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2/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118098

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF A THEORETICAL BASIS FOR A METHOD OF DETERMINING THE BASIC METALLIC STATE CHARACTERISTICS OF A MEDIUM, SUCH AS METALLIC ION CHARGES, ELECTRON AND HOLE CONCENTRATIONS, CURRENT CARRIER SCATTERING CROSS SECTIONS AND THE TEMPERATURE PARAMETERS OF ELECTRON AND HOLE CONDUCTIVITIES. THE METHOD IS BASED ON CERTAIN RELATIONS BETWEEN THESE VARIABLES. THE EXISTENCE OF THESE RELATIONS IS SUGGESTED BY AN ELECTRON TRANSFER THEORY DEVELOPED BY KUZ'MENKO AND KHAR'KOV (1960) IN A TWO ZONE QUANTUM MODEL APPROXIMATION. EXAMPLES OF THE PRACTICAL IMPLEMENTATION OF THIS METHOD ARE GIVEN FOR SEVERAL BINARY ALLOYS.

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UDC 621.762:669.018.5

USSR

FRANTSEVICH, I. N.

"Cermets Materials in Electrical Engineering"

Sovrem. probl. poroshk. metallurgii -- V. sb. (Modern Problems of Powder Metallurgy -- collection of works), Kiev, Naukova Dumka Press, 1970, pp 190-205 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G456)

Translation: The characteristics of cermets thermocouples -- C-TiC, C-$ZrB_2$, C-NbC, $ZrB_2$-ZrC, $MoSi_2$-$WSi_2$, SiC-C -- are presented. The properties and brief technology of silicon carbide heaters and cermets electrical contacts and also recommendations with respect to selecting the electrical contacts of cermets materials for different purposes and application of powder metallurgy for the production of magnetically soft materials based on Fe-compounds and magnetically hard materials based on disperse Fe and Fe-Co particles and also ferromagnetic semiconductors ($MeOFe_2O_3$ ferrites) are presented. There are 2 tables and a 9-entry bibliography. [Institute of Applied Mineralogy of the Ukrainian SSR Academy of Sciences].

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UR 9012

TITLE-- ETERNAL RELATIONSHIP

NEWSPAPER-- PRAVDA, MARCH 31, 1970, P 6, COLS 1-8

ABSTRACT-- I. N. FRANTSEVICH, DIRECTOR, THE INSTITUTE OF MATERIAL SCIENCE PROBLEMS, MEMBER OF THE UKRAINIAN ACADEMY OF SCIENCES - V. M. TUCHKEVICH, DIRECTOR, THE PHYSICAL-TECHNICAL INSTITUTE, CORRESPONDING MEMBER OF THE UKRAINIAN ACADEMY OF SCIENCES - E. L. ANDRONIKASHVILI, DIRECTOR, THE INSTITUTE OF PHYSICS, MEMBER OF THE GEORGIAN ACADEMY OF SCIENCES - I. N. PYSTYNSKIY, HEAD OF A CHAIR, TOMSK INSTITUTE OF RADIOELECTRONICS AND ELECTRONIC ENGINEERING - PARTICIPANTS OF THE "ROUND TABLE" PRAVDA-SPONSORED DISCUSSION, EXPRESS THEIR VIEWS ON THE COLLABORATION BETWEEN SCIENTISTS AND INDUSTRY.

FRANTSEVICH STRESSED THE DESIRABILITY OF DESIGN BUREAUS AND PILOT PLANTS IN THE STRUCTURE OF RESEARCH INSTITUTES.

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TUCHKEVICH ILLUSTRATED HIS POINT BY CITING THE COLLABORATION BETWEEN HIS INSTITUTE, THE ENERGETICS INSTITUTE, AND SOME UNNAMED PLANT ENGINEERS THAT WAS NECESSARY TO DEVELOP A SEMICONDUCTOR FREQUENCY CONVERTER.

ANDRONIKASHVILI MENTIONED A CAPACITANCE-DISCHARGE CHAMBER, DEVELOPED BY HIS INSTITUTE, WHICH CAN COMPETE, IN SOME INSTANCES, WITH THE HYDROGEN BUBBLE CHAMBER.

PUSTYNSKIY CITED THE PTU-8G, AN INSPECTION TV CAMERA, "TELEGLAZ", WHICH WAS MADE BY HIS INSTITUTE ON THE ORDER AND WITH THE ASSISTANCE OF THE INSTITUTE OF MINING OF THE SIBERIAN BRANCH OF THE ACADEMY OF SCIENCES. THE LETTER G IN THE DESIGNATION STANDS FOR "MINING". THE LATEST, THE TENTH "TELEGLAZ", IS THE SMALLEST MODEL WHOSE TV CAMERA IS FITTED IN A METAL CYLINDER 25-MM IN DIAMETER. IN THE FIELD, THE CAMERA CAN BE POWERED BY A 12-VOLT BATTERY. THIS INSTRUMENT WAS ALSO MADE IN THE SHOPS OF THE INSTITUTE. OTHER INSTRUMENTS MADE BY THE TOMSK INSTITUTE OF RADIOELECTRONICS AND ELECTRONIC ENGINEERING HAVE FOUND USES IN AVIATION AND CHEMICAL PLANTS AND THE INSTITUTE OF ATOMIC ENERGY IMENI KURCHATOV.

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1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ALUMINUM BASE CATHODIC PROTECTION ALLOY -U-

AUTHOR-(03)-FRANTSEVICH, I.N., ZHURAKHOVSKIY, A.F., PECHENTKOVSKIY, YE.L.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,158

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--04FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM BASE ALLOY, ZINC CONTAINING ALLOY, CALCIUM ALLOY, COPPER CONTAINING ALLOY, LEAD CONTAINING ALLOY, MANGANESE CONTAINING ALLOY, ELECTROCHEMICAL PROPERTY, METALLURGIC PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1056 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0130091

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2/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC-ACCESSION NO--AA0130091

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN AL BASED CATHODIC PROTECTION ALLOY WITH GOOD ELECTROCHEM. CHARACTERISTICS HAD THE FOLLOWING CHEM. COMPN.: ZN 17.5-20; CA 4.3-5.3; MN 0.25-0.4; IMPURITIES OF FE SMALLER THAN OR EQUAL TO 0.25; SI SMALLER THAN OR EQUAL TO 0.15, CU SMALLER THAN OR EQUAL TO 0.01PERCENT PB TRACES, CD TRACES; AND AL THE REMAINDER.

FACILITY: INSTITUTE OF PROBLEMS IN MATERIAL MANAGEMENT, ACADEMY OF SCIENCES, UKRAINIAN S.S.R.

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Composite Materials

USSR

FRANTSEVICH, I. N., and KARPINAS, D. M., Eds.

Kompozitsionnyye Materialy Voloknistogo Stroyeniya (Composite Materials With a Fibrous Filament Structure), Kiev, "Naukova Dumka" Press, 1970, 403 pp

Translation of Introduction: For the solution of problems of the construction of machines and mechanisms in various branches of the new technologies, especially the high-parameter technologies, new materials are required with a complex of different, occasionally even contradictory properties, which have been stipulated by the requirements of the designer. The materials scientist can solve these problems effectively and expeditiously only by the rational synthesis of materials with advanced, pre-established complex properties. It is therefore necessary to have a thorough understanding of solid-state physics, which will open the way to predicting the properties expected in fabricated materials, as well as to point to options of variants of the most flexible technology, resulting in the synthesis or construction of materials with any combination of constituents in a homogeneous, or sometimes, complex composite material.

There is another side of the problem under consideration -- information and its processing. Information in the area of materials science is especially



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FRANTSEVICH, I. N., and KARPINAS, D. M., "Naukova Dumka" Press, 1970, 403 pp

complex, not only because of the abundance of sources but also because it is necessary to understand new, additional information from allied sciences -- mathematics, physics, chemistry, and mechanics.

Consequently, in research in materials science, particularly for the designer, one must proceed not from the original, even if it is only systematized material information, but from material reprocessed by highly qualified specialists and published in the form of a monograph. This monograph must include for each narrow subject, sufficiently complete and strictly stated physical questions and a fundamental theoretical presentation for a given area, a detailed and exhaustive description of the technological scheme of production, both of original compounds and materials and basic-purpose materials and, finally, a comprehensive and exhaustive description of a complete range of literature sources relating to properties of materials in a given class and to the area of their use.

This monograph, prepared by specialists having wide experience in the given area, must not merely be a compilation. To a certain extent it must also be

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FRANTSEVICH, I. N., and KARPINAS, D. M., "Naukova Dumka" Press, 1970, 403 pp

original, reflecting the subjective feelings of the authors. The reader is thus engaged with the authors in a creative search in a given area of composite materials. The monograph, "Composite Materials With a Fibrous Filament Structure," has been written according to this method and is presented for the attention of the reader.

The book is devoted to one of the very real problems of contemporary materials studies. Materials, about which much has been said, to a significant degree predetermine further progress in aviation and rocket technology. For their development numerous associations of outstanding scientists of all disciplines have been attracted, and yearly the number of publications in scientific periodicals and in monographic literature have increased. Until the publication of the present monograph, "Composite Materials With a Fibrous Filament Structure," no generalized monograph of this type had been published, either here or abroad.

