USSR UDC 77

BELOUS, V. V.

"Luminescence Studies of Photographic Emulsions"

V sb. Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. Chuvstvitel'nosti (International Congress on Photographic Science, Moscow, 1970, Nature of Photographic Sensitivity -- Collection of Works), no place of publication given, Vneshtorgizdat, no year given, pp 83-86 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1317)

Translation: Green and orange bands in the photoluminescence spectrum of AgBr(I) emulsions and salts at 77°K are caused, according to the author, by the recombination of free holes and localized electrons. It is shown that the centers of this photoluminescence have an Ag-nature, and therefore the relationship of the intensities of the bands I_{or}/I_{gr} at different stages of preparing the emulsions characterizes the concentrations of certain centers forming in microcrystals and fully or partially determining their photographic sensitivity (S). In $AgBr \cdot Ag_2S$ single crystals the orange band gives a flash of photoluminescence under IR

1/2

USSR

BELOUS, V. M., Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. chuvstvitel'nosti, no place of publication given, Vneshtorgizdat, no year given, pp 83-86

illumination, due to the presence of Ag_2S complexes; low-sensitivity emulsions and salts do not produce this and behave the same under sulfurous and reducing sensitization; i.e., Ag-centers not Ag_2S-centers, are formed in both cases. During chemical maturing of low-sensitivity emulsions the change in S and I_{or}/I_{gr} is the same: i.e., S as a whole is determined by the Ag-centers that form; there is not this correlation for high-sensitivity emulsions, apparently due to complication of the picture by the presence of fog centers, etc. High-sensitivity AgBr(I)-emulsions sometimes give a photoluminescence flash probably as a result of the rise of Ag_2S-complexes in them or the yield of AgBr into a separate phase. 10 references. A. L. Kartuzhanskiy.

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USSR UDC 535.37.541.77

BELOUS, V. M., MEL'NICHUK, L. P., ORLOVSKAYA, N. A., and CHIBISOV, K. V., Odessa Construction Engineering Institute, Odessa, Ministry of Higher and Secondary Specialized Education Ukrainian SSR; Corresponding Member of the Academy, Moscow State University imeni M. V. Lomonosov, Moscow, Ministry of Higher and Secondary Specialized Education USSR

"Mechanism of the Formation of Photographic Sensitivity of Bromoiodosilver Emulsions as Investigated by the Luminescence Method"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 5, Aug 70, pp 1086-1089

Abstract: Data are reported on the study of luminescent and photographic properties of AgBr(I) subjected to the action of a solution of hydrazine chloride and thiourea. The results obtained showed that the ratio of I_2/I_1 -- intensity at a selected band to the maximum in the green band from the range of orange-red luminescence -- increases after treatment with solutions of thiourea and hydrazine chloride, indicating that in case of sulfur sensitation silver centers may form similar to those forming during reductive sensitation. The digestive action of thiourea is also very important in this process. The increase in light sensitivity of the investigated materials is accom-

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BELOUS, V. N., et al, Doklady Akademii Nauk SSSR, Vol 193, No 5, Aug 70, pp 1086-1089

panied by an increase in the I_2/I_1 ratio. On the other hand, appearance of silver sulfide microcrystals on the surface of AgBr(I) results in a lowered I_2/I_1, meaning that the light sensitivity is principally predetermined by the atom-molecular dispersed silver centers, a portion of which is responsible for the orange-red band in the luminescence at low temperature. This principally holds for low sensitivity emulsions; highly sensitive emulsions did exhibit a flash of orange-red luminescence in some cases, and the reason for this is still unknown. It is proposed that the center of green luminescence of the microcrystals consists of an iodide ion and some kind of a defect. The energy resulting from the recombination of the free hole and the electron localized on the defect is transmitted to the iodide ion, and excites it.

Luminescence

USSR B UDC 548.0:539.21

MARINCHIK, V. P., BELOUS, V. M., and BUGRIYENKO, V. I., Odessa Polytechnical Institute, Odessa, Ministry of Higher and Secondary Specialized Education RSFSR

"Temperature Effect on the Luminescence and Photoelectric State of Silver Halides"

Moscow, Kristallografiya, Vol 14, No 6, 69, pp 1016-1020

Abstract: The study of charge carrier capture centers in silver halides is essential for determining the mechanism of photochemical coloring and the formation of a hidden photographic image. Attempts have been made to solve these problems by various methods including that of thermally stimulated conductance (TSC). In this paper measurement results of the temperature extinction of luminescence and flash under the effect of infrared light of the blue AgCl band, green AgBr band and orange-red AgBr quenched crystals are compared with thermally stimulated conductance of the same crystals in the electric field of a space charge within 80 - 250°K. Proof is given of the ionic mechanism of the optical flash and luminescence temperature extinction. The thermionic nature of TSC maxima at 120°K and

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MARINCHIK, V. P., et al, Moscow, Kristallografiya, Vol 14, No 6, 69, pp 1016-1020

$\sim$180°K was established. Analysis of the TSC curves yielded activation energies (0.11 -- 0.13 ev) and (0.34 -- 0.36 ev) which correspond to dislocation processes of internodal silver ions and cation vacancies in crystals. A satisfactory agreement was observed between values of the preexponential factors and temperature dependence of ionic conductivity which were determined by electric and luminescence methods.

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1/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--THERMOELECTRET STATE IN SILVER HALIDES -U-

AUTHOR-(03)-BUGRIYENKO, V.I., MARINCHIK, V.K., BELOUS, V.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1) 46-50

DATE PUBLISHED-------70

B

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--THERMAL EFFECT, SILVER COMPOUND, IODIDE, BROMIDE, CHLORIDE, THERMOELECTRIC PHENOMENON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/0237 STEP NO--UR/0181/70/012/001/0046/0050

CIRC ACCESSION NO--AP0048516

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0048516

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COOLING OF SINGLE CRYST. AGCL, AGCL(I), AGBR, AND AGBR(I) DOWN TO 77DEGREESK IN AN EXTERNAL ELEC. FIELD LEADS TO THE APPEARANCE OF A THERMOELECTRET STATE RELATED TO THE SHIFT OF INTERSTITIAL AG IONS. HEATING OF OVER POLARIZED SPECIMENS IS ACCOMPANIED BY THE APPEARANCE AT 120-135DEGREESK OF A MAX. OF THERMALLY DEPOLARIZED CURRENT. FORMULAS ARE DEVELOPED WHICH ALLOW DETN. IN TERMS OF THE EXPTL. RESULTS, OF THE BASIC PARAMETERS WHICH CHARACTERIZE THE TEMP. DEPENDENCE OF IONIC ELEC. COND.

1/2 043 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--FLASH IGNITION OF THE LUMINESCENCE OF SILVER HALIDE PHOSPHORS -U-

AUTHOR-(03)-ORLOVSKAYA, N.A., BELOUS, V.M., GOLUB, S.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK, 1970, 12(3), 460-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL PHOSPHOR, SILVER COMPOUND, HALIDE, LUMINESCENCE CENTER, IR RADIATION, EXCITATION ENERGY, SINGLE CRYSTAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1490 STEP NO--UR/0368/70/012/003/0460/0466

CIRC ACCESSION NO--AP0118477

UNCLASSIFIED

2/2 043 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0118477

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LUMINESCENT PROPERTIES WERE STUDIED AT AGBR, AGBR(I), AND AGCL,MN SINGLE CRYSTALS BY USING THE FLASH IGNITION OF LUMINESCENCE STIMULATED BY IR RADIATION. THE FLASH IGNITION IS OBSD. ONLY AT THE LUMINESCENT BANDS GENERATION OF WHICH RESULTS FROM RECOMBINATION OF FREE ELECTRONS ON LOCALIZED HOLES. BOTH KINETICS AND MICROSTRUCTURE OF LUMINESCENCE CNETERS IN MN ACTIVATED AGCL SINGLE CRYSTALS ARE DISCUSSED IN DETAIL.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--DEPENDENCE OF THE TEMPERATURE QUENCHING OF THE LUMINESCENCE OF PHOTOEMULSION LAYERS ON EXCITATION DENSITY, AND ITS CONNECTION WITH THE

AUTHOR-(04)-BELOUS, V.M., KARTUZHANSKIY, A.L., MATVIENKO, V.I., SHUR, L.I.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 311-16

DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT

TOPIC TAGS--LUMINESCENCE QUENCHING, SILVER COMPOUND, NUCLEAR EMULSION, ELECTRON CAPTURE, PHOTOSENSITIVITY, LOW TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1469 STEP NO--UR/0051/70/028/002/0311/0316

CIRC ACCESSION NO--AP0118458

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118458

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TEMP. QUENCHING OF THE GREEN LUMINESCENCE OF A NO. OF NUCLEAR EMULSIONS WAS STUDIED. WITH DECREASING EXCITATION D., THE QUENCHING REGION IS SHIFTED TO LOWER TEMPS. AT A FIXED TEMP., AN INVERSE PROPORTIONALITY BETWEEN THE LUMINESCENCE INTENSITY AND IONIC COND. OF THE EMULSION MICROCRYSTALS EXISTS. THE ACTIVATION ENERGY FOR THE LUMINESCENCE QUENCHING IS 0.12 PLUS OR MINUS 0.02 EV. THE IONIC MECHANISM OF LUMINESCENCE QUENCHING OF THE AG(BR, I) PHOTOEMULSION MICROCRYSTALS WAS CONFIRMED. THE CAPTURE CENTERS FORMED IN THE PRESENCE OF L,PHENYL,5,MERCAPTOTETRAZOLE (I), ARE NOT VACANCIES; THEY ARE PROBABLY CONNECTED WITH A I-AG PRIME POSITIVE COMPLEX AND WORK AS ELECTRON TRAPS. TEMP. DEPENDENCE OF THE SENSITIVITY OF THE SAME PHOTOEMULSIONS TO THE ALPHA AND BETA PARTICLES WAS MEASURED. AT SMALLER THAN 77DEGREESK, A PECULAIR INVERSION TAKES PLACE; THE SENSITIVITY TO THE WEAKLY IONIZING PARTICLES IS GREATER THAN THE SENSITIVITY TO THE STRONGLY IONIZING PARTICLES WHILE AT NORMAL TEMPS. THIS RELATIONSHIP IS JUST THE OPPOSITE. IN THE PRESENCE OF I, ADDNL. SHALLOW LEVELS OF THE ELECTRON CAPTURE OCCUR. DURING A SUBSEQUENT HEATING OF THE EMULSION BEFORE DEVELOPING, ELECTRONS CAN FREE THEMSELVES THERMALLY FROM THESE LEVELS AND CAN PASS NOT ONLY TO THE RADIATION RECOMBINATION LEVELS BUT ALSO TO DEEPER LEVELS WHICH DET. THE PHOTOGRAPHIC SENSITIVITY.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--THERMOELECTRET STATE OF PHOTOEMULSION LAYERS -U-

AUTHOR-(03)-MARINCHIK, V.K., BUGRIYENKO, V.L., BELOUS, V.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. NAUCH. PRIKL. FOTOGR. KINEMATOGR. 1970, 15(2), 151-3

DATE PUBLISHED--------70

SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS

TOPIC TAGS--PHOTOGRAPHIC EMULSION, THERMAL EFFECT, ELECTRET, LUMINESCENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1721 STEP NO--UR/0077/70/015/002/0151/0153

CIRC ACCESSION NO--AP0118699

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118699

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LAYERS OF NUCLEAR (YA 2 TYPE) AND OPTICAL AG(I, BR) EMULSIONS WITH A THICKNESS OF 50 MU WERE TESTED. THE THERMOELECTRET STATE WAS GENERATED BY APPLYING AN EXTERNAL VOLTAGE OF 1 KV AND SLOW COOLING OF THE SAMPLE TO THE TEMP. OF LIP. N. THEN THE FIELD WAS SWITCHED OFF AND TEMP. ROSE SLOWLY. THEN THE FIELD WAS SWITCHED OFF AND TEMPERATURE ROSE SLOWLY. THE DISCHARGE CURRENT WAS RECORDED WITH AN ELECTROMETRIC INTENSIFIER. A COMPLEX DEPENDENCE OF I ON T WAS FOUND. THE CHANGE IN THE DISCHARGE CURRENT WITH TEMP. IS INFLUENCED NOT ONLY BY THE PROCESSES TAKING PLACE IN THE EMULSION MICROCRYSTALS BUT ALSO BY THE ORDERING OF THE DIPOLE TEXTURE CREATED IN GELATINE. THE MAX. OF THE THERMODEPOLARIZATION CURRENT OBSD. AT 110 AND 170DEGREESK BELONG TO THE AG HALIDE MICROCRYSTALS AND ARE DUE TO THE SHIFT IN THE INTERSTITIAL AG IONS (PEAK AT 110DEGREESK) AND THE CATION VACANCIES (PEAK AT 170DEGREESK). THESE PEAKS ARE MOST CLEARLY VISIBLE IN THE NUCLEAR EMULSION BECAUSE THE AG HALIDE CONCN. IN IT IS MUCH HIGHER. THE MAX. OF THE THERMIONIC CURRENT AT THE SAME TEMPS. AT WHICH AN INTENSIVE DAMPING OF THE GREEN AND ORANGE RED LUMINESCENCE BANDS OF THE MICROCRYSTALS IS OBSD. ALSO SHOWS THAT THE DEPENDENCE OF THE LEVEL OF LUMINESCENCE OF THE BANDS ON TEMP. IS DETD. BY IONIC PROCESSES.

