

USSR

UDC 621.375.426

SIMONOV, YU. L., VOROB'YEV, V. N. [Members, Scientific-Technical Society Of Radio Engineering, Electronics, And Communications imeni A.S. Popov]

"Distribution Of Attenuation Equivalents And Generalized Misalignments In Single-Circuit IF Amplifiers With Staggered Stages With Critical Misalignment"

Radiotekhnika, Vol 27, No 4, Apr 1972, pp 57-60

Abstract: General computed relations are obtained in the case of critical misalignment for the attenuation equivalents of circuits, generalized misalignments, and the functions  $X_U(n)$  and  $\Psi_U(n)$  of an intermediate frequency amplifier with an arbitrary number  $N$  of identical groups of staggered stages (each group includes  $U$  staggered stages; the overall number of stages of the amplifier  $n = NU$ ). 1 tab. 2 ill. 5 ref. Received, 4 May 1970; after further improvement, 9 Dec 1970.

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Veterinary Medicine

USSR

UDC 619:576.858.4

SIMONOVA, E. G., SKALINSKIY, Ye. I., UZYUMOV, V. L., 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 A<sub>22</sub> 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 endoplasmic 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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Phytology

USSR

UDC 632.9

GESHELE, E. E., and SIMONOVA, G. A., All Union Selection-Genetics Institute

"Extending the Period of Inoculation of Wheat With Smut for Selection Evaluation"

Moscow, Vestnik Sel'skokhozyaystvennoy Nauki, No 3, 1970, pp 78-81

Abstract: Possibilities of extending the inoculation period of several varieties of wheat and barley with smut from 7 to 20 days after the beginning of blooming were examined. Seven varieties of winter wheat were studied, differing in the degree of resistance to this disease. It was determined that wheat may be infected with smut during the blooming period, and to some extent after its termination, which was typical of the most susceptible types. It would be advisable to differentiate between the degrees of susceptibility of the studied varieties for this reason. The inoculation of various varieties of wheat with smut may be forecast from the degree and type of infection of the seeds.

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UDC: 621.396.69:621.391.4

SIMONOVA, G. P.

"Shortening the Time for Hardening of Epoxy Compounds in the Production of Capacitors"

Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Electronic Technology. Scientific and Technical Collection. Technology and Organization of Production), 1970, vyp. 4 (36), pp 85-89 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V361)

Translation: The author discusses methods of shortening the time for hardening of epoxy compounds when using them for potting paper and metalized paper capacitors in an aluminum can. Data are given from experimental studies of hardening the epoxy in a high-frequency field and in the presence of infrared radiation. Resumé.

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SIMONOVA, I.

"Toward Victory Over Disease"

Minsk, Sovetskaya Belorussiya, 29 Aug 70, p 4

Translation: One of the most important fields of modern medicine - restorative surgery - is including in its research plans the goal of transplanting and restoring the activity of the majority of vital human organs. Belorussian surgeons are making their contribution to a solution of this problem. The Third Clinical Hospital in Minsk is in the forefront of this research.

Pavel Iosifovich Bulay and Vladimir Mikhaylovich Dorofeyenko, representatives of the Burn Department, the newest department of the hospital, have entered the office of Professor Timofey Yermeyevich Gnilyov, Doctor of Medical Sciences, Honored Scientist of the Ukraine, and Director of the Department of General Surgery.

"Congratulate us, Professor, we are discharging the patient who was admitted last spring."

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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

The ambulance brought her to the hospital in critical condition. One third of the young girl's body was burned by fire. Six times the surgeons of the Burn Department operated. Six times they placed "patches" on her body, sewing healthy tissue onto disfigured skin. Fifteen liters of blood and plasma were transfused. And when it became clear that she would live, they operated twice again to restore her original features. This likewise was an important and difficult task.

The Burn Department of the Third Clinical Hospital has now become a center for therapy and consultation in the republic. Here use is made of the latest advances in science. Special personnel are being trained, shock induced by burns is being studied, and methods for early treatment of burns, grafts, and plastic surgery for cosmetic purposes are being developed. An ambulance airplane can leave here for any part of the republic to bring to any severely burned person consultants who will decide whether the victim should be treated locally or brought to the center.

It happened that in the late 1940's the same Third Clinical Hospital became a center for treating those disabled in World War II. An Institute of  
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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

Orthopedics and Traumatology was set up at the hospital. Here the so-called Filatov flap, healthy skin grafted to the site of injury, was used for the first time. The initial steps to work out the techniques for plastic surgery, osteoplasty, and mandibulofacial surgery were taken in the hospital. Doctor of Medical Sciences Iosif Robertovich Voronovich introduced into practice the transplantation of joints and hemiarthrooses, thereby restoring mobility to ailing extremities. Docent Tamara Vasil'yevna Fokina, Head of the Department of Stomatological Traumatology, by correcting congenital and acquired defects of the face, bestowed happiness on many of those who came to the hospital with their misfortune. Under the direction of Tat'yana Vasil'yevna Birich, the eye clinic is successfully performing repair operations on the eyelids, transplanting corneas, and restoring vision.

Research on organ and tissue transplants was considerably broadened when Professor T. Ye. Gnilorybov came to the hospital. A republic experimental laboratory for blood, organ, and tissue preservation was opened in the Surgical Department.

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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

"You have heard, of course, about the protein incompatibility which causes the rejection of transplant in man?" asked the professor. "The same thing happens when preserved skin is grafted in the treatment of burns. This skin is attacked by the human organism, which tries to reject it as something foreign, since there are in fact no two identical organisms in nature and all are highly individual in protein composition. The newborn, however, have the most neutral protein up to about 6 months of age."

"The 'foreign patches' used to 'cover' the victim of a burn have a temporary value, to gain time for spontaneous restoration. When the process of "growth" of the patient's own skin resumes, sloughing off of the "foreigner" is not a terrible thing, since it has already done its job. In cases where a human ear or an ala or septum of the nose has to be reconstructed (such operations are common), surgeons use the patient's own skin, procuring a skin flap from his body by special methods. The work is laborious, but look at these photos."

They are of the same girl, but what a difference! One shows a sunken head, sad, frightened eyes, and, instead of a nose, something unimaginable. The second

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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

photo shows a pretty face with an even symmetrical little nose and a special, exalted look. It is a harsh fact of life that man is intolerant of physical defects. He avoids people and fears that he looks strange. The mind is sick, the nervous system disturbed, passivity and apathy are characteristic. No, the success of an operation is not measured solely by restoration of an organ.

"Yes," continued Timofey Yerevich as though going on with the unexpressed thought, "In my practice I have met hundreds of persons who were transformed after the operation and, on leaving the hospital, said proudly: 'Now I am a person like everyone else.'"

Somehow or other they brought into the hospital a fellow 21 years old. He had a broken shoulder, crushed blood vessels, damaged nerves. Youth admits of no compromises: "If I'm to be a cripple, why should I live!" The surgeons spent many hours on him. Arteries were transplanted and the arm was kept viable and mobile. They were happy when the fellow introduced his family.

Another photograph. A 14-year-old dwarflike child received a pituitary transplant. In two years she grew 32 centimeters. About 200 such operations

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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

have been performed in the clinic. The surgeons are boldly invading the kingdom of the endocrine glands. They transplanted a pituitary in a patient suffering from "water" diabetes. After the operation the patient, who had previously drunk 30 to 40 liters of water a day, reduced his daily intake to 4 to 7 liters. The surgeons also transplant adrenal glands, which restore hematopoiesis.

Operations are also performed on the gastrointestinal tract. Efforts are made to reconstruct the bile duct. In the future there will be complex operations involving transplantation of the liver and extremities. Considerable progress has been made in the use of free skin grafts and round skin flaps to restore the face, nose, lips, ears, and fingers, and in the application of "patches" to trophic ulcers, etc. Docents L. I. Artishevskiy and L. N. Guseva, Assistants G. P. Shrokh and V. M. Kazachenok, and other specialists are working effectively on all of these problems.

The International Congress on Blood Transfusion and Organ Transplantation held last August heard a report by T. Ye. Gnilorybov, I. L. Madorskiy, and Ye. A. Satishur, staff members of the Third Clinical Hospital in Minsk, on grafting

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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

cadaver bone marrow with sternal marrow on to vascular junctions. The surgeons received medals of the Exhibition of Achievements of the National Economy for this work.

There are some letters in one of the drawers in T. Ye. Gnilyorbov's table.

"I beg of you, help our son." "Can I try my luck in your hospital?"

If it is possible to help, the answer is yes. The Surgical Department of the Third Clinical Hospital accepts patients from all over the country.

Assistant Andrey Il'ich Kot goes around the wards with a group of students, concentrating, smiling, or joking to release the tension when it begins to interfere with the work.

"We'll be operating tomorrow," he says to an attractive woman from the Ukraine who lifted herself from the bed to greet him. For three short weeks you will be living at our expense. The healthy we send home, the sick we don't let go."

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SIMONOVA, I., Sovetskaya Belorussiya, 29 Aug 70, p 4

The woman smiles. For 8 years she has been tormented by her ailment. They had treated her, as she put it, "for the heart and kidneys" and "for the head," but they could not make the correct diagnosis.

An elderly woman who had seen quite a few hospitals and physicians in her time told me:

"Andrey Il'ich analyzed my condition very quickly. He suggested an operation. I believed him...and tomorrow I'm going to be discharged. I was invalided by the war. It's been a long time since I was 40, but after the operation I felt like a young girl. You know, I never smelled the odors of summer as I have this year. It is as though I was reborn. It was a miracle pure and simple."

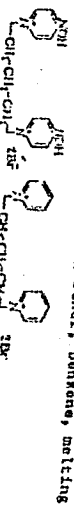
Surgeons don't believe in miracles, because they achieve the miracle of curing a man, of enabling him to be reborn, through day-by-day effort: study and observation, victory and despair, through physical fatigue and mental strain. Toward victory over disease.

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SIMONOVA, I. G.

UARS 58073  
30 Jan 73

Experiments were performed upon 200 white mice of both sexes, 80 white rats and 52 cats.



This study involved an attempt to explain the role of the oximino group in the therapeutic and prophylactic effect of diproxime. For this purpose, in parallel, the pharmacological properties of the oxime-free analog (Bromus 1,3-bis (pyridine) propane) synthesized at our suggestion by candidate of chemical sciences I.N. Simona (see Formula II). The physical properties of the oxime-free analog: a white crystalline powder, odorless, easily soluble in water, hardly soluble in ether, benzene, melting point 242-244 degrees.

No showed previously (S.G. Golikov and coauthors, 1966) that diproxime (see Formula I) sufficiently quickly restores the cholinesterase activity inhibited by organophosphorus insecticides (FOI) and anticholinesterase well with FOI in the effect upon isolated organs and systems.

Experiments on mice, rats and cats showed that diproxime is a reactivator of cholinesterase which has, in the structure, 2 nucleophilic effect after poisoning animals by anticholinesterase organophosphorus compounds. The synthesized oxime free analog does not possess these properties. The revealed certain cholinolytic activity of the oxime-free analog of diproxime is much lower than the activity of diproxime. The investigations indicated the decisive role of the oximino group in the antidotal effect of diproxime (Pharmacology and Toxicology, No. 5, p. 589, 1972).

THE PHARMACOLOGY OF DIPROXIME  
UDC 615.246.9.015

Article by S.G. Golikov, V.I. Shebekoldina and I.G. Simonova, Moscow, Farmakologiya i Toksikologiya, Russian, No 5, 1972, submitted 1 February 1972, pp 587-592

(5)

USSR

UDC: 621.315.431.2.001.2

SIMONOVA, L. S.

