev,  
Yu. A. Kotov, L. A. Modestov

109

109

Planar-Epitaxial Microwave Band Varactors, S. F. Kausov, V. I.  
Pil'don

133

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USSR

Ya. A. Fedotov (ed.) Izd-vo Sovetskoye Radio, No 32, 19,000 copies, 328 pages

Varactor Frequency Multipliers Using Transmission Strip Lines For Semiconductor Multiplier-Amplifier Microwave Circuits, Yu. S. Pilibets, I. P. Polovkov	145
Designing the Mode of A Varactor In A Parallel-Frequency Multiplier Circuit, I. Ya. Tabachnikov, I. R. Frid, S. F. Kausov, A. A. Vizel'	172
Restoration Time of A Limiting Diode And Methods For Determining It, I. M. Martirosov, V. P. Kozidubov	203
Noise Characteristics of An Autogenerator Using Avalanche-Drift Diodes of the P-N Type, R. N. Belokopytov	213
Investigation of the Thermal Characteristics of Semiconductor Limiting Microwave Diodes, V. A. Shpirt, E. N. Ulanovskiy	227
On Some Parameters of Semiconductor Junction Diodes for the Micro- wave Range, M. S. Gasyatiner	238

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USSR

Ya. A. Fedotov (ed.) Izd-vo Sovetskoye Radio, No 32, 19,000 copies, 328 pages Experimental Investigation of Frequency Multiplier Using Semiconductor Diodes in the 18-70 GHz Range, V. I. Navrotsky, A. A. Vizel', V. P. Voronenko	246
On Selection of the Operating Mode of An AFC Radar Receiver Semi- conductor Mixer, S. M. Klich	261
Measuring the S-Parameter of A Microwave Transistor, N. A. Bakhtin, N. Z. Shvarts	276
Asynchronous Microwave Tunnel Diode Detector, V. V. Gorbin, V. A. Malyshev	285
Experimental Investigation of the Frequency Dependence of A P-N Junction's Impedance In A Wide Frequency Range, S. P. Babenko, B. V. Velichko, I. M. Drydo, E. A. Mikhaylova, I. A. Strukov, V. S. Etkin	297
Varistors, Yu. S. Karpov, B. Yu. Lototskiy, Yu. T. Okunev, V. V. Pasyukov, L. K. Chirkin	305

4/4

- 94 -

USSR

UDC 678.675.01:53

KOLESNIKOV, G. S., (DECEASED), FEDOTOVA, O. YA., and PARESISHVILI, O. I.

"Polyimides Based on Di-(3,4-dicarboxyphenyl)-Phenylphosphine Oxide Dianhydride"

Moscow, Plasticheskiye Massy, No 12, Dec 70, pp 20-23

Abstract: The authors study the physical and mechanical properties of homo- and mixed phosphorus-containing polyimides of various chemical structure selected in such a way that the effect which the phosphorus-containing group has on the properties of the polyimides could be investigated. It was found that all polyimides with phosphorus-containing groups in the chain have a definite softening point temperature in the region of 270-330°C depending on the structure of the amine component, and in the case of mixed polyimides, on the content of the phosphorus-containing dianhydride as well. It was also found that considerable reversible deformations are typical of the materials studied, which indicates that the softening process in polyimides corresponds to transition to the highly elastic state. However, further investigation shows that partial cross-linking may take place in the highly elastic state at high temperatures. In  
1/2



USSR

KOLESNIKOV, G. S., (DECEASED), et al., *Plasticheskiye Massy*, No 12, Dec 70, pp20-23

contrast to most polyimides, some of the materials synthesized in this research are readily soluble in organic solvents. Solubility drops with a reduction of phosphorus content in the chain. The tensile strength of films based on these polyimides may be as high as 800-1200 kg/cm<sup>2</sup> depending on polymer structure. The dielectric constant of the materials studied varies from 3.3 to 3.9 and is not strongly dependent on temperature. The resistivity at room temperature is considerably greater than  $10^{15} \Omega \cdot \text{cm}$ , and the loss tangent is 0.002-0.16, showing almost no change with the structure of the polymer chain. The electrical strength of the polymers varies from 62 to 82 kW/mm. The polymers are fire-resistant and quench rapidly after removal from flame. In view of their valuable properties, these polymers should be put to practical use.

2/2

USSR

UDC: 632.4:582.268.42:633.511

FEDOTOVA, T. I., and GUSEVA, N. N., All Union Institute of Plant Protection, Leningrad

"Induced Wilt-Resistance of Cotton"

Leningrad, Mikologiya i Fitopatologiya, Vol 4, No 6, 1970, pp 512-516

Abstract: On being infected with a weakly pathogenic strain of the fungus *Verticillium dahliae* or with fungi of species that have a low pathogenicity for cotton (*Fusarium oxysporum* f. *lycopersici*, *Aspergillus niger*, or *Rhizoctonia solani*), cotton plants showed immunity to infection with a strongly pathogenic strain of *V. dahliae*, the agent of cotton wilt. The strongly pathogenic strain of *V. dahliae* or *Fusarium oxysporum* f. *vasinfectum*, which has a high pathogenicity for young cotton plants, did not produce an immunizing effect. Infection with the strongly pathogenic strain of *V. dahliae* was conducted 2 days after immunization. The immunity varied in degree, depending on the fungus by which it was produced and reached 100% with the use of the weakly pathogenic strain of *V. dahliae*. Development of immunity was accompanied by an increased synthesis of proteins in plants, particularly of peroxidase isoenzymes. The effects

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USSR

FEDOTOVA, T. I. and GUSEVA, N. N., Mikologiya i Fitopatologiya, Vol 4, No 6, 1970, pp 512-516

of a single immunization were not lasting; upon immunization with the weakly pathogenic strain of *V. dahliae*, the induced immunity disappeared with 8-13 days. The content of isoenzymes approached that of nonimmunized controls toward the 13th day. Repeated exposure, rather than a single infection with an immunizing strain, may be assumed to occur in nature, however. It has been observed that cotton varieties which are resistant to cotton root rot are susceptible to verticilliosis and those that are susceptible to root rot show resistance to verticilliosis. Immunity induced by another pathogenic factor may be involved here. Experiments to check the correctness of this assumption will be conducted.

2/2

USSR

UDC 621.762.004.2

FEDOTOVA, V. S.

"Study of the Autoignition Temperature of Powders of Boron and Its Compounds With Refractory Metals"

Problemy inzhenernoy okhrany truda [Problems of Engineering Protection of Labor], (Moscow Institute of Steels and Alloys, 63), Moscow, 1970, pp. 41-45, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No.1 G506 by the author).

Translation: The ignition temperatures of powders of B in various modifications and a number of its compounds with Ti and Zr are studied in a bed using the method of the Moscow Institute of Steels and Alloys. The approximate mechanism of ignition of powdered B is determined on the basis of analysis of low-temperature oxidation right up to the temperature preceding the beginning of ignition. 2 tables; 7 biblio. refs.

