

USSR

UDC: 624.07:534.1

IVANOV, V. P.

"Some Problems of Oscillations of Bladed Wheels and Other Elastic Bodies Having Cyclic Symmetry"

V sb. Prochnost' i dinamika aviats. dvigateley. Vyp. 6 (Strength and Dynamics of Aircraft Engines--collection of works, No 6), Moscow, "Mashinostroyeniye", 1971, pp 113-132 (from RZh-Mekhanika, No 7, Jul 71, Abstract No TV233)

Translation: Based on a consideration of the properties of the spectrum of natural oscillations of bodies with cyclic symmetry, the author solves problems of oscillations of a system of blades with elastic connections through banding or disc, including oscillations in the case of small deviations from strict cyclic symmetry. It is shown that small deviations from symmetry may result in a considerable spread of resonance stresses. Bibliography of eleven titles. Author's abstract.

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USSR

UDC: 621.397.61

IVANOV, V. P., BORISOV, B. K., KURAPOV, Ye. F., ANTONOV, V. F.

"A Device for Automatic Iris Control"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, Apr 71, Author's Certificate No 299987, Division H, filed 21 Jun 69, published 26 Mar 71, p 218

Translation: This Author's Certificate introduces a device for automatic control of the irises in television transmitting cameras. The device contains a comparison stage, an actuating mechanism and a reference voltage source. As a distinguishing feature of the patent, the reliability of iris control with sharp changes in illumination is improved by connecting the input of the actuating mechanism to the comparison stage through the normally open contacts of a selector switch, and to a storage capacitor through the normally closed contacts of the switch. The storage capacitor is connected through the normally open contacts of the switch to the reference voltage source.

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USSR

UDC: 621.374.5(088.8)

MADYAR, P. M., ROMANENKO, V. I., IVANOV, V. P.

"A Rectangular Pulse Shaper"

USSR Author's Certificate No 272361, filed 23 Feb 68, published 9 Sep 70
(from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2G325 P)

Translation: This Author's Certificate introduces a square pulse shaper based on thyristors. One of these is the main thyristor which is connected in series with the load. The other is a quenching thyristor with a shaping line connected to its anode. To extend the range of the output prf and increase efficiency, the cathode of the main thyristor is connected through a semiconductor diode to a matching resistor and to the cathode of the quenching thyristor whose anode is connected to an auxiliary power supply through a choke and a third thyristor.

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USSR

UDC 547.962

CHUMAKOV, V. M., IVANOV, V. P., YAGUZHINSKIY, L. S., ROZANTSEV, E. G., and KALMANSON, A. E., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR; Institute of Chemical Physics, Academy of Sciences USSR; and Interfaculty Laboratory of Bioorganic Chemistry, Moscow State University imeni M. V. Lomonosov, Moscow

"An Investigation of Various Iminoxyl Free Radicals in Biological and Artificial Membranes by the Method of Erythrocyte Sedimentation Rate"

Moscow, Molekulyarnaya Biologiya, Vol 6, No 2, Mar/Apr 72, pp 240-245

Abstract: The structure and function of lecithin micelles and mitochondrial membranes were investigated by studying their interaction with iminoxyl spin labels or free radicals I-V. The ESR [erythrocyte sedimentation rate] spectra obtained from various types of solutions containing the radicals and the substances being studied were examined. It was discovered that the ESR spectrum of the interaction of radical I with lecithin micelles and mitochondria had both a broad and a narrow signal, indicating that the radical was localized in two different parts of the membranes (the hydrophilic and hydrophobic parts). The same type of spectrum was observed for radical IV, but radicals III and V were localized only in the hydrophilic region of
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USSR

CHUMAKOV, V. M., et al., Molekulyarnaya Biologiya, Vol 6, No 2, Mar/Apr 72, pp 240-245

the membranes. All five iminoxyls interacted with the respiratory chain of the mitochondria, resulting in iminoxyl decay, the rate of which was significantly lower in the hydrophobic region. Radical I was used to show that when the mitochondria are energized, the spin labels are transferred from the hydrophobic region to the hydrophilic. Radical I was also used to show that the changes which occur in the lipid part of the mitochondria during energization are qualitatively different from those which occur during reduction of the respiratory chain.

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USSR

UDC: 621.315.592

VUL, B. M., IVANOV, V. S., RUKAVISHNIKOV, V. A., SAL'MAN, V. M.,
and CHAPNIN, V. A., P. N. Lebedev Physics Institute, Moscow

"Characteristics of Cadmium Telluride Doped With Iron"

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp
1264-1267

Abstract: The electrical characteristics, photoconductivity, absorption, and electrical absorption in CdTe doped with Fe are considered. The iron impurity was introduced, in the experiments described, into the CdTe by diffusion annealing at 950° C for 50-100 hours in quartz ampoules exhausted to a pressure of 10⁻⁴ mm Hg or under the pressure of saturated Cd vapors. To investigate the effect of the iron impurity, measurement of the Hall constant and electrical conductivity was made in the 80-400° K temperature range, and the photoconductivity and absorption as well as the electrical absorption as functions of the photon energy were studied. Curves are plotted for the absorption coefficient as a function of photon energy at temperatures of 300, 90, and 20° K, and for electron concentration and mobility as functions of the

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USSR

VUL, B. M., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972,
pp 1264-1267

temperature. The electron mobility curve shows an anomalous characteristic in the 150-250° K range, where the mobility takes a sharp jump. The authors note that this peculiarity cannot be explained by traditional mechanisms and should be further explored.

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USSR

UDC 911.3.616.9:597.6(571.18)

KORSH, P. V., RAVDONIKAS, O. V., MAL'KOV, G. B., VORONIN, Yu. K., ZIMINA, V. Ye., KOSTYUKOV, V. P., IVANOV, V. S., FEDOROVA, T. N., YEGOROVA, L. S., RUDAKOV, V. A., CHULOVSKIY, I. K., and SHAYMAN, M. S.

"On Carrier Characteristics and Contacts With Vectors of Viral and Bacterial Infections Among Omskaya Oblast Wild Animals"

v sb. Vopr. infekts. patol. (Problems of Infection Pathology -- collection of works) Vyp. 2, Omsk, 1970, pp 75-78 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.51)

Translation: A table is presented of species composition of oblast wild animals and their relative population by individual landscape subzones in Omskaya oblast (64 species). Transmission of infections with natural foci was established in 27 species for the following diseases: tickborne encephalitis, Omsk hemorrhagic fever, rabies, tickborne scrub fever, Q fever, tularemia, erysipelas, toxoplasmosis, and leptospirosis.

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USSR

UDC 669.2:621.746

MOLCHANOV, M. D., BONDAREV, B. I., IVANOV, V. S., KALYAPIN, A. S., PONOMARENKO, A. M., and ANDRONOV, A. N.

"Development and Industrial Application of FL10 Flux"

Tsvetnyye Metally, No 3, Mar 71, pp 70-71

Abstract: FL10 flux contains no compounds which react with such alloying elements as zirconium and the rare earth elements, and therefore can be recommended for processing of all magnesium alloys without limitation. The cost of FL10 is 16 rubles less than the cost of FL5 flux.

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USSR

UDC 621.378.653.9

BURAKOV, V. S., MAKHOMOV, P. A., IVANOV, Y. P., and KOSYGIN, G. A.

"Study of the Passage of High-Power Laser Radiation Through an Optically Dense Plasma"

USSR

UDC: 624.07:534.1

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"Some Problems of Oscillations of Bladed Wheels and Other Elastic Bodies Having Cyclic Symmetry"

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UDC 911.3.616.9:597.6(571.18)

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"Development and Industrial Application of FL10 Flux"

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I V A N O V, V. S.

Electromechanics

Quality Control System

JPRS 56235
12 June 1972

DOC 681-1423

QUALITY CONTROL SYSTEM FOR PRODUCTION OF MAGNETIC ANGULAR CONVERTER

Article by I. K. Saifirov, Acad. Sci. USSR, Institute of Polytechnical Institute
Acad. M. I. Kalitina; Leningrad, Institute of Electrical Engineering, Academy of
Sciences of the USSR, Moscow, Vol 15, No 3, 1972, signed to press 14 September
1971, pp 70-74

A method is proposed for monitoring a magnetic angular converter by means of a pilot system. The procedure of evaluating the production precision of the converter is described.

The development of magnetic recording technology stimulated a need for the development of positional magnetic angular converters (MAC) [1], the code mask of which is written on magnetic tape in a special code (usually in cyclic code), and the sensitive elements are general-purpose current-sensitive magnetic heads, such as Hall heads [2].

The magnetic mask of the n-bit cyclic binary angular converter can be written in the presence of n-bit cyclic binary generator. The low-order bit of an n-bit photoelectric converter can be used as the binary pulse generator. The sample interrogation frequency f_0 during recording of the magnetic code mask is selected from the condition

$$f_0 > \frac{1-p}{T_0} \quad (1)$$

where T_0 is the sample retrieval period in the recording mode, p is the accuracy of recording of the code mask ($p < 0.5$).