"Determination of Single-Crystal Regions in Artificial Quartz Crystals"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiokomponenty (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 5, pp 87-91 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V476)

Translation: Computational formulas are proposed as well as a method of determining the extent of a single-crystal region through the thickness of a perfect artificial quartz crystal. It is shown that the extent of the single-crystal region in industrial quartz crystals without defects is 90 percent or more of the physical weight of the crystals. Consideration is given to the lack of correspondence between the upper limit of the size of the single-crystal region determined in higher technical academies for quartz single crystals, and the actual extent of the single-crystal region. Resumé.

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UDC 621.396.69(088.8)

RADAYEV, N. S., SHOKOROV, V. A., SIMONOVA, L. S.

"A Device for Locking a Nut"

USSR Author's Certificate No 258457, Filed 26 Jul 68, Published 17 Apr 70 (from  
RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V394 P)

Translation: The proposed device for locking a nut contains a set-screw threaded into the nut radially. As a distinguishing feature of the patent, the operational reliability of the device during vibrations is improved by making the screw with a flat end, making a platform on the thread of the sleeve onto which the nut fits in the region where the screw is threaded into it, and installing balls between sleeve and nut on one or both sides of the screw.

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USSR

UDC 547.752'83:543.422.4

SAGITULLIN, R. S., BORISOV, N. N., KOST, A. N., and SIMONOVA, N. A., Moscow State University imeni M. V. Lomonosov

"Indole Chemistry. XX. Reaction of 2-Aminoindoles With  $\alpha$ - $\beta$ -Unsaturated Ketones"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 1, Jan 71, pp 61-64

Abstract:  $\alpha$ - $\beta$ -Unsaturated ketones react with 1-alkyl-2-aminoindoles forming  $\alpha$ -carbolines: refluxing 1-methyl-2-aminoindole hydroiodide with benzalacetophenone in isopropyl alcohol and equivalent amount of a base yielded 82% of 9-methyl-2,4-diphenyl- $\alpha$ -carboline, m.p. 123-24°. Analogously 2-aminoindole condensed with dibenzoyl methane or benzal-acetophenone yields 2,4-diphenyl-pirimidino-[1,2]-indole, m.p. 222-224°. Finally, 1-methyl-2-aminoindole or 1-benzyl-2-aminoindole react with methylacetylacetone forming 2,3,4,9-tetra-methyl- $\alpha$ -carboline, m.p. 150-152°, and 2,3,4-trimethyl-9-benzyl- $\alpha$ -carboline, m.p. 217-219° respectively.

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1/2 023

TITLE--PASSIVATION LAYERS FORMED ON ZINC DURING ANODIC POLARIZATION IN  
STRONG ALKALINE ZINCATE ELECTROLYTES -U-  
AUTHOR-(04)-POPOVA, T.I., SIMONOVA, N.A., KULYAVIK, V.YA., KABANOV, B.N.

UNCLASSIFIED

PROCESSING DATE--18SEP70

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(1), 104-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ELECTROLYTE, ANODE POLARIZATION, METAL PASSIVATION, ZINC,  
METAL ELECTRODE, OXIDE FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1988/0695

STEP NO--UR/0364/70/006/001/0104/0108

CIRC ACCESSION NO--AP0105671

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105671

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT WAS STUDIED OF THE PASSIVATION POTENTIAL OF A ZN ELECTRODE, THE COMPN. OF THE ELECTROLYTE, AND CONDITIONS OF DIFFUSION ON THE THICKNESS AND COMPN. OF THE OXIDE FILMS DEPOSITED ON THE ELECTRODE. THE ACTIVATION OF ZN ELECTRODES PASSIVATED AT 0.0 V BEGAN AT MINUS0.3 AND WAS COMPLETE AT MINUS1.3 V. THE REDN. POTENTIAL WAS IN A SEMI LOG RELATION TO THE EXCESS O REMAINING IN THE FILM. AN INCREASE IN THE CATHODIC C.D. SHIFTED THE REDN. POTENTIAL OF THE EXCESS O TOWARD THE NEG. SIDE, UP TO MINUS1.3 V. ALL THE O ABOVE STOICHIOMETRIC IN THE PASSIVATION FILM IS REDUCED ACCORDING TO:  $(1-M) ZNO SUB1 PLUS M PLUS H SUB2 O PLUS 2E PRIMENEGATIVE$  YIELDS  $(1-M) ZNO PLUS 2OH PRIMENEGATIVE$ , WHERE 1 IS LARGER THAN M IS LARGER THAN 0. WHEN THE PASSIVATION IN SOLNS. CONTG. NO ZINCATE WAS SLIGHT, THE EXCESS OVER STOICHIOMETRIC O IN THE FILM WAS 5-7, AND WHEN THE PASSIVATION WAS HEAVY, IT ROSE TO 10 AT. PERCENT. IN THE CASE OF PASSIVATION IN ALK. SOLNS. SUPERSATD. WITH ZINCATE, THE VALUES WERE 1-2 AND 3 AT. PERCENT, RESP. EXPTS. WITH AGITATING THE SOLN. SHOWED THAT THE QUANTITY OF ELECTRICITY REQUIRED TO DISSOLVE THE PASSVATING FILM AND ACTIVATE THE ELECTRODE DEPENDS ON THE RATE AT WHICH HO SUB2 PRIMENEGATIVE IS REMOVED FROM THE ELECTRODE.

UNCLASSIFIED

USSR

UDC 577.153:612.8.015.612.744

SIMONOVA, N. Ya., and EPSHTEYN, S. F., Institute of Biochemistry, Academy of Sciences, Ukrainian SSR, Kiev

"Study of the Cholinesterase Activity in Nerves and Subcellular Fractions of Skeletal Muscles of Rabbits with Reversible Distruption of the Motor Functions of Muscles"

Kiev, Ukrainskyy Biokhimicheskiy Zhurnal, Vol 42, No 4, 1970, pp 417-423

Abstract: Resection of the motor cortex in rabbits causes morphological shifts in the nerve and disturbs nerve impulse transmission to the muscle during the first few days after surgery. These shifts gradually disappear and after 2 months the nerve structure and conductivity become normal. An investigation was carried out to determine total cholinesterase in the nerve and true acetylcholinesterase in homogenate and subcellular fractions of rabbit skeletal muscles (myofibrillar-nuclear, mitochondrial, and microsomal) at various times after surgery. A decrease in acetylcholinesterase activity was noted 2 days after surgery in all cellular fractions except the myofibrillar-nuclear fraction. The greatest decrease in cholinesterase activity in the myofibrillar-nuclear and mitochondrial fractions was observed a month after surgery and in the microsomal, 2 weeks after surgery. Cholinesterase activity returned to normal 2 months later.

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SIMONOVA, N. Ya and EPSHTEYN, S. F., Ukrainskyy Biokhimiicheskiy Zhurnal,  
Vol 42, No 4, 1970, pp 417-423

In the nerve homogenate, activity increased sharply 2 days after surgery, reached a maximum after 2 months, and then declined to the normal level during the following 2 months. It is concluded that resection of the motor cortex is accompanied by a change in cholinesterase activity in subcellular fractions of the skeletal muscles and homogenates of rabbit muscles and nerves and that this activity eventually returns to the normal level.

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Acc. Nr:

AT0039903

Abstracting Service:  
CHEMICAL ABST.

4-78

Ref. Code:  
UR0020

83434e Dependence of water vapor pressure on the concentration of the anomalous component in modified water. Derwa-  
 gin, B. V.; Zheleznyi, B. V.; Rabinovich, Yu. I.; Simonova,  
 V. Kh.; Talaev, M. V.; Churaev, N. V. (Inst. Fiz. Khim.,  
 Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970, 190(2), 372-  
 5 [Phys Chem] (Russ). The so-called modified water, defined  
 as a 2-component system, one of which is ordinary water and the  
 other referred to as "anomalous component" of which the nature  
 is unknown for the present, was studied. The anomalous com-  
 ponent is less volatile, its diffusion coeff. is smaller, its d. is  
 greater, and its  $n$  and mol. wt. are appreciably greater than of  
 ordinary water. The mol. wt. of the anomalous component was  
 detd. exptl. as  $200 \pm 50$  and by a method of computation as  $180$   
 $\pm 50$ . For the present, these values given for mol. wt. are merely  
 tentative upper limit values. The changes observed in modified  
 water upon removal of one of the components are completely re-  
 versible. The state of complete modification of water, i.e. a state  
 in which the water is satd. with the anomalous component, is  
 equally reversible; however, the time required for attaining equil.  
 may be several days or even weeks.

M. Hosen

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UDC 620.193

BRYNZA, A. P., KOSGLAPOVA, T. YA., KELELOVSKAYA, S. A., FEDORUS, V. B., and SIMONOVA, YE. K., Dnepropetrovsk State University and Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Corrosion Resistance of Titanium Carbide Powders"

Kiev, Poroshkovaya Metallurgiya, No 8, 1971, pp 67-72

Abstract: The decomposition kinetics of titanium carbide were studied in the region of homogeneity in mixtures of sulfuric acid (from 0.5 to 10 g/g/l) with hydrogen peroxide (from 1.08 to 6.44 g/g/l) at 25-80°. The carbides were prepared in a laboratory vacuum furnace (10-3 mm Hg) with a slow temperature rise (for 30-40 minutes) to 1500-1600°, with subsequent exposure at this level for 2 hours. The mean particle size of carbide powder was 15 microns. In the corrosion testing, all carbide phases completely decompose when maintained in a solution containing 10 g/g/l H<sub>2</sub>SO<sub>4</sub> and 6.44 g/g/l H<sub>2</sub>O<sub>2</sub> for 120 hours at 25°. With temperature rise, the time required for total decomposition was reduced to 10 hours at 40°, 5 hours at 60°, and 2 hours at 80°. When the concentration of sulfuric acid was increased from 0.5 to 5 g/g/l, the rate of dissolution of titanium carbides was reduced, and when the acid content was varied from 5 to 10 g/g/l, the rate of decomposition did not depend on solution acidity. When the hydrogen peroxide content was increased, the rate of decomposition of the titanium carbides rose. When the carbon content in titanium

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BRYNZA, A. P., et al, Kiev, Poroshkovaya Metallurgiya, No 8, 1971, pp. 67-72  
carbide was increased, the decomposition rate declined. That is, the more  
defect-free the carbide is relative to carbon, the higher is its resistance  
in a mixture of sulfuric acid and hydrogen peroxide.

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USSR

UDC: 666.015.42:691.54

AKHVERDOV, I. N., SIMONOVICH, R. G., Belorussian Polytechnical Institute

"Influence Which the Degree of Dispersion of Portland Cement and Microfiller Have on the Properties of Heatproof Sintered Porous Concrete"

Minsk, Vestsi Akademii Navuk BSSR, Seryya Fizika-Tekhnichnykh Navuk, No 1, 1973, pp 16-23

Abstract: The paper gives the results of an investigation of the effect which the specific surface of portland cement and aluminosilica additive has on the heat resistance of sintered porous concrete. It is found that the heat resistance of the concrete after calcining is proportional to the initial strength of the dried specimens. Coarse-ground cement (specific surface less than  $2700 \text{ cm}^2/\text{g}$ ) and very fine-ground cement (specific surface greater than  $6000 \text{ cm}^2/\text{g}$ ) reduce the technological indices of heatproof concrete. Samples with a specific surface of portland cement of  $5200 \text{ cm}^2/\text{g}$  show the maximum strength after heating with an optimum ratio  $f = S_a A / S_c C$ , where  $S_a$  and  $S_c$  are the specific surfaces of additive and cement, and A and C are their respective percentage weight concentrations in the mix. The weight concentration of microfiller and cement in heatproof concrete

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AKHVERDOV, I. N., SIMONOVICH, R. G., Vestsi AN BSSR, Ser. Fiz.-Tekhn. Navuk, No 1, 1973, pp 16-23

depends on their specific surfaces; coarse-ground microfiller must be added in a greater quantity than fine-ground since fire shrinkage increases considerably with a high concentration of fine-ground filler. The optimum ratio  $f$  for ordinary cements lies in the range of 0.4-1.0. When sands with a high concentration of fractions finer than 0.315 mm are used in heatproof concrete there is no need to add the fine-ground filler if the ratio of the specific surface of these fractions to that of the cement is about 0.4.