FACILITY: ODESS. GOS. UNIV., ODESSA, USSR.

UNCLASSIFIED

USSR

B

UDC 621.039.553.36:620.193.47.4

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GERASIMOV, V. V., GROMOVA, A. I., LUPAKOV, I. S., MOROZOVA, I. K., BAKULEVSKIY, A. A., BELOUS, V. N., and KOLESOV, B. I.

"Corrosion and Electrochemical Behavior of Carbon Steels Under Quasi-reactor Conditions"

Moscow, Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 13-18

Abstract: The article describes results of a study of the corrosion and electrochemical behavior of steels of the perlitic class in water at 300° C at various oxygen concentrations (0.02-40 and 1000 mg/kg) at pH = 7-10, as well as a study of the effect of reactor irradiation on the corrosion processes of perlitic steels. The corrosion and electrochemical tests were staged under static and dynamic conditions. The perlitic steels studied included St. 20 (C 0.17%; Cr 0.25%; Ni 0.25%; Mn 0.35%; Si 0.17%) ; 12KhM (C 0.12%; Cr 0.94%; Mn 0.59%; Si 0.3%; Mo 0.4%); and 16GNM (C 0.18%; Ni 1.41%; Mn 1.18%; Si 0.23%; Mo 0.26%). Specimens of stainless steel Kh18N10T (C 0.08%; Cr 17÷19%; Ni 9÷11%; Mn 1.2%; Si 0.8%; Ti 0.6%) were comparison-tested.

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GERASIMOV, V. V., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 13-18

It was found that in demineralized water at 300° C an increase in the oxygen concentration from 0.02 to 40 mg/l increases the corrosion rate of perlitic steels, with pitting corrosion developing with a pit depth of up to 0.1 mm. In oxygen-containing water under static conditions a complex dependence of anodic process rate on potential is observed in steels of the perlitic class. In demineralized deaerated water an increase in the pH to 10 (by introducing ammonia) results in a decrease in the corrosion rate, with no development of pitting corrosion being observed. Irradiation reduces the corrosion resistance of the steels during the initial testing period. The corrosion rate under irradiation decreases with an increase in exposure time, and after 3500 hours of tests the corrosion rate for the perlitic steels is practically the same with or without irradiation.

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BELOUS V.N.

Acc. Nr: AP0042127 Abstracting Service: NUCLEAR SCI. ABST. 4-70 Ref. Code: UR0089

12371 CORROSION AND ELECTROCHEMICAL BEHAVIOR OF CARBON STEELS UNDER CONDITIONS SIMILAR TO THOSE IN REACTOR OPERATION. Gerasimov, V. V.; Gromova, A. I.; Lupakov, I. S.; Morozova, I. K.; Bakulevskii, A. A.; Belous, V. N.; Kolesov, B. I. At. Energ. (USSR); 28: 13-18(Jan 1970). (In Russian).

The corrosion and electrochemical behavior of carbon steels was studied in water at 300°C with oxygen concentrations equal to 0.02 to 40 and 1000 ppM. The samples of carbon steels, irradiated in the reactor and non-irradiated samples were tested under static and dynamic conditions. The increase of oxygen concentration in water intensified corrosion of carbon steels. Irradiation reduced steel corrosion resistance during the initial test period. (auth)

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REEL/FRAME
19760028

18

USSR B

BELOUS, V. V., KOSTIN, V. N. (Khar'kov State University)

"Investigation of the Development of a High-Voltage Pulsed Discharge in Long Tubes at the Shaping Stage"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, August, 1970, pp 128-33

ABSTRACT: On the basis of an analysis of oscillograms, voltage and photometric, for pulsed discharges in long tubes (d = 60-132 cm) in hydrogen it is shown that with an increase in pressure from 0.4 to 5 mm Hg and a decrease of the overvoltage from 290% to 90% the "step" current I_{st} decreases and the times t_p, t_{st}, and t_ϕ, characterizing the shaping stage, increase. This makes it possible to assume that a "step" is formed as the result of the transition of an avalanche-streamer maximum at the beginning of the shaping stage to a cathode-directed streamer. In the experiments discussed pd ~ 300 mm Hg·cm, corresponding to this transitional discharge mechanism.

The article includes 4 figures and 2 tables. There are 6 references.

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USSR

UDC: 669.15'26'24'28'3-194:669'14.018.821

PETROVA, V. S., FROLOV, A. V., RATNAKOV, V. P., FILIMONOVA, L. A., BELOUS, V. Ya., NIKISHOV, A. S., BONDAREV, V. V., PODOL'SKIY, M. L.

"Stainless Steel"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, Apr 72, Author's Certificate No 334273, Division C, filed 2 Sep 68, published 30 Mar 72, p 104

Translation: This Author's Certificate introduces: 1. A stainless steel which contains carbon, chromium, nickel, molybdenum, copper and iron. As a distinguishing feature of the patent, mechanical properties are improved by taking the components in the following proportions in percent: carbon--0.03-0.1; chromium--10.05-11.9; nickel--3.3-4.0; molybdenum--2.3-3.0; copper--1.0-2.0; manganese--less than 0.6; silicon--less than 0.8; the remainder iron; and 2. a modification of this steel distinguished by the fact that the chromium:nickel ratio is 2.8-3.8.

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USSR

UDC: 532.516.2

BELOUSOV, A. I., GRANIN, S. S.

"Effect of the Forces of Inertia of the Fluid on the Characteristics of a Hydrostatic Thrust Bearing"

Tr. Kuybyshev. aviats. in-t (Works of the Kuybyshev Aviation Institute), 1971, vyp. 35, pp 48-52 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9B788)

Translation: The authors investigate the effect of shaft rotation on the distribution of pressures in axisymmetric flow of an incompressible lubricant in an annular gap of fixed thickness in a hydrostatic thrust bearing fed through a central pocket. The thin-layer equations

$$\rho v \frac{\partial v}{\partial r} - \rho \frac{u^2}{r} = -\frac{\partial p}{\partial r} + \mu \frac{\partial^2 v}{\partial y^2}$$

$$\frac{\partial^2 u}{\partial y^2} = 0$$

$$\frac{1}{r} \frac{\partial}{\partial r} (rv) + \frac{\partial w}{\partial y} = 0$$

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USSR

BELOUSOV, A. I., GRANIN, S. S., Tr. Kuybyshev. aviats. in-t, 1971, vyp. 35, pp 48-52

are taken as the initial equations, where ρ is density, p is pressure, u, v and w are the radial, tangential and transverse components of velocity respectively, μ is the coefficient of viscosity, and r and y are cylindrical coordinates. It is assumed that the temperature is a linear function of radius, and that the viscosity is inversely proportional to temperature. When the equations are integrated under sticking conditions, the term $\rho v \partial v/\partial r$ is averaged over the thickness of the layer and expressed in terms of flowrate. Formulas are found for the distribution of pressures and for lifting capacity. Two numerical examples are given which show the appreciable influence of inertial forces of the lubricant on the lifting capacities of the bearing; under certain conditions the bearing may lose lifting capacity. A. I. Snopov.

USSR UDC 621.385.032.21 (088.8)

SAVITSKIY, YE. M., MOROZOV, A. V., IVANOVA, K. N., BELOUSOV, A. I., BARON, V. V., ROZHDESTVENSKIY, V. M., OVCHINNIKOV, M. A.

"Alloy For The Production Of Components Of The Cathode Unit Of Electronic Devices"

USSR Author's Certificate No. 304642, filed 14 August 1969, published 15 September 1971 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A49)

Translation: A cathode-heating unit is proposed by which, with the object of increasing the stability, reliability, and longevity of a component, the cathode holder, screens, and pistons are produced from RN-6 or RN-8 alloys based on niobium. The RN-6 alloy contains (percent by weight): tungsten 5-7, molybdenum 4-6, zirconium 2-2.5, remainder niobium. The cost of the proposed alloy is considerably less than the cost of tantalum. The alloys are characterized by highly stable properties and sufficient plasticity, which makes it possible to produce tubes, wire, sheets, and foil 1-0.1 mm thick, from them under industrial conditions by the method of processing various semifinished products by pressure. Use of the electron-beam method of smelting considerably reduces the content of gaseous impurities, and a three-fold remelting is used for a more uniform composition of ingots. Sheets 0.5--0.1 mm thick are obtained by the hot forging method and cold rolling with intermediate recrystallization annealings.
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USSR

UDC 621.385.032.213.6

SAVITSKIY, YE. M., MOROZOV, A. V., IVANOVA, K. N., BELOUSOV, A. I., BARON, V. V., ROZHDESTVENSKIY, V. M., OVCHINNIKOV, M. A.

"Alloy for Manufacturing the Parts of the Cathode Junction of Electronic Devices"

USSR Author's Certificate No 304642, filed 14 August 1969, published 25 May 1971 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1971, No H 01j 1/20)

Translation: 1. An alloy for manufacturing the parts of the cathode junction of electronic devices based on niobium is introduced. It is distinguished by the fact that in order to improve strength and stability of shape of the parts, the alloy contains tungsten and zirconium additives.

2. The alloy according to item 1 distinguished by the fact that it contains 7-9% tungsten and 2-2.5% zirconium is introduced.

3. The alloy according to item 1 distinguished by the fact that it contains molybdenum is introduced.

4. The alloy according to item 3 distinguished by the fact that it contains 5-7% tungsten, 1-1.5% zirconium and 4-6% molybdenum is introduced.

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USSR

BELOUSOV, A. I., MAKUSHIN, A. B., GRANIN, S. S., RAVICH, A. V.

"Experimental Study of Flow Characteristics of Dual Radial Hydrostatic Bearing with Self Choking"

Tr. Kuybyshev. Aviats. In-t [Works of Kuybyshev Institute of Aviation], 1972, No 51, pp 99-115 (Translated from Referativnyy Zhurnal Mekhanika, No 5, 1973, Abstract No 5B709, by A. I. Snopov).

