

USSR

SEMENOV, A. P. Treniye i adgezionnoye vzaimodeystviye tugoplavkikh materialov pri vysokikh temperaturakh, Moscow, "Nauka" Press, 1972.

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1/2 021 UNCLASSIFIED S PROCESSING DATE--11SEP70
TITLE--PRIMARY CANCER OF THE LIVER -U-
AUTHOR--MAKAROV, F.D., SEMENOV, A.P., MAKSIMENKO, I.D., MAKSIMENKO, O.I.
COUNTRY OF INFO--USSR
SOURCE--VRACHEBNOYE DELO, 1970, NR 3, PP 9-12
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SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--LIVER, CANCER, DIAGNOSTIC MEDICINE, AUTOPSY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/0799 STEP NO--UR/0475/70/000/003/0000/0012
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PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102762

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OF 3552 AUTOPSIES PRIMARY CANCER OF THE LIVER WAS FOUND IN 26 CASES (0.73PERCENT), AMONG CANCERS OF OTHER SITES IT OCCUPIED 4.6PERCENT. MALES 22, FEMALES 4; AGE: FROM 20 TO 30 YEARS. PRIMARY CANCER OF THE LIVER WAS CLINICALLY DIAGNOSED IN 11 CASES. CLINICAL DIAGNOSIS PROVED PRACTICALLY POSSIBLE IN THE TERMINAL STAGE. PECULIAR CHARACTERISTICS OF THE CLINICAL COURSE ARE DESCRIBED. INDICATIONS FOR DIAGNOSTIC LAPAROTOMY ARE DISCUSSED.

UNCLASSIFIED

USSR

UDC 531.43

SEMENOV, A. P., KATSURA, A. A., and POZDNIKOV, V. V.

"The Friction of Rhenium at High Temperatures"

Moscow, Mashinostroyeniye, No 6, Nov-Dec 72, pp 80-84

Abstract: The temperature relationships of the coefficient of friction of rhenium in a vacuum (10^{-4} - 10^{-5} torr) was obtained in the case of the friction of two like specimens of rhenium against each other, and in case of the friction of a rhenium specimen against corundum ceramics (containing 0.6% MgO), on laboratory installations at temperatures of up to 1500°C. The presented experimental results testify to the high antifriction properties of rhenium at high temperatures in a vacuum and in inert gaseous media. 4 figures, 18 references.

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1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--OPTIMIZATION PROBLEMS WITH PHASE COORDINATE CONSTRAINTS -U-

AUTHOR-(02)-SEMENDV, A.S., TROITSKIY, V.A.

COUNTRY OF INFO--USSR

SOURCE--PRIKLADNAIA MATEMATIKA I MEKHANIKA, VOL. 34, JAN.-FEB. 1970, P.
127-131

DATE PUBLISHED-----70

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

TOPIC TAGS--COORDINATE SYSTEM, OPTIMAL AUTOMATIC CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1450

STEP NO--UR/0040/70/034/000/0127/0131

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UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 010

CIRC ACCESSION NO--AP0106206

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF OPTIMIZATION PROBLEMS FOR CONTROL PROCESSES WITH FIRST AND HIGHER ORDER CONSTRAINTS ON THE PHASE COORDINATES. A CONDITION IS FORMULATED WHICH FACILITATES THE DETERMINATION OF THE POINT OF DEPARTURE OF THE PHASE TRAJECTORY FROM THE BOUNDARY OF THE REGION OF ADMISSIBLE COORDINATE VARIATIONS.

UNCLASSIFIED

USSR

UDC: 621.375.826+539.219.1

LITVINOV, V. F., MOLOCHEV, V. I., MOROZOV, V. N., ~~NIKOLAI, V. N.~~
SEMEYNOV, A. S., and KHATYREV, N. P.

"Light Pulse Transmission Through a Two-Component Semiconductor
Medium"

Moscow, Kvantovaya elektronika, No 7, 1972, pp 89-92

Abstract: This brief communication is concerned with the interaction of the radiation from an injection laser and a two-component semiconductor medium. This is defined as a medium which can be used for amplifying or absorbing light, depending on the controlling injection current applied to the semiconductor. The measurements described in the paper were made with a combination light-pulse oscillator and two-component semiconductor made of a single GaAs diode, one of the ends of the planar specimen coinciding with the (110) plane while the opposite end is set at a 10° angle with respect to the first to reduce positive light feedback. A diagram of this arrangement is shown. Measurements were conducted at a temperature of 80° K on specimens in which the oscillator was 0.8 mm long and the two-component medium 2 mm long. Curves for experimental and computed amplitude characteristics of the two-component medium are plotted, and show close agreement.

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USSR

UDC: 621.372.837(088.8)

SEMENOV, A. V.

"A Multichannel Diode Switch"

USSR Author's Certificate No 260693, filed 11 Dec 67, published 7 May 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B172 P)

Translation: The proposed switch is based on a ring circuit. All input and output communication lines are connected through series semiconductor diodes to a ring line at a distance of $\lambda/4$, and electrically controlled shunting diodes are connected in parallel with the ring line at the tiepoints of the input and output lines. The shunting diodes are connected in series with capacitors. The design of the device reduces the amplitude of introduced losses, as well as channel asymmetry. One illustration. A. K.

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1/3 042

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--FOUR PHOTON SCATTERING IN A RESONANCE MEDIUM -U-

AUTHOR--(04)--KIRIN, YU.M., RAUTIAN, S.G., SEMENOV, A.YE., CHERNOBOROD, B.M.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(7), 340-2

DATE PUBLISHED--70

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SUBJECT AREAS--PHYSICS

TOPIC TAGS--PHOTON; ANGULAR DISTRIBUTION; SPECTRAL DISTRIBUTION;
MONOCHROMATIC RADIATION; LASER PULSE; RAMAN SCATTERING; RUBY LASER;
SPECTROGRAPH/(U)DFS8 SPECTROGRAPH

CONTROL MARKING--NO RESTRICTIONS

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CIRC ACCESSION NO--AP0124695

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. VERY STRONG CHANGES OF THE ANGULAR AND SPECTRAL DISTRIBUTIONS OF AN EFFICIENT NONMONOCHROMATIC RADIATION, HAVING PASSED THROUGH A RESONANCE MEDIUM, WERE OBSD. A GIANT PULSE OF A RUBY LASER (SIMILAR TO 50 MW) EXCITED THE STIMULATED RAMAN SCATTERING IN PHNO SUB2 (OR ALPHA CHLORONAPHTHALENE (I)) AND THIS RAMAN SCATTERING, FILTERED FROM THE LASER RADIATION, PASSED THROUGH A CELL CONTG. K VAPORS AND WAS RECORDED BY A DFS, 8 SPECTROGRAPH. IN THE CASE OF PHNO SUB2, THE SCATTERING SPECTRUM HAD A WIDTH OF SIMILAR TO 4 CM PRIME NEGATIVE1 AND WAS SHIFTED BY 12 CM PRIME NEGATIVE1 TO THE SHORTWAVE REGION, IN COMPARISON WITH THEK RESONANCE LINE (OMEGA SUBO EQUALS 13,042.9 CM PRIME NEGATIVE1). AT VAPOR PRESSURES SMALLER THAN OR EQUAL TO 5 TIMES 10 PRIME NEGATIVE4 TORR, A SMALL FREQUENCY ANGULAR RADIATION DIFFUSION WAS OBSD.: AT SIMILAR TO 5 TIMES 10 PRIME NEGATIVE4 MINUS 5 TIMES 10 PRIME NEGATIVE2 TORR, CHARACTERISTIC WHISKERS APPEARED AT THE FREQUENCIES SMALLER THAN OMEGA SUBO, ANGULAR DISTANCE OF WHICH INCREASED WITH PRESSURE. AT LARGER THAN OR EQUAL TO 0.1 TORR, THE WHISKERS DISAPPEARED FROM THE FIELD OF VIEW AND ONLY A FURTHER BROADENING OF THE FREQUENCY ANGULAR DIAGRAM WAS OBSD. THESE EFFECTS ARE CONSIDERED A RESULT OF A 4-PHOTON SCATTERING. IN THE CASE OF I, THE L SPECTRUM OF GREAT WIDTH WAS SHIFTED BY 18 CM PRIME NEGATIVE1 FROM OMEGA SUBO TO THE LOWER FREQUENCY REGION. AT SIMILAR TO 10 PRIME NEGATIVE4 MINUS 10 PRIME NEGATIVE3 TORR, WHISKERS WERE OBSD. AS A SIMULTANEOUS PASSAGE OF THE LASER RADIATION AND L OF I THROUGH THE K VAPORS, A BAND OF 2 QUANTA ABSORPTION, RELATED TO THE 4S YIELDS 4D AT. TRANSITION, WAS OBSD. ADDNL.

UNCLASSIFIED

3/3 . 042

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124695

ABSTRACT/EXTRACT--PREFERENTIAL RADIATION OF THE RED LINES UNDER NONZERO ANGLES AND THEIR SHIFT TO LOWER FREQUENCIES (AS COMPARED WITH AT. TRANSITION FREQUENCIES) INDICATE A POSSIBLE ROLE OF COHERENT PROCESSES.

FACILITY: INST. FIZ. POLUPROV., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

UDC: 681.32.001

BELEVITSEV, A. T., BESSHAPOSHNIKOV, Ye. A., YEFIMOV, V. P., MUZALEV, Ye. Yu.,
SEMEHOV, B. A., CHEZHNIK, S. P.

"Resistive Element for a Potentiometer"

USSR Author's Certificate No 293271, filed 1 Aug 69, published 11 Mar 71
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct
71, Abstract No 10B148 P)

Translation: This Author's Certificate introduces a resistance element for
a potentiometer. The element is made in the form of two layers applied in
sequence, one of them being a layer of rhodium. For the purpose of thermal
stabilization of the resistance, the element utilizes a heat-treated chromium
film as the rhodium sublayer. One illustration.

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Analysis and Testing

USSR

UDC 620.175

MILOSERDIN, Yu. V., KUL'BAKH, A. A., CHECHKO, V. N., and SEMENOV, B. D., Moscow

"Method of Performing Cyclical Elastic-Plastic Tests of Refractory Materials by Twisting at Normal and High Temperatures"

Kiev, Problemy Prochnosti, No 12, Dec 70, pp 51-57

Abstract: This work deals with problems of the low-cycle testing of refractory materials by torsion. A method is described and two installations are studied which perform repeated tests automatically at normal and elevated temperatures. The results are presented from the deformation and molybdenum at temperatures in the 293-1600°K range.

