

USSR

UDC 639.16.07.669:65.011.56

SMOLYAK, V. A., UZLYUK, V. N., Candidates of Technical Sciences,  
VASILENKO, V. I., ZELENIN, V. M., YASHIN, YU. F., Engineers

"Gamma-Relay Level Gage for Automatic Dosage Control"

Moscow, Mekhanizatsiya i Avtomatizatsiya Proizvodstva, No 5, 1970,  
pp 38-39

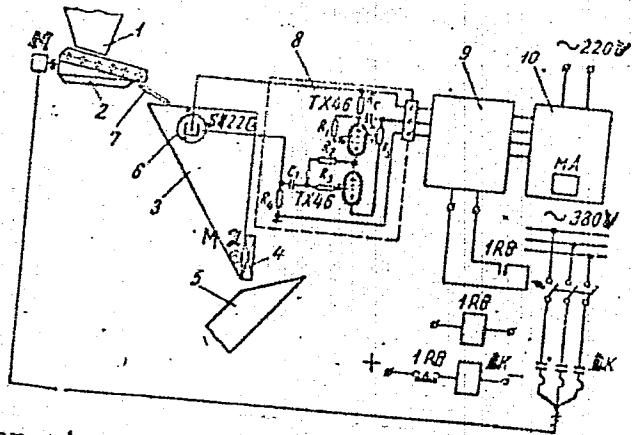
Translation: Volume dosage was applied to a rebuilt furnace of a metallurgical plant since, under the prevalent technical conditions, it was impossible to use a complex of typical equipment and mechanisms for assembling and dosing the coke in mass. Based on a GR-7 radioisotope gamma relay, a system for automatic regulation of coke volume dosage controlling a roller disc screen for sifting coke particles and a main skip hoist (see drawing) was developed.

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SMOLYAK, V. A., et al., Moscow, Mekhanizatsiya i Avtomatizatsiya  
Proizvodstva, No 5, 1970, pp 38-39



Automatic Radioisotope Control System for Coke Dosage  
and Disc Screen Regulation:

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SMOLYAK, V. A., et al., Moscow, Mekhanizatsiya i Avtomatizatsiya  
Proizvodstva, No 5, 1970, pp 38-39

- 1) coke bunker; 2) disc screen; 3) coke hopper;
- 4) gate; 5) skip; 6) radiation detector;
- 7) nozzle for adjusting input coke mass; 8) sensor;
- 9) electronic relay block; 10) control block

The radiation source is in a cast iron collimator container outside the weight hopper 3. at its side wall. The container provides safety from radiation and forms a gamma radiation beam directed toward the detector 6, which uses a SI22G counter in a protective tube 200 mm in diameter and with a wall thickness of two mm in the upper part of the interior of the hopper 3. The placement of the detector inside the object measured, where the radiation by 30-40% the activity of the source and thus reduces the danger of radiation to personnel operating the loading mechanism.

To prevent false operation of the gamma relay and to improve the coke dosage automatic control system, a radiometric pair

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SMOLYAK, V. A., et al, Moscow, Mekhanizatsiya i Avtomatizatsiya  
Proizvodstva, No 5, 1970, pp 38-39

(source and detector) was placed so that the gamma beam, perpendicular to the longitudinal axis of the screen, is not interrupted by the flow until the moment the hopper is filled with a specified amount of coke and its top is hit by the gamma beam.

To adjust the system -- i.e., to change the specified mass within the limits of 100-200 kg -- the pouring nozzle 7 is shifted by 200-300 mm and pulls the top away from the gamma beam to the screen opposite the wall of the hopper, so that the latter is filled with a large quantity of the coke before the screen is switched off. And, conversely, the sideward approach of the top to the vertical plane passing through the gamma beam leads to an earlier intersection of the latter by the top of the coke mass. Consequently, the control of the coke mass within the technical range depends on which of the following interrupts the gamma beam: the top of the poured coke mass or the side slope ascending to the top. In the latter case, the top is higher than the level at which the gamma beam is permitted to pass.

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SMOLYAK, V. A., Et al., Moscow, Mekhanizatsiya i Avtomatizatsiya  
Proizvodstva, No 5, 1970, pp 38-39

This control system also contains a sensor, an electronic relay block, and a control block, as well as a low-current control for the electric-feed network of the disc screen.

The control signal from the sensor is applied to the relay of the electron relay block operating in the positive (triggered) position. When the hopper is filled with the specified amount of coke, the gamma beam intensity is weakened to one-third its former level, and contacts IRB of the switch are opened. The coil of IRB is deenergized, the closed contacts IRB in the coil of the linear contactor LK open, and the motor M of the disc screen is switched off. The screen is once more switched on after the gate 4 is opened (motor M2) and the coke is poured from the hopper into the skip 5.

The radioisotope automatic coke dosage regulation systems are based on both coke-loading mechanisms. The annual saving to the economy amounts to 42 thousand rubles.

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032  
 TITLE--HEAT TRANSFER DURING THE BOILING OF SATURATED HYDROCARBONS IN A  
 THERMOSIPHON VAPORIZER -U-  
 AUTHOR--(03)-GELPERIN, N.I., SOLOPENKOV, K.N., UZUNOV, A.KH.  
 COUNTRY OF INFO--USSR  
 SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(2), 234  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--PHYSICS, MATERIALS  
 TOPIC TAGS--HEAT TRANSFER, BOILING, SATURATED HYDROCARBON, VAPORIZATION  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--3002/1582  
 CIRC ACCESSION NO--AP0128972  
 STEP NO--UR/0063/70/015/002/0234/0234  
 UNCLASSIFIED

032  
 CIRC ACCESSION NO--AP0128972 UNCLASSIFIED PROCESSING DATE--27NOV70  
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM AN EXPTL. STUDY OF HEAT  
 TRANSFER IN A THERMOSYPHON VAPORIZER WITH 50, 70, AND 90PERCENT DYNAMIC  
 LIQ. LEVEL IN THE VERTICAL PIPE OVER A RANGE OF THERMAL LOADINGS IN THE  
 SINGLE TUBE CLOSED CIRCUIT PIPE CAPABLE OF VARIOUS REGIMES OF  
 CIRCULATORY MOTION, IT WAS SHOWN THAT THE HEAT TRANSFER RATE WAS  
 INDEPENDENT OF THE CIRCULATION RATE OR THE VAPOR CONTENT IN THE STREAM.  
 THE RELATION:  $\alpha = 13.9 \phi^{0.62}$ , WHERE  $\phi$  IS THE COEFF.  
 OF LOWERING OF THE HEAT TRANSFER RATE IN TRANSITION FROM BOILING H SUB2  
 0 TO BOILING HYDROCARBON,  $\alpha$  IS THE AV. HEAT TRANSFER COEFF. AND  $Q$  IS  
 THE SP. HEAT FLUX OF THE HEATING SURFACE. THE VALUE OF  $\phi$  IS ALSO  
 EXPRESSED AS:  $\phi = \frac{M_{SUBH}}{M_{SUBW}}$  WHERE  $M_{SUBH}$  AND  $M_{SUBW}$   
 SUBH ARE MOL. WTS. OF H SUB2 0 AND THE HYDROCARBON USED, RESP.; THE 0.56  
 EXPONENT APPEARS CHARACTERISTIC OF ALIPHATIC HYDROCARBONS OF NORMAL  
 STRUCTURE (E.G., HEPTANE, OCTANE, DECANE) WHICH ARE LIQ. AT NORMAL TEMP.  
 AND PRESSURES. FACILITY: MOSK. INST. TONKOI. KHIM. TEKHNOL. IM.  
 LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED



USSR

UDC 616.89-008.44-092.9-07:616.151.5-07

CHERNIGOVSKAYA, S. V., CHERKOVICH, G. M., and UZUNYAN, L. A., Institute of Experimental Pathology and Therapy, Academy of Medical Sciences USSR, Sukhumi, and Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"The Effect of Severe Emotional Stress on Blood Coagulation System Indexes in Monkeys"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 75, No 3, 1973, pp 29-32

Abstract: Fibrinogen, alpha and beta lipoprotein, free fatty acid, and cholesterol concentration, as well as recalcification and heparin time, prothrombin index, thrombocyte adhesion, and fibrinolytic activity of blood were determined in 2 groups of baboons -- six controls on normal diet and 7 monkeys that had been fed a high cholesterol diet for 3 years -- prior to and during emotional stress induced by violating the customary tribal hierarchy (Miminoshvili method) and disrupting the daily feeding routine and the diurnal light-darkness cycle (Cherkovich method). A significant and practically identical rise in fibrogen concentration from an initial  $363 \pm 36$  to  $470 \pm 37$  mg% was observed in both groups during stress, even though the monkeys on a high cholesterol diet had a persistently elevated free fatty acid concentration (1,002 vs. 740 mequ/L).

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CHERNIGOVSKAYA, S. V., et al., Byulleten' Eksperimental'noy Biologii i Meditsiny,  
Vol 75, No 3, 1973, pp 29-32

Fluctuations in the other parameters were random and insignificant. It is suggested that a prolonged elevation of fibrinogen concentration may change the permeability of blood vessel walls and promote atherosclerosis and thrombopoiesis.

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UNCLASSIFIED  
 TITLE--HEAT TRANSFER DURING THE BOILING OF NORMAL ALKANES IN THE VERTICAL.  
 HEATING TUBE OF A EVAPORATOR WITH NATURAL CIRCULATION -U-  
 AUTHOR--GELPERIN, N.I., SOLOPENKOV, K.N., UZUNOV, A.KH.

*u*

COUNTRY OF INFO--USSR  
 SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1) 44-7  
 DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY  
 TOPIC TAGS--HEAT TRANSFER, HEPTANE, OCTANE, DECANE, EVAPORATOR

CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1989/0191  
 CIRC ACCESSION NO--AP0106847  
 STEP NO--UR/0064/70/046/001/0044/0047  
 UNCLASSIFIED

027  
 CIRC ACCESSION NO--AP0106847 UNCLASSIFIED PROCESSING DATE--11SEP70  
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EMPIRICAL EQUATION FOR THE HEAT  
 TRANSFER COEFF., ALPHA, IN THE BOILING OF ETA, HEPTANE, ETA, DECANE IN A  
 VERTICAL TUBE UNDER ATM. PRESSURE IS PROPOSED: ALPHA EQUALS 13.9(R  
 PRIME-R) PRIME 0.47 Q PRIME 0.62, WHERE R PRIME AND R ARE THE SO CALLED  
 RECHORS (FRIEND (1942)) FOR H SUB 2 Q AND FOR THE ALKANE, RESP., AND Q  
 IS THE THERMAL LOAD AT THE TUBE WALL. FOR THE ABOVE ALKANES AT Q  
 BETWEEN 14000 AND 35000 KCAL-M PRIME 2 HR, THE VALUES OF ALPHA (FOR A CU  
 TUBE) RANGED FROM 2000 TO SIMILAR TO 4000 KCAL-M PRIME 2 HR.

