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BORISOV, T., Trud, 8 Feb 72, p 3

spacecraft made a soft landing on the Moon on 19 April 1967. In November 1969 the astronauts, who participated in the lunar expedition on Apollo 12, examined the vehicle standing on the Moon and removed a number of parts from it for study on earth, i.e., a television camera, a bucket, and part of a cable. These items were delivered to laboratories on earth under conditions of strict sterility. Small pieces of wires and metal and other structural materials were placed in test tubes containing nutrient media. A miracle happened in one flask. A white "tail" 2 to 3 millimeters long grew on a piece of polyurethane foam which had been part of the heat insulation within the television camera of Surveyor-3. An analysis showed that this was a colony of the *Streptococcus mitis* microorganisms, which are well known on earth. Evidently, the microbes were brought into the television camera by the operator's breath during the prestart preparation of Surveyor-3. The microorganisms were on the Moon, where the conditions are incomparably more severe than on Mars, for  $2\frac{1}{2}$  years and they survived!

Thus, many earthly microorganisms could live and reproduce themselves on Mars. However, this does not prove that there is life on Mars. First of all, it should have originated and developed from nonliving matter there. Perhaps, however, the conditions on Mars are totally unsuitable for this?

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Scientific investigations which make it possible to answer this question have been conducted in the last few years.

The essence of these experiments is as follows. A corner of Mars, this time free from any traces of microorganisms and organic substances, i.e., sterile, chemically pure, and nonorganic, is created in a chamber. Pure sandy soil and an atmosphere of carbon dioxide with small admixtures of nitrogen and water vapor are the initial products before the beginning of this experiment. Next, solar radiation, including its ultraviolet part, which on Mars, in contrast to earth, reaches the planet's surface in an almost unchanged form, is recreated in the chamber.

The experiment goes on for days, weeks, and months. Certain chemical reactions take place among the substances. Ultraviolet radiation plays a very important part here. It ionizes gases, and the reactions among ions are especially intense. After the completion of the experiment the reaction products are subject to a careful chemical analysis. At the same time, a number of complex organic substances are discovered. Such compounds as formaldehyde, acetaldehyde, and glycolic acid are primarily formed. The atmospheric nitrogen is gradually oxidized and nitric oxides actively enter into reactions. By combining among themselves, the simplest organic molecules, especially under the effect of ultraviolet radiation, can form a

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number of biochemically important substances. Quite recently it was established in the same Leningrad Institute of Cytology that various aminoacids appear in the process. Consequently, such a set of organic substances could have also appeared on Mars.

Experiments during which aminoacids were discovered in meteorites that had fallen on earth have been conducted in our country and abroad. For example, in the Murchison meteorite, which had fallen in Australia in

September 1970, five different aminoacids were discovered. Aminoacids are the "bricks" from which protein is built. The simplest organic compounds (for example, formaldehyde) are detected by spectral analysis also in interplanetary space in clouds of interstellar gas.

Evidently, the emergence of organic substances from inorganic compounds is a typical chemical process and a normal route of the chemical evolution of matter. Therefore, there is nothing surprising in the appearance of such substances on Mars.

As yet, however, science cannot answer other questions. Does the appearance of organic substances always lead to the emergence of life? Does chemical evolution always lead to biological evolution? Therefore, we cannot now confirm that there is life on Mars. In principle, it could

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have originated and developed there. But did it originate? The automatic explorers which will conduct the appropriate experiments on the surface of the red planet in the future will answer this question. The way for such automatic "biologists" was opened after the soft landing of the descent capsule of the Soviet Mars-3 interplanetary station.

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1/2 036 UNCLASSIFIED PROCESSING DATE--0200170  
TITLE--FROM "VOSTOK-3" TO "SOYUZ-9" -U-  
AUTHOR--BORISOV, T. *B*  
COUNTRY OF INFO--USSR  
SOURCE--TRUD, JUNE 10, 1970, P 3, COLS 1-3  
DATE PUBLISHED--10JUN70  
SUBJECT AREAS--SPACE TECHNOLOGY, AERONAUTICS  
TOPIC TAGS--MANNED SPACECRAFT, PARACHUTE, SPACECRAFT LANDING/(U)VOSTOK  
MANNED SPACECRAFT, (U)SOYUZ MANNED SPACECRAFT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/1596 STEP NO--UR/9025/70/000/000/0003/0003  
CIRC ACCESSION NO--AM0108016  
UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--02JCT70

CIRC ACCESSION NO--AN0108016

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE ENUMERATES SOME BASIC DIFFERENCES BETWEEN THE VOSTOK AND SOYUZ SPACE SHIPS. ASTRONAUTS FLYING THE "VOSTOK" SHIP HAD AN OPTION OF EITHER MAKING A PARACHUTE LANDING WITH THE SHIP OR EJECTING AT AN ALTITUDE OF ABOUT 7 KMS. THE REENTRY ACCELERATION OF THE "VOSTOK" SHIP WAS 8-10 G, S, WHEREAS THAT OF THE "SOYUZ" IS ONLY 3-4 G, S.

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UR 9025

FROM: FBIS Daily Report, Soviet Union, 21 Jan 1970, Vol III, Nr 14, pp D1-D3

USSR

GIANT RADIOTELESCOPE USED TO TRACE PULSARS

Moscow TRUD 15 Jan 70 P 4 L

[TRUD special correspondent T. Borisov article: "Signals of Other Worlds? Pulsars Transmit a Cipher..."]

[Text] The first impression: the strings of a giant harp are stretched across the earth. Dozens of metal masts, drawn up in an ideally straight line, stretch into the distance. At the top of each of them is an arched cross-piece in the form of a large yoke. These are parabolic girders. To these are fixed 430 wires, forming, if it were, a distinctive trough 1,000 meters long. Of course, it is not solid, for the distance between the wires is very appreciable. The wire trough is just one antenna, one ray of the cross-shaped DKR-1000 radiotelescope. It is true, scientists do not say ray but north-south band. The other similar antenna, formed from 17 masts, on which wires are also stretched, intersects the north-south band in the center, at an exact right angle. From above, from an airplane, the radiotelescope's antennas look like a 1,000-meter dotted cross....

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It is here that hundreds of wires catch the distant and mysterious signals coming from the depths of space.

I endeavor to imagine the vast intergalactic spaces, through which even a swift ray of light takes hundreds and thousands of years to pass, but the imagination is obviously inadequate. Signals in the form of electromagnetic waves travel and travel along the roads of space, past planets unknown to us, and past stars. While they are traveling to the earth, they become quite weak. This is why such powerful antennae are needed to receive them.

The cross-shaped radiotelescope near Serpukhov is one of the largest in area in the world.

The east-west antenna is rotatory. The parabolic girders, fixed to steel supports, can synchronously turn through an angle of 120 degrees. The DNR-1000's sensitivity is such that to observe pulsars the entire antenna is not used, but only one-third of the east-west line.

Looking at this radiotelescope--and immense construction on an uninhabited plain--one experiences an unusual emotion. Perhaps it will be from here that the first radio bridge to other civilizations will begin....

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We approach a small building at the center of the cross, near the intersection of the DKR-1000's two antenna bands. Here the apparatus is installed that controls the radioscope's work and records radio signals. The broad tape of the automatic recorder winds on and greenish snakes run over the screens of the oscillographs...Here a wavy line is distorted by a sudden peak--it is a hit! This is a signal from a distant pulsar....

The history of the discovery of pulsars is fascinating and dramatic. The unusual signals were first discovered by Jacqueline Bell in 1967 in a radioastronomic laboratory near Cambridge. The records of radio signals were divided by pulses and were created at a period of 1.3373 seconds!

Radio signals coming from space bodies, nebulae, galaxies, quasars--have the form of noises. On the recorder's band these noises look like a disorderly, chaotic palisade of broken lines. The noise can increase with time, weaken, or remain constant. This, so to speak, is the voice of the elements, of inanimate nature. The noise of a waterfall, peals of thunder, or the howl of the wind can serve as examples of noises in the diapason of sound waves. And here, figuratively speaking, the radio signals recorded at Cambridge differed from the normal noises from space sources just as the noise of surf differs from the sound of a working engine on a ship. It was logical to conclude that the origin of these signals is artificial, associated with intelligent activity.

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The signals felt almost no doubt that they were received from the inhabitants of other worlds, situated far from our solar system. However, more careful research showed that there was still an indication which allowed the mysterious signals to be attributed to phenomena of inanimate nature. Intelligent beings should transmit either on a certain wavelength or on a certain waveband. But pulsers apparently omit signals over the whole diapason of radiowavers.

Nevertheless, interest in pulsars is as great as ever. They are being observed in various countries, including the Soviet Union. Since March of last year signals from pulsar CP-1919 have begun to be received in the radioastronomical laboratory of the USSR Academy of Science P.N. Lebedev Physics Institute. In December 1968 Soviet scientists discovered a new pulsar. It was named PP-0934 (the letters are from the words pushchino and pulsar and the figures signify the body's coordinates in the heavenly sphere).

Today more than 40 pulsars have been discovered. But so far they remain a mystery. Scientists theorize that a pulsar is either a star of the white dwarf type, well known in astronomy, or a neutron star which earlier existed only in theory. Astronomers explain the origin of these two types of stars in the following manner. Stars grow old. With time the thermonuclear reaction seething within them grows weaker; the reserves of fuel diminish and the products of the reaction accumulate. The star's mass is huge. Under the action of the force of gravity this mass invariably

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begins to contract. Before, the compression was opposed by the energy bursting out from within the star. But now this energy is already weakening. The compression grows stronger. Of course, all this happens very slowly. A year in a man's life is equal to dozens of millions of years in a star's life.

After a certain time the star turns into a so-called white dwarf. The density of such a star reaches 1-10,000 tons per cubic centimeter!

But if the mass of the contracting star exceeds a certain critical mass, equal to approximately 1.2 times the mass of the sun, the compression does not stop at the stage of the white dwarf. Theory predicts a stable neutron state for the star.

In a white dwarf the atoms are packed very closely and their electron shells are destroyed; however, the atoms' nuclei and electrons still exist independently. Further compression leads to electrons (negative particles) uniting with the protons of nuclei (positive particles) and forming neutrons, which under compression produce a fantastic density of matter--from 1 million to 1 billion tons per cubic centimeter. With such packing our earth would become a sphere with a diameter of approximately 1 and a half kilometers.

New research has shown that pulsars are not white dwarfs. Most likely they are neutron stars.

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We returned to the scientific town of Pushchino on the bank of Oka together with the leader of the pulsars study, Doctor of Physicomathematical Sciences V. V. Vikrevich. "Today we must still not peremptorily declare that pulsars are neutron stars," he said. "Further research may confirm this pattern or lead to the creation of a new one. But even now the pattern of a neutron star seems very probable. In this case pulsars are the major discovery of astronomy for the last few decades. Stars have been discovered at a period of their life which was formerly hidden from our observations and was predicted only in theory. The secret of the birth, life, and death of the stars is one of the most burning mysteries of nature. Here every step is interesting...."