In the case when the interrogation pulses are displaced arbitrarily in phase relative to the boundaries of discreteness of the sample, the relative arithmetic mean error of recording (with a perfect head) will be

$$P_n = \frac{1-p}{2T_0} \quad (2)$$

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USSR

UDC: 539.385

~~IVANOVA, V.S.~~, TERENT'YEV, V.F. and POYDA, V.G., Institute
of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR

"Community of Nature of Both Fatigue Limits and Physical
Yield Points"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press,
1971, pp 15-23

Translation: Discussed is a hypothesis explaining the com-
munity of nature of both physical fatigue limits and physical
yield points. To analyze the relation between these phenomena,
use was made of the kinetics of changes in the yield area
during the cyclic loading (repeated stretching at loading
frequency of 2800 cycles/minute of flat specimens from St.3
steel. It is shown that cyclic loading, after a certain incu-
bation period, results in the disappearance of the yield tooth
and gradual elimination of the yield area on the static stretch
curve. Based on the derived data, it is suggested that deter-
mination of the physical fatigue limit (by analogy with the

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IVANOVA, V. S., et al., "Community of Nature of Both Gaiigue Limits and Physical Yield Points", Sb. "Ustalost' metallov i splavov", 1971, pp 15-23

physical yield point) is governed by the formation (during cyclic loading) of a hardened surface shell of the thickness of the grain. The fatigue limit conforms to a stress which fails to cause microcracks of critical length in the hardened surface layer. This shell serves as a barrier to the escape of dislocations from the inner layers of the metal and thus hinders the generation of irreversible damage. (4 illustrations, 33 bibliographic references; summary).

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USSR

UDC: 539.385

IVANOVA, V. S., Institute of Metallurgy imeni A.A. Baykov,
Academy of Sciences USSR

"Present-Day Concepts of the Nature of Fatigue Failure and
New Trends of Research"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press,
1971, pp 3-14

Translation: The purpose of this work was to determine regularities in the development of the fatigue process at stresses covering both low-and high-cycle fatigue. The analyses includes the role of surface effects in the development of fatigue under the application of low stresses as well as temperature effects on fatigue damage. The long-range trends in fatigue phenomena studies as well as in development of methods for increasing cyclic strength are stated. (7 illustrations, 27 bibliographic references; summary).

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USSR

UDC: 539.385

IVANOVA, V. S. and VEYTSMAN, M. G., Institute of metallurgy
imeni A. A. Baykov, Academy of Sciences USSR

"Effect of Neoprene Coatings on the Cyclic Strength of Specimens
and Parts Affected by Fretting Corrosion"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press,
1971, pp 103-108

Translation: The cyclic strength level of real structures
and parts is determined by a number of factors including
fretting corrosion. The presence of fretting corrosion
markedly reduces cyclic strength. This study concerns the
effect of neoprene coatings (synthetic rubber variety) on
the cyclic strength of 1Kh18N9 steel specimens and structural
parts under fretting corrosion conditions. Fatigue tests of
neoprene-coated specimens under contact friction conditions
indicate their fatigue limits to be by 60% higher than that
of uncoated specimens. Dynamic tests of real assemblies
protected with neoprene have shown a three-to four-fold
increase in service life as compared to similar unprotected
assemblies. (4 illustrations, 7 biblio. references; summary)

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" 25 "

USSR

UDC 669.2:621.746

MOLCHANOV, M. D., BONDAREV, B. I., IVANOV, V. S., KALYAPIN, A. S., PONOMARENKO, A. M., and ANDRONOV, A. N.

"Development and Industrial Application of FL10 Flux"

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Abstract: FL10 flux contains no compounds which react with such alloying elements as zirconium and the rare earth elements, and therefore can be recommended for processing of all magnesium alloys without limitation. The cost of FL10 is 16 rubles less than the cost of FL5 flux.

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Veterinary Medicine

UDC 619:616.988.43-097

USSR

SALAZHOV, Ye. L., and ~~IVANOV, V. S.~~ All-Union Institute of Experimental Veterinary Science

"The Component of Foot-and-Mouth Disease Virus Responsible for Immunogenic Properties"

Moscow, Veterinariya, No 9, Sep 70, pp 38-40

Abstract: Type A₂₂ foot-and-mouth disease virus cultured in fetal pig kidney cells was inactivated by irradiation with UV light (32000 erg/mm²) or by treatment with 0.05% formalin solution for 48 hrs at 26°C. The RNA was also isolated from active virus. Virus inactivated by either method was avirulent for suckling white mice. The RNA produced infection in experimental animals of the same type produced by the active virus. Tests with guinea pigs indicated that inactivated virus of either type raised antibody titers in convalescent animals not susceptible to infection, while the RNA did not have this effect and even lowered the antibody titer. Upon administration of RNA to susceptible animals, the same immunobiological reactions occurred as were observed in infections with active virus, because the RNA replicated with formation of virus. Results indicated that virus protein rather than RNA

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SALAZHOV, Ye. L and IVANOV, V. S., Veterinariya, Vol 47, No 9, Sep 70,
pp 38-40

(which lost its capacity for replication after inactivation of the virus) had immunogenic properties. It does not follow, however, that a foot-and-mouth disease vaccine must consist only of virus protein. Complete elimination of the RNA is a technically difficult and expensive process. Furthermore, the RNA remaining in the vaccine, although incapable of replication, may act as a haptene in combination with the virus protein.

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USSR

UDC 534.26

IVANOV, V. S., ROMANOV, V. N.

"Concerning Determination of the Sonic Pressure in the Vicinity of the Surface of an Infinite Plate, Excited by a Concentrated Force"

Moscow, Akusticheskiy Zhurnal, Vol 16, No 4, 1970, pp 526-529

Abstract: A determination is made of the three-dimensional boundary of a region in which it is possible to employ the asymptotic solution of the problem concerning the radiation of a plate under the action of a concentrated force, obtained by L. Ya. Gutin. Analytic expressions for the sonic pressure in the vicinity of the plate around the line of action of the force are presented. 4 figures, 2 bibliographic entries.

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USSR

UDC 621.787.6

SHKANOV, I. N., Candidate of Technical Sciences, IVANOV, V. S.

"Strengthening of Welds in Titanium Alloys"

Moscow, Mashinostroitel', No 1, Jan 70, p 20

Abstract: In order to obtain welds with a strength close to that of the base metal, 200 titanium alloy specimens were welded by four different welding methods, and then were fatigue tested. Specimens of the OT4 titanium alloy, 2 mm thick, were butt welded by an argon-shielded arc. To relieve welding stresses, the welded specimens were annealed at $670 \pm 10^\circ\text{C}$ for 1.5 hour, and furnace-cooled to 500°C with subsequent cooling in an air atmosphere. To increase the strength of the welds, some of them were shot blasted. The prepared specimens were then fatigue tested. It was found that the fatigue strength of the base metal prior to strengthening was 36 kg/cm^2 . The highest fatigue strength of welds (25 kg/cm^2) was obtained in specimens welded on both sides by automatic pulsed welding. Slightly lower fatigue strength (22 kg/cm^2) was found in specimens welded on one side

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USSR

SHKANOV, I. N., et al., Mashinostroitel', No 1, Jan 70, p 20

with manual pulsed welding. The lowest fatigue strength (20 kgc/mm²) was in specimens welded by automatic and manual processes. After strengthening the welds with shot blasting, the highest fatigue strength was found in specimens welded on both sides by automatic pulsed welding. It was established, on the basis of tests, that shot blasting increased the fatigue strength of a weld, bringing it close to the strength of the base metal.

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Acc. Nr:

AP0049943

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UR 0065

103490a Device for the automatic determination of phenol in waste waters. FSV-65V type. Bukler, V. O.; Ivanov, V. S.; Men'kov, P. A.; Chernousov, N. N. (USSR). *Khim. Tekhnol. Topl. Masel* 1970, 15(1), 38-40 (Russ). The detn. was based on the reaction of water contg. phenol with reagents producing coloration. The color change, depending on the concn. of phenol, was recorded by an automatic photoelec. colorimeter and compared with control glasses corresponding to detd. concns. of phenol. The device included a sampler and sample-prepg. system, automatic dosing and mixing water and reagents, colorimeter AKN-65V, and electronic potentiometer EPP-09M3 with scales: 0-10 mV; absorbance units, and 0-50 mg l/l. Thus, 25 ml water at $\leq 40^\circ$ was mixed with pyramidon 1, buffer 7, and NH_4^+ peroxy sulfate soln. 7 ml and transferred into a colorimeter cuvette. The detn. ranges were 0-5 and 0-50 mg phenol/l., being required 40-60 min/detn., with errors of $\pm 15\%$, sensitivity and reproducibility of 5%. GGJR

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Магнусон
I
Vladimir

USSR

BONNARDY, M. L., KUKOL, V. S., and MASHKOV, A. N., and others

"Special Features in the Technology of Introducing Zirconium into Alloys"

Moscow, Tsvetnyye Metally, No 6, Jun 70, p 50

Abstract: One of the basic difficulties in the industrial production of zirconium alloys containing zirconium lies in the means for introducing the metal into the melt. Three industrial introduction processes are discussed: introduction of zirconium from calcium fluorozirconate; introduction from a mixture containing 80% K₂ZrF₆, 10% Na₂SiF₆, and 10% NaF; and introduction from a mixture containing zirconium. The principal advantages of the first two processes are discussed. It was established, during experiments and calculations, that the most effective in reflecting furnaces of 10-ton capacity, and in the case of the third process, assimilation were obtained with a binary alloy containing 10% zirconium. A description of one procedure is given. A comparison of the results of zirconium assimilation obtained by the above-described method and obtained by the use of binary K₂ZrF₆ alloy reveals an irreversible metal loss of 1.5 times.