UNCLASSIFIED

USSR

UDC 591.1

AKOPYAN, S. A., and UZUNYAN, A. A., Chair of Human and Animal Physiology  
Yerevan State University, Yerevan

"State of the Regulatory Mechanisms of Water Metabolism in Irradiated Animals  
Upon Hyperhydration. I. Evacuation of Liquids from the Stomach Into the  
Intestine and Diuresis"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 24, No 4, Apr 71, pp 33-40

Abstract: Water metabolism upon hyperhydration was studied on dogs with stomach  
fistulas, isolated sections of the intestine in some cases, and a urinary bladder  
operated upon according to Pavlov. Hypotonic water (Yerevan drinking water) or  
isotonic water containing 0.9% NaCl was used. The effects of irradiation with  
x-rays in a dose of 700 R on the transfer and elimination of water were studied.  
The results indicated that the water-salt metabolism underwent phasic changes  
in the course of radiation sickness. In the first days after irradiation, the  
following processes were accelerated: evacuation of water from the stomach into  
the intestine, its resorption from the intestine, and elimination by the kidneys  
as compared with these phenomena for non-irradiated controls. This was the phase  
of increased reactivity of the regulatory mechanisms, which had the aim of  
rapidly restoring the water metabolism disturbed by hyperhydration. It was

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AKOPYAN, S. A., and UZUNYAN, A. A., *Biologicheskij Zhurnal Armenii*, Vol 24, No 4, Apr 71, pp 33-40

accompanied by predominance of excitation processes, some disinhibition of the central nervous system, and reinforced respiration, blood circulation, and digestion. In the advanced stage of radiation sickness on the 15th day after irradiation, there was delayed evacuation of water from the stomach into the intestine, which was accompanied by oligouria. The kidney function at this stage was affected to a greater extent than elimination from the stomach. Elimination of the isotonic solution from the stomach was delayed to a greater extent than that of hypotonic water. As radiation sickness advanced, differences in the regulation of water metabolism in relation to the type of water used (hypo-, hyper-, or isotonic) tended to decrease and the effect of the initial state of the stomach (rest or hunger contractions) at which water was introduced into the stomach on the evacuation of water from it diminished. In the experiments conducted 1,550 ml water were introduced into the stomach.

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Public Health, Hygiene and Sanitation

USSR

UZVALOK, M. A.

UDC 629.114.654

"The Automobile for the Disinfection Service"

Moscow, Meditsinskaya Tekhnika, No 4, Jul/Aug 72, pp 52-53

Translation: The Central Industrial Design Office (CIDO) Mekhanizatsiya has designed a special automobile for the disinfection service (see Figure below).

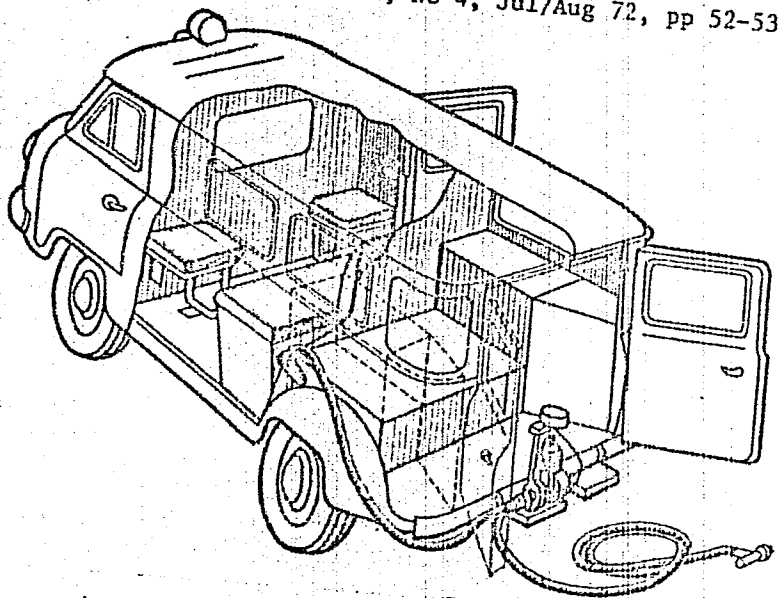
Appliances and equipment of this automobile make it possible to perform various tasks under field conditions, such as disinfection of buildings, extermination of rats and mice, sanitary treatment of public markets, cesspools, and of other objects. Because of a high chassis, the automobile can run on all kinds of roads and in places with no roads at all. This is of importance for locations with bad roads, where the disinfection services can be carried out during any season of the year. The automobile is divided into passenger and equipment sections by an airtight divider. The passenger section has one built-in seat for three persons and two folding back seats. Including the driver and his assistant, the automobile can carry seven persons.

The passenger section is equipped with light, heater, and ventilation system.

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UZVALOK, M. A., Meditsinskaya Tekhnika, No 4, Jul/Aug 72, pp 52-53



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Automobile for the Disinfection Service

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UZVALOK, M. A., Meditsinskaya Tekhnika, No 4, Jul/Aug 72, pp 52-53

Personal items of the servicing personnel and some of the equipment can be stored under the removable three-seat cushion.

The equipment section, which occupies the rear part of the automobile, contains the necessary devices and equipment needed for work. Cupboards and small night tables are located along both sides of the section. They contain equipment and attachments, including containers with pesticides, and a motor-driven sprayer MRZh-2. The sprayer is fixed on the folding footboard during operation requiring the spraying of cesspools, public markets, and buildings. The disinfection solution is supplied to the sprayer by a rubber hose from a tank fixed to the automobile floor. A wooden deck is built-in over the tank for storing the disinfected items or those needing treatment.

The automobile for the disinfection service is recommended for serial production. It will be produced at the Saransk Plant for Medical Equipment.

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032

UNCLASSIFIED  
TITLE--ANTIBODIES AND TRACE ELEMENTS OF THE BLOOD AND IMMUNOGLOBULINS IN  
CHRONIC DISEASES OF THE LIVER -U-  
AUTHOR--(05)-BONDAR, Z.A., ZOLOTNITSKAYA, R.P., UZYANOVA, V.L.,  
BELOKRINITSKIY, D.B., KIRILCHENKO, A.M.  
COUNTRY OF INFO--USSR

PROCESSING DATE--02OCT70

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 3, PP 18-23  
DATE PUBLISHED--70

u

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--INTERNAL ORGAN DISEASE, LIVER, BLOOD CHEMISTRY, TRACE ELEMENT,  
ANTIBODY, GLOBULIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY KEEL/FAME--1986/0815

STEP NO--UR/0504/70/042/003/0018/0023

CIRC ACCESSION NO--AP0102777  
UNCLASSIFIED

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CIRC ACCESSION NO--AP0102777 UNCLASSIFIED

PROCESSING DATE--020CT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS CONDUCT IMMUNOLOGICAL INVESTIGATIONS IN 110 PATIENTS WITH VARIOUS CHRONIC DISEASES OF THE LIVER. COMPARING THEM WITH CLINICAL AND HEMATOLOGICAL DATA. IT WAS FOUND THAT IN 47.2 PERCENT OF THE PATIENTS ANTIBODIES TO TRACE ELEMENTS WERE DETERMINED, MOSTLY ERYTHROCYTIC AND THROMBOCYTIC. THERE WAS FOUND A CERTAIN CORRELATION BETWEEN POSITIVE REACTIONS TO ANTIBODIES AND CYTOPENIA; DEGREE OF SPLENOMEGALY AND CHANGES IN THE AMOUNT OF IMMUNOGLOBULINS. THE GREATEST IMMUNOLOGICAL CHANGES WERE OBSERVED IN PATIENTS WITH CIRRHOSIS OF THE LIVER. THE SPLEEN PLAYED A GREAT ROLE IN THE IMMUNE CONFLICT. A SPECIAL IMPORTANCE SHOULD BE ATTACHED TO THE IMMUNE MECHANISM IN THE COMPLICATED GENESIS OF HYPERSPLENISM IN CHRONIC DISEASES OF THE LIVER, HOWEVER THE ASSESSMENT OF IMMUNOLOGICAL DATA SHOULD BE DONE WITH CAUTION IN VIEW OF NONSPECIFIC POSITIVE REACTIONS.

UNCLASSIFIED

USSR

Veterinary Medicine

UDC 619:576.858.4:576.809.32

PEREVOZCHIKOVA, N. A., and UZYUMOV, V. L., All Union Scientific Research  
Institute of Foot-and-Mouth Disease

"Interaction of Foot-and-Mouth Disease Virus with Cells of Tissue Cultures.  
Literature Review"

Moscow, Veterinariya, No 1, Jan 73, pp 41-43

Abstract: Two mechanisms of adsorption of the virus by tissue culture cells are effective. The first mechanism is purely physical and is based on retention of the virus particles on the cell surface by forces arising between the  $NH_2$  and SH groups of the virus protein and the acid phosphate groups of the cell wall. The second mechanism, which determines infection of the cells, is based on interaction between the virus receptors and specific lipoprotein or mucoprotein cell receptors. Viruses penetrate into sensitive cells by the following interactions: 1) disintegration of the virus particle on the cell surface followed by penetration into the cell of the freed nucleic acid; 2) resorption by the cell of an intact virus particle followed by degradation of the particle inside the cell in vacuoles formed during phagocytosis; 3) resorption of an intact virus particle, which undergoes partial degradation on the cell surface or in phagocytosis vacuoles and then enters the cytoplasm, where

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PEREVOZCHIKOVA, N. A., and UZYUMOV, V. L., Veterinariya, No 1, Jan 73, pp 41-43 ..

final deproteinization takes place. Mixed ways of penetration of a virus into cells are also possible. Riverson (1968) assumes that the virus of foot-and-mouth disease penetrates into sensitive cells by viropexis (a type of phagocytosis). An exact answer to the question as to how the virus of foot-and-mouth disease penetrates into cells and undergoes deproteinization is not yet available in the literature. After penetration of the virus into the cell and freeing of its genome, synthesis of the virus cannot be detected by virological or serological methods. Both the RNA and protein of the virus of foot-and-mouth disease are synthesized in the cell cytoplasm. The process of synthesis culminates in freeing of the virus particles from the cell, a process which may be gradual or explosive. The gradual freeing is typical for viruses with an outer lipoprotein membrane; because the foot-and-mouth virus does not contain lipids, explosive liberation of this virus is more probable.