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USSR

YAKUBOV, Sh. Kh., and SEMENOV, B. E., Institute of Poliomyelitis and Virus Encephalitides, Academy of Medical Sciences USSR, and Uzbek Scientific Research Institute of Epidemiology, Microbiology, and Infectious Diseases

"The Hemagglutinating Properties and Cytopathic Activity of Some Little-Investigated Arboviruses"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 1, Jan 73, pp 26-30

Abstract: In a study conducted with the arboviruses Chenunda (I), Kvaranfil (II), N'yamanini (III), Bandia (IV), Uukuniemi (V), Okola (VI), and Ingvavura (VII), the pathogenicity of the viruses to various cell cultures and the effectiveness of methods for the extraction of hemagglutinins associated with the viruses were studied. Cultures of the fibroblasts of chicken embryos (FKE), of pig embryo kidney cells (PES), of cells of the kidney epithelium of green marmosets (Vero), of cells of the kidney epithelium of hamster embryos (VKK-21), and cells of carcinoma of the cervix uteri (HeLa) were infected with the viruses. As an auxiliary means used with the purpose of obtaining hemagglutinating antigens from the cell cultures, medium 199 based on Earl's solution without serum was applied. Infection of cell cultures proved unsuitable for obtaining hemagglutinating antigens from the viruses. I and VII at sufficiently high titers produced 1/2

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YAKUBOV, Sh. Kh. and SEMENOV, B. F., Meditsinskiy Zhurnal Uzbekistana, No 1, Jan 73, pp 26-30

degenerative changes in PES, VNK-1, Vera, and FKE. II, III, IV, V, and VI, when present at high titers, had a cytopathic activity only towards some of the cell cultures. By applying various procedures for extraction from the brain of infected newborn mice, the hemagglutinating antigens of II, IV, V, VI, and VII were obtained. However, the antigen derived from VII was not always extracted, had low titers, and was very unstable. No hemagglutinins derived from I or III could be detected on extraction from brain tissue by any method.

2/2

USSR

UDC 576.858.25.097.5

SEMENOV, B. F., and VARGIN, V. V., Institute of Poliomyelitis and Virus Encephalitides, Academy of Medical Sciences USSR, Moscow

"Changes in the Properties of Antibodies During Immune Response of Rabbits to Inoculation With West Nile Virus. The Characteristics of Homologous and Heterologous Activity of Immunoglobulins in Hemagglutination-Inhibition Tests"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 540-544

Abstract: Rabbits were immunized with various doses of live virus and virus inactivated with formaline and absorbed on aluminum hydroxide, and blood samples were collected at 2-5 day intervals for 7 weeks. The physical and chemical properties of the antibodies were determined by the 2-mercaptoethanol test and by gel-filtration through Sephadex G-200. It was established that changes observed in antibody specificity were not due to a substitution of IgM antibodies with the IgG type, but that they were conditioned by the dose of the virus, its physical condition (live or inactivated and absorbed), and by the time factor. IgM and IgG antihemagglutinins reacting only with homologous virus were identified. Type 19S antibodies interacting with West Nile, Ntaya, St. Louis, and Japanese encephalitis viruses and those interacting with West Nile, Ntaya, St. Louis, Japanese encephalitis, and Ilheus viruses were described. A functional heterogeneity of the antihemagglutinins in IgM and Ig G immunoglobulins is postulated.

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USSR

UDC 616.988.5-022.395.42

SEMENOV, B. F., and L'VOV, D. K., Institute of Poliomyelitis and Virus Encephalitis, USSR Academy of Medical Sciences, Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences

"Distribution and Role of Tick-Borne Arboviruses in Human Infectious Pathology Except Group B"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 40, No 3, May/Jun 71, pp 259-267

Abstract: Tick-borne arboviruses which are not associated with the usual antigens representative for Group B viruses were the object of this survey. These viruses are widely distributed over most climatic and geographic zones of the earth and new species belonging to this category have been discovered recently. Also, many of these arboviruses are highly pathogenic to men and animals alike. More than 40 such tickborne viruses were isolated and identified in early 1970. Their antigenic classification and their classification with respect to ixodid ticks or Argasid mites is presented together with their distribution over various zones of the earth. Literature data indicate that tickborne arboviruses are transmitted over great distances by infected ticks, animals, and migratory birds, as well as domestic animals. As far as their physicochemical characteristics are concerned, these arboviruses do

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SEMENOV, B. F., and L'VOV, D. K., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 40, No 3, May/Jun 71, pp 259-267

not differ from the other arboviruses; they contain RNA, they are sensitive to ether and desoxycholate, they vary in size from 70-80 to 140-150 m μ . They could be divided into seven serological groups. Sixteen stimulants are as yet unclassified as far as their serological properties are concerned. The pathogenicity for man was established for nine of the listed arboviruses; six of these caused occasional diseases, whereas the remaining three caused numerous severe cases with frequently lethal outcome. Conventional laboratory methods are used for the diagnosis of infections caused by these viruses. Lately, the fluorescent antibody method has found widespread use, as have agar-agar precipitation and the neutralization reaction in a tissue culture.

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USSR

YAKUBOV, Sh. Kh., SEMENOV, B. E., MAKUMOV, S. S., KARASEVA, P. S., SADYKOVA, V. D., and CHUNIKHIN, S. P., Institute of Poliomyelitis and Viral Encephalitis Academy of Medical Sciences USSR; and Uzbek Scientific Research Institute of Epidemiology, Microbiology, and Infectious Diseases

"Serological Data on the Circulation of Virus of the Tachina Fly (Larvaovoridae) in the Uzbek SSR"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 4, 1971, pp 27-30

Abstract: A serological study was carried out to determine the possible foci of the Tachina virus in Uzbekistan. Human and domestic animal sera were collected in Tashkentskaya, Surkhandar'yinskaya, Samarkandskaya and Kashkadar'inskaya Oblasts, and in the Karakalpak Autonomous Soviet Socialist Republic. Virus-neutralizing antibodies were found in all areas studied in 15.7% of the human population and 15.5% of animals with titers of 1:10-1:80. Immunity was lower in people inhabiting mountainous and foothill regions than in the plains, except for Kashkadar'yinskaya oblast', where the percentage of antibodies in the plains was lowest probably because of weakly developed irrigation and resultant lesser number of flies. Statistically, immunity was higher among older inhabitants. The presence of antibodies proved that the virus

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YAKUBOV, SH. Kh., et al, Meditsinskiy Zhurnal Uzbekistana, No 4, 1971,
pp 27-30

does circulate within Uzbekistan, as it apparently also does in other southern
regions of the USSR, where investigations showed similar results.

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USSR

UDC 576.858.097.5.077

VARGIN, V. V., and SEMENOV, B. F., Institute of Poliomyelitis and Virus Encephalities, Academy of Medical Sciences USSR, Moscow

"Use of the Color Test for Titration of Antibodies to West Nile Fever Virus in Microvolumes of Serum"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 70, pp 500-502

Abstract: A modification of the Huang color test was used to determine antibodies to West Nile fever virus (strain B-956) in sera (volumes of 0.6 ml and 0.075 ml) from immunized rabbits. Neutralization of cytopathic activity was studied simultaneously. The results of titrating the antibodies were very close in all cases, indicating that the color test is as sensitive as other available methods. It is suggested that the color test be used for research on other arboviruses, in view of the good results obtained in experiments with St. Louis encephalitis virus and the cytopathic variant of Tahyna virus.

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USSR

UDC:538.56:530.145

SEMENOV, B. I.

"Removal of Molecules From the Lower Operating Level in a Molecular Generator Sorting System"

Elektron. Tekhnika. Nauchno-Tekhn. Sb. Elektron. SVCh [Electronic Equipment. Scientific and Technical Collection. SHF Electronics], No. 7, 1970, p. 147 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Zh30, Unsigned)

Abstract: The directivity diagram of the source of a beam of molecules is represented in the form $\phi(\theta) = \cos^n \theta$, where n determines the width of the radiation pattern, to produce simple expressions for the dependence of effectiveness of operation of the sorting system in a beam molecular generator on length L , radius of the sorting system, and width of the radiation pattern $\Delta\theta$ of the source of the beam of molecules. The curves showing the effectiveness of operation of the sorting system

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USSR

UDC:538.56:530.145

SEMENOV, B. I., Elektron. Tekhnika. Nauchno-Tekhn. Sb. Elektron. SVCh [Electronic Equipment. Scientific and Technical Collection. SHF Electronics], No. 7, 1970, p. 147 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Zh30, Unsigned)

as a function of L and $\Delta\theta$ (for the case of a molecular generator using a beam of ammonia molecules with an aperture diameter of the sorting system of 4 mm) show that for $\Delta\theta > 20^\circ$ sorting systems on the order of 50 mm in length can be used. When operating with narrow radiation patterns of the source ($\Delta\theta < 20^\circ$), the length of the sorting system must be increased in order to retain effective operation. Thus, the effectiveness of the operation of a sorting system at $\Delta\theta = 13^\circ$ will be equal to the effectiveness of a system 50 mm long at $\Delta\theta = 20^\circ$ if the length of the former system is 80-90 mm. The full text of the manuscript is on file at "Elektronika" Institute, number DE 191.

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USSR

UDC:538.56:530.145

SEMENOV, B. I., NIKISHINA, O. I.

"Distribution of Molecules by Velocities in the Flux at the Output of a Molecular Generator Sorting System"

Elektron. Tekhnika. Nauchno-Tekhn. Sb. Elektron. SVCh [Electronic Equipment. Scientific and Technical Collection. SHF Electronics], No. 7, 1970, p. 149 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Zh32, Unsigned)

Abstract: The distribution of velocities of molecules $F(v)$ at the output of the sorting system of a beam quantum generator is determined as a function of the radiation pattern of the beam source. The radiation patterns $f(\theta)$ were recorded over a predetermined interval of change of pattern length $\Delta\theta$ using an expression of V. S. Troitskiy for $F(\theta)$. For a broader range of change of $\Delta\theta$, the convenient express $f(\theta) = \cos^N\theta$

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USSR

UDC:538.56:530.145

SEMENOV, B. I., NIKISHINA, O. I., Elektron. Tekhnika. Nauchno-Tekhn. Sb. Elektron. SVCh [Electronic Equipment. Scientific and Technical Collection. SHF Electronics], No. 7, 1970, p. 149 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Zh32, Unsigned)

was suggested, where n defines $\Delta\theta$. The calculated curves of distribution of molecules by velocities in the flux at the output of the sorting system for one particular case, that of a molecular generator using a beam of ammonia molecules, show that for $\Delta\theta$ from 120° to 8° , distribution $F(v)$ changes from the generally used value of $F(v) = v \exp(-v^2/\alpha^2)$ for $\Delta\theta = 120^\circ$ to $F(v) = v^2 \exp(-v^2/\alpha^2)$, where $\Delta\theta$ is on the order of 8° . The error produced using the representation $f(\theta) = \cos^n\theta$ in comparison with the precise formula over the intervals of combined change is shown to be insignificant. The full text of the manuscript is on file at "Electronic" Institute, number DE-153.

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USSR

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UDC 621.373.530.245.6

SEMENOV, B. I., NIKISHINA, O. I.

"Velocity Distribution of Molecules in the Flux at the Output of a Maser Sorting System (Abstract of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SNT Electronics), 1970, Vyp. 7, p 149 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D183 Dep)

Translation: The velocity distribution of molecules $F(v)$ at the output of the sorting system of a beam maser is found as a function of the radiation pattern of the beam source. To record the radiation pattern $f(\theta)$ over a certain range of variation in the width of the radiation pattern $\Delta\theta$, use is made of V. S. Troitskiy's expression for $f(\theta)$. For a wider range of variation in $\Delta\theta$, the convenient notation $f(\theta) \sim \cos^n \theta$ is proposed where n defines $\Delta\theta$. The given theoretical curves for molecular distribution by velocity in the flux at the output of the sorting system for the special case of an ammonia beam maser show that the velocity distribution $F(v)$ for $\Delta\theta$ from 120° to 8° ranges from the generally accepted $F(v) \sim \exp(-v^2/a^2)$ for $\Delta\theta = 120^\circ$ to $F(v) \sim v^2 \exp(-v^2/a^2)$ when $\Delta\theta$ is of the order of 8° . The insignificance of the error in using the expression $f(\theta) \sim \cos^n \theta$ as compared with V. S. Troitskiy's exact formula is demonstrated on intervals of common change in $\Delta\theta$. Resumé.

