2/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0141021

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VALUE OF THE CONSTANT D OF THE TRIPLE CORRELATION BETWEEN THE VECTORS OF THE NEUTRON SPIN SIGMA AND THE DIRECTIONS OF THE ELECTRON AND ANTINEUTRINO MOMENTA P SUBE AND P SUBPI IS FOUND TO BE MINUS 0.01 PLUS OR MINUS 0.01. THE CORRESPONDING PHASE SHIFT BETWEEN AXIAL VECTOR AND VECTOR CONSTANTS OF THE WEAK INTERACTION IS PHI EQUALS 181.3 PLUS OR MINUS 1.3DEGREES. FACILITY: INST. OF ATOMIC ENERGY, MOSCOW.

UNCLASSIFIED

USSR

YEROZOLIMSKIY, B. G., BONDARENKO, L. N., MOSTOVOY, Yu. A., OBINYAKOV, B. A.; ZAKHAROVA, V. P., and TITOV, V. A., Institute of Atomic Energy imeni I. V. Kurchatov

"Search for Three-Vector Correlation in the Decay of Polarized Neutrons"

Moscow, Yadernaya Fizika, Vol. 11, No. 5, May 70, pp 1049-1057

Abstract: An experiment conducted to measure the constant D of triple correlation between the vectors of the neutron spin σ and the electron and antineutrino momenta p_e and p_ν is described. The experiment was conducted on the IRT-M reactor of the Institute of Atomic Energy imeni I. V. Kurchatov. 23 series of measurements of duration 35-100 hours each were conducted and approximately 9.1 $\cdot 10^4$ decay events were recorded. The average value of the coefficient D for all series was -0.01 ± 0.01. The accuracy in obtaining the constant D made it possible to establish the difference from 180° of the phase difference between the axial-vector and the vector constants of weak interaction; this was found to be $\phi = 181.3^\circ \pm 1.3^\circ$.

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YERSH, D. P.

UDC 615.38/.39

MASSIVE BLOOD TRANSFUSIONS

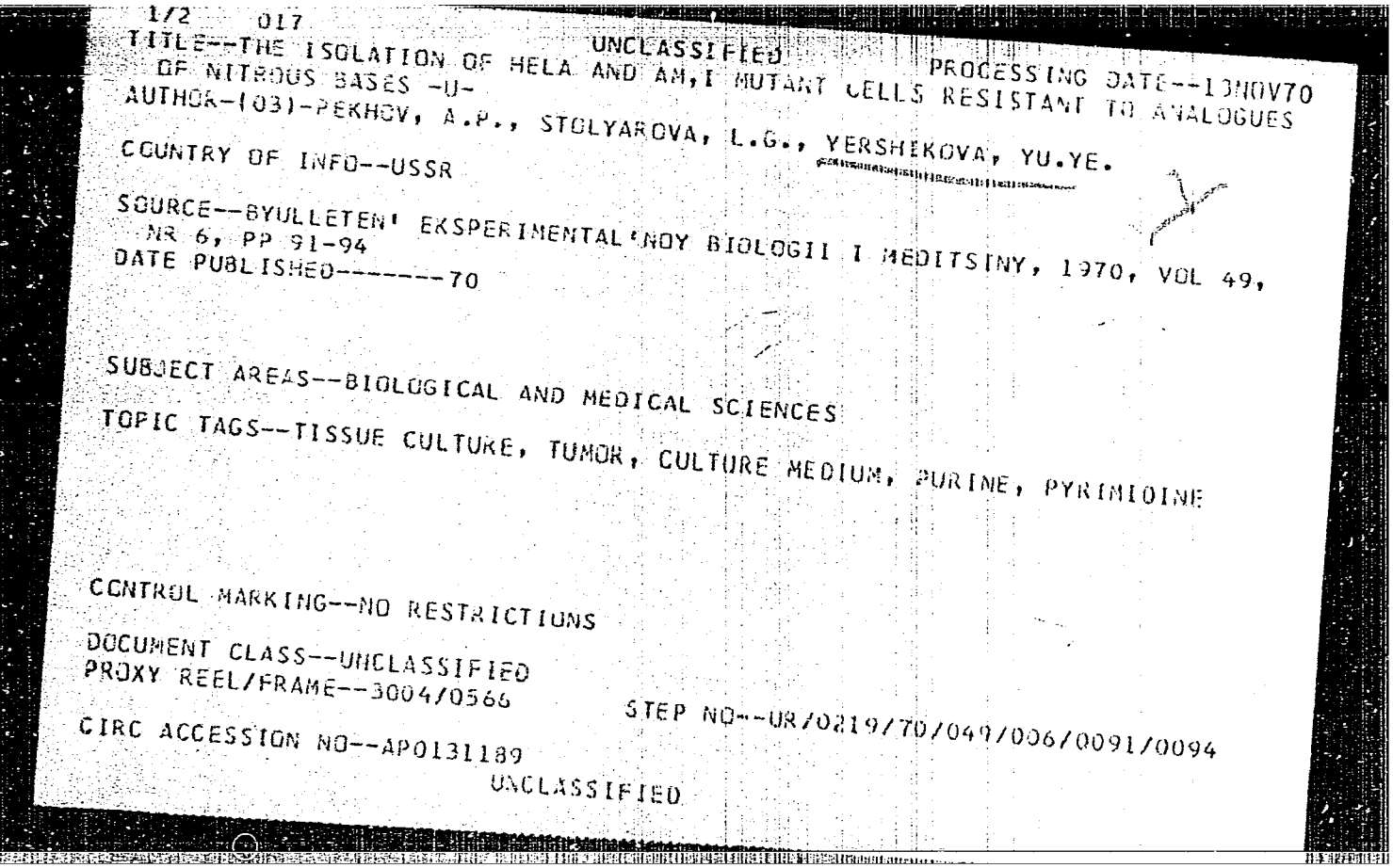
[Article by N. Ya. Kulikov and D. P. Yersh, Moscow, Voyenno-Meditsinskiy Zhurnal, No 6, 1972, p 75]

Massive blood transfusions are given to those suffering from extensive bleeding and they greatly reduce the death rate. According to the data of Crosby (1954) and Bekay (1955), about 18 liters of blood are transfused for severe wounds with shock and bleeding. We analyzed the effectiveness of massive blood transfusions from hospital records. A total of 52 patients received such transfusions over a period of 10 years. Each was transfused at one time on average of 1.5 to 2 liters (maximum 4.5 liters) of blood as an emergency measure. Thirty patients received massive transfusions for traumas, bleeding and shock, 14 during surgical operations complicated by substantial bleeding, and 8 during major and protracted operations accompanied by bleeding. The transfusions were supplemented by infusions of dextran and other blood substitutes (1 to 1.5 liters).

The organization of massive blood transfusions is facilitated by the existence in the hospital of a department for blood procurement and transfusion. Due to the free donor system there is always a supply of O(I), A(II), and B(III) groups "on duty." Donors with known blood groups are registered and they can be summoned in a short time if there is an acute need for their blood.

In view of the poor condition of the patients, massive transfusions were generally carried out by phlebotomy; in 5 cases intra-arterial injection of blood was started under pressure. Note that massive direct transfusion is more difficult to do than indirect transfusion, but it is more effective. This method was used for 2 patients (500 ml each) after which the procedure was continued with banked blood. Because massive transfusions were often given to patients in very poor condition, there was need for speed, efficiency, and coordination on the part of the medical personnel. The creation of a regular blood transfusion team made up of a physician and 2 nurses was an important factor. Estimates of blood losses were based on clinical and laboratory data: the patient's general condition, consciousness/unconsciousness, arterial pressure, respiration, hemoglobin level, erythrocyte count. In some cases the hematocrit and approximate blood loss (by Van Slyke's method) were determined.

Mil Med Journal #6, 1972



1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--THE ISOLATION OF HELA AND AM,I MUTANT CELLS RESISTANT TO ANALOGUES OF NITROUS BASES -U-

AUTHOR-(03)-PEKHOV, A.P., STOLYAROVA, L.G., YERSHEKOVA, YU.YE.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 49, NR 6, PP 91-94

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TISSUE CULTURE, TUMOR, CULTURE MEDIUM, PURINE, PYRIMIDINE

CONTROL MARKING--NO RESTRICTIONS

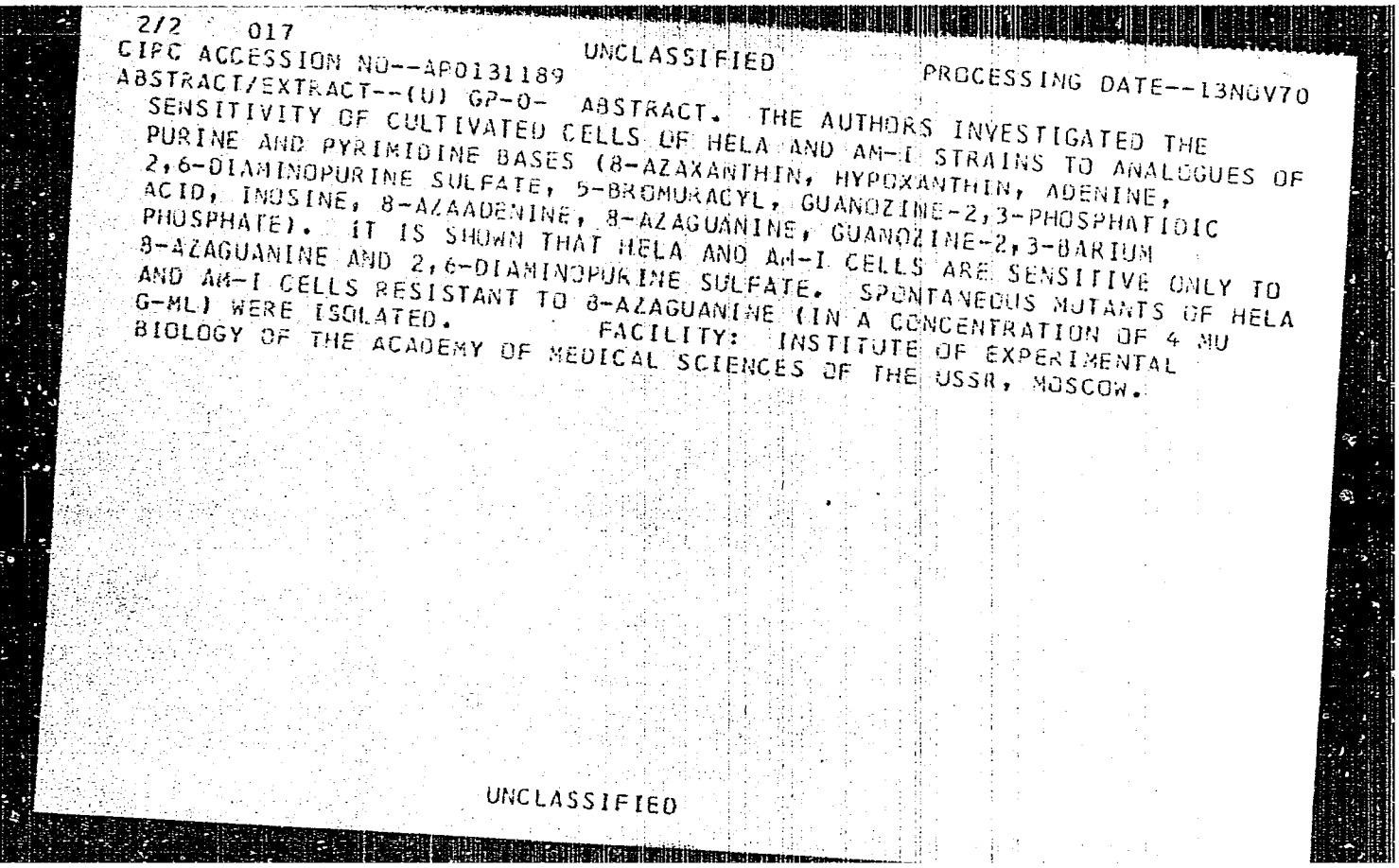
DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0566

STEP NO--UR/0219/70/049/006/0091/0094

CIRC ACCESSION NO--AP0131189

UNCLASSIFIED



2/2 017 UNCLASSIFIED
CIPC ACCESSION NO--AP0131189 PROCESSING DATE--13NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS INVESTIGATED THE SENSITIVITY OF CULTIVATED CELLS OF HELA AND AM-I STRAINS TO ANALOGUES OF PURINE AND PYRIMIDINE BASES (8-AZAXANTHIN, HYPOXANTHIN, ADENINE, 2,6-DIAMINOPURINE SULFATE, 5-BROMURACYL, GUANOZINE-2,3-PHOSPHATIDIC ACID, INOSINE, 8-AZAADENINE, 8-AZAGUANINE, GUANOZINE-2,3-BARIUM PHOSPHATE). IT IS SHOWN THAT HELA AND AM-I CELLS ARE SENSITIVE ONLY TO 8-AZAGUANINE AND 2,6-DIAMINOPURINE SULFATE. SPONTANEOUS MUTANTS OF HELA AND AM-I CELLS RESISTANT TO 8-AZAGUANINE (IN A CONCENTRATION OF 4 MU G-ML) WERE ISOLATED. FACILITY: INSTITUTE OF EXPERIMENTAL BIOLOGY OF THE ACADEMY OF MEDICAL SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC:536.4.46

YERSHIN, Sh. A., RYBALOVA, R. P., SARSENBAYEV, Zh.