The first nine chapters of the monograph were written by G. A. Van Fo Fy. This is original material, dealing with calculations of stability and other characteristics of reinforced composite materials. Continuous models were



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FRANTSEVICH, I. N., and KARPINAS, D. M., "Naukova Dumka" Press, 1970, 403 pp

used in a consideration of the elastic and rheonomic properties of fibrous materials, processes of heat conductivity and heat diffusion in them, questions of thermoelectromotive force and loss during their preparation and work at high temperatures, and also the electromagnetic properties and propagation of elastic waves in such materials. Methods of analogy in the theory of composite materials and methods of manufacturing parts from them are described.

Chapter ten, written by D. M. Karpinos and L. I. Tuchinskiy, also has a theoretical character. Consideration is given to the reinforcement and stability of properties of the materials, reinforced by continuous and discrete fibers, the effect of electromotive forces on the stability of the materials, a statistical model of breakdown, defects in composite materials, and types of breakdown in composite materials.

The last chapters deal with a description of the technology of the preparation of different forms of fibrous materials and their use.

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FRANTSEVICH, I. N., and KARPINAS, D. M., "Naukova Dumka" Press, 1970, 403 pp

Technological schemes for the production of metallic and ceramic materials, reinforced by fibers, and their physical-mechanical properties are described in Chapter 11 by D. M. Karpinos, L. I. Tuchinskiy, and V. G. Zil'berberg.

In Chapter 12, D. M. Karpinos and V. M. Grosheva discuss reinforced plastics.

Permeable fibrous materials, such as filters, transpirators, packing, and shock absorbers are described in Chapter 13, which was written by A. G. Kostornov and I. M. Fedorchenko.

Chapter 14, which was written by A. G. Kostornov, V. G. Zil'berberg, D. M. Karpinos, and A. V. Tkachenko, describes technological methods of preparing metallic and nonmetallic reinforcing elements, i.e., fibers and filaments.

The final chapter describes specific forms of metallic materials with fibrous structure which are created in the process of crystallization and other forms of thermal processing. The chapter was written by D. M. Karpinos and Ye. N. Denbnovetskiy.

I. N. Frantsevich,
Academy of Sciences UkrSSR

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Coatings

UDC 621.763

USSR

FRANTSEVICH, I. N., KARPINOS, D. M., BESPYATYY, V. A., BESPYATYY, A. A., and REPECHENKO, G. A., Institute of Problems of Material Sciences, Academy of Sciences Ukrainian SSR; Zaporozh'ye "Kommunar" Automobile Plant

"Barrier Coating on Tungsten Fibers for Reinforced Nickel-Base Compositions"

Kiev, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 38-43

Abstract: The potentials of metal-base reinforced compositions appear to be limited due to the problem of stability of this class of materials, particularly by the stability of the interphase boundary of the composition at high temperatures. This study concerns a new technology of applying an antidiffusion coating to tungsten fibers as well as its reinforcing properties in a nickel-base composition. The experiment involved a $WAl_{12}$ compound applied by spraying in vacuum to tungsten fibers. The compound was



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USSR

FRANTSEVICH, I. N., et al., Poroshkovaya Metallurgiya, No 10, Oct 70, pp 38-43

found to provide a stable interphase boundary in a nickel-base composition at 1200° C for a minimum of 100 hours and at 1100°C for a minimum of 300 hours. The findings were confirmed by microstructural x-ray spectral analysis of the interphase boundary in a $WAl_{12}$ coating applied in 0.01-mm layers. Use was made of an MAR-1 microanalyzer to study the tungsten distribution in the composition along the interphase boundary after various durations of heat treatment.

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USSR UDC 669.715'5'74'891.018.8(088.8)

FRANTSEVICH, I. N., ZHURAKHOVSKIY, A. F., and PECHENTKOVSKIY, Ye. L., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Aluminum-Base Protective Alloy"

USSR Authors' Certificate No 263158, Cl. 40B, 21/00, (C 22 c) filed 15 May 67, published 29 May 70 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 1797 P)

Translation: An anti-corrosion alloy to protect storage spaces containing corrosives on board ships and in installations operating under conditions of marine corrosion contains the following (in %): Zn 17.5-20.0, Ca 4.3-5.3, Mn 0.25-0.4, admixtures of Fe < 0.25, Si 0.15, Cu < 0.01, and traces of Pb and Cd. It has an electrochemical equivalent of 0.51 g/l·hr, possesses heightened technological properties, and is economical.

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USSR UDC 620.179.14

ZAKHAROV, V. A., MIKHEYEV, M. N., FRANTSEVICH, V. M.

"Design of a Ferroprobe Coercitimeter with an Attached Electromagnet and Compensation Winding"

Defektoskopiya, No 4, 1971, pp 21-31.

Abstract: Results are presented from a study of the dependence of the ampere turns of demagnetization and compensation on the parameters of the magnetic circuit of a ferroprobe coercitimeter with an attached electromagnet and compensation winding, as well as certain experimental results. Simplified formulas are given for calculation of the ampere turns, as well as an example of calculation and a schematic diagram of the semiautomatic ferroprobe coercitimeter for testing the quality of heat treatment of products.

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USSR UDC 577.4

FRANTSIS, T. L.

"Synthesis of Time Asynchronous Automata With Delays"

V sb. Vopr. sinteza konechn. avtomatov (Problems in the Synthesis of Finite Automata -- Collection of Works), Riga, "Zinatne", 1972, pp 66-71 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V405)

Translation: An abstract model of a time asynchronous automaton is presented. The synthesis of time asynchronous automata with delay elements is discussed on the basis of this model using finite automaton matrices. Authors abstract.

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UDC 577.4

USSR

FRANTSIS, T. L.

"Synthesis of Temporal Asynchronous Atomata with Delays"

V sb. Vopr. sinteza konechn. avtomatov (Problems of Synthesizing Finite Automata -- collection of works), Riga, Zinatne Press, 1972, pp 65-71 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V405)

Translation: An abstract model of a temporal asynchronous automaton is presented on the basis of which a study is made of the synthesis of temporal asynchronous automata with delay elements using the finite automaton matrices.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 51:155.001.57:681.3.06

AYZENBERG, N. N., FRANTSUZ, A. G.

"Pattern Recognition in a Finite Set of Descriptions"

Probl. Bioniki. Resp. Mezhved. Nauchno-tekhn. Sb. [Problems of Bionics, Republic Interdepartmental Scientific and Technical Collection], No 4, 1970, pp 70-74, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V645 by the authors).

Translation: Problems are studied related to teaching of automata to recognize objects and situations described by a set of discrete characteristics. A class of canonical decision rules (CDR) is introduced, including a decision rule realizing error-free recognition in formation of a set of CDR on the basis of a representative learning sample. The basic theorems determining the properties of the CDR are formulated. Algorithms for the formulation of the CDR set and selection of the optimal CDR are presented.



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

FRANTSUZOV, M. M., PRYAKHIN, S. N.

"One Method of Compact Recording of Information"

Uch. Zap. Gor'kov. Un-t [Scientific Writings of Gor'kiy University], 1973, No 146, pp 76-78 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V637).

Translation: One method of compact recording of information is studied, in which punching of initial data is performed directly from the document, and versions of operation with this representation of data are demonstrated.



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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

UDC 621. 398.08

KARACHENTSEVA, N. YA., FRANTSUZOVA, K.D., GONCHAROVA, R.I., and ALEKSEYEVA, YE. I., Institute of Technical Cybernetics, Academy of Sciences Belorussian SSR

"Device for Monitoring the Reliability of Telemetry Data"

USSR Authors' Certificate No 306485, Cl. G08c 19/28, H 03 k 13/32, filed 29 Apr 72, published 3 Aug 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 1, Jan72, Abstract No 1A341P)

Translation: For monitoring the reliability of telemetry data a device is suggested which contains a clipping amplifier and subtraction unit connected via a threshold stage with an analyzer. In order to simplify the device and increase its reliability, it contains a differential filter and detectors, with the differential filter's input connected with the clipping amplifier's output, and the differential filter's outputs connected via the detectors with the subtraction unit's input.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 669.141.3:620.178.3

FRANYUK, V. A., and RANTSEVICH, V. B., Department of Physics of Non-destructive Control of the Academy of Sciences Belorussian SSR

"Investigation of the Dispersion of Energy in Carbon Steels in the Fatigue Process"

Moscow, Zavodskaya Laboratoriya, Vol 38, No 12, 1972, pp 1503-1505

Abstract: A study of the dispersion energy was made by the method of measuring hysteresis losses and registering the emissive heat power on steel 45 specimens annealed in vacuum at 650°C. Fatigue tests for cyclic tension-compression were made on the TsDM Pu-10 hydraulic pulsator machine at a 750 cycles/min loading frequency. The cimens show a similar character of changing. The application of infrared radiation pyrometers, which determine the temperature of a specimen by the power of its natural electromagnetic radiation, makes it possible to carry out high-precision non-destructive investigations. Two figures, one table, three bibliographic references.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 620.178.3:536.5

FRANYUK, V. A., RAINTSEVICH, V. B., and MAL'KO, I. I., Physics Branch of Indestructive Control of the Academy of Sciences, Belorussian Soviet Socialist Republic

"Radiation Method of Measuring the Temperature of Metal During the Process of Fatigue Tests"

Moscow, Zavodskaya Laboratoriya, Vol 37, No 12, 1971, pp 1476 –1477

Abstract : A method is suggested and the installation has been developed for remote temperature measuring of individual surface parts of the investigated specimen by cyclic tests. Owing to the scanning system, the temperature distribution on the specimen can be obtained in the form of oscillograms which are recorded on a film. The range of measured temperatures is 15 –300 °C, the measuring accuracy is ± 1 °C. The determination time of the endurance limit is considerably shortened because the speed of temperature increase is being determined by the magnitude of the applied voltage. Two illustr., three biblio. refs.
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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

