USSR

AVAKYAN, A. V., et al., Tr. koordinats. soveshchaniy po gidrotekhn., No 59, 1970.

hydroengineering complex. Periodic investigation and reconfirmation of the basic use rules for water resources of reservoirs and also conversion to compilation of analogous rules for the hydroengineering complex cascade are considered expedient. A list of most important scientific research problems connected with improving the effectiveness of using hydroengineering complexes is presented. The bibliography has 13 entries.

2/2

USSR

SRAGOVICH, V. G., SHAPIRO, L. Z.

"On the Collective Behavior of Type G Automata"

Translation: The authors consider class G automata (abstract 4V370) which participate in a positional game and in a Gur game. A. Maslov.

1/1

Corrosion

USSR

UDC 669.14.018.8:620.193.4

SHAPIRO, M. B., and ZLOTNITSKAYA, L. V., NIIKhIMMASh /All-Union Scientific Research and Design Institute of Chemical Machine-Building/

"Intercrystalline Corrosion Susceptibility of Austenitic Stainless Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, 1971, pp 24-26

Abstract: The authors studied the dislocation structure of Kh18N10T steel after different types of heat treatment and its relation to intercrystalline corrosion in sulfuric and nitric acids (the AM and D method, All-Union State Standard 6032-58) and corrosion cracking in magnesium chloride. Two steel melts were used for the study. It was found that carbide precipitation in the steel and its intercrystalline corrosion susceptibility are influenced by the steel's dislocation structure. Intercrystalline corrosion of the steel in nitric acid is due to increased dislocation density at the grain boundaries and in the boundary zone after tempering at 600-650° C, rather than the result of chromium depletion of the grain boundaries. Tensile straining (to 30%)

1/2

USSR

SHAPIRO, M. B., and ZLOTNITSKAYA, L. V., Metallovedeniye i Termicheskaya
Obrabotka Metallov, No 1, 1971, pp 24-26

increases the intercrystalline corrosion resistance of steel specimens tested
according to the AM method. More complete carbon fixation in titanium car-
bides can be achieved by combined treatment, including strain, heating at 600°
C for 10 hours and stabilizing annealing at 900° C for 8 hours. This treat-
ment is recommended for raising intercrystalline corrosion resistance at 500-
650° C.

USSR

UDC 669.15.018.8

SHAPIRO, M. B., and ZLOTNITSKAYA, L. V.

"Effect of Thermomechanical Treatment of Sensitivity of Austentitic Steel to Stress Corrosion Cracking"

V sb. Povysh. konstriktivn. prochnosti staley i splavov (Increasing the Structural Strength of Steels and Alloys), No 2, Moscow, 1970, pp 212-215 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 31600 by K. Shapiro)

Translation: The authors studied the effect of 5-30% stretching strain and subsequent heating at 600-650°, 10% fractional strain (3 cycles) and heating at 600°, and thermal rolling at 250-400° and subsequent heating at 400° on the dislocation structure and mechanical properties of Khl8N10T steel (C 0.08-0.105%, Ti 0.5-0.65%), as well as the steel's sensitivity to stress corrosion cracking (CC) in a boiling 42% $MgCl_2$ solution. The CC tests were carried out in special clamps, and the given strain was established with the aid of strain gauges. The CC tests showed that the maximum CC resistance is found in the steel after fractional plastic straining and tempering at 600°. This is due to the high density of dislocations and their blocking by the Cr carbides precipitated during tempering. Two illustrations. One table.

1/1

UNCLASSIFIED

TITLE--USE OF PHOSPHORUS COMPOUNDS FOR PRODUCING LIGHTING ENGINEERING OPAQUE GLASSES-U-

PROCESSING DATE--23OCT70

AUTHOR-(04)-TSARITSYN, M.A., PROSHKINA, A.I., SOKOLOV, M.S., SHAPIRO, M.D.

COUNTRY OF INFO--USSR

SOURCE--STEKLO KERAM. 1970, 27(3),13-16

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GLASS COMPOSITION, OXIDE GLASS, PHOSPHOURS COMPOUND, GLASS OPACITY, GLASS PROCESSING, LIGHT SCATTERING GLASS
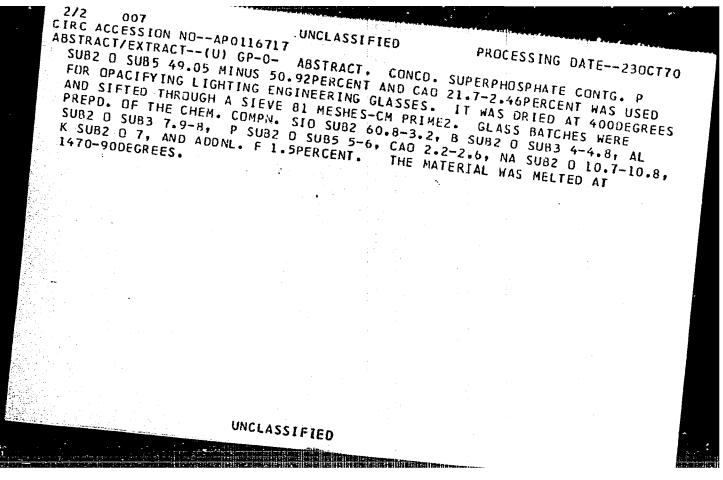
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1255

STEP NO--UR/0072/70/027/003/0013/0016

CIRC ACCESSION NO--AP0116717

UNCLASSIFIED

2/2   007
CIRC ACCESSION NO--AP0116717   UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONCD. SUPERPHOSPHATE CONTG. P
SUB2 O SUB5 49.05 MINUS 50.92PERCENT AND CAO 21.7-2.46PERCENT WAS USED
FOR OPACIFYING LIGHTING ENGINEERING GLASSES. IT WAS DRIED AT 400DEGREES
AND SIFTED THROUGH A SIEVE 81 MESHES-CM PRIME2. GLASS BATCHES WERE
PREPD. OF THE CHEM. COMPN. SIO SUB2 60.8-3.2, B SUB2 O SUB3 4-4.8, AL
SUB2 O SUB3 7.9-8, P SUB2 O SUB5 5-6, CAO 2.2-2.6, NA SUB2 O 10.7-10.8,
K SUB2 O 7, AND ADDNL. F 1.5PERCENT. THE MATERIAL WAS MELTED AT
1470-90DEGREES.

UNCLASSIFIED

USSR

SOMOV, G. P., SHUBIN, F. N., SHAPIRO, M. I., COPACHENKO, I. M., NATSKIY, K. V.

UDC: 911.3.616.981.714(571.6)

"Further Study of the Zone of Tsutsugamushi Fever in the Far East"

V sb. Materialy XV Vses. S'ezda Epidemiologov. Mikrobiologov i infektsionistov, Tezisy dokl. Ch. I. (Proceeding of the 15th All Union Conference of Epidemiologists, Microbiologists and Specialists in Infectious Diseases, Report Theses, Part I--collection of works) Moscow, 1970, pp 110-111 (from RZh-Meditsinskaya geografiya, No 1, Jan 71, Abstract No 1.36.110, by V. Maslovskaya)

Translation: Patients and infected material yielded a total of 22 rickettsial strains. It was established that the strains belonged to the tsutsu-gamushi rickettsial group and differed from type strains only in their virulence. Ten of the 13 strains from Lake Shikotan, and 2 of the 3 from Sakhalin, were highly pathogenic. All 8 strains isolated from rodents and ticks in the northwest rayons of Primorskiy Kray were of low pathogenicity. On analysis of this data and previous research, the geographic plan shows that, from south to north, and from the oceanic islands to the continent, there is a decrease in the incidence of rickettsial strains from rodents and ticks, and a weakening of pathogenicity.

1/2

- 48 -

USSR

SOMOV, G. P., et al., V sb. Materialy XV Vaes. S'ezda Epidemiologov, Mikrobiolo-
gov i infektsionistov. Tezisy dokl. Ch. I. (Proceeding of the 15th All Union
Conference of Epidemiologists, Microbiologists and Specialists in Infectious Di-
seases, Report These, Part I--collection of works) Moscow, 1970, pp 110-111 (from
RZh-Meditsinskaya geografiya, No 1, Jan 71, Abstract No 1.36.110, by V. Maslov-
skaya)

The continental zone covers the whole southwestern part of the Primorskiy Kray,
right up to Khabarovskiy Kray (Bikinskiy rayon). In the northwestern region of
the Pacific Ocean, the tsutsugamushi zone includes south Sakhalin, the south
Kuril=e Islands, and apparently the very southeastern part of the Kamchatka pen-
insula. The natural foci in the Soviet Far East are part of the general zone
of this infection, including parts of Oceania, Australia, and South and South-
east Asia, all adjacent to the basins of the Pacific and Indian Oceans.

2/2

USSR

UDC 576.851.49:576.809.7:541.24

VASIL'YEVA, T. G., SAZONETS, G. I., and SHAPIRO, N. I., Leningrad Institute of Vaccines and Sera

"Characteristics of the Molecular Weights of the Highly Active Large-Molecular Component of Salmonella paratyphi B Endotoxins According to Light Diffusion and Electron-Microscopy Data"

Abstract: Salmonella paratyphi B endotoxins can be separated into fractions differing markedly from one another in molecular weight, chemical composition, and biological activity. The first and largest-molecule fraction possesses the greatest biological activity (antigenicity, immunogenicity, toxicity, stressor action). This fraction is more active than even the original endo-toxin. Electron-microscopic study of the fraction revealed the presence of two types of particles: (a) 140 X 250 Å - 500 X 650 Å and (b) 240 X 780 Å - 340 X 1200 Å. The authors regard them as fragments of the microbial cell membrane.