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1/2 034 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EXCITON THERMAL REFLECTION IN CADMIUM TELLURIDE -U-

AUTHOR--(04)-BALASHOV, A.A., IVANOV, V.S., KOPYLOVSKIY, B.D.,
STOPACHINSKIY, V.B.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(5), 869-72

DATE PUBLISHED-----70

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TOPIC TAGS--EXCITON, HEAT REFLECTION, CADMIUM TELLURIDE, SINGLE CRYSTAL,
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2/2 034 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0136325
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMOREFLECTANCE SPECTRA OF
N-TYPE CDTE SINGLE CRYSTALS WITH FREE CARRIER CONCN. OF SIMILAR TO 4.5
TIMES 10 PRIME15-CM PRIME3 WERE STUDIED AT 80-140DEGREESK. THE EXCITON
EFFECTS MUST BE TAKEN INTO ACCOUNT IN THE INTERPRETATION OF THE EXPTL.
DATA, ESP. AT THE LOW END OF THE TEMP. RANGE STUDIED. THEORETICAL
ANAL. OF THE SHAPE OF THE THERMOREFLECTANCE SPECTRUM DUE TO EXCITONS
SHOWS GOOD QUAL. AGREEMENT WITH THE EXPTL. RESULTS. FACILITY:
FIZ. INST. IN. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--INOCULATING DEFORMABLE MAGNESIUM ALLOYS -U-
AUTHOR--(04)-DETKOVA, O.V., BONDAREV, B.I., IVANOV, V.S., ANDRONOV, A.N.
COUNTRY OF INFO--JSSR
SOURCE--TSVET. METAL. 1970, 43(4), 79-80
DATE PUBLISHED-----70

I

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MAGNESIUM ALLOY, CRYSTAL STRUCTURE, ZINC ALLOY, ALUMINUM
ALLOY, MANGANESE ALLOY, SILICON ALLOY, ZIRCONIUM ALLOY, BORON ALLOY,
INOCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0333

STEP NO--UR/0136/70/043/004/0079/0080

CIRC ACCESSION NO--AP0137438

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHARACTERISTIC FEATURES OF THE INOCULATION PROCESS OF DEFORMABLE ALLOYS OF THE MG-MN AND MG-AL-AN-MN SYSTEMS, USE OF C CONTG. ADDITIVES AS INOCULANTS, AND THE INFLUENCE OF SI, ZR, AND B ON THE GRAIN SIZE ARE DISCUSSED.

UNCLASSIFIED

1/2 046 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--RAISING THE FATIGUE STRENGTH OF METALS BY MEANS OF NEOPRENE
COATINGS -U-
AUTHOR--(02)-IVANOV, V.S., WEITSMAN, M.G.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (2), 65-68
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--FATIGUE STRENGTH, PLASTIC COATING, OXIDATION INHIBITION,
CHROMIUM NICKEL STAINLESS STEEL, ALUMINUM ALLOY, CRYSTAL DISLOCATION,
CRACK THEORY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1815 STEP NO--UR/0369/10/005/002/0065/0068
CIPC ACCESSION NO--AP0129183
UNCLASSIFIED

2/2 046

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129183

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF NEOPRENE (NAIRIT) COATINGS ON THE FATIGUE STRENGTH OF CR,NI STAINLESS STEELS AND TWO AL ALLOYS WAS STUDIED. IN SAMPLES WITH NEOPRENE COATINGS THE FATIGUE STRENGTH WAS APPRECIABLY GREATER THAN IN THOSE LACKING SUCH COATINGS. THE POSITIVE INFLUENCE OF THE COATINGS LAY MAINLY IN PREVENTING OXIDIZING PROCESSES TAKING PLACE IN THE SLIP BANDS; THIS PROMOTED A MORE FAVOURABLE DISLOCATION ACTION AND RETARDED CRACK DEVELOPMENT.

UNCLASSIFIED

USSR

I

VAVILOV, V. S., IVANOV, V. S., KOPYLOVSKIY, D. B., STOPACHEVSKIY,
V. B.

"Methods of Studying Thermal Reflection in Semiconductors"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 6, June 1978, pp 1678-
1681

Abstract: Research on the thermal reflection spectra of GaAs at a temperature of about 500°K and CdTe at about 80°K as carried out. Various methods of effecting temperature modulation as well as the system for recording $\Delta R/R$ are described. In the thermal-reflection spectrum of GaAs, with the use of a CO₂-based laser for temperature modulation, $\Gamma_{15} \rightarrow \Gamma_1$, $A_3 \rightarrow A_1$, $L_3 \rightarrow L_1$ optical transitions were observed. On the basis of the example of CdTe it is shown that at low temperatures, in the analysis of thermal-reflection spectra, electron-hole interaction must be taken into account.

1/1

Electrochemistry

USSR

UDC 541.135.52

IVANOV, V. T., and SHAFEYEV, A. I., Bashkir State University imeni, 40-Letiya Oktyabrya, Ufa

"Electric Field in a Slotted Compartment"

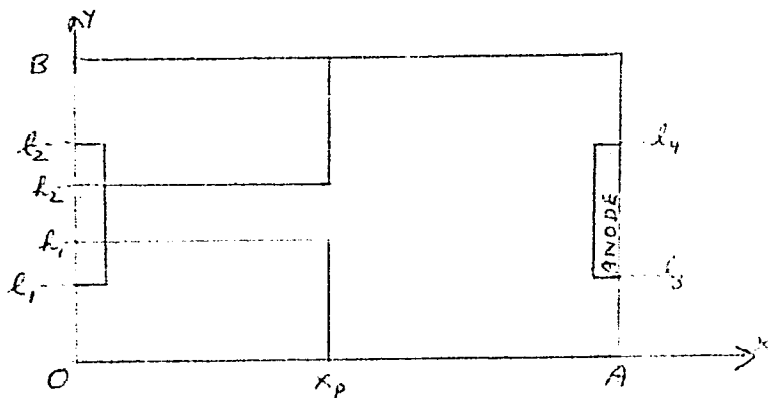
Moscow, Elektrokimiya, Vol 8, Vyp 2, 1972, pp 208-211

Abstract: A general solution is developed for the distribution of potential in a slotted compartment relative to the size and polarization of the electrodes and the size and arrangement of the slot. The general geometry is shown below

1/2

USSR

IVANOV, V. T., and SHAFEYEV, A. I., *Elektrokhimiya*, Vol 8, Vyp 2, 1972, pp 208-211



Five discrete sets of the parameters shown above are considered. Curves of the current vs. x and y are then plotted.

2/2

USSR

UDC 517.946

IVANOV, V. T., SMIRNOV, G. P., and LUBYSHEV, F. V., Bashkir State University

"Ordinary and Inverse Boundary Value Problems for Heat Conductivity Equations"

Minsk, Differentsial'nyye Uravneniya, No 11, 1972, pp 2023-2028

Abstract: This paper considers an approximate-analytic method, the method of planes, for solving inverse boundary value problems. Using as an example the solution of the inverse boundary value problem for the simplest heat conductivity equation, the authors apply the differential-difference method. The method of planes is explored in an earlier paper published in the journal noted above (O. A. Liskovets, No 12, Vol 1, 1965). As for the heat conductivity equation considered in the present paper, it is

$$\frac{\partial u}{\partial t} = a^2 \left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \right) + q(t, x, y),$$

in the region of $|x| < \infty$, $c < y < d$, and $t > 0$, under the following initial boundary and conditions: $u(x, y, 0) = \varphi(x, y)$, $u(x, c, t) = 0$, $u(x, d, t) = 0$. It is also assumed that the function q has the form $q(t, x, y) = f(y, t) \delta(x - x_0)$, where $\delta(x)$ is the Dirac delta function.

1/1

1/2 02P UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--CIS-TRANS ISOMERISM OF THE PEPTIDE BONDS IN N-METHYLATED ALANINE
DIPEPTIDES -U-
AUTHOR--(05)-PORTNOVA, S.L., BYSTROV, V.F., BALASHOVA, T.A., LVANOV, V.T.,
OVCHINIKOV, YU.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKADEMIY NAUK SSSR, SER. KHIM. 1970, (4), 825-30.
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ISOMERIZATION, PEPTIDE, CHEMICAL BONDING, NUCLEAR MAGNETIC
RESONANCE, ACTIVATION ENERGY, STEREOCHEMISTRY, ENTROPY, ENTHALPY,
ALANINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REL/FRAME--0006/1353 STEP NO--08/0062/70/010/0067/0825/0830
CIRC ACCESSION NO--AP0155132
UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--2011070
CIRC ACCESSION NO--AP0155032

ABSTRACT/EXTRACT--(U) OP-G- ABSTRACT. CIS-TRANS ISOMERISM OF THE N-METHYLANIDE LINK IN DIPEPTIDES OF N-METHYLANINE WAS STUDIED BY NMR SPECTRA AT 21-60DEGREES; SOME 20PERCENT OF SUCH PEPTIDES MAINTAIN THE CIS CONFIGURATION. FOR THE ME ESTER OF N-ACETYL-D,ALANYL-L-METHYLANINE, DELTAH OF CIS TRANS TRANSITION WAS 650 CAL-MOLE, DELTAS SUB35 MINUS 0.21 E.U. AND DELTAF SUB35 710 CAL-MOLE. THE TRANS ISOMER POSSESSES THE LOWER VALUES OF FREE ENERGY, ENTHALPY AND ENTROPY OF THE EQUIL. STATE. THE ESTD. ACTIVATION ENERGY OF INTERNAL ROTATION WAS 19.8 KCAL-MOLE FOR THE TRANS AND 18.5 FOR THE CIS FORM. THESE ARE COMPARABLE TO ROTATIONAL BARRIERS IN ET SUB2 ACID OR ET SUB2 NAC. FACILITY: INST. KHIM. PRIR. SUEIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--CONFORMATION OF GRAMICIDIN S AND ITS N, N PRIME DIACETYL DERIVATIVE IN SOLUTIONS -U-

AUTHOR-(05)-OVCHINNIKOV, YU.A., IVANOV, V.T., BYSTROV, V.F., MIROSHNIKOV, A.I., SHEPEL, E.N.