Translation: A description and experimental results are produced of a study for determination of the flow rate in a dual hydrostatic bearing with self choking. The bearing has pockets on the shaft, with oil fed into the pockets through apertures in the bushing from a common circular chamber. The apertures are covered with a cylindrical sleeve, rigidly connected to the shaft so that the oil, before entering the feed holes, flows through a circular slit of variable thickness, depending on the displacement of the shaft. The case of symmetrical two-row feed with four chambers per row (dual bearing) is studied. The length of each working portion of the bearing is 55 mm, the shaft diameter is 50 mm. Assuming that the flow rate depends little on eccentricity, tests were performed for the case when the shaft touches the bushing ($\varepsilon = 1$). The

USSR

Belousov, A. I., Makushin, A. B., Granin, S. S., Ravich, A. V., Tr. Kuybyshev. Aviats. In-t, 1972, No 51, pp 99-115.

pressure was varied from 0 to 2 kg/cm^2. The properties of the oil are not indicated.

Twelve graphs are presented of the dependence of oil flow rate through each end and the summary flow rate as functions of the distance from the pockets to the end, as well as 8 graphs of the dependence of these flow rates on feed pressure for various shaft positions. A significant divergence is noted between theoretical and experimental data on flow rate for each end, and good (within 10%) agreement is noted for summary flow.

Also, certain results of static testing of an individual bearing with self choking with shaft diameter 150 mm are presented, including 5 graphs of loading and flow rate characteristics, the dependences of pressure in the end gap at the exit from the bearing on fluid feed pressure at the input, which reached 100 kg/cm^2.

2/2

USSR

GORYUNOV, L. V., BELOUSOV, A. I.

"Influence of Variable Gap Height and End Leakage on Distribution of Pressure in a Radial Hydrostatic Bearing"

Tr. Kuybyshev. Aviats. In-t [Works of Buybyshev Institute of Aviation], 1972, No 51, 116-124 (Translated from Referativnyy Zhurnal Mekhanika, No 5, 1973, Abstract No 5B710, by A. I. Golubev).

Translation: The flow of viscous incompressible fluid in the cross connections between chambers of hydrostatic radial bearings was studied. Curves of the dependence of load-bearing ability of bearings on eccentricity, gap width and bearing design parameters are presented. The curves have maxima at certain values of design parameter. It is established that the width of the chambers significantly influences the load-bearing capacity of the bearing. Isobars of liquid pressure distribution on the connecting gaps are presented with rectangular and I-shaped chambers, determined by the EHDA method. The load-bearing capacity of the bearing is greater with the I-shaped chamber. 7 biblio. refs.

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USSR

UDC 62-567.2

BELOUSOV, A. I., CHEGODAYEV, D. YE., and NESOLENOV, G. F., Kuybyshev Order of the Labor Red Banner Aviation Institute imeni S. P. Korolev

"Bilateral Hydrostatic Bearing"

USSR Author's Certificate No 366286, Filed 9 Jun 70, Published 16 Jan 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar(a) 73, Claim No 1445447/25-28)

Translation: A bilateral hydrostatic bearing containing a cylindrical pivot with a ring-shaped section, forming a ring-shaped central chamber in the pivot, with a radial-throttling aperture, two ring bands with scrolls, in one of which an axial aperture is formed for delivery of the working medium, distinguished by the fact that in order to improve the shock-absorbing properties of a socket, the front parts which penetrate the scroll band rings, forming with each of them a supporting chamber and two concentric ring-shaped apertures, serving as delivery and outlet of the working medium for the chamber.

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USSR

UDC: 629.78.018.3

BELOUSOV, A.I., MAKUSHIN, A.B., GRANIN, S.S. and RAVICH, A.V.

"Experimental Investigation of Flow Rate Characteristic of Coupled Radial Selfthrottling Hydrostatic Bearing"

Kuybyshev, Tr. Kuybyshev. Aviats. In-ta (Transactions of Kuybyshev Aviation Institute), 1972, vyp 51, pp 99-115 (from Referativnyy Zhurnal-Raketostroyeniye, 1973, Abstract No 4.41.264 by T.A.E.).

Translation: Hydrostatic bearings can support heavy loads without rotation of the shaft. However, this involves a relatively high rate of flow through the bearing, increases operating cost of high-power units and reduces their efficiency. With some designs high losses of liquid cannot be tolerated. In such cases the hydrostatic support functions as a bearing and as a seal. At this time, designs of low-flow hydrostatic bearings have been developed. One of such designs is the selfthrottling radial hydrostatic bearing. Investigation results are presented of flow-rate characteristic of a coupled selfthrottling bearing consisting of a block of bearings with a common supply of liquid. 15 illustrations. 1 reference.
1/1

EQUIPMENT
Aeronautical

USSR

UDC: 621.822.5

BELOUSOV, A. I., RZHEVSKIY, V. P., KASHIN, B. M., RUBINCHIK, Yu. G., Kuybyshev "Order of the Red Banner of Labor" Aviation Institute imeni Academician S. P. Korolev

"A Throttle for a Hydrostatic Bearing"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5, Feb 73, Author's Certificate No 364773, Division F, filed 18 Dec 70, published 28 Dec 72, p 107

Translation: This Author's Certificate introduces a throttle for a hydrostatic bearing. The device contains an insert of MR porous material accommodated in a housing. As a distinguishing feature of the patent, provision is made for regulating hydraulic characteristics and improving operational properties. The throttle is equipped with a control device made in the form of a washer with channels for passage of lubricant which rests on the porous insert and is compressed by a nut mounted in the housing.

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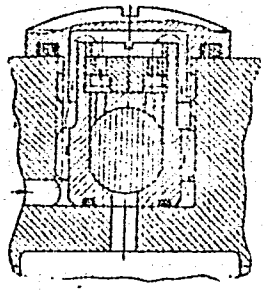
USSR

BELOUSOV, A. I. et al., USSR Author's Certificate No 364773



2/2

1/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ACTIVITY OF SOME SERUM ENZYMES IN TREATING PATIENTS WITH PULMONARY CANCER WITH MASSIVE DOSES OF CYCLOPHOSPHANE -U-

AUTHOR-(03)-ZELVIN, B.M., BELOUSOV, A.P., BATINOV, I.N.

B

COUNTRY OF INFO--USSR

SOURCE--VOP. ONKOL. 1970, 16(2), 26-9

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PULMONARY DISEASE, CANCER, ANTINEOPLASTIC DRUG, ORGANIC PHOSPHORUS COMPOUND, CELL PHYSIOLOGY, ENZYME ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/2041 STEP NO--UR/0506/70/016/002/0026/0029

CIRC ACCESSION NO--AP0117284

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117284

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LEVELS OF THE ENZYMES, ALANINE AND ASPARTIC AMINOTRANSFERASE (ALT AND AST) AND CHOLINESTERASE WERE INVESTIGATED IN THE SERUM OF PATIENTS TREATED WITH CYCLOPHOSPHANE (26 WITH LUNG TUMORS BEFORE SURGERY AND 10 AFTER RADICAL SURGERY). THE DRUG WAS GIVEN IN LARGER DOSES, 2 TO 5 G I.V. EVERY 10-14 DAYS. ALT AND AST WERE DETD. BY THE UMBRIGHT METHODS (MODIFIED); CHOLINESTERASE LEVEL WAS EVALUATED BY MEASUREMENT OF HOAC, AFTER ENZYMIC DECOMPN. OF ACETYLCHOLINE DURING 1 MIN IN 1 ML SERUM. THE ENZYMES WERE MEASURED BEFORE THE BEGINNING OF TREATMENT, ON THE 2-3RD DAY, AND ON THE 10-12TH DAY. HEALTHY (15) PERSONS SERVED AS CONTROLS. IN CASES OF MALIGNANCY THE INITIAL VALUES WERE SOMEWHAT HIGHER THAN IN NORMALS. AFTER THE ADMINISTRATION OF CYCLOPHOSPHANE, A DISTINCT RISE OF ALT, A LESSER RISE OF AST, AND A FALL IN CHOLINESTERASE ACTIVITIES WERE OBSD. AFTER RADICAL SURGERY THE SHIFTS WERE LESS DISTINCT, NO RISE OF AST WAS OBSD. NO DEPENDANCE WAS FOUND BETWEEN THE ENZYMIC ACITIVITY AND THE STAGE OF THE DISEASE. THE OBSD. CHANGES MAY BE CONSIDERED AS SIGNS OF METABOLIC DISTURBANCES IN THE LIVER. FACILITY: LAB. BIOCHEM., P. A. GERTSEN RES. INST. ONCOL., MOSCOW, USSR.

UNCLASSIFIED

USSR

BELOUSOV, A. S.

Moscow, Shchetchiki Elementarnykh Chastits, 1972, pp 2 and 158-159

Translation: Annotation: This book is an exposition of the physical processes which occur in counters used in registering elementary particles. The operation of gas-discharge, scintillation, Čerenkov, and semiconductor types of counters is examined. Also studied are the basic characteristics of radiation-matter interaction and the special features of the recording of various types of radiation. The author describes a series of unique experiments which could be conducted only with use of the very newest types of elementary-particle counters.

The book is intended for a wide range of readers interested in the achievements of modern physics. It will also serve laboratory workers, technicians, and engineers who have any concern with nuclear-radiation recording apparatus.

The chief editor is Ye. I. Tamm.
1/3

USSR

BELOUSOV, A. S., Shchetchiki Elementarnykh Chastits, 1972, pp 2 and 158-159

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BELOUSOV, A. S., Shchetchiki Elementarnykh Chastits, 1972, pp 2 and 158-159

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1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF SOME PHARMACOLOGICAL SUBSTANCES AND PHYSICAL FACTORS ON THE BILE EXCRETORY FUNCTION IN HEALTHY INDIVIDUALS AND IN PATIENTS WITH
AUTHOR-(04)-BELOUSOV, A.S., TASHEV, T., GRYUNCHAROV, V., ZHIGALOVA, M.F.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 4, PP 54-61

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BILE, SECRETION, ATROPINE, DUODENUM, DRUG EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0439 STEP NO--UR/0504/70/042/004/0054/0061

CIRC ACCESSION NO--AP0117675
UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0117675
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS SUGGEST A NEW METHOD OF STUDYING BILE SECRETION AND BILE EXCRETION IN HUMAN BEINGS. ITS ADVANTAGES AS COMPARED TO OTHER METHODS ARE SHOWN. MATERIAL CONCERNING THE EFFECT OF PHARMACOLOGICAL SUBSTANCES (ATROPINE, MYCERIN) ON BILE EXCRETION IN TO THE DUODENAL REGION IS GIVEN. THE AUTHORS DRAW THE READER'S ATTENTION TO AN UNTOWARD EFFECT OF ATROPINE ON THE BILE SECRETORY FUNCTION IN THE TREATMENT OF PATIENTS WITH PEPTIC ULCER. THEREFORE, IT IS RECOMMENDED THAT COLAGOGUE MEANS (MEDICINAL, DYGESTIVE AND PHYSIOTHERAPEUTIC) SHOULD BE INCLUDED INTO THE COURSE OF TREATMENT WITH ATROPINE AND ATROPINE LIKE AGENTS. FACILITY: KAFEDRA RASTROENTEROLOGII I DIYETOTERAPII TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY, MOSCOW. FACILITY: KAFEDRA RASTROENTEROLOGII ISUL, SOFIA.

UNCLASSIFIED

USSR

BELOUSOV, B. N., LUKASHENKO, A. N., and PANCHENKOV, A. N.