F

Nickel

UDC 669.24:539.67

USSR

FRANYUK, V. A., and RAMEYKO, A. V., Department of Physics of Nondestructive Testing, Academy of Sciences, BSSR

"Influence of Magnetization of Nickel on the Rate of Relaxation of Internal Stresses and Elastic Aftereffect"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 3, Sep 70, pp 640-642

Abstract: This work experimentally demonstrates the influence of the degree of magnetization in constant and variable magnetic fields on the change in stress relaxation and elastic aftereffect in nickel. Before testing in a special device constructed for the purpose, the specimens were annealed in a vacuum at 1000° C and held at this temperature 3 hr, with subsequent cooling together with the furnace. The tests on stress relaxation and aftereffect were performed at room temperature. The curve of stress relaxation shows that there is an area of magnetic fields at 10-20 oe where the greatest change in relaxation is noted. The greatest drop in stress in alternating fields is achieved in fields corresponding to the region of maximum magnetic permeability. In the study of aftereffect, it was found that both in tests for stress relaxation and creep, magnetization with constant or variable fields influences the process of decreasing deformation in nickel specimens.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

FRATKIN, A. B., Department of Chemical Means of Agriculture Plant Protection

"Effective Pesticides Should Be Applied to the Fields"

Moscow, Zashchita Rasteniy, No 4, 1971, pp 6-8

Abstract: The Soviet chemical industry has increased the output of pesticides, fungicides, and herbicides almost 17-fold during the past 20 years, and many of them are new. At the same time production of almost all the ineffective inorganic insecticides (e.g., sodium fluoride, barium chloride) as well as many chemicals dangerous to warm-blooded animals (e.g., Paris green, calcium arsenite) or highly toxic to man (e.g., mercaptophos, thiophos, aldrin) has been halted. The supply of such comparatively new products as hexachloran (lindane), rogor, antio, carbophos, the seed fungicide granosan, the herbicide 2,4-D, and many others will be ample enough in 1971 to satisfy all the needs of the kolkhozes and sovkhozes for these compounds.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC: 519.20

FRAYER, B.

"On Convergence of Sums of a Random Number of Stepped Processes"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1971, 11, No 1, pp 199-205 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V137)

Translation: Two theorems on convergence to certain limiting stepped processes are proved for a sequence of sums of independent random processes $Y^{(n)}(t)=\sum_{r=1}^{\nu_n} X_r^{(n)}(t)$, where $\nu_n$ is a sequence of random quantities. In the first theorem the limiting process is a Poisson process, while in the second it is a Poisson process with random parameter. I. Kovalenko.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC: 519.214

SAAS, D. FRAYER, B.

"One Problem of the Theory of Summation With Random Index"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1971, 11, No 1, pp 181-187 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V57)

Translation: An investigation is made of the limiting behavior of sums of independent identically distributed random quantities where the number of terms is random and does not depend on the terms themselves. There is a well known hypothesis which states that if the sum of a nonrandom number of terms and a random index with appropriate normalization have limiting distributions, then the sum of a random number of terms also converges. Some generalizations of this hypothesis are considered in this paper. Authors' abstract.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 025 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--CONCERNING THE PROBLEM OF ASSOCIATED CRANIOCEREBRAL INJURIES IN CURRENT TRAUMATOLOGY -U-

AUTHOR-(03)-FRAYERMAN, A.P., ZVONKOV, N.A., LIKHTERMAN, L.B.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK KHIRURGII IMENI I. I. GREKOVA, 1970, VOL 104, NR 4, PP 122-126

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CEREBRUM, INJURY, TRAUMATOLOGY, BLOOD TRANSFUSION, HEMODYNAMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0044 STEP NO--UR/0589/70/104/004/0122/0126

CIRC ACCESSION NO--AP0105143

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

UNCLASSIFIED PROCESSING DATE--16OCT70

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CIRC ACCESSION NO--AP0105143

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASED ON THE ANALYSIS OF 367 CLINICAL OBSERVATIONS OF ASSOCIATED CRANIOCEREBRAL INJURIES AND A SERIES OF EXPERIMENTS ON RABBITS, A DETERMINATION OF THE ASSOCIATED CRANIOCEREBRAL INJURY IS GIVEN, AS WELL AS ITS RATIONAL CLASSIFICATION. THE PECULIARITIES OF DIAGNOSIS, CLINICAL COURSE AND SURGICAL POLICY IN SHOCK, OCCURRED DUE TO THE ASSOCIATED CRANIOCEREBRAL TRAUMA IN 36.2PERCENT OF CASES, ARE DISCUSSED. IT IS BELIEVED THAT IN CASE OF SHOCK BLOOD AND BLOOD SUBSTITUTING SUBSTANCES TRANSFUSIONS ARE GREATLY WARRANTED IRRESPECTIVE OF GRAVITY OF CRANIOCEREBRAL TRAUMA AND IN AMOUNTS NECESSARY FOR STABILIZING HEMODYNAMICS.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 535.233+629.7.018.1

KARPUKOV, Ye. G., NEGRUTSAK, L. M., RYZHIK, A. B., FRAYERMAN, S. I., and YURMANOV, Yu. A.

"Spectroscopic Investigation of Supersonic Heterogeneous Currents in a Combustible Condensed Phase"

Novosibirsk, Fizika goreniya i vzryva, No 3, 1973, pp 387-391

Abstract: In connection with the problem of the combustion of metallic particles in ultrasonic currents, the authors describe investigations into the relative energy spectrum distribution in the interaction of detonation waves in stoichiometric hydrogen-air mixtures with aluminum and magnesium powder suspensions. They conducted their experiments in accordance with the method of heterochromic photometry, using a formula developed in this article for the radiating surface temperature. A description of the experimental equipment, which includes a shock tube, pressure sensors, and the ISP-51 spectrograph, is given. The tube was 7.5 m long and had an inner diameter of 100 mm, with the suspended material placed in the closed end. Results of the experiments were analyzed by comparing the experimental data with the conclusions of hydrodynamic theory.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

F

Instruments and Measurements

USSR UDC 621.317.799:621.382

MUSTAFAYEV, Z., CHUN', I.Z., FRAYMAN, B.S.

"Method Of Measurement Of Thermal Conductivity Of Semiconductor Films"

Sb. Tr. po agron. fiz. (Collection Of Works On Agricultural Physics), 1970, Vyp 25, pp 104-110 (from RZh--Elektronika i yeye primeneniye, No 6, June 1970, Abstract No 6B510)

Translation: A method is proposed for determination of the thermal conductivity coefficient, based on measurement of the thermal conductivity of a packet of films on substrates, both in a stationary and a nonstationary regime. At first the thermal losses were determined and then the over-all thermal loss which consists of the thermal losses and the flux of the films measured. 2 ill. 6 ref. Summary.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 621.371.123

LITVAK, A. G., FRAYMAN, G. M., Scientific Radio Physics Institute

"Interaction of Opposing Electromagnetic Wave Beams in a Transparent Nonlinear Medium"

Gor'kiy, Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV, No 9, 1972, pp 1341-1348

Abstract: The Lagrange function description of electromagnetic waves was used to study the interaction of opposing beams of electromagnetic waves in a transverse nonlinear medium. The aberrationless approximation equations were obtained for the widths of beams with a gaussian intensity profile, and the critical self-focusing parameters were defined. The characteristics of the instability of opposing plane waves with respect to small disturbances of a three-dimensional structure are analyzed. The nature of the interaction of the opposing beams is illustrated by the problem of reflection of an electromagnetic wave beam from a plane layer of nonlinear material one of the boundaries of which is ideally reflecting.

The effect of a three-dimensional instability of opposing waves in a "defocusing" medium cannot be explained by ordinary geometric-optical beam principles, and this instability does not lead to the formation of isolated self-focusing beams. The instability can be easily interpreted in the language

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

LITVAK, A. G., et al., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV, No 9, 1972, pp 1341-1348

of four-photon interaction. The instability in any medium is possible only if the synchrony conditions are satisfied for the pumping waves and the amplified waves. A degenerate parametric interaction is also possible in the case of opposing waves when there is synchrony of two opposing disturbance quanta with two opposing pumping quanta. This interaction is possible only if the pumping quanta have the same electric field polarization.