1/1

USSR

UDC 615.371:576.851.49].036.8.074:541.24

MOSKVICHEVA, I. V., DUDKINA, M. I., ZUYEV, A. S., CHERKASOV, A. N., and SHAPIRO, N. I., Leningrad Institute of Vaccines and Sera

"Relationship Between the Immunological Properties of S. typhi Antigen Fractions and Their Molecular-Weight Parameters

Abstract: Antigens isolated from S. typhi cultures by tryptic proteolysis or by treatment with hydrogen peroxide were characterized by considerable polydispersity. They contained components with diffusion coefficients ranging from $0.45 - 0.6 \times 10^{-7}$ to $10 - 11 \times 10^{-7}$ cm^2/sec with mean square radii [$(\overline{R_5^2})^{1/2}$] from 560 - 590 to 30 - 40 Å. The high-molecular-weight fractions of the preparations induced the formation of O and Vi antibodies in high titers; the antigen activity of the low-molecular-weight fractions was 2 to 3 orders lower. The high-molecular-weight fraction of the peroxide preparation also induced the formation of H antibodies. A relationship was observed between the molecular-weight parameters of the antigen preparations and the level of their biological activity (protective properties, toxicity, and antigenic specificity). The high-molecular-weight components exhibited the greatest biological activity in rabbit serum.
1/1

USSR

SHAPIRO, N. I., VASIL'YEVA, T. G., MOSKVICHEVA, I. V., SAZONETS, G. I., and REPINA, G. V., Leningrad Institute of Vaccines and Sera

UDC 615.372:576.851.49].011.4

"Molecular Heterogeneity of Endotoxins of Typhoid and Paratyphoid Bacteria. I. A Method of Fractionation and Some Physicochemical Properties of the Resulting Fractions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971, pp 55-59

Abstract: Preparations of S. typhi (4446) and S. paratyphi B (50602) endotoxins obtained by different methods of chemical disintegration of stab cultures were fractionated by gel filtration on columns of sepharose 2 B and 4 B. The optical density (at λ=260 and 280 mμ), carbohydrate and protein contents were determined in successive samples. The original preparations were found to be heterogeneous in molecular weight and chemical composition. A large protein-polysaccharide fraction with a molecular weight of about 9 X 10⁶ and a polydisperse low-molecular fraction were isolated from all the preparations. Besides proteins and carbohydrates, the second fraction contained nucleic acids not present in the first fraction.
1/1

USSR

SHAPIRO, N. I., MANTSYGIN, Yu. A., and BAGROVA, A. M., Moscow State University imeni M. V. Lomonosov

UDC 576.312.8

"Chromosomal Aberrations and Radiation Death of Somatic Mammalian Cells"

Abstract: Synchronized cells from Chinese hamsters were cultivated in a suitable medium, after X-ray irradiation with an LD50 dose. The cells, their nuclei, and chromosomes were studied. The nuclei of the irradiated cells showed pronounced changes in chromosomes, including changes in chromosome types also. Dicentric and ring chromosomes, fragments and chromated-type chromosomes were noted and chromosomes with clear breaks. In all experimental doeses of irradiation which produced a similar death rate of cells, the number of chromosomal aberrations was also similar. It is concluded that radiation death of the somatic cells was due to chromosomal aberrations.

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1/2   024

UNCLASSIFIED

TITLE--THE PRESENCE OF COMMON PEPTIDE FRAGMENTS IN THE PROTEIN ALLERGENS OF ENTEROBACTERIA -U-

AUTHOR-(02)-SHAPIRO, N.I., DENISOVA, N.P.

PROCESSING DATE--02OCT70

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3, PP 77-80

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ESCHERICHIA COLI, PARATYPHOID FEVER, TYPHOID FEVER, VACCINE, DYSENTERY, PEPTIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1489

STEP NO--UR/0016/70/000/003/0077/0090

CIRC ACCESSION NO--AP0109549

UNCLASSIFIED

CIRC ACCESSION NO--AP0109549   UNCLASSIFIED   PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS EXAMINED THE PROTEIN ALLERGENS ISOLATED FROM THE STRAINS OF A NUMBER OF REPRESENTATIVES OF INTESTINAL FAMILY, DYSENTERY FLEXNER 26, E. COLI OIII, TYPHOID NO. 1203 AND PARATYPHOID B NO. 50602 BY MODIFIED TSUVERKALOV'S METHOD. THE PREPARATIONS WERE SUBJECTED TO ENZYMATIC SPLITTING WITH CRYSTALLINE TRYPSIN, AND PEPTIDE MAPS OF HYDROLYZATES WERE OBTAINED BY THE FINGER PRINT METHOD. THE PROTEIN ALLERGENS UNDER STUDY CONTAINED IN THEIR PRIMARY STRUCTURE FRAGMENTS, COMMON BY PEPTIDE COMPOSITION. THIS CIRCUMSTANCE WAS A POSSIBLE CAUSE OF CROSS REACTIONS SEEN IN ADMINISTRATION OF HETEOLOGOUS ALLERGENS TO ANIMALS SENSITIZED WITH DYSENTERY VACCINE.

UNCLASSIFIED

1/2   039

TITLE--MATERIALS ON PHYSICO CHEMICAL CHARACTERISTICS OF THE PREPARATIONS OF CRUDE AND PURIFIED -U-

UNCLASSIFIED   PROCESSING DATE--02OCT70

AUTHOR-(02)-DENISOVA, N.P., SHAPIRO, N.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 4, PP 72-77

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ELECTROPHORESIS, DYSENTERY, CHROMATOGRAPHY, UV SPECTRUM, IR SPECTRUM, SKIN TEST, DIAGNOSTIC METHODS, ANTIGEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1938/1674

CIRC ACCESSION NO--AP0106420

STEP NO--UR/0016/70/000/004/0072/0077

UNCLASSIFIED

CIRC ACCESSION NO--AP0106420   UNCLASSIFIED   PROCESSING DATE--02OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMPARATIVE STUDY WAS MADE OF
THE ELECTROPHORETIC PROPERTIES, DISTRIBUTIVE CHROMATOGRAPHY, COLUMN
MOLECULAR CHROMATOGRAPHY AND SPTIC PROPERTIES (UV SPECTRA, INFRARED
SPECTRA, DYSPERSION AND OPTIC ROTATION) OF THE PREPARATIONS OF CRUDE AND
PURIFIED DYSENTERIN USED FOR SKIN TESTS IN DIAGNOSIS OF DYSENTERY.
PURIFIED DYSENTERIN WAS PURELY PROTEIN, AND HOMOGENEOUS IN SIZE
(MOLECULAR WEIGHT ABOUT 12,000). A MARKED POLYDISPERSITY AND THE
PRESENCE OF ADMIXTURES OF COMPONENTS OF NUCLEAR NATURE AND DERIVATIVES
OF A COMPLEX ANTIGEN WERE REVEALED IN PREPARATIONS OF CRUDE DYSENTERIN.

UNCLASSIFIED

USSR

SHAPIRO, N. I. (Reviewer)

"Trigger Mechanisms of Radiation Injury to Cells: Strukturno-Metabolicheskaya Gipoteza v Radiobiologii (Structural-Metabolic Hypothesis in Radiobiology) by A. M. Kuzin, Moscow, "Nauka" Publishing House, 222 pp

Moscow, Priroda, No 12, 1971, pp 94-96

Abstract: The reviewer is highly critical of the hypothesis advanced by the author to account for the initial effects of radiation. Kuzin conjectures that radiation gives rise to a host of changes in the cell organelles that individually are inconclusive but in the aggregate result in lesions. The multiple changes produce primary radiotoxins, i.e., substances that appear soon after irradiation and that are responsible for the main radiobiological effects observed in the individual cells or organism as a whole. These primary radiotoxins are different from the toxins that appear at the height of radiation sickness. The reviewer rejects as inadequate the three types of experimental studies cited by Kuzin to support his hypothesis that primary radiotoxins exist and play a decisive role in the radiation reaction. He also contends that the author failed to controvert the widely held view that injury to the nuclear apparatus of the cells is the main factor in the process. Despite its many
1/2

USSR

SHAPIRO, N. I. (Reviewer), Priroda, No 12, 1971, pp 94-96

shortcomings, the book has several merits. First, it examines at the bio-chemical (molecular) level the effects of radiation on the structure and functions of vital cell organelles. Second, it is the first attempt to systematize the experimental data collected on the subject in recent years.

2/2

USSR

UDC 615.372:576.851.49].07

SHAPIRO, N. I., VASIL'YEVA, T. G., MOSKVICHEVA, I. V., DUDKINA, M. I.,
KRUGLIKHINA, Z. M., SAZONETS, G. I., OZERETSKOVSKIY, N. A., BALAYAN, V. D.,
and KOVAL'SKAYA, S. Ya., Leningrad Institute of Vaccines and Sera and State
Control Institute of Medical Biological Preparations imeni Tarasevich, Moscow

"Molecular Heterogeneity of Endotoxins Extracted From the Typhoid-Paratyphoid
Group of Bacilli. Report II. Antigenic Structure and Biological Activity of
High and Low-Molecular-Weight Fractions"

Abstract: By means of sepharose 2B columns, endotoxin extracts from typhoid
(4446) and paratyphoid B (50602) bacilli can be separated into a high-molecular-
weight and a low-molecular-weight fraction. Components of the latter fraction
retain some serological specificity but are nontoxic, exert a low protective
activity, and display no stressor activity. On the other hand, components of
the high-molecular-weight fraction have a full antigenic structure, are highly
immunogenic and toxic, and display pronounced stressor activity. The high-
molecular-weight fraction is the carrier of the biological properties of
typhoid and paratyphoid endotoxins.
1/1

- 29 -

1/2 041 S UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--PREPARATION OF GASOLINE WITH AN OCTANE NUMBER OF 95 IN AN
INDUSTRIAL CATALYTIC REFORMING PLANT -U-
AUTHOR--IVANYUKOV, D.V., KAMINSKIY, E.F., MASLYANSKIY, G.N., FEDOROV,
A.P., SHAPIRO, R.N.
COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), I-5

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--GASOLINE, FUEL OCTANE RATING, CATALYTIC CRACKING, ALUMINUM
OXIDE, OXIDE CATALYST, PLATINUM CATALYST, HIGH PRESSURE EFFECT, CHEMICAL
REACTION RATE, CHLORINE, PETROLEUM CATALYTIC REFORMING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/2042 STEP NO--UR/0065/70/015/003/0001/0005

CIRC ACCESSION NO--AP0109974
ZZZZZZZZZZZZZ UNCLASSIFIED

PROCESSING DATE--11SEP70

2/2   041
CIRC ACCESSION NO--AP0109974
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS AND THE PLANT WERE MODERNIZED BY USING PT-AL SUB_2 O SUB_3 CATALYST PROMOTED WITH CL INSTEAD OF F, WHOSE ACTIVITY WAS MAINTAINED BY ADDN. OF ORG. CL COMPDS. IN THE REACTION ZONE. A GREATER AROMATIZATION OF THE PARAFFINIC STOCK WAS REACHED AS THE AMT. OF H SUB_2 O IN THE REACTION ZONE WAS REDUCED BY EVAPG. THE WATER FROM THE HYDROFINED GASOLINE STOCK AND DRYING THE RECYCLE GASES WITH MOL. SIEVES. A PRESSURE DECREASE TO 20 ATM INCREASED THE YIELD OF GASOLINE WITH RESEARCH OCTANE NO. 95. A 3RD STAGE REACTOR WAS ADDED, DISTRIBUTING THE CATALYST IN THE QUANT. RATIO 1:2:4 IN THE 3 REACTORS, RESP.

USSR

SHAPIRO, S. I.

"Algorithms in Generalized Mathematical Thought"

Novyye Issled v Psikhol. i Vozrastin. Fiziol. [New Studies in Psychology and Developmental Physiology -- Collection of Works], No 1, Moscow, Pedagogika Press, 1970, pp 63-66 (Translated from Refertivnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V595 by V. Serdobol'skiy).

Translation: Using the example of a simple arithmetic problem, the relationship between the algorithm used for problem solving by students and the algorithm used for recognition of applicability of the solution method is discussed.

1/1

/3

USSR   UDC 669.245.018.44(088.8)

PANASYUK, I. O., BRUSILOVSKIY, B. S., VILKOV, V. I., VORONIN, G. M., YEGOROV,
YE. YE., YELKIN, I. S., KLIMOV, L. YA., KOVROVA, YE. A., KONTSEVAYA, YE. M.,
LYUBINSKAYA, M. A., MILENINA, YE. G., MIKHAYLOV, I. A., RAZUVAYEV, YE. I.,
SIROTKIN, A. I., SOLDATCHENKO, V. A., SPILITSIN, R. I., SHAPIRO, S. M.