1/1

USSR

UDC: 576.851.511.097.29

FEDOTOVA, Yu. M., Control Institute of Biomedical Preparations imeni L. A. Tarasevich

"The Effect of Anthrax Toxin on Cells Cultures in vitro"

Moscow, Arkhiv Patologii, Vol 12, No 11, 1970, pp 30-33

Abstract: Exposure of HeLa (human carbinoma) and Fl (human amnion) cells to anthrax toxin for 3 days failed to produce any morphologically pronounced degenerative changes, but the culture was less dense than the control, suggesting an inhibition of growth. In a culture of guinea pig spleen peritoneal macrophages, the addition of anthrax toxin produced degenerative changes in the form of a rounding of the cells within 4 hours, increased basophilia of the cytoplasm, and poor differentiation in the staining of the nucleus and cytoplasm. Although these changes were subsequently reversed, the growth of the culture was inhibited, as shown by the greater sparseness of the layer of experimental cells as compared with the control.

1/1

Acc. Nr: ~~AP0043865~~

**FEDOTOVA**

Ref. Cod. **Yu. M.** UR 0016

PRIMARY SOURCE: ~~Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, 1970, Nr 2, pp 47-51~~

A STUDY OF SPECIFIC ANTITOXIC ACTIVITY  
OF THERAPEUTIC GLOBULIN AGAINST ANTHRAX

*Yu. M. Fedotova, A. A. Ulanova*

The authors studied the antitoxic activity of therapeutic globulins against anthrax produced in the USSR. A method of neutralization of anthrax toxin in the skin of guinea pigs was used. The globulins under study proved to possess a high antitoxic activity — they neutralized the standard toxin dose in a dilution of  $10^{-3}$  —  $10^{-4}$ .

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19770289

6 DI

F Microbiology

USSR

UDC: 576.851.511.097.29

FEDOTOVA, YU. M. and ULANOVA, A.A., Control Institute for Biomedical Preparations imeni Tarasevich

"The Specificity of Anthrax Toxin Produced in Vitro"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 3, 1970, pp 111-113

Abstract: Anthrax toxin produced in vitro on a semisynthetic nutrient medium was applied to the skin of guinea pigs. The specificity of the toxin was tested by adding antianthrax serum globulin and gamma-globulins of therapeutic sera against brucellosis, measles, tickborne encephalitis, diphtheria, tetanus, and gas gangrene. The resultant skin reaction was characterized by the edema index (ratio of the thickness of the skin fold before injection to that after injection, i.e., by the size of the edema). The toxin was neutralized only when specific globulin of therapeutic anthrax serum was added to it. The edema index was 0. Nonspecific sera failed to neutralize the toxin, and the edema index was the same as when the toxin alone was used: much less than 2.78 in all cases.

1/1

1/2 023 UNCLASSIFIED PROCESSING DATE--02JCT70  
TITLE--A STUDY OF THE SPECIFICITY OF ANTHRAX TOXIN OBTAINED IN VITRO -U-  
AUTHOR--(02)-FEDOTOVA, YU.M., ULANDVA, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3,  
PP 111-113  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ANTHRAX, BACTERIAL TOXIN, ENCEPHALITIS, MEASLES, BRUCELLOSIS,  
DIPHTHERIA  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1990/1494 STEP NO--UR/0016/70/000/003/0111/0113  
CIRC ACCESSION NO--AP0109554  
UNCLASSIFIED



2/2 023

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109554

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDIED THE SPECIFICITY OF ANTHRAX OBTAINED IN VITRO ON SEMISYNTHETIC NUTRIENT MEDIUM ELABORATED BY THE AUTHORS. SMITH'S METHOD WAS USED FOR THIS PURPOSE (THE ACTIVITY OF ANTHRAX TOXIN WAS DETERMINED BY ITS INTRADERMAL INJECTION). THE RESULTS OF THIS REACTION WAS ASSESSED BY JEDEMA INDEX SUGGESTED BY THE AUTHORS. IT APPEARED THAT THE TOXIN WAS NEUTRALIZED ONLY WITH SPECIFIC GLOBULIN OF THE THERAPEUTIC ANTHRAX SERUM AND THAT ITS ACTIVITY PERSISTED AFTER ADDITION OF THERAPEUTIC SERUM PREPARATIONS AGAINST DIPHTHERIA, TETANUS, GAS GANGRENE, BRUCELLOSIS, TICK BORNE ENCEPHALITIS AND MEASLES. THUS, A STRICT SPECIFICITY OF ANTHROX TOXIN OBTAINED IN VITRO WAS DEMONSTRATED.

UNCLASSIFIED

Immunology

USSR

UDC: 615.363.6:576.851.511/.036.8

F  
FEDOTOVA, YU. M. and ULANOVA, A.A., Control Institute for Biomedical Preparations imeni Tarasevich

"Study of the Specific Antitoxic Activity of Therapeutic Antianthrax Globulin"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 2, 1970, pp 47-51

Abstract: The antitoxic activity of antianthrax globulin produced in the USSR was determined by a method suggested by H. Smith et al. (1955). The method is based on neutralization of the pathological effect of anthrax toxin, which causes hyperemia and edema in guinea pigs when administered intradermally. The results are expressed as the ratio of the thickness of the skin fold at the edema site to the thickness of the fold of healthy skin in the same animal. Experiments showed that the titer of the antitoxic activity of all 22 series of globulins tested ranged from  $10^{-3}$  to  $10^{-4}$ . The findings are consistent with clinical observations which indicate that the intensity of both systemic and local pathological symptoms of anthrax diminishes within 24 hours of administration of the serum.

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USSR

UDC: 537.533.34

KEL'MAN, V. M., FEDULINA, L. V., YAKUSHEV, Ye. M., Institute of Nuclear Physics of the Academy of Sciences of the Kazakh SSR, Alma-Ata

"Deflection of Parallel Beams of Charged Particles by a Flat Electrostatic Mirror"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 41, No 9, Sep 71, pp 1825-1831

Abstract: The authors discuss the electron-optical properties of a flat electrostatic two-dimensional mirror which is distinguished by the fact that a parallel beam of charged particles incident on its surface remains parallel in the paraxial approximation after reflection as well. It is shown that there are two types of flat electrostatic mirrors which differ with respect to the nature of the trajectories. Cardinal points are defined for each type of mirror. The nature of angular aberrations is investigated, and expressions are found for the aberration coefficients. In the direction parallel to the central plane of the mirror, aberrations vanish to the fourth order, while in the direction perpendicular to this plane, aberrations vanish to order three. The general theory is applied

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USSR

KEL'MAN, V. M. et al., Zhurnal Tekhnicheskoy Fiziki, Vol 41, No 9, Sep 71,  
pp 1825-1831

to the case of two-electrode electrostatic mirrors. All necessary param-  
eters are calculated for such mirrors. Two figures, bibliography of  
three titles.