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USSR

UDC 621.382(047.1)

ZHDANOV, V.I., AKSENOV, A.I., BORISOV, V.A., MITRCFANOV, A.V.

"New Semiconductor Devices For Radioelectronics Apparatus"

Elektron. tekhnika. Nauch.-tekhn. sb. Poluprovodn. pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, Issue 2(59), pp 11-20 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B9)

Translation: The paper considers the principal characteristics and directions in the development of contemporary discrete semiconductor devices for radioelectronics apparatus for wide-scale application. In the development of power transistors, three principal directions are indicated: (1) Creation of a transistor for increasing the power with a high critical frequency of amplification of the current and small interelectrode capacitances applicable to high-frequency and microwave techniques; (2) Development of a transistor with a large amount of production of the maximum current of the collector at the permissible collector voltage with large power dissipation and a critical frequency of amplification up to 20 MHz, broadening use in amplifier and switching circuits; and (3) Creation of high-voltage transistors necessary for the final stage of the horizontal sweep of television and a number of other circuits. 7 ill. V.K.

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USSR

UDC 612.382

CHERNYSHEV, A. A., AKSENOV, A. I., BORISOV, V. A.

"Use of Semiconductor Devices in a Radioelectronics Apparatus and Means of Increasing Its Operational Reliability"

Elektron. tekhnika. Nauch.-tekhn. sb. Poluprovodn. pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1971, Issue 2(59), pp 5-10 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B560)

Translation: An expansion of the functional problems which are met by a contemporary apparatus leads to an increase of the quantity of elements entering into it. Hence there results an increase of the requirements on the reliability of semiconductor devices. Failure of semiconductor devices in an apparatus is principally produced by their incorrect use. Use of semiconductor devices in regimes exceeding the maximum permissible norms leads to gradual or sudden failure. At present, breakdowns in the use of a semiconductor device in a static regime is almost not found; breakdowns are primarily connected with the transient processes of operation of a circuit. A third category of breakdown arises with reduction of the load to an unjustifiedly small magnitude when, because of the significant effect of the back currents, instability of the load currents is increased. With the

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CHERNYSHEV, A. A., et al., Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1971, Issue 2(59), pp 5-10

tendency to obtain specified output characteristics by ruggedization of the norms on the parameters of the semiconductor devices, matching them in pairs, etc., the reliability of the apparatus is reduced. During construction of apparatus it is necessary to take into account the technological spread and the drift of the parameters of semiconductor devices which is not subordinated to any kind of specific law. Circuit -- construction breakdowns (incorrect mounting in the assembly bending lead outs, etc.) can lead to a deterioration of the electrical and thermal operating conditions of the semiconductor devices. Reliability of operation of the apparatus is also connected with the presence of methods and guidance which determine the order and conditions of use and control of the methods of use of semiconductor devices. At present recommendations are prepared on the use of stabilitrans, non-housed devices and guidance is worked out on the use of thyristors, and devices with negative resistance. Before 1975 guidance must be issued on the use of varicaps, microwave diodes, light-emitting diodes, field-effect transistors, and others. 1 ref. I. M.

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621.517.77  
KUCHERENKO, G. N., BORISOV, V. P., and KRAVCHENKO, S. A.

"A Method of Verifying Electronic Phase Meters in a Frequency Range of the Order of 10 MHz"

V sb. Voor. uluchsheniya tekhn. parametrov vypryamit. i tranzist. priborov (Problems of Improving the Technical Parameters of Rectifiers and Transistorized Devices--collection of works) Leningrad, 1970, pp 240-246 (from Radiotekhnika, No. 5, March 71, Abstract No. 34362)

Translation: It is shown that the best method for verifying phase meters in the 10 MHz frequency range is the specification of known phase shifts through sample phase-shift devices (PSD). The most promising is the PSD with phase automatic frequency control. The characteristics of the phase APC system permits its use in the design of highly accurate PSD with a wide phase and frequency range. A circuit diagram and the characteristics of the developed PSD are given. Bibliography of two. E. L.

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USSR

UDC: 621.3.019.3

BORISOV, V. F.

"Use of Topological Methods for Calculating the Reliability of Radio Components With Respect to Partial Failures"

Tr. Mosk. aviats. in-ta (Works of the Moscow Aviation Institute), 1970, vyp. 212, pp 22-42 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A86)

Translation: A method is outlined for determining the influence coefficient for the effect which the elements' parameters have on the output parameters of a circuit. The procedure is based on topological analysis of the circuit, the basic electrical parameters of the circuit (transmission ratio, input and output impedances) being determined directly from the circuit configuration, which speeds up calculation considerably as compared with classical methods. Seven illustrations, bibliography of eight titles. N. S.

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Reliability Theory

USSR

UDC: 621.3.019.3

FOMIN, A. V., BORISOV, V. F., CHERMOSHENSKIY, V. V.

"Methods of Computer and Experimental Evaluation of the Reliability of Radio Components With Respect to Incomplete Failures"

Tr. Mosk. aviats. in-ta (Works of the Moscow Aviation Institute), 1970, vyp. 212, pp 89-117 (from RZh-Radiotekhnika, May 71, No 5, Abstract No 5A85)

Translation: A comparative analysis is given of the matrix-topological method and the method of statistical planning of an experiment from the standpoint of their use for computer calculation of the reliability of electronic circuits. It is shown that the second method can be used for calculating reliability with respect to incomplete failures when the circuit has no analytical description. Seven illustrations, one table, bibliography of seven titles. N. S.

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UDC 621.372.5/.6

B  
BORISOV, V. F.

"Use of Circuit Technology for Machine Analysis of Radio Circuits"

Metody razrab. radioelektron. apparatury. No 1 (Methods of Developing Radio-electronic Equipment. No 1), Moscow, 1970, pp 117-119 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8A190)

Translation: The application of the method of variables of state during analysis of radio circuits by means of analog and digital computers has been demonstrated. Currents flowing through inductances and voltages on capacitances are usually selected as the variable states characterizing the energy stored in a system. The bibliography has two entries.

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USSR

DABAGYAN, A. V., BORISOV, V. G. and MIKHAYLENKO, N. S.

"The Problem of Prediction of Random Processes"

Upravlyayushchiye Sistemy i Mashiny [Control Systems in Machines],  
1973, No 1, pp 42-46 (Translated from Referativnyy Zhurnal Kibernetika,  
No 9, 1973, Abstract No 9V204)

Translation: The possibility is studied of predicting a stable random  
process formed by a discrete sequence of random quantities distributed  
normally using a linear prediction model. An example is presented of  
prediction of the quality of manufacture of series-produced electric  
motors.

Author's view

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USSR

UDC 669.71.042.62

KUROCHKIN, P. D., KUZNETSOV, V. S., BORISOV, V. G.

"Solidification of Aluminum Sheet During Continuous Casting in a Roll Crystallizer"

V sb. Novoye v protsessakh goryachey obrabotki met. (What's New in the Processes of Hot Working of Metals -- collection of works), Moscow, Mashinostro-yeniye Press, 1971, pp 33-43 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G170)

Translation: The effect of the thermophysical properties of the metal and the forms and conditions of deformation of the crystallizing metal on the process of forming an Al casting in a roll crystallizer is demonstrated. Five illustrations and a 7-entry bibliography.

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USSR

UDC 669.716:621.746.55.047:621.771.23

BORISOV, V. G., MARAYEV, S. Ye., and ZYUZ'KO, I. I.

"Some Problems of the Theory and Practice of Ingot-Free Rolling of Aluminum Bands"

*Metallovedeniye Splavov Legkikh Metallov-Sbornik*, Moscow, "Nauka", 1970, pp 165-171, resume

Translation: Thermophysical constants of the melt and the solidified metal in the range of the crystallization temperature are investigated as constants not depending on temperature. The production process of the band by the method of ingot-free rolling is analyzed. As a result of processing data of all ingot-free rolling parameters, the liquid metal temperature dependence of the process rate was established. Two figures, four bibliographic references.

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USSR

UDC 621.314.14(088.8)

B

BCRISOV, V.I. [Tomsk Institute Of Radio Electronics And Electronics Technology]

"D-C Voltage Doubler"

USSR Author's Certificate No 253174, Filed 5 May 68, Published 24 Feb 70 (from  
RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 1CB365F)

Translation: A circuit is proposed for a doubler (constructed on the basis of capacitors and semiconductor diodes with a common zero point for applied and doubled voltages) with the object of feeding various stages from one and the same device. The doubler is made with the use of two series-connected semiconductor diodes connected between the source of the input voltage and a reservoir capacitor to which the load is connected. The blocking oscillator has a transformer with three windings: the first is connected in series with the charging capacitor at the junction with the semiconductor diode; the second is connected between the emitter and base of a transistor; the third between the emitter and base of an additional transistor, the collector of which is connected with a minus source and the emitter is connected with the collector of the oscillator transistor. With connection of the doubler to the source of the voltage supply, the capacitor is charged via the oscillator transistor to the voltage of the power source. When the oscillator transistor is blocked, the additional transistor is unblocked, joining the charged capacitor in parallel with the first semiconductor diode. During this the output voltage is equal to the doubled value of the feeding, because the first semiconductor diode is blocked. 1 ill. V.Sh.1/1

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USSR

UDC 537.533.2+537.534

BORISOV, V. L., SHAPIRO, I. YA.

"Secondary Emission Properties of Layers of Magnesium Oxide Obtained With the Aid of an Electron Beam"

Tr. Leningr. politekhn. in-ta (Works of Leningrad Polytechnical Institute), 1970, No 311, pp 20-24 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12Zh657)

Translation: Secondary emission properties of thick (up to 4  $\mu$ ) films of MgO were studied as they depended on preparation conditions. The MgO was evaporated with an electron beam of high intensity. It was shown that the coefficient of secondary electron emission ( $\sigma$ ) could change greatly, depending on the temperature of the metal substrate at the time of deposition of the film. A correlation was established between the optical transparency of the layers and the value of  $\sigma$  which is apparently caused by the dependence of the optical and secondary emission properties of the films on the concentration of defects in the crystalline structure. Authors abstract.

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USSR

UDC 537.533.2+537.534

ANDREYEVA, M. I., BORISOV, V. L., FYUKOV, V. K.

"Thermoelectron Emission of Certain Metals in Cesium Vapors"

Tr. Leningr. politekhn. in-ta (Works of Leningrad Polytechnical Institute), 1970, No 311, pp 3-9 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12Zh627)

Translation: The results of a study of thermoelectron emission of Mo, W, Re, and W-Re alloy (VR-15) in Cs vapors are presented. A distinct feature of the work is the relatively high values of the Cs pressure reaching, in the limiting case, 0.16 mmHg. The change in the work function of the Me-Cs system as determined by the total current method was traced over a broad range of emitter temperatures and Cs vapor pressures. It was shown that the smallest value of the work function, corresponding to an optimum coating of Cs and determined both by the total current method and by the Richardson line method, is observed in the case of Re and the W-Re alloy. The lowest values of the heat of vaporization of cesium atoms was obtained for these objects. 10 references. Authors abstract.