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Veterinary Medicine

USSR

UDC 619:576.858.4

SIMONOVA, E. G., SKALINSKIY, Ye. I., ~~IZYUMOV, V. I.~~ and MISHCHANIN, V. A.,  
All Union Scientific Research Foot-and-Mouth Disease Institute

"Ontogenesis of Foot-and-Mouth Disease Virus (An Electron Microscope Study)"  
Moscow, Veterinariya, No 9, 1971, pp 28-31

Abstract: The development of foot-and-mouth disease (FMD) virus in the epidermal layer of guinea pigs' paws was studied. A suspension of type A22 virus adapted to these animals, in a dilution of 1:10 and a dose of 0.2 ml, was injected into the plantar surface of the paws, and material for study was extracted 6, 12, 17, 20, 24, 48, and 72 hours after infection. Extracts were fixed in a 1% solution of buffered glutaraldehyde, and then fixed in a 1% solution of osmic acid buffered with veronal acetate. The samples were washed with the original buffer, dehydrated in acetone, and polymerized at 60°C in 24-48 hr. Slices obtained on an ultramicrotome were contrasted with a saturated solution of uranyl acetate and lead salts by the Reynolds method and examined under an electron microscope. Guinea pig epidermis was treated and in the same manner infected with the same virus. A strain inactivated by heating was used as the control. The investigations established that formation

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SIMONOVA, E. G., et al., Veterinariya, No 9, 1971, pp 28-31

of the focus of infection begins on the 12th day after injection of virus in the cisternae of the endoplasmic reticulum in the horny layer of epidermis. In the course of its development, the virus destroys the membranes of the endoplasmatic reticulum, gradually extending the area of the infection. Electron microscope study of the ultrathin sections of the epidermis revealed the presence of full and empty particles of FMD virus 20-24 hours after infection.

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USSR

UDC 619:576.858.4

PEREVOZCHIKOVA, N. A., and IJZYUMOV, V. L., All Union Scientific Research  
Foot-and-Mouth Disease Institute

"Foot-and-Mouth Disease Virus in Subcultures of Hog Kidney Cells"

Moscow, Veterinariya, No 9, 1971, pp 31-33

Abstract: Investigations were conducted with an electron microscope to determine the formation of foot-and-mouth disease (FMD) virus-like particles in cells of a hog kidney subculture as a result of interaction of the virus with the cells. A clonal FMD virus type A, variant A<sub>22</sub> was propagated in a culture of trypsinized hog kidney tissue. The cells of the trypsinized tissue were then cultured in a test tube, and after the formation of a monolayer, washed with a maintenance medium, and infected with FMD virus. Thirty minutes after absorption of the virus, the medium was decanted, the culture washed with a fresh quantity of medium, and incubated at 37°C. Samples for electron microscope study were taken 4, 5, and 6 hours after infection. Metabolic processes in the samples were inhibited by keeping the cultures at 4°C for 18 hours. The material was then fixed in a buffer solution of osmium trioxide and poured into methacrylates by the plane-parallel method. Ultra-thin sections obtained on an ultramicrotome and contrasted with uranyl acetate and lead

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PEREVOZCHIKOVA, N. A., and UZYUMOV, V. L., Veterinariya, No 9, 1971, pp 31-33

citrate were examined under an electron microscope. The examination revealed the presence of virus particles in the cytoplasm of hog kidney cells. The particles are homologous and not found in the controls, which suggests that they are particles of FMD virus.

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UDC 619.616.988.43-094:576.8

UZUMOV, V. L., All Union Scientific Research Institute of Foot-and-Mouth Disease

"Structure and Properties of the Virus of Foot-and-Mouth Disease (Review)"  
Moscow, Veterinariya, No 9, Sep 70, pp 36-38

Abstract: Studies on the relationship between the structure and properties of foot-and-mouth disease virus are reviewed. It is noted that the biological and physicochemical properties of the virus are determined by the complete virus particle and its structural components. The virus particle consists of RNA surrounded by a protein capsule that is composed of 32 capsomers. The virus is not precipitated by freon, is thermolabile, and is unstable at a pH of less than 7. It has infectious, antigenic, complement-fixing, and precipitating properties and also has immunogenic activity. Approximately 99.5% of the particles in a foot-and-mouth virus population are incapable of infecting susceptible cells because the RNA in them has deteriorated. The protein capsule consists of particles (capsomers) with a diameter of 7 millimicrons, whereas the diameter of the virion is virus particle 20-28 millimicrons. As distinguished from the virus particle containing RNA, these particles are stable for 30 min at 56°C and do not deteriorate at a pH of less than 7. They are

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UZYUMOV, V. L., Veterinariya, No 9, Sep 70, pp 36-38

noninfectious and nonimmunogenic, but have complement-fixing properties and are active in the precipitation reaction. The RNA is less sensitive to pH shifts than the complete virus and also has a more extensive temperature stability range. However, it deteriorates rapidly in storage.

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UDC: 517.948:513.88:518

USSR

VAARMANN, O., Institute of Cybernetics, Estonian SSR Academy of Sciences

"Some Iteration Methods of Finding Normal Solutions of Nonlinear Equations"

Tallin, Izvestiya AN EstSSR: Fizika, Matematika, Vol 22, No 4, 1973, pp 343-349

Abstract: The author considers the problem of finding the stationary point of a functional  $\varphi(x) = \|F(x)\|^2$ , where the operator  $F(x)$  acts from one Hilbert space  $H_1$  into another  $H_2$ . This problem is intimately related to that of solving the equation

$$[F'(x)]^*F(x) = 0.$$

Methods frequently used for solving this problem involve pseudo-inverse operators  $[F'(x)]^+$ , which are generally fairly difficult to find. Therefore an effort is made in this paper to find iteration methods which converge rapidly. A numerical example is given.

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UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--EFFECT OF HYDROGEN ON THE INTERNAL FRICTION OF ALPHA IRON AT ROOM

TEMPERATURE -U-

AUTHOR--(02)-SHUMILOV, M.A., VACHEV, Z.K.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(1), 136-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--HYDROGEN, METAL INTERNAL FRICTION, IRON ALLOY, CRYSTAL  
DISLOCATION, PLASTIC DEFORMATION, GAS CONTAINING METAL, METAL CONTAINING  
GAS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/1009

STEP NO--UR/0148/70/013/001/0136/0139

CIRC ACCESSION NO--AT0102943

UNCLASSIFIED

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CIRC ACCESSION NO--AT0102943

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT WAS DETD. OF H ON INTERNAL FRICTION IN ALPHA FE (C 0.07, S 0.022, P 0.01, SI 0.02, CR 0.04, NI 0.02, AND MN 0.37 WT. PERCENT) AS WELL AS THE INTERACTION OF H WITH DISLOCATIONS. THE FE WAS HYDROGENATED ELECTROLYTICALLY AT ROOM TEMP., THEN SUBJECTED TO VARIOUS HEAT TREATMENT OPERATIONS, AND INTERNAL FRICTION WAS DETD. BY TORSIONAL VIBRATIONS. SUBSEQUENTLY, A PURIFIED FE (BY LONG ANNEALING IN H AT 1100DEGREES WITH ANNEALING IN VACUO FOR 3 HR AT 650DEGREES TO REMOVE MOST OF THE H) WAS SIMILARLY TESTED. THE HYDROGENATION OF FE PROBABLY CHANGED THE CONC. AND COMPN. OF COTTRELL CLOUDS. THIS IS CONFIRMED BY THE FACT THAT THE CRIT. RELATIVE DEFORMATION CHANGED AFTER THE HYDROGENATION. SEVERAL INDICATIONS LEAD TO THE CONCLUSION THAT H IN ALPHA FE IS FAIRLY STRONGLY BOUND TO DISLOCATIONS AND THEREBY HAS CONSIDERABLE EFFECT ON INTERNAL FRICTION. CONSEQUENTLY, THE DIFFUSIONAL MOBILITY OF H IN ALPHA FE SUBJECTED TO PLASTIC DEFORMATION SHOULD BE REDUCED.

UNCLASSIFIED

USSR

UDC: 547.947.1

VACHNADZE, V. Yu., MALTSKOV, V. M., IL'YASOVA, Kh. T., MUDZHIRI, K. S.,  
YUNISOV, S. Yu. "Order of the Red Banner of Labor" Institute of the Chemistry  
of Plant Materials, Uzbek SSSR Academy of Sciences; Institute of Pharmaco-  
chemistry imeni I. G. Kutateladze, Georgian SSR Academy of Sciences

"Qualitative Characteristics of Alkaloids of Some Species of the Genus Vinca"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 1, 1973, pp 72-76

Abstract: A comparative study is made of qualitative color reactions of 38 indole alkaloids with the reagents ceric ammonium sulfate and ferric chloride in thin layer analysis on silicagel G and silufol to determine the relation between chemical structure and the type of alkaloid coloring. The alkaloid color observed after 24 hours of contact with the reagents was the criterion. The results of the study show the feasibility of predetermining the principal chromophore of the alkaloids ( $\alpha$ -methylenindoline, indoline, indole or hydroxyindole) according to color reactions with ceric ammonium sulfate and ferric chloride.

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USSR

UDC 541.57:546.11:547.1'118

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

"Hydrogen Bonding in Dithio Acids of the Pentavalent Phosphorus"

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

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

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1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--LUMINESCENCE AND STRUCTURE OF PHENOXAZINE DYES -U-  
AUTHOR--(04)-VACLAV, S., GOLOVINA, A.P., ALIMARIN, I.P., ZOROV, N.B.  
COUNTRY OF INFO--USSR ✓  
SOURCE--VESIN. MOSK, UNIV., KHIM. 1970, 11(1), 74-8  
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TOPIC TAGS--LUMINESCENCE, DYE, MOLECULAR STRUCTURE, CHEMICAL INDICATOR  
CONTROL MARKING--NO RESTRICTIONS  
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PROXY REEL/FRAME--1995/1183 STEP NO--UR/0189/70/011/001/0074/0078  
CIRC ACCESSION NO--AP0116648  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116648

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF LUMINESCENCE AND ABSORPTION OF TITLE DYES ON THEIR STRUCTURE VARIATION WAS INVESTIGATED. THE ABSORPTION MAX. AND LUMINESCENCE SPECTRA, THE INTENSITIES OF LUMINESCENCE, AND THE ABSORPTIVITIES WERE MEASURED FOR ETOH SOLNS. OF PHENOXAZINE, 3H, PHENOXAZIN, 3, ONE (I), AND OF 12 OTHER DYES DERIVED FROM I (SUBSTITUENTS ON I GIVEN): 8,9,CH:CHCH: CH, 7, OET, 7, NH SUB2, 1,2,CH:CHCH:CH, 7, NME SUB2, 1,2,CH:CH CH:CH, 7, NET SUB2, 2, OH, 2, NH SUB2, 7, N POSITIVE H SUB3, 8,9, CH:CHCH:CH, 7, NH SUB2, 8,9, CH:CHCH:CH, 1,7, ME(NME SUB2), 1,7, ME(NH SUB2), 1,7, OH(NH SUB2). FROM THE RESULTS, CONCLUSIONS WERE DRAWN ON THE STRUCTURE OF PHENOXAZINE DYES. ALL THE STUDIED COMPOS. EXHIBITED INDICATOR PROPERTIES; DEPENDING ON THE PH OF THE MEDIUM THEY CHANGED NOT ONLY THEIR COLOR BUT ALSO THEIR FLUORESCENCE.