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USSR

UDC 621.313.322.621.316.729

URUSOV, I. D., ~~SYMONOVSKIY, V. I.~~

"Procedure for Synchronizing Synchronous Generators"

USSR Author's Certificate No 266023, filed 31 May 65, published 2 Jul 70, (from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 Yel21 P)

Translation: This patent describes a synchronization procedure for which the angle  $\theta$  between the axes of synchronized generators is measured in order to increase reliability in the synchronization process. Depending on the magnitude of this angle, the excitation voltage of the generators is varied. With an angle between the rotors in the range of

$$-\alpha-90^\circ < \theta < -\alpha+90^\circ \tag{1}$$

the synchronizing moment proportional to the expression  $k_1 E_2 \sin(\theta + \alpha)$  (where  $E_1$  and  $E_2$  are the emfs of the generators,  $\alpha$  is the angle defined by the network parameters) prevents divergence of the rotors, that is, promotes synchronization. When

$$-\alpha+90^\circ < \theta < -\alpha-90^\circ \tag{2}$$

the moment becomes accelerating. It is possible to select the law of variation of the excitation currents (and also  $E_1$  and  $E_2$ ) as a function of  $\theta$  so

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URUSOV, I. D., et al., USSR Author's Certificate No 266023, filed 31 May 65,  
published 2 Jul 70

that for small angles in the interval (1) the excitation currents will reach maximum values, and for the angles in interval (2), they will be minimal. Decreasing the emfs  $E_1$  and  $E_2$  in opposite phase decreases the current and voltage spikes. The proposed method can be realized using known schemes for automatic excitation regulators.

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Communications

USSR

UDC 621.396.600

SIMONTOV, I.M., NEMIROVSKIY, V.M.

"Nonlinear Distortions In Bridge Level Controllers"

Elektrosvyaz: No 3, Mar 1972, pp 37-39

Abstract: The circuits of two bridge automatic gain controls are examined. It is found that with a change of the differential resistance in the direct branch of the voltage-current characteristic, nonlinear distortions do not depend on the magnitude of the control voltage. The highest level of the signal during operation in the direct branch corresponds to a d-c voltage close to zero. At this point it is necessary to control the distortions. With a change of the differential resistance of a diode in the limits of the back branch of the voltage-current characteristic, and also in capacitance bridges, the nonlinear distortions depend on the magnitude of the control voltage. The distortions can be calculated by means of formulas derived in the paper. 2 fig. 3 ref. Received 15 July 71.

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1/3 026

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--COUNCIL OF YOUNG SCIENTISTS -U-

AUTHOR--SIMONYAN, A.

COUNTRY OF INFO--USSR

SOURCE--KOMMUNIST, AUGUST 2, 1970, P 2, COLS 1-3

DATE PUBLISHED--02AUG70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--R AND D MANAGEMENT ORGANIZATION, SCIENTIFIC TECHNICAL COUNCIL,  
GEOGRAPHIC LOCATION, POLITICAL SYSTEM, GRADUATE STUDENT ENROLLMENT,  
ENTRANCE REQUIREMENT, EDUCATIONAL POLICY, GEOCHEMISTRY, ACADEMIC  
INSTITUTION ADMINISTRATION, R AND D FACILITY MANAGEMENT, PERSONNEL  
MANAGEMENT, PERSONNEL EVALUATION, ADVANCED EDUCATION QUALITY,

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1907

STEP NO--UR/9041/70/000/000/0002/0002

CIRC ACCESSION NO--AN0125502

UNCLASSIFIED

LIRC ACCESSION NO--AN0125502  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT. THE ARTICLE PRAISES THE ACHIEVEMENTS OF YOUNG ARMENIAN SCIENTISTS AND REVIEWS THE ACTIVITIES OF THE ARMENIAN COUNCIL OF SCIENTISTS. ON THE COUNCIL, WHICH CONSISTS OF EIGHT SECTIONS REPRESENTING DIFFERENT AREAS OF SCIENCE, ARE YOUNG DOCTORS, CANDIDATES OF SCIENCES, AND GRADUATE STUDENTS. COUNTERPARTS OF THIS COUNCIL HAVE BEEN ESTABLISHED IN RESEARCH INSTITUTES AND IN MOST HIGHER SCHOOLS. THE YOUNG COMMUNIST LEAGUE ORGANIZATIONS AND THE COUNCILS OF YOUNG SCIENTISTS OF INSTITUTES ARE CALLED UPON TO AID THE ADMINISTRATION AND THE PARTY ORGANIZATION TO SELECT STUDENTS FOR GRADUATE PROGRAMS AN IN PROBLEMS OF ADVANCED TRAINING. IN RESOLVING PROBLEMS RELATED TO YOUNG SCIENTISTS, DIRECTORS OF INSTITUTES MUST TAKE INTO ACCOUNT THE OPINION OF THESE ORGANIZATIONS. THE ROLE OF COUNCILS IN TRAINING LABORATORY ASSISTANTS, TECHNICIANS, IS ALSO PRAISED. ACCORDING TO THIS ARTICLE, TO QUALIFY AS A LABORATORY ASSISTANT WITH A RESEARCH INSTITUTE ONE MUST HAVE A HIGHER EDUCATION. (SEE TRANSLATOR, S NOTE BELOW). HOWEVER, THE ARTICLE LAMENTS THE LOWERING OF REQUIREMENTS IN RECENT YEARS, PARTICULARLY AT ACADEMIC RESEARCH INSTITUTES. TRANSLATOR, S NOTE, AS DEFINED BY THE GREAT SOVIET ENCYCLOPEDIA THE RUSSIAN TERM "LABORNT" CAN HAVE TWO MEANINGS: (1) SCIENTIFIC OR TECHNICAL ASSOCIATE OF A LABORATORY (2) A PERSON WHO READIES INSTRUMENTS, CHEMICALS, ETC, FOR LABORATORY CLASSES CONDUCTED BY PROFESSORS. WHEREBY THE ENGLISHE TRANSLATION OF "LABORANT" "LABORATORY TECHNICIAN" WOULD BE CORRECT ONLY FOR THE SECOND CASE.

UNCLASSIFIED

026  
CIRC ACCESSION NO--AN0125502

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--L. ARUTYANYAN, ASSOCIATED WITH THE INSTITUTE OF  
GEOLOGICAL SCIENCES, IS MENTIONED AS AN OUTSTANDING YOUNG SCIENTIST OF  
THE REPUBLIC WHO WAS AWARDED THE KOMSOMOL PRIZE FOR HIS WORK IN THE AREA  
OF MOLYBDENUM GEOCHEMISTRY.

FACILITY: THE ARMENIAN ACADEMY OF  
SCIENCES.

UNCLASSIFIED



USSR

UDC 622.24.054.322:622.24.051.64

KHUBOV, A. N., VOSKANOV, T. G., GEVORKOV, G. S., KARAYEV, S. K., MDIVANI, A. G., SIMONYAN, A. A., SHAKHRAMANOV, A. Kh., Baku Division of the All-Union Scientific Research Institute for Drilling Techniques, All-Union Scientific Research Institute for Drilling Techniques and "Kaspmorneft" Combine

"Effectiveness of Applying Slow-Speed Turbodrills in Drilling With Diamond Chisels"

Dzerzhinsk, Bureniye, No. 4, 1972, pp 3-7

Abstract: The results of experimental boring with diamond chisels of diameter 241 mm in combination with slow-speed and high-revolution turbodrills when approximately the same power is supplied to the chisel are analyzed. It is shown that the highest economic and technical operating indices for diamond chisels are achieved by applying a slow-speed low-pressure turbine of precision casting, namely the 3TSSh-190TL turbodrill and the 33/11 turbine. This turbine can operate consistently at revolutions of 250-400 per minute and can take axial loads of 12 tons or more. Data are presented on the consumption of DRS241S2 diamond chisels, the nature of their wear, and the change in mechanical rate during drilling. It is shown that a

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USSR

KHUBOV, A. N., et al, Bureniye, No. 4, 1972, pp 3-7

decrease in the number of revolutions to 300-400 per minute had a favorable effect on the wear and an increase in cutting capacity by a factor of 2 is achieved at the same mechanical rate.

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2/2

024

TITLE--INTENSITY OF RESPIRATION AND OXIDATIVE PHOSPHORYLATION IN BRAIN  
MITOCHONDRIA OF A CHICK EMBRYO UNDER THE EFFECT OF LECITHIN -U-  
AUTHOR--SIMONYAN, A.A.

UNCLASSIFIED

PROCESSING DATE--04DEC70

S

COUNTRY OF INFO--USSR

SOURCE--BIOL. ZH. ARM. 1970, 23(2), 30-5

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, MITOCHONDRION, EMBRYOLOGY, PHOSPHORYLATION, RESPIRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3009/0169

STEP NO--UR/0427/70/023/002/0030/0035

CIRC ACCESSION NO--AP0139032

UNCLASSIFIED

2/2 024

CIRC ACCESSION NO--AP0139032  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--04DEC70

CHICK EMBRYO, THERE IS AN ACCUMULATION OF FATS AND AN INCREASE IN THE LIPOPROTEINIC FRACTION IN THE LIVER. THESE PROCESSES ARE OF GREAT IMPORTANCE FOR THE REGULATION OF THE ENERGETIC METABOLISM. THIS LIPOPROTEINIC FRACTION CONTAINS A GREAT DEAL OF PHOSPHOLIPIDS AND LECITHIN; THE PRESENCE OF LECITHIN IN THE LIVER OF THE RAT INCREASES THE RESPIRATION OF THE MITOCHONDRIA OF THIS ORGAN. WHEN THE BRAIN MITOCHONDRIA OF THE CHICK EMBRYO ARE ISOLATED AND SUSPENDED IN A SOLN. OF SUCROSE, THE ADDN. OF SUCCINATE, GLUTAMATE AND GAMMA AMINOBUTYRATE BRINGS ABOUT A DIMINUTION IN THE ABSORPTION OF O AND A DECREASE IN THEIR OXIDATIVE PHOSPHORYLATION.

UNCLASSIFIED

USSR

UDC 535.322.4.08

AYOLLO, E. S., DMITRIYEV, A. V., KARABEGOV, M. A., KOZIRAKOV, YU. I., POZHIDAYEV, G. H., SIMONYAN, G. A.

"New Wide-Range Automatic Refractometer for Monitoring the Course of Technological Processes"

Dokl. Vses. soveshch. Optich. i titrometrich. analizatory zhidk. sred. 1971. Ch. 2 (Reports of the All-Union Conference on Optical and Titrometric Analyzers of Liquid Media, 1971, Part 2), Tbilisi, 1971, pp 39-44 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 3, Mar 72, Abstract No 3.32.1044)

Translation: At the present time, among automatic industrial refractometers, the systems with optical compensation for the deviations of the light beam, displacement of the light shadow interface and under variables which are a function of the index of refraction have become most widespread. The schematic and description of an automatic refractometer developed by the Special Design Office for Analytical Instrument Making are presented. This refractometer permits an increase in the dynamic measurement range by several times while retaining the given instrument error. It also permits a five-fold increase in the accuracy of measuring the concentration of the substance. There are 2 illustrations and 1-entry bibliography.

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... K. N.

