USSR

UDC: 621.396.677

LAYEVSKIY, V. S.

"Determination of the Fields of the Near Zone of Elementary Sources"

V sb. Radiofiz. i mikroelektronika (Radio Physics and Microelectronics--collection of works), Voronezh, 1970, pp 26-30 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B4)

Translation: Expressions previously derived by the author (see Works of Voronezh Polytechnical Institute, "Signal Emission and Amplification", No 3, pp 138-139, Voronezh, 1970) for components of the fields of elementary sources above uniform ground are made more exact. Bibliography of four titles. N. S.

1/1

USSR

LAYGNA, K. Yu.

"Experimental Study of Limited Turbulent Stream"

Tr. Tallin. ped. In-ta [Works of Tallin Pedagogics Institute], No 1, 1971, pp 110-128, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 B304 by Yu. F. Dityakin).

Translation: The method and results of experimental study of characteristics of a turbulent stream flowing into a closed chamber are presented. Experiments were performed both using water and using air models. The velocity fields were measured in the models, varying the diameters of the tubing and the length of the sector studied. The dimensionless distances from the flow points to the cross section studied and the degree of limitation of the stream were used as generalizing parameters. The Reynolds number in all experiments exceeded $4 \cdot 10^4$. In addition to measurements of velocity fields, high speed cinematography of the stream was performed with stream visualization: for air streams, aluminum powder was used, for liquid streams -- chemical solutions. Furthermore, studies were performed under natural conditions in a dead-end mine 40 m in length and 8 m^2 in cross section. The air was fed into the mine through a pipe (0.5 m in diameter) terminated with a diffusor. The air flow was measured and the boundaries of the stream were determined (using an anemometer and thin wires). It was established in these experiments that turbulent

1/2

USSR

LAYGNA, K. Yu., Tr. Tallin. ped. In-ta, No 1, 1971, pp 110-128.

streams propagating in closed mines do not follow the rules of free turbulence. A rule was determined for the change in air flow over the length of the stream. It was demonstrated that the aperture angle of the stream is constant and independent of the structural factor. 5 Biblio. Refs.

USSR

UDC[537.226+537.311.33]:[537+535]

ARONOV, A. G., GUREVICH, V. G., and LAYKHTMAN, B. D.

"Peculiarity of Phase Transition in Ferroelectric Semiconductors"

V sb. Materialy 6-v Zimney shkoly po teorii yadra i fiz. vysokh. energiy, 1971, Ch. 3 (Materials of Sixth Winter School on Nuclear Theory and High-Energy Physics, 1971, Part 3 -- Collection of Works), Leningrad, 1971, pp 129-136 (from RZh-Fizika, No 1, Jan 72, Abstract No 1YE1247 by M. A. ITSKOVSKIY)

Translation: The authors consider the behavior of electron gas in ferroelectric semiconductors. It is shown that as the second-order phase-transition point is approached from the direction of high temperatures ($T > T_c$, T_c = transition temperature), electron interaction results in an infinite increase in specific heat according to the law $\Delta c \sim (T - T_c)^{-1/2}$. This qualitative conclusion regarding the electronic intensification of the specific heat feature also holds for uniaxial crystals, except with a different law of increase, $\Delta c \sim (T-T_c)^{-3/2}$. It is pointed out that quantitative theory requires the consideration of electron-phonon interaction, for which the same type of dependence of the specific heat feature is obtained as for the Debye term, except with a greater coefficient. The effect on the peculiarity of the behavior of the specific heat of dopant ions is also discussed.

1/1

1/2 032 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--NONLINEAR EFFECTS DURING THE AMPLIFICATION OF SOUND IN N INDIUM ANTIMONIDE IN A STRONG MAGNETIC FIELD -U-

AUTHOR-(03)-GALPERIN, YU.M., GRICHKO, I.G., LAYKHTMAN, B.D.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970 12(5), 1437-42

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--INDIUM ANTIMONIDE SEMICONDUCTOR, AUDIO FREQUENCY AMPLIFIER, NONLINEAR EFFECT, TRANSVERSE MAGNETIC FIELD, CONDUCTION ELECTRON, ACOUSTIC WAVE, VIBRATION RELAXATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0976 STEP NO--UR/0181/70/012/005/1437/1442

CLAS ACCESSION NO--AP0131463

2/2 032 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0141965

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NONLINEAR DEPENDENCE WAS USED. OF THE COEFF. OF AMPLIFICATION OF SOUND AND ITS INTENSITY IN N INSB AT 77DEGREESK IN A STRONG, NONQUANTIZED, TRANSVERSE MAGNETIC FIELD. THIS EFFECT IS EXPLAINED BY HEATING OF CONDUCTION ELECTRONS BY THE ELEC. FIELD OF THE SOUND WAVE. THE RELAXATION TIME OF THE IMPULSE OF ELECTRONS IS INDEPENDENT OF ENERGY AS WELL AS OF THE MECHANISM OF RELAXATION OF THE ENERGY ELECTRONS. FACILITY: INST. POLUPROV., LENINGRAD, USSR.