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USSR

UDC 669.71.472(088.8)

BELYAYEV, A. S., BICH, I. I., VIKHLYAYEV, A. A., NOSIKOV, G. M., and  
FEDULOV, A. I., Novokuznetsk Aluminum Plant and Mining Institute of  
Siberian Department of Academy of Sciences USSR

"Device for Disassembly of Lining of Aluminum Electrolyzers"

USSR Authors' Certificate No 290949, Cl. C 22d 3/02, C 22 d 3/12, filed  
18 Nov 69, published 11 May 71 (from RZh-Metallurgiya, No 1, Jan 72,  
Abstract No 1G125P)

Translation of Abstract: This device for the disassembly of the lining of  
aluminum electrolyzers in accordance with author's certificate (RZh-  
Metallurgiya, 1967, Abstract No 7G131) is unique in that, in order to raise  
operating reliability, the rotating column consists of a pi-shaped pillar,  
to which a crane arm is hinged, and a rotating platform, on which are mounted  
the mechanism for rotating the column, the control panel, and hydraulic lift-  
ing jacks for hoisting the crane arm. The mechanism for rotating the column  
is made in the form of two hydraulic cylinders with two-way pistons, rigidly  
connected by racks meshing with an immobile pinion shaft. Two illustrations.  
1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--INDIVIDUAL COMPOSITION OF A GASOLINE CONDENSATE FRACTION (INITIAL  
BOILING POINT 150DEGREES) FROM THE PECHORA KOZHVA GAS CONDENSATE DEPOSIT  
AUTHOR--(03)-KRUPENSKIY, V.I., STUKANOVA, L.N., FEULOV, S.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., NEFT GAZ 1970, 13(3), 68

DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--GASOLINE, CHEMICAL COMPOSITION, NATURAL GAS, PETROCHEMISTRY,  
PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3001/2083

STEP NO--UR/0152/70/013/003/0068/0068

CIRC ACCESSION NO--AP0127456

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0127456

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FRACTION CONTAINED IS SIMILAR TO 100 HYDROCARBONS, INCLUDING 73.3PERCENT PARAFFINIC (52PERCENT N-PARAFFINIC), 1.3PERCENT AROMATIC, AND 25.4PERCENT NAPHTHENIC, BEING ALSO SUITABLE AS PETROCHEM. RAW MATERIAL. FACILITY: UKHT. IND. INST., UKHTA, USSR.

UNCLASSIFIED

USSR

UDC: 529.78

LEYKIN, A. Ya., TKACHENKO, V. S., FEDULOV, V. M., FERTIK, N. S.

"Cesium Nuclear-Beam Reference in the Secondary Frequency and Time Standard of Khar'kov State Institute of Measures and Measuring Instruments"

Tr. Metrol. In-tov SSSR. Khar'kov. NII Metrol. [Works of Metrological Institutes of the USSR. Khar'kov. Scientific Research Institute for Metrology], 1972, No 7, pp 80-99 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 4, 1973, Abstract No 4.32.540, from the Resume).

Translation: Results are presented from studies of the short-term and long-term instability of the frequency of cesium nuclear beam standards. The reproducibility of the frequency of a cesium nuclear beam standard, measured by comparison of the frequency of two standards in the AFC mode, is  $3.6 \cdot 10^{-11}$ . It is shown that the relative error introduced by the electronics developed at the Khar'kov State Institute of Measures and Measuring Instruments for the cesium standard is not over  $3 \cdot 10^{-12}$ . The change in phase difference in the arms of the U-shaped resonator with time was tested by measurement of the quality of the U-shaped resonator and width of the spectral absorption lines.

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USSR

LEYKIN, A. Ya., et al., Tr. Metrol. In-tov SSSR. NII Metrol., 1972, No 7,  
pp 80-99

The measurement, continued over 10 days, showed that the frequency shift due to changing phase difference was not over  $(1-2) \cdot 10^{-12}$ . 11 figures, 3 bibliographic references.

2/2

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USSR

UDC 621.224:532.5.001.24

FEDULOV, Yu. I.

"On the Calculation of Energy Profile Losses in the Ring Lattice of the Stator of Hydraulic Turbines"

"Gidromekhanika. Resp. Mezhved. Sb." [Hydromechanics. Republic Interdepartmental Collection], 1972, Vol 21, pp 103-106 (from Referativnyy Zhurnal, No 6, June 72. 49. Turbostroyeniye. Abstract No 6.49.150)

Translation: The possibility is demonstrated to use the calculation of energy profile losses by the Loytsyanskiy, L. G. method for the determination and the analysis of energy losses in radial stators of hydraulic turbines. The profile losses of energy are calculated considering additional losses at the expense of the thickness of the leading edge of the profile. Theoretical calculation results are compared with experimental data obtained by investigation of power characteristics of radial rotors at the Khar'kov Branch of the Machine Science and Automation Institute of the Academy of Sciences, UkrSSR. Five biblio. refs.

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USSR

UDC 616.927.7-07

POSTOVIT, V. A., Doctor of Medical Sciences, and ~~FEDULOVA~~ Ye. N., Candidate of Medical Sciences, Kiev Scientific Research Institute of Infectious Diseases, Ukrainian SSR Ministry of Public Health,

"Clinical Picture and Diagnosis of Paratyphoid Fever A"

Moscow, Klinicheskaya Meditsina, Vol 50, No 6, 1972, pp 135-138

Abstract: To study the clinical picture of paratyphoid fever type A, the course of the disease in 140 patients from 1950-1970 was analyzed. The need for such a study was due to incomplete description of the disease, ongoing incidence of cases, and difficulty in diagnosis. In laboratory diagnosis, the duration of pathogenic activity in blood, feces, urine and bile of the cases was established. Hemoculture was most indicative (75.8% positive reaction); Widal's reaction in 38.7% of the subjects was negative or its titer did not reach a diagnostic level. Clinical data reflected a polymorphism of symptoms. Most significant of these were an acute onset of the disease (72.1%), enlargement of the liver (89.3%) and spleen (71.4%), frequent early Rose rash on the skin (exanthema in 54.3%), relative bradycardia (65.9%), moderate leucopenia (55%) or normocytosis (30%), and stomach pain (39%). Dyspeptic and catarrhal disturbances as well as fever were common. The researchers

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USSR

POSTOVIT, V. A., and FEDULOVA, Ye. N., *Klinicheskaya Meditsina*, Vol 50, No 6, 1972, pp 135-138

noted three variants of the disease: typhoid (55.8%), catarrhal (19.3%), gastrointestinal (14.2%), and mixed (10.7%). Five percent of the ill had relapses and 7.8% had complications. A small number suffered intestinal perforations (0.7%) and intestinal hemorrhages (0.7%).