"Lifting Surface in Nonstationary Flow Near the Screen"

Samoletostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb. (Aircraft Construction and Equipment of the Air Fleet -- Republic Interdepartmental Collection of Scientific and Technical Works), 1970, vyp. 18, pp 3-11 (from RZh-Mekhanika, No 1, Jan 71, Abstract No 1B369 by V. I. Kholyavko)

Translation: By the acceleration potential method the authors consider the general solution of the linearized problem of the harmonic oscillation of a thin slightly curved lifting surface in a restricted fluid flow. The solution is presented in the form of three terms, two of which (solution involving the presence of a velocity distribution discontinuity on the lifting surface, and solution describing inertial motion) are regular, and one is singular. For a high-aspect-ratio wing ($\lambda \to \infty$), with application of the Prandtl scheme and approximation of vortex intensity along the chord by an expression taken from the plane solution the nonstationary problem reduces to two one-dimensional integral equations. An example is given of the calculation of nonstationary wing motion for the case of elliptic span load

USSR

BELOUSOV, B. N., et al., Samoletostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb. (Aircraft Construction and Equipment of the Air Fleet -- Republic Interdepartmental Collection of Scientific and Technical Works), 1970, vyp. 18, pp 3-11 (from RZh-Mekhanika, No 1, Jan 71, Abstract No 1B369 by V. I. Kholyavko)

distribution. In comparison with classical theory, an additional term of order λ^{-1} is obtained in the stationary part of the lift coefficient for a nonplanar wing. It is assumed that this term takes into account the influence of aspect ratio on zero-lift angle.

2/2

B

ANO 013710

UR 9025 5 5 1 11

AUTHOR-- BELOUSOV, I., CANDIDATE OF GEOGRAPHIC SCIENCES

TITLE-- SCIENTIFIC RESEARCH

NEWSPAPER-- VODNYY TRANSPORT, JANUARY 24, 1970, P 4, COLS 2-4

ABSTRACT-- RESEARCH SHIPS, THE "AKADEMIK KURCHATOV", "DMITRIY MENDELEYEV", AND "VITYAZ", HAVE RECENTLY COMPLETED SEVEN VOYAGES IN THE PACIFIC AND ATLANTIC OCEANS. THE EXPEDITION THAT WAS HEADED BY PROFESSOR V. KORT AND SAILED ON THE "AKADEMIK KURCHATOV" AND THE DMITRIY MENDELEYEV" STUDIED THE SYSTEM OF WESTERN CURRENTS IN THE TROPICAL ATLANTIC. DOCTOR OF GEOLOGICAL AND MINERALOGICAL SCIENCES G. UDINTSEV, ABOARD THE "AKADEMIK KURCHATOV", DIRECTED THE EXPLORATIONS OF THE CENTRAL PART OF THE ATLANTIC UNDERWATER RIDGE.

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AN0013710

THE EXPEDITION ON THE "VITYAZ", DIRECTED BY DOCTOR OF BIOLOGICAL SCIENCES M. VINOGRADOV, WAS CONCERNED WITH THE BIOLOGICAL PRODUCTIVITY OF THE OCEAN.

SCIENTISTS OF THE OCEANOLOGICAL INSTITUTE IMENI SHIRSHOV CONTINUE THE EXPLORATORY WORK IN THE WHITE, BLACK, AND MEDITERRANEAN SEAS. THE NEW SHIP OF THE INSTITUTE, THE "PERVENETS" MADE FOUR TRIPS TO THE SEA OF JAPAN.

PROFESSOR N. VASIL,KOVSKIY, DIRECTOR OF THE PACIFIC DEPARTMENT OF THE INSTITUTE OF OCEANOLOGY, COMPILED 22 PALEOGEOGRAPHIC MAPS OF THE EASTERN PART OF THE SOVIET UNION.

2/2

19580652

USSR UDC: 621.395.657.4

ASEYEV, Yu. P., BELOUSOV, I. V.

"Electric Pulse Counter"

USSR Author's Certificate Number 310408, filed 29/03/68, published 27/08/71 (translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 3, 1972, Abstract No 3 A369 P)

Trans: The authors suggest an electric pulse counter, based on electromagnetic relays with strobing of the input signal of each cell by the relay contact, in which the output of each cell is connected through tubes to the input of the preceding and succeeding relays, while the switching contacts of even and odd relays, which strobe the input signals, are connected into two independent electrical circuits, connected at one end to the power supply through a switching contact. In order to simplify the device, the other ends of these circuits of the series-connected contacts of odd and even relays are connected to the outputs of the first and second counter cells respectively. 1 figure.

1/1

AA0043564 .. BELOUSOV I.V

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/1

242501 IMPULSE FORMING DEVICE useful in automation contains a generator, a former, register and boosters.

The impulses from generator 1 enter the two tact former 2 of impulses, two outputs from the former are connected to the input of the two tact decimal ferro-transistor meter 3, each decade of which is in the form of a ringed register. The required time lag, multiple to 10,100,1000 etc. of the generator impulses, are taken off the commutators of the ferrotransistor cells of the register and transferred to register 4.

28.12.67 as 1206833/18-24. I.V.BELOUSOV & A.N. KULAKOV (11.9.69) Bul 15/25.4.69. Class 42m^3,21a^1. Int.Cl.G 06f, H 03k.

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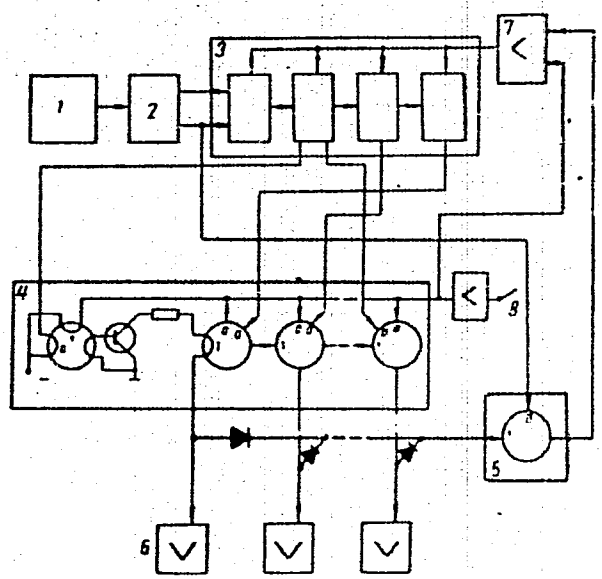

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19762022

USSR B UDC 621.373.421.1(088.8)

KITAYGORODSKIY, Yu. I., BELOUSOV, N. A., SHLENSKIY, Ye. M., VOLODIN, V. P.

"A Magnetostriction Converter With Acoustic Feedback"

USSR Author's Certificate No 148609, Filed 28 Jul 61, Published 16 Mar 70 (From RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D376 P)

Translation: This Author's Certificate introduces a magnetostriction converter with acoustic feedback for automatically tuning the frequency of a self-oscillator to the mechanical resonance frequency of the converter. In order to obtain feedback voltage sufficient for direct excitation of oscillator tubes with a power of 5-15 kW without additional signal amplification, and to increase operational stability, the converter packet is made in the form of three electrically and magnetically independent elements which have the same natural resonance frequency. Two of these elements form the active link of the converter while the third, which is placed between them, produces the acoustic feedback voltage. Also introduced is a converter which differs from the one described above in that the phase relationships between the excitation and feedback voltages are maintained throughout the working frequency range of the converter by connecting the active elements and acoustic feedback element to the transmitting system of the converter in the same plane perpendicular to the direction of propagation of longitudinal oscillations of the system. The proposed magnetostriction converter may be used in self-oscillator circuits with automatic frequency control, for instance in ultrasonic oscillators which operate with welders. V. P.

USSR UDC 621.039

NAUMOV, V. I., and BELOUSOV, N. I.

"Approximate Calculation of the Spectrum of Thermal Neutrons in a Cell of a Thermal Reactor"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors — Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 136-143 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V554)

Translation: An approximation of the neutron spectrum in a thermal reactor with Fermi and Maxwell spectra joined at E ~ 0.6 ev does not give a correct description of the transport region, since individual neutrons in scattering by nuclei of the moderator take on energy up to 3 ev, which is especially noticeable in high-temperature reactors. At the same time, exact multigroup methods require large expenditures of machine time. In this paper the method of collisions is applied to calculations for a cell with a graphite moderator. In the method the spectrum is represented by the sum of partial spectra of neutrons accelerated 1,...,n

$$\Phi(E) = \Phi_0(E) + a_n \phi^{(n)}(E + \Phi_T):$$

1/2

USSR

NAUMOV, V. I., and BELOUSOV, N. I., Fiz. yadern. reaktorov (Physics of Nuclear Reactors — Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 136–143 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V554)

where $\Phi_0(E)$ is the spectrum of moderating neutrons only, $a_n\Phi(n)$ is the spectrum of neutrons undergoing from 1 to n collisions; $\Phi_T(E)$ is the Fermi spectrum. The calculation for the cell is made easy by the independence of the spectra of neutrons undergoing a large number of accelerations of the capture cross section of the medium, since this permits separation of the space and energy variables. This also made it possible to tabulate the microcross sections and the diffusion coefficients averaged over the partial spectra in the function of only the temperature and properties of the moderator. Thus, the calculation of the spectrum in the transport region reduced to the solution of a small number of equations of the diffusion type. A. G. Promokhov.

2/2

USSR

UDC: 621.396.983

BELOUSOV, N. N., YELFIMOV, V. I., and KIRSANOV, N. I.

"Optimal Algorithm for Measuring the Dispersion of a Random Process With the Effects of External and Internal Additive Noise Taken Separately Into Account"

Kiev, Izvestiya VUZ SSSR-- Radioelektronika, No 10, 1972, pp 1291-1294

Abstract: The problem of measuring the dispersion of a normal stationary random process on a background of normal stationary noise is considered, where both signal and noise processes are noncorrelational. An equation is given for the conditional estimate of the signal dispersion for an accurately known noise dispersion. Although the solution to this equation is well known, it does not take into account the separate effects of the external and internal additive noises. To correct this omission, the present brief communication offers a method of eliminating the effect of the internal noise of the measuring device on the accuracy of the signal dispersion measurement. In developing the algorithm for the dispersion measurement, the authors assume that the samplings of the

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USSR

UDC: 621.396.983

BELOUSOV, N. N., et al, Izvestiya VUZ SSSR--Radioelektronika, No 10, 1972, pp 1291-1294

noise and signal mixtures are obtained by a number of identical measuring devices.

2/2

USSR UDC 621.396.962.2

BELOUSOV, N.N., KIRSANOV, N.I. (Members Of The Scientific-Technical Society Of Radio Engineering, Electronics, And Communication imeni A.S. Popov)

"Discriminator Of Tracking Measurer Of The Spatial Delay Time Of A Noise-Like Signal"

Radiotekhnika, Vol 27, No 3, March 1972, pp 60-67

Abstract: The discriminator is studied of a tracking measurer of the relative spatial delay time of a noise-like signal picked up by two spaced antennas. A block diagram of the discriminator is discussed. The discriminatory and fluctuation characteristics are determined for normal stationary additive signals and noise in the case of rapid fluctuations. The expression for the fluctuation characteristic is applicable only with weak signals. Some of the material of this paper as well as certain experimental results were reported at the XVII Scientific-Technical Conference Devoted To "Radio Day" held at Tomsk in May 1969. 3 ill. 4 ref. Received by editors, 22 Dec 69; after further improvement, 7 July 70.

1/1

USSR UDC 669.715.721.725.295.296.74.26.018.29(088.8

BELOUSOV, N. N., MIKHEYEVA, Ye. N., ZHOLOBOVA, Ye. P., KASHEVNIK, L. Ya., DODONOV, A. A., YEGOROVA, V. A., YEVSTRATOV, Yu. A., POPKOVA, V. A., BOTYANOVSKIY, M. G.

"Aluminum-Based Casting Alloy"

USSR Author's Certificate, No. 253375, Filed, 19/06/67, Published, 8/10/70. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I670P).