UNCLASSIFIED

UDC: 551.511

USSR

GISINA, F. A., DZHOLOV, G. D., LAYKHTMAN, D. L.

"Distribution of the Concentration of an Impurity Entering the Atmosphere From a High-Altitude Continuous Point Source"

Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. Min. SSSR (Works. Institute of Experimental Meteorology. Main Administration of the Hydrometeorological Service Affiliated With the Council of Ministers of the USSR), 1972, vyp. 27, pp 70-76 (from RZh-Mekhanika, No 7, Jul 72, Abstract No 7B988)

Translation: Taking the numerical solution of the two-dimensional equation of turbulent diffusion as a basis, the authors find the distribution of an impurity $S(x,z)$ entering the atmosphere from a continuous high-altitude point source (the x-axis is parallel to the wind, the z-axis is directed vertically upward). The function $S(x,z)$ is related to the volumetric concentration $q(x,y,z)$ by the expression

$$q(x, y, z) = \frac{e^{-v^2/2\sigma_y^2}}{(2\pi\sigma_y^2)^{1/2}} S(x, z)$$

1/2

USSR
GISINA, F. A. et al., Tr. In-t eksperim. meteorol. GU, upr. gidrometeorol. sluzhby pri Sov. Min. SSSR, 1972, vyp. 27, pp 70-76

where σ_y^2 is the dispersion of the particles of impurity in the direction of the y-axis.

In determining $S(x,z)$ use was made of the wind speed profiles and the coefficient of turbulence found by Bobyleva, Zilitinkevich and Laykhtman from a closed system of equations for the boundary layer. The external parameters of the problem are the Rossby number $R = G/\lambda z_0$, and the stratification parameter

$$\mu = -\varkappa^2 \frac{g}{T} \frac{P/C_p \rho}{\lambda V_*^2}$$

where G is the geostrophic wind, $\lambda = 2\omega \sin\phi$ is the Coriolis parameter, z_0 is the roughness parameter, V_* is the dynamic velocity, P is the turbulent heat flux and the remaining notation is conventional.

The calculation was done on a computer. A study was made of the effect of external parameters and physicochemical characteristics on impurity distribution. Some results of the numerical solution are given. Authors' abstract.

2/2

- 22 -

1/2 028 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--MODEL OF A BAROTROPIC OCEAN -U-

AUTHOR-(03)-YEGOROV, K.L., LAYKHTMAN, D.L., RADIKEVICH, V.M.

COUNTRY OF INFO--USSR

SOURCE--OKEANOLOGIYA, 1970, VOL 10, NR 2, PP 249-255

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN CURRENT, SURFACE AREA, MODEL, TURBULENT FLOW, GEOSTROPHIC WIND, ATMOSPHERIC WIND FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1285 STEP NO--UR/0213/70/010/002/0249/0255

CIRC ACCESSION NO--AP0109359

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109369

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. METHODS FOR COMPUTING VERTICAL DISTRIBUTIONS OF THE SEA CURRENT VELOCITIES AND TURBULENCE PARAMETERS ARE SUGGESTED FOR A BAROTROPIC OCEAN. THE GEOSTROPHIC WIND FIELD IS USED AT THE INITIAL DATA. THE COMPUTATIONS ARE MADE FOR A CLOSED RECTANGULAR BASIN. TANGENTIAL WIND STRESS AT THE OCEAN SURFACE IS A FUNCTION OF COORDINATES TAU SUBAY EQUAL 0; TAU SUBAX EQUAL TAU SUB0 TIMES COS PI Y DIVIDED BY B. THE OBTAINED QUANTITATIVE RESULTS ARE IN ACCORD WITH THE KNOWN ORDERS OF MAGNITUDES WHICH FACT MAKES POSSIBLE TO ASSUME THAT THE SUGGESTED MODEL CAN GIVE A CORRECT DYNAMICAL DESCRIPTION OF THE PROCESSES IN A BAROTROPIC OCEAN. FACILITY: INSTITUT OKEANOLOGII IM. P. P. SHIRSHOVA AN SSSR FACILITY: LENINGRADSKIY GIDROMETEROLOGICHESKIY INSTITUT.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--MODEL OF A BAROTROPIC OCEAN -U-

AUTHOR-(03)-YEGOROV, K.L., LAYKHTMAN, D.L., RADIKEVICH, V.M.