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Abstracting Service:

Ref. Code:

INTERNAT. AEROSPACE ABST 5-70 UR0170



A70-23865 # Certain problems of shielding thermal radiation (Nekotorye voprosy ekranirovaniia teplovogo izlucheniia). L. A. Vedachkoria (Akademia Nauk Gruzinskoj SSR, Institut Fiziki, Tbilis, Georgian SSR). *Inzhenerno-Fizicheski Zhurnal*, vol. 18, Jan. 1970, p. 21-30. 6 refs. In Russian.

Investigation of the influence of shields on the stationary radiative heat transfer in a closed system of two gray surfaces of arbitrary shape. For general conditions where all surfaces participating in the heat exchange have arbitrary geometrical and optical characteristics and where all the shields are subjected to different heat effects from the ambient energy sources, equations are derived for (1) the resulting heat flux in any of the closed systems formed by the shields, (2) the flux lost by the 'hot' surface, (3) the flux absorbed by the 'cold' surface, and (4) the temperature of any shield. Attention is also given to cases where the shields are not subjected to the action of constant energy sources, where the shields are acted upon by identical fluxes from constant sources, and where only one of the shields is subjected to a constant source. Tables are given for situations where all the participating surfaces have identical blackness levels and specified geometrical characteristics. T.M.

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VADACHKORIYA, M. K.

medicine

VOYENNO-MEDITSINSKIY ZHURNAL, NO. 3, 1970, pp. 45-47

DIRECT BLOOD TRANSFUSIONS IN THE COMPLEX THERAPY OF ULCER DISEASE OF THE STOMACH AND THE DUODENUM

by

M. K. Vadachkoriya, Honored Physician of the Uzbek SSR, Lt. Col. of Med. Serv., Lt. Col. of Med. Serv.

In the complex therapy of gastric and duodenal ulcer disease (GDU) blood transfusions occupy an important place. Hemostasis-formation stimulates reparative processes, makes up lacking protein and amino acids in the organism (S. M. Agas, 1957, 1966; A. A. Buzdakov and M. S. Butskiy, 1952; A. A. Kadyrov, 1950; Ye. I. Samson, 1963; Ye. M. Volkov, Ye. A. Zerkov, 1963; and others). Side and dysregulating effects of the reticuloendothelial system and of the regulatory defects of the neuro-humoral apparatus will increase (A. A. Bogomolov, 1975, 1981; A. A. Buzdakov and M. S. Butskiy, 1972, and others). Therefore, blood transfusion belongs to one of the most effective pathogenetic methods of treatment of many ailments of internal organs.

Clinical observations and experimental research of recent years indicate that the therapeutic effect of blood transfusion by the direct transfusion method is more effective than transfusion of prepared blood (A. N. Berezov et al., 1966; H. V. Petrovskiy, 1967; Yu. V. Kur, 1968; Ye. M. Novikov, 1966, and others). In the first case it preserves its biological properties to the maximum (S. I. Spasokukovskiy, 1975), and it has a marked stimulating and hemostatic effect (V. Yu. Kur, 1966). Complex therapy with the use of direct hemotransfusions was the most effective in acute and chronic ulcer disease (A. N. Berezov with collaborators, 1966; Ye. M. Zakryshchikovskiy, 1963), and a treatment for patients with some hemotological ailments (S. B. Gayev and P. D. Vakhitskiy, 1966; G. J. Alekseyev and S. I. Vyskubentse, 1966; A. Ya. Kholodnyy, 1966). In the available literature we did not find indications for using direct blood transfusions in the treatment of ulcer disease.

Since 1966 we have been using direct blood transfusion in the complex therapy of GDU. This article gives the results of treatment of 106 patients (102 males and 4 females). Among them 7 persons were below 30 years of age, 57 between 20 and 25, 16 between 26 and 30, 9 between 31 and 40, 7 over 40. In the majority of patients the duration of disease was not long. Thus, 72 persons considered themselves sick for about one year, 37 between one and three years, 13 between four and five years, 12 between six and ten years, and 10 over ten years.

All patients entered the treatment with marked clinical symptoms of exacerbation of ulcer disease. Here, in 91 patients the niche symptom was noted predominantly, in others indistinct radiological signs: bulb deformation, peridiverticula, "claw"-like symptoms, and so on. The ulcer disease was localized in the duodenal area in 79; in the stomach area in 27 and one ulcer of the pyloric vector of the stomach was combined with ulcer of the duodenal bulb.

All patients observed had previous in the first ten days of treatment, and received Diet No. 1 (after Pevzner); for the next 10 days, Diet No. 1b and semi-liquid diet, and then Diet No. 1 and general regime. Simultaneously for the first 10-15 days atropine

J-89448

52

drops in the usual doses (35 programs) or vitamin (51) were prescribed. All patients received alkalinizing agents and physiotherapy blood transfusion was given to 28 patients twice, to 43 three times, and to 29 four times. At one intake, usually 150 to 250 ml of identical group was transfused. Only four patients received a formalin-iron blood (first group). At evaluation of the effectiveness of the performed therapy, attention was paid to the general condition of the patients, the character of the pathological x-ray findings and of the protein disorders, the evolution of protein and of protein fractions in the blood, and to the indices of the coagulogram.

In the majority of patients, already after the first transfusion, the general feeling improved considerably, the ataxia and dyspeptic disturbances ceased entirely or they diminished. Thus, by the 15th day of treatment, after 2-3 direct blood transfusions, in 70 patients the pain and dyspeptic disturbances were stopped, and by the 25th day in 98 patients full subjective comfort was noted, only in 8 who had associated perivascularitis and pathological changes in the liver and biliary pathways did the dyspeptic symptoms remain for a longer time. Z.A. Bondar and co-authors A.I. Gurskaya and others at the All-Union Gastroenterological Conference (Minsk, 1966) emphasized that approximately one third of the patients with chronic ulcer disease, the liver, pancreas, and other organs are involved in the process, the liver, of which the period of recovery is considerably stretched out.

It is well known that at the evaluation of the effectiveness of some therapeutic method of ulcer disease one of the most objective criteria is the time of ulcer healing. According to the findings of S.N. By's (1966), in half of the cases chronic ulcers of the stomach and duodenum are inclined to heal in 38-42 days. G.F. Burdakovskiy (1967) thinks that reparation of an acute ulcer takes from a few weeks to a few months. N.S. Smirnov (1968) established with a gastroscope that initial signs of ulcer healing are already found after 10 days of treatment, and approximately after 30 days it is fully healed. P.I. Solov'ev (1968) analyzed the findings of repeated radioscopies of the GI tract of young servicemen who had the generally approved methods of treatment and he found that cicatrization of the ulcer starts on the 24th to 25th day and lasts until the 40th to 45th day.

For objective evaluation of the time of reparation, we compared the findings of repeated roentgenological examinations of two groups of patients. In all patients the niche symptoms were detected at the first radioscopy. Persons of the first group (91 men) received direct blood transfusion, those of the second (72 men) did not have hemotransfusion. The patients' age, the clinical symptoms of the disease and also the performed other treatment were identical in both groups. The second roentgenological examinations were on the 24th - 25th day of treatment. The obtained results are shown in Table 1.

Table 1

Group of patients	Number of patients	Results of the second roentgenological examination		
		no evident niche (full repair)	niche considerably smaller in dimension	niche of original dimension
First	91	76	13	2
Second	72	36	10	26

ELECTRICAL ENGINEERING

Power

USSR

Vadim Aleksandrovich Orlov

"Small Sources of Current" (Malogabaritnyye istochniki toka)

Moscow, 1970, Izd-vo Ministerstva Oborony SSSR, 17,000 copies, 224 pages

Abstract: The book describes the conversion of various types of energy into electricity and principles of operation, structure, technical and operational characteristics of contemporary current sources (chemical, semiconductor, nuclear, and others).

Reference material on current sources produced by USSR industry and their methods of operation are presented to aid the reader in solving the problem of selecting a needed current source.

The book is intended for military specialists who deal with autonomous current sources and for engineers and technicians working in the field of radio engineering and electronics.

The book makes use of material from the domestic and foreign press and contains numerous tables, illustrations, and 42 citations.

The chapter headings are as follows:

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V. Aleksandrovich Orlov, Izd-vo Ministerstva Oborony SSSR, 17,000 copies,  
224 pages

Chapter One. Fundamental characteristics of current sources	Page
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Chapter Three. Semiconductor current sources	32
Chapter Four. Nuclear power current sources	135
Chapter Five. Operation of current sources	176
Appendix	182
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	220

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USSR

UDC: 539.1.08

VAD'IN, V. I., ZALMANZON, Yu. Ye., NIKITIN, V. I., CHUTKIN, O. A.

"Radiometry and Identification of Alpha-Active Isotopes of 'Thick' Aerosol Samples"

Tr. Soyuzn. n.-i. in-ta priborostr. (Works of the Union Scientific Research Institute of Instrument Building), 1970, vyp. 12, pp 204-215 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 11, Nov 70, Abstract No 11.32.1460)

Translation: The authors show the possibility of determining isotopic composition for "thick" specimens, and find corrections for the radiation yield and the effectiveness with which radiation is registered for such specimens. Five illustrations, one table, bibliography of eight titles.

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Coatings

VADIVASOV, D. G., KUBAYEV, K. YE., CHAYKA, B. I., and LAPKO, P. N., Saratov Institute of Mechanization of Agriculture imeni M. I. Kalinin; Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Effect of Conditions of Plasma Spraying on the Cohesion Strength of Steel Coatings"

Kiev, Poroshkovaya Metallurgiya, No. 9, Sep 70, pp 12-16

Abstract: This paper analyzes the possibility of using plasma spraying to increase the wear resistance and restore the worn surfaces of automotive and tractor parts. The basic factor determining the practical application of sprayed coats is their cohesion strength with the sprayed surface. In this case the cohesion strength of plasma sprayed steel coats was determined as a function of geometric and electric parameters of the process. Use was made of the UPU-3M plasma unit and high-carbon USA steel. Normalized 45 steel served as the backing material. The cohesion strength of the

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VADIVASOV, D. G., et al, Poroshkovaya Metallurgiya, No. 9, Sep 70, pp 12-16

plasma-sprayed steel coat was tested by the pin method and was found to be 2.5 to 3 times higher than that produced by gas flame and electrometallizing. The recommended optimum conditions for plasma spraying of U3V steel coats are: L=120 mm (spraying distance); I=450 amp, V=30 v, Q=17 l/min, G=0.86 m/min at a 1.8-mm wire diameter.

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USSR

UDJ 537.311.33:546.22'48

ASTAKHOVA, N.A., VADOV, G.I.

"Study Of The Impedance Of Polycrystalline Films Of Solid Substances Of CdS.SdSe In The Structure M-CdS.CdSe-M"

Sb.Nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Insitute Of Electronics Technology), 1971, Issue 7, pp 36-42 (from RZh:Elektronika i voye primeneniye, No 6, June 1972, Abstract No 6B52)

Translation: The experimental part of the study was conducted on a barrier model of the conductivity of polycrystalline films. 3 ref. Summary.