"Aerodynamics of Gas Streams and a Flame in a Homogeneous Wake (Isobaric and Gradient Flows)"

Probl. Teploenerg. i Prikl. Teplofiz. [Problems of Thermal Power Engineering and Applied Heat Physics -- Collection of Works], No 9, Alma-Ata, Nauka Press, 1973, pp 131-141 (Translated from Referativnyy Zhurnal Aviatsionnyye i Raketnyye Dvigateli, No 11, 1973, Abstract No 11.34.29, from the resume)

Translation: Results are discussed from a study of a nonisothermal stream and a gas flame at high wake-flow parameters. Isobaric and gradient flows are studied. An explicit expression of the dependence of effective coordinate $\xi(x)$ is produced and introduced in the method of the equivalent problem from the theory of heat conductivity as a function of the main flow parameters. The method of the equivalent problem from the theory of heat conductivity is extended to gradient and jet flows. The results of calculation agree satisfactorily with experimental results. 5 Figures; 2 Tables; 11 Biblio. Refs.

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Heat, Combustion, Detonation

USSR

UDC:533.601.1.536.46

YERSHIN, Sh. A., PAK, V.V., SHEGUROV, A. A.

"Experimental Study of Aerodynamics of a Diffusion Flame with Supersonic Gas Flow"

Probl. Teploenerg. i Prikl. Teplofiz. [Problems of Thermal Power Engineering and Applied Heat Physics -- Collection of Works], No 9, Alma-Ata, Nauka Press, 1973, pp 112-120 (Translated from Referativnyy Zhurnal Aviatsionnyye i Raketnyye Dvigateli, No 11, 1973, Abstract No 11.34.41, from the resume)

Translation: The case is studied of axisymmetrical movement of a supersonic stream and flame in a flooded space. Experimental data are presented for various cross sections from the cross section of the nozzle and for two flow modes: M=1.05, T_0=930° K, n=0.94, and M=1.25, T_0=950° K, n=0.92. The calculation of the supersonic diffusion flame is constructed on the basis of the method of the equivalent problem of the theory of heat conductivity, and the agreement with experimental data is satisfactory. 4 Figures; 9 Biblio. Refs.

1/1

USSR

UDC:533.601.1

USTIMENKO, B. P., TKATSKAYA, O. S., YERSHIN, Sh. A.

"Some Results of Investigation of the Aerodynamics of a Twisted Gas Flame"

Probl. Teploenerg. i Prikl. Teplofiz. [Problems of Thermal Power Engineering and Applied Heat Physics -- Collection of Works], No 9, Alma-Ata, Nauka Press, 1973, pp 91-99 (Translated from Referativnyy Zhurnal Aviatsionnyye i Raketnyye Dvigateli, No 11, 1973, Abstract No 11.34.42, from the resume)

Translation: The regularities of development of turbulent twisted flames are studied with various values of the twisting parameter ($0.08 \geq S \geq 0.51$) and wake parameter ($0 \leq m \leq 1.0$). The axial and tangential velocity fields, excess static pressure field and excess temperature field are presented in detail. The results of experiments for a slightly twisted flame are compared with calculated values using the method of the equivalent problem from the theory of heat conductivity and agreement is good. 7 Figures; 4 Biblio. Refs.

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USSR

UDC 621.43.011:533+621.5:533

YERSHIN, SH. A., ZHAPBASBAYEV, U. K., MOLYUKOV, I. D., and PAK, V. V.

"The Aerodynamics of Supersonic Flows of a Compressible Gas"

Alma-Ata, Matematika i Mekhanika. Tezisy Dokl. 4-oy Kazakhstan. Mezhvuz. Nauch. Konf. po Mat. i Mekh. Ch. 2 (Mathematics and Mechanics. Theses of Lectures of the Fourth Kazakhstan Conference of Schoold of Higher Learning on Mathematics and Mechanics. Part 2), 1971, pp 203-205 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2B392 by A. S. Tikhotskiy)

Translation: The article presents the results of an experimental investigation of a supersonic jet (submerged and with weak cocurrent flow). The installation consisted of two coaxial pipes 200 and 400 mm in diameter; on one end of the pipes were profiled nozzles, one of them with a vent diameter of 5 mm (a Laval nozzle) and the other with a vent dimateter of 100 mm (a Vitoshinskiy nozzle). At the other end of the pipes are fittings for supplying air from a system consisting of high-pressure capacities and a fan. The basic regime parameters of the experiments were within the limits of $2 \leqslant p_0 \leqslant 8$ and $340 \leqslant u_0 \leqslant 600$, where p_0 is the pressure at the Laval-nozzle inlet, u_0 is the discharge velocity from the Laval nozzle.

It is established that the laws governing the development of the jet

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Bionics

USSR

YERSHOV, A.

"Biological Portents of Earthquakes"

Riga, Nauka i Tekhnika, No 4, Apr 71, pp 10-12

Abstract: The 1966 Tashkent and 1948 Ashkhabad earthquakes were preceded by many examples of premonitions of the catastrophe. For example, Ashkhabad hospitals were deluged 6-8 weeks before the quake with people complaining of heart pains. Cardiograms revealed nothing unusual, but Yershov suggests that some people may be sensitive to such impending events. Ants in Tashkent were observed leaving their nests with the pupae shortly before the quake, and many zoo animals would not sleep in buildings until the autumn of 1966. Bears in the vicinity of Bezymyannyi volcano in the winter of 1955-56 were impelled to move to safer ground as a result of impressions received from volcanic action. Pheasants in the "Tiger Gorge" game preserve in Tadzhikstan react even to construction going on 15 km away. Soviet scientists are studying the sensitivity of fish to earthquakes. Promising results have been achieved by Dr. Protasov of the hydrobionics group at the Institute of Evolutionary Morphology and Ecology of Animals, Academy of Sciences U.S.S.R. Fish are able

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USSR

YERSHOV, A., Nauka i Tekhnika, No 4, Apr 71, pp 10-12

to perceive low-frequency acoustical oscillations arising from earthquakes, explosions, and approaching tidal waves. The perception of approaching catastrophes by living organisms is often based on their hearing sounds not audible to man, which arise when the core of the earth is only beginning to "break open." It is also possible that animals react to changes in electrostatic and magnetic fields produced by the beginning of an earthquake. Therefore, it is important to make models of animals' sensory organs which can perceive seismic signals. This will make it possible to operate without the help of the animals themselves and to achieve more reliable results.

2/2

USSR

YERSHOV, A.

"The Terrestrial Service of the Sun"

Tashkent, Ekonomika i Zhizn', No 9, Sep 71, pp 74-76.

Abstract: A popular review is presented of efforts to utilize the energy of sunlight for production of the light and heat needed by man. The solar concentrators designed by G. Ya. Umarov are described. After learning from the mistakes of his first attempt at solar engineering, the construction of a 10-meter parabolic solar reflector to provide the heat for a canning plant, which cracked due to the difference in thermal expansion between the glass of the reflector and the glue which held it to the reenforced concrete shape, Umarov has designed many smaller solar concentrators, which are now used to power pumps bringing water up from wells in the desert and other similar isolated power applications. Another promising application of solar heating is in metallurgy, where solar heat can melt metals of exceptionally high purity without introducing contaminating impurities resulting from burning of fuel. Production of such installations, as well as hot water heaters and kitchens designed for home use, has been begun in Tashkent.

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1/2 009 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--EARTHQUAKES AND RADIOACTIVITY -U-

AUTHOR--YERSHOV, A.

COUNTRY OF INFO--USSR

SOURCE--ZARYA VOSTOKA, JUNE 6, 1970, P 4, COLS 2-4

DATE PUBLISHED--06JUN70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--RADIOACTIVITY, EARTHQUAKE FORECAST, GEOLOGIC CONFERENCE, EARTH CRUST MOVEMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0974 STEP NO--UR/9029/70/000/000/0004/0004

CIRC ACCESSION NO--AN0107403

UNCLASSIFIED

2/2 009 UNCLASSIFIED

CIRC ACCESSION NO--AN0107403 PROCESSING DATE--020CT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE ALL UNION CONFERENCE ON THE CONTEMPORARY MOVEMENT OF THE EARTH, P. O. KAZANCHYAN, A SCIENTIST FROM YEREVAN, HAS REPORTED THAT PRIOR TO HEAVY EARTHQUAKES THE LOCAL RADIOACTIVITY RISES 25-30 PERCENT ABOVE NORMAL.

UNCLASSIFIED

Acc. Nr.: AN0040369 Ref. Code: UR 9012

AUTHORS-- MARCHUK, G., ACADEMICIAN, DEPUTY CHAIRMAN, SIBERIAN DEPARTMENT OF THE ACADEMY OF SCIENCES, U.S.S.R., DIRECTOR OF THE COMPUTATION CENTER, AND YERSHOV, A., DOCTOR OF PHYSICAL-MATHEMATICAL SCIENCES, HEAD OF A DEPARTMENT OF THE COMPUTATION CENTER

TITLE-- COMPREHENSIVE PROBLEMS OF ELECTRONIC COMPUTERS

NEWSPAPER-- PRAVDA, APRIL 9, 1970, P 3, COLS 1-3

ABSTRACT-- THE ARTICLE URGES A MORE RAPID DEVELOPMENT OF COMPUTER SOFTWARE, TRAINING OF PROGRAMMERS, AND SHARING OF COMPUTER TIME IN ORDER TO MAKE FULL USE OF HARDWARE CAPABILITIES.

AN AUTOMATED INFORMATION CENTER, "AIST", IS BEING TRIED ON EXPERIMENTAL BASIS AT THE COMPUTATION CENTER OF THE SIBERIAN BRANCH OF THE ACADEMY OF SCIENCES. IT CONSISTS OF TWO M-220 RAPID COMPUTERS, WHICH ARE CONTROLLED BY THE "MINSK-22" COMPUTER. THE CENTER CAN HANDLE SIMULTANEOUSLY 32 SUBSCRIBERS.

Reel/Frame
19741808

USSR

UDC 621.378:550.145:13

DMITRIYEV, V.G., YEREMEYEVA, R.A., YERSHOV, A.G., ITAHCKI, I.YA., KARPOVA, YE.P.

"Engineering Calculation And Optimization Of Parameters Of Optical Band Frequency Doublers"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), 1972, pp 72-79

Abstract: At the contemporary level of development of experimental nonlinear optics, the necessity for engineering calculation and optimization of the parameters of frequency doublers is dictated by the appearance of a large number of nonlinear crystals which make it possible to obtain a high efficiency of conversion into the second optical harmonic without special focusing schemes. As a rule, relatively powerful solid-state lasers are used as the sources of initial radiation. The radiation of the lasers introduces a predominantly pulse character and the divergence substantially exceeds the diffraction limit. During calculation of frequency doublers of such lasers it is necessary because of the back reaction to take into account both the pulse character of the initial radiation and the effect of saturation of the harmonic. Calculation of the enumerated factors introduces a number of special features in the nature of the calculation of the efficiency of conversion, such as determination of the optimum ratio

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USSR

DMITRIYEV, V. G., et al., Kvantovaya elektronika, No 5(11), 1972, pp 72-79

between the intensity of the exciting wave and the length of the nonlinear crystal, and others. The methods of calculation used in the present work were developed by others for the case of a prescribed field of initial frequency, and for a substantially nonlinear regime. For production of engineering graphs it is most advisable to conduct numerical integration of equations because analytical methods of calculation, valid in some approximations, lead to fairly awkward solutions. 5 fig. 1 tab. 11 ref. Received by editors, 6 Oct 1971.

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USSR

UDC 621.373:530.145.6

YERSHOV, A. G., CHEREDNICHENKO, O. B., SHARIF, G. A.

"An Experimental Study of a Laser Based on a Solution of an Organic Dye With Transverse Pumping and a Dispersion Cavity"

Zh. prikl. spektroskopii (Journal of Applied Spectroscopy), 1971, 14, No 2, pp 216-221 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D187)

Translation: The authors study the polarization, energy and spectral characteristics of emission from a laser based on a solution of rhodamine 6G in ethyl alcohol with a concentration of $C = 1 \cdot 10^{17}$ cm^{-3}. The use of a dispersion cavity with diffraction grating and prism, and with transverse pumping of the dye by the second harmonic of an 8 MW neodymium laser made it possible to achieve emission which can be tuned over a range of 560-620 nm with an emission bandwidth of 1-6 nm and a maximum conversion factor of $\eta \approx 35\%$. Five illustrations, bibliography of nine titles.