COUNTRY OF INFO--USSR

SOURCE--OKEANOLOGIYA, 1970, VOL 10, NR 2, PP 249-255

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN CURRENT, SURFACE AREA, MODEL, TURBULENT FLOW, GEOSTROPHIC WIND, ATMOSPHERIC WIND FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1285 STEP NO--UR/0213/70/010/002/0249/0255

CIRC ACCESSION NO--AP0109369

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002201720013-3"

2/2 028 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109369

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. METHODS FOR COMPUTING VERTICAL DISTRIBUTIONS OF THE SEA CURRENT VELOCITIES AND TURBULENCE PARAMETERS ARE SUGGESTED FOR A BAROTROPIC OCEAN. THE GEOSTROPHIC WIND FIELD IS USED AT THE INITIAL DATA. THE COMPUTATIONS ARE MADE FOR A CLOSED RECTANGULAR BASIN. TANGENTIAL WIND STRESS AT THE OCEAN SURFACE IS A FUNCTION OF COORDINATES TAU SUBAY EQUAL 0; TAU SUBAX EQUAL TAU SUB0 TIMES COS PI Y DIVIDED BY B. THE OBTAINED QUANTITATIVE RESULTS ARE IN ACCORD WITH THE KNOWN ORDERS OF MAGNITUDES WHICH FACT MAKES POSSIBLE TO ASSUME THAT THE SUGGESTED MODEL CAN GIVE A CORRECT DYNAMICAL OESCRIPTION OF THE PROCESSES IN A BAROTROPIC OCEAN. FACILITY: INSTITUT OKEANOLOGII IM. P. P. SHIRSHOVA AN SSSR FACILITY: LENINGRADSKIY GIDROMETEROLOGICHESKIY INSTITUT.

UNCLASSIFIED

USSR

UDC 669.712.5

PEVZNER, I. Z., and LAYNER, A. I.,

"On the Theory of the Thorough Desiliconization of Aluminate Solutions"

Moscow, Tzvetnyye Metally, No 9, Sep 70, pp 26-30

Abstract: A study of the system Na_2O-Al_2O_3-CaO-SiO_2-H_2O has shown the existence of two domains. In domain 1 the precipitates are $Ca(O..)_2$ and calcium hydrosilicates of the composition $nCaO.nSiO_2.eli_gO$. In domain 2 there were $3CaO.Al_2O_3.6H_2O$ and calcium hydrosilicates of the composition $3CaO.Al_2O_3.mSiO_2.nH_2O$ ($C_3AS\ H_n$). The obtained data made possible a new approach to explaining the mechanism of the process of thorough desiliconization. The study shows that with an increase of Al_2O_3 concentration in the solution, the proportion of CaO and Na_2O and SiO_2 being constant, the degree of desiliconization decreases. Correlation of results show that this regularity appears the stronger the further the composition of the solution from an equilibrium curve. It is suggested that in domain 2

1/2

USSR

PEVZNER, I. Z., and LAYNER, A. I., Tsvetnyye Metally, No 9, Sep 70, pp 26-30

silica appears in two compounds: sodium silicate and aluminosilicate complex which react as follows: $2SiO_3^{2-}+2Al(OH)_3+H_2O \rightarrow [Al_2Si_2O_5(H_2O)_4]^{2+}+6OH^-$.

Five reactions describe the chemism of desiliconization in comain 2. Reaction rate constants are computed for various temperatures and the activation energy is given as 23000 cal/mole. The effect of temperature on desiliconization rate is expressed as follows:

$$K=2.5\cdot10^{15}e^{-\frac{23000}{RT}}.$$

2/2

1/2 017 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SULFURIC ACID TREATMENT OF ZAGLIK ALUNITES -U-

AUTHOR-(02)-LAYNER, A.I., TAGIYEV, E.I.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1), 44-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--POTASSIUM MINERAL, CRYSTAL HYDRATE, SULFATE, SULFURIC ACID, SOLUTION HEAT TREATMENT, SILICA, IRON OXIDE, ALUMINA, SODIUM OXIDE, POTASSIUM OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/0777 STEP NO--UR/0136/70/043/001/0044/0047