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USSR

UDC 621.376:530.145:6

VAFIASI, V.G, USHAKOVA, N.A., SOKOLIK, A.I.

"Light Modulator Based On Optical Contact Of Glass And Plastic"

Vestn. Belorus. un-ta (Bulletin Of Belorussian University), 1971, Series 1, No 2, pp 83-84 (from Rzh-Radiotekhnika, No 9, Sept 1971, Abstract No 9D358)

Translation: The circuit and the frequency and amplitude characteristics of a pulsed light modulator are presented. Plates of polystyrene with appropriate processing assure a contact at a 10 mm<sup>2</sup> area with the force of the pressure of the plates on a glass prism of 0.2 kg. Tests showed that the modulator passes square pulse with a duration of 0.5-30 microsecond with a depth of modulation of 75-80 percent and distortions of the pulse tops of 10-15 percent. 2 ill. 4 ref. V.Ch.

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USSR

UDC 535

VAFIADI, V. G., POPOV, Yu. V.

"The Speed of Light and Its Meaning in Science and Technology"

Skorost' sveta i yeye znachenije v nauke i tekhnike (cf. English above), Minsk, Publishing House of Belorussian State University, 1970, 136 pp, ill., 90 k. (from RZh-Fizika, No 7, Jul 71, Abstract No 7D876)

Translation: The first part of the monograph presents the history of the discovery of the speed of light and modern methods for measuring the speed of electromagnetic waves. The second part is concerned with optical radar: i.e., the description of optical range-finders - devices which measure distances with a high accuracy on the basis of the time required for light to travel over the distance being measured. The book is intended for physicists and geodesists, scientific workers, graduate students, and engineers. 348 ref. Abstract

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USSR

UDC 541.13:541.515:543.422.27

IL'YASOV, A. V., KARGIN, YU. M., MOROZOVA, I. D., CHERNOKAL'SKIY, B. D.,  
VAFINA, A. A., MEL'NIKOV, B. V., GEL'FOND, A. S., MUKHTAROV, A. SH., and  
GALYAMETDINOV, YU. G., Institute of Organic and Physical Chemistry Imeni A. Ye.  
Arbuzov, Acad. Sc. USSR, and Kazan' Chemical-Technological Institute Imeni S. M.  
Kirov

"Electrochemically Generated Free Radicals. 9 Communication. Reduction of Some  
Nitrophenylarsine Derivatives and EPR Spectra of Their Anion Radicals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72,  
pp 2174-2178

Abstract: The mechanism of polarographic reduction of nitrophenyldiethylarsines  
and their oxides and sulfides in an aprotic medium was studied. These compounds  
exhibit two reduction waves, the first one corresponding to a one-electron wave,  
the process being reversible. The second wave is typical of a 3e-process. A  
diagram for the sequential chemical processes of these compounds after the  
capture of second electron has been proposed. Both waves represent a stepwise  
oxidation of the unstable dianion of the substituted nitrobenzene; the phenyl  
ring -- arsenic system remains untouched in this process. Novel organoarsine  
anion radicals have been obtained by electrochemical reduction and studied by  
the EPR method. Delocalization of the unpaired electron in these anion  
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IL'YASOV, A. V., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, pp 2174-2178

radicals has been investigated analyzing possible reasons for a considerable decrease of the spin density on the arsenic atom during the transition from tetracoordinated arsenic atom of the anion radicals to a tri-coordinated one.

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USSR

UDC 538.113:541.515:547.63'118

IL'YASOV, A. V., LEVIN, Ya. A., MOROZOVA, I. D., VAFINA, A. A., GOZMAN, I. P., and ZOROATSKAYA, Ye. I., Institute of Organic Chemistry, imeni A. Ye. Arbuzov, USSR Academy of Sciences, Kazan'

"Delocalization of the Unpaired Electron in Phosphorus-Containing Anion-Radicals"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 108-111

Abstract: It is of current interest whether elements of the third period function as barriers in conjugated systems, or are able to participate in conjugation.

The distribution of spin density in the anion-radical of triphenylphosphine and its oxide were studied. The compounds were prepared by electrochemical reduction. For a more rigorous picture of delocalization of the unpaired electron, completely and partially deuterated  $\text{Ph}_3\text{P}$  and  $\text{Ph}_3\text{PO}$  were synthesized and studied. Dimethylformamide and acetonitrile solutions of the anion-radicals were studied at concentration of ca.  $5 \cdot 10^{-3}$  M, using epr spectroscopy.

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IL'YASOV, A. V., et al., Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 108-111

Based on preliminary results, it is concluded that, unlike compounds of elements of the second period, the electron structure of phosphorus anion-radicals cannot be described by a simple  $\pi$ -electron theory; the so-called d-model must be rejected. The concepts of completely delocalized molecular orbitals and multi-center bonds must be used, with allowance for all valence electrons.

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USSR

VAGABOV, R. M.-A., and KARAKUYUMCHYAN, M. K.

"Inactivation of Fixed Rabies Virus With Hydroxylamine"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 71, p 494

Translation: It was demonstrated that it is possible to inactivate fixed rabies virus with hydroxylamine without destroying immunogenic properties. The best results are obtained by inactivation in a 1.M hydroxylamine solution pH 7.8, at a temperature of 22°C, for 96 hr.

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USSR

UDC 621.762.002.5(088.8)

LEVIT, I. A., BATRAKOV, P. D., VAGANOV, B. M.

"Automatic Multiple Tube Electric Arc Furnace"

USSR Author's Certificate No 272491, filed 18 Jun 66, Published 2 Sep 70  
(from RZn-Metallurgiya, No 4, Apr 71, Abstract No 4G473P)

Translation: An electric arc furnace for obtaining powders by reduction contains mechanisms for charging and unloading the furnace and mechanisms for charging and unloading the troughs. For simultaneous charging or unloading of all the furnace tubes and to insure complete automation of its operation, the furnace is equipped with a holder with clamps for the troughs the number of which corresponds to the number of furnace tubes and a conveyor for moving it.

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1/2 014 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--PROTON POLARIZATION IN ELASTIC AND INELASTIC SCATTERING OF  
MAGNESIUM 25 AT E SUBP EQUALS 6.08 MEV -U-  
AUTHOR--(05)-CHUBINSKIY, O.V., KUZMITSKIY, I.V., VAGANOV, P.A., GUSTOVA,  
L.V., GUSHCHIN, V.N.  
COUNTRY OF INFO--USSR  
SOURCE--YAD. FIZ. 1970, 11(1), 29-32  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY  
TOPIC TAGS--ELASTIC SCATTERING, INELASTIC SCATTERING, PROTON POLARIZATION,  
MAGNESIUM ISOTOPE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1980/0174 STEP NO--UR/036770/011/001/0029/0032  
CIRC ACCESSION NO--AP0048466  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--A0048466

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLARIZATION ANGULAR DISTRIBUTION OF 6.08-MEV P ELASTICALLY SCATTERED ON PRIME25 MG WAS MEASURED AT 30-150DEGREES IN THE LAB. SYSTEM BY USING THE DOUBLE SCATTERING METHOD. THE 1ST TARGET WAS 2-MG-CM PRIME2 SELF SUPPORTING METALLIC MG FOIL, ENRICHED WITH PRIME25 MG UP TO 92PERCENT, THE 2ND ONE WAS 8-MG-CM PRIME2 GRAPHITE PLATE. THE SCATTERED P WERE REGISTERED WITH A TELESCOPE DETECTOR, CONSISTING OF A PROPORTIONAL COUNTER AND OF A SI-LI DETECTOR, PLACED INSIDE THE PROPORTIONAL COUNTER. THE P BEAM THROUGH MG TARGET WAS 5-6 MUA. THE INSTRUMENT ASYMMETRY WERE MEASURED WITH 11 MG-CM PRIME2 AU FOIL. THE EXPTL. RESULTS ARE COMPARED IN A GRAPH WITH THE CALCNS. BY MEANS OF THE OPTICAL MODEL. THE VALUES OF THE POLARIZATION OF INELASTICALLY SCATTERED P CORRESPONDING TO THE STATES 1.614 MEV (SEVEN HALVES PLUS) AND 1.980 MEV (THREE HALVES PLUS) WERE OBTAINED AT 60, 70, 80, 90, 100, AND 140DEGREES. FACILITY: Leningrad. Gos. Univ., Leningrad, USSR.

UNCLASSIFIED

USSR

CHUBINSKIY, O. V., ~~VAGANOV, P. A.~~, GUSTOVA, L. V., GUSHCHIN, V. N., KUZ'MITSKIY, I. V., SEREBROV, A. P., Leningrad State University

"Proton Polarization in Elastic and Inelastic Scattering by Mg-25 at  $E_p = 6.08$  Mev"

Moscow, Yadernaya Fizika, Vol 11, No 1, 1970, pp 29-32

Abstract: Continuing their study of proton polarization in elastic and inelastic scattering by magnesium isotopes, the authors describe results of measurements of the angular dependence of the polarization of 6.08 Mev protons in elastic scattering on Mg-25 in an angle range of from  $30^\circ$  to  $150^\circ$  (laboratory system). This is the first time that results have been obtained for the proton energy range considered. The double scattering method was used for the measurements. At certain angles ( $\theta = 60^\circ, 70^\circ, 80^\circ, 90^\circ, 100^\circ, \text{ and } 140^\circ$ ) it was possible to obtain the value of the polarization of inelastically scattered protons corresponding to the states 1.614 Mev ( $7/2^+$ ) and 1.960 Mev ( $5/2^+$ ). Since in future the authors intend to make a combined analysis of the data obtained by them on the polarization of 6-Mev protons in elastic and inelastic scattering by the isotopes Mg-24, Mg-25, and Mg-26, including the results of

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CHUBINSKIY, O. V., et al., Yadernaya Fizika, Vol 11, No 1, 1970, pp 29-32

recent measurements of variation with energy of proton polarization in scattering by Mg-24, the present article is limited to a comparison of experimental results for Mg-25 with calculations according to the optical method.

The authors thank the operations group of the Cyclotron Laboratory of the Scientific Research Institute of Physics, Leningrad State University.

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USSR

UDC 621.372.8.09

VAGANOV, ROAL'D BORISOVICH; MATVEYEV, ROSTISLAV FEDOROVICH; MERLAKRI, VYACHESLAV VYACHESLAVOVICH

"Multiwave Waveguides With Random Irregularities"

Mnogovolnovyye volnovody so sluchaynymi neregulyarnostyami (of. English above), Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 52 ref. 77 kop.

**Abstract:** A theoretical analysis is presented and methods are described of experimental study of multiwave waveguide channels, on the basis of which it is possible to construct ultrawide band communication lines and feeder lines with small losses. The effect of random irregularities on the properties of multi-lines is considered in detail. Theoretical conclusions are confirmed by the results of experimental studies. The book is intended for specialists in waveguide techniques, high-frequency electrodynamics, communication theory, measurements in the millimeter band, and statistics of random media, and also for students of advanced courses and graduate students of corresponding specialities.