Translation: The alloy has the following composition (%): Mg 8-9.5, Be 0.03-0.15, Ti 0.05-0.15, Zr 0.05-0.2, Mn 0.1-0.3, Cr 0.05-0.15, remainder Al. The alloy has high technological properties, corrosion resistance, and stability of properties. In the cast state, the alloy, when cast in a sand mold, has σ_b 18-23 kg/mm^2, δ 0.7 - 2.5%, a_H 0.2-0.4 kgm/cm^2; when cast in a chill mold - σ_b 27-33 kg/mm^2, δ 4 - 12%, a_H 0.4 - 1.2 kgm/cm^2.

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USSR UDC 620.187

VIL'DANOVA, N. F., NOSKOVA, N. I., PAVLOV, V. A., BELOUSOV, N. N., and MIKHEYEVA, Ye, N., Institute of Metal Physics, Academy of Sciences USSR

"Electron Microscope Study of Al-Mg Alloys Cooled With Varying Rates From the Homogenization Temperature"

Sverdlovsk, Fizika Metallov i Metallovedeniye, No 6, Vol 30, Dec 70, pp 1264-1269

Abstract: Changes were investigated in the structure of alloys Al+Mg(11%) and Al+Mg(11%)+Ti, Zr, Be, Mn (0.1%) which result in connection with the use of different cooling rates after a homogenizing anneal. The cast and heat-treated alloys were rolled into plates measuring 20 x 50 x 0.2 mm and then subjected to a homogenizing anneal at 435° C for 20 hours with different cooling rates: quenched in cold water (+20), quenched in hot water (+90), and air cooled.

Thin foils of the alloys were investigated by electron microscopy. The foils were made from plates, which had been heat treated, by chemically thinning them in a 40% solution of sodium hydroxide with subsequent electropolishing

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USSR

VIL'DANOVA, N. F., et al, Fizika Metallov i Metallovedeniye, No 6, Vol 30, Dec 70, pp 1264-1269

in an electrolyte at +70 C. The investigation was conducted with an SEM-3 microscope.

It was shown that aging processes take place in these alloys independently of the cooling rate and grains are detected in the structure along the boundaries and in the volume of which there are precipitations. Complex alloying accelerates aging: in the structure of the alloy after cooling at the maximum rate practically no grains were observed without precipitates, but coagulation of the precipitated phases takes place. A decrease in the cooling rate leads to a fuller passage of aging processes and to phase coagulation in all the alloys.

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USSR

UDC 539.4

LYUTTSAU, V. G., BELOUSOV, N. N., and ROVINSKIY, B. M., Moscow

"On the Generation of Micropores in Alloys"

Moscow, Fizika i Khimiya Obrabotki Metallov, No 1, Jan-Feb 71, pp 81-84

Abstract: The microporosity in aluminum alloys was investigated by the X-ray shadow microscopy method. The character and sizes of micropores generating in alloys during the crystallization process and heat treatment were determined. It is demonstrated that an increase of the cooling rate of alloys during the crystallization leads to a decrease in the dimensions of micropores and an increase of their concentrations. The fact was ascertained of the micropore generation in locations corresponding to dispositions of the second phase in alloys by heating and subsequent hardening. Considerations are presented on the mechanism of micropore generation by heat treatment of alloys containing dispersed inclusions of the second phase.

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B

USSR

UDC 621.396.75

BELOUSOV, N. N., KIRSANOV, N. I., PRAVDUKHIN, V. M.

"Effect of Inertial Differentiation on the Accuracy of Measuring Delays by a Differential Correlator"

Tr. Uralskogo politekhn. in-ta (Works of the Urals Polytechnical Institute), 1970, Collection 183, pp 106-109 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8G88)

Translation: In differential direction finders with direction finding by the signal minimum, the optimal device for measuring the delay between two correlated signals is a discriminator with delayed synchronization. The actual differentiating device of the discriminator introduces errors into the measurement of the delay caused by the fact that the amplitude and phase-frequency characteristics of it differ from the same characteristics of an ideal differentiating device. From comparison of the real and ideal discrimination characteristics it follows that in the real case there is null shift of the discrimination characteristic and a decrease in its steepness. This leads to a systematic error equal to the null displacement and to a random error determined by the instability of the elements of the differentiating device. In some cases, the null displacement

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USSR

BELOUSOV, N.N., et al, Tr. Uralskogo politekhn. in-ta (Works of the Urals Polytechnical Institute), 1970, Collection 183, pp 106-109 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8G88)

is equal to the time constant of the differentiating circuit, and the random error can be determined by known instability of the parameters of the device. There are two illustrations and a two-entry bibliography.

2/2

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THE SMELTING AND LADLING OF ALLOYS OF NONFERROUS METALS -U-

AUTHOR--BELOUSOV, N.N.

COUNTRY OF INFO--USSR

SOURCE--SEC. ED., EXP. AND REV. (PLAVKA I RAZLIVKA SPLAVOV TSVETNYKH METALLOV. IZD. VTOR. DOP. I PERER.) LENINGRAD. MASHINOSTROYENIYE. 1969
DATE PUBLISHED--------70

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

TOPIC TAGS--COPPER ALLOY, ALUMINUM ALLOY, MAGNESIUM ALLOY, SAFETY ENGINEERING, METAL CASTING, SMELTING FURNACE, NONFERROUS ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/1458 STEP NO--UR/0000/70/000/000/0001/0107

CIRC ACCESSION NO--AM0121906
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AM0121906

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3. CHAPTER I BURDEN MATERIALS, USED FOR THE PREPARATION OF ALLOYS OF NONFERROUS METALS 5. II FURNACES FOR THE SMELTING OF ALLOYS OF NONFERROUS METALS 18. III THE TECHNOLOGY OF SMELTING AND LADLING OF COPPER ALLOYS 45. IV THE TECHNOLOGY OF SMELTING AND LADLING OF ALUMINUM ALLOYS 54. V THE TECHNOLOGY OF SMELTING AND LADLING OF MAGNESIUM ALLOYS 77. VI CHARACTERISTICS OF THE TECHNOLOGY OF LADLING ALLOYS OF NONFERROUS METALS BY USING MODERN MEANS OF MAKING SECTION CASTINGS 89. VII LABOR PROTECTION AND TECHNOLOGY OF SAFETY 101. LITERATURE 106. IN CONNECTION WITH THE INCLUSION OF 63 NEW HIGHLY DURABLE ALUMINUM ALLOYS IN THE SECOND EDITION OF THIS BROCHURE HAVE BEEN EXAMINED IN DETAIL THE PECULIARITIES OF SMELTING, DEGASING, REFINING AND MODIFICATION OF THESE ALLOYS AND METHODS GIVEN TO PREPARE NEW LIGATURES.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--INCREASE IN THE MECHANICAL PROPERTIES OF ZINC CONTAINING SILUMIN CASTINGS -U-

AUTHOR-(02)-BELOUSOV, N.N., KASHEVNIK, L.YA.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, 2, 6-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MECHANICAL PROPERTY, ALLOY DESIGNATION, ALLOY COMPOSITION, HIGH PURITY METAL, ALUMINUM ALLOY, SILICON CONTAINING ALLOY, LIQUID METAL, METAL REFINING/(U)AL11M ALUMINUM SILICON ALLOY, (U)SILUMIN ALUMINUM SILICON ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1732 STEP NO--UR/0128/70/002/000/0006/0007

CIRC ACCESSION NO--AP0118710

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118710

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW ALLOY, DESIGNATED AL11M, CONTG. SI 7.9, ZN 13-16, MG 0.4-0.06, CU 0.6-09, BE 0.04-0.08, TI 0.04-0.08, ZR 0.04-0.08, AND B 0.03-0.06PERCENT WAS STUDIED. THE ALLOY REQUIRES HIGH PURITY AL (99PERCENT) AS THE STARTING MATERIAL. THE MOLTEN METAL WAS REFINED WITH HEXACHLOROETHANE AND MODIFIED WITH A FLUX CONTG. NACL 62.5, NAF 25, AND KCL 12.5PERCENT. AFTER HEAT TREATMENT, CASTINGS EXHIBITED THE OPTIMUM COMBINATION OF MECH. PROPERTIES. THE MECH. PROPERTIES WERE DETD, FROM MINUS 196DEGREES TO 300DEGREES AND SUITABLE PROPERTIES WERE FOUND IN THE RANGE MINUS 196DEGREES TO 200DEGREES. AFTER HEAT TREATMENT THE YIELD STRENGTH AND ELONGATION OF SAMPLES CUT FROM A CASTING WERE 35-40 KG-MM PRIME2 AND 2-4PERCENT RESP. THE SHRINKAGE, FLUIDITY, AND HOT SHORTNESS OF THIS ALLOY WERE COMPARABLE TO THOSE OF OTHER SILUMINS BUT THE STRENGTH IS 1.5 TIMES GREATER.

UNCLASSIFIED

Acc. Nr: AP0046686 Abstracting Service: 5/70 INTERNAT. AEROSPACE ABST. Ref. Code: UR0185

A70-23194 # Some properties of ordered phases based of the metallides TiNi and TiCo and interactions between them (Deiaki vlastivosti vporiadkovanikh faz na osnovi metalidiv TiNi i TiCo i vzaemodiia mizh nimi). I. I. Kornilov, O. K. Belousov, and E. V. Kachur (Akademiia Nauk SSSR, Institut Metallurgii, Moscow, USSR). *Ukrains'kii Fizichnii Zhurnal*, vol. 15, Jan. 1970, p. 110-112. 10 refs. In Ukrainian.

Investigation of changes in electrical resistivity of the compounds TiNi and TiCo and of alloys with deviation from stoichiometry to 3 at.% Ni and Co, respectively. The measurements were made at room temperature and at -196 C after quenching from 900 C or long-term annealing. Over the section TiNi-TiCo at intervals of 10 mol.% the electrical resistivity of TiCo was measured during continuous heating from 20 to 1000 C. It is established that for TiCo the minimum density at 20 C corresponds to 50 at.% Co for annealed and quenched samples, while at -196 C for the Ti-Co the minimum is observed with 51% Co. For the system Ti-Ni the minimum density corresponds to an Ni concentration equal to 49.5% for quenched samples. For annealed samples the minimum is observed with 51% Ni and is also present at -196 C with somewhat greater concentrations. (Author)

ALS

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18

REEL/FRAME
19782002

B Titanium

USSR [illegible]

KACHUR, Ya. [illegible], [illegible], [illegible], [illegible] Imeni A. A. [illegible], [illegible], Academy of Sciences [illegible]

"Interaction in the Triple Metalloid System TiFe-TiCo-TiNi"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 5, Aug 70, [illegible]

Abstract: On the basis of a fusibility diagram and of [illegible], it was shown that in the TiX system (where X = Fe, Co, or Ni) there exists a continuous solubility in solid state for the alloys of the composition [illegible]. Thermo-emf for the alloys was determined; the Q sign changes depending on the composition of the alloy. For the system TiFe-TiNi the change in Q as a function of e/a coincides qualitatively with such a change observed for the binary systems of TiFe-TiCo and TiCo-TiNi. Study of the thermo-emf of the ternary system of metallides along the three radial crossections shows that the p-type conductivity predominates only in alloys similar in composition to the TiFe and TiNi systems.

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AH0016972_ B UR0533

TITLE-- AUTOMATA IN THE WEATHER SERVICE

NEWSPAPER-- SOTSIALISTICHESKAYA INDUSTRIYA, FEBRUARY 1, 1970, P 4

ABSTRACT-- THE ENTIRE PAGE IS DEVOTED TO THE SOVIET WEATHER SERVICE AND THE "METEOR" SYSTEM. IT HAS BEEN PREPARED BY DOCTOR OF GEOGRAPHICAL SCIENCES YE. G. POPOV SMCLN CANDIDATES OF PHYSICAL-MATHEMATICAL SCIENCES S. I. BELOUSOV AND N. G. LEONOV SMCLN CHIEF OF THE DEPARTMENT OF ANALYSIS AND SATELLITE DATA OF THE HYDROMETEOROLOGICAL CENTER, U.S.S.R., I. A. CHETVERIKOV SMCLN AND CORRESPONDENT YU. GRACHEV.