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USSR

UDC 517.9:833.7

BORISOV, V. M., and MIKHAYLOV, I. YE., Moscow

"On the Steady-State, Three-Dimensional, Vortex-Free Motion of a Gas With Supersonic Velocity"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol. 12, No. 4, Jul/Aug 70, pp 1006-1015

Abstract: Three-dimensional steady-state motion with the absence of vortices is analyzed as the most simple of the essentially spatial motions of a gas. The study is limited to the region of supersonic velocities. The form obtained for the characteristic relationships made it possible to make a complete analysis of these relationships and to construct a characteristic system of coordinates in space. The latter was used to construct a finite-difference scheme for the spatial characteristics method. The supersonic flow in a three-dimensional jet of tetrahedral shape is calculated as an example. The computation time on the BESM-6 computer was about 6 minutes.

1/2 012 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--MAGNETOOPTICAL METHOD FOR STUDYING PHOSPHORIC ACIDS -U-  
AUTHOR--(05)-BORISOV, V.M., MASLENNIKOV, B.M., SAMOYLOV, V.A., GUBAREVA,  
V.N., KONANYKHINA, L.N.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. MOSCOW 1970, 46(3), 190-1  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PHOSPHORIC ACID, MAGNETOOPTIC EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1996/0886 STEP NO--UR/0064/70/046/003/0190/0191  
CIRC ACCESSION NO--AP0118055  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118055

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGE IN VERDET'S CONST. DELTA DELTA OF AQ. POLYPHOSPHORIC ACID SOLNS. WAS TRACED (AS A FUNCTION OF P SUB2 O SUB5 CONCEN.) AT 35DEGREES AND A WAVELENGTH OF 500 NM; DELTA DELTA INCREASED FROM 10 TIMES 10 PRIME NEGATIVES AND THEN DECREASED TO 25 TIMES 10 PRIME NEGATIVES MIN-CM SEC WHEN THE P SUB2 O SUB5 CONCEN. WAS INCREASED FROM 10 TO 40 TO 70 WT. PERCENT, RESP., AND INCREASED CONTINUOUSLY AT HIGHER P SUB2 O SUB5 CONCNS.

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--STRUCTURE OF A NONEQUILIBRIUM IONIZATION FRONT IN A GAS -U-  
AUTHOR--BORISOV, V.M. *B*  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL VYCHISLITEL'NOI MATEMATIKI I MATEMATICHESKOI FIZIKI, VOL.  
10, JAN.-FEB. 1970, P. 252-255  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--GAS IONIZATION, SHOCK WAVE FRONT, SHOCK WAVE STRUCTURE,  
ELECTRON GAS, UNSTABLE PLASMA  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1978/1232 STEP NO--UR/0208/70/010/000/0252/0255  
CIRC ACCESSION NO--AP0046155  
UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0046155

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE STRUCTURE OF AN IONIZATION WAVEFRONT ON THE BASIS OF A VERY SIMPLE MODEL OF A NONEQUILIBRIUM, LOW TEMPERATURE, WEAKLY IONIZED PLASMA AND THE ELECTRON GAS ENERGY BALANCE EQUATION CORRESPONDING TO THIS MODEL. THE STRUCTURE OF THE IONIZATION FRONT AND ITS PROPAGATION VELOCITY ARE EXPRESSED IN THE FORM OF A SERIES IN POWERS OF A SMALL PARAMETER.

UNCLASSIFIED

Pesticides

USSR

UDC 631.893.12

BORISOV, V. M., ZHDANOV, Yu. F., DOKHOLOVA, A. N., POPOV, N. P., KONYUKHOVA, Ye. B., KIPRIYANOV, Yu. I., KARTOSHKIN, A. D., and KALASHNIKOV, V. A.

"Production of Granulated Ammophos Using the BGS Apparatus"

Moscow, Khimicheskaya Promyshlennost', No 12, 1973, pp 905-907

Abstract: Industrial experimental results are reported on the production of ammophos from the apathite concentrate. The method used involved evaporation of the pulp in a multiple unit vacuum evaporation apparatus followed by granulation in a BGS unit [Drum granulator-dryer]. Technological parameters are reported for the neutralization of the extracted phosphoric acid with ammonia, evaporation of the ammonized pulp, drying and granulation of ammophos.

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USSR

UDC: 533.6.011

BORISOV, V. M. MIKHAYLOV, I. Ye.

"Numerical Method of Characteristics for Three-Dimensional Stationary Nonvortical Gas Flows"

Sb. teor. rabot po gidromekh. (Collection of Theoretical Works on Hydro-mechanics), Moscow, Vychisl. tsentr AN SSSR, 1970, pp 6-29 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B228)

Translation: The authors construct a modification of the numerical method of three-dimensional characteristics for equations of nonvortical gas dynamics of a gas with arbitrary equations of state. It is shown that selection of the canonical equations on the characteristic surface is non-unique and may be accomplished with regard to the requirements of numerical methods (convenience of approximation, stability of calculation, etc.). As an example, hypersonic nonvortical flow of a perfect gas with  $\kappa = 1.4$  is calculated in the region of a sharp bend in the wall of a three-dimensional nozzle. Tables are given. I. M. Tsitelov.

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Fluid Dynamics

USSR

UDC 517.9:532

BORISOV, V. M., MARKOV, V. G., PALILOVA, S. F., Moscow

"On the Steady-State Motion of a Uniformly Dense Suspension in a Tube"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No. 3,  
May/Jun 71, pp 738-745

Abstract: The steady-state one-dimensional motion of uniformly dense suspensions is considered. The suspension is considered as a continuous medium, the state of which at each point under steady-state motion is characterized by three variables: the concentration of particles, the velocity, and the effective viscosity. The effective viscosity is defined as the proportionality coefficient between the amount of energy  $E$  dispersed in a unit volume per unit time and the second invariant deformation velocity vector of the medium. The analysis is based on a maximum principle of the dispersed energy in steady-state motion. The assumption is not made that the flow of the suspension satisfies the Navier-Stokes equations with an effective viscosity. The more natural use of a maximum principle for dissipation made it possible to make an analogy with the familiar Helmholtz principle for slow flows of a viscous incompressible fluid. It is shown that layering

1/2

USSR

BORISOV, V. M., et al, Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, No. 3, May/Jun 71, pp 738-745

of the suspension occurs in all cases. The rate of entrainment of the column of the solid phase formed is obtained for the case of a wall effect. It is pointed out that the model used applies when the flow of the suspension is essentially one-dimensional.

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USSR

UDC 621.373.029.7

BORISOV, V. S., KORIDALIN, V. YE.

"Study of the Intensity Fluctuations of the Induced Emission of a Gas Laser in Low and Infralow Frequency Ranges"

Moscow, Radiotekhnika i elektronika, Vol XVII, No 2, 1972, pp 425-426

Abstract: Results are presented from experimental studies of the intensity fluctuations of the induced emission of a gas laser in the 0.1-10 hertz range. Distribution curves were calculated from the results on a digital computer, and good agreement was detected with normal gaussian distribution. A curve is presented corresponding to a gas discharge tube current of 14 milliamps and another for 9 milliamps. The magnitude of the fluctuations for the second case turned out to be less. The magnitude of the intensity fluctuations of the induced laser radiation increased as the frequency dropped, and at  $f = 0.1$  hertz it reached  $\sim 2 \cdot 10^{-3}$  of the mean value of the radiation intensity of the laser. The measurements were performed in a broad frequency band. An expression is presented for the mean square noise current.

1/1

Powder Metallurgy

USSR

UDC 621.762.2.001

DOVZHENKO, L. D., BORISOV, V. T., RADOMYSEL'SKIY, I. D.

"Study of the Homogenization Kinetics when Obtaining Alloyed Powders"

V sb. Zashchitn. pokrytiya na metallakh (Protective Coatings on Metals -- collection of works), vyp. 5, Kiev, Naukova Dumka Press, 1971, pp 41-45 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G370)

Translation: The homogenization process when obtaining alloyed powders is determined by the gas phase composition, the surface reaction rates, and the diffusion of the element in the solid particles. A system of equations was compiled which describes the course of homogenization of the powder mixture. Investigation of the homogenization of a Fe-Ti powder mixture in various media demonstrated that the limiting saturation stage is the surface process kinetics. Three illustrations.

1/1

USSR

UDC: 669.189:621.746.7.001

BORISOV, V. T., VINOGRADOV, V. V., DUKHIN, A. I., MANOKHIN, A. I.,  
MATVEYEV, YU. YE., SOKOLOV, L. A. and SHISHKOV, V. T., (Moscow)

"Applicability of the Quasi-Equilibrium Two-Phase Zone Theory to the  
Description of Ingot Crystallization"

Moscow, Izvestiya Akademii nauk SSSR, Metally, no 6, Nov-Dec 71, pp 104-109

Abstract: Increasing the requirements on metal quality necessitates more intimate knowledge and in-depth analysis of the fine points of alloy crystallization phenomena. Noteworthy, in this case, is the study of the quasi-equilibrium two-phase zone of an alloy -- a region in which thermal, diffusion, and other processes accompanying the formation of the ingot's structure take place. This study is an attempt to test the applicability of the theory to computer analysis of the crystallization of a metal ingot. Described is a crystallizer designed for the study of thermal conditions in the two-phase zone of an ingot for crystallization at both low and high cooling rates. A mathematical arrangement is proposed characterizing a crystallizing ingot in terms of the new theory. The correlation of the theoretical results with the experimental data indicates that the proposed

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USSR

BORISOV, V. T., et al, Izvestiya Akademii nauk SSSR, Metally, no 6,  
Nov-Dec 71, pp 104-109

mathematical model provides both qualitative and quantitative patterns of  
the thermal and other real conditions of ingot crystallization.  
(2 illustrations, 13 bibliographic references).

2/2

USSR

UDC: 538.56

BORISOV, V. V.

"Incidence of a Pulsed Electromagnetic Signal on a Layer of Ionized Gas Whose Boundaries Move With the Speed of Light"

Leningrad, Vestnik Leningradskogo Universiteta, No 10, Apr-Jun 73,  
pp 38-46

Abstract: The recombination of charged particles after passage of an ionizing radiation pulse through an absorbing medium leads to a simplified model: the ionized region is limited by two planes whose velocity is equal to the speed of light. The problem of the incidence of a plane electromagnetic wave on this ionized region is examined. It is assumed that the electron velocity is much less than the velocity of light, that the ions are immobile, and that particle collisions are negligible. The author finds that the transverse electric field vector represents the superposition of two harmonic oscillations shifted in phase; the values of these oscillations at large distances from the wave front are determined. He expresses his gratitude to A. S. Blagoveshchenskiy for discussing the problem.