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VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye vcnovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp., 7 tab. 58 fig. 52 ref. 77 kop.

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Slightly Irregular Multiwave Waveguides

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VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye volnovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 77 kop.

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USSR

VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye volnovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 77 kop.

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USSR

VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye volnovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 77 kop.

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USSR

VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye volnovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 77 kop.

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USSR

VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye volnovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 77 kop.

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USSR

VAGANOV, ROAL'D BORISOVICH, et al., Mnogovolnovyye vonovody so sluchaynymi neregulyarnostyami, Moscow, Izd. "Sovetskoye radio," 1972. 232 pp, 7 tab. 58 fig. 77 kop.

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USSR

UDO 533.9.08

VAGANOV, R.B., MERIAKRI, V.V. [In-t radiotekhn. i elektron. AN SSSR--Institute Of Radio Engineering And Electronics, AS USSR]

"Device For Diagnostics Of Plasma"

USSR Author's Certificate No 204393, filed 18 Mar 65, published 22 June 70 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A363P)

Translation: A device is patented for diagnostics of plasma with the aid of a microwave quasioptical beam formed by lenses, which contains an analyzer differing in the fact that (with the object of registration of the waves of higher modes originating as the result of interaction, in order to determine the parameters of the plasma layer) the analyzer consists of a receiving waveguide, transitional section, a matching adapter, and a number of microwave radiation detectors. The device of patent 1 [po p. 1] differs in the fact that, with the object of a more precise identification of the radiation, the microwave radiation detectors are made in the form of directional couplers, each of which is tuned to one wave of higher order.

1/1

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USSR

UDC: 621.372.823(088.8)

VAGANOV, R. B., Institute of Radio Engineering and Electronics, Academy of Sciences of the USSR

"A Dielectric Spacer for Holding the Inner Conductor of a Coaxial Waveguide With  $H_{01}$  Wave"

USSR Author's Certificate No 244449, filed 13 Mar 68, published 15 May 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B170)

Translation: The proposed dielectric spacer is made in the form of a fan with sector-shaped blades mounted at the Brewster angle to the waveguide axis. The ends of the blades are broader and the blade becomes narrower toward the center. The number of blades is selected in such a way that the width of the sector in the middle of the radius is somewhat greater than the mean length of the band. The diameter of the spacer is equal (with a minus tolerance) to the inside radius [sic] of the waveguide, so that the spacer is held in the waveguide by friction. The thickness of the washer, measured in the direction of the waveguide axis, is made everywhere equal. This thickness is selected from consideration of the mechanical strength alone, and may be made fairly small. This ensures a uniform phase shift with respect to cross section, and uniform absorption in the dielectric. One illustration. A. K.

1/1

USSR  
Aerosols

USSR

UDC 632.982

VAGANOV, L. I., Chief Agronomist for Plant Protection, Khalturinskiy Rayon,  
Kirovskaya Oblast

"For an Efficient Use of Aerosol Generators"

Moscow, Zashchita Rasteniy, No 6, Jun 73, p 29

Translation: In the Ambarsk Specialized Division of the Khalturin Rayon Association "Sel'khoztekhnika" (Agriculture Machinery) an AG-UD-2 aerosol generator is used for the destruction of arboreal and shrubby vegetation with arboricides, as well as for spraying of grain crops with mixtures of herbicides and mineral fertilizer, disinsection of storehouses, potato storages, barnyards, and for the treatment of sowings with insecticides. To increase the efficiency of the apparatus, it was mounted on an uniaxial tractor trailer together with a tank for working solution. In case of the use of other preparations than herbicides, on the platform of the trailer is mounted an additional tank, since the use of the herbicidal tank without first washing it may lead to a burn of plants. During one hour of work, at a consumption of the fluid equal to 17-20 l/hectare it is possible to treat 12-15 hectares of sowings with herbicides.

1/3

USSR

VAGANOV, L.I., Zashchita Rasteniy, No 6, Jun 1973, p 29

A tank with a capacity of 1000 l is filled with 900 l of water, the motor of the generator is started, and the tap of a pneumatic mixer (a 3/4 inch pipe with an elbow in whose walls 5 mm diam. holes are drilled along a spiral). A mother liquor is prepared in a bucket and poured into the tank through a filler. The bucket has been previously graduated (marks were made for 1, 3, and 5 kg of the preparation ,

At the edge of a field which must be treated the operator starts the motor of the unit and turns on the tap of the pneumatic mixer for 10-15 min at full revolutions of the motor, and then closes the tap by half and turns on the tap of the tank. The unit is driven on the sowing and stopped.

The operator sit downs in operator's position, turns on the sprayer and watches the width of the strip being treated, and, if necessary, changes the angles of inclination of the angular nozzle by means of a control wheel.

2/3

- 1 -

USSR

VAGANOV, L. I., Zashchita Rasteniy, No 6, Jun 73, p 29

Diagram not reproduced shows: 1 -- tank lid; 2 -- pipe with measuring scale; 3 -- pneumatic mixer; 4 -- box for protective overalls; 5 -- operator's seat; 6 -- control wheel; 7 -- branch pipe; 8 -- aerosol generator; 9 -- sprockets; 10 -- angular nozzle; 11 -- roller chain; 12 -- stairs; 13 -- rubber hoses; 14 -- tap of angular nozzle; 15 -- barrel with herbicide; 16 -- tap of pneumatic mixer; 17 -- tap of tank; 18 -- tank for working solution; 19 -- box for spare parts; 20 -- reserve tank with gasoline.

For the control of the working solution consumption. There is provided a measuring scale, installed in a pipe with holes. The pipe is welded into tank's lid. The pneumatic mixer is also welded into tank's lid. Marks are made on the metallic measuring scale. With the height of the tank 300 mm, length 1250 mm, and width 1000 mm, marks are made every 5 cm, which corresponds to 62.5 l of solution in the tank.

It is the third year that this unit works on farms of Khalturinskiy Rayon, and similar units are used on other farms of the Rayon.

3/3

USSR

UDC: 681.327.66

BEREZIN, A. S., VAGANOV, V. I., KUZ'MIN, V. A., MOCHALKINA, O. R., ONI-SHCHEKHO, Ye. M., ORLIKOVSKIY, A. A., PERSHENKOV, V. S., Moscow "Order of the Red Banner of Labor" Engineering Physics Institute

"An Integrated Thyristor Memory Element"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzysy, Tovarnyye Znaki, No 20, Jul 72, Author's Certificate No 343299, Division G, filed 7 Oct 70, published 22 Jun 72, p 174

Translation: This Author's Certificate introduces an integrated thyristor memory element which contains a thyristor with longitudinal structure, and a recording readout transistor connected by its collector to the P-base of the thyristor, and by its base through a resistor to the word recording input. As a distinguishing feature of the patent, the degree of integration is increased, and the interference immunity and recording and readout speed are increased by connecting the readout transistor emitter to the thyristor emitter, and also through a resistor to the word readout input, and by connecting the base of the readout transistor to the zero-potential line.

1/1

1/2 018 UNCLASSIFIED  
TITLE--SIMULATION OF A GUNN DIODE -U- PROCESSING DATE--13NOV70  
AUTHOR--(02)-VAGANOV, V.I., KUZNETSOV, V.M. ✓  
COUNTRY OF INFO--USSR  
SOURCE--RADIOELEKTRONIKA, VOL. 8, MAR. 1970, P. 409-412  
DATE PUBLISHED----MAR70  
SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--GUNN DIODE, MODEL, OSCILLOGRAM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0238 STEP NO--UR/0452/70/003/000/0409/0412  
CIRC ACCESSION NO--AP0124000 UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124000

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A GUNN DIODE MODEL WHICH IS SUPERIOR TO THE ONE PROPOSED BY CARROL AND GIBLIN (1967) IN THAT IT DOES NOT CONTAIN ELECTROMAGNETIC RELAY CIRCUITS AND IS FREE OF CONSTRAINTS ASSOCIATED WITH THEM, SUCH AS A LOW OPERATIONAL FREQUENCY, HIGH ACTUATION CURRENTS, HIGH WINDING INDUCTANCE, AND THE INCAPABILITY OF SIMULATING A DIODE WITH A VARIABLE CROSS SECTION. OSCILLOGRAMS ARE GIVEN TO SHOW THE OPERATION OF THIS MODEL IN THE SUBTHRESHOLD AND OSCILLATORY MODES OF ACTION IN SIMULATING A GUNN DIODE.

UNCLASSIFIED



USSR

UDC: 621.382

V  
VAGANOV, V. I. and KUZNETSOV, V. M.

"Modeling the Gunn Diode"

Kiev, Izvestiya Vuzov SSSR--Radioelektronika Vol 13, No 3, 1970,  
pp 409-412

Abstract: The function of this brief is to set up a model for the Gunn effect, important in functional logic devices, which does not suffer from the defects of earlier models. These defects derive from the use of electromagnetic relays (Carroll & Gablin, "A Low-Frequency Analog for a Gunn-Effect Oscillator," IEEE Trans. on Electron Devices, 1967 ED-14, No. 10, 640). The authors of the communication list those defects as low operating frequency (3 Hz), high triggering currents, high control coil inductance, and the impossibility of modeling a diode of variable cross section.

1/2

USSR

VAGANOV, V. I., et al, Izvestiya Vuzov SSSR--Radioelektronika, Vol 13, No 3, 1970, pp 409-412

Also shown are oscillograms of the voltage across the domain capacitance in the new model. There are two tables: one comparing the design formulas of the model and the actual diode; the other comparing the electrical characteristics of the two.

2/2

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USSR

UDC: 621.372.88

VAGANOV, Yu. I., GRIBOVSKIY, P. O.

"A Capacitive Electrically Controlled Element for High-Frequency Devices"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratztsy, Tovarnyye Znaki, No 11, Apr 72, Author's Certificate No 333639, Division H, filed 21 Jul 70, published 21 Mar 72, pp 211-212

Translation: This Author's Certificate introduces a capacitive electrically controlled element for high-frequency devices. The element is used for realizing a linear controlling function and contains capacitors with non-linear dielectric. As a distinguishing feature of the patent, in order to reduce the extent to which the capacitance depends on the amplitude of the high-frequency signal, the controlled element is made in the form of two cylindrical cup-shaped capacitors with electrodes applied to both sides of their bases. The capacitors are connected in series in the high-frequency alternating signal circuit, and in parallel in the DC bias source circuit.