"Nickel-Chromium Base Alloy"

Translation: The heat-resistant alloy has the following composition (in %):
C 0.03-0.1, Cr 30-40, W 3-5.5, Mo 2-4, Ti 0.5-1.5, Al 0.5-1.5, Nb 0.5-1.5,
Ce 0.01-0.3, B 0.003-0.008, Ni, the rest. The alloy has increased heat re-
sistance and also the following mechanical and physical-chemical properties
at 1,100°: σ_B 8 kg/mm^2, δ 65%, $\sigma_{stress-rupture}$ 1 kg/mm^2, coefficient of
linear expansion $15 \cdot 10^{-6}$ deg$_2^{-1}$, increase in weight after 100 hours of heating
at 1,200° in the air 0.6 g/m^2. It is corrosion-resistant in a moist atmosphere
under tropical conditions, in sea water, and in the products of combustion of
highly sulfurous fuel.
1/1

Controls

USSR

UDC 621.315.722.1 (C88.8)

PALASHOV, V.V., SHAPIRO, S.V.

"Voltage Regulator"

USSR Author's Certificate No 275165, filed 9 Mar 67, published 12 Oct 70 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4B697P)

Translation: In order to increase the speed of response and the reliability of a regulator, the final control element consists of two networks connected in anti-parallel which contain a thyristor and a saturation choke coil. The thyristors are shunted by semiconductor diodes and a capacitor is connected between their outlets connected with the choke coils, which eliminates untimely closing of the thyristors resulting from the effect of the residual inductance during saturation of the choke coil. The control unit used for control of the turn-on phase of the thyristor contains a combined phase-shifting ladder network with a shaper of rectangular pulses. 1 ill. A.T.

1/1

USSR

UDC 616.981.551-002.39

SHAPIRO, S. Ye. and BYBOROV, G. P., Clinic of Infectious Diseases, Khabarovsk Medical Institute

"Rare Cases of Tetanus"

Moscow, Sovetskaya Meditsina, No 2, 1973, pp 147-148

Abstract: Of more than 300 cases of tetanus observed by one of the authors during 35 years of medical practice (1934-1969) in different parts of the Soviet Union, 2 were caused by the pecking of roosters and 1 by a dog bite. One developed general tetanus after a rooster nicked his hand and another suffered kopf-tetanus when a rooster scratched her forehead. The third person developed the symptoms of a generalized infection after he was bitten in the palm of the hand by a healthy dog. It is assumed that the spores of the causative agent were already present on the bodies of the victims and that the animals were merely mechanical factors in forcing the spores into the skin. All three persons had applied brilliant green or iodine to the site of the bite, thereby creating anaerobic conditions favorable for the growth of the causative agent.

1/1

- 3 -

Pathology

KONTSEVAYA, N. G., KONSTANTINOV, A. A., SHAPIRO, S. Ya., and KOVAL'SKIY, G. S., Khabarovsk Medical Institute

"Some Indices of Protein Metabolism and Vitamin Balance in Patients With Far-Eastern Hemorrhagic Fever With a Renal Syndrome"

Abstract: A study was made of 269 patients suffering from Far-Eastern hemorrhagic fever with a renal syndrome. During the first 3 weeks of the illness, a high degree of azotemia is present which is caused by the specific tissue processes as well as by the disturbance of kidney function. The increased porosity of vascular walls accounts for the hemorrhagic syndrome. The decomposition of tissue proteins, vomiting, and dehydration which are characteristic of the syndrome are conditioning factors in the extra-renal azotemia. The content of amino acids and proteins in serum is distorted. Loss of water-soluble vitamins C and P is not compensated by their administration, an indication that the condition is endogenous. Oliguria (200-300 ml per day) or even anuria during the first week is followed by polyuria the second week (6,000-8,000 ml), but elimination of urea nitrogen is still below normal.
1/2

USSR

KONTSEVAYA, N. g., et al, Voprosy Meditsinskoy Khimii, Vol 16, No 4, Jul/Aug
70, pp 376-381

It is believed that the disproteinemia, which involves all proteins, tyrosine,
tryptophan, xanthurenic acid, and vitamins C and P, is caused by a disturbance
in the proteolytic enzyme system, since some distortion remains even during
the convalescent period in the fourth week.

2/2

AP0037122 $\mathcal{S}$ UR 0399

USSR

UDC 616.981.455-036.2(571.6)
JPRS 49948

SHAPIRO, S. Ye., BUSOYEDOVA, N. M., and POGORELOV, M. Ye., Clinic of Infectious Diseases, Khabarovsk Medical Institute, and Khabarovsk Plague-Control Station

"Some Results of Tularemia Studies in the Soviet Far East"

Moscow, Sovetskaya Meditsina, No 11, pp 98-101

Abstract: Sporadic cases of tularemia were reported in the mid-1950s in the Khabarovsk region of the Soviet Union. Several investigations since then have confirmed that these cases were not accidental. Isolation of tularemia bacteria from ticks, serologic studies, and detection of numerous cases of the disease throughout the 1960s using improved diagnostic methods led to the conclusion that the Khabarovsk region is part of an extensive natural tularemia focus embracing Eastern Siberia, Yakutia, the Maritime Province, and Sakhalin. Further research will probably confirm the existence of local tularemia on Kamchatka and natural foci of the infection in Amur and Magadan Oblasts, on the Kuril Islands, and elsewhere in the Far East.

D.K.

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USSR

UDC 616.981.455-036.2(571.6)

SHAPIRO, S. Ye., BUSOYEDOVA, N. M., and POGORELOV, M. Ye., Clinic of Infectious Diseases, Khabarovsk Medical Institute, and Khabarovsk Plague-Control Station

"Some Results of Tularemia Studies in the Soviet Far East"

Abstract: Sporadic cases of tularemia were reported in the mid-1950s in the Khabarovsk region of the Soviet Union. Several investigations since then have confirmed that these cases were not accidental. Isolation of tularemia bacteria from ticks, serologic studies, and detection of numerous cases of the disease throughout the 1960s using improved diagnostic methods led to the conclusion that the Khabarovsk region is part of an extensive natural tularemia focus embracing Eastern Siberia, Yakutia, the Maritime Province, and Sakhalin. Further research will probably confirm the existence of local tularemia on Kamchatka and natural foci of the infection in Amur and Magadan Oblasts, on the Kuril Islands, and elsewhere in the Far East.

USSR   UDC 577.150.13:541.67

MISHCHENKO, V. V., SHAPIRO, T. A., RUBCHINSKAYA, Yu. M., KHRISTIANOVICH,
KHOMUTOVA, Ye. D. and BEREZOVSKIY, V. M., All-Union Scientific Research
Institute of Vitamins

"Nucleotides, Coenzymes, and Phosphoric Acid Esters. XXVIII. Spectroscopic
Investigation of Intramolecular Interaction in FAD and Its Analogs"

Abstract: By studying circular dichroism, fluorescence, and paramagnetic
resonance, it was established that in aqueous solutions flavin-adenine dinucleo-
tide (FAD) and its analogs differing with respect to the number of phosphoric
acid groups, which ranged from one to four in the compounds investigated,
exhibited interaction between the flavin and adenine parts of the molecule.
With an increasing length of the phosphoric acid chain connecting the two
parts of the molecule, the magnitude of the intramolecular interaction
decreased.

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UDC 547.859:577.150.13:577.164.12

USSR

SHAPIRO, T. A., KHOMUTOVA, YE. D., BEREZOVSKIY, V. M., All-Union Scientific Research Institute of Vitamins

"Nucleotides, Coenzymes, Phosphate Esters. XXVI. Synthesis of P^1-(Riboflavin-5')-P^2-[adenosine-2'(3')phospho-5']diphosphate and P^1-(Riboflavin-5')-P^1-(adenosine-5') Monophosphate"

Abstract: The paper describes synthesis of the monophosphate structural analog of flavin adenine dinucleotide -- P^1-(riboflavin-5')-P^1-(adenosine-5') monophosphate (RAdP) -- and a flavin adenine dinucleotide phosphate (FADP) analogous to natural nicotine amide adenine nucleotide phosphate in which the third phosphate group occupies the 2'(3') position of the ribose part of the adenosine -- P^1-(riboflavin-5')-P^2-[adenosine-2'(3')-phospho-5'] diphosphate. Phosphate FADP was synthesized from tri-n.-octyl ammonium salt of riboflavin-5'-phosphate and 4-morpholino-N,N'-dicyclohexylcarboxamidinium salt of adenosine-2'(3')-phospho-5'-phosphomorpholide. The reaction was done in a mixture of anhydrous pyridine and dimethylformamide at 50° C for 20 hours. Compound RAdP was synthesized from 2', 3', 4'-triacetyl riboflavin and $N,0^2,0^3$-triacetyl

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USSR

SHAPIRO, T. A., et al., Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul72, pp 1634-1638

adenosine-5' - phosphate. The reaction was carried out in anhydrous pyridine at 20°C for five days in the presence of a ten-fold excess of N,N'-dicyclohexyl-carbodiimide. It was found that reducing the number of phosphate groups in the flavin adenine dinucleotide molecule (from two to one) leads to a sharp reduction in the activity of RAdP as a cofactor of D-amino acid oxidase. It was found that FADP has 18% of the coenzymatic activity of flavin adenine dinucleotide.

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UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--NUCLEOTIDES, COENZYMES, PHOSPHATES. XXII. SYNTHESIS OF P
   PRIME1,RIBOFLAVIN,5,YL, P PRIME3,ADENOSIN,5,YL, TRIPHOSPHATE AND P
AUTHOR-(03)-KHOMUTOVA, YE.D., SHAPIRO, I.A., BEREZOVSKIY, V.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 470-4

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NUCLEOTIDE, COENZYME, PHOSPHATE, BIOSYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0596   STEP NO--UR/0079/70/040/002/0470/0474

CIRC ACCESSION NO--AP0117824
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0117824
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADENOSINE 5,PYROPHOSPHATE AND
  MORPHOLINE GAVE 70PERCENT ADENOSINE 5 PRIME,PYROPHOSPHATE MORPHOLIDE
  ISOLATED AS THE BIS(4,MORPHOLINE,N,N PRIME,DICYCLOHEXYLCARBOXAMIDINIUM)
  SALT (I). OCTYLAMINE AND RIBOFLAVINE 5 PRIME,PYROPHOSPHATE IN 24 HR IN
  AQ. SOLN. GAVE 64.5PERCENT ORANGE RED RIBOFLAVINE 5 PRIME,PYROPHOSPHATE
  BIS(TRIOCTYLAMMONIUM) SALT (II) AFTER DRYING OVER P SUB2 O SUB5. I AND
  TRIOCTYLAMMONIUM RIBOFLAVINE 5 PRIME, PHOSPHATE DRIED IN PYRIDINE BY
  DISTN. OF THE SOLVENT, THEN TREATED WITH PYRIDINE,ME SUB2 NCHO 20 HR AT
  50DEGREES AFTER FINAL TREATMENT WITH NACLO SUB3 IN MECH GAVE, P PRIME1,5
  PRIME,RIBOFLAVINE,P PRIME3,5 PRIME,(ADENOSINE TRIPHOSPHATE), PURIFIED BY
  SEPHADEX G-25 IN 27.5PERCENT YIELD; THIS HAD 18-20PERCENT ACTIVITY
  RELATIVE TO NATURAL FAD AS THE COENZYME FOR D,AMINO ACID OXIDASE
  ACTIVITY. RESULTS ON HYDROLYSIS IN ACID AND ALK. SOLNS. WERE REPORTED.
  SIMILARLY II WAS USED AS ABOVE IN THE SYNTHESIS OF P PRIME1, 5 PRIME,
  RIBOFLAVINE,P PRIME4,5 PRIME,(ADENOSINE TETRAPHOSPHATE). THE RESULT OF
  HYDROLYSIS WERE REPORTED. LENGTHENING THE PHOSPHATE CHAIN IN SUCH
  SUBSTANCES LOWERE THEIR ACTIVITY AS COENZYMES.   FACILITY: VSES.
  NAUCH.-ISSLED. VITAM. INST., MOSCOW, USSR.