CIRC ACCESSION NO--AP0102740
UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0102740

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ATTEMPT WAS MADE TO DET. THE OPTIMUM FIRING TEMP. OF ALUNITES. TO BE ABLE TO DO THIS, 40-G BATCHES OF THE ALUNITES WERE HEATED IN A MUFFLE FURNACE AT 460, 500, 540, 560, 580, AND 620DEGREES FOR 3 HR. THE BATCHES FIRED AT THESE TEMPS. WERE TREATED WITH H SUB2 SO SUB4 SOLN. UNDER VARIOUS CONDITIONS IN A GLASS VESSEL WHILE BEING STIRRED MECH. THE FILTRATE WAS ANALYZED FOR AL SUB2 O SUB3, FE SUB2 O SUB3, K SUB2 O, NA SUB2 O, AND SIO SUB2. THE HIGHEST EXTN. OF THE USEFUL COMPONENTS AT THE GIVEN TEMP. IS ACHIEVED AFTER 3-4 HR FIRING. IF THE FIRING TIME IS MORE OR LESS THAN THIS, LEACHING IS NOT AS SUCCESSFUL. WITH THE EXCESS OF H SUB2 SO SUB4 INCREASING, THE DEGREE OF DISSOLN. OF FE SUB2 O SUB3 INCREASES. IN ALL CASES, SIO SUB2 DISSOLVES IN ONLY SMALL AMTS. THE MAX. EXTN. OF SIO SUB2 IS ACHIEVED AFTER 45 MIN LEACHING OF ALUNITE. INCREASING THE H SUB2 SO SUB4 CONCN. TO 40PERCENT HAS NO EFFECT ON THE EXTN. OF USEFUL COMPONENTS, AND DECREASES THE OUTPUT OF FE SUB2 O SUB3 ONLY SLIGHTLY. THE OPTIMUM CONDITIONS OF THE PROCESS WERE: FIRING AT 560DEGREES FOR 3 HR; LEACHING AT 80-90DEGREES FOR 45 MIN; H SUB2 SO SUB4 CONCN. 30 PERCENT; AMT. OF H SUB2 SO SUB4 105PERCENT OF STOICHIOMETRIC. THE SOLID AND LIQ. PHASES CAN BE SUCCESSFULLY SEPD. BY ALLOWING THE PULP TO SETTLE AT 80DEGREES.

UNCLASSIFIED

USSR

UDC 541.122.2

MIRTSKHULAVA, A. A., RAKOV, V. V., LAVIER, E. D., MIL'VIDSKIY, M. G., SAKVARELIDZE, L. G., State Scientific Research and Design Institute of Rare Metals Industry

"Study of the Phase Equilibrium in Gallium Arsenide-Aluminum Arsenide System"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 45, No 9, 1971, pp 2374-2375

Abstract: The ternary phase diagram of the quasibinary gallium arsenide-aluminum arsenide system with 0-15 mol% aluminum arsenide was determined using gravimetric physicochemical analysis. Arsenic concentration in the melt, temperature of the melt, and arsenic vapor pressure were determined simultaneously by the above method. Vacuum degassing of the starting materials and of the ampoule and graphitization of the crucible prevented aluminum from interacting with the container and with oxygen. To determine the liquidus line polythermal cuts of the diagram were plotted for alloys with different ratios of nonvolatile components. The

1/2

USSR

MIRTSKHULAVA, A. A., et al, Zhurnal Fizicheskoy Khimii, Vol 45, No 9, 1971, pp 2374-2375

maximum liquidus temperature within each cut corresponded to a Ga-Al-As melt with 50 at.% As. The projections of the liquidus line of the quasibinary system on T-x, P-x, and P-T planes are shown. The experimental coefficient of interdiffusion of the melt components, i.e., Ga, Al, and As, was found to decrease from $1.5 \cdot 10^{-4}$ to $1.1 \cdot 10^{-4}$ sq. cm./sec., when aluminum arsenide concentration in the melt was increased from 0 to 15 mol.%.