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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 007 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--SCREW FEEDER FOR FREE FLOWING MATERIAL -U-

AUTHOR--GAVRILIN, A.V., FRAYMAN, R.S., REYBAKH, M.S., POLYAK, L.G.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1) 60-3

DATE PUBLISHED--------70

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

TOPIC TAGS--MATERIAL HANDLING, FEED MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1337 STEP NO--UR/0064/70/046/001/0060/0063

CIRC ACCESSION NO--AP0106114

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 007 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106114

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A GRAVITY SCREW FEEDER FOR THERMALLY UNSTABLE, FINELY DIVIDED SOLIDS IS DISCRIBED; ITS MAIN COMPONENT IS A ROTATING SPIRAL CHANNEL, AND ITS ACCURACY IS IN MOST CASES PLUS OR MINUS 1PERCENT, INDEPENDENTLY OF THE DIRECTION OF ROTATION.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 035 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--PROBLEMS OF IMMUNOLOGICAL REACTIVITY IN MENTAL PATIENTS WITH TOXOPLASMOSIS -U-

AUTHOR-(04)-MOTOVKINA, N.S., MIKHALEVA, L.V., KOTKOV, F.I., FRAYND, N.M.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA, 1970, VOL 70, NR 5, PP 718-721

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IMMUNOLOGY, MENTAL DISORDER, ANTIBODY, TEST, PSYCHOSIS, ENCEPHALITIS, CENTRAL NERVOUS SYSTEM, PARASITIC DISEASE, TOXOPLASMOSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1134 STEP NO--UR/0246/70/070/005/0718/0721

CIRC ACCESSION NO--AP0115153

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 035 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0115153

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS CONVENED A COMPREHENSIVE STUDY OF IMMUNOLOGICAL CHANGES IN THE ORGANISM OF MENTAL PATIENTS WITH TOXOPLASMOSIS. THE STUDIES WERE RELATED MAINLY WITH THE EXISTENCE OF COMPLETE ANTIBODIES, COMPLEMENT FIXATION TESTS, INCOMPLETE ANTIBODIES IN THE INHIBITIVE REACTIONS OF COMPLEMENT FIXATION AND SENSITIZATION BY A TOXOPLASMOTIC ALLERGEN (INTRACUTANEOS TESTS). 1504 PATIENTS WERE STUDIED. THE HIGHEST PER CENT OF POSITIVE REACTIONS TO TOXOPLASMOSIS WAS SEEN IN OLIGOPHRENIC PATIENTS (73.3PERCENT) AND IN PATIENTS WITH ENCEPHALITIS (67.0PERCENT); THE LOWEST WAS SEEN IN TRAUMATIC PSYCHOSES (26,3PERCENT). THE TOTAL NUMBER (IN ALL DISEASES) WAS 53,5PERCENT. COMPARING THE RESULTS IN GROUPS OF PATIENTS WITH TOXOPLASMOSIS WITHOUT MENTAL DISORDERS AND WITH DIVERSE MENTAL CHANGES IT WAS DISPLAYED THAT INCOMPLETE ANTIBODIES IN THE SECOND GROUP WERE REGISTERED 4 TIMES MORE FREQUENTLY THAN IN THE FIRST. THIS MAY SPEAK OF A MORE PROFOUND AFFECTION OF THE ORGANISM BY INFECTIONS AND AN INVOLVEMENT INTO THE PATHOLOGICAL PROCESS OF THE CNS. THESE CHANGES IN THE REORGANIZATION OF REACTIVITY ARE INTIMATELY CONNECTED WITH THE DURATION OF THE DISEASE. FACILITY: KAFEDRY PSIKHIATRII, KAFEDRA MIKROBIOLOGII VLADIVOSTOK MEDITSINSKOGO INST. AND TOKSOPLAZMOZNAYA LAB. KRAYEVOY SANEPIDSTANTSII.

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USSR UDC 621.397

AVDEYEV, B. YA., ANTONYUK, YE. M., BELYAYEV, V. YE., SEMENOV, YE. I., FREMEKE, A. V., Leningrad Electrotechnical Institute imeni V. I. Ul'yanov (Lenin)

Leningrad, IVUZ Priborostroyeniye, Vol XIII, No 3, 1970, pp 60-62

Abstract: It is shown that the method of adaptive quantization can be used when signal characteristics are right in multichannel telemetry systems to narrow the frequency band in each channel without a buffer memory. Expressions are given for the coefficients of contraction of redundant information and frequency band compression for the case of independent signals. The proposed procedure can be used to advantage in simplifying multichannel telemetry systems, improving reliability, and providing readings in real time.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 550.834

USPENSKIY, B. G., FREMD, V. M.

"A Seismograph"

USSR Author's Certificate No 347708, Filed 08/01/71, Otkrytiya, Izobreteniya Promyshlennye Obraztsy Tovarnye Znaki, No 24, Moscow, 1972, p 150.

Translation: A seismograph, containing a pendulum with one degree of freedom, a sensor of the movement of the inert mass relative to the base of the seismograph, a sensor signal amplifier-convertor, a device damping the mechanical oscillations of the systems in the drive and feedback branches, differing in that in order to improve stability and linearity of the measurement channel, decrease sensitivity to external and internal signals of non-seismic origin and expand the frequency range of the soil displacements recorded, including in the direction of longer periods, longer than the natural oscillating period of the pendulum used, it is equipped with a device to compensate for the motion of the base under the influence of movements of the soil, including a compensating seismograph output convertor, converting the output to proportional base displacement, containing a non-moving part rigidly connected to the soil and a moving part rigidly connected to the base, the moving part of the convertor being equipped with an elastic

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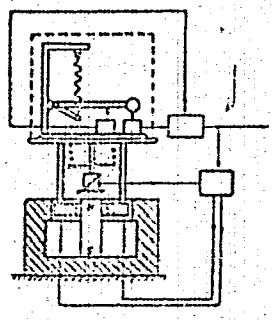
USSR UDC 550.834

USPENSKIY, B. G., FREMD, V. M., USSR Author's Certificate No 347708, Filed 08/01/71, Otkrytiya, Izobreteniya Promyshlennye Obraztsy Tovarnye Znaki, No 24, Moscow, 1972, p 150.

spring for connection to the soil.



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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

UDC: 532

DUTCHAK, Ya. Y., KLYM, M. M., FRENCHKO, V. S.

"Short-Range X-Ray Study in Bi-Pb-Sn Eutectic in the Liquid State"

Visnyk L'viv. un-tu. Ser. Fiz. (L'vov University Herald. Physics Series), 1971, vyp. 6(14), pp 57-59, 109 (from RZh-Fizika, No 6, Jun 72, Abstract No 6Ye143)

Translation: The paper presents the results of an x-ray study of a eutectic comprised of 41.9 at.% Bi + 21.1 at.% Pb + 37% Sn in the liquid state. Analysis of radial distribution curves shows quasi-eutectic distribution of atoms in this alloy in the complete melting region. It is found that when the temperature is raised to 433°K, the structure of the melt is described by statistical distribution of atoms. Authors' abstract.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

UDC 615.472:615.846

USSR

LIVENSON, A. R., FRENK, A. A., KRETLOVA, Ye. L., and SOBOLEVSKIY, S. V.,
All-Union Scientific Research Institute of Medical Instrument-Building, Moscow

"'Volna-2' Apparatus for Microwave Therapy"

Moscow, Meditsinskaya Tekhnika, No 4, Jul/Aug 72, pp 21-25

Abstract: In order to eliminate shortcomings of previous apparatus using electromagnetic waves for the treatment of patients, the Volna-2 apparatus was designed to use 65 cm wavelength. This makes it possible to penetrate human tissues twice as deep and to practically eliminate the standing waves in fat layers. The reflection coeff. scattering is also reduced by 1.8-fold. The portable apparatus generates electromagnetic waves of 460 MHz frequency, with a maximum output power of 100 watts. It consists of the wave autogenerator, wave power meter, interchangeable emitters, power supply unit, and automatics. Since it is impossible to measure the power absorbed by the patient's body, the measurement of the output power of the apparatus plays an important role in establishing the dosimetry for each patient. A duration of treatment combined with the apparatus output power makes it possible to find with sufficient accuracy the radiation dose received by the patient. The total error of the output power meter should not exceed ± 25 percent. A schematic diagram of the apparatus is given, with description of all details and materials used for its design.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

UDC 621.55

RUSHCHINSKIY, V. M., FRENKEL', A. Ya., and FRIDMAN, L. I., Central Scientific Research Institute of Large-Scale Automation

"A Method of Detecting Faulty Data Channels in a System for Monitoring a Technological Operation"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Aug 71, Author's Certificate No 309362, Division G, filed 24 Feb 69, published 9 Jul 71, p 188

Translation: This Author's Certificate introduces: 1. A method of detecting faulty data channels in a system for monitoring a technological operation such as a boiler installation by measuring the output parameters of the operation, computing the values of the same parameters by means of a mathematical model of the process being monitored, and comparing the two. As a distinguishing feature of the patent, in order to improve the reliability of the monitoring system when the discrepancy between the measured and calculated values of several output parameters of the operation goes beyond the permissible value, the controlling and disturbing actions disconnected from the inputs of the model are sequentially compared with those calculated on the model, and the defect is determined in the measurement channel for the input quantity for

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

RUSHCHINSKIY, V. M., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Aug 71, Author's Certificate No 309362, Division G, filed 24 Feb 69, published 9 Jul 71, p 188

which the difference between the computed and measured values is greater than a preassigned limit. Before the data channel is restored to working order, the appropriate calculated input signal of the model is substituted for the pickup signal for the given parameter. 2. A modification of this method is distinguished by the fact that when the discrepancy between the measured and calculated values of one of the output parameters of the operation goes beyond the permissible amount, the defect of the measurement channel for the given output parameter is determined, and the appropriate signal of the model is substituted for the signal from the pickup.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

Scientific Activities/MEDICAL

30 Dec 71 5 FPD:SOVIET SCIENCE

USSR

SETGAYLO, Ye., Meditsinskaya Gazeta, 20 Aug 71, p 3

hedge nettle, SOAK, colchicine prednisolone ointment, and the anticoagulant LK.

Biolakt, a new product widely used in childrens' institutions in and outside the republic is one of the more important advances in childrens' nutrition.

Most of Kirgizia consists of high mountains. High mountain physiology and pathology are therefore some of the main study fields pursued by scientific institutes and some chairs at the medical institute. The following organizations are participating in the study of these problems: the Institute of Physiology of the Siberian Department of the USSR Academy of Sciences, the Institute of Evolutionary Physiology and Biochemistry imen. I. M. Sechenov of the USSR Academy of Sciences (Leningrad), the Institute of Normal and Pathological Physiology of the USSR Academy of Medical Sciences, and others.