"Nucleotides, Coenzymes, Phosphoric Esters. XXII. Synthesis of P^1-(Riboflavin-5')-P^3-(adenosine-5')triphosphate and P^1-(Riboflavin-5')-P^4-(adenosine-5')tetraphosphate"

Abstract: The authors undertook to synthesize unsymmetrical dinucleo-
side polyphosphates in the flavin dinucleotide series for purposes of
ascertaining the effect of the length of the phosphoanhydride chain
connecting the flavin and adenylic parts of the molecule on its abili-
ty to recombine with the specific apoenzyme into the corresponding en-
zyme. P^1-(Riboflavin-5')-P^3-(adenosine-5')triphosphate and P^1-(ribo-
flavin-5')-P^4-(adenosine-5')tetraphosphate were synthesized from bis-
4-morpholine-N,N'-dicyclohexylcarboxamidinium salt of adenosine-5'-
diphosphate morpholide and tri-n.-octylammonium salts of riboflavin-

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5'-mono- and riboflavin-5'-diphosphates respectively. It is shown
that an increase in the length of the phosphoanhydride chain in the
flavin adenine dinucleotide molecule brings about a decrease in the
activity of these compounds as cofactors of D-amino acid oxidase as
compared with flavin adenine dinucleotide.

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UDC: 512.25/.26+519.3:330.115

SHAPIRO, V. B.

"On the Problem of a Statistical Estimate of Various Methods of Solving a Transport Problem"

Nauch. zap. Tashkent. in-t nar. kh-va (Scientific Notes. Tashkent Institute of the National Economy), 1970, vyp. 34, pp 33-38 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V678)

Translation: The author compares the method of potentials and the method of differential rents with respect to expenditures of machine time on solution of a problem. A specially selected series of problems showed the equivalence of the methods. In both methods, labor expenditures increase as $(mn)^2$. D. Epshteyn.

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USSR

KOVPIK, O. F., KORNILOV, YE. A., KOLYADA, YU. YE., SHAPIRO, V. D., and
SHEVCHENKO, V. I.

"Electron-Beam Excitation of Low-Frequency Oscillations in a Hot Plasma Con-
fined by a Mirror Machine"

Abstract: The article describes results of a study of the interaction of an
electron beam with a hot plasma in a mirror machine and the heating of the
plasma by ion-sound oscillations excited by the beam. The results indicate
the following:

       1. An electron beam effectively interacts with a hot plasma, exciting
ion-sound instability.

       2. Scattering of the beam electrons by the ion-sound oscillations and
their capture by the mirror machine can result in the creation of large elec-
trostatic potentials, the presence of which causes the appearance of centrif-
ugal instabilities.

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3. Effective ion heating is possible in the interaction of an electron beam with a hot plasma.

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BEREZIN, A. K., FAYNBERG, Ya. B., SHAPIRO, V. D., BEREZINA, G. P.,
ZEYDLITS, V. P.

"Investigating Low-Frequency Instabilities in a Plasma-Beam
Discharge by Correlation Analysis"

Abstract: A method is described for determining the degree of
stochasticity of the oscillations excited in a plasma-beam dis-
charge. The method is based on measurements of the oscillation
space-time correlation functions, the latter having the form
$R(\underline{l}, \tau) = \overline{E_z(z,t) E_z(z + \underline{l}, t + \tau)}$, where E_z is the intensity of the
high-frequency electric field and the horizontal line above the
expression indicates averaging over z and t. The authors also
describe experiments they performed to determine the degree of

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BEREZIN, A. K. et al, Fizika plasmy i problemy upravlyayemogo
termoyadernogo sinteza, 1971, Naukova dumka, pp 129-133

stochasticity of the excited oscillations by investigating the
shape of the oscillations with movable antenna loops along the
beam close to the glass chamber containing the plasma and oriented
to the H_z component of the field. The autocorrelation functions,
frequency spectra, and wave number spectra were obtained for the
envelope and the low-frequency oscillations excited in the plasma
beam discharge. A block diagram of the experimental apparatus
is given.

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USSR

SHAPIRO, V. D.; SHEVCHENKO, V. I. (Physicotechnical Institute, Ukrainian Academy of Sciences)

"Nonlinear Theory of Relaxation of a 'Monoenergetic' Beam in a Plasma"

ABSTRACT: The dynamics of relaxation of an initially "monoenergetic" beam in a plasma is investigated. It is shown that instability of beam particles captured in the oscillation potential well play an important role in the relaxation process. Equations are derived which describe oscillation excitation and diffusion in the beam, with allowance for this instability. An inspection of the equations reveals that the distribution function of the beam is almost plateau-shaped for times $t \sim \omega_p^{-1} n_0/n_1$ (ω_p is the plasma frequency and n_1, n_0 the beam and plasma densities respectively). During the following relax-

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USSR

DHAPIRO, V. D., et al., Zhurnal Eksperimental'moy i Teoretiche-
skoy Fiziki, Mar 71, pp 1023-1035

ation stage for which the characteristic time is

$$t \sim \Omega - {}^1 n_o / {}^n i \quad (\Omega = \omega_p \ (n_i / n_o) \ 1/3$$

is the oscillation frequency of the captured particles), accelerated particles
appear in the beam and a velocity distribution which is close to Maxwellian is
established.

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Molecular Physics

USSR

FAYNBERG, YA. B., SHAPIRO, V. D., SHEVCHENKO, V. I., Physico-Technical Institute, Academy of Sciences, Ukrainian SSR

"Nonlinear Waves in a Relativistic Electron Beam"

Abstract: It is known that in stationary electron configurations a decrease of the Coulomb force of repulsion is achieved with the aid of the Lorentz force of the constriction of the currents of relativistic electrons. Because a limitation of the amplitude of a wave in plasma is connected with the effect of the Coulomb repulsion of electrons, the question naturally arises as to the possibility of the excitation of waves of great amplitude during conditions of the compensation indicated. Such a situation can occur during wave propagation along the axis of an electron beam, the particles of which are rotated in azimuth. In this case the wave of charge density leads to oscillations of the current of the particles in the beam

$$i'_\varphi (z - v_\varphi t) = -e v_0 n'(z - v_\varphi t)$$

[v_0 is the azimuthal velocity of the beam] and consequently to formation of a

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FAYNBERG, YA. B., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, Vol 11, No 8, 20 Apr 70, pp 410-413

magnetic field of the wave $H_r(z - v_\varphi t)$. The force of the pinch of the clusters
connected with this magnetic field, in which the wave divides the beam

$$F_H = e/c \ v_0 H_r \ ,$$

in the same manner as in the stationary case, is found to be out of phase with
the Coulomb force $F_E = -eE_z$ and, with

$$v_0 \simeq \sqrt{c^2 - v^2} \ ,$$

leads to a significant reduction of the displacement of the electrons in the
field of the wave. In the process it is possible to propagate the wave in the
beam with an extremely large amplitude of the electrical field without formation
of an intersection of the trajectories and overturning of the wave front. This
result shows the possibility of effective use of waves in relativistic beams for
realization of a plasma method of acceleration proposed by Ya. B. Faynberg (Proc.
Symp. CERN, 1,84,1956). For simplicity, in the present work the authors consider
the case of rectangular geometry: the electron beam moves with respect to the γ -
axis and is limited with respect to the x. The electron charge of the beam is
assumed to be partially compensated by ions and, in equilibrium with the Coulomb

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repulsion force acting on the electrons $-eE_x$, is compensated by the magnetic
force $-e/c \, v_0 \, H_z$, where H_z (x) is the magnetic field created by the electron
current. The wave originating in such an electron beam is described with the aid
of an ordinary hydrodynamical system of equations. Curves are shown for the dis-
persion dependences for waves in an azimuthal electron beam. The continuous
curves pertain to the case of small amplitudes $(\lambda \rightarrow 1)$; the dotted curves
indicate the case of the maximum possible amplitude determined by a formula
developed in the work. 1 fig. 5 ref. Received by editors, 9 March 70.

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USSR

LEVIN, M. B., LYUBARSKIY, M. G., ONISHCHENKO, I. N., SHAPIRO, V. D., and SHEVCHENKO, V. I.

UDC: None

"Nonlinear Theory of Electron-Beam Kinetic Instability in a Plasma"

Abstract: In earlier papers on this subject the problem of the excitation of monochromatic plasma waves was solved for the case of an instability in the monoenergetic beam in the plasma. The present paper discusses the kinetic instability which arises in the interaction between the plasma and the beam, with the release of large quantities of heat. This instability is the result of the Landau attenuation effect; a formula is given for the linear increment of the increase in oscillation manifested by the instability. In their analysis, the authors use a system of equations describing the motion of the resonance particles in the wave field and the change in the wave amplitude due to the interaction with those particles, a system valid only if the phase change of the field as a result of that interaction is neglected. Plots are given of what the authors call the phase "mixup" of the resonance particles. Connected with the Physico-Technical Institute of the 1/2

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Ukrainian Academy of Sciences, they thank Ya. B. Faynberg and R. Z. Sagdeyev for discussing the work with them, and Yu. N. Dnestrovskiy, D. P. Kostomarov, A. A. Ivanov, and T. Soboleva for their assistance in preparing it.

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USSR

UDC 621.382.23.011.222

SHAPIRO, V.I.

"Temperature Properties Of Tunnel Diodes And Their Connection With The Energy Band Structure Of A Semiconductor"

Elektron.tekhnika. Nauch.-tekhn.sb. Poluprovodn. pribory (Electronic Technics. Scientific-Technical Collection. Semiconductor Devices), 1971, Issue 4(61), pp 75-78 (from RZh:Elektronika i yeye primeneniye, No 4, April 1972, Abstract No 4B225)

Translation: The paper considers the connection of the temperature dependence of the peak current of tunnel diodes prepared from GaAs, Ge, and GaSb with the energy band structure of the semiconductor starting materials. It is noted that in the case of a GaSb tunnel diode the negative temperature coefficient of the peak current (which in practice is observed with any real achievable ratio of concentrations in the n- and p-region), in contrast to tunnel diodes from GaAs and Ge, is caused by the strong temperature dependence of the position of the Fermi level and the populated electron states close to it. A. Ye.