WHEN THE "METEOR" SYSTEM WAS SET UP IN THE SOVIET UNION, THE HYDROMETEOROLOGICAL CENTER ESTABLISHED A SPECIAL UNIT FOR THE ANALYSIS OF METEOR DATA. THIS UNIT IS KNOWN AS "SPUTNIK VERTICAL".

THREE PHOTOGRAPHS ARE GIVEN SHOWING THE LAUNCH OF A WEATHER BALLOON AT THE AEROLOGICAL STATION "VYSOKAYA" NEAR SVERDLOVSK, THE WEATHER SATELLITE "METEOR", A PHOTOGRAPH OF A CYCLONE EYE MADE BY THE "METEOR-2", AND A TWO-COORDINATE DEVICE PROGRAMMED TO DRAW WEATHER MAPS.

19600100

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1/3 030 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--FEATURE ARTICLE ON METEOR SYSTEM. THE METEOR SYSTEM -U-

AUTHOR--POPOV, YE.G., BELOUSOV, S.L., LEONOV, N.G., CHETVERNIKOV, I.A., GRACHEV, YU.
COUNTRY OF INFO--USSR

B

SOURCE--MOSCOW, SOTSIALISTICHESKAYA INDUSTRIYA, 1 FEBRUARY 1970, P 4

DATE PUBLISHED--01FEB70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--METEOROLOGIC SATELLITE, PHOTOGRAPH, METEOROLOGIC STATION, UNMANNED ORBITAL LABORATORY, SPACEBORNE EARTH PHOTOGRAPHY, WEATHER CHART, METEOROLOGIC DATA, COMPUTER APPLICATION/(U)METEOR METEOROLOGIC SATELLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1743 STEP NO--UR/0533/70/000/000/0004/0004

CIRC ACCESSION NO--AN0104926
UNCLASSIFIED

2/3 030 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AN0104926

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SPACE METEOROLOGICAL STATION IN A CIRCUMTERRESTRIAL ORBIC CAN DAY AND NIGHT TRANSMIT WEATHER DATA MAKING IT POSSIBLE TO WARN THE COUNTRY OF IMPENDING DANGEROUS METEOROLOGICAL PHENOMENA. THE INFORMATION IS TRANSMITTED IN THE FORM OF PHOTOGRAPHS. THESE PHOTOGRAPHS CLEARLY PINPOINT THE LOCATION OF STORMS AND THEIR DIRECTION. THE HYDROMETEOROLOGICAL CENTER USSR IS EVEN NOW RECEIVING SUCH INFORMATION FROM A WHOLE SERIES OF METEOR SATELLITES. CREATED ON THE BASIS OF THE LATEST ADVANCES IN SOVIET SCIENCE, IT IS OF THE GREATEST SERVICE IN COMPILING BOTH LONG AND SHORT RANGE FORECASTS. HOWEVER, ALL THIS REQUIRES WELL TRAINED GROUND PERSONNEL, SINCE POOR INTERPRETATION OF THE PHOTOGRAPHS WOULD CANCEL OUT THIS NEW SOPHISTICATED SOURCE OF INFORMATION. A SPECIAL SECTION AT THE HYDROMETEOROLOGICAL CENTER HANDLES SUCH WORK; IT HAS THE RATHER ROMANTIC NAME OF SATELLITE VERTICAL. THE SECTION IS MANNED BY DEDICATED PIONEERS IN THIS NEW BRANCH OF METEOROLOGY. ALL SATELLITE DATA MUST BE CORRELATED WITH GROUND DATA FOR COMPILING MAPS OF CLOUD COVER DISTRIBUTION. THE COMPLEX TASK OF INTERPRETING PHOTOGRAPHS CANNOT YET BE AUTOMATED. HOWEVER, PROCESSING OF DATA ON RADIATION FLUXES IS COMPLETELY AUTOMATED. A SPECIAL PROGRAM DEVELOPED AT THE CENTER ENSURES THAT COMPUTERS CAN HANDLE THE VAST AMOUNT OF DATA ON RADIATION IN A VERY SHORT TIME. THE VOLUME OF RADIATION DATA RECEIVED FROM SATELLITES EXCEEDS THAT WHICH IS RECEIVED FROM GROUND STATIONS THROUGHOUT THE COUNTRY. SATELLITE DATA ARE SORTED BY COMPUTER BY TYPES: SOLAR RADIATION, LIGHT REFLECTED BY THE EARTH, RADIATION OF THE EARTH ITSELF, ENERGY OF ELECTROMAGNETIC WAVES.

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3/3 030 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AN0104926
ABSTRACT/EXTRACT--USING THESE DATA THE MACHINE CAN COMPUTE THE ALTITUDE OF THE UPPER CLOUD BOUNDARY, THE RADIATION TEMPERATURE OF SEAS, THE ATMOSPHERE AND DIFFERENT CONTINENTS. THE VOLUME OF DATA RECEIVED BY THE HYDROMETEOROLOGICAL CENTER IS CONSTANTLY INCREASING. HIGH SPEED, HIGH CAPACITY COMPUTERS ARE BEING BROUGHT IN TO HANDLE THE LOAD. IMPROVED FORECASTING ACCURACY WILL INEVITABLY RESULT. (A PHOTOGRAPH ACCOMPANYING THE TEXT SHOWS THE GENERATION OF A LOW PRESSURE SYSTEM OVER THE PACIFIC OCEAN TAKEN FROM AN ALTITUDE OF 650 KM BY THE "METEOR-2" WEATHER SATELLITE ON 15 JANUARY 1970 AT 0100 HOURS MOSCOW TIME).

UNCLASSIFIED

USSR

UDC: 621.396.67

AYZENBERG, G. Z. and BELOUSOV, S. P.

"Antennas for Radio Communication, Broadcasting, and Television"

Moscow, Elektrosvyaz', No. 4, 1970, pp 47-62

Abstract: A review of antennas new and old, beginning with the first antenna invented by the Russian pioneer, A. S. Popov, which consisted of a vertical, nonsymmetrical vibrator. The author discusses the history and operation of antennas both in the Soviet Union and abroad, including long- and medium-wavelength antennas for broadcasting (2000-3000 meters for the long waves and 200-2000 for the medium); anti-fading antennas, proposed in 1939 in the Soviet Union; short-wave antennas for communication and broadcasting transmitters; meter wavelength antennas for communications; television and FM transmitting antennas; antennas for space exploration. The article is liberally illustrated with line drawings as well as photographs of such installations as the pneumatic antenna mast developed by the USSR Ministry of Communications (location not given), horn antennas used in radio relay lines, a 1/2

USSR

AYZENBERG, G. Z., et al, Elektrosvyaz', No. 4, 1970, pp 47-62

transmitting antenna complex for tropospheric radio relay lines, a passive repeater antenna system for radio relay lines in the "mountains" (location not specified), and a unit of the "Orbit" communications system used in space exploration showing the large antenna dish and the building beneath. Of this last antenna, it is said that it is capable of operating under any climatic conditions.

B

USSR

UDC: 621.396.67

AYZENBERG, G. Z., BELOUSOV, S. P., SHAMSHIN, V. A., and SHKUD, M. A.

"Transmitting Antennas for Short-Wave Broadcasting"

Moscow, Elektrosvyaz', No 5, 1970, pp 4-13

Abstract: This article is devoted to recommendations concerning the application, correction, and precisioning of new types of antennas recently developed, tested, and distributed. These include synphase antennas with an active-range reflector and log-periodic antennas. The article discusses the basic requirements of such transmitting antennas in short-wave broadcasting, the parameters of the new antennas, and recommendations on the choice of particular types for network broadcasting depending on the distance covered. This last is given in the form of a table, which lists such types as the SGD 4/8 RA for an optimal wave of 12 meters in a range of 10.7 to 20.0 meters, complex arrangements consisting of three SGD 4/8 RN or SGD 4/8 RAD for optimal waves of 12, 25, and 40 meters, and the RGD 70/6. Physical and electrical characteristics, including schematics showing the arrangements of radiators, of these antennas are given.

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1/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ANTENNAS FOR RADIO COMMUNICATION, BROADCASTING, AND TELEVISION -U-

AUTHOR-(02)-AYZENBERG, G.Z., BELOUSOV, S.P.

B

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ELEKTROSVYAZ', NO. 4, 1970, PP 47-62

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION

TOPIC TAGS--ANTENNA ENGINEERING, COMMUNICATION ANTENNA, PNEUMATIC DEVICE, TROPOSPHERIC RADIO WAVE, HORN ANTENNA/(U)ORBIT COMMUNICATION SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0254 STEP NO--UR/0106/70/000/004/0047/0062

CIRC ACCESSION NO--AP0129493
UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129493

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW OF ANTENNAS NEW AND OLD, BEGINNING WITH THE FIRST ANTENNA INVENTED BY THE RUSSIAN PIONEER, A. S. POPOV, WHICH CONSISTED OF A VERTICAL, NONSYMMETRICAL VIBRATOR. THE AUTHOR DISCUSSES THE HISTORY AND OPERATION OF ANTENNAS BOTH IN THE SOVIET UNION AND ABROAD, INCLUDING LONG AND MEDIUM WAVELENGTH ANTENNAS FOR BROADCASTING (2000-3000 METERS FOR THE LONG WAVES AND 200-2000 FOR THE MEDIUM); ANTI FADING ANTENNAS, PROPOSED IN 1939 IN THE SOVIET UNION; SHORT WAVE ANTENNAS FOR COMMUNICATION AND BROADCASTING TRANSMITTERS; METER WAVELENGTH ANTENNAS FOR COMMUNICATIONS; TELEVISION AND FM TRANSMITTING ANTENNAS; ANTENNAS FOR SPACE EXPLORATION. THE ARTICLE IS LIBERALLY ILLUSTRATED WITH LINE DRAWINGS AS WELL AS PHOTOGRAPHS OF SUCH INSTALLATIONS AS THE PNEUMATIC ANTENNA MAST DEVELOPED BY THE USSR MINISTRY OF COMMUNICATIONS (LOCATION NOT GIVEN), HORN ANTENNAS USED IN RADIO RELAY LINES, A TRANSMITTING ANTENNA COMPLEX FOR TROPOSPHERIC RADIO RELAY LINES, A PASSIVE REPEATER ANTENNA SYSTEM FOR RADIO RELAY LINES IN THE "MOUNTAINS" (LOCATION NOT SPECIFIED), AND A UNIT OF THE "ORBIT" COMMUNICATIONS SYSTEM USED IN SPACE EXPLORATION SHOWING THE LARGE ANTENNA DISH AND THE BUILDING BENEATH. OF THIS LAST ANTENNA, IT IS SAID THAT IT IS CAPABLE OF OPERATING UNDER ANY CLIMATIC CONDITIONS.

UNCLASSIFIED

USSR

UDC 621.357.8(088.8)

SAMETSKIY, B. I., BELOUSOV, V. I., POLYAKOV, A. M., SMOLENTSEV, G. P., KONDRASHKOV, M. P., KUROV, P. YE.

"Solution for Electrochemical Etching of Metals"

USSR Author's Certificate No 308097, filed 7 Apr 69, published 23 Aug 71 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L286P)

Translation: A solution containing K_2SO_4 is patented for electrochemical etching of metals. It is distinguished by the fact that in order to improve the quality of marking a product made of Cu and its alloys, Na_2CO_3 has been introduced into it. The composition of the solution (in % by weight is as follows): 7.9-8.1% Na_2CO_3, 1.9-2.1 K_2SO_4, and the rest water. Example. When marking with a solution containing 8% Na_2CO_3 by weight, 1.9% K_2SO_4 and the rest water at a voltage of 5 volts on plates made of copper and BRKh-8 bronze, a clear image of the symbols is obtained which is not removed during machining.