At the Kirgiz Medical Institute, problems of high mountain physiology are studied within the framework of the International Biological Program.

Information has now been accumulated on the functioning of the circulatory and respiratory systems of individuals who are permanent inhabitants of areas with elevations from 760 to 4,200 meters above sea level. Physiological reactions during 3/7

USSR

SETGAYLO, Ye., Meditsinskaya Gazeta, 20 Aug 71, p 3

short-term stays in high mountain areas are also being studied.

Research has recently begun and is continuing on the use of adaptation to high mountain areas for therapeutic-prophylactic purposes. Studies are being made of the course and treatment of ordinary diseases in high mountain areas and on diseases caused by mountain climate.

The number of publications is a partial indication of institute scientific activities. In the past five years over 50 methodological notes and 11 monographs have been written in Kirgizia. They include the monograph by [illegible] and [illegible] "On the Classification of Shock" and "Essay on Shock and Collapse." The classification of shock suggested by the authors is included in the GREAT MEDICAL ENCYCLOPEDIA, and the latter monograph has been awarded a prize by the Kirgiz Council of Ministers. Other publications include "The Cardiovascular System in High Mountain Areas" by M. Mirrakhimov, "Mountains and the Organism's Resistance" by M. Mirrakhimov and [illegible] Agadzhanyan, "Biosince," by [illegible] Perelygin, and "Underground Mineral Waters of the Kirgiz SSR" by a group of authors.

During 1971-1975 scientific research institutes and the Central Scientific Research and Problem Laboratories of the Medical Institute plan to work on 32 subjects 4/7

FRENKEL, G.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8



USSR

SETGAYLO, Ye., Meditsinskaya Gazeta, 20 Aug 71, p 3

involving one problem of national concern, nine problems in the USSR Ministry of Health plan, and 6 subjects in the Kirgiz SSR economic plan.

The Directives of the 24th CPSU Congress state that improvement of environmental health conditions is a major problem. Therefore, one of the first areas of scientific study in the Ninth Five-Year Plan will be to determine possible carcinogenic effects of various chemicals used in the food industry, agriculture, and some sectors of the national economy, and to develop methods for the treatment of malignant tumors. Steps will also be taken to prevent occupational diseases among workers at tobacco plantations.

Work conditions at sheep shearing points, enterprises for the initial processing of wool, and carding and fulling combines in Frunze are a main focus of researchers' attention.

Extensive industrial growth, and the development of new regions in our nation are planned during the Ninth Five-Year Plan. In particular, mountain regions will be widely developed. The second area of scientific research, therefore, will involve determination of optimal high mountain regions with regard to human activity, and determination of the therapeutic-prophylactic effects of high mountain adaptation for a
5/7

USSR

SETGAYLO, Ye., Meditsinskaya Gazeta, 20 Aug 71, p 3

number of cardiovascular and blood diseases. The Kirgiz Medical Institute and a number of national and republic scientific research institutes will participate in an integrated approach to the problems of high mountain physiology and pathology.

It is also planned to continue research on distribution patterns of mineral waters in Kirgiziya and to determine the possibilities of using them for treatment purposes. Studies will be made of adaptation mechanisms in the republic's middle and high altitude mountain spas, and scientifically-based methods will be developed to treatment hypertonic diseases, arteriosclerosis, chronic nonspecific polyarthritis, radiculitis, and chronic gynecological diseases, with consideration given to specific conditions at spas.

During 1971-1975 it is planned to increase the efficiency of immunization against tuberculosis, develop methods of determining the resistance of tuberculosis bacilli to antibiotics, determine the types and non-typical forms of bacilli, and improve the methods of functional and clinical diagnosis of this disease.

Scientific research and medical institutes are preparing to perform these tasks, but little attention is being given to the systematization of this work. This problem is now on the agenda of the day.
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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 532.517.4

FRENKEL', L. I., NAZARENKO, S. B., PANKOV, B. V.

"Instrument for Measuring Turbulence in Heterogeneous Flows"

Tr. Tambov. in-ta khim. mashinostr. (Works of the Tambov Institute of Chemical Machine Building), 1971, vyp. 7, pp 22-25 (from RZh--Metrologiya i Izmeritel'naya Tekhnika, No 3, Mar 72, Abstract No 3.32.788)

Translation: An instrument is described which permits measurement of the instantaneous velocity components of a gas in heterogeneous flows. The primary advantage of the instrument is the possibility of measuring the pulsation components of the velocity in a large frequency range (to 100 kilohertz). There are 4 illustrations and the bibliography has 3 entries.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 616.155.392-036.11-08

KHVATOVA, N. V., LORIYE, Yu. I., SOLOV'YEVA, Ye. A., and FRENKEL', N. A.
Hematological Department and Clinical Laboratory, Institute of Experimental and Clinical Oncology, Academy of Medical Sciences USSR, Moscow

"Comparative Evaluation of Various Methods for Treatment of Acute Leukemia"

Moscow, Terapevticheskiy Arkhiv, Vol 43, No 5, 1971, pp 3-7

Abstract: Adult patients with acute leukemia were treated using VAMP therapy (treatment with vinristine, methotrexate, 6-mercaptopurine, and prednisolone) TsAMP therapy (VAMP therapy modified by replacing vincristine with cyclophosphane, or therapy with rubomycin S. VAMP therapy was the most effective method of treating primary acute lymphoblastic leukemia (100% complete remission), but was less effective (33% complete remission) in resistant forms of leukemia that had developed in patients already treated. It was ineffective in acute myeloblastic leukemia. The frequency of complete remissions after TsAMP therapy was 66% in primary acute lymphoblastic leukemia, 33% in resistant cases (relapses) of this disease, 14% in primary acute myeloblastic leukemia vs. 0% after VAMP therapy, and 0% in relapses in myeloblastic leukemia. Rubomycin S was the most effective drug in the treatment of primary acute myeloblastic leukemia, producing 33% of complete remissions,

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USSR

KHVATOVA, N. V., et al., Terapevticheskiy Arkhiv, Vol 43, No 5, 1971, pp 3-7

but was no more effective in relapses of this disease than the combinations of drugs applied in VAMP and TsAMP therapy. Upon treatment of acute lymphoblastic leukemia with rubomycin, the frequency of complete remissions was 66 and 14% in primary cases and relapses, respectively. Rubomycin had a more severe effect in suppressing normal hemopoiesis, particularly in acute myeloblastic leukemia, than the combinations of drugs administered in VAMP or TsAMP therapy.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PREPARATION AND STUDY OF AROMATIC OILS ,RUBBER, SOFTENERS FROM VOLGOGRAD PETROLEUMS -U-

AUTHOR-(05)-ZMIYEVSKIY, P.K., SALNIKOV, D.D., KATS, KH.SH., FRENKEL, R.SH., KURYANOVA, I.S.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (2), 9-10

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--AROMATIC HYDROCARBON, PHENOL, SOLVENT EXTRACTION, THERMAL STABILITY, PETROLEUM PRODUCT, ELASTICITY, RUBBER CHEMICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1525 STEP NO--UR/0318/70/000/002/0009/0010

CIRC ACCESSION NO--AP0118512

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118512

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PHENOLIC EXT. FROM ZHIRNOVSK AND KOROBKOVSK PETROLEUM DEASPHALTATE WAS AGAIN EXTD. WITH 2.5 PARTS BY VOL. PHOH AND 10PERCENT H SUB2 O, GIVING A HIGHLY AROMATIC EXT. AND A NAPHTHENIC AROMATIC DISTILLATE. THE 2 PRODUCTS WERE GOOD SOFTENERS FOR RUBBER, YIELDING VULCANIZATES WITH ELASTICITY AND THERMAL STABILITY HIGHER THAN THOSE OBTAINED WITH THE USUAL ONES.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

UNCLASSIFIED

1/2 011 PROCESSING DATE--02OCT70

TITLE--SULFUR VULCANIZATION OF CURED RUBBERS -U-

AUTHOR-(02)-FRENKEL, R.SH., STEPANOVA, R.N.

F

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 259,876
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--06JAN70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--VULCANIZATION, SULFUR, RUBBER, PATENT, CAPROLACTAM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0244 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0111438

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 011 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AA0111438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACCELERATORS, SUCH AS THIOCAPROLACTAM, WERE USED FOR THE S VULCANIZATION OF CURED RUBBERS BASED ON UNSATD. RAW RUBBERS. IN ORDER TO INCREASE THE VULCANIZATION RATE AND IMPROVE THE QUALITY OF THE VULCANIZED RUBBERS.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 010 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0128377

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. S VULCANIZATION OF RUBBER MIXES BASED ON UNSATD. RAW RUBBERS IS CARRIED OUT WITH ZNO OR GLYCINE COMPLEXES AS ACTIVATORS.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 011 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--VULCANIZATION OF BUTADIENE NITRILE RUBBER -U-

AUTHOR--FRENKEL, R.SH.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,436

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--VULCANIZATION, NITRILE RUBBER, BUTADIENE, CHEMICAL PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1755 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136995

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 011 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136995

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BUTADIENE NITRILE RUBBER IS VULCANIZED BY ADDING 1-10 PHR. VULCANIZING AGENT.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--ACTION OF VULCANIZATION ACTIVATORS -U-

AUTHOR--FRENKEL, R.SH.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(3), 47-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--VULCANIZATION, CHEMISORPTION, METAL OXIDE, ZINC OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0778 STEP NO--UR/0138/70/029/003/0047/0048

CIRC ACCESSION NO--AP0124447

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124447

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHEMISORPTIVE ACTIVITY OF VARIOUS METAL OXIDES WAS DISCUSSED. THE ADVANTAGES OF ZNO OVER OTHER OXIDES AS A VULCANIZATION ACTIVATOR WERE ATTRIBUTED TO GREATER ELECTRON AFFINITY AND NARROWER FORBIDDEN ZONE IN ZNO CRYSTALS. FACILITY: VSES. NAUCH. ISSLED. KONSTR. TEKHNOL. INST. REZIN. PROM., VOLZHSKII, USSR.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 577.1:612.015.33:538.6

MISHCHENKO, L. I., FRENKEL', S. R., Khar'kov Scientific Research Institute of the Hygiene of Labor and Occupational Diseases

"Variations in Nitrogen Compounds in the Nerve Tissues of Animals Under the Effect of a UHF Electromagnetic Field"

Kiev, Ukrains'kiy Biokhimichniy Zhurnal, Vol 44, No 4, 1972, pp 483-486

Abstract: A study was made of the preformed ammonia, glutamine, glutamate and nitrogen amide content of proteins, the AMP content and the activity of AMP deaminase in the brain of rats subjected to UHF electric and magnetic fields.