COUNTRY OF INFO--USSR

SOURCE--BIOCHEM. BIOPHYS. RES. COMMUN. 1970, 39(2), 217-25

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTIBIOTIC, MOLECULAR STRUCTURE, IR SPECTRUM, PROTON RESONANCE/(U)GRAMICIDIN S ANTIBIOTIC

CCNTRGL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3001/0939

STEP NO--US/0000/70/039/002/0217/0225

CIRC ACCESSION NO--AP0126598

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--3000170
CIRC ACCESSION NO--AP0126598
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONFORMATION OF GRAMICIDIN S
(I) AND N, N PRIME DIACETYLGAMICIDIN S (II) WAS STUDIED BY ORD, PMR,
AND QUANT. IR METHODS USING SEVERAL DIFFERENT SOLVENTS. THE DATA
OBTAINED PROVIDE PROOF OF THE HODGKIN DUGHTON-SCHWYZER BETA PLEATED
SHEET TYPE MODEL, FOR WHICH PHI AND PSI COORDINATES ARE GIVEN. I AND II
LACK AN INTERNAL CAVITY CAPABLE OF ACCOMODATING METAL CATIONS, AND ARE
UNABLE TO FORM COMPLEXES WITH METAL CATIONS. FACILITY: INST.
CHEM. NATUR. PROD., MOSCOW, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SYNTHESIS OF CYCLIC HEXAPEPTIDES CONTAINING L AND D ALANINE AND
GLYCINE RESIDUES -U-
AUTHOR--(03)-IVANOV, V.T., SHILIN, V.V., OVCHINNIKOV, YU.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 924-31
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PEPTIDE, CHEMICAL SYNTHESIS, ALANINE, GLYCINE, CHROMATOGRAPHY,
NUCLEAR MAGNETIC RESONANCE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3004/0465 STEP NO--UR/0079/70/040/004/0924/0931
CIRC ACCESSION NO--AP0131102
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131102

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE N HYDROXYSUCCINIMIDE OR P NITROPHENYL ESTER, AS WELL AS THE AZIDE METHOD, WERE USED TO PREP. PROTECTED POLYPEPTIDES, WHICH WERE THEN CONVENTIONALLY CYCLIZED TO CYCLOHEXAPEPTIDES WITH ALANINE AND GLYCINE RESIDUES IN VARIOUS POSITIONS IN A PLAN OF STUDY OF CONFORMATIONS OF PEPTIDE RING SYSTEMS. THE INTERMEDIATES USED IN THE SYNTHESIS (CHARACTERIZED BY CHEM. ANALYSIS AND M.P.S.) WERE CYCLIZED BY TREATMENT OF THE P NITROPHENYL ESTERS WITH HBR IN ACOH TO REMOVE THE BLOCKING CARBOBENZOXY GROUPS, THEN HEATED IN PYRIDINE SEVERAL HR TO EFFECT THE CYCLIZATION OF SOME, WHILE OTHERS IN THE FORM OF TER-TBUTOXYCARBONYL DERIVS. OF PEPTIDE HYDRAZIDES WERE TREATED WITH HBR IN ACOH, THEN WITH HCL AND NANO SUB2 AND H SUB2 U. THE FOLLOWING CYCLOPEPTIDES WERE REPORTED. D-ALA-GLY SUB5, D-ALA-D-ALA-GLY SUB4, D-ALA SUB3-GLY SUB3, D-ALA-GLY-D-ALA-GLY SUB3, (D-ALA-GLY)SUB3, D-ALA SUB3-L-ALA SUB3, (D-ALA-L-ALA)SUB3, AND D-ALA-L-ALA-D-ALA-(L-ALA)SUB3; ALL MELTED IN THE INTERVAL OF 300-300DEGREES AND WERE CHARACTERIZED CHROMATOGRAPHICALLY AND BY NMR SPECTRA. FACILITY: INST. KHIM. PRIR SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

USSR

IVANOV, V. V., KHLOBYSTOV, V. V.

"Comparison of Two Methods of Estimation of the Probability Characteristics of the Solutions of Systems of Stochastic Differential Equations"

Vychisl. i prikl. mat. Mezhd. nauch. sb. [Computational and Applied Mathematics. Interdepartmental Scientific Collection], 1972, No 19, pp 32-43 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V246 by the authors)

Translation: This work presents a comparison of two methods for estimation of the probability characteristics of the solutions of nonlinear stochastic systems -- the method of B. G. Dostupov and the method of planning extremal experiments, both for specific problems and for a class of problems. The accumulation of computation error over an interval is considered, for error developing due to errors in the solution of the problem and rounding error. Estimates of the estimates are produced and conditions are presented under which it is expedient to use one method or the other.

1/1



Industrial

USSR

UDC:621.791.75

BUDNIK, N.N., Engineer, IVANOV, V.V., Engineer, IVNITSKIY, B.Ya., Engineer, KRAVCHENKO, V.G., Engineer, MAGNITOV, V.S., Senior Engineer, and YAMPOLSKIY, V.M., Candidate of Technical Sciences, Docent

"A Unit for Arc Metal Surfacing in Vacuum"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 3, 1970, pp 118-121

Abstract: An SDV-7 unit for arc surfacing with Stellite in a vacuum has been designed and built at the Moscow Higher Technical School im. Bauman. The design of the unit is based on a method of welding and surfacing with nonconsumable electrode in a vacuum, developed by the above mentioned School. Stellite 7 (see Fig. 1) is melted by a DC arc burning between cathode K and the article to be surfaced A--anode. The design of the unit incorporates parts and elements of a standard welding and vacuum equipment. The basic technological specifications of the SDV-7 unit are: volume of the vacuum chamber 300 l, ultimate vacuum in the chamber $5 \cdot 10^{-4}$ mm Hg, operational vacuum $2-3 \cdot 10^{-3}$ mm Hg, time required to achieve operational vacuum 3-4 min, diameter of 1/4

BUDNIK, N.N. et al., Izvestiya Vysshikh Uchebnykh Zavedeniy Mashinos-troyeniye, No 3, 1970, pp 118-121

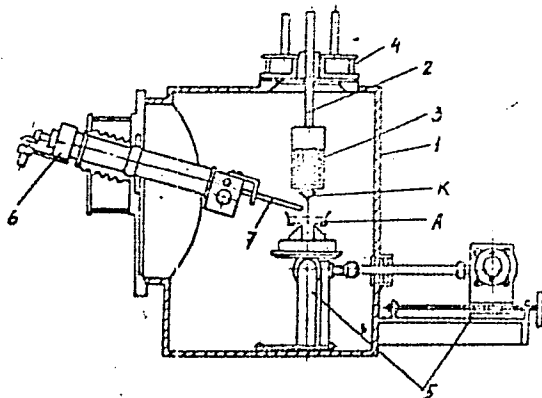


Fig. 1. Diagram of the SDV-7 metal surfacing unit

Stellite rod 6--7 mm, maximum diameter of surfaced articles 300 mm, and power input 10 kw. The unit (see Fig. 1) consists of a working
2/4

BUDNIK, N.N. et al., Izvestiya Vysshikh Uchebnykh Zavedeniy Mashinostroyeniye, No 3, 1970, pp 118-121

chamber of the vacuum system, welding gun with a mechanism for the vertical movement of a filler rod (Stellite), mechanism for rotating and longitudinal movement of the surfaced part, control panel, and power supply for the welding arc. The vacuum chamber, made of 1Kh18N9T stainless steel plate, 6 mm thick, is reinforced with V-shaped channels. Parts to be surfaced are loaded into the chamber through a hatch which seals hermetically by means of a vacuum seal and four lever clamps. The welding gun with a vertical movement mechanism, and electromagnet and electric arc supply terminals are located in the upper part of the chamber. A filler rod feeding mechanism and a valve for letting the air into the chamber are located in the side walls of the chamber. For visual observation of the surfacing process the chamber is fitted with three plastic windows, 20--25 mm thick. The vacuum system of the SDV-7 unit consists of a VN-4G preliminary vacuum pump, BN-3 high vacuum pump, vacuum shut-off valves, and connecting pipes. The degree of vacuum is controlled by VT-3 and VM-1 vacuumeters. The welding gun consists of a water-cooled cathode and electromagnet 3. The electromagnet winding is made of an 8 mm copper tube. Cooling water is fed through special inlets 4 in one of the chamber's collars. The mechanism 5 for the movement of the part is 3/4

BUDNIK, N.N. et al., Izvestiya Vysshikh Uchebnykh Zavedeniy Mashinostroyeniye, No 3, 1970, pp 118-121

capable of moving the part longitudinally with a speed of 0 to 22 m/hr and rotate it at 0--6 RPM. The filler material feeding mechanism consists of a DC motor, reducer and feed rollers. It can hold either 6--7 mm diameter rods or a 20 mm wide strip. Smooth control of the feed rate in the 9--80 cm/min range, and reverse moving of the rod is accomplished by varying the voltage in the DC motor winding. The control panel is located right on the chamber. Welding transformer of the PS-500-type is used as an arc power supply. An industrial variant of this unit for arc surfacing of valve parts is being designed.

4/4

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Acc. Nr.: AM0104115

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Ref. Code: UR0000

Yushko-Zakharova, O. Ye.; Ivanov, V. V.; Razina, I. S.; Chernyayev, L. A.