1/1

- 102 -

1/2 035 UNCLASSIFIED PROCESSING DATE--09OCT70  
 TITLE--SOME PECULIARITIES OF NEURONAL ACTIVITY IN THE  
 CEREBELLO, THALAMO, CORTICAL REGULATORY SYSTEM -U-  
 AUTHOR--(02)--AYRAPETIAN, A.A., VAGANYAN, L.G.  
 COUNTRY OF INFO--USSR  
 SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA, 1970, VOL 56,  
 NR 4, PP 527-534  
 DATE PUBLISHED--70  
 SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
 TOPIC TAGS--NEUROLOGY, THYMUS GLAND, CEREBRAL CORTEX, MEDICAL R AND D,  
 STIMULATED EMISSION  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1983/1191 STEP NO--UR/0239/70/056/004/0527/0534  
 CIRC ACCESSION NO--AP0054090  
 UNCLASSIFIED

2/2 035

CIRC ACCESSION NO--A0054090

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ALTERATIONS OF UNIT ACTIVITY ON THE UNSPECIFIC THALAMUS (USTH) DURING THE CENTRAL CEREBELLAR NUCLEI STIMULATION, AND IN THE SENSORIMOTOR CORTEX DURING THE USTH STIMULATION, WERE STUDIED USING THE EXTRACELLULAR RECORDING. BOTH THE DENTATE AND INTERPOSITUS NUCLEI AND THE USTH LOW FREQUENCY STIMULATION EXERTED A SYNCHRONIZING EFFECT, MORE DISTINCT DURING THE USTH STIMULATION. THE ABOVE NUCLEI SYSTEMS SHOWED AND EMPHASIZED INHIBITORY EFFECT EXCEPTING THE N. VA, WHERE PREFERABLY A FACILITATORY INFLUENCE WAS NOTED. IN MANY CASES, CEREBELLAR STIMULATION ELICITED IN THE USTH SOME COMPLEX NEURONAL RESPONSES, WITH OBVIOUS REGULATORY ROLE OF THE INHIBITORY PROCESS. THE NEURONAL BASIS OF THE CEREBELLO THALAMO (USTH), CORTICAL REGULATORY SYSTEM IS DISCUSSED.

UNCLASSIFIED

USSR

UDO 621.391.2:621.396.96

VAGAPOV, A.M., KOSENKO, G.G.

"General Approach To Kotel'nikov, Shannon, And Kul'bak Radar Information Measures"

Radiotekhnika i elektronika, Vol XVII, No 7, July 1972, pp 1524-1526

Abstract: In the task of analyzing the information content of various criteria of radar objects a problem arises first of all about radar information measures. At present the information measures of Kotel'nikov, Shannon, and Kul'bak (KSK) are the most widespread. By Kotel'nikov's measures is understood the average difference of the a posteriori and a priori maximum probabilities of correct recognition of a certain situation. However, up to the present in the literature a single approach is missing to the construction of radar information measures in general and to measures of KSK in particular. In the present report an attempt is made to construct such a general approach, at least including the measures of KSK. For definiteness and simplicity the report considers discrete channels of information transmission in the statistical problem of recognition of objects of a given finite alphabet. 3 ref. Received by editors, 21 Sept 1971.

1/1

- 89 -

USSR.

UDC 620.17

VAGAROV, R. D."Distribution of Angular Stresses Along the Contours of Circular Cuts"

V sb. VII Vses. konf. po polarizats.-optich. metodu issled. napryazh., 1971.  
 T. 3 (VII All-Union Conference on the Polarization-Optical Method of Studying  
 Stresses, 1971. Vol. 3 -- Collection of Works), Tallin, 1971, pp 205-211  
 (From RZh-Mekhanika, No 3, Mar 72, Abstract No 3V1648)

Translation: Elastic plane problems for regions with circular cuts are considered.  
 The possibility of determining stresses along a symmetric contour is investigated  
 with the aid of the formula

$$\sigma_{\theta} = \sigma_{\max} (1 - k\theta^2), \quad k = \frac{1}{2\sigma_{\max}} \left| \frac{\partial^2 \sigma_{\theta}}{\partial \theta^2} \right|_{\theta=0} \quad (*)$$

where  $\theta$  is a polar angle for the line of the circular symmetric contour calculated  
 from the axis of symmetry of the region and  $\sigma_{\theta}$  is the surrounding normal stress  
 along the contour line. The approximation (\*) for small  $\theta$  was obtained from  
 the expansion of known solutions of elasticity theory into series. Formula (\*)  
 was verified for an unbounded band with two symmetric cuts of hyperbolic pro-  
 file and under uniaxial tension or pure bending. The contour of a hyperbola  
 close to the extremal point is approximated by a circle to determine the coeffi-

1/2

USSR

VAGAPOV, R. D., VII Vses. konf. po polarizats.-optich. metodu issled. napryazh., 1971. T. 3, Tallin, 1971, pp 205-211

cient  $k$ . The analytical relationship  $\sigma_{\theta}/\sigma_{\max} \sim \theta$  that follows from (\*) is in good agreement with the result of photoelastic measurements for  $0 < \theta < 0.4$  for both problems (strain and bending). Similar theoretical and experimental studies were made for the tension of a plate with a relatively large central opening and for the strain of the half-plane with a circular opening at the edge. Relationships are obtained showing the coefficient  $k$  as functions of the geometric parameters  $\delta = R/a$  (where  $R$  is the radius of the opening and  $a$  is the width of the connector for  $0 < \delta < 3$ ). A. M. Lokoshchenko.

2/2

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USSR

OYKS, G. N., VAGIKH, M., and ABDUL SALAM EL SAKANIDI, Moscow

Institute of Steel and Alloys

"Rapid Method of Determining Carbon and Oxygen Dissolved in Liquid Metal"

Moscow, IVUZ Chernaya Metallurgiya, No 3, 1971, pp 43-47.

Abstract: An attempt is made to determine the simultaneous content of carbon and oxygen in a liquid bath during the melt on the basis of the crystallization temperature. The method is based on measurement of the crystallization temperature of two specimens from the bath, one normal and one deoxidized by aluminum wire which is wrapped in a spiral around the thermocouple placed in the bath. Graphs are presented which can be used, based on the two temperatures, to determine the content of carbon and oxygen in the liquid metal after rapid cooling and crystallization of the two samples.

1/1

USSR

VAGIN, V. N., PUCHIN'YAN, V. K.

"Study of Cooperative Solutions in the Game 'The Prisoner's Dilemma'"

Problemy Bioniki [Problems of Bionics -- Collection of Works], Moscow, Nauka Press, 1973, pp 361-366 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V488, by the authors).

Translation: A game of two persons with two strategies and nonzero sum is studied. The possibilities of development of cooperative solutions in the game of two stochastic automata modeled by computer is studied.

1/1

- 59 -

1/2 033  
 UNCLASSIFIED  
 TITLE--LUMINESCENCE OF AIR STUDIED UNDER THE ACTION OF FAST ELECTRONS -U- PROCESSING DATE--27NOV70  
 AUTHOR--(05)-VAGIN, YU.P., KABANOV, G.L., MEDVEDEV, YU.A., NESHKOV, D.Z.,  
 STEPANOV, B.M.  
 COUNTRY OF INFO--USSR  
 SOURCE--AT. ENERG. 1970, 28(2), 177-8  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--PHYSICS, BIOLOGICAL AND MEDICAL SCIENCES  
 TOPIC TAGS--LUMINESCENCE, AIR, ELECTRON, DOSIMETRY  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRA--2000/2255  
 CIRC ACCESSION NO--AP0125833  
 STEP NO--UR/0089/70/028/002/0177/0178  
 UNCLASSIFIED

2/2 033

CIRC ACCESSION NO--AP0125833

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LUMINESCENCE INTENSITY I  
SUBLUM OF AIR BOMBARDED WITH 2-4 MEV E PULSES (FROM A LINEAR  
ACCELERATOR) IS INDEPENDENT OF THE E ENERGY AND INCREASES LINEARLY 1-3.5  
ARBITRARY UNITS WHEN THE E CURRENT IN A PULSE IS INCREASED 30-110 MA,  
I.E., THE INTENSITY IS PROPORTIONAL TO THE ABSORBED DOSE RATE AND THE  
LUMINESCENCE OF AIR CAN THUS BE USED AS THE BASIS OF A NEW DOSIMETRIC  
METHOD.

UNCLASSIFIED

USSR

UDC 619:616.981.42-073.537

VACINA, L. A., Scientific Institute of Agriculture of the Far North

"Diagnosis of Brucellosis in Reindeer by the Immunofluorescence Method"

Moscow, Veterinariya, No 1, 1971, pp 38-40

Abstract: The sensitivity of the indirect fluorescent antibody method was compared to that of other serological tests for detecting antibodies in sera from 178 reindeer reared on farms infected with brucellosis, 10 healthy animals, and 32 animals with other diseases (necrobacillosis, echinococcosis, cysticercosis). The sera from the last two groups of animals were all negative in the agglutination, complement fixation, and Huddleson's tests, and the antibodies did not fluoresce. In sera of reindeer from infected farms, fluorescent antibodies were found in 56.7% of cases, as compared with 39.8, 33.7 and 24.1% in the agglutination, complement fixation, and Huddleson's tests, respectively. The average titer in the fluorescent antibody reaction was somewhat higher (1:173) than in the agglutination test (1:144). The high rate of antibody detection by the fluorescent antibody method is ascribed to the presence of incomplete antibodies in the sera.

1/1

USSR

UDC 619:616.981.45:591.613

PETUKHOVA, O. S., PINIGIN, A. F., ZABRODIN, V. A., VAGINA, L. A., and ZABRODINA, YE. F., Scientific Research Institute of Agriculture of the Far North

"Isolation of Brucella From Wild Animals"

Moscow, Veterinariya, No 4, 1971, pp 41-42

Abstract: In 1968-1970 in the Taymyr National District of Krasnoyarskiy Kray (Central Siberia), 41 Brucella cultures were isolated from indigenous wild animals: 15 from wild reindeer, 15 from wolves, 10 from polar foxes, and 1 from a wolverine. All these strains grew under aerobic conditions and in most cultural and morphological properties were identical to those isolated from domestic animals, reindeer in particular. While the former tended to be more resistant to penicillin than the latter, they were generally less virulent. In Siberian foci of brucellosis, wild reindeer are in frequent contact with domestic animals and apparently become readily infected by them.

1/1

- 42 -

USSR

UDC 576.85:633.367+577.15:632.954

LATYPAVA, R. M., and VAGINA, N. S.

"The Activity of Oxidoreductases in the Tubers of the Yellow Fodder Lupine After Application of Simazin"

Minsk, Izvestiya Akademii Nauk BSSR, No 4, 1971, pp 50-54

Translation: The effects of simazin on the formation of tubers, the activity of oxidoreductases in the tubers, and the concentration of nitrogen in various parts of the yellow fodder lupine were investigated. It was found that these parameters changed unequally after application of different doses of simazin. In tests performed under natural conditions, a dose of 0.5 kg of simazin per hectare had no inhibitory effects. Doses of 1.0 and 1.5 kg per hectare reduced the number of tubers and the activity of dehydrogenase and copper-containing enzymes (polyphenol oxidases and ascorbine oxidases) but did not inhibit the activity of iron-containing enzymes (peroxidases and catalases) or nitrogen fixation. The concentration of nitrogen did not change in the aboveground parts and in roots and was even increased in the tubers.