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USSR UDC: 621.373:530.145.6

DMITRIYEV, V. G., YERSHOV, A. G., ZUDKOV, P. I., SHARIF, G. A., SHVOM, Ye. M.

"Emission of Optical Harmonics in the Pulse Mode With a High Pulse Repetition Frequency"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 1, Moscow, 1971, pp 116-119 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D174)

Translation: The paper presents the results of an experiment on generation of the second, third and fourth optical harmonics of emission from an aluminum--yttrium garnet laser with neodymium working in the pulse mode with Q-switching at a high pulse repetition frequency. It is noted that the intensity of ultraviolet emission on a wavelength of 266 millimicrons is extremely stable. One illustration, one table, bibliography of eight titles. Resumé.

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USSR UDC 621.375.82

DMITRIYEV, V. G., YERSHOV, A. G., ZUDKOV, P. I., SHARIF, G. A., SHVOM, Ye. M.

"Generation of Optical Harmonics in a Pulsed Mode With a High Pulse Repetition Frequency"

V sb. Kvant. elektronika (Quantum Electronics), No. 1, Moscow, 1971, pp 116-119 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D996)

Translation: The generation of second, third, and fourth optical harmonics of the radiation of a YAG:Nd laser operating in a pulsed mode with Q-modulation with a high pulse repetition frequency was investigated experimentally. There was found a high stability of ultraviolet radiation intensity at the wavelength 266 nm. Authors abstract.

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Electrochemistry

USSR UDC 621.357.12.035.2

RYABUKHIN, A. G., YERSHOV, A. I., GRISHAYENKOV, B. G., GAVRILOV, B. A.

"Optimal Current Density for Decomposition of Water in an Electrolytic Cell with Porous Nickel Electrodes"

Tr. Kurgan. mashinostroit. in-ta (Works of the Kurgan Machine Building Institute), 1971, vyp. 17, pp 70-75 (from R2h-Khimiya, No 6 (II), Jun 72, Abstract No 6L258)

Translation: A study was made of the effect of the temperature on the magnitude of the dimensional D_a for electrolysis of water in a cell with porous electrodes. It was established that there is a region of optimal size D_a which expands with an increase in temperature and is limited on the one hand by the conversion of the anode from the passive state to the active state accompanied by strong corrosion and, on the other hand, by a sharp increase in the nonproductive losses.

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USSR

YERSHOV, A. P., KOTOV, V. Ye., LETICHEVSKIY, A. A., PODLOVCHENKO, R. I., POTTOSIN, I. V., TRAKHTENBROT, V. A., FUKSMAN, A. L. and TSEYTIN, G. S.

"Theoretical Programming in the USSR (All-Union Symposium on Programming Theory, Tsvelodubovo, 1-10 March 1972)"

Sistemnoye i Teor. Programmirovaniye [Systems and Theoretical Programming -- Collection of Works], Novosibirsk, 1972, pp 9-89 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V642).

Translation: This article is a collective report of the chairmen of the thematic sections of an All-Union symposium on programming theory held 1-10 March 1972 near Leningrad. Although only factual material discussed at the symposium is presented, this publication rather objectively characterizes the status of theoretical programming in the USSR. The work of the symposium consisted of a series of thematic sessions and discussion. The following sessions were in operation (each followed by the name of the chairman): 1. Equivalence and Conversion of Program Plans (A. A. Letichevskiy); 2. Yanov Plans and Their Generalization (R. I. Podlovchenko); 3. The Grammars of Programming Languages (A. L. Fuksman); 4. Base and Semantic

USSR

Yershov, A. P., Kotov, V. Ye., Letichevskiy, A. A., Podlovchenko, R. I., Pottosin, I. V., Trakhtenbrot, V. A., Fuksman, A. L., and Tseytin, G. S., Sistemnoye i Teor. Programmirovaniye, Novosibirsk, 1972, pp 9-89.

Languages (A. P. Yershov); 5. Parallel Programming (V. Ye. Kotov); 6. Optimization of Programs (I. V. Pottosin); 7. Complexity of Algorithms and Algorithmic Power (G. S. Tseytin).

The session was opened by a speech of introduction by the chairman, followed by 20-30 minute reports by the participants and, generally, finishing up with animated discussion. The publication is a combination of the reviews of each of the thematic sessions of the symposium, prepared by the chairman of the sessions on the basis of author's abstracts of the reports.

In addition to this, a discussion on the subject of "Programming Theory and Other Sections of Mathematics," chaired by B. A. Trakhtenbrot, is described, as well as the results of statistical processing of questionnaires passed out to the participants of the symposium, reflecting their views on the role of programming theory in general and the significance of individual sections of this theory. M. Gorbunov-Posadov

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USSR

YERSHOV, A. P.

"Technology of Development of Programming Systems"

Sistemnoye i Teor. Programmirovaniye [System and Theoretical Programming -- Collection of Works], Novosibirsk, 1972, pp 136-184 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V664, by the author).

Translation: An attempt is made to provide a summary outline of the primary components of the technological process involved in planning and development of large translating-type programming systems. The problems of organization of work and documentation are not covered in this article. Translation is analyzed as a specific information processing task. The prerequisites for determination of the structure of a translator are analyzed from the systems standpoint. The translator is looked upon as a large program, and therefore approaches to its programming and debugging are presented. The concept of the tool machine is introduced, combining all problems of automation of the development and actual realization of a system. 104 biblio. refs.

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USSR

YERSHOV, A. P.

"A Universal Programming Processor"

Probl. Prikl. Mat. i Mekh. [Problems of Applied Mathematics and Mechanics -- Collection of Works], Moscow, Nauka Press, 1971, pp 103-116, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V526 by the author).

Translation: An approach is described to the construction of a universal programming processor, capable of translating programs in such languages as ALGOL 68, PL/1 and SIMULA 67, fixed in the processor using 5 types of linguistic tables (contextually free syntax, context conditions and rules, identification, rules of reduction and cemantic induction, tables of cemantic replacement and tables of linguistic situations). One peculiarity of the process is the presence of an algorithmic internal language used to describe the cemantics of input languages, and forming a level of recording of the translated programs, at which universal optimizing transforms are performed on them. 11 Biblio. Refs.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--DYEING OF MIXTURES OF CELLULOSE POLYAMIDE FIBERS BY DIRECT LIGHTFAST DYES -U-

AUTHOR--DEMIDOVA, E.N., YERSHOV, A.P., KHARKHAROV, A.A.

COUNTRY OF INFO--USSR

SOURCE--TEKST. PROM. (MOSCOW) 1970, 30(1) 86

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--DYE, CAPRONE, CELLULOSE RESIN, POLYAMIDE RESIN, SYNTHETIC FIBER, NATURAL FIBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/1067 STEP NO--UR/0342/70/030/001/0086/0086

CIRC ACCESSION NO--AP0052433

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--11SEP78

CIRC ACCESSION NO--AP0052433

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DYEING PROCEDURE IS RECOMMENDED FOR KAPRON COTTON BLENDS WITH DIRECT DYES. DIRECT YELLOW 2K, DIRECT RED S, AND DIRECT BLUE WERE TESTED. THE RETENTION OF 0.5-1.5PERCENT (ON FABRIC WT.) OF DYES WAS ATTAINED WHEN DYEING WAS CONDUCTED AT 85-90DEGREES, PH 5, IN THE PRESENCE OF 15-20PERCENT (NH SUB4) SUB2 SO SUB4 DURING 80 MIN.

UNCLASSIFIED

USSR UDC: 8.74

YERSHOV, A. P. [Editor]

"EPSILON, A System for Automation of Programming of Symbolic Processing Problem"

EPSILON--Sistema Avtomatizatsii Programmirovaniya Zadach Simbol'noy Obrabotki. [English version above], Novosibirsk, Nauka Press, 1972, 132 pp (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V534K, by V. Mikheyev)

Translation: A description is presented of the new programming language EPSILON, a machine-oriented language designed for description of algorithms for processing of symbolic information. The basic information units permissible in the language are the machine word, a certain set of sequential machine word units or syllables and the linear sequence of elements, syllables with identical numbers of characters. The language has a means of identification of certain classes of symbols, as codes. It is assumed that these classes are differentiated according to the binary representation of the symbols in the corresponding class. To account for the influence of the machine, the description of the language and system of EPSILON does not define a unique language, but rather a certain set of languages and systems. Any language in this system has two

USSR

Yershov, A. P., EPSILON--Sistema Avtomatizatsii Programmirovaniya Zadach Simbol'noy Obrabotki, Novosibirsk, Nauka Press, 1972, 132 pp

levels--the standard level, defining the properties which are common for all languages of the set, and the specific level, the similarity or difference of which with other specific levels isnot limited. The syntax of the language is basically defined in the standard level, the semantics--both in the standard and in the specific level. In particular, the semantics of operators at the specific level are determined by the form of the operator, i.e., the sequence of instructions of the specific machine which replaces the operator. Using this design of the language, as an instruction and open procedure, the EPSILON system can perform the functions of a macroassembler. The language allows packing of information in "lists." A list refers to a certain vector of information units densely packed into memory. Expressions in the language are simple--they contain not over two operands. Numbers recorded in the language can only be non-negative integers; all other numbers must be introduced implicitly using the peculiarities of the specific language level. A definition is presented of specific realizations of EPSILON for the M-220, BESM-6 and MINSK-22 computers, plus information on translation and debugging algorithms for the language. The basic translation algorithms are presented in the form of programs in EPSILON itself.
2/2

1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--THE DETECTION OF HYPERFINE STRUCTURE IN THE EPR SPECTRUM OF A TRAPPED ELECTRON IN GAMMA IRRADIATED ALKALINE GLASSY ICE AT 77DEGREESK

AUTHOR-(02)-ERSHOV, B.G., PIKAEV, A.K.

COUNTRY OF INFO--USSR

SOURCE--RADIAT. EFF.; 2: 135-6, JAN 1970

DATE PUBLISHED----JAN70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--EPR SPECTRUM, HYPERFINE STRUCTURE, LINE SPLITTING, ELECTRON TRAPPING, GAMMA IRRADIATION, GLASS PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1461 STEP NO--UR/0000/70/002/000/0135/0136

CIRC ACCESSION NO--AP0101547

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

2/2 022

CIRC ACCESSION NO--AP0101547

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TRIPLET WAS FOUND IN THE EPR SPECTRUM OF GAMMA IRRADIATED ION ALKALINE GLASSY ICE WITH A (H)-(TH) PLUS (D)) RATIO OF SIMILAR TO 0.11. THE SIDE COMPONENTS OF THE TRIPLET COULD BE DETECTED, AND THE SPLITTING IS 6 PLUS OR MINUS 1 OE, IN AGREEMENT WITH CALCULATION. FACILITY: INST. OF PHYSICAL CHEMISTRY, MOSCOW.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--LOSS OF CAPTURED ELECTRONS IN GAMMA IRRADIATED ALKALINE GLASS AT 77DEGREESK -U-

AUTHOR-(02)-YERSHOV, B.G., TSEYTLIN, YE.L.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(2) 186-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--GAMMA RATIATION, ELECTRON ACCEPTOR, NITRITE, NITRATE, FERROCYANIDE, ALKALI GLASS, IRRADIATED GLASS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1498 STEP NO--UR/0456/70/004/002/0186/0187

CIRC ACCESSION NO--AP0112492

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112492

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RANDOM LOSS OF CAPTURED ELECTRONS (E PRIME NEGATIVE CAPT) WAS STUDIED IN THE PRESENCE OF ELECTRON ACCEPTORS. THE DOSE OF GAMMA RADIATION FROM PRIME60 CO WAS 6 TIMES 10 PRIME15 EV-G,SEC. THE ABSORPTION MAX. OF E PRIME NEGATIVE CAPT (580 NM) DECREASES WITH THE INTRODUCTION OF THE ACCEPTORS NO SUB2 PRIME NEGATIVE, NO SUB3 PRIME NEGATIVE, FE(CN) SUB6 PRIME3 NEGATIVE. IN PURE ALK. "GLASS" THE ABSORPTION OF E PRIME NEGATIVE CAPT REMAINS CONST. FOR SOME TIME. IN THE PRESENCE OF ACCEPTORS A NOTICEABLE DECREASE IN THE ABSORBANCE IS OBSD. THE RELATIVE DOSE OF THE RANDOMLY DISAPPEARING E PRIME NEGATIVE CAPT INCREASES WITH THE ACCEPTOR CONCN. WITH AN INCREASE IN THE CONTENT OF NO SUB3 PRIME NEGATIVE AND FE(CN) SUB6 PRIME3 NEGATIVE FROM 5 TIMES 10 PRIME NEGATIVE3 TO 5 TIMES 10 PRIME NEGATIVE2 M IT INCREASES FROM 8 TO 25 AND FROM 12 TO 40PERCENT, RESP. THE KINETICS OF THE LOSS OF ELECTRONS ON THE SECTION OF FAST DROP IS BEST DESCRIBED BY AN EQUATION OF THE 1ST ORDER. THE RATE CONSTS. FOR 10 PRIME NEGATIVE2 M NO SUB3 PRIME NEGATIVE, NO SUB2 PRIME NEGATIVE, FE(CN) SUB6 PRIME3 NEGATIVE ARE 2.4 TIMES 10 PRIME NEGATIVE2, 3.9 TIMES 10 PRIME NEGATIVE2, 3.3 TIMES 10 PRIME NEGATIVE2 SEC PRIME NEGATIVE1, RESP. THE RANDOM LOSS OF E PRIME NEGATIVE CAPT IN AQ. ALK. "GLASSES" IS APPARENTLY DUE TO THE TUNNEL TRANSFER OF AN ELECTRON TO THE ACCEPTOR.