SO: JPRS 53658  
22 July 71

INVESTIGATION OF STAGING OF HOSPITALIZATION OF RURAL POPULATION OF ARMENIA  
[Article by <sup>2</sup> ~~S. M. Sinyavskiy~~ chief physician, Echmiadzinskii Rayon, Armenian SSR; Moscow. ~~Собрание Здравоохранения~~ <sup>2</sup> ~~20 January 1971, pp 17-19~~ UDC: 616-082.4(479, 25-22)

Three rural rayons (Echmiadrinskii, Artashatskiy, Oktemberyskiy) of Armenia were chosen as the basis for this study; they are relatively well equipped with all forms of medical care. The volume and nature of hospitalization of the rural population at all stages of medical care were investigated.

The study was pursued for a full calendar year (from 1 January to 31 December 1968) using the statistical sampling method. Charts on discharged patients with expert evaluation entries served as the basis for studying the staging of rural hospitalization. In all, 39,610 such charts were gathered, processed and analyzed. The method used permitted determination of the volume of hospital care rendered to the rural population with unfailing hospitalization at the different stages of rendering services.

However, for deeper investigation of the nature of hospitalization and first of all for determination of the demand type of institution for the purpose, an expert evaluation of the demand type of institution and of actual hospitalization was made. Such evaluation, along with analysis of actual hospitalization (each hospitalization case was evaluated from the standpoint of necessity for hospitalization as well as of whether it was in an appropriate type of institution) made it possible not only to determine the general level of need for hospital care but also to recommend the most rational specialization of available beds.

It was established that of the 38,298 individuals hospitalized in central rayon and district hospitals, 25,504 (66.5%) were treated in former and 12,794 in the latter (33.5%). Of those hospitalized in rayon hospitals, according to the conclusions of experts, 25,349 (99.3%) did require hospitalization in precisely this type of institution, and 155 should not have been hospitalized there (0.7%); according to the experts' conclusions, 96 of the latter should have been treated as outpatients, and 59 in republic and municipal hospitals.

MEDICINE

Phytology

USSR

UDC 582.38

TETEREVNIKOVA-BABAYAN, D. N. and SIMONYAN, S. A., Department of Lower Plants,  
Yerevan State University, and Institute of Botany, Academy of Sciences  
Armenian SSR

"Some Species of Rust Fungi New to the Caucasus Discovered in Armenia"  
Yerevan, Biologicheskii Zhurnal Armenii, Vol 23, No 12, 1970, pp 3-9

Abstract: During a recent review of the microflora in Armenia, some new strains of rust fungi were discovered which had been unknown in the Caucasus. No reference is made to them either in Trushel's 1939 Handbook of Rust Fungi, nor in Ul'yanishchev's Microflora in Azerbaydzhan, nor in Keliya's Compenium of Rust Fungi in Georgia. Since many of these strains are rare throughout the Soviet Union, their morphological and physiological properties are described, and their growth and reproduction patterns, and other characteristic traits, including their geographical distribution in the USSR. These strains are: *Uromyces arenariae*, *Puccinia carniolica*, *Puccinia kulabica*, *Puccinia schroeteriana*, *Puccinia tanacetii*, *Puccinia cancellata*, *Puccinia vesleriae*, *Puccinia trebouxii*, and *Aecidium scabiosae*.

1/1

USSR

SIMONYAN, YU. A.

UDC 532.595.2;627.846

"On the Negative Hydraulic Hammer at Large Pressures"

Tr. Arm. NII bod. probl. i gidrotekhn. (Transactions of the Armenian Scientific Research Institute of Water Problems and Hydraulic Engineering), Vol 2, No 7, 1972, pp 393-399 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4B721 by V. I. Borisov)

Translation: Experimental results are given for the investigation of a negative hydraulic hammer obtained on two laboratory pump devices. The hydraulic hammer was produced by means of a rapidly closing valve in a pipeline behind the pump. The goal of the work was the experimental verification of the conditions  $\Delta H_2 > \Delta H_1$ ,  $t_A > T_S$ , where  $\Delta H_1$  is the largest reduction of head relative to static pressure,  $\Delta H_2$  is the largest increase of head relative to the static pressure (at the end of the second phase of oscillation),  $t_A$  is the time after which the velocity of the water in the valve began to drop to zero,  $T_S$  is the time of valve closing. A method for calculating the values of  $\Delta H_1$ ,  $\Delta H_2$  and  $t_A$  was developed on the basis of the results obtained. The results of calculations by the given method agree well with the experiment. (6 bibliographic entries)

1/1

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USSR

UDC 547.869+546.185

SIMOV, D., KIRILOV, M., KAMENOV, L., PETROV, G., Sofia University,  
Bulgaria

"Phosphorusorganic Derivatives of Phenothiazine and N-Alkylphenothiazine Dioxide"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70,  
pp 2131-2132

Abstract: Reaction of phosphorus oxychloride with phenothiazine at 160° for 10-12 hrs gave N-(dichlorophosphoryl)-phenothiazine, m.p. 145-146°. When N-(2,3-dibromoisobutyl)-phenothiazine dioxide was reacted with triethylphosphite by heating a 1:2 mixture of these reagents to 160° for 4 hrs, N-(2,3-diethylphosphonylisobutyl) phenothiazine dioxide, m.p. 149°, was obtained. Reaction of N-(2-chloro-3-iodopropyl)-phenothiazine dioxide with triethylphosphite gave only N-allylphenothiazine dioxide.

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1/2 011

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--ELECTROPHORESIS OF POLYNUCLEOTIDES IN POLYACRYLAMIDE GEL -U-

AUTHOR--(02)-SIMUKOVA, N.A., BUDOVSKIY, E.I.

COUNTRY OF INFO--USSR

5

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 2, PP 213-218

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NUCLEOTIDE, POLYACRYLAMIDE RESIN, GEL, ELECTROPHORESIS,  
RNA, CHEMICAL PURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1715

STEP NO--UR/0463/70/004/002/0213/0218

CIRC ACCESSION NO--AP0100312

UNCLASSIFIED

2/2 011

CIRC ACCESSION NO--AP0100312  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. ELECTROPHORESIS IN POLYACRYLAMIDE GEL IS WIDELY USED FOR THE ANALYSIS OF POLYNUCLEOTIDE MIXTURES. THE ROUTINE PROCEDURE INVOLVES REMOVAL OF THE GEL FROM THE TUBES AND STAINING, RESULTING IN DEFORMATION OF THE GEL AND DISTORTION OF THE ZONES. A SIMPLE PROCEDURE IS PROPOSED FOR DETECTION AND INTENSITY EVALUATION OF POLYNUCLEOTIDE ZONES IN POLYACRYLAMIDE GEL BASED ON DIRECT SCANNING OF GEL IN FUSED SILICA TUBES AT 270 MU. THIS METHOD IS SHOWN TO BE MORE CONVENIENT, SENSITIVE AND ACCURATE THAN A ROUTINE ONE: IT ONLY TAKES 10 TO 15 MUG OF THE MIXTURE PER TUBE AND 10 TO 12 MIN FOR SCANNING AND PROVIDES A HIGH SENSITIVE MEANS FOR THE ANALYSIS OF THE PURITY OF RNA PREPARATIONS. THE METHOD ENABLES TO STUDY THE EXTENT OF POLYNUCLEOTIDES DEGRADATION UNDER VARIOUS CONDITIONS. AN EQUATION IS PROPOSED FOR THE EVALUATION OF THE DEGRADATION EXTENT. THE ELECTROPHORETICAL MOBILITY OF POLYNUCLEOTIDES DOES DEPEND ON THEIR SECONDARY STRUCTURE.

UNCLASSIFIED

014

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--SOLUBILITY OF SILVER CHLORIDE IN THE SYSTEM CHLORIDE, PERCHLORATE,  
SODIUM, AMMONIUM WATER -U-  
AUTHOR-(02)-SIMULIN, YU.N., MARTYNOV, YU.M.

COUNTRY OF INFO--USSR

SOURCE--Zf. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 889-91

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SILVER COMPOUND, CHLORIDE, SOLUBILITY, SODIUM, WATER, AMMONIUM  
PERCHLORATE

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0437

STEP NO--UR/0080/70/043/004/0889/0391

CIRC ACCESSION NO--AP0126190

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126190

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

ABSTRACT. THE SOLY. OF AGCL IN THE PRESENCE OF THESE ICNS WAS STUDIED AT 25-70PERCENT AND THE ACTIVITY COEFFS. OF AGCL CALCD. AN INCREASE IN THE CONCN. OF NH SUB4 CLO SUB4 FROM 0.1 TO 1.04 MOLE-L. DECREASED THE SOLY. OF AGCL BY A FACTOR OF SIMILAR TO 2.5. FOR ADDNL. INCREASE IN THE CONCN. OF NH SUB4 CLO SUB4 TO 1.79 MOLE-L. THE SOLY. REMAINED ALMOST CONST. OR INCREASED SOMEWHAT. FOR THIS SYSTEM THE HEAT OF SOLN. DELTAH INCREASED WITH INCREASED CONCN. OF NH SUB4 CLO SUB4 (OR NH SUB4 OH) AND CAN BE DESCRIBED BY AN EXPRESSION OF THE FORM LOG DELTAH EQUALS ALPHA C PLUS B, WHERE C IS THE CONCN. OF NH SUB4 CLO SUB4 OR NH SUB4 OH.

UNCLASSIFIED

1/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--THE GROWING OF CRYSTALS OF A PRESET FORM -U-

AUTHOR--(03)-CHERNEVSKAYA, E.G., SIMUN, YE.A., STOZHAROV, A.I.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', NO 2, FEB 70,  
PP 42-44

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL GROWING, CRYSTAL STRUCTURE, NUCLEATION, SINGLE CRYSTAL  
GROWTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1579

STEP NO--UR/0237/70/000/002/0042/0044

CIRC ACCESSION NO--AP0118562

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118562

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN THAT THE CRYSTALLIZATION OF A MELT IN THE FORM OF A SINGLE CRYSTAL IS POSSIBLE WITHOUT THE CREATION OF AN INOCULATION CENTER AND THAT THE GROWTH OF A SINGLE CRYSTAL MAY PROCEED FROM THE SURFACE OF ANY SPATIAL CONFIGURATION (PLANE, CONCAVE, CONVEX, ETC.). THIS MAKES POSSIBLE A DIRECT GROWING OF CRYSTALS IN THE FORM OF DISKS, SQUARES, LENSES, PRISMS, AND OTHER SIMPLE AND COMPLEX FORMS OF VARIOUS SIZES.

UNCLASSIFIED

SIMUNI, L. M.

TECHNICAL TRANSLATION

FSIC-RT-23- 387-72

ENGLISH TITLE: NUMERICAL SOLUTION OF EQUATIONS IN THE TWO PARAMETER THEORY OF THE EXPONENTIAL LAYER.

FOREIGN TITLE: ЧИСЛЕННЫЕ РЕШЕНИЯ УРАВНЕНИЙ В ДВУХ ПАРАМЕТРАХ ТЕОРИИ ЭКСПОНЕНЦИАЛЬНОГО СЛОЯ

AUTHOR: Ye. F. Osorova, L. M. Simuni

SOURCE: Not Applicable

Translated for FSIC by NCSI

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UDC 532.526

USSR

OZEROVA, YE. F., ~~et al.~~ SIMONI, L. M.

"Numerical Solution of the Equations of the Double Parametric Boundary Layer Theory"

Trudy Leningradskogo Politeknicheskogo Instituta, Aerotermodynamika  
(Works of the Leningrad Polytechnical Institute, Aerothermodynamics),  
No 313, 1970, pp 44-53

Translation: The equations of double-parametric boundary layer theory are solved numerically. The partial differential equation is solved by the method of finite-differences with respect to an implicit difference scheme, and the results obtained serve as the initial data. Automatic selection of stepsize is used to insure the required accuracy. There is 1 table and a 3-entry bibliography.