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1/2   025   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--A HIGH FREQUENCY TUNNEL DIODE -U-

AUTHOR--KONSTANTINOV, P.B., SHAPIRO, V.I.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263044
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NO 7, 4 FEB
DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--HIGH FREQUENCY, TUNNEL DIODE, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1092   STEP NO--UR/0482/69/000/000/0000/0000

CIRC ACCESSION NO--AA0112214
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2/2   025   UNCLASSIFIED   PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AA0112214
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS AUTHOR'S CERTIFICATE
    INTRODUCES A HIGH FREQUENCY TUNNEL DIODE WHICH HAS A DOPANT
    CONCENTRATION OF 10 PRIME19-10 PRIME21-CC IN THE EGENERATE P AND N
    REGIONS, AND WHICH DIFFERS BECAUSE TO IMPROVE THE NOISE CHARACTERISTICS
    WITHOUT CHANGING THE VALUE OF THE MAXIMUM FREQUENCY, THE DOPANT
    CONCENTRATION IN THE N REGION IS CLOSE TO OR GREATER THAN THAT IN THE P
    REGION.

ZZZZZZZZZZZZ   UNCLASSIFIED

USSR   UDC 621.382.2

KONSTANTINOV, P. B., SHAPIRO, V. I.

"A High-Frequency Tunnel Diode"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 7, 4 Feb 70, p 62, Patent No 263044, Filed 22 Jan 68

Translation: This Author's Certificate introduces a high-frequency tunnel
diode which has a dopant concentration of 10^{19}-10^{21}/cc in the degenerate P
and N regions, and which differs because to improve the noise characteristics
without changing the value of the maximum frequency, the dopant concentration
in the N region is close to or greater than that in the P region.

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USSR

SHAPIRO, V. Ye.

UDC: 533.95:537.84

"Action of Electromagnetic Forces When Molten Metal in Channels is Sub-
jected to Intensive Heating"

Krasnoyarsk, Deystviye elektromagnitnykh sil pri intensivnom induktsion-
nom nagreve zhidkogo metalla v kanalakh. In-t fiz. Sib. otd. AN SSSR (cf.
English above. Institute of Physics, Siberian Department of the Academy
of Sciences of the USSR), preprint, IFSO-6F, 1972, 25 pp, ill., mimeo.
(from RZh-Fizika, No 6, Jun 73, abstract No 6G40)

Translation: The author considers the principal manifestations of the
action of electromagnetic forces when molten metal in channels is under
intensive induction heating: electromagnetic circulation in the channel
and orifice, redistribution of pressure and pressure pulsation at the
walls, movement of impurities and the effect of channel incrustation,
change in the nature of thermal convection. It is shown that these
effects become quite considerable in large smelting furnaces with closed
channels. A study is made of the way that the effects depend on the
depth of the skin layer, the distance to the inductor, and the size and

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SHAPIRO, V. Ye., Deystviye elektromagnitnykh sil pri intensivnom induk-
tsionnom nagreve zhidkogo metalla v kanalakh, 1972, IFSO-6F

shape of the channel cross section. As a special case the analysis covers
liquid conductors when currents are actuated in them by conduction.

USSR

SHANTSEV, I. P., and SHAPIRO, V. Ye.

"Three Forms of Low-Frequency Unstable Resonance Circuits Using Semiconductor Diodes"

Translation: An examination is made of the mechanism causing instabilities connected with a nonlinear capacitance in a semiconductor diode amplitude detector containing a resonant circuit. The threshold of their occurence is determined. Bibliography of four. N. S.

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USSR

UDC: 621.397.61

SHAPIRO, Ya. A., GALAKHOVA, N. G., VOVSI, L. M., BERLIN, B. A., KHARCHIK-
YAN, R. S., VOROB'YEVA, F. Kh.

"Technical Facilities of Television Services of the Soviet-Wide Television
Center"

Translation: Basic data are given on studio and announcer TV cameras,
motion picture cameras with TV view finder, cameras for transmitting motion
picture films in TV and motion picture projection rooms, and epidiascopic
projectors for transmitting transparencies, photos, drawings, etc. The
individual elements of the instrument and program unit, central instrument
room and video recording unit are described. N. S.

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USSR

ORLOVA, I. G., SHAPIRO, Ya. Z., and GUL'KO, N. V., Ukrainian
Scientific Research Institute of Refractory Materials

"The Effect of Some Oxides on the Crystallization of Corundum
Whiskers From the Gas Phase"

Abstract: The crystallization of corundum whiskers according to
a previously described method (V. S. Papkov et al., Kristallo-
grafiya, 9, 442, 1964) by vaporization of Al_2O_3 in a C-atmosphere
in the presence of additions of SiO_2, TiO_2, and ZrO_2 was inves-
tigated. The semicrystalline corundum ceramic was heated up to
1700—2000 ° C in a furnace by passing through it Ar containing
0.003 % O_2 and 0.01 % N_2. The positive effect of TiO_2 and ZrO_2
additions is demonstrated and their optimum application conditi-
ons are determined. It was found that crystals of corundum cry-
stallize only on graphite; they have the growth forms A_1 and C
and crystals of the growth form A_1 are characterized by a mean
breaking strength of $\sim$ 50,000 kg/cm^2 and higher. One table, nine
biblio. refs.
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USSR

SHAPIRO, YE. G.

UDC 533.6.011

"An Investigation of Supersonic Flow Past a Sphere by an Air Current at High Static Temperatures"

Moscow, Nauch. tr. In-t Mekh. Mosk. Un-ta (Scientific Transactions of the Institute of Mechanics of the Moscow University), No 1, 1972, pp 44-53 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4B300 by Yu. P. Lun'kin)

Translation: The equilibrium supersonic air flow past a sphere is examined for the case when in a free-stream flow the temperature is sufficiently high $(T_\infty > 2000°K)$, while the Mach number is relatively low $(M_\infty < 6)$. The problem is solved using the method of G. F. Telenin according to a five-ray scheme $(\mathcal{C}_0 = 0, \mathcal{C}_1 = 0.287, \mathcal{C}_2 = 0.538, \mathcal{C}_3 = 0.725, \mathcal{C}_4 = 0.800)$. An analysis of the calculations showed that in the interval of change T_∞ $(2000° < T_\infty < 7000°K)$ with a fixed M_∞ and a changing P_∞ $(-2 < \lg P_\infty < 1)$ with a fixed M_∞, T_∞ demonstrates a nonmonotonic dependence on the value of the departure $\mathcal{E}_i$ $(i=0,1,2,3,4)$. The usefulness of the approximated analytic dependence for $\mathcal{E}_0$, the speed of spreading at the critical point $(R_b/u_\infty)d\mathcal{C}_0/ds$, etc. proposed earlier is

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USSR

SHAPIRO, YE. G., Nauch. tr. In-t Mekh. Mosk. Un-ta, No 1, 1972, pp 44-53

investigated (see Telenin, G. F., and Tinyakov, G. P., Kokl. AN SSSR, 1964, 159, No 1, 39-42 -- PZHMekh, 1965, 4B199; Lebedev, M. G., Minostsev, V. B., Telenin, G. F., and Tinyakov, G. P., Izv. AN SSSR. Mekh zhidkosti i gaza, 1969, No 2, 107-111 -- RZHMekh, 1969, 11B416; Gilinskiy, S. M., Makarova, N. E., Izv. AN SSSR. Mekh. zhidkosti i gaza, 1966, No 1, 16-24 -- RZHMekh, 1966, 8B325; Bazzhin, A. P., Blagosklonov, V. I., Minaylos, A. N., and Pirogova, S.V., Uch. zap. Tsentr. aeto-gidrodinam. in-ta, 1971, 2, No 3, 95-101 -- RZHMekh, 1972, 1B299) through certain parameters of similarity with the case of a flow past a sphere by air with a high static temperature.

The calculations presented in the work confirmed the supposition that $(R_b/u_\infty)d\alpha_0/ds$ is a well-defined function of condensation $\varkappa = \rho_{co}/\rho_s = 0$ and that the flow on the frontal surface of a blunted body may be simulated by the flow of an ideal gas with an adiabatic characteristic

$$\gamma_{3\phi} = \frac{M_{\infty 2}(1-\varkappa)-2}{M_{\infty 2}(1-\varkappa)}.$$

(11 bibliographic entries)

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USSR

SHAPIRO, YE. G., (Moscow)

UDC 533.6.011.55:533.6.011.72

"Shock Layer Radiation in Hypersonic Air Flow Past a Spherical Segment"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 72, pp 101-106

Abstract: A solution of a problem on hypersonic air flow past a blunted spherical segement in the presence of radiation in a shock layer is presented. This work is an extension of the author's previous investigations on air flow past a sphere immediately behind the front of a strong shock wave with consideration of radiation, which showed that the radiation flux decreases much more rapidly than the convective flux, with increasing distance from the stagnation point. A comparison of the results obtained here with those for radiating air flow past a sphere and past a spherical segements without consideration of radiation. The effect of radiation on flow in shock layer and in the region of round off point on distribution of gas dynamic parameters in a shock layer was considered for a segment with radius $0 \leqslant R \leqslant 4m$ and at velocities $10 \leqslant V_\infty \leqslant 16$ km/sec. It is shown that radiation does not affect substantially the fields of gas dynamic parameters, since the latters are determined by processes taking place near symmetry axis, because of radiation freezing phenomenon.

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USSR

UDC: 629.78.015.533.6.011.5

STULOV, V. P., SHAPIRO, Ye. G.