Geochemistry, Mineralogy, and Methods for Determination of Elements of the Platinum Group (Geokhimiya, mineralogiya, i metody opredeleniya elementov gruppy platiny) Moscow, "edra, 1970, 199 pp (SL:2044)

TABLE OF CONTENTS:

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Methods for Determination of Platinum Elements and Minerals	22
Minerals of Platinum Metals	42
Minerals Carrying Small Impurities of Platinum Metals	103
Occurrence of Platinum Metals in Meteorites	109
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19870533

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Acc. Nr. AM 0104115

Occurrence of Platinum Metals in Various Types of Deposits	145
Certain Geochemical Characteristics in Distribution of Individual Elements of the Platinum Group	179
Geochemical Cycle of Elements of the Platinum Group	184
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The book is based on authors' works dealing with chemico-spectroscopic determination of platinum metals, as well as results of ore study in the X-ray microanalyzer and the JKha-3A.

Given are characteristics of about 60 minerals of platinum metals; half of them were discovered in recent years due to the use of X-ray electron micro-sounding of ores...

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2/2

Reel/Frame
19870534

USSR

UDC: 539.4:669.71

2

RYBAL'CHENKO, M. K., ZOLOTAREVSKIY, YU. S., KABICHEV, B. I., USTINOV, L. M.,
IVANOV, V. V., and ZHAMNOVA, V. I., Moscow

"Some Mechanical Properties of a Fibrous Composite Material Based on an Aluminum Alloy"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 73, pp 117-122

Abstract: The authors produce a series of fibrous composites made from aluminum alloy and wire made from the EP322 grade steel. This was done by the hot rolling method using the scheme for bonding packs. Reinforcing the aluminum alloy with 12.4 volumetric percent wire increases the specific strength of the material from 15.2 to 19.7 km. The best properties are ensured by a bonding scheme which incorporates the simple multi-layer (two-layer) winding of the fibers onto the sheets of the matrix.

1/1

USSR

UDC 577.3

GUKASYAN, A. B., RATNIKOVA, N. V., and IVANOV, V. V., Forest and Wood Pulp Institute, Siberian Department, Academy of Sciences USSR, Krasnoyarsk

"Nuclear Spin Relaxation Studies of the Molecular Interactions Between the Organic Lattice and Adsorbed Water in *Bacillus thuringiensis* Spores"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1973, pp 599-602

Abstract: Studies were conducted on the effects of temperature on the state of water adsorbed to the organic lattice in the spores of *Bacillus thuringiensis*, through the determination of the rotational and translational proton relaxation times. The results revealed both weakly and strongly bound water molecules, and that there is exchange between the two phases. The former molecules diffuse through the lattice with an energy of activation of 2 kcal/mole, indicating virtually no interaction with the organic lattice. Bound water exists in a state different from that of ice structure; its structure is highly distorted and a number of the bonds are broken. The latter fact apparently is responsible for the exchange of the water molecules between the two phases. Since the proton-to-proton distances in the cavities were determined to be 7 Å, the adsorption sites consisted of carbonyl groups and 7 Å may be regarded as the minimum dimension of the lattice cavities.

1/1

IVANOV, V.V.

Y.P.P.S. (66-54)
C.I.A. MEMORANDUM 1975

(1)

STUDY OF THE SHUNTING EFFECT OF THE CONDUCTING WALLS OF THE CHANNEL OF A TWO-DIMENSIONAL MAGNETOHYDRODYNAMIC FLOW
(Abstract of a Paper by V. V. Ivanov Given at the Magnetohydrodynamic Conference, pp 82-83)

In order to determine the precise attenuation factor considering the shunting effect of the conducting walls of a channel for induction pump with presented in Figure 1, when compiling the circuit diagram was proposed which is made: 1) pole division $t > h$ — height of the channel, 2) magnetic Reynolds number $t < 3$.

R_a and R_k take into account the resistance to the induced currents in the liquid-metal and walls of the channel. In the presence of a transverse boundary effect, R_a and R_k do this in the absence of the transverse boundary effects. Expressions for R_a and R_k were determined for $s = 1$ when the shunting effect is missing. According to the latter assumption, in correspondence with reference [1], the coefficients k_{0e} taking into account the attenuation of the induced currents in the walls and the liquid-metal with sufficient accuracy for practical calculations are equal. The ratio of R_a to R_k was determined by the formula

$$\frac{R_a}{R_k} = \frac{1 + \frac{t}{h}}{1 + \frac{t}{h} \frac{1}{\sigma_a h}}$$

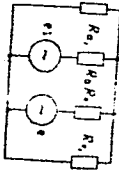


Figure 1

USSR

UDC 536.13

IVANOV, V. V.

"Study of Transfer Processes with Nonlinear Boundary Conditions"

Moscow, Teplofizika Vysokikh Temperatur, No1 11, No 1, Jan-Feb 75, pp 128-132.

Abstract: It is demonstrated that the method of linearizing functions can be effectively used for the solution of many heat transfer problems with non-linear boundary conditions. The error of this method is estimated and its relationship to the basic parameters of the process is determined. The use of the method is illustrated on the example of calculation of the temperature of a radiating surface around which a stream of transparent gas flows. A comparison is presented with the results of other authors. The error in calculation of the desired unstable temperature will not exceed 3-5%, if certain experimental conditions are met. The method is thus sufficiently accurate for engineering practice, and is also universal, simple and reliable.

1/1

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USSR

UDC: 51:330.115

IVANOV, V. V., MATRYASHYN, M. P., MOTORNYI, L. T.

"On a Procedure for Setting up a Production Program for Enterprises With Small-Series or One-of-a-Kind Production"

Visnyk Kharkiv. un-tu (Khar'kov University Herald), 1971, No 61, Eko-
nomika (Economics), vyp. 6, pp 26-37 (from RZh-Kibernetika, No 9, Sep
71, Abstract No 9V532)

Translation: A whole-number programming problem is set up. As a method of solution, the authors propose that the linearized problem be solved with subsequent rounding-off.

1/1

USSR

UDC 537.226.33

RUDYAK, V. M., BOGOMOLOV, A. A., and IVANOV, V. V.

"The Influence of Illumination on the Processes of Polarization Reversal of SbSI Single Crystals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 9, Sep 71, pp 1897-1899

Abstract: It has been shown many times in the past that the illumination of SbSI single crystals produces a change in the amount of polarization and an acceleration in the process of establishing polarization. It has also been seen that the effect from the action of light depends greatly on the interval of time which divides the electric field commutation from the moment of supplying the light impulse. This paper is concerned with a more detailed investigation of the dependence of the influence of illumination on the processes of reversing SbSI as a function of the time interval. The authors use both methods employed earlier and the method of fixing the point of reversal, thus allowing them to directly observe the kinetics of rearranging the domain structure and to fix the change in the entire polarization. They

1/2

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USSR

RUDYAK, V. M., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 9, Sep 71, pp 1897-1899

find and graphically confirm that light influences the processes of reversal only when the polarization is found to be in an unbalanced state. When the polarization becomes balanced, there is no manifestation from the light effect within the sensitivity range of the equipment employed. The article contains 3 illustrations and 9 bibliographic entries.

2/2

USSR

IVANOV, V. V.

"Optimization of Program for Data Processing in ACS Problems"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 46, Novosibirsk, 1971, pp 239-241, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V690).

NO ABSTRACT.

1/1

- 47 -

1/2 030
UNCLASSIFIED
PROCESSING DATE--13NOV70
TITLE--PROBLEM OF THE LONG RANGE TROPOSPHERIC PROPAGATION OF RADIO WAVES
-U-
AUTHOR--IVANOV, V.V. I
COUNTRY OF INFO--USSR
SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, JUNE 1970, P. 1123-1130
DATE PUBLISHED--15JUN70
SUBJECT AREAS--NAVIGATION, ATMOSPHERIC SCIENCES
TOPIC TAGS--TROPOSPHERIC PROPAGATION, RADIO WAVE PROPAGATION, REFLECTED SIGNAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0303 STEP NO--UR/0109/70/015/000/1123/1130
CIRC ACCESSION NO--AP0134107
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134107

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

ABSTRACT. STUDY OF TROPOSPHERIC EFFECTS ON RADIO WAVE PROPAGATION, SHOWING THAT THE MOST SIGNIFICANT INFLUENCE IN EXERTED IN THE SHORT AND, MEDIUM WAVELENGTH BANDS. THE IMPULSE FUNCTION OF A SIGNAL, REFLECTED FROM THE TROPOSPHERE IS CALCULATED FOR THE PRACTICAL CASE WHERE THE DIRECTION OF SIGNAL ARRIVAL IS UNKNOWN, BUT THE POSITION OF THE SIGNAL SOURCE ON THE EARTH'S SURFACE IS GIVEN. THE TIME LAG BETWEEN THE DIFFRACTION AND REFLECTION SIGNAL FRONTS IS DETERMINED TOGETHER WITH THE RATIO OF THE AMPLITUDES OF THESE TWO COMPONENTS. CALCULATIONS ARE COMPARED WITH AVAILABLE EXPERIMENTAL DATA.

UNCLASSIFIED

USSR

UDC 621.371.3

IVANOV, V. V., and STEFANOV, B. M.

"On the Problem of Diffraction of Short Waves Over the Surface of the Earth"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 8, Aug 71, pp 1313-1322

Abstract: A physical interpretation is proposed for the high-frequency anomaly in the function of attenuation of electromagnetic waves in the case of diffraction over a spherical surface. This interpretation is taken as a basis in formulating rules for evaluating the high-frequency characteristics of the transmission path in the case of diffraction under complex conditions. The method is used for computing the diffraction of short electromagnetic waves in the model of the troposphere proposed by Carrol and King (Proc. I. R. E., 1955, 10). It is found that the high-frequency anomaly is sensitive to details of the assumed idealization of the transmission path.