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USSR

UDC 621.317.255

BLAZOVESHCHENSKIY, A. S., BORISOV, V. V., Leningrad State University

"Incidence of a Plane Electromagnetic Wave on a Moving Density Jump of an Ionized Gas"

Gor'kiy, Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV, No 9, 1972, pp 1314-1319

Abstract: A study was made of problems connected with the movement of an ionization front -- a pulse of ionizing radiation then an absorbing medium -- using simplified models leading to the study of electromagnetic oscillations behind the front of the variation of the parameters of the medium (the density jump of the charged particles), the speed of which  $v$  as a function of the conditions of the absorption of the ionizing radiation and braking of the "fast" electrons formed is greater than the speed of light  $c$ . The problems of incidence of a plane electromagnetic wave on the electron density jump moving with a velocity  $v < c$  and  $v = c$  were investigated previously [V. I. Semenova, Izv. vyssh. uch. zav. Radiofizika, Vol 10, No 8, 1077, 1967; V. V. Borisov, Izv. vyssh. uch. zav. Radiofizika, Vol 14, No 1, 54, 1971].

The equations representing the problem are reduced to the Cauchy problem. The cases are considered where the incident electromagnetic wave has a time function in the form of the inclusion function, that is,  $I(\xi_2)u(\xi_2/\omega_0) = E_0 I(\xi_2)^{1/2}$

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USSR

BLAZOVESHCHENSKIY, A. S., et al., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV, No 9, 1972, pp 1314-1319

where the plane wave incident on the moving boundary has the time function  $E_y = E_0 I(\xi_2^0 \cos(\omega/\omega_0))$ ,  $\xi_2$  are the cosine oscillations with frequency  $\omega$  and phase equal to zero at the front. The results coincide with those obtained previously [V. V. Borisov, Izv. vyssh. uch. zav., Radiofizika, Vol 14, No 1, 54, 1971].

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USSR

UDC: 538.56:538.311

MANANKOVA, A. V., BORISOV, V. V., Leningrad State University

"Incidence of a Plane Wave on the Boundary of a Conductive Region Moving at the Speed of Light"

Gor'kiy, IVUZ Radiofizika, Vol 15, No 6, 1972, pp 928-934

Abstract: The problem of incidence of an electromagnetic pulse signal against the boundary of a conductive region moving at the speed of light is considered. It is assumed that the time between collisions of electrons with neutral particles or ions is much less than the characteristic scale of the time process being analyzed, and that the electromagnetic fields behind the front can be described by Maxwell equations with conduction current added. The behavior of the transverse components of vectors E and B during passage through the moving interface is analyzed. The solution of the nonstationary problem is constructed. In the case of an incident wave with time dependence in the form of an inclusion function, or in the form of an inclusion function with sinusoidal filling, the solution is expressed in terms of special functions. It is shown that when the conductivity of the medium approaches infinity, a static nonhomogeneous magnetic field, and a conduction current whose density is independent of time arise

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USSR

MANANKOVA, A. V., BORISOV, V. V., IVUZ Radiofizika, Vol 15, No 6, pp 928-934

as a result of the effect of the plane electromagnetic wave on the boundary of the region. In this case, the transverse component of vector  $E$  approaches zero. The spatial distribution of the conductivity of the medium and the transverse components of the vectors  $E$  and  $B$  is determined by the time dependence of the incident wave.

2/2

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1/2 011 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--DETERMINATION OF THE THREE DIMENSIONAL STRUCTURE OF A PEPSIN  
MOLECULE AT 5.5 A. RESOLUTION -U-  
AUTHOR--(05)-ANDREYEVA, N.S., BORISOV, V.V., GOVORUN, N.N., MELIKADAMYAN,  
V.R., RAYZ, V.SH.  
COUNTRY OF INFO--USSR

SOURCE--DOKL. AKADE. NAUK SSSR 1970, 192(1), 216-19

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEPSIN, MOLECULE, CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605006/F02 STEP NO--UR/0020/70/192/001/0216/0219

CIRC ACCESSION NO--ATC139815

UNCLASSIFIED

USSR

UDC 541.15

BORISOV, YE. A., and TIMOGYEV, V. D.

"Possibilities of the Utilization of Nuclear Reactors in Industrial Synthesis of Chemical Compounds"

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. I. Mendeleev, Vol 18, No 3, 1973, pp 323-327

Abstract: A review with 65 references analyzing the possibilities of the utilization of nuclear reactor as a source of radiation during chemical processes. Depending on the type of irradiation, in the active zone of the nuclear reactor, there form two methods for direct utilization of the radiation for chemical synthesis -- chemonuclear and nuclear-chemical. Examples are reported of these processes which were carried out by one of these methods: oxidation of nitrogen, synthesis of hydrogen cyanide, hydrazine, ozone, decomposition of carbon dioxide, synthesis of ethylene glycol, phenol, and utilization of nuclear reactors,

2/2 011

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0139815

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. EXAMN. OF A MONOCLINIC FORM OF PEPSIN CRYSTALS PREPD. AT PH 2 (MAX. ACTIVITY OF THE ENZYME IS AT THIS PH) SHOWED THAT THE UNIT CELL OF THE ENZYME HAD PARAMETERS OF: A EQUALS 54.7ANGSTROM, B EQUALS 36.3ANGSTROM, C EQUALS 73.5ANGSTROM, AND BETA EQUALS 104DEGREES; THE UNIT CELL CONTAINS 2 MOLS. OF THE PROTEIN. ISOMORPHOUS DERIVS. WERE MADE BY ION DIFFUSION OF HGI SUB3, HGBR SUB3, PT(C SUB2 O SUB4) SUB2 PRIME2 NEGATIVE, PTCL SUB4 PRIME2 NEGATIVE, AND PT(NO SUB2) SUB4 PRIME2 NEGATIVE. THE INTRODUCTION OF THESE HEAVY ATOMS WAS FOLLOWED BY DIFFRACTION ANAL. THE ENZYME CONTAINS DISTINCT ALTERNATING, FLAT LAYERS WITHOUT INTERNAL VOIDS BUT WITH A VERY COMPLEX RE

APPROVED FOR RELEASE 09/01/2001 INST LIA-RDP86-00513R002200420019-1"

UNCLASSIFIED

USSR

B

UDC 547.532-13:542.943:66.089.

TIMOFEYEV, V. D., YUR'YEV, Z. N., KLAPISHEVSKAYA, Z. B., and BORISOV, YE. A., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"Vapor Phase Radiation-Thermal Oxidation of Benzene With Molecular Oxygen Under Fast Electron Irradiation"

Moscow, Neftekhimiya, Vol 10, No 1, Jan-Feb 70, pp 42-47

Abstract: The authors studied the radiation-thermal oxidation of benzene with molecular oxygen in terms of the effect of temperature on the yield of phenol -- the yield increases with temperature increase; the effect of the ratio benzene:oxygen -- a trend towards higher yields with more oxygen was observed; effect of the contact time -- inverse relationship of the yield to contact time. The yield of phenol in this reaction was found to be always higher than in the thermal reaction, maximal yield being 4 weight-%. The radiation-chemical yield of phenol at maximal concentration was 40 molecules per 100 ev of the absorbed radiation energy. The effective energy of activation for the formation of phenol was found to be 70 Kcal/mole for the thermal process and 49 Kcal/mole for the radiation-thermal process at 700-780°.

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1/2 034 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--VAPOR PHASE RADIATION THERMAL OXIDATION OF BENZENE BY MOLECULAR  
OXYGEN DURING IRRADIATION BY FAST ELECTRONS -U-  
AUTHOR--(04)-TIMOFEEV, V.D., YURIEV, Z.N., KLAPISHEVSKAYA, Z.B., BORISOV,  
YE.A.  
COUNTRY OF INFO--USSR **B**  
SOURCE--NEFTEKHIMIYA 1970, 10(1), 42-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, PHYSICS  
TOPIC TAGS--ELECTRON ACCELERATOR, THERMAL OXIDATION, PHENOL, CRESOL,  
CARBON MONOXIDE, CARBON DIOXIDE, BENZENE, ELECTRON RADIATION, ACTIVATION  
ENERGY, OXYGEN/(U)RUP400 ELECTRON ACCELERATOR, (U)U16 ELECTRON  
ACCELERATOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0574 STEP NO--UR/0204/70/010/001/0042/0047  
CIRC ACCESSION NO--AP0119492  
UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119492

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TITLE PROCESS WAS STUDIED UNDER DYNAMIC CONDITIONS OF 1 ATM AND 50-3000 ML-HR AT SMALLER THAN OR EQUAL TO 800DEGREES USING ELECTRON ACCELERATORS RUP-400 AND U-16 (1.5 TIMES 10 PRIME15 AND 1.6 TIMES 10 PRIME17 EV-CM PRIME3-SEC, RESP.) FOLLOWED BY THE CHROMATOGRAPHIC ANAL. OF THE PRODUCTS PHOH, PH SUB2, CRESOLS, CO AND CO SUB2. IN RADIATION THERMAL OXID. (RTO), THE DEPENDENCE OF PHOH YIELD ON TEMP., C SUB6 H SUB6: O SUB2 RATIO, TIME OF CONTACT, AND CONCN. OF ADDED CYCLOHEXANE WAS STUDIED AND COMPARED WITH THERMAL OXID. (TO) UNDER THE SAME CONDITIONS. THE YIELD OF PHOH IN RTO WAS ALWAYS HIGHER THAN IN TO, THE MAX. PHOH CONCN. BEING 4 WT.PERCENT. THE QUANTUM YIELD WAS 40 MOLS.-100 EV AT MAX. CONCN. EFFECTIVE ACTIVATION ENERGY OF PHOH FORMATION WAS 70 AND 49 KCAL-MOLE FOR RTO AND TO, RESP. (MEASURED IN TEMP. INTERVAL 700-800DEGREES). FACILITY: NAUCH.-ISSLED. FIZ.-KHIM. INST. IM. KARPOVA, MOSCOW, USSR..

UNCLASSIFIED



USSR

UDC. 539.192/.194+535.33/.34.01

BOCHVAR, D. A., BAGATUR'YANTS, A. A., BORISOV, YE. V.