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USSR

UDC 621.373:530.145.6

SEMENOV, B. I., ZAK, Yu. M.

"Experimental Investigation of Maser Sorting Systems (Abstract of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, vyp. 7, p 148 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D185 Dep)

Translation: The authors give the results of an experimental investigation of the angular distribution of molecules at the output of sorting systems of ammonia masers. Radiation patterns are given for a four-rod conventional (straight) and a bent sorting system. The conventional system has sections of molecular excess and deficiency. The basic flux of sorted molecules at the output of the sorting system is concentrated in the output aperture of the sorting system. An explanation is given for the causes leading to this. The patterns for a bent system (at an overall angle $\theta_c = 5^\circ$) give a picture of the angular displacement of the maximum of molecules in the upper working range sorted by the system. This maximum lags behind θ_c by a factor of two for the given sorting system and a field strength of the order of 60 kV/cm. The balance-compensation method of measuring molecular fluxes was used in taking the radiation patterns. Resumé.

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USSR

UDC 621.373:530.145.6

SEMENOV, B. I.

"Removing Molecules of the Lower Working Level From the Sorting System of a Maser
(Abstract of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, vyp. 7, p 147 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D184 Dep)

Translation: By representing the radiation pattern of a molecular beam source in the form $f(\theta) \sim \cos^n \theta$, where n defines the width of the radiation pattern, simple expressions are found for the operational effectiveness of the sorting system of a beam maser as a function of length L , the radius of the sorting system, and the width of the radiation pattern $\Delta\theta$ of the beam source. Curves for the operational effectiveness of the sorting system as a function of L and $\Delta\theta$ (for the case of an ammonia beam maser with 4 mm radius of the sorting system) show that for $\Delta\theta \gg 20^\circ$, sorting systems with a length of the order of 50 mm may be used. In the case of operation with narrow radiation patterns of the source ($\Delta\theta < 20^\circ$), the length of the sorting system must be increased to maintain effective operation. For instance the operational effectiveness of a sorting system when $\Delta\theta = 13^\circ$ will be equal to the effectiveness of a system 30 mm long when $\Delta\theta = 20^\circ$, if the length of the first system is equal to 80-90 mm. The resultant relationships are extremely valuable in the design of beam masers which are economic with respect to consumption of the working medium. Resumé.

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USSR

UDC 621.373:530.145.6

SEMENOV, B. I.

"Removing Molecules of the Lower Working Level From the Sorting System of a Maser
(Abstract of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, vyp. 7, p 147 (from RZn-Radiotekhnika, No 10, Oct 70, Abstract No 16D184 Dep)

Translation: By representing the radiation pattern of a molecular beam source in the form $f(\theta) \sim \cos^n \theta$, where n defines the width of the radiation pattern, simple expressions are found for the operational effectiveness of the sorting system of a beam maser as a function of length L , the radius of the sorting system, and the width of the radiation pattern $\Delta\theta$ of the beam source. Curves for the operational effectiveness of the sorting system as a function of L and $\Delta\theta$ (for the case of an ammonia beam maser with 4 mm radius of the sorting system) show that for $\Delta\theta \geq 20^\circ$, sorting systems with a length of the order of 50 mm may be used. In the case of operation with narrow radiation patterns of the source ($\Delta\theta < 20^\circ$), the length of the sorting system must be increased to maintain effective operation. For instance the operational effectiveness of a sorting system when $\Delta\theta = 13^\circ$ will be equal to the effectiveness of a system 30 mm long when $\Delta\theta = 20^\circ$, if the length of the first system is equal to 80-90 mm. The resultant relationships are extremely valuable in the design of beam masers which are economic with respect to consumption of the working medium. Resumé.

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USSR

UDC: 532.526

SEMENOV, B. N.

"The External Edge Condition in the Problem of Stability of a Laminar Boundary Layer"

Dinamika Splosh. Sredy. Vyp. 10 [Solid Medium Dynamics No 10 -- Collection of Works], Novosibirsk, 1972, pp 227-232 (Translated from Referativnyy Zhurnal Mekhanika, No 12, 1972, Abstract No 12B781, by the author)

Translation: The Orr-Sommerfeld equation is solved. The edge condition used earlier

$$\phi'(1) + \alpha\phi = 0$$

at the edge of the boundary layer is replaced by the more general condition

$$-ia\phi'(1) + \alpha\phi(1) = 0$$

from which the first condition follows as a particular case where $a=i$, $a=|a|\exp(i\epsilon)$. Here $|a|$, ϵ are the amplitude relationship and phase angle between the components of the velocity pulsation v , u , α is the wave number, $1/2$

USSR

Semenov, B. N., *Dinamika Splosh. Sredy. Vyp. 10*, Novosibirsk, 1972, pp 227-232.

ϕ is the desired function. The stability of the Blazius profile near the solid boundary is studied. It is shown that with increasing phase angle, the stability of the laminar boundary layer increases.

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USSR

UDC 621.375.029.64:621.396

SEMENOV, B. P., KUBALOV, R. I.

"Transistorized Superhigh Frequency Amplifier Operating at 500 Megahertz"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi.
Vyp. 4 (Materials of the Scientific and Technical Conference. Leningrad
Electrotechnical Communications Institute. Vyp. 4) Leningrad, 1970, pp
94-96 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D11)

Translation: This article contains information on the development and results of experimental studies of a single-cascade transistorized superhigh-frequency amplifier operating at 500 megahertz. The device insures a gain of 6.8 decibels in the operating frequency band of 30 megahertz with a noise factor $F = 4.5$ decibels.

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172 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--PULSE PILE UP FOR A PRECISION AMPLITUDE SPECTROMETER WITH RC FILTERS -U-

AUTHOR--(02)-ANTYUKHOV, V.A., SEMENOV, B.YU.

COUNTRY OF INFO--USSR

SOURCE--(JINR P13 4979) LAB. OF NUCLEAR PROBLEMS. 1970. 16P. DEP CFSTI (U.S. SALES ONLY)

DATE PUBLISHED-----70

S

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PULSE HEIGHT ANALYZER, RADIATION SPECTROMETER, SIGNAL GENERATOR, SIGNAL GENERATOR, COUNTING CIRCUIT, FILTER CIRCUIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/2169

STEP NO--UR/0000/70/000/000/0016/0016

CIRC ACCESSION NO--AT0127533

UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--AT0127533
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT. A DEVICE FOR GENERATING A SIGNAL FOR BLOCKING THE TRIGGERING OF THE AMPLITUDE ANALYZER IN THE CASE OF PILE UP EVENTS (THE PILE UP INSPECTOR) IS DESCRIBED. THE PERFORMANCE REQUIREMENTS ARE CONSIDERED, THE FUNCTIONAL AND PRINCIPAL CIRCUITS ARE GIVEN, AND THE RESULTS OF EXPERIMENTS ARE DISCUSSED. THE LOGARITHMIC DEPENDENCE OF THE BLOCKING PULSE DURATION UPON THE INPUT SIGNAL AMPLITUDE, THE ABSENCE OF THE SELF DEAD TIME, A WIDE DYNAMIC RANGE OF INPUT SIGNALS (UP TO 1000), AND THE CONSERVATION OF THE PERFORMANCE CHARACTERISTICS AT HIGH COUNTING RATES PROVIDED A HIGH EFFICIENCY FOR APPLYING THE INSPECTOR TO THE PRECISION SPECTROMETER CHANNEL WHEN PULSES ARE SHAPED WITH KC FILTERS.
FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA USSR.

UNCLASSIFIED

USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., SUKHACHEVA, Ye. I., MENOSHKOVA, G. A.,
BELOVA, M. N., TARAKHTY, E. A.

"Accessibility of Radioactive Cerium for Extraction From an Organism by Diethylenetriaminepentaacetic Acid. Relationship Between the Quantity Extracted and That Contained in the Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences of the USSR), 1970, vyp. 68, pp 81-86 (from RZh-Biologicheskaya Khimiya, No 23, 10 Dec 70, Abstract No 23F2204)

Translation: The amount of cerium-144 extracted by the complexing agent in the daily urine of rats amounts to $\frac{1}{10}$ of the quantity of the isotope contained in all soft tissues (the cerium in the skeleton does not participate in this process). This is the actual ratio for various periods after using the complexing agent (from the 8-th to the 126-th day of the experiment) in a dose of 100 μ moles in a rat. Repeated injection of the complexing agent does not change this ratio when the cerium extracted with the first injection is taken into account. From the authors' resumé.

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USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., SUKHACHEVA, Ye. I., MEN'SHIKOVA, G. A.,
BELOVA, M. N.

"Accessibility of Yttrium-91 Deposited in the Tissues of an Organism for
Diethylenetriaminepentaacetic Acid Sodium Salt"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the
Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences
of the USSR), 1970, vyp. 68, pp 87-94 (from RZh-Biologicheskaya Khimiya,
No 23, 10 Dec 70, Abstract No 23F2206)

Translation: The paper demonstrates the parallelism between the effective-
ness of diethylenetriaminepentaacetic acid sodium salt and the concentration
of yttrium-91 in the kidneys and liver. M. Sh.

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USSR

UDC: 577.1:615.7/9

PODGORNAYA, I. V., LATOSH, N. I., TREGUBENKO, I. P., SEMENOV, D. I.

"Effect of Complexing Agents (Hydroxy- and Sulfo-Substituted Ethylenediamine-tetraacetic Acid Salts and Iminodiacetic Acid) on the Behavior of Cerium-144 in an Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the Institute of Plant and Animal Ecology. Ural Affiliate, Academy of Sciences of the USSR), 1970, vyp. 68, pp 76-80 (from RZh-Biologicheskaya Khimiya, No 23, 10 Dec 70, Abstract No 23P2209)

Translation: It was found that the introduction of one or two hydroxy groups into the molecule increases its effectiveness, while the addition of a sulfo group reduces effectiveness. From the authors' resumé.

USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SUKHACHEVA, Ye. I., BELOVA, M. N., NYATINA, O. A., MEN'-
SHIKOVA, G. A., SEMENOV, D. I.

"Effect of Ethylenediaminetetraacetic, Cyclohexylaminetetraacetic and Diethy-
lenetriaminopentaacetic Acid Sodium Salts on the Behavior of Cadmium-115 in
an Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the
Institute of Plant and Animal Ecology. Ural Affiliate, Academy of Sciences
of the USSR), 1970, vyp. 68, pp 65-67 (from PZh-Biologicheskaya Khimiya,
No 23, 10 Dec 70, Abstract No 23F2208)

Translation: The cadmium complex with ethylenediaminetetraacetic acid sodium
salt is partially dissociated under conditions in the organism, whereas
cadmium complexes with cyclohexylaminetetraacetic and diethylenetriamine-
pentaacetic acid sodium salts, which have higher constants of stability,
are almost completely eliminated from the organism of rats within the first
few days. Early application of the complexing agents appreciably reduces
the deposition of cadmium in the tissues, and increases its elimination with

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USSR

TREGUBENKO, I. P., et al., Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR, 1970, vyp. 63, pp 65-67

urine. Diethylenetriaminopentaacetic acid sodium salt has the most pronounced effect. Stable complexes of cadmium-115 are eliminated almost entirely through the kidneys, part of the isotope being selectively retained in the kidneys (23-43 percent of the residue in the organism), which may be utilized for irradiation of kidney tumors. From the authors' resume.