2/2

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1/2 025

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--INDIRECT HEMAGGLUTINATION REACTION USED IN THE DIAGNOSIS OF TYPHOID

-U-

AUTHOR--(02)-GRABOVSKIY, P.M., FEDULOVA, YE.YA.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3, PP 51-54

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HEMAGGLUTINATION, TYPHOID FEVER, DIAGNOSTIC METHODS, ERYTHROCYTE, ANTIGEN, ANTIBODY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1518

STEP NO--08/0016/70/000/003/0051/0054

CIRC ACCESSION NO--AP0106274

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0106274

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS SUGGEST A SINGLE METHOD OF OBTAINING SENSITIZED HUMAN ERYTHROCYTES (I-O BLOOD GROUP), LOADED WITH O AND VI TYPHOID ANTIGENS. WHEN STORED IN A REFRIGERATOR, THESE SENSITIZED ERYTHROCYTES RETAINED THEIR PROPERTIES FOR NOT LESS THAN 3 MONTHS. NINETY ONE PATIENTS SUFFERING FROM TYPHOID WERE EXAMINED IN THE COURSE OF THE DISEASE (217 SERA). THE DISEASE WAS CONFIRMED BY INDIRECT HEMAGGLUTINATION REACTION IN 73.6PERCENT AND VI AGGLUTININS WERE REVEALED IN 59.2PERCENT OF THE PATIENTS. THE GREATEST TITRES OF O ANTIBODIES WERE FOUND DURING THE 2ND WEEK OF THE DISEASE. THIS REACTION IN THE DESCRIBED MODIFICATION CAN BE USED, IN PRACTICAL LABORATORIES.

UNCLASSIFIED

USSR

UDC: None

YEROZOLINSKIY, B. G., BONDARENKO, L. N., MOSTOVOY, Yu. A.,  
OBINYAKOV, B. A., FEDUNIN, V. P., and FRANK, A. I.

"Measurement of Neutron Spin-Electron Impulse Angular Correlation  
in the Decay of Polarized Neutrons"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki,  
vol. 13, No. 7, 5 April 1971, pp 356-359

Abstract: This letter offers an experimental method for precise measurement of the angular correlation coefficient in the beta decay of neutrons. To avoid errors due to proton recoil and other factors, the operating part of the neutron beam in the experimental apparatus is separated out by a diaphragm from the electron detector, and the recording of all decay protons corresponding to the recorded electrons is thus guaranteed. A cross-sectional sketch of the apparatus is given. The polarization coefficient of the neutron beam, measured by the Stern-Gerlach method, was  $0.77 \pm 0.02$  at an intensity of  $3 \cdot 10^4$  neutrons/sec. The

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- 115 -

YERZOLIMSKIY, B. G., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol. 13, No. 7, 5 April 1971, pp 356-359

experimental work was done in the IRT-M reactor of the Institute of Atomic Energy imeni I. V. Kurchatov. The authors express their gratitude to P. Ye. Spivak for his interest; to A. I. Afonin, A. G. Koshchin, A. Yu. Kulikov, and S. I. Kuznetsov for setting up the equipment and making measurements; and to the personnel under the direction of V. P. Chernyshevich, in charge of the IRT-M reactor.

2/2



Acc. Nr: HP0034482

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 2, pp 168-171

/ EFFECT OF ERYTHROMYCIN ON RESPIRATION AND OXIDATIVE  
PHOSPHORILATION IN LIVER MITOCHONDRIA OF ALBINO RATS

M. G. Kokaroutseva, V. V. Fedurov

Kiev Medical Institute

The effect of erythromycin on respiration, oxidative phosphorylation and coenzyme Q levels in the liver mitochondria of rats treated with antibiotics for prolong periods of time in spring and autumn was studied. Dependence of respiration on the season was shown. Having no effect on intensity of oxygen uptake by the liver mitochondria in vivo, erythromycin decreased esterification of inorganic phosphorus which was especially evident in spring. In vitro erythromycin had no effect on the processes studied.

D. n.

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REEL/F  
FRAME  
19711158

USSR

UDC 532.68

DERYAGIN, B. V. (Corresponding Member, Academy of Sciences USSR); FEDYAKIN, N. N., and NOVIKOVA, A. V., (Institute of Physical Chemistry, Academy of Sciences USSR, Moscow, and the Serpukhov Higher Command Engineering School imeni Lenin Komsomol, Serpukhov, Moscow Oblast')

"On Mirror Reflection of Molecular Vapor and Supermolecular Flow in Fine Capillaries"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 193, No 3, 1970, pp 561-564

Abstract: The authors briefly review the limitations of the cosine rule of distributed reflection of molecules from cleaved alkali halide crystals and discuss the relations and conditions necessary for mirror reflection and the limiting angle of total mirror reflection.

An experiment is described in which water vapor escapes from a capillary having a radius of less than one micron. When the capillary is larger than the free path of a molecule, the rate of vapor flow follows the Knudsen equation. When the capillary is smaller, the flow is greater than that predicted by the Knudsen equation. Under certain conditions of vapor density, molecules collide with the

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USSR

DERYAGIN, B. V., et al, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 193, No 3, 1970, pp 561-564

wall at less than the critical angles and can bounce back and forth between the walls without colliding with other vapor molecules. The mirror angle for water vapor is found to be 5 to 7 degrees. The capillary experiments are intended to separate the mirror-reflected from the diffuse-reflected molecules. A theoretical relation is derived for the flow density of the vapor, and a proof, more direct than the one given in a previous paper, is presented. Basis for the proof is the fact that the pressure of a neutral gas affects the path length of the vapor molecules, and those that are reflected from the wall at less than the critical angle collide with molecules of the neutral gas before again striking the wall.

The rate of water vapor evaporation from a 56-micron capillary was measured at various pressures. The water-filled capillary, sealed at one end, was placed in a glass test chamber connected to a vacuum pump and containing silica gel. Following the experiment the moisture content of the gel was used to determine the vapor pressure. The diameter of the capillary was less than the free path length even at atmospheric pressure. Under these conditions the Knudsen

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USSR

DERYAGIN, B. V., et al, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 193, No 3, 1970, pp 561-564

relation ought to be valid. Between 200 and 760 mm Hg pressure the Knudsen relation does hold, following a linear curve; below 200 mm Hg the evaporation rate is markedly higher, but again it falls along a straight line. The curves represent the evaporation rate as a function of the reciprocal of the depth of the liquid meniscus in the capillary.

It is concluded that with respect to sufficiently small-bore capillaries there is a narrow air pressure interval at which Knudsen flow becomes supermolecular, and the flow rate is independent of air pressure.

Orig. art. has 3 figs. and 10 refs.