1/1

1/2 , 011 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF DIETHYL ETHER ON THE RATE OF METHYLALETHYLAL EXCHANGE
UNDER THE INFLUENCE OF TIN TETRACHLORIDE -U-
AUTHOR--(03)-IVANOV, V.V., SABIROVA, R.D., YENIKOLOPYAN, N.S.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(2), 388-90 (PHYS CHEM)
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ETHYL ETHER, EXCHANGE REACTION, TIN CHLORIDE, COMPLEX
COMPOUND, CHEMICAL REACTION RATE, BENZENE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0701 STEP NO--UR/0020/70/191/002/0388/0390
CIRC ACCESSION NO--AT0124373
UNCLASSIFIED

2/2 . 011

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124373

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE REACTION WAS DISCUSSED IN TERMS OF INTERMEDIATE FORMATION OF SnCl_4 COMPLEXES AND OXONIUM SALTS. A REACTION SYSTEM OF METHYLAL, ETHYLAL, C_6H_6 ET SnCl_4 WAS EXAMD. AT 20 DEGREES FOR INITIAL REACTION RATE; ALTERATION OF THE REACTION RATE BY ADDN. OF ET SnCl_4 IS NOT CONNECTED WITH ALTERATION OF MOISTURE CONTENT IN THE SYSTEM. THE EFFECT OF ADDED ET SnCl_4 AFFECTS THE KINETICS OF REACTIONS PROCEEDING UNDER THE INFLUENCE OF LEWIS ACIDS; THERE IS A LINEAR RELATION BETWEEN THE CONC. OF ADDED ET SnCl_4 AND $(w-w_{\text{SUB1}})^{-1}$, WHERE w IS THE INITIAL RATE WITHOUT ADDN. OF ET SnCl_4 AND w_{SUB1} IS THAT WITH ADDED ET SnCl_4 .
FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

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1980-1981

IVANOV, V. V.

"Long-Distance Tropospheric Propagation of Radio Waves"

Radio Engng. Electron. Phys., Vol. 25, No. 6, 1980, pp. 1107-1110

Abstract: The author elaborates and extends the waveguide model proposed in conjunction with V. M. Arsenin and G. M. Stupakov on the separation of signals when is propagating only along the tropospheric channel. The fact that the signal which is reflected by the ionosphere lags with respect to the tropospheric signal was used for solving the discrimination problem. Using this as the basis, the author shows that characteristic manifestations of the effect of the troposphere on radio wave propagation should be observed during the propagation of signals in the troposphere. A direction pulse function is determined for a signal reflected from the troposphere. On this basis, the author explains the appearance of negative currents in the pulse function noted in the earlier work as the reflection of an electromagnetic signal from the troposphere. Measurement of the pulse function of the direction of propagation at distances in the order of 300 km are recommended to verify the proposed conclusions. Original contains: three figures, 23 formulas, and 12 bibliographic entries.

1/1

1/2 019 UNCLASSIFIED PROCESSING DATE--0900170
TITLE--EFFECT OF WATER, METHANOL, FORMIC ACID, AND METHYLAL ON GAS PHASE
POLYMERIZATION OF FORMALDEHYDE IN AN OPEN SYSTEM -U-
AUTHOR--(03)-PENCHEV, P.I., IVANOV, V.V., YENIKOLOPYAN, N.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKUMDL. SOEDIN., SER. A 1970, 12(2), 329-35

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--WATER, METHANOL, FORMIC ACID, POLYMERIZATION,
POLYFORMALDEHYDE, MOLECULAR WEIGHT, TRIETHYLAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1992/0318

STEP NO--UR/0459/70/012/002/0329/0335

CIRC ACCESSION NO--AP0111512

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0111512

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF THE TITLE ADDITIVES ON THE YIELD AND MOL. WT. OF POYFORMALDEHYDE (I), OBTAINED BY GAS PHASE POLYMN. OF HCHO IN AN OPEN SYSTEM IN THE PRESENCE OF ET SUB3N, WERE STUDIED. STEADY STATE TREATMENT OF EXPTL. DATA REVEALED THAT H SUB2 O AND MECH ACTED AS COCATALYSTS WITH ET SUB3N, HWEREAS HCO SUB2 H INHIBITED THE POLYMN. (BY REACTING WITH ET SUB3N), AND CH SUB2(OME)SUB2 HAD NO EFFECT. THE YIELD OF I WAS INDEPENDENT OF THE H SUB2 O CONTENT, BUT THE MOL. WT. DECREASED IN THE PRESENCE OF H SUB2 O. H SUB2 O, MECH, AND HCO SUB2 H EFFECTED CHAIN TRANSFER IN THE REACTIVITY RATIO 1.0:1.7:6.5, RESP. MECH ALSO MODIFIED THE AV. MOL. WT. OF I BY CHAIN TRANSFER WITH FORMATION OF STABLE TERMINAL MEO GROUPS.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--NATURE OF ACTIVE CENTERS DURING ANIONIC POLYMERIZATION OF
FORMALDEHYDE ON TRIETHYLAMINE -U-
AUTHOR--(05)--MARKEVICH, M.A., PENCHEV, P.I., KEDRINA, N.F., IVANOV, V.V.,
YENIKOLOPYAN, N.S.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1140-2 (PHYS CHEM)
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLYMERIZATION, FORMALDEHYDE, TRIETHYLAMINE, CHEMICAL REACTION
MECHANISM, NMR SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0719 STEP NO--UR/0020/70/190/005/1140/1142
CIRC ACCESSION NO--AT0124389
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124389

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING 2 MECHANISMS ARE CONSIDERED FOR THE ANIONIC POLYMN. OF HCHO IN THE PRESENCE OF ET SUB3 N: (1) ET SUB3 N PLUS H SUB2 O IN EQUILIBRIUM TO ET SUB3 N PRIME POSITIVE H PLUS OH PRIME NEGATIVE; OH PRIME NEGATIVE PLUS HCHO YIELDS HOCH SUB2 O PRIME NEGATIVE. THE POLYMER CHAIN GROWTH INVOLVES (HO(CHS U82 O) SUBN CH SUB2 O PRIME NEGATIVE)HNET SUB3 PRIME POSITIVE (I) AS THE ACTIVE CENTER; H SUB2 O MUST BE PRESENT AS THE COCATALYST. (2) ET SUB2 N PLUS HCHO YIELDS ET SUB3 N PRIME POSITIVE CH SUB2 O PRIME NEGATIVE. THE POLYMER CHAIN GROWTH INVOLVES THE ZWITTERION ET SUB3 N PRIME POSITIVE (CH SUB2 O) SUBN CH SUB2 O PRIME NEGATIVE (II). HCHO WAS POLYMD. IN PHME OR IN THE GAS PHASE IN THE PRESENCE OF ET SUB3 N. THE POLYMN. MIXTS. WERE EXTD. WITH PHNO SUB2 AT 100DEGREES. THE EXTS. DID NOT HAVE COMPS. OF TYPE II AS SHOWN BY COMPARING NMR SPECTRA OF THE EXTS. WITH THE SPECTRUM OF (ET SUB3 NCH SUB2 OME) PRIME POSITIVE CL PRIME NEGATIVE. THUS, MECHANISM (1), POSSIBLY ALSO INVOLVING FAST PROTON EXCHANGE (E. K. RALPH, ET AL., 1967), IS PREFERRED. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 533.6

IVANOV, V. V. and DUNIN, I. L.

"Investigation of Heat Transfer in the Boundary Layer With Account Taken of Radiation of the Surface"

Moscow, Energetika i Transport, No 2, 1972, pp 167-172

Abstract: The nonlinear problem of heat transfer in the boundary layer of a transparent compressible gas, when the heat of friction is transferred by convection to the surface of a solid situated in a streamlined flow, and is then removed by radiation to the surrounding medium, is solved by a new method, the method of linearizing functions, which permits effective utilization of standard solutions of linear problems with high exactness of the final results. A bilateral evaluation of the calculation error is made. A specific numerical example is presented, and a comparison is made with the results of other authors. 3 figures. 1 table. 10 references.

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USSR

UDC 669.715.018.95

BABICHEV, B. I., D'YACHENKO, L. A., ZOLOTOREVSKIY, YU. S., IVANOV, V. V., KUCHKIN, V. V.

"Possibility of Hardening Aluminum Alloys by VT15 Alloy"

V sb. Metallurgiya (Metallurgy -- collection of works), No 14, Sudostroyeniye Press, Leningrad, 1971, pp 128-132 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4I647)

Translation: A study was made of the possibilities of creating layered composite materials by reinforcing Al-alloys with high-strength materials. As an example a composite is presented in which the role of the hardening agent is played by VT15 alloy. The theoretical technological scheme and the heat treatment conditions for this composite material were selected so as to insure a strength $>70 \text{ kg/mm}^2$ with a specific weight of 3.32 g/cm^3 . The study of the physical and mechanical properties of this composite makes it possible to draw conclusions regarding its promising nature. 3 illustrations, 1 table, and a 6-entry bibliography.

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USSR

BABICHEV, B. I., ZOLOTOREVSKIY, YU. S., ZORINA, A. YA., IVANOV, V. V.

"Properties of An Aluminum Alloy Strengthened With Fiberglass"

V sb. Metallurgiya (Metallurgy -- collection of works), No 14, Sudostroyeniye Press, Leningrad, 1971, pp 133-137 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4I648)

Translation: A study was made of the properties of an aluminum alloy strengthened with fiberglass. It is demonstrated that the theoretical data on the strength of a two-layer composite agree with the actual data. The variation in temperature from +142 to -180°, cyclic loading, and corrosive environment have no effect on the mechanical properties of the two-layer composite. 1 illustration, 2 tables, and a 3-entry bibliography.