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USSR

UDC: 577.1:615.7/9

VORONINA, N. M., TREGUBENKO, I. P., LATOSH, N. I., SUKHACHEVA, Ye. I.,
SEME NOV, D. I.

"Effect of Complexing Agents (Iminodiacetate Derivatives of the Oxytriphenylmethane Series) on the Behavior of Iron-59, Zinc-65, Strontium-90, Yttrium-91 and Cerium-144 in an Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences of the USSR), 1970, vyp. 68, pp 68-75 (from EBh-Biologicheskaya Khimiya, No 23, 19 Dec 70, Abstract No 23F2205)

Translation: The effectiveness of the complexing agents (amount of extraction of yttrium and cerium from the organism and the degree of reduction of their deposition in tissues) increases symbatically with the increase in the number of iminodiacetate groups in the molecule. With respect to their effectiveness, preparations with three and four groups are therapeutically on a level with ethylenediaminetetraacetic acid sodium salt (data from experiments with yttrium), and in some instances (experiments with cerium) are considerably more effective. From the authors' resumé.

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Optics & Spectroscopy

USSR

UDC 548.52:535.4

GINZBURG, V. M., GUSEVA, I. N., KRAMARENKO, V. A., SEMENOV, E. G., SONIN, A. S., and STEPANOV, B. M.

"The Use of Holographic Interferometry to Observe the State of a Solution During the Growth of Single Crystals"

Moscow, Kristallografiya, Vol 17, No 5, Sep-Oct 72, pp 1012-1014

Abstract: The article shows that holographic interferometry can be used to study the state of a solution during the growth of KH_2PO_4 single crystals. The method used is that of bringing the object into coincidence with its virtual image, in which the recorded wave front interferes with the real wave front. The method makes it possible to obtain real-time holographic interferograms for any stage of the growth process and to take photographs and motion pictures of them. The use of diffused illumination of the crystallizer makes it possible to record the interferograms from various aspects, which permits an analysis of the volumetric distribution of the refractive index of the solution and from the known relation between variations in the

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USSR

GINZBURG, V. M., et al., Kristallografiya, Vol 17, No 5, Sep-Oct 72, pp 1012-1014

refractive index and the concentration, diffusion coefficient, etc. an analysis of the spatial distribution of the principal parameters of the solution.

The authors thank D. YE. TEMKIN, A. A. CHERNOV, N. N. SHEFTAL', and A. A. SHTERNBERG for discussing the results, and V. N. KIRILLOVA for her help in the experiment.

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USSR

UDC 548.4

GINZBURG, V. M., GUSEVA, I. N., SEMENOV, E. G., SOVIN, A. S., STEPANOV, B. M.

All-Union Scientific Research Institute of Opticophysical Measurements, MOSCOW

"On the Possibility of the Application of Holographic Interferometry to the Investigation of Crystals"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 5, 11 Oct 71, pp 1092-1094

Abstract: The possibility of using the method of holographic interferometry for the investigation of crystals was shown by the authors on the basis of the example of fluorite. Used for obtaining holographic interferograms was the UIG-2 installation, developed at the All-Union Scientific Research Institute of Opticophysical Measurements. Data show that holographic interferometry makes it possible to obtain several different integral values for different observation angles of a single crystal. Due to the presence of an intensive coherent light source, the UIG-2 holographic installation makes it possible, in addition to interferograms, also to obtain a defraction-shadow pattern of inhomogeneity of the refraction index of the sample. It is comparable in sensitivity to a light pattern obtained by means of a special pro-

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USSR

GINZBURG, V. M., et al, Doklady Akademii Nauk SSSR, Vol 200, No 5, 11 Oct 71, pp 1092-1094

jection type shadow installation. Thus, holographic methods may be used for complex research on growth defects: establishment of the shape of the crystallization isotherm, shape changes of the light wave under the influence of admixtures, stresses, etc. 3 figures, 1 table, 4 references.

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USSR

UDC 548.4

GINZBURG, V. M., GUSEVA, I. N., SEMENOV, E. G., SONIN, A. S., and STEPANOV, B. M., All-Union Scientific Research Institute of Optical and Physical Measurements, Moscow

"Use of Holographic Interferometry For Crystal Studies"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 5, 1971, pp 1092-1094

Abstract: An UIG-2 holographic device was used to study the morphology of crystal structures by obtaining interferograms of synthetic fluorite. The UIG-2 unit was developed at the All-Union Scientific Research Institute of Optical and Physical Measurements and its Operating principle is as follows: a laser beam passes through a collimating system and is split by two mirrors into two equal intensity beams. Beam 1 is reflected by a third mirror to form a reference wave front and beam 2 is reflected by a fourth mirror and strikes a diffuser to form a signal wave front. Beams forming the reference and signal wave fronts intersect at a photographic plate to register the hologram. By comparing holograms obtained with the above UIG-2 unit with holograms taken on a Michelson interferometer it was evident that holographic interferometry makes it possible to evaluate heterogeneity of refraction

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USSR

GINZBURG, V. M., et al., Doklady Akademii Nauk SSSR, Vol 200, No 5, 1971, pp 1092-1094

indices in the volume of a crystal sample. It is mentioned that with the use of an intensive coherent light source one can obtain diffraction-shadow pictures of diffraction index heterogeneity. With the use of holographic methods it is possible to study growth defects in crystals by establishing shapes of crystallization isotherms and the change in light wave forms under the influence of impurities, stresses, etc. The authors expressed their thanks to B. I. FEODOROVSKIY and Ye. N. LEKHTSIYER for their assistance. Three figures, one table, four bibliographical references.

2/2

1/2 020
UNCLASSIFIED
PROCESSING DATE--13NOV70
TITLE--MASS SPECTROMETRIC STUDY OF THE COMPOSITION OF THE VAPOR OVER ALCL
SUB3 .POCL SUB3 -U-
AUTHOR--(03)-SHUBAYEV, V.L., SUVOROV, A.V., SEMENOV, G.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(4), 939-40
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ALUMINUM COMPOUND, CHLORIDE, MASS SPECTROMETER, MASS SPECTROSCOPY, VAPOR STATE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1076
STEP NO--UR/0078/70/015/004/0939/0940
CIRC ACCESSION NO--AP0123069
UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--AP0123069
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. MASS SPECTRA OF 150DEGREES VAPOR ABOVE THE ALCL SUB3-PUCL SUB2 SYSTEM SHOWED HIGH CONC. OF ALPOCL SUBN PRIME POSITIVE (N EQUALS 2-6). THE SUM OF RELATIVE INTENSITIES OF IONS CONTG. AL (210) WAS CLOSE TO THE SUM OF RELATIVE INTENSITIES OF IONS CONTG. P (240). SINCE THE VOLATILITIES OF ALCL SUB3 AND PUCL SUB2 VARY MARKEDLY UNDER THE EXPTL. CONDITIONS, ONE ASSUMES THAT APPROX. THE SAME RELATIVE INTENSITIES OCCUR DUE TO DISSOCIATIVE IONIZATION IN THE VAPOR PHASE. THE PRESENCE OF ALPOCL SUB2 SHOWS THAT THE ADDUCT IS BOUND VIA THE O ATOM.

UNCLASSIFIED

172 027

TITLE--THERMODYNAMIC STUDY OF THE VAPORIZATION OF THALLIUM OXIDES USING A MASS SPECTROMETER -U-
AUTHOR--(02)-RATKOVSKIY, I.A., SEMENOV, G.A.

UNCLASSIFIED

PROCESSING DATE--04DEC70

S

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 168-71.
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--MASS SPECTRUM, THALLIUM COMPOUND, METAL OXIDE, ENTROPY, ENTHALPY, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/1507

STEP NO--UR/0153/70/013/002/0168/0171

CIRC ACCESSION NO--AT0130436

UNCLASSIFIED

027

CIRC ACCESSION NO--AT0130436
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT. THE SYSTEMS TL SUB2 O SUB3 PLUS
 TL, TL SUB2 O, TL SUB2 O SUB3, AND TL WERE STUDIED IN A KNUDSEN CELL
 WITH A RATIO OF EVAPN. SURFACE TO EFFUSION AREA EQUALS 250, AND MASS
 RATIOS WERE DETD. RELATIVE TO TL SUB2 O PRIMEPOSITIVE. AFTER
 STABILIZATION OF THE FORMATION OF O SUBW PRIMEPOSITIVE, EVAPN. MAY BE
 DESCRIBED BY TL SUB2 O SUB2 (S) YIELDS TL SUB2 O SUB3 NEGATIVE XDEGREES
 PLUS (X-2) (O SUB2) (G), AND TL SUB2 O(2) YIELDS (TL SUB2 O)(G),
 THERMODYNAMIC DATA FOR THE FORMATION OF THALLIUM OXIDE VAPOR FROM TL
 SUB2 O SUB3 PLUS TL, TL SUB2 O, AND TL SUB2 O SUBE ARE: L SUBT, 38 PLUS
 OR MINUS 1, 40 PLUS OR MINUS 2, 46 PLUS OR MINUS 1, 50 PLUS OR MINUS
 SUBT DEGREES, 38 PLUS OR MINUS 1, 40 PLUS OR MINUS 2, 45 ENTROPY UNITS; DELTA H SUB298
 2 KCAL-MOLE; DELTA S SUBT, 32, 33, 45 IN EQUATION LOG P (TL SUB2 O)(G)
 DEGREES 101, 44, 54; COEFFS. A AND B, IN EQUATION LOG P (TL SUB2 O)(G)
 EQUALS A PLUS B-T (MM HG): 10.573 AND 9091, 10.304 AND 8794, 10.220 AND
 9776; FOR TL SUB2 O(G) MINUS DELTA H SUBG298 EQUALS 4, 2, 5 KCAL-MOLE; O
 SUB298 DEGREES (DISSOCN. ENERGY) EQUALS MINUS 143, MINUS 143, MINUS 144
 KCAL-MOLE.
 Leningrad, USSR. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA,

UNCLASSIFIED

UDC 537.533.8

USSR

SEMENOV, G.F., DENENOVETSKIY, S.V.

"Approximation Of The Effective Coefficient Of Secondary Emission In A Wide Range Of Changes Of The Target Potential"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektronoluch. i fotoelektr. pribory
(Electronic Technology. Scientific-Technical Collection. Electron Beam and Photoelectric Devices), 1970, Issue 2(16), pp 45-46 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4A9)

Translation: An approximate function is proposed for the effective coefficient of secondary emission with any values of the target potential, provided that the actual coefficient of secondary emission is known. An example is presented of the use of an approximate function for determination of the potential contour of the recording of an input signal with large amplitude. Author's abstract.

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USSR

UDC: 621.376.56:621.373.029.67

GUSEV, A. A., NIKITIN, V. V., SEMENOV, G. I., and SHASHIN, V. I.

"Switching Device Using an Injection Semiconductor Laser"

Moscow, Kvantovaya elektronika, No 7, 1972, pp 92-94

Abstract: Recently, successful use has been made of semiconductor lasers for rapid-operation optical logic elements. With the idea of using such lasers as a rapid switching device for multiplex telemetric systems, the authors of this brief communication have investigated such a laser switch, with special attention to its dynamic range and noise characteristics. The block diagram of the experimental equipment with which this investigation was conducted is built around two GaAs lasers, cooled to the temperature of liquid nitrogen, and silicon photodiodes. The lasers are fed by independent current pulse generators with signal amplitudes continuously variable from zero to 20 A, the injection current being measured. The laser radiation emerges from a plane-parallel window of the cryostat and is recorded by the photodiodes, the output of which is connected to an S1-15 oscillograph. By means of this equipment, curves of the output power of the lasers and the laser switching device as a function of the injection current were plotted. The authors conclude that the lasers can be used

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USSR

UDC: 621.376.56:621.373.029.67

GUSEV, A. A. et al, Kvantovaya elektronika, No 7, 1972, pp 92-94

as ultra-rapid switching devices with a dynamic range of 10^3 - 10^4 , especially since semiconductor lasers capable of operating at room temperature and above have recently been developed. The authors express their gratitude to V. D. Samoylov for his discussion of the experimental results, and to Yu. P. Zakharov and V. F. Litvinov for their assistance with the experiments.