UNCLASSIFIED

Acc. Nr.
AP0028301

Abstracting Service:
CHEMICAL ABST. 3-70

Ref. Code
UR 2952

49500p Detection of hyperfine structure in the EPR spectrum of a trapped electron in γ-irradiated alkaline glassy ice at 77°K. Ershov, B. G.; Pikaev, A. K. (Lab. Radiat. Chem., Inst. Phys. Chem., Moscow, USSR). *Radiat. Eff.* 1970, 2(2), 135-6 (Eng). The EPR spectrum of the trapped electrons in γ-irradiated 10*M* KOH glassy ice at 77°K with $\xi = [H]/([H] + [D]) \approx 0.11$ shows a splitting between side components of 6 ± 1 Oe. The triplet is most distinct for $\xi < 0.2$–0.33. The electrons are localized in the trap formed by the protons of mols. of the medium.
DWJN

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19

REEL/FRAME
19671742

1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--PHYSICOMECHANICAL PROPERTIES OF TRANSLUCENT GLASS FIBER REINFORCED PLASTICS -U-

AUTHOR--YERSHOV, B.L.

COUNTRY OF INFO--USSR

SOURCE--BUDIVEL'NI MATER. KONSTR. 1969, (4), 39-40

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GLASS FIBER, REINFORCED PLASTIC, POLYESTER RESIN, BOROSILICATE GLASS, ADHESIVE/(U)PN1 POLYESTER RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1477 STEP NO--UR/0635/69/000/004/0039/0040

CIRC ACCESSION NO--AP0116914

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0116914
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SHEETS OF POLYESTER PN-1 FILLED WITH CHOPPED BOROSILICATE GLASS FIBERS WERE STUDIED. OPTIMAL PHYSICOMECH. PROPERTIES WERE OBTAINED BY USING 15-37PERCENT OF THE GLASS FIBER TREATED WITH HYDROPHOBIC ADHESIVES NOS. 16 AND 289 OF RUSSIAN ORIGIN.

UNCLASSIFIED

USSR

UDC 621.373:590.145.6

BATANOV, V. A., YERSHOV, B. V., MAKSIMOV, L. P., SAVRANSKIY, V. V., FEDOROV, V. B.

"Laser Unit with Radiation Energy up to 10 Kilojoules for Investigating the Interaction of Powerful Luminous Fluxes with Matter"

Kratk. soobshcheniya po fiz. (Brief Reports on Physics), No 4, 1970, pp 8-14 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8 D188)

Translation: This article contains a description of a device created on the basis of a neodynium glass laser (λ = 10,600 Å) generating pulses with an energy to 10 kilojoules and $\sim$ 1 millisecond long. The intensity of the light flux reaches 10^7 watts/cm^2 over an area of up to 1 cm^2. The device consists of three independent generators operating in parallel each of which contains three plane-parallel rods of neodynium glass pumped by pulse tubes. The experience in operating the device for three years has demonstrated that obtaining an energy of ~10 kilojoules is possible 5-10 times, obtaining an energy of five kilojoules is possible 50 times without replacing the tubes, active elements and reflectors.

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USSR

UDC 612.791.014.482

OSANOV, D. P., YERSHOV, E. B., KLYKOV, O. V., and RAKOVA, V. A.

"Kinetics of Dose Distribution in Skin Contaminated by Radioactive Substances"

Moscow, Meditsinskaya Radiologiya, No 5, 1971, pp 44-50

Abstract: Solutions of tritium oxide, Sr^{89}, Pu^{239} nitrates, and other radioactive substances were applied to the backs of 8-week-old pigs (whose skin is morphologically and physiologically almost identical to human skin) in order to study the kinetics of penetration of the absorbed doses. The distribution of activity was investigated by the method of layer-by-layer radiometry of horizontal sections 15 to 20 μm thick. The substances remained on the skin from 1 hour to 2 days. Data were also obtained on the kinetics of elimination of the isotopes from the skin after a single 6-hour exposure. A correlation was observed between the absorbed doses in the basal layer that were formed by the thin surface contamination and the thick-layer source created in the skin by penetration of the isotopes through the horny layer.

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USSR

UDC 576.858.6.083.35.07

ZHDANOV, V. M., BYKOVSKIY, A. F., AL'TSHTEYN, A. D., LOZINSKIY, T. F., URYVAYEV, L. V., VOLKOVA, M. L., YERSHOV, F. I., IL'IN, K. V., BEKTEMIROV, T. A., IRLIN, I. S., MILLER, G. G., ZAKHAROVA, L. G., PEREKREST, V. V., GERASINA, S. F., and SEVAST'YANOVA, M. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, and the Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Moscow

"Detection of Oncornaviruses in Continuous Tissue Cultures"

Moscow, Voprosy Virusologii, No 4, 1973, pp 411-414

Abstract: Studies were conducted on a number of human and animal continuous tissue cultures maintained in medium 199 containing 10% bovine serum to determine oncornaviruses. Formation of oncornaviruses in the tissue cultures were followed by the appearance of virtal particles in the culture fluid labeled with H^3-uridine, susceptibility of their synthesis to low actinomycin D concentrations, appearance of these particles following inhibition of nuclear material synthesis by bromodeoxyuridine or mitomycin, presence of reverse transcriptase in these particles, presence of 60-70 S RNA in these particles, and electron microscopy. Of the 26 human lines investigated 14 contained type B oncornavirus, and 4 lines type C virus. Eight of the

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(11)

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ZHDANOV, V. M., et al., Voprosy Virusologii, No 4, 1973, pp 411-414

14 animal lines studies also showed the presence of oncornaviruses. The source of these viruses in the human lines remains unclear, but the source may have been bovine serum or porcine trypsin used in the preparation of cell suspension. It is noteworthy that type B viruses were isolated in human cultures of epithelial origin, while type C viruses in human cultures of leukotic or sarcomatous origin.

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USSR

UDC 578.6

YERSHOV, F. I., BYKOVSKIY, A. F., URYVAYEV, L. V., SOKOLOVA, T. M., and ZHDANOV, V. M., Member Academy of Medical Sciences USSR, Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"The Morphology of Hybrid Ribonucleoprotein Complexes (Pseudoviruses)"

Moscow, Doklady Akademii Nauk SSSR, Vol 210, No 5, 1973, pp 1206-1207

Abstract: It was established in earlier work by Yershov et al (DAN SSSR, Vol 189, No 4, 882, 1969) that addition of the infectious RNA of the virus of Venezuelan equine encephalomyelitis to the fraction S 105 of the hyaloplasm of chick embryo fibroblasts results in the formation of hybrid ribonucleoprotein (RNP) complexes (pseudoviruses) that consist of the virus RNA and cell proteins and differ from the virion RNP in regard to their sedimentation distribution and floating density. They are insensitive to the action of antivirus antibodies, but at the same time exhibit infectious activity. In the work reported at present, the morphology of the pseudoviruses in question was studied by electron microscopy. It was established that the optimum ratio for the formation of the RNP complexes was 400 gamma virus RNA to 1.6 mg protein. On purification of the RNP complexes (pseudoviruses) by centrifuging in a 10-30% density gradient of sucrose dissolved

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YERSHOV, F. I., et al., Doklady Akademii Nauk SSSR, Vol 210, No 5, 1973, pp 1206-1207

in an isotonic phosphate buffer (0.1 M NaCl, 0.01 M phosphate buffer, pH 7.2) the fraction corresponding to the peak of RNP complexes (80 S) was collected and studied by means of an electron microscope. Centrifuging in a CsCl gradient was also carried out. Threads with a diameter of 25-30 A and bundles of these threads were observed. The hybrid pseudovirus complexes resembled the virus RNP and differed from informophers in size and shape.

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USSR

UDC 615.281.8:576.858.098.396.332

NOVOKhATSKIY, A. S., and YERShOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences, USSR

"Inhibition of the Multiplication of RNA-Containing Viruses in a Tissue Culture With Combined Use of an Inducer of Interferon Production and a Ribonuclease"

Moscow, Antibiotiki, No 7, 1973, Vol 18, pp 629-633

Abstract: The fact that complexes of polynucleotides can stimulate the production of interferon leads to consideration of the possible therapeutic and prophylactic use of such preparations. Further, it has recently been established that nucleases have a definite antiviral effect. In the current investigation, the combined used of ribonuclease (an active inhibitor of the reproduction of RNA-containing viruses) and polyIC (a complex of synthetic polynucleotides of polyinosinic and polycytidylic acids, one of the most active and least toxic of the synthetic interferonogens) was tested with primary trypsinized cultures of chick embryo fibroblasts. Previous investigation has showed that complexes located on the outer part of cell surfaces are sensitive to the action of pancreatic ribonuclease. Thus it is possible that the antivirus effect of polyIC manifests itself as the preparation passes from the outer cell surface into the interior of the cell. The initial ribonuclease-sensitive phase was

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203710006-0"

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NOVOKhATSKIY, A. S., and YERShOV, F. I., Antibiotiki, No 7, 1973, Vol 18, pp 629-633

determined; it varies depending on type of cell, species of virus, and other factors. Successful combination of the nuclease and the interferonogen is possible only upon conclusion of this phase. The combined application is based on the principle that the antiviral state developed by the use of the polyIC is maintained when the preparation is not actually present (at least on the cell surface). It is concluded that a combination of the official pancreatic ribonuclease and an interferonogen is possible in principle, and further investigation is required for the extent of animal application.

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USSR

UDC 615.355:577.155.2]:615.281.8

NOVOKHATSKIY, A. S., YERSHOV, F. I., and URBAKH, V. Yu., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Antiviral Action of Ribonuclease"

Moscow, Voprosy Virusologii, No 1, 1973, pp 13-16

Abstract: Chick embryo fibroblast cultures were tested for viral infectiousness and hemagglutinating activity and for interferon 24 hours after infection by 5-10 plaque-forming units/cell of Venezualan equine encephalomyelitis virus. There was approximately linear direct correlation between the dose of pancreatic ribonuclease added to the culture and the suppression of infectiousness, hemagglutinating activity, and interferon production, with significant suppression occurring at doses as low as 0.25 mg/ml. Statistical treatment of experimental data indicated that the degree of suppression of all three indexes can be determined on the basis of information on just one of the indexes. The results support the suggestion that RNA-ase inhibits viral activity and interferon production by suppressing cellular protein synthesis. It is concluded that pancreatic RNA-ase is an effective virus-controlling compound, especially when administered together with interferon.

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USSR

UDC 576.858.25.098.396.332

AGABALYAN, A. S., URYVAYEV, L. V., and YERSHOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Characteristics of Viral RNA of Venezuelan Equine Encephalomyelitis Virus"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 72, pp 490-494

Abstract: The physicochemical properties of viral RNA isolated from Venezuelan equine encephalomyelitis (VEE) virus were studied in comparison to those of other group A arboviruses. RNA was labeled with H^3-uridine and studied spectrophotometrically. The RNA formed a single peak in a sucrose gradient with a sedimentation constant of 38-40S. This peak was sensitive to RNA-ase, and its maximum infectivity coincided with the maximum of radioactivity. Electrophoresis of the RNA in 3.5% agarose-polycarylamide gel indicated that it was homogeneous and pure, and enabled determination of its molecular weight: $4{\cdot}10^6$-$4.3{\cdot}10^6$ daltons. When fractionated in a cesium sulfate density gradient, the RNA settled in a single zone with density 1.55 gm/cm^3. These findings support previously published evidence that viral RNA is heavier than had been supposed. Differences in other properties between data on VEE virus RNA given here and previously published data on RNA of other A arboviruses are minor and can be attributed to variations in experimental procedures. Thus it is concluded that VEE virus RNA is identical in physicochemical properties to other A arboviruses.