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UDC 547.295.94:665.4

USSR

MASKAYEV, A. K., MAN'KOVSKAYA, N. K., LEND'YEL, I. V., FEDOROVSKIY, V. F.,  
SIMUROVA, Ye. I., and TEREENT'YEVA, V. N., VNIIPKneftekhim [All-Union Scien-  
tific Research, Planning and Design Institute of Petrochemical Processes]

"Production of 12-Hydroxystearic Acid -- Raw Material for Plastic Lubricants"

Moscow, Khimiya i Tekhnologiya Topliv i Masel, No 2, 1971, pp 21-24

Abstract: It has been established that commercial grades of Soviet castor oil contain 4-6 percent fewer glycerides of ricinoleic acid than foreign specimens. Therefore, the production of a high yield of 12-hydroxystearic acid (12-HSA) requires that the hydrogenation process take place under conditions which assure the maximum conversion of ricinoleic acid into 12-HSA. The purpose of the article was to study the effect of castor oil hydrogenation conditions on the process rate, the composition of the hydrogenate and the selection of optimal conditions assuring hydroxy acid conservation. Experiments were conducted in an autoclave with a 5 l. load of castor oil with mechanical stirring (1500 rpm) in the presence of a powdered skeleton metallic catalyst containing 68.8 percent (by weight) nickel. The raw material used was grade I refined castor oil and commercial hydrogen with 1/2

USSR

MASKAYEV, A. K., et al, *Khimiya i Tekhnologiya Topliv i Masel*, No 2, 1971, pp 21-24.

a purity of 99.5 percent by volume. After the catalyst was filtered out, the iodine numbers and fatty acid composition of the samples were determined.

It was found that the conditions assuring maximum (98.5 percent) conversion of ricinoleic acid into 12-HSA are: temperature 130°C, quantity of catalyst at least 2 percent by weight, hydrogen pressure 10-15 atm. In order to conserve hydroxy acids, the castor oil hydrogenation process should not be permitted to go to an iodine number below 5. The Soviet oil and fats industry produces various grades of castor oil differing in purification efficiency. A study of the hydrogenation rate showed that the higher the purification efficiency, the higher the process rate. However, medicinal castor oil cannot be recommended because of its short supply and high cost. The isolation of fatty acids from hydrogenated castor oil presents no difficulties. Using the described technique, VNIIPKneftexhim has for the first time in the USSR organized the pilot production of 12-HSA and new types of 12-HSA-based plastic lubricants possessing high operating properties.

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1/2 039 UNCLASSIFIED PROCESSING DATE--0200170  
TITLE--CREEP OF LINEAR UNORIENTED POLYMERS DURING ELONGATION, COMPRESSION,  
AND TORSION -U-  
AUTHOR-(04)-BORSENKO, V.N., PESCHANSKAYA, N.N., SINANI, A.B., STEPANOV,  
V.A.  
COUNTRY OF INFO--USSR  
SOURCE--MEKH. POLIM. 1970, 6(1) 24-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS, PHYSICS  
TOPIC TAGS--LINEAR POLYMER, ELONGATION, CREEP, POLYMETHYLMETHACRYLATE,  
POLYSTYRENE RESIN, POLYETHYLENE, LOW TEMPERATURE EFFECT, COMPRESSIVE  
STRESS, TORSION STRESS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/0327 STEP NO--UR/0374/70/006/001/0024/0028  
CIRC ACCESSION NO--AP0111521  
UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111521  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE ELONGATION CREEP RATES OF POLY(METHACRYLATE) BETWEEN MINUS 50DEGREES AND PLUS 70DEGREES ARE ONLY APPROX. TWICE AS LARGE AS THE COMPRESSION AND TORSIONAL CREEP RATES; BELOW MINUS 100DEGREES THE ELONGATION CREEP RATES GREATLY EXCEED THE COMPRESSION AND TORSIONAL CREEP RATES. SIMILAR SITUATIONS EXIST FOR POLYSTYRENE AND POLYETHYLENE, BUT THE 3 CREEP CURVES NEARLY COINCIDE IN THE 60-70DEGREES RANGE FOR POLYSTYRENE AND BELOW MINUS 140DEGREES FOR POLYETHYLENE.

UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111521

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELONGATION CREEP RATES OF POLY(METHACRYLATE) BETWEEN MINUS 50DEGREES AND PLUS 70DEGREES ARE ONLY APPROX. TWICE AS LARGE AS THE COMPRESSION AND TORSIONAL CREEP RATES; BELOW MINUS 100DEGREES THE ELONGATION CREEP RATES GREATLY EXCEED THE COMPRESSION AND TORSIONAL CREEP RATES. SIMILAR SITUATIONS EXIST FOR POLYSTYRENE AND POLYETHYLENE, BUT THE 3 CREEP CURVES NEARLY COINCIDE IN THE 60-70DEGREES RANGE FOR POLYSTYRENE AND BELOW MINUS 140DEGREES FOR POLYETHYLENE.

UNCLASSIFIED

USSR

UDC 546.45(547.297:547.571):547.361

LARKIN, I. I., YEVSTAFIYEVA, N. Ye., and SINANI, S. V.

"Organoberyllium Compounds and Their Chemical Reactions. VII. Reaction of Berylliumacyl Halides With Aromatic Aldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1984-1986

Abstract: Studying the reactions of berylliumacyl bromide with variously substituted aromatic halides, it has been established that introduction of two or more substituents on the ring does not change the reaction course and leads to the formation of diacylderivatives of stilbenes. Low yields obtained in some cases are caused by steric hindrance. On the basis of IR spectral data it was shown that all of the synthesized stilbenes have the trans-configuration.

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Acc. Nr: AP0046224 SRef. Code: UR 0646PRIMARY SOURCE: Teoreticheskaya i Matematicheskaya Fizika, 1970,  
Vol 2, Nr 2, pp 230-243INVESTIGATION OF THE SPECTRA OF SOME STOCHASTIC  
OPERATORS ARISING IN THE LATTICE GAS MODELSR. A. Minlos, Ya. G. Sinai

The spectrum of the transfer-matrix  $A_L$  is investigated for the case of the general lattice models with finite interaction. The limiting stochastic operator  $P_\infty$  is constructed as the limit of the stochastic matrices  $P_L$ , which are obtained from the transfer-matrix  $A_L$  by means of a natural normalization. The first and the second invariant subspaces of the operator  $P_\infty$  with small values of the parameter  $\beta$  are found. The spectrum of the operator  $P_\infty$  in the first subspace coincides with the values of a certain function  $a(\lambda)$  ( $0 < \lambda < 2\pi$ ) while in the second subspace this spectrum contains the values of the function  $a(\lambda_1)a(\lambda_2)$  ( $0 < \lambda_1 < \lambda_2 \leq 2\pi$ ) plus perhaps several additional segments. The latter result is in a good agreement with the well-known work by L. Onsager, where the spectrum of  $P_\infty$  was found in the explicit form for the case of the Ising model.

REEL/FRA  
19781340

DI 21



USSR

UDC 669.715.017.3:548.5:621.785.78

BOCHVAR, O. S., and SINANYAN, L. G.

"Modifications in the Fine Structure of the AK4-1 Alloy as a Result of Aging"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970,  
pp 59-63, resume

Translation: Modifications arising in the fine structure of the AK4-1 alloy as a result of aging for 10, 100, and 1000 hrs in the temperature interval of 125-450°C were investigated by the method of harmonic analysis of X-ray interference lines. A correlation was noted between microdistortions of the crystal lattice and strength characteristics of the alloy. In the authors' opinion, the decomposition process of the supersaturated solid solution is related to the presence of packing defects on which, as a result of segregation of atoms of alloying elements, Suzuki atmospheres develop. Three figures, one table, twelve bibliographic references.

1/1

Aluminum and Its Alloys

UDC 669.715:669.017.3

USSR

SINANYAN, L. G., and BOCHVAR, O. S., Moscow

"Investigation of Packing Defects in an Aluminum Alloy"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul-Aug 70, pp 126-130

Abstract: The presence of deformation packing defects and twinned packing defects was determined by x-ray examination and the role of the AK4-1 alloy (Cu—2%; Mg—1.3%; Fe—1%; Ni—0.9%; Si—0.15%; Al—the rest; and Cu/Mg=1.5/1.0) in the aging process investigated. Packing defects can arise in the AK4-1 alloy as a result of strain hardening; in this case, full dislocations disintegrate into partial dislocations with a band of packing defects of equal slip plane (111) between them. Experimentally derived isochrones of packing defects demonstrate a primary growth of twinned packing defects which reflects the effect of Suzuki atmospheres. The segregation according to Suzuki probably represents a precondition of the phase transformation. Isochrones of the crystal lattice period of the AK4-1 alloy, the conventional yield limit  $\sigma_{0-2}$ , and the relations of  $\sigma_{0-2}/E$  and of twinned to deformation packing defects demonstrate a correlation of x-ray examination data with variations of mechanical properties of the AK4-1 alloy. Maximum strength values were observed after 10, 100, and 1000 hrs of aging at 200, 175, and 150°C, respectively which correspond to the

USSR

SINANYAN, L. G., and BOCHVAR, O. S., Izvestiya Akademii Nauk SSSR, Metalii, No 4, Jul-Aug 70, pp 126-130

condition of maximum development of Suzuki atmospheres. No segregation or packing defects was found by x-ray examination after 10 hrs of aging at temperatures over 350°C.

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USSR

UDC 621.793.8

ANTONOVA, YE. A., ANDRUSHCHENKO, N. S., and SINAY, L. M.,  
Academy of Sciences USSR, Institute of the Chemistry of Silicates  
imeni I. V. Grebenshchikov

"Interaction of Ni-Cr-Si-B Coatings With Steel During Facing"

Moscow, Zashchita Metallov, Vol 7, No 2, Mar-Apr, 1971, pp 137-142.

Abstract: Results are presented from a study of the process of formation of protective coatings on carbon and alloy steels based on finely dispersed powder. The process of formation of the coatings from a mixture of finely dispersed powders applied to the surface of the metal to be protected and the modes of formation of coatings of powdered materials were studied. With the Slurry method of producing Ni-Cr-Si-B coatings of a powder mixture of the initial elements on a steel substrate, the optimal temperature area for facing, providing for a continuous layer, good adhesion, and minimum interaction with the substrate (reaction zone 20-30  $\mu$ ) lies at the beginning of the interval of melting of the powder mixture, at 980-1050°. With facing temperatures of about 1170° and higher, the contact interaction is sharply expressed (iron in the coating 48% and higher), as a result of formation of large quantities of complex boride eutectics involving the metal substrate.

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USSR

UDC: 519.25

BUNIMOVICH, L. A., SINAY, Ya. G., Moscow

"Concerning a Fundamental Theorem in the Theory of Scattering Billiards"

Moscow, Matematicheskii Sbornik, Nov. Ser., Vol 90(132), No 3, Mar 73,  
pp 415-431

Abstract: The authors consider billiards within regions on a plane or on a two-dimensional torus with a Euclidean metric, the border of these regions being everywhere convex inward. It is shown that the stream  $\{S_t\}$  generated by such a billiard is a  $K$ -system. Principal attention is devoted to proof of a theorem which shows that the transversal layers for stream  $\{S_t\}$  are comprised "in the main" of fairly long regular segments. The implications of this theorem relate to the absolute continuity of transversal foliations for billiards of the type investigated.