2/2

USSR UDC 621.791.001.5:533.5:669.14+669.295

LAYNER, D. I., Doctor of Technical Sciences, KHARITONOVA, L. D., Candidate of Technical Sciences, and MASLOVSKIY, V. A., Engineer

"Investigation of Bonding Layer Strength in Titanium-Steel Bimetal Produced by Vacuum Condensation of Titanium"

Moscow, Svarochnoye Proizvodstvo, No 9, 1973, pp 26-27

Abstract: The change of bonding strength of titanium and steel in relation to the nature of surface purity of the steel base and the temperature of its heating at the time of titanium condensation was examined and results from structural studies of the titanium contact regions are presented. Steel 08kp, 0.1 mm thick, was used as the base metal which was washed in organic solvents prior to placement in a UNV-2M-1 vacuum unit. The titanium was vaporized with the aid of an electron-beam vaporizer from water-cooled copper crucible. Bonding strength was determined by the method of normal tear. Bonding strengths were found to be, for an unannealed base metal, 0.1 kgf/mm^2 with the base metal temperature at 50 and 90°C, 1.4, 1.6, 2.1, and 2.3 kgf/mm^2 at base metal temperatures of 120, 200, 300, and 370°C respectively, and greater than 18 kgf/mm^2 in the 400-800°C interval. In all cases in the 400-800°C interval, tear occurred

1/2

USSR

LAYNER, D. I., et al., Svarochnoye Proizvodstvo, No 9, 1973, pp 26-27

along the braze joint at stresses higher than 18 kgf/mm^2 which shows that the bonding strength of titanium depends on the temperature at which the titanium was applied. TiCl and FeTi are formed in the intermediate layer as a result of reactive diffusion. 2 tables, 5 bibliographic references.

2/2

Coatings

USSR

LAYNER, D. I., KHARITONOVA, L. D., and MASLOVSKIY, V. A., State Scientific Research and Planning Institute for Processing Non-Ferrous Metals

"ON the Method of Determining the Adhesion of Titanium Coatings to Steel"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 2, 1973, pp 188-189

Abstract: The usual break-off method used for determining the force required to separate a metal coating from a metal base is not applicable for the determination of the bonding strength of titanium coatings with the base because the oxide film inhibits the soldering of titanium with the investigation pins. This is avoided in the described method by applying an additional 1-2 μ thick layer of copper on the titanium coatings. The process of titanium and copper condensation in a vacuum of $1 \cdot 10^{-5}$-$5 \cdot 10^{-5}$ mm Hg on 10 x 10 mm bimetal samples is discussed. Characteristics of solders and strength properties of soldered joints are presented. One figure, one table.

1/1

USSR

UDC 669.3:539.214:539.377

LAYNER, D. I., TSYPIN, M. I., NOVIKOV, A. V., SHEVAKIN, Yu. F., SOLLER-TINSKAYA, Ye. S., AFONIN, M. P., State Scientific Research and Design Institute of Alloys and Nonferrous Metalworking, Moscow

"Ductility, Brittleness and Superplasticity of Copper"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, Mar/Apr 73, pp 80-82

Abstract: The authors investigate the particulars of behavior of specimens cut from copper ingots and deformed by tension over a broad temperature range (from -196 to 1000°C, tests at 100°C and higher being done in vacuum) at strain rates from 10^{-5} to 10^{-2} s^{-1}. The deformation curves were processed on the "Minsk-32" digital computer. The results show the existence of two fundamentally different mechanisms of high-temperature plastic deformation of copper, in one of which superplasticity is observed due to periodic recrystallization of the metal at the focus of deformations. The existence of such a mechanism of superplasticity may be considered proved, at least for pure metals.

1/1

UDC 621.762.2:669.22

USSR

CHIZHIK, S. P., SHTAYNBERG, A. N., KAGAN, N. M., KHASIN, E. K., SHELEST, A. YE., DMITRIYENKO, V. YE., and LAYNER, D. I.

"Method of Producing Silver Granules"

USSR Authors' Certificate No 267079, Cl. 40b, 1/04; 31 b3, 9/00, (B 22f), filed 27 Apr 67, published 16 Jul 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G404P by S. Krivonsova)

Translation: An alloy containing up to 50% Ag, the rest Al, is rolled into strip and treated in alkali. In order to produce granules with up to 0.5% Al content, the initial alloy is rolled into strip up to 0.5-5 mm in thickness, and before alkali treatment is heated to 540-560°, held for 1.5 hr in an inert atmosphere until a solid solution of Ag in Al forms, and is hardened.

1/1

1/3 036 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--EFFECT OF HEAT TREATMENT ON THE MECHANICAL, ELECTROCHEMICAL, AND CORROSION CHARACTERISTICS OF ZINC AND SOME OF ITS ALLOYS -U-

AUTHOR-(02)-BULGACHEVA, N.M., LAYNER, D.I.