1/1

USSR UDC 545.85

SIDOROV, L. N., BELOUSOV, V. I., and AKISHIN, P. A., Moscow State University imeni M. V. Lomonosov

"Mass-Spectroscopic Study of Thermodynamic Properties of NaF-BeF_2 System. VI. Temperature Dependence of Partial Pressures and Dissociation Enthalpy of Complex Molecules"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 45, Vyp 12, 1971, pp 3007-3011

Abstract: Partial pressures of NaF, Na_2F_2, BeF_2, $NaBeF_3$, $Na_2Be_2F_6$, and Na_2BeF_4 in the NaF - BeF_2 system were determined as a function of temperature (up to 1106°K), with BeF_2 concentrations from 0-100%. Using the results obtained in previous work, the authors calculated the heat of vaporization of NaF and BeF_2 on the assumption that in the melt $\Delta \bar{S}_i = 0$, and of $NaBeF_3$, $Na_2Be_2F_6$, and $NaBeF_4$ with the aid of Hess' law from the heat of appropriate gas-phase reactions. Gibbs' free energy, and the heat of formation of NaF - BeF_2 from liquid BeF_2 and solid NaF at 1106°K as well as the entropy, enthalpy, and Gibbs' free energy for nine gas-phase reactions involving the same complex molecules are also presented. The absolute energy values for $NaBeF_3$, Na_2BeF_4, and $Na_2Be_2F_6$ calculated in this work are S°_{1106} = 103.4 ± 3, 150.6 ± 5, and 182.3 ± 8, resp. The assumed structure of the molecules are also given. The experimental results are presented in 7 tables. 1/1

USSR UDC 541.11

BELOUSOV, V. I., SIDOROV, L. N., Department of Chemistry, Moscow State University imeni M.V. Lomonosov

"On the Melting Point of Berrylium Fluoride"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 1, Jan 70, pp 254-255

Abstract: The mass-spectrometric investigation of the pressure of saturated vapor of the system NaF-BeF_2 shows that during the isothermal evaporation of melts of the system NaF-BeF_2, which contain 90 mole % BeF_2, the intensity of all recorded ions remains constant over a period of several hours. From the obtained experimental data, $800 \pm 5^{\circ}$ is accepted as the melting point of BeF_2.

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1/2 022 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--MASS SPECTROMETRIC STUDY OF THERMODYNAMIC PROPERTIES OF SODIUM FLUORIDE BARIUM FLUORIDE AND SODIUM FLUORIDE, MAGNESIUM FLUORIDE SYSTEMS
AUTHOR-(03)-BELOUSOV, V.I., SIDOROV, L.N., AKISHIN, P.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1) 263-4

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--MASS SPECTRUM, THERMODYNAMIC PROPERTY, SODIUM COMPOUND, BARIUM FLUORIDE, MAGNESIUM FLUORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/0315 STEP NO--UR/0076/70/044/001/0263/0264

CIRC ACCESSION NO--AP0053300
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0053300

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MASS SPECTRA OF GASEOUS PHASES OVER NAF-BAF SUB2 AND NAF-MGF SUB2 SYSTEMS WERE STUDIED AT 1160-1450DEGREES, AND FOR THE COMPN. RANGES UP TO 90 WT. PERCENT BAF SUB2 AND 60 WT. PERCENT MGF SUB2. AT 1160-1170DEGREES, THE NA PRIME POSITIVE, NAF PRIME POSITIVE, NA SUB3 F SUB2 PRIME POSITIVE, BA PRIME POSITIVE, BAF PRIME POSITIVE, MG PRIME POSITIVE, AND MGF PRIME POSITIVE IONS WERE FORMED. THE OCCURRENCE OF NAMGF SUB2 PRIME POSITIVE WAS ALWAY LESS THAN 0.001PERCENT WHEREAS HIGHER AMTS. OF NABAF SUB2 PRIME POSITIVE WERE OBSD. (IS LESS THAN 6PERCENT AT 1460DEGREES FOR THE SYSTEM WITH 90 WT. PERCENT BAF SUB2).

UNCLASSIFIED

USSR

UDC 621.791:621.642.001.2

(5)

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

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

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

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

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

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

2/2

Composite Materials

USSR UDC 669.2:621.771

BAKUMA, S. F., BELOUSOV, V. P., SEDYKH, V. S., and TRYKOV, Yu. P.

"Production of Plate Metal Compositions by Explosive Welding and Intermediate Rolling"

Moscow, Tsvetnyye metally, No 5, May 72, pp 58-62

Abstract: Proposed are new flow charts for producing composite materials with provisions for combining explosive welding with either cold, warm, or hot rolling. Explosive welding of bimetal joints from hard-to-weld metal combinations (Ti-Fe, Al-Mg, Nb-Fe, and others) require strict adherence to specific parameters including precise setting of root gap openings between the plates, perfect dosage of composition and appropriate density of the explosive powder, and special surface preparation. Violation of either condition may cause drastic reduction of weld strength and even lamination. The new flow charts offer potentials for increasing the mechanical properties of bimetal weld joints. The complex technology is justified by the savings in costly and scarce materials and realization of new design problems. (3 illustrations, 1 table, 7 bibliographic references)

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USSR UDC 621.791:621.7.004.2.01:669.295+669.14

BELOUSOV, V. P., Engineer, SEDYKH, V. S., Candidate of Technical Sciences, and TRYKOV, YU. P., Candidate of Technical Sciences

"Mechanical Properties of Explosion-Welded Titanium-Steel Joints (With Interlayers)"

Moscow, Svarochnoye Proizvodstvo, No 9 (443), Sep 71, pp 19-21

Abstract: Investigation results of the effect of mechanical heterogeneity on strength and plasticity characteristics of titanium-steel joints with Cu-Nb interlayers after explosion-welding and heating are discussed. The change of mechanical properties of explosion-welded joints of OT4 titanium alloy with Kh18N10T austenite steel with Cu-Nb interlayers of various thickness is explained by hardening of the latter as the result of explosion loading and the effect of case hardening. The gradual decrease of the relative thickness k of the copper alloy in the range of 0.5 to 0.067 results in a progressive increase in strength and decrease of plasticity characteristics. Due to case hardening of the copper alloy at k=0.03 an increase in joint strength up to the strength level of steel and also a plasticity increase take place. A comparison of mechanical properties of titanium-steel joints with interlayers of copper and its high-strength alloys demonstrates their 1/2

USSR

BELOUSOV, V. P., et al., Svarochnoye Proizvodstvo, No 9 (443), Sep 71, pp 19-21

unjustified application at $k \leqslant 0{,}03$. The rating of mechanical properties of welded joints with soft interlayers from calculation formulas showed that it is necessary to take into account the hardening of soft layers as the result of explosion loading. Seven illustrations, one table, eight bibliographic references.

2/2

BELOUSOV, V.V.

Geology

THE SOVIET GEOLOGICAL AND GEOPHYSICAL EXPEDITION IN INDIA

Tasks of the Expedition

[Article by Corresponding Member of the AS USSR V. V. Belousov and A. A. Kremnyy] Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 42, No 6, June 1972, pp 72-74]

In 1960, upon the initiative of Soviet investigators, an international program of study of the depths of the earth, known as the "Deep Mantle Project", was decided upon. The main goal of the project was to discover the deep causes of geological phenomena which are expressed on the surface in the form of volcanic eruptions and other so-called endogenic processes. From the very start it was assumed that the work on the given problem would be of both theoretical and practical importance, as knowledge of the nature of endogenic geological processes will contribute to a better understanding of the laws of distribution of minerals and also the development of methods of forecasting earthquakes.

According to the Deep Mantle Project the deep structure of various geological zones on both the continents and on the bottom of the oceans have been investigated comprehensively, with the application of geological, geophysical and geochemical methods. Among those zones the rifts -- very deep faults in the earth's crust -- have attracted special attention. Until recently, when the bottom of the oceans remained almost unstudied, rifts appeared to be relatively rare, to some extent exotic, structures which have only a slight influence on the structure of the earth's crust. That structure is determined, however, by such extensive structural regions as geosynclines and platforms. Even the East African rift, which extends for 6000 kilometers from the shores of the Mediterranean Sea to the mouth of the Zambezi River, was considered only a local "deviation from the norm".

USSR UDC 547.26'118:542.61

BELOUSOV, YE. A., and KIRILLOV, V. M., Leningrad Technological Institute imeni Lensovet

"Relation Between Structural Criteria and Extractive Power of Neutral Organophpsphorus compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1876-1877

Abstract: The authors undertook to establish quantitative regularities whereby the extractive power of neutral organophosphorus compounds towards HCl and H_2CoCl_4 is related to their structure, using 1 M solutions of the extracting agents in benzene. Effective HCl extraction constants and cobalt partition coefficients, determined under strictly identical conditions, were used as the extractive power criterion. The structural criterion consisted of values of Kabachnik constants, which account for the effect of substituents at the phosphorus atom, and electronegativitiy values of the radicals. Analysis of the results showed that in the case of a hydrate-solvate extraction mechanism a linear relation is found between effective extraction constant logarithms, Kabachnik constant values and radical electronegativity values up to an HCl concentration of $\sim$5 mol /l in the initial aqueous solution. An increase in 1/2

USSR

BELOUSOVE, YE. A., and KIRILLOV, V. M., Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1876-1877

the HCl concentration above 5 mol /l results in reduced hydration in the extract. In cobalt extraction an analogous relation is found between values of the cobalt partition coefficients and Kabachnik constants.

2/2

USSR

UDC 546.73:542.61

BELOUSOV, YE. A., KIRILLOV, V. M., Leningrad Technological Institute imeni Lensovet, Leningrad, Ministry of Higher and Secondary Specialized Education RSFSR

"Extraction Properties of Neutral Organophosphorus Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 2134-2135

Abstract: Data are reported on the effect of the structure of neutral organophosphorus compounds on the extraction of cobalt from aqueous solutions of HCl, LiCl, and $CaCl_2$ (MCl_x). The series phosphates-phosphonates-phosphinates-phosphine oxide with alkyl radicals ranging from butyl to octyl groups, was studied. It was determined that extraction increases from phosphates to phosphine oxides and decreases from butyl to octyl substituents. Distribution coefficients decrease in the order $HCl > CaCl_2 > LiCl$, other conditions being equal. Depending on the MCl_x, cobalt goes into the organic phase as H_2CoCl_4 Li_2CoCl_4 and $CaCoCl_4$. It is proposed that cobalt is extracted by the hydrate-solvate mechanism.
1/1

USSR UDC [621.362:538.4]-16:537.311.3

USIKOV, A. Ya., TRUTEN', I. D., MOTORNENKO, A. P., BELOUSOV, Ye. V.

"On the Possibility of Using Microwave Ionization to Produce a Non-equilibrium Plasma in Magnetohydrodynamic Generators"

Ukr. fiz. zh. (Ukrainian Physics Journal), 1971, 16, No 5, pp 705-710 (from RZh-Elektrotekhnika i Energetika, No 9, Sep 71, Abstract No 9A79)

Translation: The authors show the possibility of obtaining extended volumes of cold plasma with a charged particle concentration comparable to the concentration in a DC arc by using the ionizing radiation of electromagnetic fields in the superhigh-frequency band. A microwave plasma in argon without additives of alkali metals is produced with a conductivity exceeding 100 mho/m and conditions are determined for further increasing conductivity. Calculations are done to evaluate the effectiveness of using such a preionizer in MHD devices. Four illustrations, one table, bibliography of twenty-one titles. [Institute of Radio Physics and Electronics. Academy of Sciences of the UkrSSR. Khar'kov]. Authors' abstract.