It was found that under the effect of an electric field the ammonia content rises. This can be caused to a significant degree by a drop in the nitrogen amide content in the proteins of the brain tissue and the activity of the AMP deaminase. The effect of the magnetic field is characterized by a drop in the ammonia and glutamine content and an increase in the AMP content and the nitrogen amide in the brain proteins.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

UDC 535

SHALTYKO, L. G., SHEPELEVSKIY, A. A., FRENKEL', S. Ya.

"Small-Angle Scattering of Light in Liquid Crystals"

Uch. zap. Ivanov. gos. ped. in-t (Scientific Notes of Ivanovo State Pedagogical Institute), 1972, Vol. 99, pp 124-146 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D783)

Translation: The scattering intensities of polarized light from three models of optically anisotropic structures encountered in lyotropic liquid crystals are calculated. These were an optically anisotropic cylinder with a cholester distribution of the polarization capacity within it, an optically anisotropic cylindrical shell, and an optically anisotropic torus. The corresponding diffraction formulas were obtained. The theoretical distribution of intensity obtained by computer tabulation of the functions satisfactorily corresponds to the experimentally obtained pictures of small-angle scattering of light from lyotropic liquid crystals of poly-γ-benzyl-L-glutamate. 34 ref. Resume.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

UDC 620.183:677.4

USSR

TUYCHIYEV, Sh., SULTANOV, N., GINZBURG, B. M., and FRENKEL', S. Ya., Institute of High-Molecular Compounds, Academy of Sciences of the USSR

"Effect Which Drawing has on the Supermolecular Structure of Polymer Fibers"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 12, Series A, No 9, Sep 70, pp 2,025-2,035

Abstract: Wide-angle and narrow-angle x-ray diffraction methods are used to study polyvinyl alcohol fibers with various degrees of hot drawing. X-ray studies were also done on iodine-contrasted specimens. It is shown that for a simple two-phase model of the supermolecular structure of oriented fibers, the size of amorphous sections increases with the degree of hot-drawing, reaching 86-92% of the crystallite density for "dry" polyvinyl alcohol fibers. As the degree of drawing increases, there is a slight reduction in the crystallite density (by approximately 1%), and the lattice type goes from monoclinic toward orthorhomic. A scheme is proposed for the rearrangements in the supermolecular structure of polyvinyl alcohol fibers with an increase in the degree of hot-drawing. According to this scheme, as the degree of hot-drawing increases there is a rise in the number of continuous chains and a reduction in

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

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TUYCHIYEV, Sh., et al, Vysokomolekulyarnyye Soyedineniya, Vol 12, Series A, No 9, Sep 70, pp 2,025-2,035

the number of folded chains. At the same time, there is somewhat of a reduction in the transverse dimensions of fibrils due to a reduction in the number of blocks in the "mosaic" in the fibril crystallites, accompanied by an increase of shear fractures in the fibril packing. Drawing increases the density of both intrafibrillar and interfibrillar amorphous layers. On the whole, the structure of the fibers becomes more uniform. The authors thank D. Ya. TSVANKIN, A. I. SLUTSKER, Yu. V. BRESTKIN and S. L. DOBRETSOV for discussing the results and for useful criticism, and also A. G. POVESHCHENKO for constant interest in the work.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

UNCLASSIFIED PROCESSING DATE--03JUL70

TITLE--RADIOISOTOPE RENOGRAPHY IN PATIENTS SUFFERING FROM ATHEROSCLEROSIS .

-U-

AUTHOR--MAKSIMOVA, I.L., FRENKEL, V.KH.

17
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22

COUNTRY OF INFO--USSR

SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 1, PP 45-49

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ATHEROSCLEROSIS, RADIOISOTOPE, RENAL TUBULE TRANSPORT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1977/1273 STEP NO--UR/0497/70/048/001/0045/0049

CIRC ACCESSION NO--AP0044597

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

Acc. Nr: AP0014597 Ref. Code: UR0497

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48, Nr 1, pp 45-49

# RADIOISOTOPE RENOGRAPHY IN PATIENTS SUFFERING FROM ATHEROSCLEROSIS

I. L. Maksimova, V. Kh. Frenkel'

Summary

The authors employed radioisotope renography for the study of the functional state of the kidneys in patients with general atherosclerosis. These investigations enabled to establish different disturbances, mostly of the secretory function of renal tubules, the markedness of which depended upon the severity of the disease. Radioisotope renography is conducive to the recognition of clinically undetectable functional disturbances of the kidneys in patients affected with general atherosclerosis.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC:669.187.6

VOLKOV, S. Ye., PAVPEROVA, I. A., KLYUYEV, M. M., PUPYNINA, S. M., and FRENKEL, YA. A.

"Improvement of the Quality of Type Kh25N16G7AR (EI835) Steel"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 169-177

Translation: The possibility is studied of improving the quality of type EI835 steel by double electric slag remelting. The repeated electric slag remelting allows a significant reduction in the contamination of the metal with non-metallic inclusions. However, in order to produce metal of the highest quality, it is necessary to consider the temperature mode of the process and the composition of the flux.

The influence of the composition of the working flux on the nature of non-metallic inclusions following electric slag remelting has been established. For example, after remelting under a flux with increased content of basic oxides, the inclusions contain calcium oxide and magnesium oxide. Remelting beneath a flux, the composition of which included aluminum oxide, led to an increase in the content of alumina in the inclusions. Based on these facts, an assumption is made concerning the mechanism of interaction of slag and metal during the process of electric slag remelting. 4 figures; 3 tables; 3 biblio. refs.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 013 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--CERENKOV RADIATION IN NONLINEAR UNI AXIAL CRYSTALS -U-

AUTHOR-(02)-MINEYEV, V.S., FRENKIN, A.R.

F

COUNTRY OF INFO--USSR

SOURCE--VESTNIK MOSKOVSKOGO UNIV. FIZ. ASTRON. (USSR), NO. 2, P. 222-5 (1970)

DATE PUBLISHED--------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--CHERENKOV RADIATION, UNIAXIAL CRYSTAL, CHARGED PARTICLE, PARTICLE MOTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605029/D03 STEP NO--UR/0188/70/000/002/0222/0225

CIRC ACCESSION NO--AP0141718

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 013 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0141718

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF SOME SINGULARITIES OF THE CERENKOV RADIATION IN A NONLINEAR UNIAXIAL CRYSTAL WHEN THE RELATIVISTIC MOTION OF CHARGED PARTICLES IS ALONG THE OPTICAL AXIS OF CRYSTAL.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 512.7

FREIKIN, R. R.

"On Decomposability and Reducibility in Certain Classes of n-Groupoids. I"

V sb. Mat. issledovaniya (Mathematical Research -- Collection of Works), Vol 6, Vyp. 2, Kishinev, "Shtiintsa," 1971, pp 122-137 (from RZh-Matematika, No 2, Feb 72, Abstract No 2A235 from author's abstract)

Translation: The article considers the possibility of the representation of an n-ary operation through operations of lesser "arities," subject to certain natural requirements; if there is such a representation, the operation is said to be decomposable, and if the representative operations can be chosen to be coincident, it is said to be reducible. If all the operations considered belong to a certain class $\mathfrak{R}$, the concepts of $\mathfrak{R}$-decomposability and $\mathfrak{R}$-reducibility respectively are defined. It is shown that if $\mathfrak{R}$ is the class of all reduced operations or all division operations, $\mathfrak{R}$-reducibility coincides with reducibility. With the methods of an article by V. D. BELOUSOV and M. D. SANDIK (RZh-Matematika, 1966, Abstract No 8A197) as his basis, the author obtains conditions under which a reduced operation is expressed through reduced operations of a lesser "arity." The article also shows that every n-groupoid is embedded into a reducible and into a divisible n-groupoid; and every reduced

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USSR

FRENKIN, B. R., Mat. issledovaniya, Vol 6, Vyp. 2, Kishinev, "Shtiintsa," 1971, pp 122-137

n-groupoid, into an n-quasi-group; in the latter case BRUCK's method (BRUCK, R. H., A Survey of Binary Systems, Berlin-Heidelberg-New York, 1966) is used.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 541.135.52

KUKOZ, F. I., KUDRYAVTSEV, YU. D., MAKOGON, YU. O., and FRESENKO, L. N., Novocherkassk Polytechnic Institute