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- 133 -

1/2 011 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--LEVEL OF RADIOACTIVE ELEMENTS IN KIMBERLITES OF THE SIBERIAN
PLATFORM -U-
AUTHOR-(02)-AKIMOV, A.P., SEMENOV, G.S. S
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUR SSSR 1970, 190(4), 947-50
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, PHYSICS
TOPIC TAGS--RADIOISOTOPE, GAMMA SPECTROSCOPY, MINERAL FORMATION ANALYSIS,
ROCK, URANIUM ORE, URANIUM, THORIUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1984/0280 STEP NO--UR/0020/70/190/004/0947/0950
CIRC ACCESSION NO--AT0055073
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0055073

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONTENTS OF TH AND U WERE DETD. BY THE GAMMA SPECTROMETRIC METHOD IN KIMBERLITE SAMPLES FROM 20 YAKUTIA PIPES SITUATED IN 5 AREAS OF KIMBERLITE MAGMATISM. A HIGHER RADIOACTIVITY WAS DETECTED IN KIMBERLITES THAN IN THEIR TRAP COUNTRY ROCKS: TH 5.3-15 AND U 1.1-3.5 PPM. THE TH AND U CONTENTS IN KIMBERLITES WERE COMMENSURABLE WITH THOSE IN GRANITES. THE ENDOCONTACTS OF PIPES AND THE AREAS OF KIMBERLITES, CONTACTING LARGE BLOCKS OF COUNTRY ROCKS, WERE EXCEPTIONALLY HIGH IN U AND TH OFTEN 2-3 TIMES HIGHER THAN THEIR CONTENT INSIDE THE PIPES. THIS WAS ACCOMPANIED BY SIMULTANEOUS INCREASE IN K CONTENT BY 50-100 TIMES. DIFFERENCES IN DISTRIBUTION OF RADIOACTIVE ELEMENTS WERE DETECTED FOR MOST OF DIAMOND BEARING AND DIAMOND FREE KIMBERLITE. THE TH-U RATIO IN KIMBERLITES CONTG. DIAMONDS WAS 3-4. IT INCREASED TO 15-20 IN DIAMONDFREE KIMBERLITES. THE KIMBERLITE ROCKS WERE NOT SIMILAR TO THE ULTRABASIC ROCKS IN CONTENTS OF RADIOACTIVE ELEMENTS. THEY OCCUPY AN INTERMEDIATE POSITION, IN THE SERIES OF ROCKS OF PLATFORM ALK. MAGMATISM BETWEEN THE ALK. BASALT SERIES OF THE ACTIVATION ZONES AND THE CARBONATITES.

UNCLASSIFIED

USSR

DENISYUK, Yu. N.; SEMENOV, G. V.; SAVOST'YANENKO, N. A.

"Effect of Nonlinearity of Photomaterial on the Characteristics of Amplitude Holograms"

Leningrad, Optika i Spektroskopiya; November, 1970; pp 994-1001

ABSTRACT: Expressions are derived for determining the magnitudes of the radiation in the first and second orders of the spectrum of amplitude holograms, taking into account the nonlinear character of recording on photomaterial. It is shown that the effect of nonlinearity on the distribution of light between different orders of the spectrum can be determined more precisely by means of nonlinearity factors depending on the contrast p of the interference pattern registered on the hologram, as well as on the contrast factor γ of the photomaterial. Analytic expressions are obtained by means of which it is possible to determine the nonlinearity factors for the first and second orders of the spectrum, and curves are drawn for their dependence on p for several values of γ . Results of an experimental check of the theory are given.

USSR

UDC 613.633+613.648]:666.76

LEMYASEV, M. F., BABUSHKINA, L. G., SEMENOV, G. V., (Deceased), KATSNEL'SON, B. A., KARAGODINA, I. V., TREYGER, S. I., and BELOBRACINA, G. V., Scientific Research Institute of Hygiene and Occupational Diseases, Medical Institute, Oblast Sanitary-Epidemiological Station, Sverdlovsk

"Dust and Radiation Factors in the Production of Fireproof Articles From Zirconium Dioxide"

Moscow, Gigiyena i Sanitariya, No 10, Oct 1970, pp 38-41

Abstract: Tests with rats confirmed that the fibrogenic character of "pure" ZrO_2 dust is lower than that of the commercial product. This difference is attributed to the admixture of radioactive elements in the dust of the insoluble commercial ZrO_2 , which is used as raw material in the production of various fireproof objects, so that the fibrogenic action of this dust on the lungs is intensified. On the basis of data from this experiment and from studies in an industrial environment, it is recommended that maximum permissible concentrations of ZrO_2 dust and similar substances be established which taken into account the radioactive contamination present in these dusts.

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Economics

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INTERNATIONAL ECONOMIC RELATIONS

ECONOMIC INTEGRATION THROUGH COME AND DEFENSE POTENTIAL

(Article by I. Semenov, candidate of economic sciences: "Integration of the COME countries and the strengthening of their defense potential"; Moscow, Sovetskii Izdatel', Russian, 6 October 1971, PP 2-3)

The 25th session of COME occupies a special place in the history of the development of economic cooperation among the socialist countries. The decision and improvement of cooperation and for the development of socialist economic integration of the member nations of COME represents, in essence, a general plan for joint economic activity for several five-year periods in the future. It opens up wide horizons for all-round cooperation, for further strengthening of the economic and defensive might of the socialist countries.

The adoption of the comprehensive program became feasible as a result of successes already obtained in socialist construction and also thanks to the advantages of the socialist system. This program sets upon a rich experience of cooperation for more than 20 years within the framework of COME. Combining their own efforts with the development of mutual cooperation, the member nations of COME achieved during these years such successes which the more developed capitalist countries needed hundreds of years to achieve.

During the last two decades industrial production in the COME countries grew 6.8 times, while in the developed capitalist countries only 2.8 times. Almost 33 percent of the world's industrial production now falls to the share of the COME countries, while in 1946 it was 10.3 percent. The activity of the COME countries has grown in the whole dynamics of world economic development.

The member nations of COME, whose population is more than 350 million people, comprise the world's largest industrial complex, enabling them to solve complicated economic problems, as well as questions of strengthening the defense potential. The socialist countries, united by the Marxist-Leninist stand opposed to the aggressive imperialist bloc like a powerful progressive coalition.

2705 54912, 26 January 1972, Translations on COME Trade and Services No. 324.

SEMENOV, I

USSR

UDC 616.083.98:616-099

SEMENOV, I. A., PALAMARCHUK, Ye. S., MUDRITSKIY, V. D., and YAROSECHUK, G. S.,
Clinical Hospital imeni October Revolution, Kiev Medical Institute, Kiev

"Emergency Treatment in Acute Poisoning with Organophosphorus Compounds"

Kiev, Vrachebnoye Delo, No 10, Oct 72, pp 131-134

Abstract: Experience acquired in emergency treatment during the past 9 years of 112 persons poisoned with organophosphorus compounds (principally chlorophos) is reviewed. Thirty-nine persons inhaled the poison, while 73 swallowed it. In cases in which the poison was swallowed, the stomach was washed out with water or a 2% Na_2CO_3 solution, whereupon an absorbent (activated carbon or a 25% solution of Na_2SO_4) was administered. In cases of unconsciousness, endotracheal intubation was carried out and the stomach pumped out. In every instance, an 0.1% atropine solution was injected immediately either subcutaneously, intramuscularly, or intravenously (1-2, 2-4, and 3-5 ml in cases of light, medium severe, and acute poisoning, respectively). A 15% solution of dipyroxime was administered in an amount of 1-2 ml in 8 cases of acute poisoning accompanied by deep unconsciousness. In severe cases, an intravenous injection of a 5% glucose solution (250-800 ml) together with vitamin C (100-200 mg), B_1 (60 mg), B_6 (60 mg), PP (30-40 mg), and B_{12} (600-800 gamma) was

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carried out at the site of the accident. If the condition of the patients did not improve, 250-300 ml physiological NaCl solution or 200-400 ml of a 2-4% NaHCO₃ solution were injected in addition to that. The majority of patients were given subcutaneous injections of cordiamine, mezaton, and caffeine and also intramuscular injections of MgSO₄ to stimulate cardiac activity. On hospitalization washing out of the stomach was repeated and atropine was administered as required, in the absence of harmful effects produced by it, until improvement of the condition of the patients set in. The total amount of atropine administered was 2-12, 10-20, and > 20 mg in cases of light, medium, and acute poisoning, respectively. Because atropine is dangerous in cases of pronounced hypoxia, patients in this state were given oxygen to inhale. If indicated by the condition of the patients, the following methods of treatment were applied: intramuscular injection of a 25% MgSO₄ solution in pronounced mental disturbances; bloodletting and intravenous injection of a 40% glucose solution and a 10% CaCl₂ solution in pulmonary edema; intravenous injection of an 0.05% strophanthine solution together with a 40% glucose solution in cases of collapse. Poliglucine, hydrocortisone, ephedrine, and other drugs were also administered. As a part of the detoxification therapy vitamins of the B complex (B₁, B₆, PP, etc) and ascorbic acid were administered together with glucose and plasma substitutes. As resuscitation measures artificial respiration (upon

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SEMENOV, I. A., et al., Vrachebnoye Delo, No 10, Oct 72, pp 131-134

endotracheal intubation), infusion of poliglucine and other blood extenders, indirect massage of the heart, and defibrillation were applied. Complete recovery following the treatment resulted in 88 cases. Side effects that accompanied recovery comprised pneumonia, acute psychosis, and polyneuritis in 9, 8, and 2 cases, respectively. Five patients died.

3/3

1/2 033 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MEASUREMENT OF ION TEMPERATURE ON THE TOKAMAK T-3 INSTALLATION BY
USING DOPPLER BROADENING OF THE SPECTRAL LINES OF NEUTRAL HYDROGEN AND
AUTHOR--(02)-SEMOV, I.B., MIRNOV, S.V.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(2), 129-31

DATE PUBLISHED-----70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--HYDROGEN, DEUTERIUM, ION TEMPERATURE, TEMPERATURE MEASUREMENT,
SPECTRAL LINE, PLASMA PHYSICS/(U)TOKAMAK 3 THERMONUCLEAR DEVICE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
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STEP NO--UR/0089/70/028/002/0129/0131

CIRC ACCESSION NO--AP0125031

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 033

CIRC ACCESSION NO--AP0125831

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

ABSTRACT. DETAILS ARE GIVEN OF A TECHNIQUE FOR THE DETN. OF THE TEMP. T OF D PLASMA IN THE "TOKAMAK T-3" TORROIDAL PLASMA SETUP BY MEASURING THE DOPPLER BROADENING OF THE H SUBALPHA AND D SUBALPHA SPECTRAL LINES AFTER THE INJECTION OF "COLD" H INTO THE PLASMA; THE VALUE OF T (AT A PLASMA CONC. N SUBE EQUALS (1-2) TIMES 10¹³-CM⁻³) INCREASED SIMILAR TO 80-150 EV WHEN THE DISCHARGE CURRENT WAS INCREASED FROM 30-80 KA.