3/3

1/2 042 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--TURBULENT HEATING OF A PLASMA IN A DISCHARGE WITH A SKIN CURRENT  
-U-  
AUTHOR--(02)-DUBOVOY, L.V., FEDYAKOVA, V.P. F  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,  
NR 4, PP 1168-1177  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HIGH FREQUENCY DISCHARGE, PLASMA HEATING, TURBULENT PLASMA,  
SKIN EFFECT, THERMODYNAMIC EFFICIENCY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1501

STEP NO--UR/0056/70/058/004/1168/1177

CIRC ACCESSION NO--AP0106257

UNCLASSIFIED

272 042

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106257

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF AN EXPERIMENTAL INVESTIGATION OF THE EFFICIENCY OF HEATING OF A PLASMA IN A HIGH FREQUENCY DISCHARGE WITH A SKIN CURRENT IN THE TURBULENT STATE ARE PRESENTED. A SCHEME FOR CALCULATING THE HEATING EFFICIENCY OF A PLASMA IS PROPOSED FOR THE CASE WHEN ION SOUND INSTABILITY IS EXCITED IN THE REGION OF THE SKIN LAYER; DISCHARGE CURRENT DISSIPATION IN THE PLASMA IN THE TURBULENT STATE AND TRANSFER PHENOMENA OCCURRING PERPENDICULAR TO THE EXTERNAL FIELD AND ACCOMPANIED BY DISSIPATION OF THE HIGH FREQUENCY FIELD ENERGY ARE TAKEN INTO ACCOUNT. THE APPLICABILITY OF THE CONCEPTS DEVELOPED IN WORK ON HIGH FREQUENCY DISCHARGES TO TURBULENT HEATING OF A PLASMA BY SINGLE SHORT DURATION CURRENT PULSES IS DISCUSSED.  
FACILITY: INST. ELEKTROFIZICHESKOY APPARATURY IM. D. V. YEFREMOVA.

UNCLASSIFIED

USSR

UDC: 533.9...16

ANDRYUKHINA, E. D., IVANOVSKIY, M. A., POPOV, S. N., POPRYADUKHIN, A. P.,  
FEDYANIN, O. I., KHOL'NOV, Yu. V.

"Investigation of the Magnetic Field Structure of the Tor-1 and Tor-2 Stellarators"

Tr. Fiz. in-ta AN SSSR (Works of the Physics Institute, Academy of Sciences of the USSR), 1973, 65, pp 73-81 (from RZh-Fizika, No 6, Jun 73, abstract No 6G358)

Translation: The electron beam method is used to study the structure of magnetic surfaces in toroidal plasma traps with a double-helix field -- the Tor-1 and Tor-2 stellarators. Beam monitoring was done by the conventional probe method and by a high-speed dielectric grid method. It is shown that the structure of the surfaces is regular up to angles of rotational conversion  $i$  of the order of  $5.5\pi$  throughout the entire range of variation in  $i$  with the exception of the resonance values  $i = \pi, 2\pi, 4\pi$ , for which expansion of the surfaces with the formation of a rosette structure is recorded. The amplitude of resonance perturbations measured with respect to the width of the rosettes is of the order of  $10^{-4}$  of the amplitude of the main stellarator field. Bibl. 11 titles.

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6555 (NP-tr-1860) MAGNETIC FIELD STRUCTURE IN THE TOR-1 STELLARATOR WITH  $l = 2$ . Andryukhina E. D., Fedyanin O. I., Kholmov Yu. V. Translated for Culham Lab., Abingdon, Eng., from Preprint No. 118. 16p. (CTO-862) Dep. CFSTI (U. S. Sales Only).

The results of magnetic measurements in TOR-1 are reported. The existence of closed surfaces is experimentally confirmed. The resonance region is investigated. The maximum rotational transform is  $l = 4$  to 4.5, with a maximum shear  $\theta = 3 \times 10^{-2}$ .  
(auth)

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19



USSR

UDC 669.017:539.216.2

TIMASHEV, S. F., and FEDYANIN, V. K.; Physico-Chemical Institute imeni L. Ya. Karpov

"Electron Theory of Metallic Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 4, Oct 70, pp 713-721

Abstract: The problem of calculating the equilibrium characteristics of the gas of interacting electrons in a metallic film of thickness  $l$  is considered. The approach is based on the apparatus of Green functions and correlation functions and allows direct consideration of the effects of inter-electron interaction in the Hartree-Fock approximation, and also of the effects of dynamic shielding. The authors thank Yu. A. TSERKOVNIKOV for discussion of the results.

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Adsorption

USSR

UDC 541.183

F  
FEDYANIN, V. K., Scientific Research Physico Chemical Institute  
imeni L. YA. Karpov, Moscow, State Committee for Chemistry

"Calculation of the Interaction Between Molecules in Problems Per-  
taining to Adsorption and Absorption"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, Feb 70, pp 495-498

Abstract: A method based on the use of correlation functions and  
of Ising's model was modified for applications pertaining to the  
solution of problems of adsorption and absorption. It is applied  
in the treatment of adsorption of identical molecules of a gas on  
an ideal Langmuir surface and of absorption in an ideal crystal  
lattice. By means of polynomial splitting, an equation is derived  
for the equilibrium isotherm of adsorption of interacting molecules.

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1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLS--CALCULATION OF MOLECULAR INTERACTION IN ADSORPTION AND ABSORPTION  
-U-  
AUTHOR--FEDYANIN, V.K. F  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 295-8  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CALCULATION, ADSORPTION, MOLECULAR INTERACTION, CRYSTAL  
STRUCTURE, CHEMICAL ABSORPTION  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1073 STEP NO--UR/0076/70/044/002/0495/0498  
CIRC ACCESSION NO--AP0128500  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128500

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CASE OF THE LOCALIZED MONOLAYER ADSORPTION ON AN IDEAL SURFACE OR ABSORPTION IN AN IDEAL CRYST. STRUCTURE IS SOLVED BY THE STANDARD METHODS OF STATISTICAL MECHANICS WITH REGARD TO MOL. INTERACTION. IT IS ASSUMED THAT ADSORPTION SETS IN ON N (N YIELDS INFINITY) LOCALIZED CENTERS FORMING THE PERIODICAL ONE, TWO, AND THREE DIMENSIONAL STRUCTURE. ONLY THE CASE OF IDENTITY OF GASEOUS MOLs. CHARACTERIZED BY THE CHEM. POTENTIAL AND MOLs. ADSORBED IS STUDIED. THE EQUATION OF THE EQUIL. SURPTION ISOTHERM OF INTERACTING MOLs. IS DERIVED. FACILITY: NAUCH.-ISSLED. FIZ.-KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 616.938.75-036.22-084.484:546.215

FEDYAYEV, B. P., FLORENKOVA, K. M., SIDENKO, V. V., and STEPANOVA, Z. I.