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1/2 008 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--ON A TYPE OF SINGULARITY IN MODELS OF THE ISING TYPE -U-

AUTHOR--(02)--VUL, YE.B., SINAY, YA.G.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,  
NR 6, PP 2121-2126

DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--MODEL, PROBABILITY, ANALYTIC GEOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1998/0536

STEP NO--UR/0056/70/058/006/2121/2126

CIRC ACCESSION NO--AP0121208

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0121208

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. SOME GEOMETRICAL PROPERTIES OF  
TYPICAL CONFIGURATIONS IN MODELS OF THE ISING TYPE ARE CONSIDERED. THE  
PROBABILITIES INVOLVED ARE INVESTIGATED AS FUNCTIONS OF THE GIBBS  
DISTRIBUTION PARAMETERS. IT IS SHOWN THAT THE PROBABILITIES POSSESS  
SINGULARITIES ON THE SEGMENT  $\mu$  EQUALS 0, MINUS  $\beta$  SUBKP LESS THAN  
 $\beta$  LESS THAN  $\beta$  SUBKP. FACILITY: INSTITUT PRIKLADNOY  
MATEMATIKI AN SSSR.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--THE CHARACTERISTICS OF JAUNDICE CAUSED BY AMINAZINE CHLORPROMAZINE  
-U-  
AUTHOR--(04)-SINAYKO, G.A., PAKTORIS, YE.A., KUTCHAK, S.N., SHUMKINA, O.B.  
COUNTRY OF INFO--USSR  
SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 6, PP 45-52  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--JAUNDICE, CHLORPROMAZINE  
CENTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1887 STEP NO--UR/0497/70/048/006/0042/0052  
CIRC ACCESSION NO--AP0129244  
UNCLASSIFIED



2/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129244

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMINAZINE (CHLORPROMAZINE) INDUCED JAUNDICE WAS STUDIED IN 31 CASES. THE PAPER GIVES A CHARACTERISTICS OF ITS CLINICAL PICTURE, THE RESULTS OF BIOCHEMICAL AND MORPHOLOGICAL (ILLUMINATION AND ELECTRON MICROSCOPY) INVESTIGATIONS. AMINAZINE ACCOMPANIED BY ITCHING, INCREASED ACTIVITY OF ALKALINE PHOSPHATASE AND THE BLOOD SERUM CHOLESTEROL LEVEL. THE ACTIVITY OF FRUCTOSE MONO AND FRUCTOSE DIPHOSPHATE ALDOLASES, ASPARTATE AND ALANINE AMINOTRANSFERASES AUGMENT INSIGNIFICANTLY OR DO NOT CHANGE. PRECIPITATION TESTS, MERCURIC CHLORIDE AND THYMOL, REMAIN NORMAL. THERE IS A MODERATE OR SIGNIFICANT RISE OF THE LEUKOCYTE AND EOSINOPHIL COUNT AND ACCELERATION OF ESR. UPON MORPHOLOGICAL STUDY THERE IS OBSERVED AN INTRAHEPATIC CHOLESTASIS WITHOUT DISORDER OF THE LIVER STRUCTURE AND OBVIOUS CHANGES OF ITS PARENCHYMA AND PORTAL FIELDS. AS A RULE, AMINAZINE INDUCED JAUNDICE OCCURS ON THE 2ND-5TH WEEK FROM THE ADMINISTRATION OF THE PREPARATION AND DOES NOT APPEAR IN PERSONS PROTRACTEDLY USING THE DRUG. CLINICAL DATA, ALONG WITH THE RESULTS OF LABORATORY AND MORPHOLOGICAL INVESTIGATIONS, MAY SERVE AS A RELIABLE BASIS FOR THE DIAGNOSIS OF AMINAZINE JAUNDICE AND ITS DIFFERENTIATION FROM VIRAL HEPATITIS (BOTKIN'S DISEASE). FACILITY: KLINICHESKIY OTDEL INSTITUTA VIRUSOLOGII IM IVANOVSKOGO AMN SSSR NA BAZE GORODSKOY KLINICHESKOY INFEKTSIONNOY BOL'NITSY NO 82, MOSKVA.

UNCLASSIFIED

1/2 066

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--INTERACTION BETWEEN A GRAPHITE SURFACE AND A TURBULENT GAS FLOW  
UNDER CONDITIONS OF SUBSTANTIAL NONISOTHERMALITY AND IN THE PRESENCE OF  
AUTHOR--(04)-VOTCHKOV, E.P., ZAULICHNYY, YE.G., LEONTYEV, A.I., SINAYKO,  
YE.I.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZIKA VYSOKIKH TEMPERATUR, VOL. 8, JAN.-FEB. 1970, P.  
116-122

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, PROPULSION AND FUELS

TOPIC TAGS--TURBULENT FLOW, GAS FLOW, GRAPHITE, EXHAUST GAS COOLING,  
THERMAL INSULATION, NITROGEN, COMBUSTION RATE, REYNOLDS NUMBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0384

STEP NO--UR/0294/70/003/000/0116/0122

CIRC ACCESSION NO--AP0111577

UNCLASSIFIED

2/2 065

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0111577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL AND EXPERIMENTAL STUDY OF THE NONISOTHERMAL BURN UP RATES OF GRAPHITE SURFACES IN AN AIR FLOW WITH OR WITHOUT INJECTING A NEUTRAL GAS INTO THE BOUNDARY LAYER AS A SHIELD FROM BURNING. THE EXPERIMENTS WERE CARRIED OUT AT TEMPERATURES FROM 1500 TO 1800DEGREESC AT REYNOLDS NUMBERS FROM 40K TO 4M IN A GRAPHITE CHANNEL. THE CHANNEL WALLS WERE 5-10 MM THICK, THE DENSITY OF THE GRAPHITE SPECIMENS WAS 1076-1925 KG-CU M, AND NITROGEN OR ARGON WERE INJECTED THROUGH SLOTS FOR SHIELDING. THE GRAPHITE BURN UP RATES WERE ESTIMATED BY MEASURING THE CHANNEL DIAMETER AFTER EXPERIMENTS. EQUATIONS ARE PROPOSED FOR ESTIMATING THE EFFECTIVENESS OF THIS SHIELDING TECHNIQUE. THE THEORETICAL AND EXPERIMENTAL RESULTS ARE COMPARED.

FACILITY: AKADEMIIA NAUK SSSR,  
 NAUCHNO-ISSLEDOVATEL'SKII INSTITUT VYSOKIKH TEMPERATUR, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 620.178.38:620.193

SINAYSKIY, B. N., POGREBNIYAK, A. D., ISCHENKO, I. I., Institute of Strength Problems, Academy of Sciences, Ukrainian SSR

"The Effect of Test Temperature Upon the Fatigue Strength of Alloy ZhS6K"

Kiev, Problemy Prochnosti, No 2, Feb 72, pp 24-31

Abstract: The fatigue strength of the nickel-base turbine-blade alloy ZhS6K was investigated within the working-temperature range 600 -- 1000°C. Acute weakening of the material was observed to occur at temperatures in the top portion of the working range. The fatigue properties of this alloy changed differently for symmetric and asymmetric loading cycles in the vicinity of the upper and lower boundaries of the investigated temperature range. It was established that after preliminary holding at 950° C for 1000 hour's the fatigue strength of the material decreases, the tensile strength and the maximum hardness decrease, and the chemical composition of the surface layers changes. Seven figures, 9 references.

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USSR

UDC: 620.171.2

SKLYAROV, N. M., KONONCHUK, N. I., ISHCHENKO, I. I., POGREBNIYAK, A. D.,  
LOZITSKIY, L. P., SHIPIL', V. Ya., LAPITSKIY, Yu. A., SINAYSKIY, B. N.,  
KUFAYEV, V. N., Kiev

"Determination of Durability of Heat-Resistant Alloys in Unstable Operating Modes Considering Brief Overloads"

Kiev, Problemy Prochnosti, No 3, Mar 73, pp 100-104.

Abstract: The specific features of application of the linear hypothesis of addition of damage during calculation and accelerated experimental determination of the guaranteed durability of parts operating with brief overloads during individual stages in the program of unstable loading with static and variable loads are studied, as well as problems of adjustment of the corresponding calculation characteristics for heat-resistant alloys. The concept developed by the authors is in that the share of durability expended at any moment is determined by successive addition of its parts for stages of the program under the combined influence of loads and temperatures in a quasi-stable mode for each stage; the sets of long-term static strength and endurance characteristics are utilized, considering the influence of the loading prehistory and the corresponding limiting curves for various

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USSR

SKLYAROV, N. M., et al, Kiev, Problemy Prochnosti, No 3, Mar 73, pp 100-104

temperatures and durabilities. The spectrum of loads is studied in combination with the sequence of their application, i.e., in time.

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SINAYSKIY, B. N.

JPRS 55987  
15 May 72  
UDC 620.178.38

FATIGUE STRENGTH OF MODELS OF GAS TURBINE VANES DURING PROGRAMMED TEMPERATURE CHANGE APPROXIMATING THE OPERATIONAL CHANGE

[Article by B. N. Sinayskiy; Kiev, Problemy Prochnosti, Russian, No 7, 1971, assigned to press 21 July 1970, pp 62-68]

Experience in the operation of gas turbine engines (GTE) with a long service life has shown that one of the principal causes of premature failure of the working turbine vanes is fatigue.

In the solution of the problem of reliable determination and forecasting of fatigue strength and durability of turbine vanes much importance is attached to the principles of accumulation of damage during fatigue tests of structural parts and specimens under conditions approximating operating conditions [1].

The results of investigations of fatigue strength and durability of structural parts -- models of vanes under isothermal conditions and with programmed change of temperature, simulating the thermal condition of working turbine vanes during operation, are presented in this article.

For the purpose of reproducing static tensile stresses produced by centrifugal forces during fatigue tests the subject for investigation was made in the form of a double closed model of a working turbine vane, fabricated from cast refractory nickel-based ZhSbK alloy. The manufacturing technology of the model vanes corresponded to the industrial technology of cast GTE vanes.

Smooth cylindrical specimens of ZhSbK alloy, 9 mm in diameter, were tested in order to obtain comparative characteristics of fatigue strength and durability. Heat treatment of the specimens, like that of the vane models, was conducted in the typical regime for the given alloy: heating to 1,210-1,220°C, soaking for 4 hours, hardening from 1,210-1,220°C, cooled

According to data reported at the conference "Structural Strength of Engines," held in Kobyshchev on 24-26 June 1970.

SINAYSKIY, B. N.

UDC 620.178.38:620.197  
INVESTIGATION OF THE INFLUENCE OF OXIDATION-RESISTANT COATINGS ON THE FATIGUE STRENGTH OF HEAT-RESISTANT ALLOY

JPRS 55972  
12 May 1972

[Article by L. I. Izbicka, V. I. Omel'chenko, B. N. Sinayskiy, A. D. Logobnyak, P. S. Hamak, V. I. Reznik (Kiev, Zaporozh'ye State University, Prochnost', Russian, No 10, 1971, signed to press 8 February 1971, pp 76-81)]

The use of heat-resistant alloys with good strength properties increases the service life of gas turbine engines.

Service life can be increased even further by certain design and technological measures, one of which is the use of oxidation-resistant coatings for protecting parts from oxidation. This is particularly important in connection with high working temperatures in an engine. The most reliable results can be obtained from tests of an engine with coated parts. Such tests, however, are extremely expensive and take a long time. Therefore they must be preceded by investigations of specimens and structural components under laboratory conditions.

A great deal of work has been done on investigation of the structure of coatings, their oxidation resistance in the unstressed state, development of the technology of application of coatings. However, evaluation of the effectiveness of oxidation-resistant coatings according to data on their structure, composition and oxidation resistance is not sufficiently reliable without additional determination of the strength properties of materials and structural components with coatings under conditions approximating operating conditions, i.e., under the influence of working stresses and temperatures, real media and other factors [1-3]. Moreover, the use of many heat-resistant materials depends largely on the choice of coating. Consequently the effectiveness of an oxidation-resistant coating is determined largely on the basis of results of investigation of the strength characteristics of heat-resistant materials with coatings. In such investigations great attention should be devoted to evaluation of the effectiveness of the coatings under conditions of variable stresses, when the state of the surface layer plays a particularly important role.