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USSR

UDC 576.858.095.5(049.3)

YERSHOV, F. I., Professor, Doctor of Medical Sciences (Reviewer) Mutagenez Virusov Cheloveka i Zhivotnykh (Mutagenesis of Human and Animal Viruses), by Zasukhina, G. D., Moscow, Meditsina, 1971, 180 pp

Moscow, Voprosy Virusologii, No 4, Jul/Aug 72, p 503

Abstract: This monograph analyzes factors controling mutagenesis in viruses. Part 1 deals with the use of plaque formation as a genetic trait by which to describe and differentiate viruses. Part 2 describes the principle differences between hereditary (mutational) and nonhereditary variability in viruses in comparison to bacteriophages. Part 3 deals with spontaneous mutagenesis in natural and experimental conditions. Individual genetic traits are discussed, and methods for obtaining altered variants experimentally are described. Part 4 provides information on inducing mutagenesis experimentally by varying environmental conditions. Data on bacteria, phages, and actinomycetes are added in classifying chemical mutagens and describing their properties. Part 5 describes possible systems for repairing genetic damage on the basis of data on both microorganisms and cells of higher animals, and the author's own experimental findings on viruses. The monograph contains a bibliographic index.

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USSR

UDC 615.37:576.858.095.383].015

TAZULAKHOVA, E. B., and YERSHOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Some Aspects of Interferon Activity"

Moscow, Antibiotiki, Vol 17, No 10, 1972, pp 940-945

Abstract: Resistance to Venezuelan equine encephalomyelitis virus developed by chick embryo fibroblasts in response to administration of homologous interferon depends on the time and dose of the virus and interferon added. On the average, resistance begins to develop 1-2 hrs after administration of interferon, reaches a maximum in 5-6 hrs, and remains constant as long as interferon is present in the medium in ample concentration. The best results are achieved by adding interferon prior to inoculation. Infection is not prevented if interferon is administered 2-3 hrs after inoculation. Removal of interferon from the medium is followed by a fall in resistance in 6-9 hrs, regardless of the inoculation dose and the initial concentration of interferon. This period coincides with the functional period of the antiviral protein.

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USSR

UDC 576.858.098.396.332.095.38

URYVAYEV, L. V., SOKOLOVA, T. M., YENSHOV, F. I., and ZHDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"A Study of the Phenomenon of Complexing Between Viral RNA and Cell Proteins"

Moscow, Voprosy Virusologii, No 6, Nov/Dec 72, pp 670-676

Abstract: Physicochemical properties of chick embryo fibroblast proteins complexing with Venezuelan equine encephalomyelitis virus RNA were studied. Complexing activity between protein, isolated in a DEAE-cellulose column at pH 6.8 and not sedimenting upon 105,000 g centrifugation, and labeled viral RNA was judged by the degree to which RNA was arrested by a millipore filter. Three classes of proteins (12S, 9S, and 6-4.5S) with differing complexing activity were separated on a sucrose gradient. Ionic strength of the medium apparently has an effect on complexing activity: Increasing the NaCl concentration from 0.01-0.1M to 0.5-1M considerably reduces sorption of viral RNA. It was also shown that RNA sorption decreases as the protein concentration is decreased. Moreover increasing the RNA: protein weight ratio from 1:6 to 1:1.5 caused a drop in ribonucleoprotein sedimentation constant from 85S to 57S. The heavier viral RNA coincided with the peak of maximum infectivity. It is suggested that high ionic strength causes viral RNA to form compact units that

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URYVAYEV, L. V., et al., Voprosy Virusologii, No 6, Nov/Dec 72, pp 670-676

cannot react readily with protein. Though the biological significance of RNA: protein complexing remains unclear, the fact that such complexes arise in isotonic media suggest that such structures exist in infected cells. The relationship between the weight increase of viral RNA and the quantity of protein available suggests that when protein is low in quantity it distributes itself uniformly among all RNA molecules, and RNA sedimentation rate does not increase noticeably.

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UDC 576.858.25.0.8.396.332

AGABALYAN, A. S., MEN'SHIKH, L. K., and YERSHOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Factors That Influence the Level of Infectiousness of Venezuelan Equine Encephalomyelitis Virus RNA"

Moscow, Voprosy Virusologii, No 5, 1971, pp 527-532

Abstract: The titers of infectious VEE virus RNA are highest after the cells are treated with 1 M NaCl solution for 15 min at room temperature. DEAE dextran (2 to 3 mg/ml) and protamine sulfate (0.3 to 0.6 mg/ml) added to the agar overlay increase the number and size of the plaques formed by RNA and intensify its infectiousness. The RNA titers are highest when the nuclei acid is adsorbed on the cells for 2 to 5 min at room temperature and at 37°C. Prolonging the adsorption time markedly lowers the titers of infectiousness. Treatment with RNAase completely neutralizes the infectiousness of RNA, whereas treatment of the original virus with the same enzyme has little or no effect in this respect. Immune serum against VEE virus has no effect on plaque formation caused by RNA preparations, but it greatly reduces the infectious titers of the original virus. Infectious RNA is

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AGABALYAN, A. S., et al., Voprosy Virusologii, No 5, 1971, pp 527-532

resistant to heating, even to 56°C. Infectious RNA isolated either from a virus-containing suspension or from infected cells retains its activity for several weeks when stored at -20°C.

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USSR UDC 576.858.25.097.2

URYVAYEV, L. V., CHEPULIS, G.-K., DERKACH, Yu. S., ZHDANOV, V. M., and YERSHOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Protein Components and Antigens of Venezuelan Equine Encephalomyelitis Virus"

Moscow, Voprosy Virusologii, No 5, 1971, pp 586-589

Abstract: The protein composition of highly purified Venezuelan equine encephalomyelitis virus was studied by electrophoresis in polyacrylamide gel and by double diffusion in agar. Both methods revealed the presence in the virus particles of three virus-specific proteins with antigenic properties.

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USSR

UDC 576.858

GAYTSKHOKI, V. S., YERSHOV, F. I., KISELEV, O. I., MEN'SHIKH, L. K., ZAYTSEVA, O. V., URIVAYEV, L. V., ZHDANOV, V. M., Member of the Academy of Medical Sciences USSR, and NEYFAKH, S. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow, and Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

"Reconstruction of the Autonomous Genetic and Protein-Synthesizing System from Virus RNA and Isolated Mitochondria"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 1, 1971, pp 220-223

Abstract: In experiments performed on isolated mitochondria of rat liver incubated with H^3-RNA obtained from purified Venezuelan equine encephalomyelitis virus, it was demonstrated that the virus RNA enters the mitochondria and is incorporated into their autonomous system of protein synthesis, for which the mitochondria supply the necessary energy. Transcription of the mitochondrial DNA is inhibited, the virus RNA is replicated, and thus virus proteins are synthesized.

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USSR

UDC 576.858.098.396.332.083.1

GAYTSKHOKI, V. S., YERSHOV, F. I., KISELEV, O. I., MEN'SHIKH, L. K., ZAYTSEVA O. V., YRYVAYEV, L. V., ZHDANOV, V. M., and MEYFAKH, S. A., Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad, Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

"Replication of Infectious Viral RNA in Isolated Mitochondria. Report I: Penetration of Viral RNA Into Mitochondria and Its Effect on Mitochondrial Synthesis"

Moscow, Voprosy Virusologii, No 3, May/Jun 71, pp 269-273

Abstract: Isolated rat liver mitochondria were incubated in a medium promoting oxidative phosphorylation and protein and RNA biosynthesis. H^3-RNA of Venezuelan equine encephalitis virus was added. It was found that after incubation, approximately 72% of the introduced radio-activity was in the mitochondria. It was concluded that the emergence of H^3-RNA of the cirus in the mitochondria is not due to adsorption of RNA on the surface of these structures; instead, the cell fluid and actinomycin D stimulated RNA penetration. The distribution of viral RNA in mitochondrial subfractions was studied. Approximately 64% of the labeled RNA was found in the internal membrane and matrix fraction. Inhibition of RNA synthesis of mitochondrial protein was observed. The fraction of actinomycin-resistant protein synthesis 1/2.

increases sharply. It was concluded that there maybe a link between the restructuring of mitochondrial ribosomes and the synthesis of mitochondrial proteins and virus-specific syntheses.

UDC 576.858.098.396.332.083.1

USSR

YERSHOV, F. I., GAYSKHOKI, V. S., KISELEV, O. I., ZAYTSEVA, O. V., MENSHIKH, L. K., URYVAYEV, L. V., NEYFAKH, S. A., and ZBDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow, Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad

"Replication of Infectious Viral RNA in Isolated Mitochondria. Report II: Replication of Viral RNA in Mitochondria and Characteristics of the Final Product"

Moscow, Voprosy Virusologii, No 3, May/Jun 71, pp 274-280

Abstract: It was of interest to establish whether isolated mitochondria could replicate virus RNA, that is whether "bacterial" ribosomes could synthesize the functionally active RNA polymerase, and whether the final product of virus-specific synthesis has infectious properties. H^3-RNA isolated from purified Venezuelan equine encephalitis virus was used to study the function of virus RNA emerging in mitochondria. Contact between mitochondria and RNA was 30 minutes at 0°C. After this, the mitochondria were incubated under aerobic conditions for 2 hours at 37°C. After termination of the incubation period, RNA was separated by the phenol deproteinizing method and analyzed in a sucrose density gradient (5-30%). Peaks were found in the 40S and 26-20S region. The 40S area corresponds to RNA-ase and the 26-20S area to ribonu-

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YERSHOV, F. I., et al., Voprosy Virusologii, No 3, May/Jun 71, pp 274-280
clease-resistant material, the replicative form of viral RNA. The data obtained indicate that the predominant portion of viral RNA appearing in mitochondria does not participate in the replication process and its dehydration products show up in the top zone of the gradient. No radioactive products of mitochondrial RNA translation were detected, which can be explained by the effective concentration of actinomycin D. As the newly synthesized RNA forms complexes with proteins, infectious activity increases. The complexes formed have subcellular structures and are separated from infected cells.

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USSR

NOVOKHATSKIY, A. S., and YERSHOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Thermal Inactivation of Viruses. Report IV. Factors Determining the Dynamics and Rate of the Process of Inactivation of Venezuelan Equine Encephalomyelitis (VEE) Virus)"

Moscow, Voprosy Virusologii, No 2, Marc/Apr 71, pp 143-150

Abstract: The effect of a number of biological, physical and chemical factors on the course of the process of loss of infectious activity at various temperatures was studied on a model of Venezuelan equine encephalomyelitis (VEE) virus. Virus populations obtained on HeLa and MASHA cells were less resistant to heating than virus populations obtained on trypsinized chick embryos and KES cultures. Ultracentrifugation decreased the thermostability of VEE virus and increased its sensitivity to the thermostabilizing effect of 12.5% magnesium sulfate. Lowering the pH of the virus-containing suspension from 9.0 to 7.0 somewhat delayed thermal inactivation of VEE virus according to the nucleic type, and wider pH shifts sharply accelerated dying off of the virus. In all cases changes in the duration and dynamics of the

USSR

NOVOKHATSKIY, A. S., and YERSHOV, F. I., Voprosy Virusologii, No 2, Mar/Apr 71, pp 143-150

process of loss of infectious activity of VEE virus occurred as a result of regular changes in a limited number of mechanisms of loss of infectious activity, specific manifestations of which are discussed.

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UDC 576.858.25.098.396.332:576.858.25.097.21

USSR

YERSHOV, F. I., URYVAYEV, L. V., and ZHDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Synthesis of Infectious Ribonucleoprotein of Arbcviruses in Subcellular Structures"

Moscow, Voprosy Virusologii, No 3, May/Jun 70, pp 322-330

Abstract: A mitochondrial-microsomal (MM) fraction isolated from chick fibroblasts infected with Venezuelan equine encephalomyelitis virus (VEE) and incubated in medium 199 ensures extracellular synthesis of virus-specific RNA and protein and the formation of ribonucleoprotein complexes (RNP). These complexes possess infectious activity, which increases 80-100-fold in 3-4 hours of incubation. The RNP complexes contain the infectious RNA, which may be associated both with the virus-specific and the cellular proteins. The main part of the infectious RNA is formed extracellularly and not because of completion of the templates derived from cells together with the MM fraction.

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UDC 576.858.25.095.383.098

USSR

ZHDANOV, V. M., YERSHOV, F. I., and URYVAYEV, L. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Virus-Like Particles Formed in vivo and in vitro"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 70, pp 537-543

Abstract: It was shown that ribonucleoprotein complexes capable of producing infections and typical plaques in agar were formed in the mitochondrial fraction isolated from cells infected with Venezuelan equine encephalomyelitis (VEE) virus during incubation in proper media. Sedimentation constants of these complexes in a linear sucrose gradient ranged from 80S and 160S. Their buoyant density in Cs gradient varied from 1.30 to 1.42 g/cm^3. Virus-like particles ("pseudoviruses") with similar characteristics were found after addition of the infectious RNA of VEE virus to homogenate of uninfected cells. These particles were partially resistant to ribonuclease and could not be neutralized by virus-specific sera. It is proposed that the formation of virus-like particles in vivo and in vitro is based on some complexing between viral RNA and cell proteins, in which case it is possible that formation of *informosome-type* structures may occur.