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CSO: 1860-W

USSR

UDC 621.316.003.13

BELOUSOV, YU. F., SUKHANOV, V. S.

"Problems of Electric Power Economy in Municipal Networks"

V sb. Tekhn. progress v elektrosnabzh. gorodov (Technical Progress in Electric Power Supply of the Cities -- collection of works), Leningrad, Energiya Press, 1970, pp 17-19 (from RZh-Elektrotekhnika i Energetika, No 4, Apr 71, Abstract No Ye 4 289)

Translation: Measures for reducing the electric power losses inside the municipal networks are analyzed. Measures of an operational nature not requiring large capital expenditures, and, in part, measures connected with capital construction and redesign of the network are investigated. The bibliography has 5 entries. [Volgograd Electric Power Network]

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Acc. Nr. AP0034078 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code UR 0078

B

71197s Yttrium sulfate-ammonium sulfate-water and dysprosium sulfate-ammonium sulfate-water system at 25°. Belousova, A. N.; Shakhno, I. V.; Plyushchev, V. E. (Mosk. Inst. Tonkoi Khim. Tekhnol. im. Lomonosova, Moscow, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 226-30 (Russ). The soly. of $M_2(SO_4)_3$-$(NH_4)_2SO_4$-H_2O systems, where M = Y or Dy was studied at 25° and their diagrams are constructed. The systems form incongruently sol. $M_2(SO_4)_3.(NH_4)_2SO_4.8H_2O$ (I). X-ray diffraction pattern study proved that I (M = Y or Dy) are individual compds. Also, for I (M = Y) n_α is 1.538 ± 0.003 and n_α is 1.526 ± 0.003; and for I (M = Dy) n_α is 1.550 ± 0.003 and n_α is 1.527 ± 0.003. D., detd. pycnometrically, of I (M = Y) and I (M = Dy) are 2.42 ± 0.05 and 2.58 ± 0.05, resp. HMIR

1 REEL/FRAME 18

19710721

Acc. Nr: AP0051956 Ref. Code: UR0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 3, pp 224-228

EFFECT OF MINERAL PHOSPHORUS ON PRODUCTION OF LEVORIN AND FATTY ACIDS BY ACTINOMYCES LEVORIS KRASS

I. I. Belousova, Ye. B. Lishnevskaya, R. Ye. Elgart, I. M. Tereshin

Leningrad Institute for Antibiotics

Addition of inorganic phosphorus to corn steep liquor media and 24- or 48-hour fermentation broths, in which mycelium of Act. levoris Krass, 26/I was grown decreased the synthesis of levorin, the decrease being more pronounced on addition of phosphorus to fermentation broths than to the initial medium. Glycerophosphate also inhibited the antibiotic production by the mycelium grown in fermentation broths of various age, while to a lesser extent than an equivalent amount of mineral phosphorus. A decrease in the synthesis of levorin by the mycelium under the effect of phosphorus added to the fermentation broth was accompanied by an increase in production of fatty acids and incorporation of radioactive acetate to them.

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USSR

BELOUSOVA, I. M., BOBROV, B. D., KISELEV, V. M., KURZENKOV, V. N., KREPOSTNOV, P. I.

"Photodissociative I^{127} Laser in a Magnetic Field"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy iziki, Vol 65, No 2 (8), 1973, pp 524-536

Abstract: A study was made of the effect of a magnetic field and also a number of other factors on the kinetics of the radiation spectrum of a photodissociative I^{127} laser in the $2P_{1/2}-{}^2P_{3/2}$ transition. The behavior of the spectrum of the induced radiation was investigated in the presence and absence of a magnetic field, and the superthin splitting constant of the upper operating level of the iodine atom $A_{1/2}$ was determined experimentally. A broadening of the luminescence line in the operating transition of the iodine atom during collisions with C_3F_7I molecules and also with argon and xenon atoms found. Then the corresponding broadening cross sections and the Van der Waals constants were determined for the interaction of the iodine atom with these gases. The calculated values of the frequencies and amplification factors for the most intense groups of Zeeman components were obtained with a varia-

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tion explaining the behavior of the induced radiation spectrum with the variation of the magnetic field. The magnitude of the relaxation between sublevels with different F of the upper operating state $^2P_{1/2}$ was evaluated.

The study of the spectral composition of the induced radiation in the $^2P_{1/2}$-$^2P_{3/2}$ transition of the iodine atom showed that the radiation kinetics of the given laser, which is a complex spectral system, depends on a number of factors such as the magnitude of the magnetic field, the gas pressure in the cell, and the magnitude of the pumping energy. The characteristics of the output radiation of the laser are determined not only by the kinetics of the chemical reactions but also by the structure of the upper and lower transition states, which varies even during the oscillation pulse time. This factor must be considered when constructing various kinetic models of the photodissociative iodine laser. In turn, for a more detailed study of the behavior of the oscillation spectrum in a magnetic field the population kinetics on all sublevels of the investigated transition must be considered.

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USSR UDC: 621.373:535(206.3)

BELOUSOVA, I. M., KISELEV, V. M., KURZENKOV, V. N.

"Spectrum of Stimulated Emission of Atomic Iodine on the Hyperfine Structure of the Transition $^2P_{1/2}-^2P_{3/2}$ (7603 cm^{-1})"

Leningrad, Optika i Spektroskopiya, Vol 33, No 2, Aug 72, pp 203-209

Abstract: An experimental study is made of the emission spectrum of atomic iodine-127 on the hyperfine structure of the transition $^2P_{1/2}-^2P_{3/2}$ in the free emission mode. The emission spectrum from a photodissociation laser was registered in the experiment. A diagram of the experimental installation is given and its operation is described. The results of the measurements showed that of the six components of the hyperfine structure of the spontaneous transition $5p^2P_{1/2}-5p^2P_{3/2}$ of atomic iodine, three are realized in stimulated emission: the components 3-3, 3-4, and one of the components 2-1 or 2-2. It is shown that the spectrum is multicomponent in the presence of a magnetic field; the number of components being realized in emission is determined by the amplification factor. By compensating the magnetic fields of the pumping currents, stable single-mode

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BELOUSOVA, I. M., et al., Optika i Spektroskopiya, Aug 72, pp 203-209

emission can be achieved without any power loss as compared with multi-component emission. The other components of the hyperfine structure are not realized in emission in the absence of a magnetic field, regardless of the amplification factor, which fact is apparently due to the strong competition between them under these conditions.

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UDC: 621.373:535

BELOUSOVA, I. M.; KISELEV, V. M., KURZENKOV, V. N.

"Line Width of Stimulated Emission of Atomic Iodine on the Transition $^2P_{1/2}-^2P_{3/2}$"

Leningrad, Optika i Spektroskopiya, Vol 33, No 2, Aug 72, pp 210-213

Abstract: An experimental study is made of the width of the line and the mode structure of stimulated emission of atomic iodine-127 on the spontaneous transition $^2P_{1/2}-^2P_{3/2}$ in a photodissociation laser. It was found that only one of the many possible longitudinal emission modes is realized, regardless of the amplification factor, the presence of a magnetic field, distance between mirrors, or the addition of an inert gas. The emission line width is less than 0.002 Å (35 MHz). The emission line width does not exceed 0.002 Å with addition of an inert gas over a broad range of variation in pressure and amplification factor.

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USSR

BELOUSOVA, I. M., DANILOV, O. B., ZAPRYAGAYEV, A. F., and ROZANOV, N. N.

"Study of the Radiation Spectrum of a Laser Used as Receiver of a Signal With a Doppler Shift"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 58, No 2, Feb 70, pp 394-406

Abstract: The article describes results of a study of the radiation spectrum of a helium-neon laser which is acted on by a signal reflected from a moving object (a mirror or a reflector with a diffusing surface). It is shown that at a significantly low answer signal intensity ($\sim 10^{-4}$ of the output power) beats appear in the laser radiation whose frequency is determined by Doppler's law, with a modulation depth close to 100 percent. The low-frequency beat spectrum reveals harmonics. Two reasons are assumed for the appearance of the harmonics: 1) multiple passage of the signal between the laser and the moving object, and 2) (in the case of a multifrequency laser mode) non-

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BELOUSOVA, I. M., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 58, No 2, Feb 70, pp 394-406

linear interaction between the field of the answer signal of one mode and the field of another mode.

It was found experimentally that a mode of stimulated laser generation sets in after the signal reflected from the moving object ceases to act on it ("memorization" effect). It is shown that the existence of the "memorization" effect is due to the presence of harmonics in the beat spectrum. The question of the stability of the "memorization" mode is considered theoretically. It is suggested that there is a stability region for the case of three frequencies belonging to one longitudinal mode.

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USSR B

BELOUSOVA, I. M.; DANILOV, O. B.; ZAPRYAGAYEV, A. F.

"Experimental Study of Nonlinear Processes in Lasers Using a Mixture of Helium and Neon"

Leningrad, Journal of Technical Physics; February, 1970; pp 405-7

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ABSTRACT: The article concerns an experimental study of the spectrum and modulation depth of laser radiation, with the return wave's being directed into the resonator by a moving reflector. The study indicates the presence of several harmonics in the spectrum of Doppler beats whose intensity depends on the conditions of the return of the radiation from the moving reflector inside the resonator. The effect of generating forced oscillations in a laser with a fixed reflector is observed.

The article includes a table and two figures. There are three references.

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Acc. Nr: AP0049165 Abstracting Service: CHEMICAL ABST. 5-70 B Ref. Code: UR 0057

104032q Coefficients of trifluoroiodomethane and heptafluoroiodopropane diffusion in inert gases. Belousova, I. M.; Kiselev, V. M.; Kurzenkov, V. N. (USSR). *Zh. Tekh. Fiz.* 1970, 40(2), 402–5 (Russ). The diffusion coeffs. of the following binary mixts. were studied: He-CF_3I, He-C_3F_7I, Ne-CF_3I, Ne-C_3F_7I, Ar-CF_3I, Ar-C_3F_7I, Xe-CF_3I, and Xe-C_3F_7I. The diffusion, as a function of time, was described by the J. Crank (1956) equation. It was assumed that the diffusion coeff. does not depend on the concn. of the mixts.; however, there is a weak dependence. The diffusion coeffs. are of interest for characterizing the diams. of the iodide mols., the potentials of interaction, and the bond types. L. Holl

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Acc. Nr: AP0047884 Abstracting Service: INTERNAT. AEROSPACE ABST. Ref. Code: 5-70 UR0057

A70-25123 # Experimental investigation of nonlinear processes in a laser employing a neon-helium gas mixture (Eksperimental'noe issledovanie nelineinykh protsessov v OKG na smesi gazov gelii-neon). I. M. Belousova, O. B. Danilov, and A. F. Zapriagaev. *Zhurnal Tekhnicheskoi Fiziki*, vol. 40, Feb. 1970, p. 405-407. In Russian.

Study of the spectrum and depth of modulation of laser emission in the case where the laser beam is reflected back into the resonator by a mirror moving along the direction of the beam. In this case, the laser power output is modulated at the Doppler frequency corresponding to the rate at which the mirror moves. It is found that the spectrum of the Doppler beats exhibits several harmonics whose intensity depends on the conditions under which the backward wave is reflected from the moving mirror.

V.P.

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19791556

Acc. Nr: AP0043669 B Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 394-406

INVESTIGATION OF THE RADIATION SPECTRUM OF A LASER EMPLOYED AS A DETECTOR OF A DOPPLER SHIFTED SIGNAL

I. M. Belousova, O. B. Danilov, A. F. Zapryagayev, N. N. Rozanov

The radiation spectrum of a helium-neon laser subjected to the action of a signal reflected from a moving body is investigated. Stimulated generation arising on cessation of action of the external signal on the laser is observed.

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19770073