"Study of  $\pi$ -Electron Structure of Substituted Sidnons and Sidnonimins by the Huckel Method With Parameters Obtained From the Pariser-Parr-Popl Method"

Izucheniye  $\pi$ -elektronnogo stroeniya zameshchennykh sidnonov i sidnoniminov po metodu Khyukkelya s parametrami, poluchennymi iz metoda Parizera-Parra-Popla (cf. English above), Editorial Collegium of Zhurnal fizicheskoy khimii, Academy of Sciences USSR, Moscow, 1971, 17 pp, ill., 14 references, Deposition No 2523-71 (from RZh-Fizika, No 5, May 71, Abstract No 5D113)

Translation: Twenty-three molecules of substituted sidnons and sidnonimins were calculated by the simple Huckels method. Two sets of Coulomb and resonance integrals were used that were calculated from the corresponding matrix elements of the Pariser-Parr-Popl method. Molecular diagrams and energy characteristics of the molecules calculated are given. The properties of sidnons and sidnonimins of both substitutes and conductors of electron effects are discussed, and the effects of redistribution of electron density in the heteroring under the effect of substitutes R, R', R'' are discussed. It is shown that the effect of substitutes has a stronger

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USSR

BOCHVAR, D. A., et al, Izucheniye  $\pi$ -elektronnogo strovaniya zameshchennykh sidonov i sidnoniminov po metodu Khyukkelya s parametrami, poluchennymi iz metoda Parizera-Parra-Popla

effect on the charges of  $N_2$ - and  $C_4$ - atoms. It was found that sidons and sidonimins, in accordance with the data from analysis of the physicochemical properties and reaction capacities of these molecules, are weak conductors of  $\pi$ -electron effects from the third and fourth positions of the ring into the fifth and sixth positions.

2/2

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Gyroscopic

USSR

UDC: 62-56

SLIV, E. I., BORISOV, Yu. A., ZOST, Z. G., IL'ICHEVA, A. D., Leningrad Institute of Precision Mechanics and Optics

"Errors of the Extremum Method of Finding the Meridian in Initial Orientation of Inertial Systems"

Leningrad, Izvestiya VUZov: Priborostroyeniye, Vol 16, No 8, 1973, pp 68-71

Abstract: The authors examine the errors involved in determining the position of a gyroplatform in the azimuth from the extremum of the azimuthal characteristic. It is shown that the expected accuracy of determining the gyroplatform position in the first approximation is higher than with gyrocompass determination since the procedural errors of the method are low and in principle can be reduced, accuracy is independent of the drift of the leveling gyros, and at the same time the constructional errors are the same as in the gyrocompass method.

1/1

USSR

UDC: 534+536.46

BORISOV, Yu. Ya., ROZENFEL'D, E. I., SMOLENSKIY, V. G., Moscow

"Influence of Accoustic Oscillations on a Gas Flame in a Limited Space"

Novosibirsk, Fizika Goreniya i Vzryva, No 3, 1971, pp 404-412.

Abstract: This article studies the effects of an accoustic field on a turbulent flame formed under the conditions of limited furnace volume, by analysis of the concentration, temperature and accoustic fields and the characteristics of turbulence in the volume of the furnace. Natural gas was burned in cylindrical, water-cooled furnaces. The application of a high-intensity accoustical field to a flame during burning of a prepared mixture greatly increases the length of the cold core in the flame. The application of an accoustical field to a diffusion flame shortens the cold core and intensifies the process of burning within the volume of the furnace.

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1/2 030 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--LARGE OBJECTS FROM AERATED POROUS SLAG CONCRETE -U-  
AUTHOR-(03)-ROZENFELD, L.M., BORISOVA, A., POGULYAYEV, S.  
COUNTRY OF INFO--USSR  
SOURCE--BUDIVEL'NI MATER. KONSTR. 1970, (1), 9-11  
DATE PUBLISHED--70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--SLAG, CONCRETE, ELECTRIC POWER PLANT, INDUSTRIAL WASTE,  
ELASTIC MODULUS, FROST  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--2000/0796 STEP NO--UR/0635/70/000/001/0009/0011  
CIRC ACCESSION NO--AP0124465  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124465

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FLY ASH FROM THE LUGANSK ELEC.  
POWER STATION WAS SUCCESSFULLY USED TO MANUF. POROUS SLAG CONCRETE.  
UNDER OPTIMUM TECHNOL. CONDITIONS, CONCRETE WITH A BULK D. OF 1000 KG-M  
PRIME3 HAD THE FOLLOWING PHYS. MECH. PROPERTIES: CRUSHING STRENGTH 75  
KG-CM PRIME2, DYNAMIC MODULUS OF ELASTICITY 35,600 KG-CM PRIME2, COEFF.  
OF FROST RESISTANCE AFTER 50 FREEZING THAWING CYCLES, EQUALS 1.

UNCLASSIFIED

USSR

BORISOVA, A. K., et al., Precision Alloys with Special Properties of Heat Expansion and Elasticity, Moscow, Izdatel'stvo Standartov, 1972, 152 pp

Alloys are distinguished by a complex group of physical and mechanical properties. A low coefficient of heat expansion together with dimensional stability are important for meteorology, geodesy, and precision instrument production. Prescribed coefficients of heat expansion and high plasticity permit application of alloys for joining with glass and ceramics; a small temperature coefficient of the modulus of elasticity and increased mechanical durability allow alloy use for the elastic elements of extremely precise measuring instruments; high durability and elasticity properties together with nonmagnetic nature, corrosion resistance, and thermostability allow use for various elastic elements, winding springs, torsions, etc.

Reliability of data about each alloy according to basic parameters, and also other properties included in the handbook, is confirmed by worldwide experience in the production of similar alloys.

The handbook was prepared by a group of authors: Candidate of Technical Sciences N. A. Solov'yeva wrote the general information relating to ferromagnetic alloys with prescribed coefficients of linear heat expansion, and discusses the 36N, 39N and 35NKT alloys and, together with A. K. Borisova, 2/7

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USSR

BOHISOVA, A. K., et al., Precision Alloys with Special Properties of Heat Expansion and Elasticity, Moscow, Izdatel'stvo Standartov, 1972, 152 pp

discusses the method for determining physical and mechanical properties of alloys; B. N. Popov wrote the materials about 32NKD and 58N alloys; Candidate of Technical Sciences M. I. Yudkevich discusses alloys for junctures with unlimited insulators, except for the alloy 18KTF, which was written by S. I. Olevskiy; K. S. Pridantseva discusses nonmagnetic alloys with prescribed coefficients of linear heat expansion; N. G. Chomovau wrote the section on alloys with a temperature-stable modulus of normal elasticity; candidate of Technical Sciences V. A. Sol'tsh, discusses nonmagnetic corrosion - and heat-resistant alloys with high elastic properties, except for alloy 67KKB5, which was discussed by A. K. Borisova; S. S. Gratsianova compiled the appendix "Product Assortment, Standardized Technical Documentation, and Condition of Alloys at Delivery."

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USSR

BORISOVA, A. K., et al., Precision Alloys with Special Properties of Heat Expansion and Elasticity, Moscow, Izdatel'stvo Standartov, 1972, 152 pp

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USSR

BORISOVA, A. K., et al., Precision Alloys with Special Properties of Heat Expansion and Elasticity, Moscow, Izdatel'stvo Standartov, 1972, 152 pp

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USSR

BORISOVA, A. K., et al., Precision Alloys with Special Properties of Heat Expansion and Elasticity, Moscow, Izdatel'stvo Standartov, 1972, 152 pp

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USSR

BORISOVA, A. K., et al., Precision Alloys with Special Properties of Heat Expansion and Elasticity, Moscow, Izdatel'stvo Standartov, 1972, 152 pp

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USSR

UDC 666.764.13:621.9.048.6

BORISOVA, A. YU., ZIN'KO, E. I., and FEDINA, I. V., State  
Scientific Research Institute of Electroceramics

"Effect of a Vibratory Mill on the Sintering and Properties of  
Magnesium Oxide"

Moscow, Ogneupory, No 3, Mar 71, pp 57-60

Abstract : Each year the requirements for parts made of pure oxides for use at high temperatures increase. The manufacture of parts made of magnesium oxide presents significant difficulties due to its tendency to hydration and the high sintering temperature required (1800-2000°C). The authors of this article produced a highly refractory material from magnesium oxide and developed the technology of producing vacuum-tight parts of complex configuration from this material by means of pressure casting. They also studied the effect of vibratory mills on sintering and the properties of chemically pure magnesium oxide. It was found that processing in a vibratory mill lowers the full sintering temperature of magnesium oxide from 1950 to 1850°C, and

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USSR

BOGISOVA, A. YU., et al., Ogneupory, No 3, Mar 71, pp 57-60

increases density and strength. Vibratory processing of magnesium oxide makes it possible to produce a uniform thermo-plastic mass for hot pressure casting and to significantly decrease the content of binder in it. Magnesium oxide vibrated for 15 minutes is distinguished by high specific volume, electrical strength and vacuum density, and by a small tangential angle of dielectric loss.

2/2

61 -

1/2 020  
TITLE--METHOD FOR OBTAINING  
O,ALKYL,O,ACYL,BETA,DIALKOXYBORO,ETHYLTHIOPHOSPHONATES -U-  
AUTHOR-(04)-STERLIN, R.N., ISAYEV, V.L., KRYLOV, V.F., BORISOVA, G.N.  
COUNTRY OF INFO--USSR  
SOURCE--AUTHOR CERTIFICATE NR 264393  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, NR 9,  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PHOSPHORUS SULFIDE, ORGANIC PHOSPHORUS COMPOUND, ORGANOBORON  
COMPOUND, CHEMICAL SYNTHESIS, CHEMICAL PATENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/1771  
CIRC ACCESSION NO--AA0137011  
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0137011

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A METHOD IS ANNOUNCED FOR  
OBTAINING N,ALKYL O,ACYL,BETA,(DIALKOXYBORO) ETHYLTHIOPHOSPHONATES BY  
REACTING ACYL HALIDES WITH ALKALI SALTS OF  
O,ALKYL,BETA,(DIALKOXYBORO)ETHYLTHIOPHOSPHONIC ACID IN AN ORGANIC  
SOLVENT. THE PROCESS IS CONDUCTED AT 60-80 C AND PRODUCTS ARE SEPARATED  
BY KNOWN METHODS.

UNCLASSIFIED



USSR

MATRESHIN, V. F., PETRITSYUK, V. D., MATRESHIN, A. V., and BORISOVA, G. P.

"Protective Action of Sodium Hydroxybutyrate in Poisoning by Organo-phosphorus Compounds"


Sb. Nauch. Robot Voen. Med. Fak. pri Kuybyshev Med. In-te (Collection of Scientific Papers of the Military Medical Faculty at the Kuybyshev Medical Institute), 1973, No 4, pp 206-208 (from RZh-Biologicheskaya Khimiya, No 24, Dec 73, Abstract No 2190)

Translation: The protective action of sodium hydroxybutyrate (I) was studied on mice using subcutaneous or intraperitoneal administration, 25 minutes prior to exposure to lethal doses of organophosphorus compounds. In preliminary experiments concentrations of I were determined (100 and 200 mg/kg) which exhibit marked protective action. It has been shown that subcutaneous administration of 100 and 200 mg/kg of I resulted in 65 and 85% survival of the animals respectively. It has been assumed that the expressed protective action of I (especially on subcutaneous injection) is connected with an action on the retarding CNS paths and not with the blocking of the choline receptors nor with the action of nucleophilic substances -- reactivators of CE.