UNCLASSIFIED

USSR

UDC 629.124.72.011.17

SEMENOV, I. M. S"Two-Hull Trawler-Seiner"

Leningrad, Sudostroyeniye, No 1, Jan 70, pp 5-10

Abstract: This article presents a detailed description of a catamaran trawler-seiner of 900-t displacement named "Experiment", designed by the Kaliningrad Central Design Bureau. This two-hull diesel (2 x 300 hsp) stern trawler of 450 m³ hold cargo capacity was built with the purpose of conducting broad investigations on sea-going properties and improvements of industrial fishing operations, with the new possibilities of a two-hull ship taken into account. It consists of a two-hull one deck ship with a submerged half-tank and a stern ramp on both hulls. Each hull is divided into 6 compartments by six transverse bulkheads. The stern compartment serves as fuel reservoirs. The article presents design consideration, technical aspects and characteristics, and also the inboard and outboard profiles, body plan, general arrangement decks, photographs in a dry dock, on water, and during the sea trials. It contains a description of thorough investigation conducted on the ground and on water with the purpose of determining the strength of a two-hull ship. The results of these investigations confirm the great possibilities of two-hull ships at any swell and arbitrary angle of motion. It also

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USSR

UDC 510

SEMENOV, I. S.

"On An Aspect of the Problem of Abstractions in Mathematical Logic"

Filos. probl. suchasn. pryrodozn. Mizhvid. nauk. zb. (Philosophical Problems in Modern Natural Science. Interdepartmental Collection of Scientific Works), 1971, vyp. 24, pp 101-106 (Ukrainian: Russian summary) from RZh-Matematika, No 2, Feb 72, Abstract No 2A8 from author's summary)

Translation: The article considers the logical analysis of the abstracting process in the construction of such objects of mathematics and logic as predicates, functions, formal systems. The result of the analysis is employed to refine the structure of such a formal logic object as a concept. The formalizing possibilities of sign systems are analyzed, and the essence of the concept "unformalizable reminder" is revealed.

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USSR

UDC 510

SELENOV, I. S.

"On An Aspect of the Problem of Abstractions in Mathematical Logic"

Filos. probl. suchasn. pryrodozn. Mizhvid. nauk. zb. (Philosophical Problems in Modern Natural Science. Interdepartmental Collection of Scientific Works), 1971, vyp. 24, pp 101-106 (Ukrainian: Russian summary) from RZh-Matematika, No 2, Feb 72, Abstract No 2A8 from author's summary)

Translation: The article considers the logical analysis of the abstracting process in the construction of such objects of mathematics and logic as predicates, functions, formal systems. The result of the analysis is employed to refine the structure of such a formal logic object as a concept. The formalizing possibilities of sign systems are analyzed, and the essence of the concept "unformalizable reminder" is revealed.

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USSR

SEMENOV, L., and FEDOROV, V.

"The Air Which Cosmonauts Breathe"

Trud, 11 Jun 70, p 3

Translation: Extra-atmospheric flights must be performed under conditions in which cosmonauts can work and rest. They must get the right amount of food, drink, air, rest, and sleep. This simple, commonplace matter on earth becomes a complex scientific and technological problem in the cosmos.

Man can survive a fairly long time without food, several days without water, but only a few minutes without air. Breathing is a vital function of the human body. How is it ensured in spaceflights?

The free volume in spaceships is small. The most spacious ship -- Soyuz -- has about 9 cubic meters of air on board. Outside the ship's walls, there is almost a complete vacuum or just remnants of the atmosphere with a density a million times less than on the earth's surface.

Nine cubic meters is all that the cosmonauts have available for breathing on the Soyuz. However, this is sufficient. The question is only what fills this volume and what do the cosmonauts breathe.

The atmosphere surrounding man on earth consists, of 78.09% nitrogen, 20.95%

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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

oxygen, 0.93% argon, and 0.03% carbon dioxide. The concentration of the other gases is insignificant.

This is the gas mixture human beings and all other living creatures on earth are accustomed to breathe. However, the adaptability of the human body is great. Of the total atmospheric pressure of 760 mm Hg at sea level, only about 160 mm are due to oxygen (the so-called partial pressure of oxygen). What happens when the oxygen concentration in the air decreases? Man can breathe even when the partial pressure of oxygen is as low as 98 mm Hg: only when the value falls below this level does "oxygen starvation" begin. The opposite is also possible, that is, oxygen concentration in the air can be greater than normal. The highest partial pressure of oxygen at which man can breathe normally is 425 mm Hg. Higher concentrations cause oxygen poisoning. Thus, the human body can tolerate a fourfold change in oxygen content. As far as the total atmospheric pressure is concerned, the human body can tolerate even greater fluctuations: from 160 mm Hg to several atmospheres.

Nitrogen and argon are inert constituents of the air. Only oxygen participates in oxidative processes. This gave rise to the following idea: in the spaceship, we could perhaps replace nitrogen with a lighter gas, for example, helium. One cubic meter of nitrogen weighs 1.25 kg while the same volume of helium weighs

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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

only 0.18 kg, that is, seven times less. This makes quite a difference for a spaceship where each extra kilogram counts. Experiments demonstrated that man can breathe normally in an oxygen-helium atmosphere. This was verified by American aquanauts in prolonged submersions.

From the technical viewpoint, a single-gas atmosphere consisting of pure oxygen is also interesting. In American spaceships, astronauts breathe pure oxygen at a pressure of about 270 mm Hg. This requires simpler and easier instruments to control the pressure and composition of the atmosphere. However, pure oxygen has its shortcomings: fire hazard in the spaceship increases, and the prolonged inhalation of pure oxygen causes unpleasant complications in the astronauts' respiratory passages.

The normal atmosphere on earth was taken as the basis for establishing an artificial environment on the Vostok, Voskhod, and Soyuz ships. Our specialists, especially medics, insisted that the spaceships must be a miniature duplicate of earth, with characteristics as similar as possible to those surrounding man on earth. All technical advantages ensuing from a single-gas atmosphere, and oxygen-helium mixture, and other mixtures were sacrificed for the sake of the cosmonauts' full comfort.

After the cosmonauts board the ship and the compartments are locked and sealed, the composition of the atmosphere in the ship begins to change. In one hour, two

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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

cosmonauts consume about 50 liters of oxygen and produce 80-100 g of water vapor, carbon dioxide, volatile metabolites, and so on. At that time, the airconditioning system turns on and adjusts the atmosphere to the "required condition," that is, it maintains all atmospheric parameters at the optimum level.

Regeneration of the atmosphere is based on tested, effective physical and chemical processes. There are chemical substances which, upon combining with water or carbon dioxide, release oxygen. These are superoxides of the basic metals sodium, potassium, and lithium. To release 50 liters of oxygen -- the hourly requirement of two cosmonauts -- these substances must bind 26.4 g of water. As mentioned before, two cosmonauts exhale into the atmosphere 100 of water vapor per hour.

A portion of this water vapor is used to produce oxygen, another portion is left in the atmosphere to keep the relative humidity at 40-60%, and the rest is absorbed by special desiccators.

Activated carbon is used to absorb volatile metabolites and odors.

No dust, crumbs, or other debris must be present in the air. During weightlessness, these particles do not fall to the floor but freely float in the atmosphere and may enter the cosmonauts' respiratory tracts. Special filters are used to purify the air from mechanical pollutants.

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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

Thus, regeneration of the atmosphere in the ship is accomplished by fans which continuously draw air from the inhabited compartments and conduct it through various installations of the airconditioning system. There, the air is purified, its chemical composition, humidity, and temperature are restored, and then it is returned to the cosmonauts' cabin. This circulation of air goes on continuously, and the speed of circulation and effectiveness of reconditioning are constantly controlled by automatic mechanisms.

For example, when the oxygen concentration in the ship's atmosphere increases above the preset level, the control instruments notice it immediately. They send orders to appropriate equipment, and their performance level is changed to decrease the release of oxygen.

The effectiveness of the atmosphere regeneration system developed by Soviet specialists has been repeatedly tested under real space conditions.

All parameters are very close to the norms of the earth's atmosphere. This proves that the system is highly sensitive and maintains all variables within a very narrow range. The cosmonauts breathe almost the pure air of the earth.

5/5

USSR

UDC 612.886

KISLYAKOV, V. A., LEVASHOV, M. M., ORLOV, I. V., and SEMENOV, L. A.,
Laboratory of Physiology of the Vestibular Apparatus, Institute of
Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Interaction of the Semicircular Canals and Otoliths"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 41,
No 12, 1970, pp 1,731-1,744

Abstract: Experiments were performed on pigeons to study the mechanism of action of the otoliths on rotatory, galvanic, and caloric nystagmus. Centrifugal force (CF) was used to stimulate the otoliths. CF was found to exert a modifying influence on reflexes from the semicircular canals. The inhibitory or excitatory effect of centrifugal force depended on the absolute intensity of the CF and on changes in the force with time. Two different mechanisms appear to be involved: (1) in a caloric test, the direct effect of the CF on the hydrodynamics of the semicircular canals, i.e., that portion of the labyrinth associated with the origin of nystagmus; and (2) stimulation of the otolith apparatus and the indirect influence of otolithic afferentation through the central nervous system on reflexes from

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USSR

LISLYAKOV, V. A., et al, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 41, No 12, 1970, pp 1,731-1,744

the semicircular canals. While the central mechanisms are mostly involved in altering the characteristics of the rotatory and galvanic varieties of nystagmus, the hydrodynamic processes in the labyrinth are dominant in modifying caloric nystagmus.

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USSR

UDC 612.858+612.886

SEMENOV, L. A., and DOLOTOVSKIY, A. N., Laboratory of Physiology of the Vestibular Apparatus, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"The Influence of the Semicircular Canals on Otolith Reflexes"

Leningrad, Fiziologicheskiy Zhurnal SSSR, Vol 56, No 11, Nov 70, pp 1546-1553

Abstract: Pigeons were exposed to linear horizontal (0.359-0.397 G) and vertical (0.198-0.212 G) accelerations while on a four-perch swing. A caudal shift of the otoliths resulted in contraction of the m. levator coccygis, while a rostral shift resulted in contraction of the m. depressor coccygis. The reaction ceased when the swinging was slowed and the linear acceleration decreased to 0.2 G. The tonic reaction of the m. levator coccygis is thus a specific otolith reflex arising in response to a caudal shift of the otoliths. In pigeons with the semicircular canals blocked this reaction remained qualitatively unchanged but was quantitatively different from the reaction in intact birds. This fact suggests that, in the latter, afferent impulses from the semicircular canals inhibit the otolith reflex. Exclusion of the canals (through transection), however, facilitates the reflex.

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USSR

S UDC 678.674.004.14:621.397 6

SEDOV, L. N., VLADIMIROVA, Z. V., SAPOZHNIKOVA, YE. I., MAKEYEVA,
A. A., SEMENOV, L. G., MAK-MILLIN, D. M., BAKANOV, YU. A.,
DIDZHYULENE, D. I., MALKINA, F. S., and ZHLABIS, S. B.