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USSR

UDC 533.6.011.6

IVANOV, V. V., DUNIN, I. L., and MEDVEDEV, G. G., (Novosibirsk)

"Boundary Layer of a Transparent Gas on a Radiating Surface"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 72, pp 107-110

Abstract: The process of heat transfer in a laminar, boundary layer of a transparent gas flow over a flat plate with a given heat flux on its surface is investigated. In this case the effect of radiation on convection appears only through boundary conditions. A system of differential equations of motion for a boundary layer is written and solved by an analytical method of solution for transfer problems developed by one of the authors and generalized for determining heat transfer in boundary layer. A comparison of the results obtained with available data, shows a good agreement. It is stated in the conclusion that the method presented here can be used for the solution of the nonlinear problem of heat transfer, when the energy equation of a system of boundary layer equations contains dissipative terms.

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ENGINEERING
Aeronautical and Space

USSR

UDC 533.6.011.55:533.633.3

IVANOV, V. V., KRASIL'NIKOV, A. V., Moscow

"Experimental Study of Pressure Distribution on a Triangular Wing With Blunted Edges at Small Angles of Attack"

Moscow, Mekhanika zhidkosti i gaza, No. 2, Mar/Apr 72, pp 166-169

Abstract: The pressure distribution on a triangular wing with blunted edges with a semispan angle $\theta = 45^\circ$ was studied experimentally at angles of attack $\alpha = 0, 5$ and 10° for $M_\infty = 11.6$ and $Re = 1.5 \cdot 10^6$. A considerable pressure drop was observed in the region adjacent to the axis of symmetry at a certain distance from the vertex. It is noted that a theoretical study of the flow over a triangular wing at hypersonic velocities becomes quite complicated in the presence of blunted edges since the flow becomes essentially three-dimensional and it is necessary to consider the characteristics of flow in the high-entropy layer in the region between the body in the shock wave. Pressure was measured on the surface of the wing using 32 miniature differential inductive transducers. Pressure measurements were made on a wing of the same model with sharp edges at $\alpha = 0$ and for the same Mach and Reynolds numbers as in the basic

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USSR

IVANOV, V. V., KRASIL'NIKOV, A. V., Mekhanika zhidkosti i gaza, No. 2, Mar/Apr 72, pp 166-169

experiments to show the effect of viscosity and nonuniformity of the flow field. Experiments showed that the effect of viscosity under the experimental conditions was slight and that the incident flow was fairly uniform. It was observed that close to the vertex of the wing the shock wave is curved and as distance from the vertex increases, it is practically straight so that the angle of inclination of the shock wave to the surface of the wing decreases almost linearly with the rise in angle of attack. The pressure distribution on the wing and along the axis of symmetry is graphed. A discussion of the results shows qualitative agreement with the theory.

Inorganic Compounds

USSR

UDC 541.127.1/546.681'18+546.681'19⁷

SHURYGIN, P. M., MARBAKH, A. L., DENISOV, V. M., IVANOV, V. V., Krasnoyarsk Institute of Nonferrous Metals imeni M. I. Kalinin

"Kinetics of Thermal Dissociation of GaP and GaAs Under a Layer of Flux"

Moscow, Doklady Akademii Nauk SSSR, Vol 204, No 6, 21 Jun 72, pp 1419-1421

Abstract: The authors investigated the kinetics of thermal dissociation of gallium phosphide and gallium arsenide under a layer of B_2O_3 doped with Na_2O , SiO_2 and GeO_2 at various pressures of argon. The process of vaporization of the volatile component of the compound -- formation and growth of the gas bubble, its detachment from the molten semiconductor and rise in the flux -- was observed visually and photographically. The rate of dissociation was determined from the number and sizes of bubbles escaping from the interface between phases or from the change in weight of the specimens. The results show that the vaporization of arsenic and phosphorus in the process of dissociation of gallium arsenide and gallium phosphide under molten flux is limited by the processes for formation and growth of bubbles. These processes depend on the external pressure of the inert gas and may be controlled by changing the composition of the flux. The pressure which prevents or

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USSR

SHURYGIN, P. M., et al., Doklady Akademii Nauk SSSR, Vol 204, No 6, 21 Jun 72,
pp 1419-1421

strongly suppresses gas release can be lowered considerably by appropriate
selection of a flux with high surface tension.

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USRR

UDC 621.791.1

IVANOV, V. YE., AMONENKO, V. M., GODIN, V. M., RYBAL'CHENKO,
N. D., TRON', A. S., and YAKUSHIN, A. P., Khar'kov

"Properties of Compounds of Ti Alloys With Steel Made in Thin
Layers"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71,
pp 101-105

Abstract: The strength and plastic properties of the bimetals VT6S-1Kkh8N10T, OT⁴-1Khl8N10T, Vt14-1Khl8M10T, and AT2-Khk8k0T with niobium-copper interlayers were studied in the temperature range from -196 to +1,000°C. The influence of the dimensional factor on the effect of contact hardening of the interlayer was established. The increase in the strength of the thin copper interlayers is explained by specifics of the stress state of the metal with low yield point, located between two stronger metals. This state of the metal during deformation results in higher shear stresses, resulting from blocking of dislocations by the stronger metal at the division boundary. The use of these thin interlayers of copper and niobium, preventing the formation

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USSR

IVANOV, V. YE., et al., Fizika i Khimiya Obrabotki Materialov,
No 2, Mar-Apr 71, pp 101-105

of brittle compounds at the titanium-steel division boundary,
allows the production of the material with high strength, good
impact toughness, fatigue resistance, and satisfactory ductility.

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USSR

UDC 569.725: 539.292

IVANOV, V. Ye., TEKHINSKIY, G. F., SHPAGIN, I. V., and KHRISPENKO, I. N.,
Physicotechnical Institute of the Academy of Sciences, Ukrainian SSR

"The Effect of Grain Size on Cold Brittleness of Beryllium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 6, Jun 71, pp 1281-1285

Abstract: An investigation was made of the dependence of the brittle-plastic transition temperature (T_b) of high-purity beryllium (99.95%), determined from bending test results, on the grain size d . In the scope of the theory of R.W. Armstrong this dependence is characterized by the equation $T_b = A - B d^{-1/2}$, where A and B are constants. The limiting possibility of lowering T_b for the metal under consideration by a decrease of the grain size is analyzed. The cross-breaking strength and the yield point near T_b change in relation to the grain size in accordance with presented functions. The coefficients of these functions are determined for three types of the metal, the distilled, hot-pressed, and hot-pressed deformed types. On the basis of calculations and the analysis of results, an attempt is made to determine the deformation mechanism and the breakdown character of pure beryllium. The bending strain of beryllium is brought about principally as a result of realization of the mechanism characterized by high breaking stresses. Three illustr., one table, four formulas, 15 biblio. refs.

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USSR

UDC 669.725:539.374

IVANOV, V. YE., TIKHENSKIY, G. F., SHPAGIN, I.V., KORNIYENKO, L.A., MERISPEENKO, I.N., and NIKOLAYENKO, A.A., Physicotechnical Institute of the Academy of Sciences USSR

"The Effect of Admixtures on the Cold Brittleness of Beryllium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 6, Jun 71, pp 1286-1292

Abstract: The dependence of the transition temperature of beryllium from the brittle into the plastic state on the metal purity is investigated. This dependence is very sharply expressed at low concentrations ($\sim 0.05\%$) of the admixtures. By the replica method and the transmitting electron-microscopy method, the deformation mechanism and the desintegration character of beryllium at temperatures corresponding to the brittle and plastic states was studied. The contribution of turning to deformation and the potential to brittle failure on cleavage elements decrease with increasing purity; further, in the pure metal there appears the possibility of a light slipping on grain boundaries. The strength of beryllium increases with increasing bending test temperature up to the transition temperature from there brittle to the plastic state, which is connected with the decreased tendency of beryllium to brittle failure on cleavage elements. Six illustr., one table, 21 biblio. refs.

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USRR

UDC 621.791.1

IVANOV, V. YE., AMONENKO, V. M., GODIN, V. M., RYBAL'CHENKO,
~~N. D., IRON, A. S.,~~ and YAKUSHIN, A. F., Khar'kov

"Properties of Compounds of Ti Alloys With Steel Made in Thin
Layers"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71,
pp 101-105

Abstract: The strength and plastic properties of the bimetals
VT6S-1Khk8N10T, OT4-1Kh18N10T, Vt14-1Kh18M10T, and AT2-Khk8kOT
with niobium-copper interlayers were studied in the temperature
range from -196 to +1,000°C. The influence of the dimensional
factor on the effect of contact hardening of the interlayer was
established. The increase in the strength of the thin copper
interlayers is explained by specifics of the stress state of the
metal with low yield point, located between two stronger metals.
This state of the metal during deformation results in higher
shear stresses, resulting from blocking of dislocations by
the stronger metal at the division boundary. The use of these
thin interlayers of copper and niobium, preventing the formation
1/2

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USSR

IVANOV, V. YE., et al., Fizika i Khimiya Obrabotki Materialov,
No 2, Mar-Apr 71, pp 101-105

of brittle compounds at the titanium-steel division boundary,
allows the production of the material with high strength, good
impact toughness, fatigue resistance, and satisfactory ductility.

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USSR

UDC 621.039.543.4:621.039.544.57

VOLOSHCHUK, A. I., GAYDAMACHENKO, G. S., GOLOVCHENKO, YU. M.,
ZELENSKIY, V. F., IVANOV, V. YE., and KONOTOP, YU. F.