1/1

USSR

UDC 602.704.31

MIRONOV, K. YE., and BORISOVA, L. A. 

"Second All-Union Symposium on the Processes of Growth and Synthesis of Crystals and Films of Semiconductor Compounds"

Moscow, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 188-189

Abstract: A brief report is given at the Second All-Union Symposium on the Processes of Growth and Synthesis of Crystals and Films of Semiconductor Compounds, held in Novosibirsk on 12-16 May 1969. The participants in the symposium heard 145 reports under the following headings: Elementary Processes of Crystal Nucleation and Growth, Macroscopic Models for Quantitative Description of Growth Processes, Models and Methods of Describing Alloying Processes and Distribution of Admixtures, Morphology of Crystals and Films as a Function of Growth Conditions, and Experimental Techniques and Equipment for Investigating the Details of the Growth Process of Semiconductor Crystals and Films.

The proposed procedure for experimental-statistical investigation of the processes of growing semiconductors from a melt was of special interest. It was pointed out that recent years have been characterized by the development of methods of applied mathematics for calculating heterogeneous solid state-gas

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USSR

MIRONOV, K. YE., et al, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 188-189  
equilibria. There were two reports in this area. About half the reports were on the growth of films of semiconductor compounds and solid solutions of them.

The problem of alloying crystals and films of semiconductors was discussed broadly. In the reports connected with experimental techniques and equipment for investigating growth processes, there were discussions of the possibilities of investigating the kinetics and thermodynamics of Mironov, K. Ye., and Borisova, L. A., Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 188-189 evaporation in a superhigh vacuum at temperatures to 2000°K, observation of the growth of silicon layers by applying the electron paramagnetic resonance method, and investigation of the distribution of admixtures in films with respect to optical properties. The third symposium is planned in 1971.

2/2

1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--USE OF CATALYSTS FOR LOWERING THE DRYING TEMPERATURE OF ALKYD  
MELAMINE ENAMELS -U-  
AUTHOR--(04)--CHUPEYEV, M.A., IVANOV, V.A., BORISOVA, L.D., MOZOLEV, V.P.  
COUNTRY OF INFO--USSR  
SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (2), 35-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ACID CATALYSIS, ALKYD RESIN, MELAMINE RESIN, ENAMEL, PIGMENT,  
HARDNESS, COLOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/1071 STEP NO--UR/0303/70/000/002/0035/0036  
CIRC ACCESSION NO--AP0134760

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134760

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ACID CATALYSTS AND THEIR CONCNS. ON THE HARDNESS AND COLOR OF ALKYD MELAMINE ENAMEL (A) COATINGS DRIED 30 MIN AT 100DEGREES OR AN 130DEGREES WAS STUDIED. (BUO) SUB2 P(O)OH (I), A 1:1 MIXT. OF I AND MALAMINE, HCHO RESIN (II) K,423,02 (IIA), BUOP(O)OH SUB2 (III), P,MEC SUB6 H SUB4 SO SUB3 H (IV), AND PHTHALIC ANHYDRIDE WERE ADDED TO A WHITE PIGMENTED A CONTG. 25PERCENT II (IIA OR K,421,02(IIIB)) AND ALKYD RESINS MODIFIED BY CASTOR OIL AND SYNTHETIC FATTY ACID, 21.7PERCENT AND 28.83PERCENT, RESP. WITHOUT CATALYST, A CONTG. IIA DRIED AT 100DEGREES FOR 30 MIN AND 90DEGREES FOR 20 MIN HAD HARDNESSES 0.57 AND 0.34, RESP.; AND A CONTG. IIB, A BUTYLATED II, DRIED SIMILARLY HAD HARDNESSES 0.60 AND 0.14, RESP. ADDING 2-3PERCENT I OR III TO A CONTG. IIA DRIED AT 100DEGREES GAVE HARDNESSES 0.5-0.63. ADDING 4PERCENT I OR III TO A CONTG. IIB. DRIED AT 130DEGREES GAVE HARDNESSES 0.38-0.42. ADDING 3PERCENT III OR IV CAUSED SIGNIFICANT COLOR CHANGES TO WHITE PIGMENTED A DRIED AT 100DEGREES.

UNCLASSIFIED

USSR

UDC 547.759.3'853.5

BORISOVA, L. N., KUCHEROVA, N. F., KARTASHOVA, T. A., and ZAGOREVSKIY, V. A.,  
Institute of Pharmacology, Academy of Medical Sciences USSR, Moscow

"Indole Derivatives. 39. Fischer Cyclization of 3-Methylpiperidone-4-arylhydrazones"

Riga, Khimiya Geterotsiklicheskikh Soyadineniy, No 5, May 1972, pp 645-647

Abstract: Previous investigations have shown that Fischer cyclization of 3-substituted N-methylpiperidone-4-arylhydrazones follows an unusual course and results in the formation of 1,2,3,4-tetrahydropyrimido[3,4-a]indoles. The present study was initiated to determine the products formed by the condensation of 3-methylpiperidone-4 with arylhydrazines (containing -H, -CH<sub>3</sub>, -OCH<sub>3</sub>, or -COOC<sub>2</sub>H<sub>5</sub> in the para position) in alcoholic HCl. On the basis of UV, IR, and PMR spectra the four products of the reactions were characterized as 5-methyl-1,2,3,4-tetrahydropyrimido[3,4-a]indole (I), 5,7-dimethyl-1,2,3,4-tetrahydropyrimido[3,4-a]indole (II), 5-methyl-7-methoxy-1,2,3,4-tetrahydropyrimido[3,4-a]indole (III), and 5-methyl-7-carbethoxy-1,2,3,4-tetrahydropyrimido[3,4-a]indole (IV). The structure of II was further confirmed through its conversion into 2,5,7-trimethyl-1,2,3,4-tetrahydropyrimido[3,4-a]indole via the intermediate 2-formyl-5,7-dimethyl-1,2,3,4-tetrahydropyrimido[3,4-a]indole. Furthermore, I, II, III, and IV may be dehydrogenated over palladium black to 1/2

USSR

BORISOVA, L. N., et al., Khimiya Geterotsiklicheskikh Soyedineniy, No 5, 1972, pp 645-647

5-methylpyrimido[3,4-a]indole and 5,7-dimethylpyrimido[3,4-a]indole, i.e., forming a new heterocyclic system of pyrimido[3,4-a]indoles.

2/2

Acc. Nr:

AP0053885

Abstracting Service:

CHEMICAL ABST. 6-70

Ref. Code:

4R 0038

117304e Reactions of rhenium heptoxide with sulfuric acid and sulfur dioxide. Borisova, L. V.; Yarinova, T. I. (USSR). *Zh. Neorg. Khim.* 1970, 15(2), 313-16 (Russ). A pink soln. formed when  $\text{Re}_2\text{O}_7$  was absorbed in concd.  $\text{H}_2\text{SO}_4$  or in  $\text{H}_2\text{SO}_4$  satd. with  $\text{SO}_2$ . The color is due to redn. of  $\text{Re(VII)}$  to  $\text{Re(VI)}$  by  $\text{SO}_2$  which is present in the concd. acid. The redn. occurs best at  $120^\circ$  in  $18.5M$   $\text{H}_2\text{SO}_4$ .  $\text{Re(VII)}$  was not reduced in  $\leq 14.5M$  acid.

HMJR

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1/1

REEL/FRAME  
19830962

18



172 010 UNCLASSIFIED PROCESSING DATE--ZUNOV70  
TITLE--VALENCE STATE OF RHENIUM IN A THIOSULFATE COMPLEX -U-

AUTHOR--(02)-BCHRISOVA, L.V., ZHAMNOVA, V.I.

CCOUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 586-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--RHENIUM COMPOUND, COMPLEX COMPOUND, CHEMICAL VALENCE,  
SPECTRUM, THIOSULFATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3C05/0001

STEP NO--UR/0075/70/025/003/0586/0588

CIRC ACCESSION NO--AP0132301

UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132301

ABSTRACT/EXTRACT--(U) CP-G- ABSTRACT. RE(V) DOES NOT FORM COLORED COMPLEXES WITH THIOSULFATE AND DOES NOT GIVE CHARACTERISTIC SPECTRA. RE IS IN ITS TETRAVALENT FORM IN THE THIOSULFATE COMPLEX. THE ACTIVE FORM OF RE(IV) CHLORIDE REACTS WITH THIOSULFATE IONS. MAX. ABSORBANCE OF THE COMPLEX IS AT 420 MM; THE MOLAR ABSORPTIVITY IS 1.5 TIMES 10 PRIME4. FACILITY: INST. GEOCHEM. ANAL. CHEM., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 612.273.2+612.454

ROBISOVA, L. YA., and SIMANOVSKIY, L. N., Institute of Evolutionary Physiology and Biochemistry imeni I. K. Sechenov, Academy of Sciences USSR

"Corticosterone Content of Some Tissues During Adaptation to Hypoxia"

Leningrad, Fiziologicheskii Zhurnal SSSR, No 12, 1971, pp 1,817-1,820

Abstract: Hypoxia was induced in rats in a pressure chamber and the corticosterone content of the adrenals, cerebral cortex, skeletal muscles, and blood plasma was determined fluorometrically at different stages of adaptation. It was found to increase in the adrenals from days 3 to 20 but decrease in the cerebral cortex and skeletal muscles. It remained unchanged in the blood plasma. These results were consistent with those obtained by injecting the animals intraperitoneally with tritium-labeled corticosterone. The authors conjecture that in adaptation to hypoxia, the hormone leaves the blood plasma for the brain where it is rapidly metabolized. A decrease in the corticosterone level lowers the excitability of the cerebral cortex, an adaptive reaction to hypoxia.

1/1

Pathology

USSR

UDC 616-002.71-07:616.36-008-072.7

BORISOVA, M. A., Chair of Infectious Diseases, Vladivostok Medical Institute

"Clinical Picture and Liver Function in Pseudotuberculosis"

Moscow, Sovetskaya Meditsina, No 2, 1972, pp 92-96

Abstract: Pseudotuberculosis (Far Eastern scarlatinoid fever) is an acute infectious disease characterized by general intoxication, fever, rash, and dysfunction of various organs. The clinical symptoms at the onset are polymorphic and not specific to this disease, but fever, generally intermittent, is invariably present. Gastrointestinal disturbances, arthralgia, enlargement of the maxillary lymph nodes, etc. commonly occur at the height of the disease. In addition, symptoms of liver disorders (in 144 or 25.9% of 555 patients with bacteriologically confirmed pseudotuberculosis) may be manifested by persistent pain in the right hypochondrium and epigastric region, nausea, vomiting, enlargement of the liver, and development of jaundice. Functional tests reveal impairment of protein, cholesterol, and pigment formation.