"Polyester Hermetic-Sealing Compounds"

Moscow, Plasticheskiye Massy, No 6, 1970, pp 61-62

Abstract: The authors studied compounds for the hermetic sealing of horizontal output transformer coils for television receivers. These compounds should have low viscosity in the initial state and a high hardening rate up to 100°C. In the hardened state they should possess self-extinguishability, water resistance, good mechanical and electric insulation properties, and stability of properties up to 120°C. The principal components chosen were polyester resins PN-1 and PN-69. Because of the requirement of self-extinguishability, special additives (antimony trioxide and chlorine- or fluorine-containing polymers) were introduced into the resins. In addition, mineral fillers (talc, mica, powdered quartz, titanium dioxide, powdered silica gel, etc.) were added to give the sealing compounds

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USSR

SEDOV, L. N., et al, Plasticheskiye Massy, No 6, 1970, pp 61-62

the requisite viscosity and to lower their cost. The article gives data on the hermetic sealing process. These self-extinguishing compounds are being used for the hermetic sealing of horizontal output transformers for black-and-white (1 class) and color television sets and viewing monitors.

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USSR

UDC: 51:621.391

BERMANT, N. A., SEMENOV, L. K., SULITSKIY, V. N.

"Mathematical Models and Educational Planning"

Moscow, Matematicheskiye modeli i planirovaniye obrazovaniya
(cf. English above), "Nauka", 1972, 112 pp, ill. 34 k. (from
RZh-Kibernetika, No 10, Oct 72, abstract No 10V598 K)

[No abstract]

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Semenov, L.K.

Planning + Control sys.

PLANNING AND CONTROL IN A PERSONNEL TRAINING SYSTEM

Article by M. A. Berman, L. K. Semenov, V. M. Gullikhsiz, Moscow, V. V. Vasovskiy, Moscow, *Journal of Personnel Training*, Moscow, 1971, Monthly, English Edition, Number 1, 1971, pp 186-190

Personnel systems

201 JPRS 55352
01 MARCH 1972

GLORIA

This report is devoted to a discussion of an approach to the construction of a mathematical model of planning and control of the process of meeting the demand for specialists.

The concept of an n-dimensional space of states of the personnel system $X(t_1, t_2, \dots, t_n)$ is introduced in the report, where X_i is the number of specialists of the i-th qualification level. The dynamics of the personnel system are described by the system of difference equations

$$\dot{X}(t+1) = AX(t)$$

where $X(t)$ is the state of the system in the t-th year; $X(t+1)$ is the state of the system in the (t+1)-st year into which it will convert without external effect; $A = (a_{ij})$ is the matrix of proportions of the transition of the specialists from the i-th qualification level to the j-th level.

The demand for specialists Z years in advance is given by the vector $X^*(t)$, $Z = 0, \dots, A$. Then the control in the system for meeting the demand for specialists can be defined in the following way

$$U(t) = X^*(t+1) - AX(t)$$

The system for meeting the demand for specialists can be represented in the form of a closed control system (Figure 1). Here, the target is case 1 and 2 -- the personnel system; the servomechanism -- the US module of the system of higher and middle specialized education and retraining of the personnel; the control element -- the SDM module -- is the decision-making module. The control inputs of 1 are the number of specialists hired and dismissed. In addition, automatic control $U(t)$ is possible in the system. It consists in variation of the elements a_{ij} of the matrix A and corresponds to variation of the conditions of transition of the specialists from one qualification level to another.

USSR

UDC 577.3

SEMENOV, M. A., GASAN, A. I., and MALEYEV, V. Ya., Institute of Radiophysics and Electronics, Academy of Sciences UkSSR, Kharkov

"Study of Thermal Destruction of T₂ Phage and Its Components by Infrared Spectroscopy and Adiabatic Calorimetry"

Moscow, Doklady Akademii Nauk SSSR, Vol 198, No 6, 1971, pp 1,449-1,451

Abstract: Heating of lyophilized T₂ phage and its structural components (protein fragments and DNA) produced spectral changes at three different temperature intervals. At 48°C there was a slight increase in optical density in the region of 1620 cm⁻¹, which ceased at T = 58°C (region A). Optical density in this spectral region increased still more at T = 65°C and ended at T = 73°C (region B). Similar spectral changes occurred at these temperature intervals when a suspension of fragments was heated. Since optical density increases at 1620 cm⁻¹ with thermal denaturation of proteins, the spectral changes observed in regions A and B in the case of T₂ phage are assumed to be due to conformational changes in the protein coat. A further elevation of the temperature to 75 to 85°C (region C) resulted in spectral changes characteristic of the destruction of the secondary structure of DNA: increased absorption at frequencies of 1590, 1/2

USSR

UDC 535.853

DEM'YANOV, A. A., SEMENOV, M. G.

"Procedure for Measuring the Dielectric Parameters of Strongly Absorbing Liquids on Millimeter Waves"

Moscow, Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 143-144

Abstract: A study was made of the possibility of determining the dielectric parameters for the case where only the first peak and the first minimum are observed on shifting of the metal boundary. Matching the restriction from the air-dielectric interface permitted simplification of the method of determining the damping coefficient. The measurement error was 2-3%. The described procedure was used to measure the temperature dependence of the dielectric parameters of ethylene glycol, technical ethylene glycol and a mixture of ethylene glycol with water. The divergence of these measurements from those obtained by V. V. Levin [Zh. Struk. khimii, No 4, 766, 1970] is within the limits of the measurement error.

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Epidemiology

UDC 616.981.455-036.21(282.247.33:282.6)

USSR

SEMENOV, M. Ya., BADALOV, M. Ye., SEMENOVA, A. P., and KOYKCHIDI, Ye. K.,
Rostov oblast Sanitary Epidemiological Station

"The Existence of Local Tularemia Foci in the Don Delta"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, 1970, pp 37-40

Abstract: The building of Tsimlyansk dam on the Don River made it possible to regulate the drainage of flood water. This led to a reduction in the number of dwelling sites for *Arvicola terrestris*, a small marine rodent, and a decrease in their population. Because of this, the incidence of tularemia declined, and only 25% of the usual number of tularemia cultures were isolated in that territory. However, the flood lands on the Don delta began to be used as fish hatcheries and turned into fields surrounded by banks. This created favorable conditions for rodents' nests and new tularemia foci. An accumulation of small rodents, water rats, and *D. marginatus* ticks was noted in this region. The density of rodents is particularly great when the lands are flooded, and as a result the possibility of a reactivation of the tularemia focus in this area is not excluded. Therefore, special attention should be paid to these territories in conducting a complex program of prophylactic measures for eradication of tularemia foci.

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1/2 045 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CAVITATION RESISTANCE OF GRAPHITE MATERIALS -U-
AUTHOR--(03)-SAMOKHIN, I.N., SEMENOV, M.YE., VOLIN, V.E.
COUNTRY OF INFO--USSR
SOURCE--TSVET. METAL. 1970, 43(3), 44-5
DATE PUBLISHED-----70
SUBJECT AREAS--METHODS AND EQUIPMENT, MATERIALS
TOPIC TAGS--GRAPHITE, CAVITATION, PHYSICS LABORATORY INSTRUMENT, COKE,
COAL, ULTRASONIC TEST APPARATUS/(U)UZM45 ULTRASONIC TEST INSTRUMENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2098 STEP NO--UR/0136/70/043/003/0044/0045
CIRC ACCESSION NO--AP0125682
UNCLASSIFIED

2/2 045

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125682

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CAVITATION STABILITY WAS DETD. IN TRIPLICATE FOR 8 GRAPHITE SAMPLES (CYLINDERS 15 TIMES 5 MM.) BY USING THE MAGNETOSTRICTION VIBRATOR OF ULTRASONIC APP. UZM-45 AT 20 KHZ FOR 30 MIN WITH CONTINUOUSLY COOLED H SUB2 O. WT. LOSS WAS MEASURED AND CALCD. TO HEIGHT LOSS. THE GREATER THE HOMOGENEITY OF THE SAMPLE IN CONTENT AND NATURE OF COMPONENTS, THE GREATER IS THE CAVITATION STABILITY. THE MOST HOMOGENEOUS GRAPHITE WAS MADE FROM RAW COKE AND COAL CAKE. WITH SAMPLES OF THE SAME COMPN. THE HEIGHT LOSS DECREASED LINEARLY AS COMPRESSIVE STRENGTH INCREASED, BUT FOR DIFFERENT COMPNS. THESE LINES HAD DIFFERENT SLOPES.

UNCLASSIFIED

USSR

UDC 621.3.035.2

S
SAMOKHIN, I. N., SEMENOV, M. YE. and VOLIN, V. E.

"Resistance of Graphite Materials to Cavitation"

Moscow, Tsvetnyye Metally, No 3, Mar 70, pp 44-45

Abstract: The complex of phenomena occurring within the clearance of a friction pair and the presence of high pressure in it interfere with the assessment of the efficiency of sealing materials in liquid media with respect to resistance which is determined in dry friction and require new testing methods. The present study deals with the cavitation resistance of commercial graphite brands: AG-500 antifriction graphite with various degrees of sealing, GM2 coarse grained graphite, MG-1 fine-grained graphite, and MG-1U graphite with a high content of small fractions, EEG electroerosion graphite, and MPG-6 experimental fine-grained graphite. The tests were carried out on a magnetostriction vibrator of a UZM-45 ultrasonic unit. The resistance of graphites to cavitation was found to depend on the structural homogeneity of the material; thus, the more homogeneous in content and type of components, the higher its resistance to cavitation. MPG-6 graphite made of raw coke and coal tar pitch exhibited the highest homogeneity. The addition of natural graphite as a third component reduces its resistance.

1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CYCLOPROPENYL, AND CYCLOHEPTATRIENYLPHOSPHONIUM SALTS -U-
AUTHOR-(04)-DULENKO, V.I., SEMENOV, N.A., BARANOV, S.N., KRIVUN, S.V.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 701
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CYCLIC GROUP, ORGANIC PHOSPHORUS COMPOUND, POLYNUCLEAR
HYDROCARBON, PERCHLORATE, BROMIDE, BORON FLUORIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0885 STEP NO--UR/0079/70/040/003/0701/0701
CIRC ACCESSION NO--AP0124548
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

2/2 020

CIRC ACCESSION NO--AP0124548

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

ABSTRACT. REACTION PPH SUB3 WITH I (X EQUALS CLO SUB4, BF SUB4 OR BR) AFTER BRIEF HEATING IN A POLAR SOLVENT SUCH AS MENO SUB2, MECN, OR CHCL SUB3, GAVE 100PERCENT II. THE CHARGE TRANSFER TOWARD THE P ATOM IN II TENDS TO STABILIZE THE PERCHLORATE AND REDUCES HYGROSCOPICITY OF THE BROMIDE. USE OF THESE SALTS FOR VITTIG REACTIONS SHOULD AFFORD A ROUTE TO ALKYLIDENE DERIVS. OF CYCLOHEPTATRIENE AND CYCLOPROPENE, WHEN EITHER TROPYLIUM OR I IONS ARE USED IN THE ABOVE REACTION, RESP.

FACILITY: DONETS. OTD. INST. FIZ. KHIM. IM.

PISARZHEVSKOGO, DONETSK, USSR.

UNCLASSIFIED

USSR

UDC 539.4.015.1

DERYAGIN, B. V., Corresponding Member, Academy of Sciences, USSR, PAPLAUSKAS, A. B., RYABOV, V. A., and SEMENOV, N. I., Institute of Physical Chemistry, Academy of Sciences, USSR, Moscow

"Strengthening of Glass by the Hydrothermal Method"

Moscow, Doklady Akademii Nauk SSSR, Vol 195, No 6, 21 December 1970, pp 1326-1328

Abstract: It is shown that when glass is subjected to hydrothermal treatment under dynamic conditions, not only is the surface of the glass dissolved, but it is also greatly strengthened. Under certain conditions, strengthening by a factor of 5-6 can be obtained with retention of the optical properties of the glass, and glass with a light-diffusing surface can be obtained with strengthening by a factor of 4-5. If the optical properties of the glass need not be considered, tenfold strengthening may be obtained. This is valid only with respect to defects of the glass, abstracting from other factors. 3 figures, 5 bibliographic entries.