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USSR UDC 576.858.25

URYVAYEV, L. V., ZHDANOV, V. M., YERSHOV, F. I., CHERNETSOV, Yu. V., and BUKOVSKIY, A. F., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences

"Sedimentation Characteristics of Venezuelan Equine Encephalomyelitis (VEE) Virus"

Moscow, Voprosy Virusologii, No 3, May/Jun 70, pp 330-336

Abstract: VEE virus was cultured in chick embryo fibroblasts, concentrated and purified. The optimum method for obtaining biologically active virus components consisted of destroying the virus with ether and Tween. Purified VEE virus sedimented at about 380 S in sucrose gradients, the nuclei at about 160 S. Centrifugation in CsCl gradients showed that VEE infectious material bands in two main positions: most of the virus banded at 1.25 g/ml, and a smaller amount at 1.42 g/ml. The main peak of hemagglutinins was detected at a buoyant density of 1.25 g/ml.

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USSR UDC 576.858.25.083.3

NOVOKHATSKIY, A. S., and YERSHOV, F. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"*Factors Determining the Degree of Virus Production. Report I. The Influence of Multiple Infection on the Production of Venezuelan Equine Encephalomyelitis Virus*"

Moscow, Voprosy Virusologii, No 3, May/June 70, pp 265-269

Abstract: Venezuelan equine encephalomyelitis virus was cultured on chick embryo fibroblasts in monolayer stationary culture, in suspension, and in roller culture, with single infection or multiple infection. The greatest virus yields were obtained in roller cultures. The smallest yields were obtained from multiply infected cultures. This was attributed to the presence of interferon.

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USSR

UDC 576.311.1

URYBAYEV, L. V., DERKACH, YU. S., ZHDANOV, V. M., and YERSHOV, F. I.,
Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Structural Proteins of Venezuelan Equine Encephalomyelitis Virus"

Moscow, Biokhimiya, No 1, 1971, pp 92-96

Abstract: Polyacrylamide gel electrophoresis revealed that highly purified VEE virus contains three main proteins. The ribonucleoprotein fraction isolated by centrifuging virus destroyed by tween and ether in a performed cesium chloride density gradient (1.43 g/cm^3) contained a protein with a molecular weight of 59,000 to 61,000. The more mobile hemagglutinin protein had a molecular weight of 34,000 to 38,000. The fraction which may represent basal membrane protein had a molecular weight of 15,000 to 18,000.

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1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THE FACTORS, DETERMINING THE REPRODUCTION OF THE VIRUS REPORT I THE INFLUENCE OF THE INFECTION MULTIPLICITY ON THE REPRODUCTION OF

AUTHOR-(02)-NOVOKHATSKIY, A.S., YERSHOV, F.I.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 265-269

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--VENEZUELAN EQUINE ENCEPHALITIS VIRUS, INTERFERON, CULTURE METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1746 STEP NO--UR/0402/70/000/003/0265/0269

CIRC ACCESSION NO--AP0125364

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0125364
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE PRESENT PAPER THE INFLUENCE OF THE IDFFERENT CONDITION OF THE CULTIVATION AND THE MULTIPLICITY OF THE INFECTION ON THE REPORDUCTION OF THE VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS WERE INVESTIGATED. THE VARIOUS TYPES OF CULTURES WERE USED: MONOLAYER STATIONAL CULTURES, ROLLER CULTURES AND SUSPENSION OF THE CELLS. THE HIGHEST VIRUS YIELD WAS OBTAINED IN THE ROLLER CULTURES. IT WAS SHOWN THAT IF THE LESS MULTIPLICITY OF THE INFECTION HAVE BEEN USED, THEN THE VIRUS YEALD WAS HIGHER. THE MECHANISM DETERMINING THIS FENOMEN AND THE POSSIBLE ROLE OF THE INOCULATED AND NEWLY FORMED INTERFERON ARE DISCUSSED. FACILITY: INSTITUT VIRUSOLOGII IMENI D. I. IVANOVSKOGO AMN SSSR, MOSKVA.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--SEDIMENTATION CHARACTERISTICS OF VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS -U-

AUTHOR-(05)-URYVAYEV, L.V., ZHDANOV, V.M., YERSHOV, F.I., CHERNETSOV, YU.V., BYKOVSKIY, A.F.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 330-336

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--VENEZUELAN EQUINE ENCEPHALITIS VIRUS, TISSUE CULTURE, SEDIMENTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1836 STEP NO--UR/0402/70/000/003/0330/0336

CIRC ACCESSION NO--AP0125447

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0125447
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VEE VIRUS WAS PROPAGATED IN CHICK EMBRYO CELLS, CONCENTRATED AND PURIFIED. THE OPTIMAL METHOD FOR OBTAINING BIOLOGICALLY ACTIVE VIRUS COMPONENTS CONSISTED IN DEGRADATION OF THE VIRUS WITH ETHER TWEEN. THE PURIFIED VEE VIRUS SEDIMENTED AT ABOUT 380 S IN SUCROSE GRADIENTS, THE NUCLEOID AT ABOUT 160 S. CENTRIFUGATION IN CSCL GRADIENTS SHOWED THE VEE INFECTIOUS MATERIAL TO BAND IN TWO MAIN POSITION: MOST OF THE VIRUS BANDED AT 1.25 G-ML, AND A SMALLER AMOUNT AT 1.42 G-ML. THE MAIN PEAK OF HEMAGGLUTININS WAS DETECTED AT A BUOYANT DENSITY OF 1.25 G-ML. THE SITE OF VIRUS AND ITS COMPONENTS WAS DETERMINED BY RADIOLOGICAL AND BIOLOGICAL TESTS.
FACILITY: INSTITUT VIRUSOLOGII IMENI D. I. IVANKOGO ANN SSR, MOSKVA.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--SYNTHESIS OF INFECTIOUS RIBONUCLEOPROTEIN OF ARBOVIRUS IN SUBCELLULAR STRUCTURES -U-

AUTHOR-(03)-YERSHOV, E.I., URYVAYEV, L.V., ZHDANOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 322-330

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ARBOVIRUS, VENEZUELAN EQUINE ENCEPHALITIS VIRUS, RNA, CULTURE MEDIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1847 STEP NO--UR/0402/70/000/003/0322/0330

CIRC ACCESSION NO--AP0125458

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 016

CIRC ACCESSION NO--AP0125458

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MITOCHONDRIAL MICROSOMAL (MM) FRACTION ISOLATED FROM CHICK FIBROBLASTS INFECTED WITH VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS (VEE) AND INCUBATED IN MEDIUM 199 INSURES EXTRACELLULAR SYNTHESIS OF VIRUS SPECIFIC RNA AND PROTEINS AND FORMATION OF RIBONUCLEOPRITEIN (RNP) COMPLEXES. THESE COMPLEXES POSSESS INFECTIOUS ACTIVITY WHICH INCREASES 80-100 FOLD IN 3-4 HOURS OF INCUBATION. THE RNP COMPLEXES CONTAIN INFECTIOUS RNA WHICH MAY BE ASSOCIATED BOTH WITH VIRUSSPECIFIC AND CELLULAR PROTEINS. THE MAIN PART OF THE INFECTIOUS RNA IS FORMED EXTRACELLULARLY AND NOT AT THE EXPENSE OF COMPLETION OF TEMPLATES DERIVED FROM THE CELLS TOGETHER WITH MM FRACTION. FACILITY: INSTITUT VIRUSOLOGII IMENI D. I. IVANOVSKOGO AMN SSSR, MOSKVA.

UNCLASSIFIED

USSR

UDC: 576.858

YERSHOV, F.I., URYVAYEV, L.V., and ZHDANOV, V.M., Academician, Academy of Medical Sciences USSR Institute of Virology imeni D.I. Ivanovskiy, Academy of Medical Sciences USSR

"Synthesis of Arbovirus RNA and Proteins in Subcellular Structures"

Moscow, Doklady Akademii Nauk, Vol 190, No 2, 1970, pp 458-460

Abstract: A fraction containing the subcellular structures (SS-15) was extracted from chick fibroblasts infected with Venezuelan equine encephalomyelitis virus and from intact cells. The fraction was diluted (1:10) with medium 199, and incubated for 1-2 hours at 37°C, after which H^3-uridine and a C^{14}-amino acid mixture were added. After rapid chilling, the SS-15 fraction and accompanying products were centrifuged (1500 g) and analyzed in a sucrose density gradient. Supernatants of the infected cells contained a product with a sedimentation constant of 40S, and lighter, slower settling products in the form of RNA and polypeptides, whereas supernatants of the noninfected cells contained only the lighter products. After gradient centrifugation of the SS-15 fractions isolated from infected and noninfected cells, nucleic and protein tags were found in the form of two peaks one of which was linked to the structures, while the other apeared in the lighter part of the gradient. It was concluded that subcellular structures consisting of cytoplasmatic membranes with ribonsomes and mitochondria are a convenient model for studying virus-induced synthesis.

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USSR

UDC 576.858.095.383.033

[redacted], F. I., and NOVOKHATSKIY, A. S., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Means of Inducing the Production of Large Quantities of Interferon"

Moscow, Voprosy Virusologii, No 1, 1970, pp 34-37

Abstract: Optimum conditions for the production of interferon induced by group A arboviruses (VEE and Sindbis) in primary trypsinized chick embryo fibroblast cultures were studied using different methods of cultivation - monolayer stationary cultures, roller cultures (grown in rotating vessels), and suspensions. It was found that under identical conditions the level of interferon production was determined mainly by the viability of cells and their concentration. There is a distinct relationship between the intensity of viral replication (infectious and hemagglutinating activity) and the amount of interferon formed, especially when roller cultures were used. Elevating the incubation temperature increased the yield. For example, at 39° C and higher temperatures, interferon titers reached 1600 IU_{50}/ml, but at 37° C they did not exceed 400 IU_{50}/ml. This

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USSR

YERSHOV, F. I., et al., Moscow, Voprosy Virusologii, No 1, 1970, pp 34-37

was true only in the case of Sindbis virus, for in the case of VEE virus, interferon production steadily decreased as the temperature rose, an example of the individual differences that exist in the interferon-inducing capacity of viruses within the same group.

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1/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--VIRUS INDUCED SYNTHESES ON PREFORMED SUBCELLULAR CULTURES -U-

AUTHOR--ZHDANOV, V.M., YERSHOV, F.I., URYAYEV, L.V., NOVOKHATSKIY, A.S.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 38-46

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PROTEIN SYNTHESIS, TISSUE CULTURE, EASTERN EQUINE ENCEPHALITIS VIRUS, VENEZUELAN EQUINE ENCEPHALITIS VIRUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0053 STEP NO--UR/0402/70/000/001/0038/0046

CIRC ACCESSION NO--AP0103733

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 013
CIRC ACCESSION NO--AP0103733
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE STUDY, SYNTHESIS OF RNA AND PROTEIN WAS INVESTIGATED IN MITOCHONDRIAL MICROSOMAL FRACTION DERIVED FROM CHICK EMBRYO FIBROBLASTS INFECTED WITH EEE VIRUS. IN THIS FRACTION REPLICATIVE COMPLEX OF THE VIRUS WAS FOUND AND THERE OCCURRED INTENSIVE SYNTHESIS OF CELLULAR AND VIRUS SPECIFIC RNA AND PROTEINS. PRODUCTS OF THE SYNTHESIS INCLUDED RIBONUCLEOPROTEINS DIFFERING FROM EACH OTHER IN SEDIMENTATION AND DENSITY CHARACTERISTICS. ONE OF RIBONUCLEOPROTEINS HAD SEDIMENTATION CONSTANT 160 S AND DENSITY OF 1.43G-CMPRIME3 WHICH CORRESPONDED TO PARAMETERS OF RIBONUCLEOPROTEINS OF VEE VIRUS VIRIONS.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--DEVELOPMENT AND SUBSTANTIATION OF PRINCIPLES OF PRODUCTION OF LARGE -AMOUNTS OF INTERFERON -U-

AUTHOR--YERSHOV, F.I., NOVOKHATSKIY, A.S.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 34-38

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--GROUP A ARBOVIRUS, VENEZUELAN EQUINE ENCEPHALITIS VIRUS, INTERFERON, TISSUE CULTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0052 STEP NO--UR/0402/70/000/001/0034/0038

CIRC ACCESSION NO--AP0103732
UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OPTIMAL CONDITIONS FOR PRODUCTION OF INTERFERON INDUCED BY GROUP A ARBOVIRUSES (VEE AND SINDBIS VIRUSES) IN PRIMARILY TRYPSINIZED CHICK EMBRYO FIBROBLAST CULTURES USING DIFFERENT METHODS OF CULTIVATION (ROLLER SUSPENSIONS, MONOLAYER STATIONARY CULTURES) WERE STUDIED. THE MOST IMPORTANT FACTORS DETERMINING THE LEVELS OF INTERFERON PRODUCTION WERE FOUND TO BE THE VIABILITY AND CONCENTRATION OF THE CELLS (CALCULATED PER 1 ML OF THE MEDIUM). THE MULTIPLICITY OF INFECTION IS IMPORTANT WHEN SUSPENSIONS ARE USED AND IS OPTIMALLY 1 10. PFU-CELL. INCREASING OF INCUBATION TEMPERATURE ENHANCES PRODUCTION OF INTERFERON INDUCED BY SINDBIS VIRUS.