"Radiant Heat Exchange With Hypersonic Flow of Air Around Blunt Bodies"

V sb. Nauchn. konferentsiya. In-t mekhan. MGU. Tezisy dokl. (Scientific Con-
ference of the Institute of Mechanics of Moscow State University. Summaries
of the Reports), Moscow, 1970, pp 60-61 (from RZh-Raketostroyeniye, No 8,
Aug 70, Abstract No 8.41.82)

Translation: When studying the motion of a body in the atmosphere, the
following groups of physical processes are ordinarily considered: 1) non-
equilibrium physicochemical conversions associated with the molecular struc-
ture of the gas; 2) molecular transfer phenomena and rarefaction effects;
3) radiation. On the basis of the results of a series of papers, an estimate
is made of the effect which all three groups of processes have on flow around
a sphere two meters in radius. There is a region of variation in the de-
termining parameters where viscosity is insignificant -- the boundary layer
is thin. Thermodynamic equilibrium is reached, and the radiation flux of
energy to the critical point exceeds the convective flux. When absorption
and radiation cooling are taken into account, the system of equations of
dynamics of a radiating gas reduces to a nonlinear integrodifferential system
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USSR

STULOV, V. P., SHAPIRO, Ye. G., Nauchn. konferentsiya. In-t Mekhan. MGU.
Tezisy dokl., Moscow, 1970, pp 60-61

of equations. The problem of flow around the body is solved by the method
of iterations. In each iteration, it is assumed that the contribution of
radiation in the energy equation (div s) is known, and the system of gas
dynamic equations is solved by the G. F. Telenin method. The radiation out-
put strongly changes the distribution of temperature and density in the
region between a shock wave and the surface of the body in the flow. Ve-
locity and pressure fields are practically independent of gas radiation.
The radiation fluxes incident on the body are determined for different
velocities of the oncoming flow V_∞ and blunting radius R. Deceleration of a
gas particle along the axis of symmetry causes somewhat of a reduction in
the radiation flux to the critical point as compared with the radiation flux
from a plane layer of the same thickness behind the direct shock wave. Dis-
tribution of the radiant flux reduced to the flux to the critical point
along the surface of a sphere at various values of V_∞ and R is approximated
by a single-parameter family of curves. The parameter depends only on the
velocity of the oncoming flow. This dependence has the following simple

2/3

- 34 -

USSR

STULOV, V. P., SHAPIRO, Ye. G., Nauchn. konferentsiya. In-t Mekhan. MGU.
Tezisy dokl., Moscow, 1970, pp 60-61

form: $q_r/q_{r_0} = \cos^n \theta$, $n = n(V_\infty)$. Comparison with the distributions of con-
vective heat flux available in the literature shows that radiation flux de-
creases appreciably faster than convective flux with an increase in distance
from the critical point. Because of this, the region of the surface where
radiation heating exceeds convective heating is concentrated in the forward
section of the body in the flow. Resumé.

3/3

1/2   044

UNCLASSIFIED

TITLE--RADIATION OF THE SHOCK LAYER DURING THE HYPERSONIC STREAMLINE FLOW OF AIR AROUND BLUNT BODIES -U-

PROCESSING DATE--23OCT70

AUTHOR-(02)-STULOV, V.P., SHAPIRO, YE.G.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, MEKHANIKA ZHIDKOSTI I GAZA, NO 1, JAN-FEB 1970, PP 154-160

DATE PUBLISHED------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--AIR FLOW, STREAMLINE FLOW, HYPERSONIC FLOW, BLUNT BODY, RADIATIVE HEAT TRANSFER, CONVECTIVE HEAT TRANSFER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0208

STEP NO--UR/0421/70/000/001/0154/0160

CIRC ACCESSION NO--AP0103882

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE—23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SOLUTION IS FOUND FOR THE
PROBLEM OF THE FLOW OF RADIATIVE AIR IN A SHOCK LAYER FORMED DURING
HYPERSONIC STREAMLINE FLOW OF THE AIR AROUND BLUNT BODIES. THE OUTPUT
OF RADIATION GREATLY CHANGES THE TEMPERATURE AND GAS DENSITY FIELD AND
HAS PRACTICALLY NO EFFECT UPON PRESSURE AND VELOCITY. IT IS SHOWN THAT
ACCOUNTING FOR RADIATION IN THE SPECTRAL LINES IS VERY IMPORTANT IN
SOLVING THE PROBLEM OF A RADIATIVE STREAM. THE DISTRIBUTIONS OF A
RADIANT FLUX ALONG A SPHERICAL CONTOUR REFERRED TO THE RADIANT FLUX IN
THE CRITICAL POINT, AT VARIOUS VALUES OF THE VELOCITY OF THE AIRSTREAM V
INFINITY AND THE SIDE OF THE BODY R ARE APPROXIMATED BY A MONOPARAMETRIC
FAMILY OF FUNCTIONS, THE PARAMETER DEPENDING ONLY ON V INFINITY. AS THE
DISTANCE FROM THE CRITICAL POINT INCREASES, THE RADIANT FLUX DECREASES
CONDIEREABLY MORE RAPIDLY THAN THE CONVECTIVE FLUX. THEREFORE THE
REGION OF THE SURFACE OF THE BODY IN WHICH RADIATIVE HEATING EXCEEDS
CONVECTIVE HEATING IS CONCENTRATED IN THE LEADING PART OF THE BODY
AROUND WHICH THE STREAM FLOWS.

UNCLASSIFIED

USSR

STULOV, V. P., SHAPIRO, Ye. G.

"Radiation of the Shock Layer During the Hypersonic Streamline Flow of Air Around Blunt Bodies"

Abstract: A solution is found for the problem of the flow of radiative air in a shock layer formed during hypersonic streamline flow of the air around blunt bodies. The output of radiation greatly changes the temperature and gas-density field and has practically no effect upon pressure and velocity. It is shown that accounting for radiation in the spectral lines is very important in solving the problem of a radiative stream. The distributions of a radiant flux along a spherical contour referred to the radiant flux in the critical point, at various values of the velocity of the airstream v_∞ and the side of the body R are approximated by a monoparametric family of functions, the parameter depending only on v_∞. As the distance from the critical point increases, the radiant flux decreases considerably more rapidly than the convective flux.

1/2

USSR

STULOV, V. P., SHAPIRO, Ye. G., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 1970, pp 154-160

Therefore the region of the surface of the body in which radiative heating exceeds convective heating is concentrated in the leading part of the body around which the stream flows.

?/2

USSR

BOGOSLOVSKIY, A. I., URMAKHER, L. S., VOLKOVA, A. D., ZHDANOV, V. K., and
SHAPIRO, Ye. I., Laboratory of Physiological Optics imeni S. V. Kravkov and
Moscow Scientific Research Institute of Eye Diseases imeni Helmholtz

UDC 617.735-073.97:615.849.19 -

"The Laser Electroretinogram"

Moscow, Vestnik Oftal'mologii, No 2, 1973, pp 3-6

Abstract: By applying stimulation of the eye in tolerated doses with radiation
at approximately 630nm emitted by a He-Ne laser of type LG-50, pure cone elec-
troretinograms of rabbits and humans were obtained. The output power of the
laser was 0.2 mwt and the power at the retina ≤ 0.15 mwt. Short stimuli with
a duration of 0.02 or 0.4 sec and intervals of 1 min between them were applied.
Under conditions of adaptation to a weak source of daylight (illumination at
the eye approximately 3 lux), the electroretinograms were due solely to the
bioelectric activity of the cones. Under conditions of dark adaptation, the
rod apparatus of the retina began to participate in the reaction. Laser
electroretinograms of humans were obtained for the first time in the work des-
cribed. Experiments with ruby and Ar lasers are being conducted at present
in an expanded stage of the investigation.

1/1

USSR

UDC 677.4:54-171:539.16.04

STARKOVA, A. N., KIRILENKO, YU. K., SHAPIRO, YE. I., YEOS, A. I., VOL'F, L. A., VISHNYAKOVA, T. P., VLASOVA, I. D., PANCHENKOV, G. M., and KAUCHAN-SKIY, D. A.

"Radiation Resistant Polyamide Fiber"

Abstract: An attempt was made to increase the resistance of polyamide fiber towards γ-radiation by treating it with ferrocene containing compounds. Caprone cord fiber was treated with ferrocenealdehyde (FCA) under following conditions: FCA - 3%; catalyst - 6.5% H_3PO_4; temperature - 75°C; duration - 2 hrs; solvent - ethanol. The fiber obtained was more resistant to thermo-oxidative destruction than the starting material; after heating for 2 hrs at 200°, the modified fiber retained 60-70% of the initial strength, while the starting material dropped down to 25%. The modified fiber was found to posses high adhesiveness towards the resin; it can be used in production of hoses, conveyor belts, driving belts, etc, performing under radiation.

1/1

USSR

UDC 677.4:54-171:539.16.04

SLATINA, S. D., KIRILENKO, YU. K., VOL'F, L. A., MEOS, A. I., SHAPIRO, YE. I., VISHNYAKOVA, T. P., PANCHENKOV, G. M., VLASOVA, I. D., KAUCHANSKIY, D. A., and MARKAUSOV, V. A.

"Radiation Resistant Polyvinylalcohol Fibers Containing Ferrocene"

Abstract: Polyvinylalcohol fibers containing ferrocene were obtained by impregnating a freshly formed or thermostabillized PVA-fibers with 5-18% solution of 1,1'-diacetylferrocenylformaldehyde resin $/$ 1,1'-DAFF $/$ in acetone. After the impregnation the material was heated to 140-160°C for 10-20 min, resulting in formation of chemical bonds between the hydroxyl groups of the PVA-fiber and the methylal group of 1,1'-DAFF resin (14-18% of chemically bound 1,1'-DAFF resin). The 1,1'-DAFF resin was obtained by polycondensation of diacetylferrocene with formaldehyde in ethanol at 50°C and in presence of sodium carbonate. The modified fiber was subjected to γ-radiation in presence of air oxygen. The strength and the elastic indicators of the ferrocene containing material were superior in comparison to the starting material.

1/1

USSR

UDC 678.675:542.949

STARKOVA, A. N., SHAPIRO, Ye. I., KIRILENKO, Yu. K., MEOS, A. I., VOL'F, L. A.,
VISHNYAKOVA, T. P., and ZUMMEROV, S. R., Leningrad Institute of the Textile
and Light Industries imeni S. M. Kirov, and Moscow Institute of the Petro-
chemical and Gas Industries imeni I. M. Gubkin

"Modification of Capron Fiber With Ferrocenaldehyde"

Abstract: One of the basic weaknesses of polyamide fibers is low heat-resis-
tance. Chemical methods for remedying this weakness (based mostly on pro-
cessing with bifunctional compounds and formaldehyde to form intermolecular
cross-links in the polymer), but almost nothing has been published on the use
of other monoaldehydes which might act as modifying agents to strengthen the
resistance of polyamides to thermo-oxidative destruction. The authors studied
ferrocenaldehyde (FCA) as a modifier, in the case of the fiber Capron. Phos-
phoric acid was used to increase reactivity of the aldehyde groups; this acid
reacts only slightly with Capron, and not at all with ferrocenaldehyde.
Ethanol was the solvent used. It was found that treatment of Capron with FCA
substantially increases the heat-resistance of this fiber. This is explained
1/2

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USSR

STARKOVA, A. N., et al., Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972,
pp 447-449

on the basis of decreased concentration of free terminal amino groups during
their blocking by an aromatic compound of FCA type, as is suggested by other
published data. Graphic data are given on the strength, elongation and thermal
properties of Capron, as these are affected by concentrations of FCA and
H_3PO_4, and by heating.

2/2

USSR

GERSHENZON, Ye. M., IL'IN, V. A., LITVAK-GORSKAYA, L. B.,
RABINOVICH, R. I., and SHAPIRO, Ye. Z.

UDC: 621.315.592

"Dispersion of Hot Electrons in n-InSb at Low Temperatures"

Abstract: The purpose of this paper is to study the mechanisms of hot-electron dispersion in n-type InSb in a broad range of electric fields, and to compare the results of this study with the results of theoretical research. By so doing, the authors hope to clear up some of the mystery surrounding the dispersion of energy and impulse of hot electrons in InSb at temperatures much below the limiting frequency of the optical phonon. They investigate the dependence of their specimens' conductivity, Hall constant, and particle mobility, on the intensity of the electric field at temperatures of 1.3-4.2° K and at field intensities ranging from 1-400 V/cm. The specimens, whose parameters are given in a table, were made with markedly different concentrations of impurities and compensations. Curves are given for the dependences noted above.