1/1

1/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--INTERACTION OF GLASS WITH WATER UNDER DYNAMIC HYDROTHERMAL
CONDITIONS -U-
AUTHOR--(04)-DERYAGIN, B.V., PAPLAUSKAS, A., KYABOV, V.A., SEMENOV, N.I.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(6), 1316-18
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, CHEMISTRY
TOPIC TAGS--GLASS SURFACE PROPERTY, LIQUID GLASS, WATER, FLOW RATE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1128 STEP NO--UR/0020/70/191/006/1316/1318
CIRC ACCESSION NO--AT0134814
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--L3NOV70

CIRC ACCESSION NO--AT0134814

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RATE OF GLASS REMOVAL (Δ) CHARACTERIZING THE INTERACTION OF GLASS WITH WATER UNDER DYNAMIC HYDROTHERMAL CONDITIONS IS STUDIED. AN INITIAL INCREASE IN Δ WITH TEMP. (T) IS PRACTICALLY THE SAME FOR ALL THE WATER FLOW RATES USED (3.3, 6.4, 9.1, AND 17.8 M-SEC), BUT IT SHARPLY INCREASES FROM SOME CRIT. TEMP. REACHING MAX. VALUES (Δ SUBMAX) AT T SUBMAX; FOR HIGHER FLOW RATES Δ SUBMAX IS HIGHER AND SHIFTS TOWARDS THE HIGHER TEMPS. WITH FURTHER INCREASE IN TEMP. Δ DECREASES. FOR FLOW RATES LARGER THAN 2 M-SEC THE GLASS SURFACE HAS A MAT OR SMOOTH FINISH DEPENDING ON THE TEMP. OF THE WATER FLOW; FOR FLOW RATES SMALLER THAN 1 M-SEC, THE GLASS SURFACE IS COVERED WITH THE PRODUCTS OF THE WATER GLASS COMPONENT INTERACTION RESULTING IN FORMATION OF THE LIGHT DISPERSION SURFACE.

FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

SEMENOV, N. N.

Chemical physics

WORK OF THE ACADEMY OF SCIENCES USSR IN THE AREAS OF PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

201 Oct 71

[Report of Academician N. N. Semenov, Moscow, Vostrik Akademi Nauk SSSR, Russian, Vol. 41, No 8, August 1971, pp 46-57]

I will devote my report to the problem of chemical transformation and the study of the mechanism and rates of chemical reactions.

We know well that the practical mastering of atomic energy required careful quantitative study of various elementary acts of interaction of neutrons with the nuclei of fuel, the moderator, various impurities, with metallic parts of structures, etc. Only when there was a complete understanding of how the summary nuclear process is composed of those elementary acts was it possible to achieve success.

The situation is much the same now in the development of lasers, especially chemical lasers, and the increase of their efficiency, here also it is absolutely necessary to precisely understand all the elementary acts taking place, not in the nucleus, but in the external electron shells of atoms and molecules, that is, processes in organic chemical.

In changing from nuclear and laser processes to chemical processes proper, one must bear in mind of a large number of elementary acts, the circumstances will be more difficult task. First, there is an individual's problem of chemical processes. Important to science and that are very complex, the set of possible elementary acts and their rates. In such chemical reaction is very large. At the same time, theoretical calculations and the procedures of experiments in comparison with the elementary reactions of active particles (free radicals and excited particles and ions) respectively.

The first large step in this direction was done 40-50 years ago and it pleases me to indicate the role of V. N. Kondrat'yev as

1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--COLORING OF MOLTEN GLASS -U-
AUTHOR--(05)--SEMENOV, N.N., AZAROVA, YE.M., PLAKSINA, A.M., TIMOSHENKO,
I.V., GOROKHOVSKIY, V.A.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 267,025
REFERENCE--OTKRYTIYA, IZOBRET., PROM. CBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CHEMICAL PATENT, OPTIC PROPERTY, GLASS PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/1802 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0132066
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0132068

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MOLTEN GLASS WAS MIXED WITH A METAL OR ALLOY MELT (INERT IN RELATION TO THE GLASS) HAVING A DIFFERENT D., AND CONTG. AN ADDITIVE OF METALS, THE IONS OF WHICH COLOR THE GLASS. FACILITY: SARATOV STATE SCIENTIFIC RESEARCH INSTITUTE OF GLASS.

UNCLASSIFIED

1/2 - 041 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--CORROSION OF ALUMINUM SHAVINGS DURING STORAGE -U-
AUTHOR--(02)-SEMENOV, N.P., BAZILEVSKIY, V.M.
COUNTRY OF INFO--USSR
SOURCE--TR., GOS. NAUCH.-ISSLED. PROEKT. INST. SPLAVOV OBRAB. TSVET. METAL
1970, NO. 31, 43-50
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--X RAY ANALYSIS, ALUMINUM, CORROSION RATE, PROTECTIVE COATING,
COPPER COMPOUND, ALUMINUM OXIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/0591 STEP NO--UR/0000/70/000/031/0043/0050
CIRC ACCESSION NO--AT0134356
UNCLASSIFIED

2/2 041

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0134356

ABSTRACT/EXTRACT--(U) GP-D- ABSTRACT. SHAVINGS OF AL ALLOYS CONTG. CU
1.32 AND 6.55PERCENT WERE STORED FOR 1 YR OUT OF DOORS AS WELL AS INISDE
CLOSED COMPARTMENTS. SAMPLINGS WERE MADE EVERY MONTH; THE AMT. OF
UNOXIDIZED METAL WAS DETD. BY THE METHOD OF MELTING. THE RESULTS
SHOWED THAT THE WT. LOSSES OF METAL OWING TO OXION. WERE ABOUT 2.7 AND
1.5PERCENT A MONTH FOR THE OUT OF DOOR AND COMPARTMENT STORAGE, RESP.,
AND INCREASED DIRECTLY PROPORTIONATE TO THE STORAGE TIME. NO
RETARDATION OF THE CORROSION WITH TIME WAS OBSD. X RAY ANAL. OF THE
PROTECTIVE OXIDE LAYER ON THE METAL SURFACE SHOWED THAT IT WAS DUE TO
ITS INSUFFICIENT HOMOGENEITY AND FRIABILITY. THE SURFACE LAYER
CONSISTED MAINLY OF AL(OH) SUB3. THE ALLOYS CONTG. AN INCREASED AMT. OF
CU SHOWED LESS CORROSION RESISTANCE OWING TO THE INTERCRYST. CORROSION
CAUSED BY THE INTERMETALLIC CUAL SUB2 COMPD. PPTD. AT THE GRAIN
BOUNDARIES.

UNCLASSIFIED

1/2 037 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MICRO ARC TYPE OPERATION OF THE ELECTRODES OF A MAGNETOHYDRODYNAMIC
GENERATOR -U-
AUTHOR--(04)-ZALKIND, V.I., KIRILLOV, V.V., LARIONOV, YU.A., SEMENOV, N.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. MEKH. TEKH. FIZ.; NO. 1, 130-4(JAN-FEB 1970)
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRODE, MAGNETOHYDRODYNAMICS, ELECTRIC ARC, ARC DISCHARGE,
SILICON CARBIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0114 STEP NO--UR/0207/70/000/001/0130/0134
CIRC ACCESSION NO--AP0127740
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127740

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPERATION OF THE ELECTRODES OF A MAGNETOHYDRODYNAMIC GENERATOR WAS INVESTIGATED AT RELATIVELY HIGH CURRENT DENSITIES, USING METALLIC AND SILICON CARBIDE ELECTRODES. IT WAS FOUND THAT, IN CASE OF OPERATION AT HIGH CURRENT DENSITIES, MICRO ARCS ARE FORMED AT THE ELECTRODE SURFACE. THE BOUNDARY BETWEEN THE ELECTRODE AND THE INSULATOR, WHERE POTASSIUM COMPOUNDS ARE DEPOSITED ON THE ELECTRODE SURFACE, WAS FOUND TO EXERT A STRONG INFLUENCE ON THE BEHAVIOR OF THE ARCS, WHICH ARE CONSIDERED AS BEING RESPONSIBLE FOR THE ELECTRO EROSION OF THE ELECTRODE. SUCH MICRO ARCS APPEARED ON METALLIC CATHODES AT CURRENTS OF 5 TO 6 A WITH AN ELECTRODE SURFACE OF 11 CM PRIME2 UNDER CONDITIONS CLOSE TO SHORT CIRCUIT. THE DAMAGING BURNING OF ARCS BETWEEN THE ELECTRODE AND INSULATOR MAY BE PREVENTED BY IMPROVED DESIGN.

UNCLASSIFIED

172 023 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PRESENCE OF CRITICAL MIXING TEMPERATURES DETERMINED FROM DATA ON
THE TEMPERATURE DEPENDENCE OF THE INTRINSIC VISCOSITY OF
AUTHOR--(04)-KHODZHEVANOV, F.F., NAMETKIN, N.S., DURGARYAN, S.G., SEMENOV,
D.B.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 283-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--THERMAL EFFECT, MATERIAL MIXING, CYCLOHEXANE, SILANE,
CHLORINATED ORGANIC COMPOUND, DEOXYRIBONUCLEIC ACID, PHOSPHATE ESTER,
MOLECULAR STRUCTURE, FLUID VISCOSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1356 STEP NO--UR/0062/70/000/002/0283/0289
CIRC ACCESSION NO--AP0135030
UNCLASSIFIED

2/2 023
CIRC ACCESSION NO--AP0135030
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. INTRINSIC VISCOSITIES AND THEIR
TEMP. COEFFS. WERE DETD. FOR POLY(VINYLTRIMETHYLSILANE) IN
DECAHYDRONAPHTHALIENE, CYCLOHEXANE, 1,2,4,ME SUB3 C SUB6 H SUB3, CHCL
SUB3, C SUB6 H SUB6, AND ME SUB3 SICH:CH SUB2. VISCOSITY VARIATIONS OF
THE POLYMER (PREPD. WITH ETLI CATALYST) WERE INTERPRETABLE BY THE
PATTERSON-TAGER THEORY ON THE BASIS OF EXISTENCE OF UPPER AND LOWER
CRITICAL TEMPS. OF MIXING FOR THE POLYMER SOLVENT COMPONENTS. A SIMILAR
ANAL. OF VISCOSITY IN SOLNS. OF DNA AND DEOXYRIBONUCLEOPROTEIN (DNP) WAS
MADE. DNP SOLN. SHOWED AN ANOMALOUS 3 FOLD RISE IN VISCOSITY PRIOR TO
CHANGE OF THE SPIRAL FORM TO THE SPHERICAL ONE, EITHER CAUSED BY
DISSOCIATION OF THE PROTEIN FROM THE DNA AND INCREASED ASYMMETRY
REFLECTING THE CONFORMATION CHANGE, OR PERHAPS AS A RESULT OF CHANGE IN
THE SUPRAMOLECULAR STRUCTURE OF DNP. FACILITY: INST. NEFTEKHIM.
SIN. IM. TOPCHIEVA, MOSCOW, USSR.

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