COUNTRY OF INFO--USSR

SOURCE--TR., GOS. NAUCH.-ISSLED. PROEKT. INST. SPLAVOV OBRAB. TSVET. METAL 1970, NO. 31, 3-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--METAL HEAT TREATMENT, MECHANICAL PROPERTY, CORROSION RATE, ZINC, INDIUM, LEAD, IRON ALLOY, ZINC ALLOY, CERIUM, TENSILE STRENGTH, CORROSION RESISTANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0577 STEP NO--UR/0000/70/000/031/0003/0008

CIRC ACCESSION NO--AT0134343

UNCLASSIFIED

2/3 036 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0134343

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOILS OF THE TSO TYPE ZN AND ITS ALLOYS WITH IN, PB, CE, AND FE (0.1, 0.3, 0.07, AND 0.1PERCENT, RESP.) WERE ANNEALED IN AIR AT 100, 200, AND 300DEGREES FOR 0.5, 3.5, AND 12 HR, RESP. THE SPECIMENS FOR ELECTROCHEM. AND CORROSION TESTS WERE DEGREASED FOR 5 MIN AT 80-90DEGREES IN A SOLN. CONTG. ANHYD. NA SUB3 PO SUB4 45 PLUS WATER GLASS 5 G-L. A PART OF EACH SPECIMEN WAS THEN ANODICALLY POLARIZED IN 10N KOH SOLN. AT 700 A-N PRIME2 AND THE CORROSION RESISTANCE OF THE OTHER PART WAS ESTD. BY THE DETN. OF THE VOL. OF H EVOLVED DURING 3 DAYS FROM THE 3 DM PRIME2 SURFACES OF SPECIMEN IMMERSED IN THE KOH 8.5 PLUS ZNO 0.22N SOLN. THE METALLOGRAPHIC SPECIMENS WERE ELECTROLYTICALLY POLISHED IN ETOH 65 PLUS H SUB3 PO SUB4 35PERCENT SOLN. FURTHERMORE, THE TENSILE STRENGTH SIGMA SUBV, AND RELATIVE ELONGATION DELTA OF THE FOILS WAS DETD. THE RESULTS SHOWED THAT THE HEAT TREATMENT AT 100-200DEGREES WORSENS ALL THE CHARACTERISTICS INVESTIGATED. E.G., SIGMA SUBV OF ZN-IN FOIL DECREASED FROM SIMILAR TO 14 TO SIMILAR TO 9 KG-MM PRIME2 FOR THE UNTREATED AND TREATED AT 200DEGREES FOIL, AND THE RESP. DELTA VALUES WERE SIMILAR TO 10 AND SIMILAR TO 6PERCENT. ANNEALING ACCELERATES PASSIVATION OF ELECTRODES THAT SHOW ABNORMAL BEHAVIOR ON TREATMENT AT GREATER THAN 200DEGREES. GENERALLY, THE CORROSION RESISTANCE OF FOILS TREATED AT 100DEGREES IS WORSE THAN THAT OF UNTREATED ONES BUT SOME FOILS SHOW BETTER RESISTANCE AFTER TREATMENT AT 200DEGREES. THE CHANGES OF PROPERTIES ARE ATTRIBUTED TO A UNIFORM GROWTH AND DISTRIBUTION OF ZNO SURFACE LAYERS.

UNCLASSIFIED

3/3 036 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0134343

ABSTRACT/EXTRACT--THE MEASUREMENTS OF ITS THICKNESS, CARRIED OUT BY CATHODIC REDN. OF SPECIMENS IN THE 0.1M K SUB2 SO SUB4 SOLN. BY USE OF A PB ANODE, AT 0.5-- MA-CM PRIME2, GAVE THE VALUES 15-20 ANSTROM FOR ALL UNTREATED FOILS, AND 25-30, 35-6, AND 300-400 ANGSTROM FOR THOSE TREATED AT 100, 200, AND 300DEGREES, RESP.

UNCLASSIFIED

USSR

LAYNER, D. I., TSYPIN, M. I., NOVIKOV, A. V., SHEVAKIN, Yu. F., SOLLERTINSKAYA, Ye. S., AFONIN, M. P.

"Ductility, Brittleness and Superplasticity of Copper"

Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 80-82.