1/1

Acc. Nr: AP0045581

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,  
pp 144-151

THE SYNTHESIS OF RNA ON RAT LIVER MITOCHONDRIAL DNA  
BY RNAPOLYMERASE FROM *E. COLI*

Shmerling, Zh. G.; Borisova, N. I. Rozovskiy, Ya. M.  
Institute of Atomic Energy, USSR, Moscow, and Institute of Crystallography,  
Academy of Sciences, USSR, Moscow

Mitochondrial DNA possesses template activity in the cell-free RNA-polymerase system from *E. coli*. The character of synthesized RNA depends on the template structure as was shown also in the case of viral and bacterial DNA templates. When the intact native mitochondrial DNA is used, the synthesis is assymetric, i. e. only one of DNA strands is read. Denaturation or fragmentation of DNA to the molecular weight 300 000—400 000 results in the loss of the strand specificity of the RNA synthesis; in these cases both DNA strands are read. The ability of RNA-polymerase to recognize starting points of transcription on the phylogenetically non-related templates suggests the identity of properties of DNA-initiation sites in all living creatures.

11  
REEL/FRAME  
19780551

lec 6

1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SYNTHESIS OF 2 FURANCARBOXYLIC AND 5,HALO,2,FURANCARBOXYLIC ACIDS  
-U-  
AUTHOR-(C2)-BCRISOVA, N.N., KULNEVICH, V.B. **B**  
COUNTRY OF INFO--USSR  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM., KHIM. TEKHNOL. 1970, 13(2),  
230-2  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
  
TOPIC TAGS--ORGANIC SYNTHESIS, FURAN, CARBOXYLIC ACID, IR SPECTRUM,  
IODINATED ORGANIC COMPOUND, BROMINATED ORGANIC COMPOUND  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0177 STEP NO--UR/0153/70/013/002/0230/0232  
  
CIRC ACCESSION NO--AT0132454  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NDV70

2/2 020

CIRC ACCESSION NO--AT0132454

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. 2 FURANCARBOXYLIC ACID IS PREPD.  
IN 86PERCENT YIELD BY SLOWLY ADDING A SOLN. OF 20 G FURFURAL IN 100 ML C  
SUB6 H SUB6 TO AN AGITATED SUSPENSION OF 14 G NA SUB2 O SUB2 IN 100 ML C  
SUB6 H SUB6 AND STIRRING 30 MIN. THE 5 IODO, 5 BROMO, AND 5 IODO  
DERIVS. ARE SIMILARLY PREPD. THE IR SPECTRA OF THE 4 COMPS., IN ETOH  
AT 10 PRIME NEGATIVES M, ARE INTERPRETED. FACILITY: KRSNODAR.  
POLITEKH. INST., KRSNODAR, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--CALCULATION OF DIPOLE MOMENTS OF NITROALKANES IN A MO LCAO  
APPROXIMATION -U-  
AUTHOR-(02)-BORISOVA, N.P., BOKACHEVA, L.P.  
COUNTRY OF INFO--USSR **B**  
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 99-101  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CALCULATION, DIPOLE MOMENT, ORGANIC NITRO COMPOUND, ALKANE,  
NITROMETHANE, ELECTRON DENSITY, MOLECULAR ORBITAL  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/1255 STEP NO--UR/0192/70/011/001/0099/0101  
CIRC ACCESSION NO--AP0128671

UNCLASSIFIED



2/2 021

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128671

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. AN ATTEMPT WAS MADE TO EXTEND THE DEL RE METHOD TO CALC. THE DIPOLE MOMENTS TO NITRO COMPS. AS WELL AS TO NITRO SUBSTITUTED SATD. HYDROCARBONS. MENO SUB2 WAS USED AS A MOL. FOR THE SELECTION OF PARAMETERS. THE PI ELECTRONIC COMPONENT OF THE NITRO GROUP DIPOLE MOMENT WAS CALCD. IN TERMS OF THE DISTRIBUTION OF PI ELECTRON D. BY A REASONABLE SELECTION OF PARAMETERS. WITH THE INCREASE IN N,C,N ANGLE THE DIPOLE MOMENT OF CH(NO SUB2) SUB3 DECREASES AT THE EXPENSE OF A DIRECT CHANGE IN THE GEOMETRY OF THE MOL. AND SIGMA CHARGES ON THE ATOMS WITH THE FIRST EFFECT BEING STRONGER. FACILITY: Leningrad. Gos. Univ., Leningrad, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--SUSCEPTIBILITY OF NiO-MGO SOLID SOLUTIONS HARDENED AT VARIOUS  
TEMPERATURES -U-  
AUTHOR--ARIYA, S.M., BORISOVA, N.V., BOBRYSEVA, N.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 266-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--MAGNESIUM OXIDE, NICKEL OXIDE, MAGNETIC SUSCEPTIBILITY,  
THERMAL EFFECT, X RAY DIFFRACTION ANALYSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0682 STEP NO--UR/0076/70/044/001/0264/0267  
CIPC ACCESSION NO--AP0105658  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105658

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLID SOLNS. OF NIO-MGO WITH 1-10 MOL. PERCENT NIO WERE HARDENED AT 900, 1100, AND 1300DEGREESC, ANALYZED CHEM. AND BY X RAY DIFFRACTION. THE SUSCEPTIBILITY WAS MEASURED BY THE FARADAY METHOD AT 78-460DEGREEK WITHIN 9100-13,500 OE. THE SHAPES OF THE CHINI PRIMEPARA ISOTHERMS FOR ALL HARDENING TEMPS. ARE PRACTICALLY IDENTICAL. THE ISOTHERMS DECREASE SLOWLY AT 1-5 MOLE PERCENT NIO, AND RAPIDLY STARTING AT 5 MOLE PERCENT NIO.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--SUSCEPTIBILITY OF SR SUB2 COSBO SUB6 AND SOLID SOLUTIONS OF SR SUB2  
COSBO SUB6 IN SR SUB2 ACSBO SUB6 -U-  
AUTHOR--ARIYA, S.M., CHEZHINA, N.V., BORISOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 267-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MAGNETIC SUSCEPTIBILITY, SOLID SOLUTION, COBALT COMPOUND,  
MAGNESIUM OXIDE, STRONTIUM COMPOUND, CRYSTAL STRUCTURE, THERMAL EFFECT,  
ANTIMONY COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY PEEL/FRAE--1998/0683

STEP NO--UR/0076/70/044/001/0267/0268

CIRC ACCESSION NO--AP0105659

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105659

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE SUSCEPTIBILITY OF TRIVALENT CO IN SR SUB2 COSBO SUB6 DISSOLVED IN DIAMAGNETIC SR SUB2 ALSBO SUB6 WAS SOUGHT. SOLID SOLNS. CONTG. 3, 5, AND 10PERCENT SR SUB2 COSBO SUB6 WERE SYNTHESIZED WITH A STRUCTURE OF DISORDERED PEROVSKITE. A STUDY OF THE 1-CHICO PRIMEPARA DEPENDENCE ON TEMP. (77, 133, 295DEGP FESK) SHOWED THAT ALL COMPOS. OBEY THE CURIE WEISS LAW. VALUES OF THE EFFECTIVE MAGNETIC MOMENT,  $\mu$  SUBEFF, SHOW NOTICEABLE SCATTERING, BUT WITHIN 5.8-9.5  $\mu$ B, WHEN APPROX. EXTRAPOLATED TO ZERO CO CONC. A DEPENDENCE OF CHI ON THE COMPN. OF SOLID SOLNS. IS TYPICAL FOR DIL. ANTIFERROMAGNETS, AS OPPOSED TO BIVALENT CO IN COO-MGO. FOR PURE SR SUB2 COSBO SUB6,  $\mu$  SUBEFF EQUALS 4.47  $\mu$ B.

UNCLASSIFIED

BORISOVA, O. K.

JPRS 55887  
19 APR 1972  
UDC 612.336.31-06:612.66.2

CHANGES IN INTESTINAL MICROFLORA DURING MAN'S LONG-TERM CONFINEMENT IN AN ISOLATION CHAMBER

[Article by V. M. Shilyov, N. N. Liz'ko, and O. K. Borisova; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, pp 78-81, 1972, submitted for publication 2 November 1970]

**Abstract:** This paper gives the results of a study of human intestinal microflora during a one-year medical-engineering experiment. The long-term isolation induces substantial shifts in the composition of intestinal microflora which include a drastic reduction of the population of different microbial groups and even a complete disappearance of certain representatives of microorganisms. Simulations of emergency situations which cause an increased physiological load upon the human body bring about more specific changes in the composition of microflora.

The prolonged confinement of cosmonauts in a pressurized cabin under modified environmental conditions with simultaneous exposure to a number of spaceflight factors (accelerations, ionizing radiations, special diet, restricted mobility, etc.) can lead to unfavorable shifts in the composition of intestinal microflora and a change in its biological properties.

The results of a study of normal intestinal microflora indicate the multistaged importance of intestinal microflora in body vital functions. Its positive influence is related primarily to the synthesis of vitamins, enzymatic and antagonistic properties (Donaldson; Wolf; Zubrzycki and Spaulding; Reddy, et al., and others). However, in addition to a useful effect, the constant inhabitants of the intestinal tract under definite conditions can exert an unfavorable influence favoring the development of pathology (L. G. Peretts, 1955; Haenel, and others). However, in the case of exposure of the body in an isolation chamber no adequate study has yet been made of normal intestinal microflora. Only individual studies give information on the change in intestinal microflora in individuals confined to an isolation chamber (Luckey; Bengson and Thomas; Benson; Riely, et al.; Vargosko, et al.).

Nickel

USSR

UDC 669.245.018.44:669.786

LEVI, L. I., BORISOVA, O. M., KOZLOVA, V. S., and PUSHIN, B. A.

"Nitrogen in Complexly Alloyed Nickel Casting Alloys"

Liteyn. proiz-vo (Foundry Production), 1970, No 7, pp 24-26 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 11823 by M. FROLOVA)

Translation: The use of ordinary methods of nitrogen determination (distillation of N in the form of ammonia and vacuum melting) cannot be recommended for complexly alloyed Ni alloys due to the obtaining of sharply understated results. The authors suggest a new, differential method of nitrogen determination (a chemical method, with fusion of precipitate and subsequent analysis), which makes possible nitrogen determination in solid solution and nitride phases. With the help of the new method an investigation was made of heat-resistant ZhS-6K brand Ni alloy. N concentrates mainly, not in solid solution, but in nitride phases (CrN, TiN, etc.). Total nitrogen content depends on the conditions of alloy smelting. It is assumed that carbonitride and nitrocarbide phases of the  $M_xC_yN_z$  type are present in the alloy. Two tables. Bibliography of seven titles.