1/1

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USSR

GERSHENZON, Ye. M., IL'IN, V. A., LITVAK-GORSKAYA, L. B.,
RABINOVICH, R. I., and SHAPIRO, Ye. Z.   UDC: 621.315.592

"Determining Separate Concentrations of Impurities in Type $A^{III}_B{}^V$
Compounds by Electron Heating"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1906-
1910

Abstract: A method is developed for determining separate concentra-
tions of impurities in compounds of the $A^{III}_B{}^V$ type from the mag-
nitude of the hot electron mobility and the dependence of the mo-
bility on the electric field intensity. Earlier papers have shown
that at low temperatures in such compounds, there is a range of
electric field intensities in which this dependence is weak. Two
possibilities that may then arise are considered: the carrier con-
centration is such that tht electron-electron interaction may be
neglected; the electron concentration is high and the electron-
electron interaction must be taken into account. Nomograms for
finding the total concentration of impurities from the experimental
value of the mobility are given. Also given is the diagram and ex-
planation of a device for verifying this method in the case of some
n-InSb and n-GaAs specimens. The authors express their thanks to
1/2

USSR

GERHSENZON, Ye. M., et al, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1906-1910

UDC: 621.315.592

V. S. Ivleva, A. N. Telegin, and L. D. Sobanova for preparing the N-InSb and epitaxial n-GaAs films for the verifying tests.

2/2

- 101 -

USSR

SHAPIRO, YU. L., POLTORATSKIY, N. I., TITOV, S. G., and BYVSHIKH, M. I., Podol'sk

UDC 669.14.018.8:621.762

"Pressing and Vacuum Sintering of Powder of Type Kh18N15 Stainless Steel"

Poroshkovaya Metallurgiya, No 3, Mar 71, pp 31-35

Abstract: In a continuation of earlier works, the authors study the next production batch of austenitic stainless steel powder. The principal properties, cold pressing, melting and isothermal sintering in a vacuum of powder produced by reduction of the oxides with calcium hydride were studied. The larger fractions of the powder had significantly greater specific surface and lower bulk density than the finer fractions. resulting from the complex shape and porosity of the particles. Introduction of a binder decreases and evens the bulk density. Cold pressability increases with decreasing particle size. The powder melts in a vacuum at 1375-1400°C, so vacuum sintering should be performed at 1300°. Final densities of specimens of 70 to 97% can be achieved with sintering at 1300°C by varying powder particle size

1/2

USSR

SHAPIRO, YU. L., et al., Poroshkovaya Metallurgiya, No 3, Mar 71, pp 31-35

from -150+100 to -45μ , specific pressure from 1.6 to 15.2 t/cm^2, and holding time from 1 to 8 hours. Specific pressure has the greatest influence on final density of material produced and its grain size. The composition of the steel changes little with extended sintering near the solidus point.

2/2

USSR

SHAPIRO, YU. L., POLTORATSKIY, N. I., TITOV, S. G., and BYVSHIKH,
M. I., Podol'sk

UDC 669.14.018.8:621.762

"Pressing and Vacuum Sintering of Powder of Type Kh18N15 Stainless Steel"

Abstract: In a continuation of earlier works, the authors study the next production batch of austenitic stainless steel powder. The principal properties, cold pressing, melting and isothermal sintering in a vacuum of powder produced by reduction of the oxides with calcium hydride were studied. The larger fractions of the powder had significantly greater specific surface and lower bulk density than the finer fractions, resulting from the complex shape and porosity of the particles. Introduction of a binder decreases and evens the bulk density. Cold pressability increases with decreasing particle size. The powder melts in a vacuum at 1375-1400°C, so vacuum sintering should be performed at 1300°. Final densities of specimens of 70 to 97% can be achieved with sintering at 1300°C by varying powder particle size

1/2

USSR

SHAPIRO, YU. L., et al., Poroshkovaya Metallurgiya, No 3, Mar 71, pp 31-35

from -150+100 to -45μ , specific pressure from 1.6 to 15.2 t/cm², and holding time from 1 to 8 hours. Specific pressure has the greatest influence on final density of material produced and its grain size. The composition of the steel changes little with extended sintering near the solidus point.

2/2

- 61 -

1/3   017
TITLE--PROCESSING OF STILL RESIDUES OF FURFURAL PRODUCTION -U-

UNCLASSIFIED

PROCESSING DATE--11SEP70

AUTHOR--BADOVSKAYA, L.A., KULNEVICH, V.G., FIRSOVA, L.I., SHAPIRO, YU.M., KURZIN, M.I.

COUNTRY OF INFO--USSR

SOURCE--GIDROLIZ. LESOKHIM. PROM. 1970, 23(2) 23-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FURFURAL, FURAN, PEROXIDE, POLAROGRAPHY, GAS CHROMATOGRAPHY, UV SPECTRUM, SUCCINIC ACID, MALEIC ACID, FUMARIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0147

STEP NO--UR/0328/70/023/002/0023/0025

CIRC ACCESSION NO--AP0106809

UNCLASSIFIED

CIRC ACCESSION NO--AP0106809   UNCLASSIFIED   PROCESSING DATE--11SEP70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 2 METHODS PRESENTLY USED FOR
PROCESSING RESIDUES FROM FURFURAL RECTIFICATION ARE THE RECOVERY OF
FURFURAL (I) AND METHYLFURFURAL (II) AND DECARBONYLATION TO SYLVAN
(ALPHA MEHTYL-FURAN).   THE METHOD PROPOSED CONSISTS IN OXIDN. OF THE
RESIDUES WITH H SUB2 O SUB2 TO YIELD ORG. ACIDS. ALSO DEVELOPED WAS A
NEW METHOD FOR CHEM. ANAL. OF THE RESIDUE, BETTER SUITED FOR INDUSTRIAL
CONTROL THAN EITHER POLAROGRAPHY OR GAS CHROMATOG. THE METHOD, WHICH
HAS BEEN DESCRIBED ELSEWHERE (SHAPIRO AND KUL'NEVICH, 1969), IS BASED ON
UV SPECTROMETRY AND CALCNS. OF I CONCN. FROM THAT OF A STD. SOLN. AND
THE OPTICAL DS. OF THE TEST SAMPLE AND THE STD. SOLN.   THE AMT. OF
IMPURITIES ARE DETD. FROM DIFFERENTIAL SPECTRA. THE ACCURATE METHOD
MAKES POSSIBLE SEP. I AND II DETNS. EVEN IN STRONGLY RESINIFIED
MATERIAL. COM. RESIDUES ANALYZED CONTAINED 22-95PERCENT FURALDEHYDES,
DEPENDING ON THE RAW MATERIAL AND THE I PRODN. METHOD. THEY WERE
OXIDIZED WITH 30PERCENT H SUB2 O SUB2 AT A MOLAR RATIO OF FURALDEHYDES-H
SUB2 O SUB2 OF 1:3, A TEMP. OF 64 PLUS OR MINUS IDEGREE, WITH INTENSE
MIXING FOR 4 HR. THE QUAL. AND QUANT. COMPN. OF THE OXIDN. PRODUCTS
WERE ANALYZED BY PAPER, COLUMN, AND THIN LAYER CHROMATOG. OXIDN.
CONVERTED I TO A MIXT. OF CRYST. ACIDS (MALEIC, FUMARIC, AND SUCCINIC).
II WAS CONVERTED TO BETA ACETYLACRYLIC (III) AND LEVULINIC ACID (IV).
THE RESIDUAL PEROXIDES WERE DECOMPD. BY TREATMENT WITH THIOUREA
(1PERCENT BASED ON THE VOL. OF REACTION PRODUCTS). THE CRYST. ACIDS
WERE SEPD. BY RECRYSTN.   FROM HOT WATER, AND IV BY DISTN. (70DEGREES-5
MM). IV IS RECOVERED BY EVAPN. OF THE SOLVENT AFTER EXTN.

UNCLASSIFIED

CIRC ACCESSION NO--AP0106809   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--THE OVERALL YIELD OF THE ACID WAS 85PERCENT, AND THE PERCENT COMPN. OF THE ACIDS WAS SUCCINIC 28, IV 24, III 26, MALEIC 18, AND FUMARIC 3. HIGHER YIELDS WERE OBTAINED FROM RESIDUES WITH A HIGH INITIAL CONTENT OF ALDEHYDES. SAMPLES WITH LOW ALDEHYDE CONTENT GAVE POOR YIELDS (AT CONTENT 22PERCENT, THE YIELD OF TOTAL ACID WAS 21.6PERCENT.

UNCLASSIFIED

USSR

UDC 68:66.012

GOLOVANOV, O. V., Candidate of Technical Sciences, MEL'NIKOV, B. N., Candidate of Technical Sciences, SHAPIRO, Yu. Z., Candidate of Technical Sciences, Central Scientific Research Institute of Large-Scale Automation

"A Practical Method of Controlling a Large Plant"

Moscow, Pribory i Sistemy Upravleniya, No 11, Nov 72, pp 1-3

Abstract: Relatively simple control algorithms which can be realized by present computer technology must be used for successful introduction of systems to control complex production combines. One of the ways to introduce such automated control systems consists in a two-stage solution of the control problems: first, measures are carried out to limit the field of variation and the number of variables (isolation of sets and assignment of intervals), and then more "refined" control is implemented (optimization). The appropriate models of the plant are utilized on each stage. The authors present two methods to this approach as applied to control of a large-scale ammonia plant. A simplified flow chart is used in which the plant is represented as several series-parallel units connected by technological flows. In the first method the target function is taken as the technological component of plant expenditures for making a ton of ammonia. The second method involves accounting for production structure by analyzing the state of the principal technological equipment.

1/1

SHAPIRO   Z, SA,

AA C052680

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 1 - 70

241616   OCULAR FOREIGN BODY DETECTOR   consisting
of high frequency inductive circuit with
recording device, contains a sensor consisting
of a toroidal coil whose inner surface corresponds
to the surface of the leading part of the bulbus
oculi, and the recording device has a frequency
detector whose oscillation indicates the presence
of a splinter and the voltage symbol at the output
indicates the magnetic qualities of a metal splint-
er. 29.12.67. as 1210060/31-16.   L.S.URMAKHER
et alia.   Moscow "Gelmgolets" Eye Res. Inst.
(28.8.69.) Bul.14/18.4.69. Class 30a. Int.Cl.
A61b.