"Behavior of Nickel During a-c Electrolysis in Alkali Solutions. 1. Effect of the Alkali Nature and the Current Density"

Moscow, Elektrokhimiya, Vol 7, No 7, Jul 71, pp 990-994

Abstract: The intense destruction under certain conditions, of nickel electrodes in alkaline solutions by a-c electrolysis was experimentally investigated on electrodes in the form of rectangular plates of a total area of approximately 1 $cm^2$ of smooth nickel, type NP-2. Symmetrical and asymmetrical alternating currents with different amplitude values and similar duration of half-periods of anode and cathode currents were obtained. Destruction of Ni took place only when $i_c \cdot i_a \geq 1$ and $i_a \neq 0$, where $i_c$ and $i_a$ are the amplitudes of currents in the cathodic and anodic half-periods, respectively. Tabulated and experimental data show that the destruction rate increases in the series LiOH, NaOH, and KOH and passes the maximum at $i_a = 0.25$ $a/cm^2$ for constant value of $i_a = 1$ $a/cm^2$ and that on the boundary metal-

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

KUKOZ, F. I., et al., Elektrokhimiya, Vol 7, No 7, Jul 71, pp 990-994

-solution there exists a linear impedance by current densities up to 1 a/cm$^2$. It was found that the destruction of Ni is mainly dependent on processes on the surface of the electrode during the cathodic half-period of polarization and that the effect of cations of the alkaline metal in the destruction process of Ni is apparently combined with the swelling of reducible Ni hydroxides. Two illustrations, one table, six bibliographic references.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT7

TITLE--ELECTROPHYSICAL PROPERTIES OF PYROLYTIC SILICON DIOXIDE FILMS ON SILICON AND GERMANIUM -U-

AUTHOR-(03)-KALNINA, R., FELTINS, I., FREYBERG, L.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(4), 813

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ELECTRIC PROPERTY, SILICON DIOXIDE, GERMANIUM, PHYSICAL PROPERTY, SURFACE FILM, PYROLYTIC MATERIAL, DIELECTRIC STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0931 STEP NO--UR/0449/70/004/004/0813/0813

CIRC ACCESSION NO--AP0121533

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121533

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SURFACE D. OF STATE AND CHARGE D. IN PYROLYTIC SIO SUB2 FILMS DEPOSITED ON P TYPE GE AND SI WERE STUDIED BY CAPACITANCE MEASUREMENTS. SIO SUB2 WAS DEPOSITED IN AR OR O BY THERMAL DISSOCN. OF SI(OET) SUB4 AT 700DEGREES. FILMS DEPOSITED IN O EXHIBIT HIGHER DIELEC. STRENGTH AND LOWER D. OF STATES THAN THE OTHERS.

FACILITY: FIZ.-ENERG. INST., RIGA, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

(4)

SO: JPRS 59279
14 June 73

STUDY OF THE GROWTH OF MONOCRYSTALLINE FILMS OF SILICON CARBIDE ON SILICON

all-semiconductor materials

[Article by I. P. Neymane, M. K. Sanz, I. A. Feltyn', L. A. Freyberg; Novosibirsk, Protsessy Rosta i Struktura Monokristallicheskikh Sloyev Poluprovodnikov — Trudy Simpoziuma, Russian, Part 2, 1969, pp 155–159]

The silicon carbide films on silicon are of interest thanks to the possibility of simultaneous use of valuable semiconducting properties of silicon and silicon carbide and also in connection with the fact that those materials differ sharply with respect to crystallographic properties. The difference in the permanent lattices of silicon and silicon carbide is 20.9 percent at the same time as for the semiconductors germanium and gallium arsenide it is a total of 0.007 percent. It is clear that obtaining high-quality SiC films on Si is a difficult problem.

In the literature papers appeared on this problem in 1965–1966. In them there was a report on the growth of the SiC films on Si in the presence of graphite [1] or the effect of methane [2] in an argon atmosphere, thermal arrangement of silicon tetrachloride and propane in the hydrogen flow [3] and chlorosilanes both in hydrogen and in argon [4, 5].

The listed methods were used to obtain silicon carbide films from 400 Å to several microns thick.

In reference [2], a study was made of the growth rate of films as a function of temperature and partial pressure of methane. It was found that the film thicknesses directly proportional to the value of $t^{1/2}$.

$(\ln P + A)^{1/2} \cdot \exp(-4q/2kT)$ where t is the reaction time; $\overline{P}$ is the partial pressure of methane; T is the reaction temperature; $\overline{q}$ is the electron charge; k is the Boltzman constant. The process of growing SiC is considered as the diffusion of carbon into the silicon.

The studies of the crystal lattice by the methods of electron diffraction and x-rays demonstrated that the indicated methods can be used to obtain monocrystalline epitaxial films of β-type SiC. The authors of reference [2] discovered that the films obtained by them comprise two layers — monocrystalline and polycrystalline. The polycrystalline layer is observed on the silicon



FREYBERG, L.A.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC: 621.382.002

VIRTMANIS, A. S., FELTYN', I. A., and FREYBERGA, L. A.

"Influence of Local Defects in Dielectric Films on Capacitive Characteristics of MIS Structures"

Riga, Izvestiya Akademii nauk Latviyskoy SSR -- Seriya fizicheskikh i tekhnicheskikh nauk, No 3, 1972, pp 23-26

Abstract: Noting that up until now the influence of local defects in the dielectric film in MIS structures on the capacitance-voltage curve of these devices has not been studied, the authors investigate the curve for structures in which local breakdowns have occurred. The structures investigated were made with films of silicon dioxide obtained by thermal oxidation, by reactive sputtering of the silicon in a high-frequency gas discharge plasma, by oxidation of silicon hydride in a plasma, and by the oxidation of tetraetoxysilane. Mixed films of silicon carbide and silicon oxide on silicon were also used. The measurement of the capacitance-voltage characteristic curves was conducted with equipment operating on the principle of comparing capacitive currents through the specimen tested and a standard capacitance. A range of frequencies between 1 kHz and 1 MHz was used. Several such curves are plotted, and a photograph of a burned-out electrode in one of the devices is shown.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC: 621.382.002

KALNYNYA, R. P., FELTYN', I. A., FREYBERGA, L. A., EGLITIS, I. E., AND BYMANIS, I. A.

"Silicon Oxide Films Obtained by Reactive Sputtering of Silicon in a High-Frequency Plasma"

Riga, Izvestiya Akademii nauk Latviyskoy SSR -- Seriya fizicheskikh i tekhnicheskikh nauk, No 5, 1972, pp 58-63

Abstract: A description is given of the use of reactive sputtering in a high-frequency gas-discharge plasma for the deposition of silicon oxide films. Monocrystalline silicon was used as the source and a high-frequency discharge was employed since they broaden the chemical composition of the film and result in high productivity. The purpose of this paper is to establish a connection between the condition of the films and their electrophysical parameters. The films were grown on silicon substrates set at right angles to the target in an argon-oxygen plasma in which the oxygen content was varied from 0-100%. Further details of film deposition and of the experimental apparatus are given together with the absorption spectra of $SiO_2$ films and curves illustrating the electrophysical characteristics of the films. The authors are associated with the Physics-Energy Institute, Academy of Sciences of the Latvian SSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

UDC: 621.382.2

ZHAGATA, L. A., KALNINYA, R. P., FELTYN', I. A., and FREYBERGA, L. A.

"Dielectric Films Obtained by Low-Temperature Oxidation of Tetraetoxysilane"

Riga, Izvestiya Akademii nauk Latviyskoy SSR -- Seriya fizicheskikh i tekhnicheskikh nauk, No 5, 1972, pp 34-39

Abstract: Experimental research is described for the formation of films by oxidized tetraetoxysilane in the temperature range of 270-370° C in dry oxygen and in a mixture of oxygen and water vapor. Changes in the composition and characteristics of the films as a result of the changes in the deposition techniques were also observed in the course of these experiments. The specimen films were grown on chemically and mechanically polished n- and p-type silicon substrates in a device described in an earlier article published in this same journal (No 1, 1965, p 26) by the second and third authors named above. Film thickness was measured by the method of interference lines and film composition was determined by the method of infrared absorption. Electrical characteristics of the films were investigated by the MOS structure method. The authors are associated with the Physics-Energy Institute. Academy of Sciences of the Latvian SSR.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC 621.382:621.317.799

FREYBERGA, I.m.

"Determination Of The Density Of The States Of MIS Structures By The Capacitance Method"

V sb. Poluprovodniki i ikh primeneniye v elektrotekhn. (Semiconductors And Their Application In Electrical Engineering--Collection Of Works), No 4, Riga,"Zinatne," 1970, pp 137-155 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B435)

Translation: The paper analyzes the effect of the physical properties of a dielectric film on the volt-farad chacteristics of a metal-insulator-semiconductor structure. Various methods are considered for determining the density of the surface states with respect to the volt-farad characteristics, their precision and the possibility of their use for investigation of $SiO_2$ and SiC films, obtained by the method of paraphase resolution. The precision is evaluated of determining the density of the surface states in the presence of mobile and immobile charges in the dielectric. 16 ref. V.K.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC: 539.293.546.28

FELTYN', I. A., FREYDBERGA, L. A., EGLETIS, I. YE., EYMANIS, I. A.