"Viricidal Action of Hydrogen Peroxide Aerosols in Disinfecting the Air in an Influenza Focus"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972, pp 137-142

Abstract: Hydrogen aerosols were sprayed at the rate of 0.020 to 0.31 g/m<sup>3</sup> in a children's institution during an epidemic of A<sub>2</sub> influenza (Hong Kong-68 strain). Virus was isolated from 12 of 27 air samples obtained before the spraying, but it was not found in any of 24 samples obtained 40 minutes to 3 hours afterward. None of the children brought into the sprayed areas 30 to 40 minutes after disinfection experienced any side effects, but the personnel who did the spraying suffered mild irritation of the eyes and upper respiratory tract while those exposed to larger doses (0.029 to 0.035 g/m<sup>3</sup>) developed transient nausea, vomiting, headaches, and pronounced irritation of the mucosa.

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Immunology

USSR

UDC 615.372:576.851.551].015.4:612.017.1

YEGOROVA, N. B., YEFREMOVA, V. N., and FEDYAYEV, S. E., Moscow Institute of Vaccines and Sera imeni Mechnikov

"Immunobiological Parallels in Experimental Investigations of Dry and Liquid Vaccinal Aerosols on Animals. Report II. Sensitizing Action of Tetanus Toxoid Aerosol Depending on Its Fractional Dispersive Composition"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971, pp 82-87

Abstract: The tests were performed on guinea pigs, and the development of anaphylactic shock and lethal outcome served as the criterion of sensitization. In all cases, the antitoxin titers in the animals were 0.01-0.1 MU/ml after the first vaccination and 40-50 MU/ml after the second vaccination. Combined tetanus toxoid and typhoid antigen aerosol containing less than 50% of small particles (up to 2 microns in diameter) induced anaphylactic shock in 33% of the animals after the first immunization and in 49% after the second, while combined aerosol containing 67-70% of the small particles induced anaphylactic shock in 73% and 79% respectively and lethal outcome in 23% of the animals. Vaccination with aerosols containing only tetanus toxoid yielded similar results. It is concluded that the presence of typhoid antigen does not

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USSR

YEGOROVA, N. B., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii,  
No 11, 1971, pp 82-87

affect the toxicity of the preparation and that the proportion of small dis-  
persoids should be appropriately reduced in order to make the aerosols less  
toxic.

2/2

Instruments and Equipment

USSR

UDC 616.008.9-073.55

FEDYAYEV, S. F., and BELYAKOV, V. A., Moscow Scientific Research Institute of Vaccines and Sera imeni Mechnikov

"Using the Light Scattering Method to Study Biological Aerosols"

Moscow, Laboratornoye Delo, Vol 11, 1971, pp 699-701

Translation: Modern artificial biological aerosols used for immunization of people and animals are distinguished by a wide range of particle concentrations per unit of volume and also by their polydispersity (from fractions of a micron to dozens of microns). Under these circumstances the first instruments designed for the study of aerosol parameters which worked on the principle of light scattering, were unsuitable.

The problem of the present work is to create methods and instruments which provide the necessary accuracy in determining particle and weight concentration and also the spectrum of atomization of the vaccine, which is made into aerosol by atomizing instruments.

It was necessary to create a device with high resolving power, i.e., one which would provide: 1) recording of 0.5-40 micron particles, 2) the possibility of measuring aerosol concentrations up to 500,000 units in one liter, and 3) the simultaneous recording of the entire spectrum of particles.

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USSR

FEDYAYEV, S. F. and HELYAKOV, V. A., *Laboratornoye Delo*, Vol 11, 1971, pp 699-701

Among the photoelectric instruments suitable for recording particles in the air was the electron-optical system of the A3-4 device. It was used as the basis for the sensor of the device. The main optical schematic of the sensor of the photoelectric aerosol dispersion meter AD-1 is shown in Fig. 1.

With the help of a diaphragm (3) and the objectives (2), the ray of light from the source (1) is focused into a cylindrical beam with a diameter of 1 mm. Through the connecting pipe (4) an aerosol stream with a diameter of 1 mm is directed perpendicular to the focused ray of light. The intersection of the light ray from the source and the aerosol stream forms the measurement volume of the optical system of the sensor. Perpendicular to the plane of the ray from the source and the aerosol stream, intersecting the measurement volume is the visual axis of the photomultiplier (7).

When particles in the air enter the measurement volume of the sensor, they scatter the light from the source which is sensed by the photomultiplier. As a result of this, at the output of the photomultiplier electric pulses arise which are proportional to the square of the particle radii. From the sensor, after appropriate amplification, the electric pulses are directed through a 5-meter cable to the amplitude selectors in the analytical and

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USSR

FEDYAYEV, S. F. and BELYAKOV, V. A., *Laboratornoye Delo*, Vol 11, 1971, pp 699-701

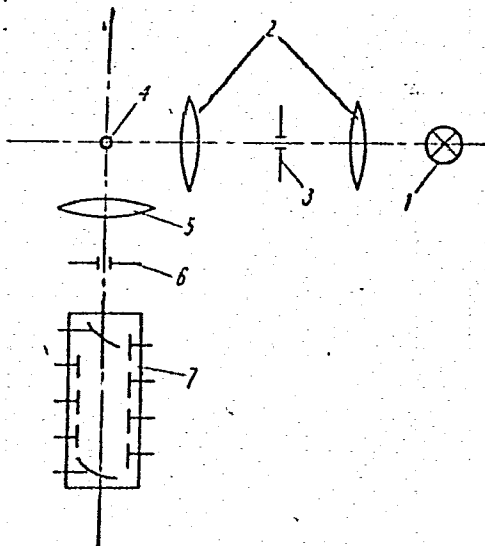


Fig. 1. The principal optical scheme of the sensor. 1-source; 2-source objectives; 3-source diaphragm; 4-connecting pipe; 5-objective of the photomultiplier; 6-diaphragm of the photomultiplier; 7-photomultiplier

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USSR

FEDYAYEV, S. F. and BELYAKOV, V. A., *Laboratornoye Delo*, Vol 11, 1971, pp 699-701

computing block. After fractionation, the pulses are counted and are fed to the indicator, an electromechanical counter of the MMS-54 type.

The AD-1 aggregate makes it possible to record simultaneously pulses in a wide range of particle sizes ranging in diameter from 0.5 to 4 microns and from 3 to 40 microns. This is made possible by the existence of two sub-ranges with an automatic change in the amplification factor of the pulse amplifier and adjustment of the amplitude selectors. The aggregate has five channels with various conversion factors: 128, 64, 32, 16, and 8. The rate of passage of the aerosol through the sensor is 0.2 l/min. All this makes it possible to sufficiently monitor the concentrated artificial polydisperse biological aerosols (200,000 to 400,000 units in 1 l).