19821451   BS 2

AA0052680

Urmakher, L. S.; Vasil'yev, Ye. K.; Shapiro, Z. Sh.
Moskovskiy Nauchno-Issledovatel'skiy Institut Glaznykh Bolezney
im. Gel'mgol'tsa

19821452

L/2   006

UNCLASSIFIED

TITLE--INTEGRAL GEOMETRY IN PROJECTIVE SPACE -U-

PROCESSING DATE--27NOV70

AUTHOR-(03)-GELFAND, I.M., GRAYEV, M.I., SHAPIRO, Z.YA.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, FUNKSTIONAL'NYY ANALIZ I YEGO PRILOZHENIYA (FUNCTIONAL ANALYSIS AND ITS APPLICATION), VOL 4, NO 1, 1970, PP 14-32

DATE PUBLISHED-------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

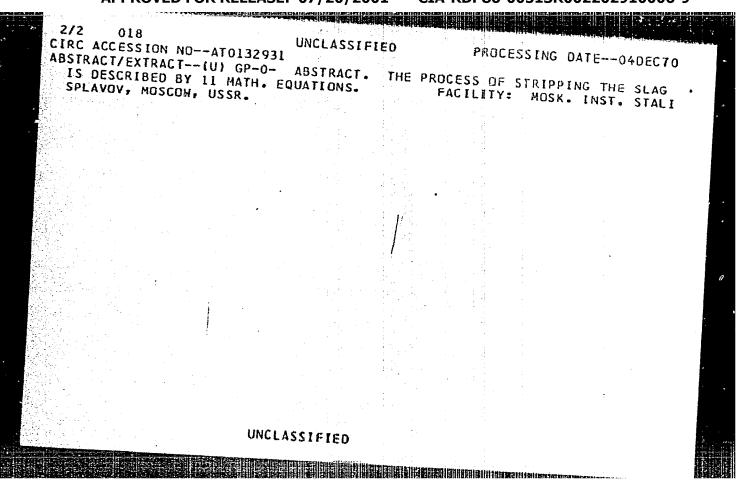TOPIC TAGS--INTEGRAL RELATION, MATHEMATIC SPACE, PROJECTIVE GEOMETRY, DIFFERENTIAL GEOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1433

STEP NO--UR/0461/70/004/001/0014/0032

CIRC ACCESSION NO--AP0125067

UNCLASSIFIED

CIRC ACCESSION NO--AP0125067   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE METHODOLOGY INCIDENT TO THE   PROCESSING DATE--27NOV70
STATEMENT OF THE INTEGRAL GEOMETRY PROBLEM IN PROJECTIVE SPACE AND ITS
SOLUTION IS RELATED TO A UNIQUE DIFFERENTIAL GEOMETRY ON GRASSMAN
MANIFOLDS.   ALTHOUGH THE AUTHORS ARE AT A LOSS TO FIND PRACTICAL
APPLICATION FOR THE METHODOLOGY TO OTHER PROBLEMS, THE BEAUTY AND NATURE
OF THE CALCULATION LEAD THEM TO BELIEVE THAT IT WILL FIND USEFULNESS
ELSEWHERE.   THE METHODOLOGY IS DESCRIBED ON THE BASIS OF A MANIFOLD G
SUBN PLUS 1, K PLUS 1 OF ORIENTED (K PLUS 1) DIMENSIONAL SUBSPACES OF
SPACE R PRIMEN PLUS 1.   SIX THEOREMS ARE GIVEN AND PROVED FOR
DIFFERENTIAL FORMS AND INTEGRAL FUNCTIONS PHI (U).   FACILITY:
INSTITUTE OF APPLIED MATHEMATICS, ACADEMY OF SCIENCES USSR, MOSCOW STATE
UNIVERSITY.

USSR

UDC 517.948.5

GEL'FAND, I. M., Corresponding Member of the Academy of Sciences USSR, GRAYEV, M. I., and SHAPIRO, Z. Ya., Institute of Applied Mathematics, Academy of Sciences USSR, Moscow

"Integral Geometry Problem Connected With a Pair of Grassmann's Manifolds"

Abstract: The purpose of the article is to formulate and solve an integral problem for a pair of manifolds -- the manifold $G_{n,k}$ of k-dimensional oriented subspaces in R^n and the manifold $G_{n,l}$ of l-dimensional oriented subspaces in R^n. It is assumed that $l < k$, $l + k \leqslant n$, as well as that $k - l$ is an even number. The results are applied without significant changes to the case of complex Grassmann's manifolds.

1/1

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Functional Analysis

USSR

GEL'FAND, I. M., GRAYEV, M. I, and SHAPIRO, Z. YA. (Institute of Applied Mathematics, Academy of Sciences USSR; Moscow State University)

"Integral Geometry in Projective Space"

Moscow, Funktsional'nyy Analiz I Yego Prilozheniya (Functional Analysis and Its Application), Vol 4, No 1, 1970, pp 14-32

Abstract: The methodology incident to the statement of the integral geometry problem in projective space and its solution is related to a unique differential geometry on Grassman manifolds. Although the authors are at a loss to find practical application for the methodology to other problems, the beauty and nature of the calculation lead them to believe that it will find usefulness elsewhere.

The methodology is described on the basis of a manifold $G_{n + 1, k + 1}$ of oriented $(k + 1)$-dimensional subspaces of space $R^{n + 1}$.

Six theorems are given and proved for differential forms and integral functions ϕ (u). Orig. art. has 2 refs.
1/1·

USSR

KRUPENIO, N. N., SHAPIROVSKAYA, N. Ya., and DROZDOVSKAYA, I. B.

UDC 621.371.332.3

"Radio Wave Scattering by Local Districts of the Moon, Mars, and Venus in the Centimeter and Decimeter Wavelength Ranges"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3--collection of works) "Nauka," 1972, pp 13-18 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10G8)

Translation: From the diagram of inverse scattering for the moon, Venus, and Mars, the ratios of the diffusion component power to the total power of the radiated signal are computed for various wavelengths by the radar measurement method. The computations were made under the assumption of isotropism of the surface characteristics within the limits of the section participating in the radiation transfer. Two illustrations. N. S.

1/1

TITLE--MATHEMATICAL MODEL OF THE CONTINUOUS STRIPPING OF SLAGS -U-

UNCLASSIFIED

PROCESSING DATE--04DEC70

AUTHOR-(05)-LISOVSKIY, O. I., IVANOV, V. A., SHAPIROVSKIY, M. R., GOLUBEV, V. I., LYAPUNOV, I. O.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TSVET. MET. 1970, 13(1), 141-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MATHEMATIC MODEL, METALLURGIC SLAG, METALLURGIC PROCESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0841

STEP NO--UR/0149/70/013/001/0141/0147

CIRC ACCESSION NO--AT0132931

UNCLASSIFIED

CIRC ACCESSION NO--AT0132931   UNCLASSIFIED   PROCESSING DATE--04DEC70
ABSTRACT/EXTRACT--(U) GP-O-   ABSTRACT.   THE PROCESS OF STRIPPING THE SLAG
IS DESCRIBED BY 11 MATH. EQUATIONS.   FACILITY: MOSK. INST. STALI
SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

DOROSHKEVICH, Ye.M., KOZLOV, E.P., POTAPOV, A.A., SHAPKAYTS, G.I.

UDC 62-531.4

"A Tracking System"

USSR Author's Certificate No 263014, Filed 23/12/68, Published 8/06/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 12, 1970, Abstract No 12 A277P)

Translation: A tracking system is suggested containing a sensor, sine-cosine transformer, amplifiers, a phase detector, and an actuating motor. It differs in that in order to increase accuracy, it contains an additional commutator, one input of which is connected to an external reference voltage source, the other to the cosine winding of the sine-cosine transformer rotor, while the output is connected to the reference voltage input of the phase detector.

1/1

- 21 -

USSR

UDC: 621.396.669.8:621.3.078-503.53

DOROSHKEVICH, Ye. M., KOZLOV, E. P., POTAPOV, A. A., SHARKAYES, G. I.

"A Tracking System"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, 1970, Author's Certificate No 271617, filed 23 Dec 68, p 45

Abstract: This author's certificate introduces a tracking system which contains a pickup, sino-cosine transformer, circuit for suppression of quadrature interference made in the form of a key controlled by a full-wave rectifier with angle cutoff, amplifiers, a phase detector, and an actuating motor. As a distinguishing feature of the patent, the precision and reliability of the system are improved by adding a minimum signal amplitude limiter connected in parallel with the circuit for suppression of quadrature interference. The cosine winding of the sine-cosine transformer rotor is connected to the input of the full-wave rectifier..

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Public Health, Hygiene and Sanitation

USSR

UDC 616-057:796

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"Effect of Athletic Activity on the Incidence and Duration of
Some Diseases"

Moscow, <u>Sovetskaya Meditsina</u>, Vol 34, No 2, Feb 71, pp 100-103

<u>Abstract</u>: The incidence and duration of diseases involving an
initial request for medical treatment was determined for employed
persons engaged in athletics (group A) and not engaged in athle-
tics (group B). The persons in both groups were otherwise
healthy males, most of them young. The study was conducted for
three years. The incidence of diseases per 1,000 persons was
as follows: simple sore throat A 48, B 135; influenza A 33,
B 24; severe colds A 554, B 920; furunculosis and abscesses
A 99, B 167; diseases of the locomotor apparatus A 127, B 107;
diseases of the peripheral nervous system A 44, B 19; diseases
of digestive organs A 29, B 45; eye diseases A 75, B 99. The

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LOMAREV, P. I., et al, Sovetskaya Meditsina, Vol 34, No 2,
Feb 71, pp 100-103

average incidence of all diseases per 1,000 persons was 126 and
189 for group A and B, respectively. The time in days lost from
work per case was 4.9 and 7.7 for group A and B, respectively.
The higher incidence of diseases of the peripheral nervous sys-
tem (radiculitis, plexitis, neuritis, etc) and of the locomotor
apparatus for persons engaged in athletics can be explained by
excessive strain in athletic training due to the injudicious
nature of this training. The average number of days lost due
to any single type of disease, including diseases of the peri-
pheral nervous system and of the locomotor apparatus, was lower
for athletes than non-athletes.

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GORYACHEVA, GALINA ANATOL'YEVNA; SHAPKIN, ANATOLIY ANATOL'YEVICH; SHIRSHEV, LEV GEORGIYEVICH

UDC 621.315.592:539.12.04

"Effect Of Penetrating Radiation On Radio Components"

Deystviye pronikayushchey radiatsii na radiodetali (cf English above), Moscow, Izd. "Atomizdat," 1971, 120 pp, 32 fig., 35 tab., 52 ref. 71 k.

Abstract: In the book the effect is considered of ionizing radiation on the electrophysical characteristics of materials which are used for production of radio components. Particular attention is paid to theoretical and experimental investigations of the character of the change of parameters of the materials under the conditions of pulsed and continuous γ- and neutron radiation. The results are presented of investigations of the reversible and nonreversible damages to the electrophysical and operational parameters of various types of resistors and capacitors in the process and after the impact on them of γ- and neutron radiation. The principal methods are given of measuring the parameters of radio components under conditions of irradiation.

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GORYACHEV, GALINA ANATOL'YEVNA, et al., Devstviye pronikayushchey radiatsii na radiodetali, Moscow, Izd. "Atomizdat," 1971, 120 pp, 32 fig., 35 tab., 52 ref., 71 k.

Foreword

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GORYACHEV, GALINA ANATOL'YEVNA, et al., Deystviye pronikayushchey radiatsii na radiodetali, Moscow, Izd. "Atomizdat," 1971, 120 pp, 32 fig., 35 tab., 52 ref., 71 k.

Chapter 3. Effect Of Penetrating Radiation On Capacitors

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