It has been demonstrated [4-7] that the influence of oxidation-resistant coatings on the fatigue strength of heat-resistant materials is



USSR

UDC 620.178.38:620.197

ISHCHENKO, I. I., OMEL'CHENKO, V. I., SINAYSKIY, B. N., POGREBNIYAK, A. D.,  
BANAS, P. S., REZNIK, M. I., Kiev, Zaporozh'ye

"Study of Influence of Heat Resistant Coatings on Fatigue Strength of Re-  
fractory Alloy"

Problemy Prochnosti, No 10, 1971, pp 76-81.

Abstract: This work presents results of studies of the influence of certain types of heat resistant coatings on the fatigue strength of ZhS6K nickel alloy, widely used for aviation engine turbine blades. None of the coatings studied were found to increase fatigue resistance without preliminary heating of the specimens. Preliminary heating without application of the coatings caused a decrease in fatigue resistance. However, the combination of preliminary heating to 950°C for 1,000 hours with application of coatings (nitriding and application of aluminozirconium coatings) caused an increase in fatigue resistance.

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USSR

UDC 612.53+612.74

BERNSHTEYN, V. A., SINAYSKIY, M. M., GRUYEVA, L. G., LEVITINA, T. A., and LAZUTINA, T. P., Chair of Physiology, Extension of the Smolensk Institute of Physical Culture, Malakhovka, Moskovskaya Oblast

"Some Aspects of Thermoregulation During Muscle Work"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 5, 1973, pp 819-827

Abstract: The investigation was performed on 12 athletic students pedaling a bicycle ergometer at a work load of 15 kgm/min/kg body weight for 30 min. At this rate of work, heart rate increases to a maximum of 174 beats/min, pulmonary ventilation to 730 ml/kg/min, and oxygen consumption to 30 ml/kg/min. During the so-called controlled hyperthermia which develops under minimum to moderate thermoinsulation, deep body temperature (measured in the ear near the tympanic membrane) rises uniformly from a control of 37.0°C to 39.4°C. However, excessive thermoinsulation (wearing a thick jacket) causes an additional uncontrolled rise in deep body temperature to a peak of 40.0°C. Skin temperature on the forehead rapidly increases during the first 9 minutes from 35.5 to 39.4°C, to exceed deep body temperature by 1.2°C, but falls subsequently to 37.7°C at the 30th minute. Sweating on the forehead begins with the local rise in temperature and then becomes proportional to deep body temperature and 1/2

USSR

BERNSHTEYN, V. A., et al., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 5, 1973, pp 819-827

thermoinsulation (from 0.2 mg/cm<sup>2</sup>/min in 3 minutes to 4.9 mg/cm<sup>2</sup>/min in 30 min). Even though not all the sweat evaporates, it is concluded that in steady-state work done with light thermoinsulation at a normal room temperature, about 3/5 of the total heat loss is due to evaporation of sweat.

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1/2 022 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--TOTAL EXTERNAL REFLECTION OF X RAYS BY A ROUGH SOLID SURFACE -U-  
AUTHOR--(03)-ROVINSKIY, B.M., SINAYSKIY, V.M., SIDENKO, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIKA TVERDOGO TELA, JAN. 1970, 12(1), 138-145  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--X RAY, SURFACE PROPERTY, STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/1292 STEP NO--UR/0181/70/012/001/0138/0145  
CIRC ACCESSION NO--APO124943  
UNCLASSIFIED

2/2 022  
CIRC ACCESSION NO--AP0124943

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTENSITY AND SHAPE OF X RAY BEAMS REFLECTED (TOTAL EXTERNAL REFLECTION) FROM STEEL AND OTHER SOLID SURFACES WITH VARIOUS DEGREES OF SURFACE FINISH WERE STUDIED IN RELATION TO THE MEAN HEIGHT OF THE MICROASPERITIES CHARACTERIZING THE SOLID SURFACE. THE INTENSITY OF THE REFLECTED BEAM AND ITS SPREAD (DIFFUSENESS) WERE DIRECTLY RELATED TO THE MEAN HEIGHT OF THE ASPERITIES (THE INTENSITY FELL AND THE SPREAD INCREASED AS THE ASPERITIES BECAME LARGER). THE POSSIBILITY OF USING THESE CHARACTERISTICS PRACTICALLY AS A GUIDE TO SURFACE QUALITY IS CONSIDERED.

UNCLASSIFIED

USSR

UDC 629.7.036.3.002.4

PEN'KOV, A. M., POGREVNAYAK, A. D., KUFAYEV, V. N., ~~SMAYSKIY, V. N.~~

"Use of Complex Method of Estimating Reliability to Study Heat-Resistant Materials for Gas Turbine Engine Parts"

Sb. Nauch. Tr. Kiev. In-t Insh. Grazhd. Avnatsii, [Collected Scientific Works of Kiev Civil Aviation Engineering Institute], 1971, No 4, pp 69-75. (Translated from Referativnyy Zhurnal Aviatsionnye i Raketnyye Dvigateli, No 1, 1972, Abstract No 1.34.77 from the resume).

Translation: Fatigue tests were performed in order to estimate the durability of alloy El617 under variable temperature conditions. The tests reproduced a temperature program imitating the temperature changes of blades in operation. The test results are presented as a fatigue curve. The points on the curve express the mean durabilities from the results of testing of 8 to 10 specimens at each level. To evaluate the behavior of the material under near actual conditions, the variable components of the power and temperature programs were reproduced. As before, the stresses in the program were decreased in stages from 39 to 31.5 kg/mm<sup>2</sup>, then increased to 39.5 kg/mm<sup>2</sup>. The damage to the alloy

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USSR

PEN'KOV, A. M., et al., Sb. Nauch. Tr. Kiev. In-t Insh. Grazhd. Avnatsii, 1971, No 4, pp 69-73

was evaluated on the basis of the values of the durability criterion with combined loading  $a_k$ . Testing of a series of specimens indicated the value of  $a_k=0.70$ , indicating intensive damage to EI617 alloy under the combined influence of variable temperatures and stresses. The application of the static component  $\sigma_{st}=20\text{kg/mm}^2$  caused a slight increase in the durability criterion with combined reproduction of stresses and temperatures up to  $a_k=0.99$ . 5 figs.

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USSR

UDC 621.791.756:669.715

RABKIN, D. M., ISHCHENKO, A. Ya., SINCHUK, A. G., Institute of Electric Welding imeni Ye. O. Paton and PORTNOY, N. D., KUKLINA, S. S., and BARANOV, A. V., Ural Railroad Car Plant imeni F. E. Dzerzhinskiy

"Electroslag Welding of Large-Cross-Section Pressed Profiles From AMg6 Alloy"

Kiev, Avtomaticheskaya Svarka, No 12, Dec 70, pp 52-54

Abstract: A description is given of the process of electroslag welding of large-dimensioned rings made of AMg6 aluminum alloy. The process was developed by the two institutions of which the authors named above are members, working in collaboration, and has been put into production. The weldings were from plane electrodes made of the AMg6 alloy (GOST standard 4784-65) and SvAMg7 alloy (GOST 7871-63). This method of welding is said to be the most convenient for short seams on large-dimensioned specimens, offering the advantages of high productivity, reduced difficulties in production, reduced expenditures of electrical energy and auxiliary materials, and improved working conditions for employees. A table gives the compositions of the AMg6 and SvAMg7 alloys.

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USSR

SINCHUK, I., Chief Engineer, Division of the Protection and Preservation of Forests and Hunting, State Forestry Committee, Council of Ministers, Moldavian SSR

"Aerovisual Pathological Inspection of Forests"

Moscow, Zashchita Rasteniy, No 11, 1970, p 42

Translation: Moldavia has no abundance of forests: its total forest area equals 306,000 hectares. Forestry tracts are situated irregularly on slopes, along watersheds, and in arable lands. Soil and climatic conditions are widely varied. All of this creates certain difficulties with respect to the protection of the forests from pests and diseases.

Episodes of mass propagation of a group of leaf-cutting insects such as the green oak tartrix (winter moth and mottled umper moth), and the European processionary moth periodically occur in our forests. The area of such active foci on 1 January 1970 equaled 43% of the total forest area.

A well-planned signaling system which would assist in the discovery of these foci and the prompt organization of protective measures is necessary for

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USSR

SINCHUK, I., Zashchita Rasteniy, No 11, 1970, p 42

successful control of the predatory pests. In this connection, forest pathology studies play a major role.

At the beginning of June 1969, an aerovisual forest pathology survey of an area of 100,000 hectares was launched for the first time in the republic for the purpose of detecting such foci on the basis of the extent of leaf damage caused by pests. Three YaK-12M planes operated along previously mapped routes. Each tract was investigated separately over a course of 1.5 km from an altitude of 50-70 m. Each plane was manned by two specialists who charted the located foci on maps during their flight. The data obtained were correlated and the foci were indicated on the maps in colors. These maps were then utilized in detailed ground inspections of trees in areas where leaf destruction was greatest. As a result, it was possible to obtain a precise representation of each focus and the extent of damage done by the pests as well as the extent of possible damage to the leaves during the next year. On the basis of these data, a system of forest-protection measures has been developed, aimed at elimination of the foci and prevention of the further appearance and distribution of the predatory insects.

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USSR

SINCHUK, I., Zashchita Rasteniy, No 11, 1970, p 42

Sixty-six flying hours were required for the inspection of 100,000 hectares,  
at a cost of 2.3 kopeks a hectare.

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USSR

UDC 612.744

KHASKIN, V. V., and SINDAROVSKAYA, I. N., Division of Ecological Physiology, Institute of Cytology and Genetics, Siberian Department of the Academy of Sciences USSR, Novosibirsk

"Effects of Cold Adaptation on the Temperature Coefficients of Oxidation, Phosphorylation, and ATP-ase Activity in Skeletal Muscles of Rats"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 1, Jan 72, pp 108-113

Abstract: Upon adaptation of male rats to 4-6° during 5 wks, the temperature coefficient  $Q_{10}$  (van't Hoff coefficient) of tissue respiration of skeletal muscles of the animals decreased. This was related to a rise in the level of nonphosphorylating oxidation in the muscle mitochondria, the  $Q_{10}$  for which is much lower than that for the phosphorylation rate. Adaptation changes in the intensity of oxidation, P/O, and the activity of mitochondrial ATP-ase were concentrated mainly in the red (slow) muscle fibers. The thermal regulation response of muscles upon intense cooling of cold-adapted animals were accompanied by a reduction in  $Q_{10}$  of the phosphorylation rate and a decrease in the degree to which P/O depended on the temperature. The activity of myofibril ATP-ase and the  $Q_{10}$  of this activity were not altered by adaptation. The

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KHASKIN, V. V., and SINDAROVSKAYA, I. N., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 1, Jan 72, pp 108-113

results obtained can be interpreted as indicating that upon cold adaptation the energy potential barriers of oxidative reactions in mitochondria are lowered and the relative heat-producing role of ATP breakdown in the functioning of the contractile apparatus of muscles is reduced.

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USSR

UDC 547.912.22;677.46/49

SINDO, AKIO, Tokyo

"Carbonization of Polymers and the Preparation of Carbon Filaments"

Moscow, Uspekhi Khimii, Vol 42, Vyp 2, 1973, pp 301-322

Abstract: The article deals with the change in physical properties during the carbonization of highly polymerized cellulose (CL) and polyacrylonitrile (PACN) fibers at temperatures to 1000°C. There are five other short sections: 1) the general crystallographic properties and forms of carbon; 2) the influence of different environmental conditions on the carbonization of such polymers as polyvinylchloride (PVC); 3) the three forms of carbon-filament structures using CL, PACN, vinylone, pitch, lignin-polyvinyl alcohol, phenol-furfuryl, and high-temperature fibers as examples; 4) the intermolecular condensation of aromatic polymers, such as CL and PACN, tending towards the graphite structure; and 5) the physical and mechanical properties of CL and PACN fibers and their graphitized products

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Welding

USSR

UDC: 621.791.052:669.295:620.192.4

KRECHETOV, A. D., ~~SINDYUKAYEV, N. P.~~ (Engineers) and POLOVINKINA, T. P.