Abstract: This work studies the peculiarities of the behavior of specimens (gage section 6 x 30 mm) cut from copper ingots and deformed by extension over a broad range of temperatures (from -196 to +1000°C, tests at 100°C and over conducted in a vacuum) and deformation rate (10^{-5}-10^{-2} sec^{-1}). Deformation curves were processes on a Minsk-32 computer. Three types of copper were tested: M1, containing 99.95% Cu, 0.02% O_2; MOB, containing 99.99% Cu and $(5\text{-}10)\cdot10^{-4}$% O_2; and MVCh, containing 99.994% Cu and $(5\text{-}10)\cdot10^{-4}$% O_2. The work establishes the existence of two mechanisms for plastic deformation of copper at high temperatures. One exhibits superplasticity by periodic recrystalization of the metal in the deformation center. The existence of this superplasticity mechanism can be considered experimentally proven at least for pure metals.

1/1

Acc. Nr: AP0047682 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR 0032

1

104871n Determination of crystallographic textures on an x-ray diffractometer. Lainer, D. L.; Radishevskii, A. I.; Sollertinskaya, E. S. (USSR). *Zavod. Lab.* 1970, 36(1), 31-3 (Russ). Complete data on the crystallographic texture of metals usually originate from the pole figures. An exptl. comparison of existing methods for the construction of the pole figures by means of x-ray ionization devices in the study of rolled metals is made.
J. Hejduk

1/1

REEL/FRAME
19791258

USSR

RATNER, A. I., RUZINOV, L. P., LAYNER, L. V.

"Search for Optimal Mixtures on Composition-Property Diagrams with Limitations"

Voprosy Kibernetiki. Nekotoryye Voprosy Planirovaniya Eksperimenta [Problems of Cybernetics. Certain Problems of Experimental Planning], Moscow, 1972, pp 91-96 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1975, Abstract No 6V296, by the authors).

Translation: In the performance of studies, it is frequently necessary to determine the singular points of a composition-property diagram. Usually, this is performed using approximation of the desired dependence by polynomials and analysis of the models produced. In this work, it is suggested that the optimal mixtures be sought using a gradient method, allowing the extremes or areas close to them to be found without preliminary adequate description of the entire response surface.

1/1

USSR

UDC 620.193.2:[669.14.018.29:669.587-977

LAYNER, V. I., Doctor of Technical Sciences, Professor, and SEDLOYEV, I. A., Engineer

"Increasing Corrosion Resistance of Hot-Galvanized Structural Steels"

Moscow, Vestnik Mashinostroyeniya, No 1, Jan 71, pages 60-62

Abstract: The influence of steel composition, process mode and heat treatment on the structure of coatings and corrosion resistance of hot-galvanized structural steels is demonstrated. Alloying elements in structural steels expand the temperature area of accelerated dissolution of iron into the zinc melt and facilitate the production of thick zinc coatings. Diffusion annealing at 500-600°C homogenizes the structure of the hot zinc coatings based on the hexagonal iron-zinc δ-phase. This heat treatment of hot-galvanized steels increases their corrosion resistance by approximately a factor of 2.

1/1

USSR UDC: 539.89:535.3

BUYNOVSKI, V., POROVSKI, S., and LAYSAAR, A. I.

"Device for Optical Research Under High Pressure at Nitrogen Temperatures"

Moscow, Pribory i tekhnika eksperimenta, No 1, 1973, pp 224-228

Abstract: The purpose of the device described in this paper is to investigate the optical characteristics of solids under hydrostatic pressure and low temperatures. It compresses helium or some other inert gas up to a level of 15 kbar, and differs from similar instruments by its simple construction and operational reliability under heavy pressure. Cross-sectional drawings are given of the gas compression system, of the high-pressure optical chamber, and of the nitrogen cryostat, and all three components are described in detail. As an example of the work the device is capable of doing, the authors reproduce the edge absorption spectra of a 83-micron thick GaSe monocrystal measured under various pressures and temperatures. They thank the personnel of the high-pressure laboratory of the Polish Academy of Science Institute of Physics for the high quality of the equipment.
1/1

L

Acc. Nr: AP0038104 Ref. Code: UR 0326

PRIMARY SOURCE: Fiziologiya Rasteniy, 1970, Vol 17, Nr 1, pp 40-48

DIFFUSION RESISTANCE OF LEAVES IN CONNECTION WITH THEIR ANATOMY

Laysk, A.; Oya, V.; Rakhi, M.