"Investigation of Metal-Oxide -- Semiconductor Structures with Silicon Dioxide Films Deposited in a High-Frequency Gas-Discharge Plasma"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, No 2, 1970, pp 48-52

Abstract: By measuring the capacitance of MOS structures, the charge density in the oxide as well as the density and energy distribution of surface states on the oxide-semiconductor interface for MOS structures with silicon dioxide films was determined. The films were applied on p-type silicon substrates by decomposing a mixture of tetraethoxysilane and molecular oxygen in a gas discharge plasma excited by high-frequency (12 MHz) eddy currents inside a pyrex cylinder 30 mm in diameter within a second cylinder 40 mm in diameter. A coolant was circulated between the tubes. The discharge was excited by a 12-turn inductor (H = 5 oersteds) wound over the outside cylinder. The substrate surface was cleaned by chemical etching and argon ion bombardment immediately before applying the film. An interference method was used for determining film thickness. The charge density of the films was found to be $(1\text{-}5)\cdot 10^{16}\ m^{-2}$, with constant density of surface states equal to $5\cdot 10^{15}\text{-}2\cdot 10^{16} m^{-2} v^{-1}$ on the oxide-semiconductor interface. It was found that the films contain no charge which is mobile at room temperature, and the MOS

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

FELTYN', I. A., et al., Izvestiya Akademii Nauk Latviyskoy SSR, No 2, 1970, pp 48-52

structures with these films show no hysteresis effect. They are stable for long periods of voltage application.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

GAYLITIS, A. K., FREYBERG, Ya. Zh.

"Self-Excitation of a Magnetic Field by a Pair of Circular Vortices"

7-ye. Soveshch. po Magnit. Gidrodinamike. T. 1. [Seventh Conference on Magnetic Hydrodynamics, Vol 1 -- Collection of Works], Riga, Zinatnye Press, 1972, pp 193-195, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 B69, by L. M. Baltin).

Translation: The possibility is studied of self-excitation of a magnetic field by an axisymmetrical pair of stationary circular vortices in an unlimited, homogeneous, conducting, incompressible fluid, without using the limitation $R \ll \min(z_0, a)$; a special form of the $v_x(r)$ function is used. It is assumed that the motion is concentrated either in a thin layer (thickness $\delta \ll R$) on the surface of the torus, while the remaining portion of the fluid is stationary. The dependence of field on azimuth $\phi$ is retained harmonic

$$B \sim e^{im\varphi}, \; m = \pm 1, \; \pm 2, \; \pm 3, \ldots$$

but $R_m$ is defined as the Eigen value of a certain integral equation. Integration is performed only with respect to the area of motion of the

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

GAYLITIS, A. K., FREYBERG, Ya. Zh., 7-ye. Soveshch. po Magnit. Gidrodinamike. T. 1., Riga, Zinatnye Press, 1972, pp 193-195.

fluid, i.e., with respect to the surface layer of the two toruses. The rates of motion in the two vortices are assumed identical and opposite, allowing integration to be performed for a single vortex. The Eigen values $R_m$ are calculated by computer.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

Magnesium

F

USSR UDC: 669:666.767.501

BAS'YAS, I. P., KOSOLAPOV, YE. F., FREYDENBERG, A. S.

"The Effect Which Agents Added to Caustic Magnesite Powders, Chromium-Containing Materials, and Calcined Dolomite Have on the Stability of Fettlings in Open-Hearth Furnaces"

Tr. Vost. in-ta ogneuporov (Works of the Eastern Institute of Refractories), 1969, vyp. 9, 48-58 (from RZh-Metallurgiya, No 1, Jan 70, Abstract No 1B56)

Translation: Studies were done on 140-900 ton open-hearth furnaces in the Magnitogorsk and Serov metallurgical combines, in the Zhdanov Metallurgical Plant imeni Il'ich and in the Makeyevka Metallurgical Plant imeni Kirov. It was found that the stability of reconditioned fettlings is satisfactory when a mixture of 80-85% magnesite powder with maximum grain size of 8-10 mm and 15-20% caustic magnesite is used for reconditioning. The chromic oxide concentration in the powders should not exceed 5-10% as otherwise the reduction of chromium and conversion to metal will exceed the standards set for most types of steel produced in open-hearth furnaces. Besides, chromic oxide concentration in excess of 5-10% leads to an increase in the rate of deterioration of the fettlings. It was found that fettlings have nearly the same stability when they are reconditioned with a mixture having a grain composition close to that of MPP powder,

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR

BAS'YAS, I. P., et al., Tr. Vost. in-ta ogneuporov (Works of the Eastern Institute of Refractories), 1969, vyp. 9, 48-58 (from RZH-Metallurgiya, No 1, Jan 70, Abstract No 1B56)

and with 80-82% fine-grained magnesite powder and 18-20% enriched 0-2mm dolomite fraction (dolomite production waste), as when MPP powder is used. 3 illustrations, 10 tables, bibliography of 13 titles. Authors' abstract.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 006 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--FORMATION KINETICS OF CLINKER MINERALS IN THE PRESENCE OF ALKALIES -U-

AUTHOR-(03)-EYDUKS, J., FREYDENFELD, E., LAGZDINA, S.

COUNTRY OF INFO--USSR

SOURCE--TSEMENT 1970, (1), 17-18

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MINERAL, SODIUM FLUORIDE, ALKALI, SODIUM CARBONATE, CALCIUM OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1982 STEP NO--UR/0101/70/000/001/0017/0018

CIRC ACCESSION NO--AP0118941

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 006 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118941

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF BONDING OF CAO WERE STUDIED ON FIRING OF A 3CACO SUB3 PLUS SIO SUB2 MIX AT 000-1450DEGREES IN THE PRESENCE OF NA SALTS, IN ORDER TO INVESTIGATE THE EFFECT OF ALKALINES ON CLINKER FORMATION. NACL, AND NA SUB2 CO SUB3 AND NA SUB3 PO SUB4 SPEEDED UP THE REACTION AT 900DEGREES AND 1100-1300DEGREES, RESP., WHILE NA SUB2 SO SUB4 AND NAF PROMOTED AN INTENSIVE REACTION THROUGHOUT, AS WAS CONFIRMED BY X RAY, THERMOGRAPHIC, AND IR SPECTROSCOPIC ANALYSES INDICATING THE FORMATION OF A LIQ. PHASE AND MODIFICATION OF THE LATTICE DEFECTS OF THE REACTION PARTNERS.

FACILITY: RIZH. POLITEKH. INST., RIGA, USSR.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 030 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--MODIFICATION OF POLYESTER URETHANES BY RIGID POLYMERS FOR PREPARING ARTIFICIAL LEATHER FOR CLOTHING -U-

AUTHOR-(04)-FREIDGEIM, K.I., ALEKSEYENKO, V.I., YABKO, YA.M., POLINSKIY, S.L.

COUNTRY OF INFO--USSR

SOURCE--KOZH.-OBUV. PROM. 1970, 12(2) 41-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LEATHER, POLYURETHANE RESIN, POLYOXYPROPYLENE, GLYCOL, ORGANIC ISOCYANATE, POLYVINYL CHLORIDE, NITROCELLULOSE, ACRYLONITRILE, COPOLYMER, ACETATE, POLYMER PHYSICAL PROPERTY, PLASTIC MECHANICAL PROPERTY, CLOTHING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0489 STEP NO--UR/0498/70/012/002/0041/0044

CIRC ACCESSION NO--AP0107094

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

2/2 030 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107094

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A POLYESTER URETHANE (I) (BASED ON A PREPOLYMER PREPD. FROM POLY(OXYPROPYLENE) GLYCOL OF MOL. WT. 1000 AND 2,4,TOLYLENE DIISOCYANATE IN A MOLE RATIO OF 1:2) WAS MODIFIED WITH POLY(VINYL CHLORIDE) (II), CHLORINATED II, NITROCELLULOSE, AND A 30PERCENT ACRYLONITRILE VINYL ACETATE COPOLYMER (III) DISSOLVED IN HCONME SUB2. III MODIFIED I HAD SUPERIOR PHYSICOMECH. PROPERTIES, I.E. MIN. RIGIDITY AND VAPOR PERMEABILITY (3.9 MG-CM PRIME2 HR).

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

USSR UDC: 621.792.3:539.4

FREYDIN, A. S., Candidate Technical Sciences, and VU BA KIYEM, [redacted] Technical Sciences

"Durability of Metal Adhesions With Epoxy Glues"

Moscow, Vestnik mashinostroyeniye, No. 11, 1970, pp 51-53

Abstract: This article gives the results of investigations of joints between metals made through the use of various types of epoxy glues. The joints were tested for creep under stretching, compression, and torsion forces. The glues were modified, widely used epoxy materials on the basis of ED-5 resins with the type marks K-115, EPTs-1, K-153, K-139, and K-147, which differed in type and amount of modifier. In the K-115 and EPTs-1 glues, the modifier material was polyester acrylate MGF-9; in K-153, it was liquid thiokol NV; and in K-139 and K-147, it was liquid nitrile rubber SKN-26-1. The authors found, through special experiments, that the type of glue material, its content of aluminum alloy or steel, had little effect in tests of the material strength. A skutch of the testing method and the specimens tested is shown.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--COMPOSITION OF PRODUCTS FROM THE OXIDATION OF THE METHYL ESTER OF CYCLOHEXANECARBOXYLIC ACID -U-

AUTHOR-(02)-VAYNTRAUB, YU.YA., FREYDIN, B.G.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(1), 68-72

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CARBOXYLIC ACID ESTER, CYCLOHEXANE, OXIDATION, CHROMATOGRAPHY, HYDROPEROXIDE, FREE RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0575 STEP NO--UR/0204/70/010/001/0068/0072

CIRC ACCESSION NO--AP0119493

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820009-8"