"Uranium Hardened With Beryllium Oxide Particles"

Moscow, Atomnaya Energiya, Vol 29, No 3, Sep 70, pp 178-183

Abstract: The article describes results of a study of uranium hardened with beryllium oxide particles. Compositions were prepared by mixing uranium hydride and beryllium oxide powders. Several types of beryllium oxide powder were used, viz. ordinary commercial BeO and BeO obtained from beryllium acetate by the Funston method. The results indicate that the strengthening of uranium with dispersed beryllium oxide particles significantly increases its heat resistance. The creep rate declines with a drop in the annealing temperature of beryllium oxide during its preparation. The creep rate is highly sensitive to load. At 600° C the creep rate of precipitation-hardened uranium is the same as or below that of unalloyed uranium at 500° C and under the same stresses. The creep activation energies calculated

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USSR

VOLOSHCHUK, A. I., et al., Atomnaya Energiya, Vol 29, No 3, Sep 70, pp 178-183

from the slope of the curves $\ln \dot{\epsilon} = f\left(\frac{1}{T}\right)$ for the most heat-resistant compositions are considerably less than the self-diffusion activation energy and the creep activation energy of unalloyed commercial uranium. High-temperature softening in precipitation-hardened uranium is delayed 50-100° C as compared to unalloyed commercial uranium. Preliminary radiation test results indicate the high radiation resistance of precipitation-hardened uranium.

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AA0046398- IVANOV V. YE. UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

1/70

242467 DEFECTOSCOPE CARRIAGE ensuring that the gap between the pick-up and the surface of examined article remains constant over a wide range of article diameters, includes a rotating faceplate with an articulated and spring-loaded lever at the end of which there is a body with two rollers a spring and a fork with an additional roller to which a pick-up head is attached.

12.8.66 as 1097681/25-28.L.P.GERSHENFOREN et al. NON-DESTRUCTIVE METHODS & MEDIA FOR CONTROL OF MATERIALS QUALITY RES.INST. (8.9.69) Bul 15/25.4.69. Class 42k. Int.Cl.G 01 n.

MT

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19781588

AA0046398

AUTHORS: Gershengoren, L. R.; Ivanov, V. Ye.; Chernobel'skiy, A. A.

Vsesoyuznyy Nauchno - Issledovatel'skiy Institut po Razrabotke
Nerazrushavushchikh Metodov i Sredstv Kontrolya Kachestva
Materialov

2/2

19781589

USSR

UDC 620.193.01:669.248

IVANOV, YE. G., KOLOMYTSEV, P. T., and KOSTINA, L. A., Air Force Engineering Academy imeni N. Ye. Zhukovskiy

"On the Catastrophic Oxidation of Nickel Alloys"

Moscow, Zashchita Metallov, Vol 9, No 1, Jan-Feb 73, pp 80-82

Abstract: In order to explain the catastrophic oxidation of heat-resistant nickel alloys (KhN70V18FTYu (EI826), KhN55WTFKYu (EI929), and KhN51V18YukFR (EP220)), the composition and kinetics of sublimation of oxide sublimates produced was investigated. Molybdenum is shown to be the main component in the sublimate, its concentration increasing with rising oxidation temperature. The EP220 alloy was found to have the highest sublimation rate of oxides and the lowest heat resistance; the EI929 alloy had the lowest sublimation rate of oxides and the highest heat resistance. A possible sublimation mechanism is presented. The catastrophic pitted oxidation observed at temperatures over 1000° is combined with the development of liquid and gaseous oxides of molybdenum. Two figures, one table, four bibliographic references.

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1/2 044 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--VISION IN SPACE -U-
AUTHOR-(02)-IVANOV, YE., KHACHATURYANTS, L. I
COUNTRY OF INFO--USSR
SOURCE--KRASNAYA ZVEZDA, JUNE 17, 1970, P 4, COLS 3-7
DATE PUBLISHED--17JUN70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, SPACE TECHNOLOGY
TOPIC TAGS--VISION, VISUAL PRECEPTION, MANNED SPACECRAFT/(U)VOSKHOJ 1
SPACECRAFT, (U)SOYUZ 9 MANNED SPACECRAFT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0896 STEP NO--UR/9008/70/000/000/0004/0004
CIRC ACCESSION NO--AN0107425
UNCLASSIFIED

2/2 044

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AN0107425

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FIRST SOVIET EXPERIMENTS AIMED AT THE STUDY OF HUMAN VISION UNDER CONDITIONS OF SPACE FLIGHT WERE CONDUCTED IN THE "VOSKHOD-1" SHIP. THE DATA DERIVED DURING THAT FLIGHT AND SUBSEQUENT FLIGHTS HAVE SHOWN THAT THE RESOLUTION OF HUMAN VISION WAS PRACTICALLY UNAFFECTED 5-7 PERCENT LOWER THAN ON THE GROUND. HOWEVER, THE RELIABILITY OF THE OPERATIONAL VISUAL CAPABILITY WAS REDUCED BY 26 PERCENT EVEN IN A ONE DAY FLIGHT. IT IS BEING ANTICIPATED THAT A LONG FLIGHT, SUCH AS THAT OF THE "SOYUZ-9", WILL BE INSTRUMENTAL IN THE ADAPTATION OF HUMAN VISION TO SPACE CONDITIONS. THE REDUCTION IN BRIGHTNESS OF SIX BASIC COLORS WAS ON THE ORDER OF 25 PERCENT.

UNCLASSIFIED

USSR

UDC 612.84:629.198.61

IVANOV, Ye. A.

"Methods for the Evaluation of the Visual Functions of Crew Members in Small Flight Cabins"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 5, 1973, pp 647-657

Abstract: Factors important in the evaluation of the state of vision of flight members of small modules were considered, such as adequate light energy, the tone or color contrast between an object and its background, the angle of vision, and the duration of perception. Each of these factors depends on the psychophysiological state of the crew member and photometric conditions. Consequently, test tables with patterns were designed to evaluate visual acuity on ground and under in-flight conditions. Under in-flight conditions the statistical error in visual acuity came to $\pm 20\%$.

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USSR

UDC 621.396.674.3.095

IVANOV, YE.A., KLIMCHUK, S.F.

"The Field Of Radiation Of A Longitudinal Magnetic Dipole In The Presence Of A Plane Screen And Of A Circular Cylinder Parallel To It"

Radiotekhnika i elektronika, Vol XVII, No 3, March 1972, pp 454-462

Abstract: The problem is solved of the field of radiation of a longitudinal magnetic dipole in the presence of a reflecting structure consisting of an unbounded plane screen and of an ideally conducting infinitely long circular cylinder parallel to it. The moment of the dipole is parallel to the plane screen and the axis of the cylinder. The problem is solved in polar coordinates on the basis of the method of separation of variables and the method of mirror images. The results of a numerical calculation are presented for various values of the parameters which determine the behavior of the field in the wave zone. The results are also shown as antenna directional diagrams. 6 fig. 5 ref. Received by editors 8 Feb 1971.

1/1

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USSR

UDC 517.951

IVANOV, Ye. A., KARPUK, A. A., Belorussian State University imeni V. I. Lenin,
Institute of Mathematics of the Academy of Sciences Belorussian SSR

"Problem of the Diffraction of the Radiation Field of a Shifted Magnetic Dipole
in Two Coaxial Circular Discs. I"

Minsk, *Differentsial'nyye Uravneniya*, No. 5, May 71, pp 892-901

Abstract: The ideas used in a previous article by one of the authors (Ivanov) concerning the rigorous solution of the general problem of an ideally conducting circular disc located in the radiation field of an elementary oscillatory magnetic dipole located at an arbitrary point in space at a finite distance from the disc with a moment oriented at a certain angle to the axis of the disc are applied in this problem to the case of two circular discs of different radii, irradiated initially by the radiation field \vec{E}^0, \vec{H}^0 of a magnetic dipole of arbitrary orientation displaced from the axis of the discs. A mathematical formulation of the boundary value problems corresponding to given orientations of the dipole moment is given, and then a method is described for obtaining a rigorous solution of them. Two cases are studied:
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the case in which the dipole moment is directed perpendicular to the axis of the discs (horizontal dipole), and the case in which it is parallel to the axis (vertical dipole). The re-emitted electromagnetic field is sought in the form

$$\vec{H} = -ik_0 \text{rot } \vec{\Pi} + \text{grad div } \vec{\Pi} + k^2 \vec{\Pi},$$

where the electric and magnetic vectors are sought in the form of expansions in terms of spheroidal wave functions. The coefficients for these functions are obtained with an infinite system of linear equations. The formulas derived can be used to investigate the behavior of the total field in the wave zone.

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DOROKHOVA, I. Ye., IVANOV, Ye. F.

"Software for the Solution of Certain Problems in Automation of Drawing"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 46, Novosibirsk, 1971, pp 175-178, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V702).

NO ABSTRACT.

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Materials

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KOLOMYTSEV, P. T., IVANOV, YE. G., KALAFIROV, P. D., and STREKOPYTOV, S. A.,
Moscow

"Investigation of the Ductility of Coatings on Heat-Resistant Alloys"

Kiev, Problemy Prochnosti, No 6, 1973, pp 106-107

Abstract: Development of an algorithm is described for investigating the ductility of protective coatings on heat-resistant alloys over a wide temperature interval. Coatings were formed on alloys KhN70VMFTYu (EI826) and KhN55VMFKYu (EI 929) by calorizing in a mixture of ferroaluminum and aluminum chloride as well as chromium calorizing in a vacuum. It was found that when the aluminum content in the coating is increased the ductility properties of the coating are impaired. In calorizing, brittle aluminides NiAl and Ni₂Al₃ are formed whereas in chromium calorizing, aluminides NiAl and the ductile Ni₃Al are formed which imparts some ductility to the coating. 3 figures.

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