The maximum count rate for particles A is determined by the illuminated space of the sensor through which the aerosol stream passes. Poisson distribution predicts that two or more particles have a probability of not more than 5% of passing through the illuminated space if the mean population does not exceed 0.4 particles. Assuming that the diameter of the aerosol stream is  $d = 0.1$  cm and the width of the light beam which intersects the particles is  $h = 0.1$  cm. we find:

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USSR

FEDYAYEV, S. F. and BELYAKOV, V. A., Laboratornoye Delo, Vol 11, 1971, pp 699-701

$$A = \frac{4 \cdot 0.4}{\pi d^2 h} = 500 \text{ particles/cm}^3. \text{ The instrument}$$

is calibrated for a relatively monodisperse medium Lycopodium, 80% of whose spores have a diameter of 28 microns, which makes it possible to measure the size of the aerosol particles with sufficient accuracy.

The following methods are used for calibration: The electro-optical sensor is installed with a connecting pipe pointing downward. A pump is connected at the other side and air is drawn through the illuminated space of the sensor at a rate of 0.2 l/min. With a light priming of a small amount of Lycopodium in front of the connecting pipe an aerosol cloud is formed which is carried by the air stream so that the Lycopodium particles migrate to the measuring volume of the sensor where the light scattered by them is transformed into electric pulses which are registered by an oscillograph. After determining the amplitude of the electric pulse which corresponds to the average particle size of 28 microns and taking into account the proportionality between the pulse amplitude and the square of the particle radius, we construct a graph for adjusting the amplitude selectors of the device (Fig. 2). After this, using a pulse generator, the operational thresholds of the selectors of all the five channels of the two subranges are adjusted.

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USSR

FEDYAYEV, S. F. and BELYAKOV, V. A., *Laboratornoye Delo*, Vol 11, 1971,  
pp 699-701

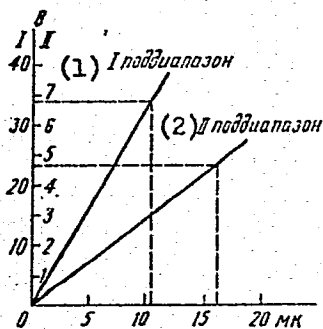


Fig. 2. Graph of adjustment of the thresholds of the amplitude selectors of the device. The horizontal -- the square of the radius of the particle (in microns); on the vertical -- the pulse amplitude (in volts).

Key: 1. Subrange 1  
2. Subrange 2

For comparison of the accuracy of calibration described above, the rather labor-consuming calibration on a sedimentometer was conducted from an oil fog obtained by bubbling. No significant deviations were observed.

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USSR

FEDYAYEV, S. F. and BELYAKOV, V. A., *Laboratornoye Delo*, Vol 11, 1971, pp 699-701

Experimental tests have been conducted in chambers of various sizes: 0.7, 5.6, and 112 m<sup>3</sup>. In the tests dry aerosol vaccines from the Moscow Scientific Research Institute for Vaccines and Sera imeni I. I. Mechnikov were used. Vaccines were atomized using PAV-65 device. The rate of passage of air through the measuring volume of the sensor was adjusted to 0.2 l/min/ a type 822 atomizer. Tests lasted 15 min. The connecting pipe of the sensor was placed in a horizontal position. The concentration by weight was monitored by two additional methods: by protein content (Lowry method) and by the fluorescence of the vaccine solution being tested (electronic fluorometer EF-3M). Samples were also taken with the aid of an impinger.

On the basis of numerous experiments, spectra were obtained for the count and the weight distributions of dry aerosol vaccines.

Atomization of dry vaccines using the PAV-65 device follows an exponential course while the maximum concentration by weight is found for 19-micron particles. This gives favorable conditions for vaccination. It causes little reaction with a good immunizing effect.

Thus the photoelectric method of investigating particles of biological polydisperse aerosol vaccines in an air stream at the present time, in our

7/8

USSR

FEDYAYEV, S. F. and PELYAKOV, V. A., *Laboratornoye Delo*, Vol 11, 1971,  
pp 699-701

opinion is the only sufficiently reliable method of studying the spectrum of particle size of an aerosol. This makes it possible to analyze the number and size of the particles in a unit volume and to observe the kinetics of change in particle concentration during the experiment.

8/8

USSR

UDC 621.385.6

FEDYAYEV, V.K.

"Effect Of Nonuniform Field On Current In Microwave Triode (Abstract Of Deposited Manuscript"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue 12, p 98 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4A151)

Translation: In contemporary microwave triodes the grid-cathode spacing is often less than the pitch of the grid turns, which leads to a considerable non-uniformity of the field between the turns. The effect is investigated of these nonuniformities on transit phenomena in triodes of plane construction. Computations show that with a grid-cathode spacing less than the pitch, there is observed a considerable change of the pulse form of the convection current, and its direct component and first harmonic. The dependences are investigated of the amplitude of these changes on the relative dimensions of the triode, the transit angles between the electrodes, the cut-off angle of the grid voltage, the relative amplitude of the grid and anode voltages, and the displacement angle between them. On the basis of the investigations conducted it is recommended that the grid-cathode spacing be chosen as not less than the pitch of the grid turns. Summary.

1/1



USSR

UDC 615.21:547.831.3

MOSKOVKINA, T. V., TILICHENKO, M. N., KURILENKO, V. M., and FEDYAYEVA-BASOVA, L. P., Far Eastern University, Vladivostok, and the Novokuznetsk Scientific Research Chemicopharmaceutical Institute

"In Search of Medicinal Agents in the Hydroquinoline Series"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, No 3, 1973, pp 3-6

Abstract: For purposes of obtaining new neutropic agents, a number of tetra- and decahydroquinolines were synthesized by reacting 1,5-diketones (prepared by adding cyclohexanone or  $\alpha$ ,  $\alpha$ -dimethyltetrahydro- $\gamma$ -pyrone to chalcone) with formamide in formic acid (Leuckart reaction). The resultant hydroquinolines were colorless, crystalline substances that formed water-soluble salts with mineral acids. Only one preparation, 1-amino-2,4-diphenyldecahydroquinoline, showed antidepressive properties by preventing reserpine-induced blepharoptosis and hypothermia, and chlorpromazine catalepsy.

1/1

USSR

UDC 536.243

ALAD'YEV, I. T., GORLOV, I. G. and FEDYNSKIY, O. S.

"Effect of Nonuniformity of Heat Inflow Along Channel Length on Critical Heat Flux With Potassium Boiling In Tubes"

Moscow, Teplo-Massopernos v Odn-i Dvukhfaznykh Sredakh, 1971, pp 5-9

Abstract: An experimental investigation of critical heat flux with increasing and decreasing heat inflow along the length of the pipe was conducted.

The mass velocity was from 20 to 250 kg/m<sup>2</sup>sec, pressure nearly atmospheric, temperature close to the saturation one.

Potassium was flowing through round, vertical, molybdenum tubes. The heat inflow was produced by the electric current passing through the tube. The distribution of the heat inflow was controlled by varying the thickness of the tube wall.