UNCLASSIFIED

USSR

UDC 576.558

YERSHOV, F. I., URYVAYEV, L. V., and ZHDANOV, V. M., Active Member, Academy of Medical Sciences USSR and DRYNOV, I. D., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences, Moscow

"Cytochemical Analysis of Structures Isolated from Cells Infected with Arbovirus"

Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 1, Jan/Feb 70, pp 212-213

Abstract: The morphological characteristics of fraction CC-15, isolated from chick embryo fibroblasts infected with Venezuelan equine encephalomyelitis virus, were studied with the help of phase contrast and fluorescence microscopy. Chick embryo fibroblasts and cells obtained three hours after infection with massive doses of the virus were disintegrated in a homogenator, and the nuclei, debris, and whole remaining cells were centrifuged for 10 minutes. The CC-15 fraction was obtained by the subsequent centrifugation of the homogenate, suspension in 199 medium, and straining with acridine orange, phosphine 3P, and homologous antibodies labelled with fluorescein isothiocyanate. Part of the preparation were stained with Janus green, or prered by 1/2

USSR

YERSHOV, F. I., et al., Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 1, Jan/Feb 70, pp 212-213

by the crushed drop method and studied by means of phase contrast microscopy. Examinations showed that cytoplasmic RNA of whole cells stained with acridine orange fluoresced ruby-red, while the RNA of the nucleoli -- brick-red, and DNA of the nuclei -- emerald-green. Phosphine 3P produced a greenish-brown color in the cytoplasm and a dark-brown color in the cell nuclei. Fluorescence microscopy of the debris and and nuclei obtained after homogenation showed large conglomerates of cytoplasm which were ruby-red. Fraction CC-15 stained with acridine orange revealed under phase contrast microscopy a mass of ruby-red granules scattered through the entire field of vision. When stained with phosphine 3P -- single brightly fluorescing lipid granules were observed. A considerable increase in the number of lipid granules was noted when the CC-15 fraction from infected cells was studied by fluorescence microscopy. The presence of a specific virus antigen was observed in the CC-15 fraction treated with fluorescein isothiocyanate. Scattered mitochondria were observed throughout the cytoplasmic network of fraction CC-15 preparations stained with Janus green.

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1/2 046 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--ACOUSTIC ELECTRIC RESONANCE IN A LASER PULSE FIELD -U-

AUTHOR-(02)-YERSHOV, G.M., KUPVILLEM, U.KH.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA TVERDOGO TELA, VOL. 12, MAR. 1970, P. 931, 932.

DATE PUBLISHED----MAR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE, ACOUSTIC RESONANCE, RUBY, RESONANCE ABSORPTION, RADIATION INTENSITY, MEASUREMENT, ACOUSTIC FREQUENCY, LIGHT PULSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1461 STEP NO--UR/0181/70/012/000/0931/0932

CIRC ACCESSION NO--AP0112455

UNCLASSIFIED

2/2 046 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0112455

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS SHOWING THAT IN A RUBY CRYSTAL SUBJECTED TO THE STIMULANEOUS EFFECT OF LASER AND ACOUSTIC PULSES, THE SOUND MAY EXPERIENCE RESONANT ABSORPTION AND CAN CHANGE THE DIRECTION OF THE SPONTANEOUSLY EMITTED SHORT LIGHT PULSE. THIS SHOULD MAKE IT POSSIBLE TO DETERMINE THE INTENSITY OF LASER EMISSION, BY MEASURING THE ACOUSTIC FREQUENCY, AND TO STUDY THE BEHAVIOR OF SHORT LIGHT PULSES IN RUBY. AN EXPERIMENTAL PROCEDURE FOR THIS PURPOSE IS PROPOSED. FACILITY: AKADEMIIA NAUK SSSR FIZIKO-TEKHNICHESKII INSTITUT, KAZAN, USSR.

UNCLASSIFIED

1/3 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--DIFFUSION OF NITROGEN IN MOLTEN IRON -U-

AUTHOR-(02)-~~YERSHOV~~, G.S., NOVOKHATSKIY, I.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL METALLOVED. 1970, 29(4), 876-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GAS DIFFUSION, FERROUS LIQUID METAL, NITROGEN, GAS CONTAINING METAL, DIFFUSION COEFFICIENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0407 STEP NO--UR/0126/70/029/004/0876/0878

CIRC ACCESSION NO--AP0126161

UNCLASSIFIED

2/3 021 UNCLASSIFIED

CIRC ACCESSION NO--AP0126161 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ORDER TO INCREASE SIGNIFICANTLY THE SENSITIVITY AND THE ACCURACY OF THE VOLUMTERIC METHOD DURING THE STUDY OF THE TITLE PROBLEM, A RINGLIKE SLIT WAS EMPLOYED FOR THE ATTENUATION OF THE CONVECTION IN THE MELT INSTEAD OF A CAPILLARY, FORMED BY 2 COAXIALLY LOCATED CORUNDUM TEST TUBES, THEREBY MAKING IT POSSIBLE TO WORK WITH LARGE MASSES OF THE LIQ. METALS. THE DISTANCE BETWEEN THE TEST TUBES WAS 1.5-2.5 MM. PRIOR TO ENTERING THE TEST TUBES, THE N USED WAS PURIFIED OF O AND MOISTURE. THE INTERNAL TEST TUBE SERVED SIMULTANEOUSLY ALSO FOR INSTALLATION OF A W-RE THERMOCOUPLE. THE METALLIC MELT WAS FORMED FROM CAREFULLY PURIFIED ELECTROLYTIC FE WITH THE TOTAL IMPURITY CONTENT OF LESS THAN 0.1 WT. PERCENT. TYPICAL TESTS WERE PERFORMED AT 1600 AND 16500EGREES. THE DIFFUSION COEFFS. FOR N IN MOLTEN FE WERE CALCD. THE ACTIVATION ENERGY OF N DIFFUSION WAS 11.0 KCAL-MOLE. THE TEMP. DEPENDENCE OF THE AVERAGED DIFFUSION COEFFS. WAS OETO. THE DIFFUSION MOBILITY OF N IN MOLTEN FE IS SIGNIFICANTLY LESS THAN THAT FOR THE REMAINING GASES. THE DIFFUSION COEFF. FOR N WAS 5.5 TIMES 10 PRIME NEGATIVE5 AT 1600DEGREES AND 6.3 TIMES 10 PRIME NEGATIVE5 CM PRIME2-SEC AT 1700DEGREES. THE DIFFUSION COEFFS. OF H AND O AT 1600DEGREES ARE 1.32 TIMES 10 PRIME NEGATIVE3 AND 1.22 TIMES 10 PRIME NEGATIVE4 CM PRIME2-SEC, RESP. ON THE OTHER HAND, THE DIFFUSION COEFF. FOR N IS SIMILAR 1 ORDER OF MAGNITUDE LARGER THAN THE SELF DIFFUSION COEFF. OF FE, THE LATTER BEING 1.7 TIMES 10 PRIME NEGATIVE6 CM PRIME2-SEC AT 1620DEGREES.

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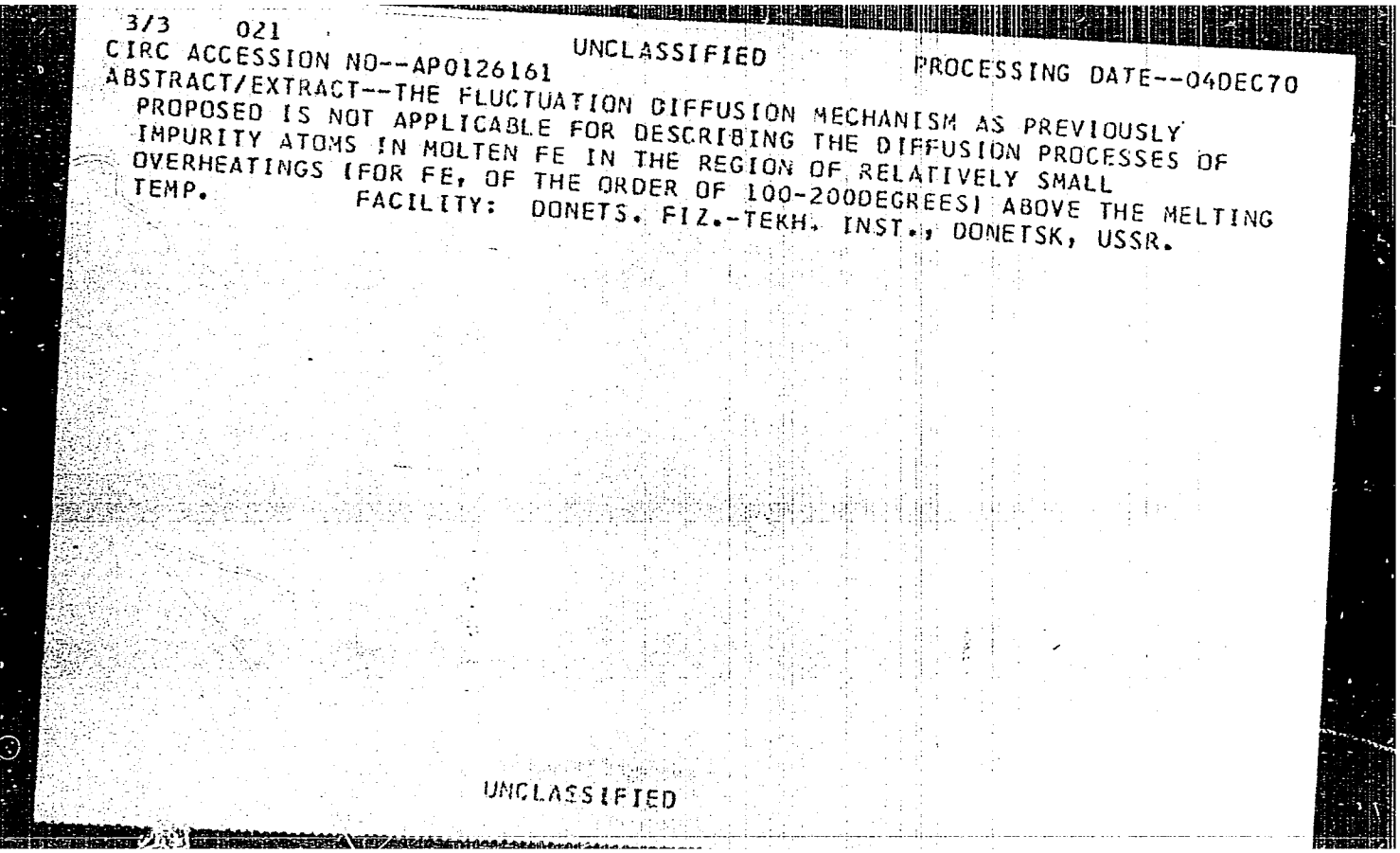

3/3 021 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126161

ABSTRACT/EXTRACT--THE FLUCTUATION DIFFUSION MECHANISM AS PREVIOUSLY PROPOSED IS NOT APPLICABLE FOR DESCRIBING THE DIFFUSION PROCESSES OF IMPURITY ATOMS IN MOLTEN FE IN THE REGION OF RELATIVELY SMALL OVERHEATINGS (FOR FE, OF THE ORDER OF 100-200DEGREES) ABOVE THE MELTING TEMP. FACILITY: DONETS. FIZ.-TEKH. INST., DONETSK, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--HYDROGEN DIFFUSION IN MOLTEN IRON -U-

AUTHOR-(04)-ARKHAROV, V.I., NOVOKHATSKIY, I.A., YERSHOV, G.S., KOVALENKO, A.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1329-32

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HYDROGEN, GAS DIFFUSION, FERROUS LIQUID METAL, IRON, METAL CONTAINING GAS, GAS CONTAINING METAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1134 STEP NO--UR/0020/70/190/006/1329/1332

CIRC ACCESSION NO--AT0116599

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0116599

ABSTRACT/EXTRACT--(U) SP-C- ABSTRACT. THE SENSITIVITY AND THE ACCURACY OF THE VOLUMETRIC METHOD USED IN THE STUDY OF H DIFFUSION IN MOLTEN FE WERE INCREASED BY THE SUBSTITUTION OF A RING GAP FOR THE CAPILLARY. THE ANNULAR SPACE WAS FORMED BY 2 CONCENTRIC TUBES. AT 1560-1650DEGREES, THE WIDTH OF THE GAP FILLED WITH MOLTEN FE DID NOT AFFECT THE DIFFUSION COEFF., D SUBH. THE AMT. OF H ABSORBED, V SUBH, INCREASED LINEARLY WITH TAU PRIMEONE HALF, WHERE TAU IS TIME. EXPTL. D SUBH EQUALS 5.21 TIMES 10 PRIME NEGATIVE2 EXPIMINUS 10,000-RT). THE ACTIVATION ENERGY IS 10.0 KCAL PER MOLE. THE D SUBH IS LARGER THAN D SUBN AND D SUBD. DIFFUSION IS AN ADDITIVE CHARACTERISTIC DUE TO THE EXISTENCE IN THE MOLTEN FE CLUSTERS, PSI SUBCL, AND DISORDERED, PSI SUBDIS, REGIONS, WHERE PSI SUBCL PLUS PSI SUBDIS EQUALS 1. D EQUALS PSI SUBCL D SUBCL PLUS PSI SUBDIS D SUBDIS. FACILITY: DONETSK, FIZ.-YEKH. INST., DONETSK, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--DEVELOPMENT AND SUBSTANTIATION OF PRINCIPLES OF PRODUCTION OF LARGE -AMOUNTS OF INTERFERON -U-