"Structure and Properties of a Welded Joint of VT6S Titanium Alloy"

Moscow, Svarochnoye proizvodstvo, No 1, Jan 72, pp 21-22

Abstract: The central purpose of this study was the structure and properties of a welded joint of VT6S titanium alloy made by various welding techniques including continuous arc welding, indirect pulsed arc welding, and two-sided pulsed arc welding. The microstructure of the weld metal is identical in all three methods and comprises  $\alpha+\alpha'$ -phases. The grain size in the transition zone is the same in all welds. However, two-sided pulsed arc welding shows a finer grain in the center of the weld than the other two welding methods. The microhardness of the weld metal is almost identical in all cases and amounts to 329-358 kg/mm<sup>2</sup>. The strength of welds produced by two-sided pulsed arc welding is 92-96% of that of the base metal. The bend angle is nearly identical in all cases and is slightly higher than the minimum permissible for the base metal. Pulsed arc welding appears to improve the forming, structure, and properties of welds of VT6S titanium

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KRECHETOV, A. D. (Engineer), et al, Svarochnoye proizvodstvo, No 1, Jan 72, pp 21-22

alloy. The best over-all results were obtained with two-sided pulsed arc welding. (3 illustrations, 2 tables, 3 bibliographic references).

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Acc. Nr:

AP0049778

Abstracting Service:  
CHEMICAL ABST. 5-70

Ref. Code:

UR 0191

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101896p Polyethylene compositions for spray-coating preparations. Sinegub-Lavrenko, A. A.; Pavlova, V. G.; Zinevich, A. M. (USSR). ~~Plast. Massy 1970, (1), 60-2 (Russ).~~ Protective polymeric coatings were prepd. by electrostatic spraying of high-d. polyethylene P-4020-E (I) [filled with SiO<sub>2</sub>, CaO, and other metal oxides and stabilized with 0.2% Neozone A (II) and diphenyl-p-phenylenediamine (III)] on Al foil. II and III were mixed with I for 15 sec in a centrifuge to give a homogeneous mixt. The filler was modified with Cationate-7 (a waterproofing agent prepd. from C<sub>18</sub>H<sub>35</sub>NH<sub>2</sub> and oleic and stearic acids), which increased the tensile strength and wear resistance, and reduced the elongation at break of I coatings. Optimum spraying conditions were detd. Photomicrographs of the modified I coatings are presented.

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UDC: 539.384/.5

PROTSENKO V.S. and SINEKOP, N.S., Khar'Kov

"Nonclassical Analysis of Infinite Beam on Elastic Foundation"

Kiev, Prikladnaya Mekhanika, Vol 9, Vyp 2, Feb 73, pp 91-94

Abstract: This is the continuation of the article by the same author in vyp 6, 1972 of this journal. Analysis is made of a band stamp of given width and infinite length pressed against a semi-infinite elastic space. The analysis begins with a relation between the deflection and the contact pressure. The distribution of contact pressure along the width of the band is established. Particular cases of this distribution are shown on graphs. The deflections and contact pressures along the axis of the band are also given, a graph of two particular cases is presented.

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USSR

UDC 537.521

VAKULENKO, L. N., SINEKOP, Yu. S.

"Investigation of the Noise Properties of a Glow-Discharge in Crossed Electrical and Magnetic Fields"

Kiyev. politekhn. in-ta. Ser. radioelektron (Kiev Polytechnical Institute. Radioelectronics Series), 1970, No 7, pp 20-22 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A113)

Translation: The results are presented of an experimental investigation of the noise of a glow-discharge in crossed electrical and magnetic fields, conducted on an electrode system of the inverted magnetron type in an atmosphere of residual gases with continuous pumping in the pressure range  $10^{-3}$  mm mercury. V. M.

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1/3 019 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INVESTIGATION OF THE NOISE CHARACTERISTICS OF SELF HEATING DIODES  
IN THE RADIO FREQUENCY ZONE -U-  
AUTHOR--(02)-ALEKSANDROV, V.T., SINEKOP, YU.S.  
COUNTRY OF INFO--USSR  
SOURCE--KIEV. IZVESTIYA VYSSHIKH UNCHEBNYKH ZAVENDENIY RADIOELEKTRONIKA,  
VOL 13, NO 1. JAN 70, PP 82-85  
DATE PUBLISHED--JAN70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--ELECTROMAGNETIC NOISE, DIODE CIRCUIT, CATHODE, RF FIELD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1991/0963 STEP NO--UR/0452/70/013/001/0082/0085  
CIRC ACCESSION NO--AT0110674  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0110674

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN A SELF HEATING DIODE, HEATING OF THE CATHODE TO THE NECESSARY OPERATING TEMPERATURE IS PRODUCED BY THE COMPLETE OR PARTIAL USE OF THE HEAT WHICH IS EMITTED BY THE ANODE AS A RESULT OF ITS ELECTRON BOMBARDMENT. THE ELECTRICAL SYSTEM OF THE SELF HEATING DIODE WHICH WAS INVESTIGATED CONSISTS OF A CENTRALLY LOCATED ANODE, INSIDE OF WHICH A STARTING HEATER IS POSITIONED. THE ANODE OF THE DEVICE IS SURROUNDED BY A CATHODE CYLINDER, THE INTERIOR SURFACE OF WHICH IS COVERED BY AN EMITTING SUBSTANCE. THE THERMAL SCREEN WHICH SURROUNDS THE ELECTRODE SYSTEM DECREASES THE EXPENDITURE OF POWER NECESSARY TO ASSURE A SPECIFIC CATHODE TEMPERATURE. THIS SCREEN CAN ACT AT THE SAME TIME AS A SECOND ANODE FOR THE DEVICE, IF THE EXTERIOR SURFACE OF THE CYLINDRICAL CATHODE IS ALSO COVERED BY AN EMITTING SUBSTANCE. THE INITIAL BUILD UP OF THE NECESSARY OPERATING TEMPERATURE OF THE CATHODE (TRIGGERING OF THE DEVICE) IS ATTAINED WITH THE AID OF THE STARTING HEATER, AFTER WHICH IT CAN BE DETACHED FROM THE HEATER CIRCUIT WITH SIMULTANEOUS SWITCHING ON OF THE ANODE VOLTAGE.

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PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0110674

ABSTRACT/EXTRACT--THE RESULTS OF THE INVESTIGATION OF THE NOISE PROPERTIES OF SELF HEATING DIODES LEAD TO THE FOLLOWING CONCLUSIONS: (1) THE POSSIBILITY OF OPERATION OF SUCH DEVICES IN A SATURATION REGIME AND IN A SPACE CHARGE REGIME IS EXPERIMENTALLY CONFIRMED; (2) DURING OPERATION IN A SATURATION REGIME, THE OUTPUT OF ITS NOISE EXCEEDED BY 1.5 TO 2.0 TIMES THE ANALOGOUS OUTPUT GENERATED BY A 202S NOISE DIODE WITH A COMPARATIVELY SMALL IRREGULARITY OF THE SPECTRAL CHARACTERISTICS OF THE NOISE, AMOUNTING TO 2-3 DB IN THE 1-10 MHZ FREQUENCY RANGE, AND (3) IN THE CASE OF OPERATION OF THE DIODE IN A SPACE CHARGE REGIME, THE NOISE OUTPUT OF THE DEVICE IS CONSIDERABLY LESS THAN THE ANALOGOUS MAGNITUDE FOR ORDINARY KENOTRONS, WHICH IS EXPLAINED, CHIEFLY, BY THE REVERSE POSITIONING OF THE ELECTRODES IN THE TUBE INVESTIGATED AND BY THE LARGE DIMENSIONS OF ITS THERMOEMITTER SURFACE AREA. POSSIBLE USES OF SUCH TUBES ARE CONSIDERED.

UNCLASSIFIED

USSR

UDC 621.385.134

ALEKSANDROV, V. T., SINEKOP, YU. S.

"Investigation of the Noise Characteristics of Self-Heating Diodes in the Radio-Frequency Zone"

Kiev, Izvestiya vysshikh uchebnykh zavedeniy Radioelektronika, Vol 13, No 1, Jan 70, pp 82-85

Abstract: In a self-heating diode, heating of the cathode to the necessary operating temperature is produced by the complete or partial use of the heat which is emitted by the anode as a result of its electron bombardment. The electrical system of the self-heating diode which was investigated consists of a centrally located anode, inside of which a starting heater is positioned. The anode of the device is surrounded by a cathode cylinder, the interior surface of which is covered by an emitting substance. The thermal screen which surrounds the electrode system decreases the expenditure of power necessary to assure a specific cathode temperature. This screen can act at the same time as a second anode for the device, if the exterior surface of the cylindrical cathode is also covered by an emitting

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ALEKSANDROV, V. T., Izvestiya vysshikh uchebnykh zavedeniy Radioelektronika, Vol 13, No 1, Jan 70, pp 82-85

Abstract: substance. The initial build-up of the necessary operating temperature of the cathode ("triggering" of the device) is attained with the aid of the starting heater, after which it can be detached from the heater circuit with simultaneous switching on of the anode voltage. The results of the investigation of the noise properties of self-heating diodes lead to the following conclusions: 1) The possibility of operation of such devices in a saturation regime and in a space charge regime is experimentally confirmed; 2) During operation in a saturation regime, the output of its noise exceeded by 1.5 to 2.0 times the analogous output generated by a 2D2S noise diode with a comparatively small irregularity of the spectral characteristics of the noise, amounting to 2-3 db in the 1-10 MHz frequency range, and 3) In the case of operation of the diode in a space charge regime, the noise output of the device is considerably less than the analogous magnitude for ordinary kenotrons, which is explained, chiefly, by the reverse positioning of the electrodes in the tube

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USSR

ALEKSANDROV, V. T., Izvestiya vysshikh uchebnykh zavedeniy  
Radioelektronika, Vol 13, No 1, Jan 70, pp 82-85

Abstract: investigated and by the large dimensions of its  
thermoemitter surface area. Possible uses of such tubes are  
considered. 5 fig. 5 ref. Submitted 9 Oct 68; resubmitted  
after revision 23 Dec 68.

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USSR

UDC 576.858.75.094

SIDORENKO, O. V., KORNYUSHENKO, N. P., TAYKOVA, N. V., SINEL'NIK, N. A.,  
and YACHNIK, O. S., Kiev State University, Kiev

"Biological Properties and Ultrastructure of the Influenza Virus A<sub>2</sub> (Hong Kong) 68"

Kiev, Mikrobiologicheskij Zhurnal, Vol 33, No 4, Jul/Aug 71, pp 466-472

Abstract: A study conducted on influenza virus of strain A<sub>2</sub> (Hong Kong) 68, received from the Influenza Institute, Academy of Medical Sciences USSR and passaged through chicken embryos, showed that the population of virus particles exhibited differences with respect to morphology, ultrastructure, and biological properties. Chromatography on DEAE-Sephadex-A-50 indicated that the virus strain contained a fraction of particles that were not adsorbed in the column. Particles of this fraction were also not adsorbed on chick embryos. Comparison with other strains showed that only the strain A<sub>2</sub> (Hong Kong) 68 contained a fraction that was not adsorbed in the column. Further passages through chick embryos did not change the relative content of this fraction. Elution with NaCl solutions of increasing concentration yielded three virus fractions with decreasing particle size: 1) 2800-7000 Å (0.1 M NaCl), 2) 1400-2100 Å (0.5 M NaCl), and 3) 600-800 Å (1.0 M NaCl). The

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