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ALAD'YEV, I. T., et al., Teplo-Massopernos v Odnno-i Dvukhfaznykh Sredakh, 1971, pp 5-9

The following conclusions were made:

1. The critical heat flux increases with the mass velocity
2. The critical heat flux decreases with the increase of the tube length
3. The critical heat flux usually occurs at the outlet of the tube.

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1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--CONTRACTILE CAPACITY OF THE MYOCARDIUM IN PATIENTS WITH  
ATHEROSCLEROTIC CARDIOSCLEROSIS WITH CIRCULATORY INSUFFICIENCY -U-  
AUTHOR--FEDYSHIN, P.S.  
COUNTRY OF INFO--USSR F  
SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 17-21  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--MYOCARDIUM, ATHEROSCLEROSIS, BLOOD CIRCULATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1726 STEP NO--UR/0475/70/000/005/0017/0021  
CIRC ACCESSION NO--AP0129094  
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129094

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DYNAMIC POLYCARDIOGRAPHIC STUDY WAS CARRIED OUT IN 85 PATIENTS WITH CIRCULATORY INSUFFICIENCY DUE TO ATHEROSCLEROTIC MYOCARDIOSCLEROSIS. IT WAS FOUND THAT THE STRUCTURE OF THE LEFT VENTRICLE SYSTOLE WAS SIGNIFICANTLY CHANGED. THESE CHANGES WERE CHARACTERIZED BY A PROLONGED PERIOD OF TENSION AT THE EXPENSE OF BOTH ASYNCHRONOUS AND ISOMETRIC CONTRACTION PHASE. THE EXPULSION PERIOD WAS SHORTENED, BUT THE MECHANICAL SYSTOLE WAS NOT ABNORMAL. EFFICIENT TREATMENT RESULTED IN AN IMPROVEMENT OF THE PHASE ANALYSIS INDICES, THOUGH NORMALIZATION WAS NOT OBSERVED. FACILITY: KAFEDRA TERAPII I KIYEVSKOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY.

UNCLASSIFIED

USSR

FEDYUK, E. O.

"Reply of E. O. Fedyuk, Author of the Article 'The Effect of Ribonuclease on Fixed Rabies Virus,' to Remarks by M. B. Maksymovych"

Kiev, Mikrobiologicheskii Zhurnal, Vol 33, No 3, May/June 71, p 395

Abstract: Fedyuk in his reply to the remarks by Maksymovych fully concurs with the latter's conclusions about the duality of character of the infectious process in rabies and the prophylactic effectiveness of the combined application of ribonuclease and gamma globulin. He disagrees, however, with Maksymovych's conclusion about the prophylactic effectiveness of ribonuclease alone. Investigations carried out by him and others failed to establish that ribonuclease had any effect on the dissemination and course of rabies. Maksymovych's error, Fedyuk writes, stems from his attempt to identify the mechanism of dissemination of adenovirus infections in cell cultures with the mechanism of pathogenesis of rabies in the animal organism.  
1/1

USSR

UDC 576.858.21

FEDYUK, E. O., Sector of Molecular Biology and Genetics, Institute of Microbiologist and Virology, Academy of Sciences, Ukrainian SSR

"Action of Ribonuclease on Rabies Fixed Virus"

Kiev, Mikrobiologichesk Zhurnal, Vol 32, No 6, Nov/Dec 70, pp 744-746

Abstract: Pancreatic RNA-ase in the maximum tolerated doses was introduced into tissue cultures infected with rabies virus and administered intraperitoneally to mice infected intracerebrally and intramuscularly with injections of rabies virus. RNA-ase in the maximum tolerated dose (30 gamma/ml) reliably reduced the rabies virus titer in tissue cultures. Prophylactic administration to mice of RNA-ase in a dose of 0.1 mg/g every 8 hrs (maximum tolerated dose 0.25 mg/g) had no effect on the course or outcome of the infection.

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FEDYUKIN, D. L.

AA0046414

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

242477 DETERMINING THE RESISTANCE OF POLYMERS TO CORROSIVE MEDIUM, where samples of articles (5) are fixed to clamps (3) and (4). Clamps (3) are mounted on the revolving disc (7), clamps (4) are moving in the groove in the immobile plate (6) which is of sinusoidal or similar form in order to change the distance between the clamps in suitable manner. Chamber (2), housing the clamps and disc, can be filled with corrosive media, and disc (7) is revolved by motor (6) causing the clamps to put oscillating loads on the samples. The measurement data can be obtained by suitably placed strain gauges.

2.2.66 as 1053420/23-5. A.N.GORDEEV et al. RUBBER & LATEX RES. INST. (8.9.69) Bul 15/25.4.69. Class 42k. Int.Cl.G 01 n.

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1/70

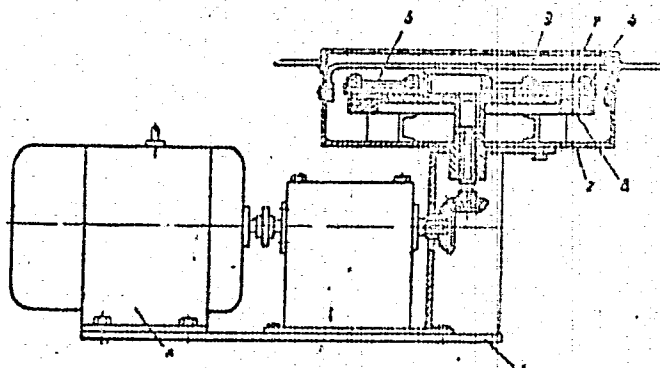
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19781619

AA0046414

AUTHORS: Gordev. A. N.; Kozlov. I. I.; Orekhova, N. I.; Reznikovskiy, M. M.;  
Smirnova, T. N.; Suzdal'nitskaya, Zh. S.; Fedvukin, D. L.; Shulev, Yu. S.

Nauchno - Issledovatel'skiy Institut Rezinovykh i Lateksnykh Izdeliy

19781620

1/2 . 029. UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--RECORDING OF TRACKS OF IONIZING PARTICLES ON CELLULOSE FILMS IN  
VARIOUS GASEOUS MEDIA -U-  
AUTHOR--(04)--PRIVALOVA, V.E., KARTUZHANSKIY, A.L., SOROKIN, YE.S.,  
FEDYUKIN, V.YA.  
COUNTRY OF INFO--USSR F  
SOURCE--ZH. NAUCH. PRIKL. FOTOGR. KINEMATOGR. 1970, 15(1), 59-61  
DATE PUBLISHED-----70  
SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS  
TOPIC TAGS--RECORDING EQUIPMENT, ION EMISSION, PARTICLE TRACK PHOTOGRAPHY,  
PHOTOGRAPHIC FILM, CELLULOSE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1983/0309 STEP NO--UR/0077/70/015/001/0059/0061  
CIRC ACCESSION NO--AP0053294  
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