1/1

Acc. Nr: **AP0037007**

Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskiy Zhurnal SSSR, 1970, Vol 56,  
Nr 2, pp 186 - 190

ADAPTATION OF THE MYOTATIC REFLEX ARCH DURING STIMULATION  
OF THE GASTRO-INTESTINAL TRACT'S INTERORECEPTORS

R. P. Borisova

Dept. of Normal Physiology, Sanitary Hygienic Medical Institute, Leningrad

Adaptation of the myotatic reflex arch during stimulation of the gastro-intestinal tract's interoreceptors was studied in chronic experiments on rabbits with intact nervous system. Electromyographic studies showed the stimulation of the interoreceptors of the stomach, bilious bladder, small intestine and coecum to alter regularly the adaptation of the myotatic reflex arch of the shank antagonistic muscles. Changes of the inhibition type prevailed during the stimulation.

D. n.

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REEL/FRAME  
**19721939**

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Immunology

USSR

UDC 576.858.73

BORISOVA, S. M., POPOVA, O. M., and TERSKIKH, I. I., Institute of Virology  
imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Production of a 'Cold' Variant of an Ornithosis Strain and Investigation of  
Its Biological Properties"

Moscow, Voprosy Virusologii, No 6, Nov/Dec 70, pp 721-723

Abstract: The effect of low temperature (8°C) on the development of the ornithosis inducer in a culture of chick fibroblasts was studied. In particular, it was found that the cold-adapted strain produced was no longer pathogenic when applied intranasally to white mice, which are usually highly susceptible to this strain. The antigen prepared was active in complement-fixation and hemagglutination tests. The strain also possessed pronounced immunogenic properties, so that it appears to be useful as a strain for live vaccination.

1/1

1/2 046 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--DETERMINATION OF THE BITUMINOUS COMPOUND CONTENT IN RAMJET FUELS  
-U-  
AUTHOR--(03)-ENGLIN, B.A., MARINCHENKO, N.I., BORISOVA, S.M.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(4), 53-5  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--PROPULSION AND FUELS, CHEMISTRY  
TOPIC TAGS--CHEMICAL PURIFICATION, CHEMICAL ANALYSIS, LIQUID FUEL, RAMJET  
ENGINE, ORGANIC SOLVENT, SOLVENT EXTRACTION, PENTANE, ISOMER, ALUMINUM  
OXIDE, ADSORPTION  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/2087 STEP NO--UR/0065/70/015/004/0053/0055  
  
CIRC ACCESSION NO--AP0127460  
UNCLASSIFIED

2/2 046

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0127460

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE RESINOUS BITUMINOUS MATTER IN FUELS WERE ADSORBED WITH AL SUB2 O SUB3 OF 28-65 MESH, ACTIVATED 2 HR AT 800DEGREES. AFTER FILTERING THE FUEL, THE HYDROCARBONS WERE WASHED WITH ISO-C SUB5 H SUB12. THE BITUMINOUS MATTER WERE DESORBED WITH ACOH AND THEN WITH WATER. THE BULK SOLN. WAS SLOWLY NEUTRALIZED WITH 25PERCENT NH SUB3 SOLN. ADDED WITH NA SUB2 SO SUB4, AND EXTG. WITH ET SUB2 O. THE EXTN. LIQ. WAS EVAPD. ON A WATER BATH AND THE RESINOUS BITUMINOUS MATTERS OBTAINED WERE BROUGHT TO CONST. WT. IN VACUO. FOR SEPG. THE VARIOUS FRACTIONS OF THE BITUMINOUS MATTER, DIFFERING BY THEIR OXIDN. DEGREE, THEY WERE SUCCESSIVELY DESORBED WITH DIFFERENT DESORBENTS, THE LATTER BEING ACOH.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--THE EFFECT OF TEMPERATURE AND PH OF THE MEDIUM ON SURVIVAL AND  
DEVELOPMENT OF ORNITHOSIS AGENT -U-  
AUTHOR--BORISOVA, S.M. *B*

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, P 21-22

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TISSUE CULTURE, ORNITHOSIS, VIRUS, HIGH TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0069

STEP NO--UR/0402/70/000/001/0021/0022

CIRC ACCESSION NO--AP0103748

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--19SEP70

CIRC ACCESSION NO--AP0103748

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STRAIN OF ORNITHOSIS AGENT HAS BEEN OBTAINED WHICH IS RESISTANT TO HIGH TEMPERATURE (HEATING AT 60DEGREESC FOR 10 MIN.) AND WHICH, IN CONTRAST TO THE ORIGINAL STRAIN, HAS LOST ITS TOXIC PROPERTIES. INVESTIGATION OF THE DEVELOPMENT OF ORNITHOSIS AGENT AT LOW TEMPERATURES SHOWED THAT THE VIRUS COULD BE DETECTED IN CHICK EMBRYO FIBROBLAST CULTURE AT A TEMPERATURE AS LOW AS 80DEGREESC. MEDIA WITH DIFFERENT PH VALUES, FROM 6.0 TO 8.4, DO NOT AFFECT SUBSEQUENT DEVELOPMENT OF ORNITHOSIS VIRUS.

UNCLASSIFIED

USSR

B  
UDC 576.858.93.095.1

BORISOVA, S. M., Institute of Virology imeni D. I. Ivanovskiy,  
Academy of Medical Sciences USSR

"The Effect of Temperature and pH of the Culture Medium on the Viability and Growth of Ornithosis Virus"

Moscow, Voprosy Virusologii, No 1, 1970, pp 21-22

Abstract: Heating ornithosis virus to 39° C, 45° C, 50° C and 60° C for 5 min and to 50° C for 10 min did not inactivate it. However, heating the culture to 60°C for 10 min deprived the strain (Lori) of its toxicity. The virus also was resistant to low temperatures, remaining infectious for chick embryos and mice even after exposure to 8° C. Tests showed that pH values of the medium ranging from 6.0 to 8.4 had no effect on growth of the virus or its biological properties.

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USSR

UDC 576.358.73.097.22:615.334

POPOVA, O. M., BORISOVA, S. M., and TERSKIKH, I. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"A Penicillin-Resistant Strain of Ornithosis Virus and its Biological Properties"

Moscow, Voprosy Virusologii, No 1, 1970, pp 114-116

Abstract: Ornithosis virus (Lori strain) was isolated from the organs of a dead parrot and grown in chick embryo yolk sacs in the presence of increasing amounts of penicillin. After the 19th passage, the penicillin-resistant strain was nontoxic for white mice in 1:5, 1:10, 1:20, and 1:40 dilutions, whereas the control or original strain killed all the animals within 3-6 hours of inoculation. The penicillin-resistant strain lost its complement-fixing activity, while retaining its hemagglutinating activity. In tissue culture its growth was similar to that of the control.

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1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT7  
TITLE--MOTION OF SIDE CHAINS IN POLYMERS CONTAINING NITRO OR NITRATE  
GROUPS -U-  
AUTHOR--BORISOVA, T.I. *B*  
CCOUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 932-7  
DATE PUBLISHED--70  
  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
  
TOPIC TAGS--DIELECTRIC CONSTANT, ORGANIC NITRO COMPOUND, ACRYLATE,  
POLYMER, NITRATE, POLYVINYL NITRATE, DIPOLE MOMENT  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0664 STEP NO--UR/0459/T0/012/004/0932/0937  
  
CIRC ACCESSION NO--AP0124336  
UNCLASSIFIED



2/2 026

UNCLASSIFIED

PROCESSING DATE--30OCT7

CIRC ACCESSION NO--AP0124336

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGES WERE DETD. OF DIELEC. CONSTS. AND LOSS TANGENTS FOR POLY(BETA NITROETHYL METHACRYLATE) (I), POLY(BETA NITRATOETHYL METHACRYLATE) (II), POLY(P NITROPHENYL METHACRYLATE) (III), AND POLY(VINYL NITRATE) (IV) IN MINUS 170DEGREES TO PLUS 130DEGREES AND 0.4-200 KHZ RANGES. THE MOVEMENT OF THE SIDE GROUPS, CONTG. NO SUB2 OR NO SUB3, DECREASED IN THE SERIES I IS GREATER THAN II IS GREATER THAN IS GREATER THAN III AND WAS ABSENT IN IV. A COMPARISON OF THE DIPOLE GROUP POLARIZATION AND KIRKWOOD FROEHLICH CORRELATION FACTORS WITH THOSE OF POLY(BETA CYANOETHYL METHACRYLATE) SHOWED THAT THE DECREASE OF THE POLAR GROUP DIPOLE MOMENT DECREASES THE DIPOLE INTERACTION AND PERMITS FREER GROUPS MOTION. FACILITY: INST. VYSOKOMOL. SOEDIN., LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 621.791:621.642.001.2

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BOGOMOLOVA, A. S., Candidate of Technical Sciences, and BAKSHI, O. A., Doctor of Technical Sciences, Chelyabinsk Polytechnic Institute; SEDYKH, V. S., Doctor of Technical Sciences, and TRYKOV, YU. P. and BELOUSOV, V. P., Candidates of Technical Sciences, Volgograd Polytechnic Institute; BORISOVA, V. A., KARAN, A. B., POPOV, A. S., and SAPRYGIN, V. D., Engineers, Moscow

"Practical Design of Welded Vessels and Pipe From Dissimilar Materials"

Moscow, Svarochnoye Proizvodstvo, No 9, 1973, pp 3-6

Abstract: Welding tests were conducted for welding dissimilar materials to join dissimilar metals in the fabrication of vessels and pipe. A steel+copper+niobium+titanium joint was made from steel Kh18N10T, M1 copper, niobium, and OT4 titanium, and a magnesium alloy+titanium+aluminum+aluminum alloy joint was made from magnesium alloy MA2-1, VT1 titanium, Ad1 aluminum, and aluminum alloy AMg6. The goal of this work was to determine the proper materials which would yield a reliable diffusion barrier in the intermediate weld layers, and a joint with a strength equal to that of the base metal. Mathematical formulas are given for calculating the tensile and yield strengths of the soft sublayer and critical magnitude of relative thickness of the soft sublayer for which an equal-strength joint can be achieved. For the titanium-steel joint the

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BOGOMOLOVA, A. S., et al., Svarochnoye Proizvodstvo, No 9, 1973, pp 3-6

the relative thickness required for the copper sublayer was approximately 0.5 while this value for the magnesium-aluminum was not computed. 4 figures, 1 table, 12 bibliographic references.

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1/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--DETERMINATION OF THE AMOUNT OF HYDROGEN IN CATALYSTS AT HIGH  
TEMPERATURES BY THE HYDROGENATION OF ETHYLENE -U-  
AUTHOR-(05)-IZMAYLOV, R.I., FEDOROV, G.I., KHAYRULLINA, R.Z., BORISOVA,  
V.V., DAVLESUPOVA, R.G.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 369-72  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--HYDROGEN, HYDROGENATION, ISOMERIZATION, HYDROCARBON,  
PALLADIUM, NICKEL, CATALYST, SORPTION, HIGH TEMPERATURE EFFECT,  
ETHYLENE, PLATINUM, CHROMATOGRAPHY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/0639 STEP NO--UR/0062/70/000/002/0369/0372  
CIRC ACCESSION NO--AP0119551  
UNCLASSIFIED