1/1

- 2 -

Acc. Nr:

AP0041564

Abstracting Service:  
CHEMICAL ABST

4-70

Ref. Code:

UR0080

85801w Thin-layer chromatographic study of the conditions of praseodymium (terbium) oxidation with subsequent separation of  $Pr^{3+}/Pr^{4+}(Tb^{3+}/Tb^{4+})$ . Vagina, N. S. (USSR). *Zh. Prikl. Khim. (Leningrad)* 1970, 43(1), 47-50 (Russ).  $Pr^{3+}$  and  $Tb^{3+}$  were oxidized to  $Pr^{4+}$  or  $Tb^{4+}$  in  $HNO_3$  solns. by addn. of excess  $KBrO_3$ . The color of  $Pr^{3+}$  soln. was changed from light-green to yellow after ~40 min. The absorption max. of  $Pr^{3+}$  at 444, 469, 482, and 579 nm disappeared and new max. at 320 and 280 nm were observed. The spectrum of  $Tb^{3+}$  was not taken because of the high absorbance of  $HNO_3$  and  $KBrO_3$  in the uv region. A fair turbidity of the  $Pr^{3+}$  soln. after the oxidn. was explained by the low soly. of  $Pr(BrO_3)_3$  (analogous to  $Ce^{4+}$ ). Oxidized solns. of  $Pr^{3+}$  and  $Tb^{3+}$  were then examd. by thin-layer chromatog. on silica gel, by using a  $Bu_3PO_4$  soln. in  $C_6H_6$  as a solvent. Sepd. ions were detd. by spectrophotometry by means of Arsenazo III and distribution on the plate was followed by  $^{147}Pr$  and  $^{160}Tb$  isotopes. The highest mobility of  $Pr^{4+}$  ( $Tb^{4+}$ ) was found in 10M  $HNO_3$ . Since a max. of 40% of the  $Tb$  and only 25% of the  $Pr$ , with respect to the total amt., were found under the same conditions, the higher stability of  $Tb^{4+}$  than  $Pr^{4+}$  was assumed. No oxidn. of  $Nd^{3+}$  and  $Er^{3+}$  was observed.

J. Havel

REEL/FRA  
19751434



USSR

KULIKOV, G. P., PROKOF'YEV, A. N., VAGINA, V. Ye.

"Testing of a New Herbicide -- Tordone (aminotrichloropicolinic acid)"

Tr. Ul'yanovsk. S.-kh. Opytn. St. [Works of Ul'yanov Agricultural Experimental Station], No 5, 1971, pp 114-120 (Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No 3 N666 by T. A. Belyayeva).

Translation: Experiments showed that tordone (I) has a strong toxic effect and aftereffect on winter and spring wheat. I can be recommended for control of weeds or non-agricultural land, since I has high herbicidal activity and long-term residual toxicity.

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1/2 013

TITLE--MANUAL ARC WELDING BY PULSATING ARC --U-

PROCESSING DATE--30OCT70

UNCLASSIFIED

AUTHOR--VAGNER, F.A.

COUNTRY OF INFO--USSR

SOURCE--MUSCOH, SVAROCHNOYE PROIZVODSTVO, NO 3, 1970, PP 21-22

DATE PUBLISHED-----70

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

TOPIC TAGS--PULSED VIBRATION ARC WELDING, BIBLIOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1999/1310

STEP NO--UR/0135/70/000/003/0021/0022

CIRC ACCESSION NO--AP0123269

UNCLASSIFIED

2/2 013

CIRC ACCESSION NO--AP0123269

UNCLASSIFIED

PROCESSING DATE--30OCT70

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

ABSTRACT. IT WAS SHOWN THAT THE PULSATION OF THERMAL POWER OF THE ARC ENHANCES BETTER FORMATION OF WELDS AND PREVENTS SPILLS AND HOLE BURNINGS IN WELDING WITHOUT BACKUPS.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INSTABILITY OF A WEAKLY INHOMOGENEOUS PLASMA WITH TWO SPECIES OF  
IONS IN THE ABSENCE OF A MAGNETIC FIELD -U-  
AUTHOR--(03)-GUREVICH, L.E., VAGNER, I.O., TOFFE, I.V. ✓  
COUNTRY OF INFO--USSR  
SOURCE--JETP LETTERS (USA), VOL. 11, NO. 1, P. 49-52 (JAN. 1970)  
DATE PUBLISHED---JAN70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--INHOMOGENEOUS PLASMA, PLASMA INSTABILITY, MAGNETIC FIELD  
EFFECT, ELECTRON MOBILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/1792 STEP NO--US/0000/70/011/001/0049/0052  
CIRC ACCESSION NO--AP0133697  
UNCLASSIFIED

2/2 023

CIRC ACCESSION NO--AP0133697

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

POSSIBLE IN THE ABSENCE OF A MAGNETIC FIELD,  
DEPENDS ON THE COORDINATES.

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. INSTABILITY IS SHOWN TO BE  
IF THE ELECTRON MOBILITY  
FACILITY: USSR ACAD. SCIS.

UNCLASSIFIED

Acc. Nr: AP0043691

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 3, pp 1007-1011

ON EXCITATION OF TRANSVERSE WAVES IN INDIUM ANTIMONIDE IN AN EXTERNAL MAGNETIC FIELD BY A STRONG CURRENT

I. D. Vagner, I. V. Ioffe, A. A. Katanov

It is shown that a strong current flowing through indium antimonide located in a strong magnetic field excites Cherenkov emission of helikoidal waves. The magaitudes of the currents and fields required for excitation to occur are found. The magnetic field strength of the current is found to be much smaller than that of the external field. For a cylindrical sample with a radius much smaller than its length, the frequency and critical current values are close to those found experimentally.

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REEL/FRAME  
19770095

USSR

WAGNER, S. D.; KAGAN, Yu. M.; SLYSHOV, A. G.

"Electrical and Optical Measurements in a Pulsed Discharge in Helium. II"  
Leningrad, Optika i Spektroskopiya; April, 1972; pp 650-2

ABSTRACT: The authors measured the variation, with time, of the intensity of the atomic helium series of lines. After termination of a pulse of current through a tube the intensity of the lines does not drop monotonically. After a rapid drop, it reaches a maximum, and only then does it drop. The maximum lasts for several microseconds for all lines after termination of the pulse. The ratio of the intensity at the maximum to the intensity at the instant of termination of the pulse increases for lines of one series with an increase in the principal quantum number of the radiation level. The dependence of this phenomenon on the diameter of the tube and discharge current was studied.

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USSR

UDC 533.9

VAGNER, S. D., KAGAN, YU. M., SLYSHOV, A. G.

"Electrical and Optical Measurements in a Pulsed Discharge in Helium. I"

Leningrad, Optika i Spektroskopiya, No 6, Dec 71, pp 876-880

Abstract: Plasma parameters directly before the beginning of de-ionization were measured in order to study the process of the afterglow of a helium discharge. A pulsed discharge in a cylindrical discharge tube of length 20 cm and diameter 10 mm with cylindrical cold electrodes was investigated. A pulsed generator supplying rectangular pulses of current of 20 usec duration with a repetition frequency of 70 Hz was used as a power supply. The measurements were made at current amplitudes in the pulse of 0.8, 3.2, and 3.6 and at helium pressures of 2, 5 and 10 torr. Two cylindrical probes of length 5 mm and diameter 0.2 mm oriented along the axis were inserted into the tube. The longitudinal electric field strength  $E$  and the electron temperature  $T_e$  were measured with these probes. The atomic spectrum and the continuous spectrum observed under these conditions were also measured

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USSR

VAGNER, S. D. et al, Optika i Spektroskopiya, No 6, Dec 71, pp 876-880

in addition to the probe measurements. The electron concentration, the atom concentration, E, and Te were measured at the lower excited levels  $2^1S_0$ ,  $2^1P_1$ ,  $2^3S_1$ , and  $2^3P_{012}$ . The radial distribution of the intensities of the lines 5016, 7381, 3389, 5376, and 7065 Å was also measured. The absolute intensities were measured for several lines emitted from levels with major quantum numbers 3, 4, and 5, and the balance equation for these levels was tested. The energy difference between levels with the same major quantum number was not great and mutual transitions existed between them. A comparison between the number of excitation events and the sum of decay events shows that the difference in the majority of cases does not exceed several orders of magnitude. It is noted that with an increase in the major quantum number, the role of multistage ionization becomes predominant in comparison with the decay of levels through radiation.

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172 034  
 UNCLASSIFIED  
 TITLE--ENERGY DISTRIBUTION OF ELECTRONS AND OPTICAL PROPERTIES OF A HIGH  
 FREQUENCY ARGON DISCHARGE -U- PROCESSING DATE--13NOV70  
 AUTHOR--(03)--VAGNER, S.D., VIROLAYNEN, V.A., KAGAN, YU.M.  
 COUNTRY OF INFO--USSR  
 SOURCE--OPT. SPEKTRGSK. 1970, 28(1), 192-5  
 DATE PUBLISHED--70  
 SUBJECT AREAS--PHYSICS  
 TOPIC TAGS--ELECTRON ENERGY LEVEL, DISTRIBUTION FUNCTION, ARGON, HIGH  
 FREQUENCY DISCHARGE, LUMINESCENCE  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1976/0440  
 CIRC ACCESSION NO--AP0042475  
 STEP NO--UR/0051/70/028/001/0192/0195  
 UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0042475  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ENERGY FUNCTIONS, DETD. FOR AR AT  
HIGH FREQUENCY DISCHARGE (28 MHZ) AT 0.05-0.25 TORR AND 50-150 MA, AGREE  
QUAL. WITH THE DATA OBTAINED BY UU. M. KAGAN, ET AL. (1966). ENERGY  
DISTRIBUTION FUNCTIONS WERE CALCD. FOR 3P PRIMES 4S AND 3P PRIMES 4P  
EXCITED STATES. CALCN. FOR THE 3P PRIMES 4S STATE GAVE GOOD AGREEMENT  
WITH THE OBSD. LUMINESCENCE OF THE EXCITED AR ATOMS.

UNCLASSIFIED

UDC 537.525:546:293

USSR

VAGNER, S. D., VIROLAYNEN, V. A., KAGAN, Yu. M.

"Energy Distribution of Electrons and Optical Properties of High-frequency Argon Discharge"

Leningrad, Optika i Spektroskopiya, Vol 28, No 1, Jan 70, pp 192-195

Abstract: Energy distribution functions were measured for electrons in a high-frequency argon discharge at a frequency of 28 Mhz in the 0.05-0.25 torr pressure range at currents of 50-150 ma. The resultant distribution functions were used to estimate the role of various processes affecting the balance of the  $3p^{54s}$  and  $3p^{54p}$  levels of argon. Balance equations were calculated for the system of  $3p^{54s}$  levels and the system of  $3p^{54p}$  levels. The results indicate the possibility of calculating optical characteristics of a high-frequency discharge on the basis of experimentally found distribution functions. The authors thank I. S. Niskonen for assisting in the work.

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