AUTHOR--YERSHOV, F.I., NOVOKHATSKIY, A.S.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 34-38

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--GROUP A ARBOVIRUS, VENEZUELAN EQUINE ENCEPHALITIS VIRUS, INTERFERON, TISSUE CULTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0052 STEP NO--UR/0402/70/000/001/0034/0038

CIRC ACCESSION NO--AP0103732

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OPTIMAL CONDITIONS FOR PRODUCTION OF INTERFERON INDUCED BY GROUP A ARBOVIRUSES (VEE AND SINDBIS VIRUSES) IN PRIMARILY TRYPSINIZED CHICK EMBRYO FIBROBLAST CULTURES USING DIFFERENT METHODS OF CULTIVATION (ROLLER SUSPENSIONS, MONOLAYER STATIONARY CULTURES) WERE STUDIED. THE MOST IMPORTANT FACTORS DETERMINING THE LEVELS OF INTERFERON PRODUCTION WERE FOUND TO BE THE VIABILITY AND CONCENTRATION OF THE CELLS (CALCULATED PER 1 ML OF THE MEDIUM). THE MULTIPLICITY OF INFECTION IS IMPORTANT WHEN SUSPENSIONS ARE USED AND IS OPTIMALLY 1 10. PFU-CELL. INCREASING OF INCUBATION TEMPERATURE ENHANCES PRODUCTION OF INTERFERON INDUCED BY SINDBIS VIRUS.

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USSR

UDC 576.558

YERSHOV, F. I., URYVAYEV, L. V., and ZHDANOV, V. M., Active Member, Academy of Medical Sciences USSR and DRYNOV, I. D., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences, Moscow

"Cytochemical Analysis of Structures Isolated from Cells Infected with Arbovirus"

Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 1, Jan/Feb 70, pp 212-213

Abstract: The morphological characteristics of fraction CC-15, isolated from chick embryo fibroblasts infected with Venezuelan equine encephalomyelitis virus, were studied with the help of phase contrast and fluorescence microscopy. Chick embryo fibroblasts and cells obtained three hours after infection with massive doses of the virus were disintegrated in a homogenator, and the nuclei, debris, and whole remaining cells were centrifuged for 10 minutes. The CC-15 fraction was obtained by the subsequent centrifugation of the homogenate, suspension in 199 medium, and straining with acridine orange, phosphine 3P, and homologous antibodies labelled with fluorescein isothiocyanate. Part of the preparation were stained with Janus green, or prered by 1/2

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YERSHOV, F. I., et al., Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 1, Jan/Feb 70, pp 212-213

by the crushed drop method and studied by means of phase contrast microscopy. Examinations showed that cytoplasmic RNA of whole cells stained with acridine orange fluoresced ruby-red, while the RNA of the nucleoli -- brick-red, and DNA of the nuclei -- emerald-green. Phosphine 3P produced a greenish-brown color in the cytoplasm and a dark-brown color in the cell nuclei. Fluorescence microscopy of the debris and and nuclei obtained after homogenation showed large conglomerates of cytoplasm which were ruby-red. Fraction CC-15 stained with acridine orange revealed under phase contrast microscopy a mass of ruby-red granules scattered through the entire field of vision. When stained with phosphine 3P -- single brightly fluorescing lipid granules were observed. A considerable increase in the number of lipid granules was noted when the CC-15 fraction from infected cells was studied by fluorescence microscopy. The presence of a specific virus antigen was observed in the CC-15 fraction treated with fluorescein isothiocyanate. Scattered mitochondria were observed throughout the cytoplasmic network of fraction CC-15 preparations stained with Janus green.

2/2

1/2 046 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--ACOUSTIC ELECTRIC RESONANCE IN A LASER PULSE FIELD -U-

AUTHOR-(02)-YERSHOV, G.M., KUPVILLEM, U.KH.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA TVERDOGO TELA, VOL. 12, MAR. 1970, P. 931, 932.

DATE PUBLISHED-----MAR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE, ACOUSTIC RESONANCE, RUBY, RESONANCE ABSORPTION, RADIATION INTENSITY, MEASUREMENT, ACCUSTIC FREQUENCY, LIGHT PULSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1461 STEP NO--UR/0181/70/012/000/0931/0932

CIRC ACCESSION NO--AP0112455

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UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 046

CIRC ACCESSION NO--AP0112455

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS SHOWING THAT IN A RUBY CRYSTAL SUBJECTED TO THE STIMULANEOUS EFFECT OF LASER AND ACOUSTIC PULSES, THE SOUND MAY EXPERIENCE RESONANT ABSORPTION AND CAN CHANGE THE DIRECTION OF THE SPONTANEOUSLY EMITTED SHORT LIGHT PULSE. THIS SHOULD MAKE IT POSSIBLE TO DETERMINE THE INTENSITY OF LASER EMISSION, BY MEASURING THE ACOUSTIC FREQUENCY, AND TO STUDY THE BEHAVIOR OF SHORT LIGHT PULSES IN RUBY. AN EXPERIMENTAL PROCEDURE FOR THIS PURPOSE IS PROPOSED. FACILITY: AKADEMIIA NAUK SSSR FIZIKO-TEKHNICHESKII INSTITUT, KAZAN, USSR.

UNCLASSIFIED

1/3 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--DIFFUSION OF NITROGEN IN MOLTEN IRON -U-

AUTHOR-(02)-YERSHOV, G.S., NOVOKHATSKIY, I.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL METALLOVED. 1970, 29(4), 876-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GAS DIFFUSION, FERROUS LIQUID METAL, NITROGEN, GAS CONTAINING METAL, DIFFUSION COEFFICIENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0407 STEP NO--UR/0126/70/029/004/0876/0878

CIRC ACCESSION NO--AP0126161

UNCLASSIFIED

2/3 021 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126161

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ORDER TO INCREASE SIGNIFICANTLY THE SENSITIVITY AND THE ACCURACY OF THE VOLUMTERIC METHOD DURING THE STUDY OF THE TITLE PROBLEM, A RINGLIKE SLIT WAS EMPLOYED FOR THE ATTENUATION OF THE CONVECTION IN THE MELT INSTEAD OF A CAPILLARY, FORMED BY 2 COAXIALLY LOCATED CORUNDUM TEST TUBES, THEREBY MAKING IT POSSIBLE TO WORK WITH LARGE MASSES OF THE LIQ. METALS. THE DISTANCE BETWEEN THE TEST TUBES WAS 1.5-2.5 MM. PRIOR TO ENTERING THE TEST TUBES, THE N USED WAS PURIFIED OF O AND MOISTURE. THE INTERNAL TEST TUBE SERVED SIMULTANEOUSLY ALSO FOR INSTALLATION OF A W-RE THERMOCOUPLE. THE METALLIC MELT WAS FORMED FROM CAREFULLY PURIFIED ELECTROLYTIC FE WITH THE TOTAL IMPURITY CONTENT OF LESS THAN 0.1 WT. PERCENT. TYPICAL TESTS WERE PERFORMED AT 1600 AND 1650DEGREES. THE DIFFUSION COEFFS. FOR N IN MOLTEN FE WERE CALCD. THE ACTIVATION ENERGY OF N DIFFUSION WAS 11.0 KCAL-MOLE. THE TEMP. DEPENDENCE OF THE AVERAGED DIFFUSION COEFFS. WAS OETD. THE DIFFUSION MOBILITY OF N IN MOLTEN FE IS SIGNIFICANTLY LESS THAN THAT FOR THE REMAINING GASES. THE DIFFUSION COEFF. FOR N WAS 5.5 TIMES 10 PRIME NEGATIVE5 AT 1600DEGREES AND 6.3 TIMES 10 PRIME NEGATIVE5 CM PRIME2-SEC AT 1700DEGREES. THE DIFFUSION COEFFS. OF H AND O AT 1600DEGREES ARE 1.32 TIMES 10 PRIME NEGATIVE3 AND 1.22 TIMES 10 PRIME NEGATIVE4 CM PRIME2-SEC, RESP. ON THE OTHER HAND, THE DIFFUSION COEFF. FOR N IS SIMILAR I ORDER OF MAGNITUDE LARGER THAN THE SELF DIFFUSION COEFF. OF FE, THE LATTER BEING 1.7 TIMES 10 PRIME NEGATIVE6 CM PRIME2-SEC AT 1620DEGREES.

UNCLASSIFIED

3/3 021 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0126161
ABSTRACT/EXTRACT--THE FLUCTUATION DIFFUSION MECHANISM AS PREVIOUSLY PROPOSED IS NOT APPLICABLE FOR DESCRIBING THE DIFFUSION PROCESSES OF IMPURITY ATOMS IN MOLTEN FE IN THE REGION OF RELATIVELY SMALL OVERHEATINGS (FOR FE, OF THE ORDER OF 100-200DEGREES) ABOVE THE MELTING TEMP. FACILITY: DONETS. FIZ.-TEKH. INST., DONETSK, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--HYDROGEN DIFFUSION IN MOLTEN IRON -U-

AUTHOR-(04)-ARKHAROV, V.I., NOVOKHATSKIY, I.A., YERSHOV, G.S., KOVALENKO, A.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1329-32

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HYDROGEN, GAS DIFFUSION, FERROUS LIQUID METAL, IRON, METAL CONTAINING GAS, GAS CONTAINING METAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1134 STEP NO--UR/0020/70/190/006/1329/1332

CIRC ACCESSION NO--AT0116599

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2/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0116599

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SENSITIVITY AND THE ACCURACY OF THE VOLUMETRIC METHOD USED IN THE STUDY OF H DIFFUSION IN MOLTEN FE WERE INCREASED BY THE SUBSTITUTION OF A RING GAP FOR THE CAPILLARY. THE ANNULAR SPACE WAS FORMED BY 2 CONCENTRIC TUBES. AT 1560-1650DEGREES, THE WIDTH OF THE GAP FILLED WITH MOLTEN FE DID NOT AFFECT THE DIFFUSION COEFF., D SUBH. THE AMT. OF H ABSORBED, V SUBH, INCREASED LINEARLY WITH TAU PRIMEONE HALF, WHERE TAU IS TIME. EXPTL. D SUBH EQUALS 5.21 TIMES 10 PRIME NEGATIVE2 EXP(MINUS 10,000-RT). THE ACTIVATION ENERGY IS 10.0 KCAL PER MOLE. THE D SUBH IS LARGER THAN D SUBN AND D SUBO. DIFFUSION IS AN ADDITIVE CHARACTERISTIC DUE TO THE EXISTENCE IN THE MOLTEN FE CLUSTERS, PSI SUBCL, AND DISORDERED, PSI SUBDIS, REGIONS, WHERE PSI SUBCL PLUS PSI SUBDIS EQUALS 1. D EQUALS PSI SUBCL D SUBCL PLUS PSI SUBDIS D SUBDIS. FACILITY: DONETSK. FIZ.-TEKH. INST., DONETSK, USSR.

UNCLASSIFIED

Acc. Nr: A70048311 Abstracting Service: INTERNAT. AEROSPACE ABST. 5-70 Ref. Code: UR0020

YERSHOV G.S.

A70-24271 # Effect of nonmetallic inclusions on the viscosity of metallic melts (Vliianie nemetallicheskikh vkliuchenii na viazkost' metallicheskikh rasplavov). V. I. Arkharov, G. S. Ershov, I. A. Novokhatskii, and A. M. Kovalenko (Akademiia Nauk Ukrainskoi SSR, Fiziko-Tekhnicheskii Institut, Donetsk; Ukrainskii Nauchno-Issledovatel'skii Institut Spetsial'nykh Stalei, Kharkov, Ukrainian SSR). *Akademiia Nauk SSSR, Doklady*, vol. 190, Jan. 11, 1970, p. 366-368. 6 refs. In Russian.

Study of the kinematic viscosity of molten steel of a single composition containing various amounts of nonmetallic oxide (mainly corundum) inclusions in the temperature range from 1600 to 1825 C. The viscosity values were determined by the method of torsional vibrations of a crucible containing liquid metal in an inert atmosphere. It is found that the viscosity of liquid steel increases substantially with an increase in the quantity of corundum dispersed in it. This relative increase in viscosity due to the presence of nonmetallic inclusions decreases with an increase in temperature.

A.B.K.

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