Institute of Physics and Astronomy, Academy of Sciences, Est. SSR

The CO_2 and water diffusion resistances were measured in 13 species of plants. Stomatal parameters (stomata number, stomata slit and tube lengths) and the exposed internal surface of the leaves were measured for the same plants. It is assumed that the anatomically possible maximal slit width does not exceed 1/2 the slit length. The minimal stomatal resistances determined experimentally never dropped below the minimal values calculated theoretically (fig. 1). The mesophyll resistance for a given species was not constant. For each species the minimal values obtained correlated with those calculated on basis of leaf anatomy (fig. 2). It is concluded that leaf anatomy determines the maximal rate of net photosynthesis. Under natural conditions additional limiting factors will appear, such as respiration, closing of stomata and increase of mesophyll resistance. The latter may be of a diffusional or chemical nature.

1/1

REEL/FRAME 19731154

C2

USSR

UDC: 513.88:513.83+517.948

LAYTERER, Yu.

"On an Operator of Multiplication by a Continuous Operator-Function"

V sb. Mat. issledovaniya (Mathematical Research--collection of works), T. 5, vyp. 4, Kishinev, Academy of Sciences of the Moldavian SSR, 1970, pp 115-135 (from RZh-Matematika, No 5, May 71, Abstract No 5B788)

Translation: The results of an article by the author (RZh-Mat. 1971, 2B717) are generalized to the infinite-dimensional case. Let $\mathfrak{B}_1$, $\mathfrak{B}_2$ be Banach spaces, Γ be a compact of finite-dimensional space, and $A(\zeta)$ be a continuous operator function with generalized-reversible values from $\mathfrak{R}(\mathfrak{B}_1, \mathfrak{B}_2)$ (the operator $A \in \mathfrak{R}(\mathfrak{B}_1, \mathfrak{B}_2)$ is called generalized-reversible if there exists an operator $X \in \mathfrak{R}(\mathfrak{B}_2, \mathfrak{B}_1)$ such that $AXA = A$). Let us denote by $\mathbb{A}$ the operator of multiplication by $A(\zeta)$ acting from Banach space $L_p(\Gamma, \mathfrak{B}_1)$ to $L_p(\Gamma, \mathfrak{B}_2)$ $(1 \leq p < \infty)$ or from $G(\Gamma, \mathfrak{B})$ and $C(\Gamma, \mathfrak{B}_2)$: $(\mathbb{A}f)(\zeta) = A(\zeta) f(\zeta) (\zeta \in \Gamma)$. Equivalence of the following assertions is established: 1) the function $\operatorname{Ker} A(\zeta) (\zeta \in \Gamma)$ is continuous (in the sense of the subspace opening); 2) the function $\operatorname{Im} A(\zeta) (\zeta \in \Gamma)$ is continuous; 3) there exists a continuous operator-function $X(\zeta) (\zeta \in \Gamma)$ with values from $\mathfrak{R}(\mathfrak{B}_2, \mathfrak{B}_1)$ such that $A(\zeta) X(\zeta) A(\zeta) = A(\zeta) (\zeta \in \Gamma)$; 4) the operator $\mathbb{A}$ is generalized-reversible; 5) the operator $\mathbb{A}$ is normally solvable. Other assumptions similar to this are proved. Author's resumé.

1/1

USSR UDC: 513.88+517.948

LAYTERER, Yu.

"One Theorem of Multidimensional Wiener-Hopf Equations"

V sb. Mat. issledovaniya (Mathematical Research--collection of works), T. 5, vyp. 3, Kishinev, Academy of Sciences of the Moldavian SSR, 1970, pp 195-201 (from RZh-Matematika, No 5, May 71, Abstract No 5B788)

Translation: A criterion of unilaterial reversibility is established for multidimensional Wiener-Hopf equations for the case in which the matrix is made up of the Fourier coefficients of a piecewise-linear function of special type. Author's resume.

1/1

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--NITRATION OF DIHYDRORESORCINOL -U-

AUTHOR-(03)-NEYLANDS, O., SKUJMA, J., LAIZANE, Z.

Laizane

CCUNTRY OF INFO--USSR

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, KIM. SER. 1970, (2), 244-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITRATION, RESORCINOL, AMMONIUM SALT, ORGANIC NITRO COMPOUND, CYCLOHEXANE, KETONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1878 STEP NO--UR/0464/70/000/002/0244/0245

CIRC ACCESSION NO--AP0123666

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123666

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 2,NITRO,1,3,CYCLOHEXANEDIONE (I) M. 114-15DEGREES (NH SUB4 SALT M. 168-9DEGREES (ETOH), WAS PREPD. IN 67PERCENT YIELD BY ADDING, DURING 1 HR AT 0-5DEGREES, 8 ML CONCD. H SUB2 SO SUB4 AND SUB3 TO 4.5 G DIHYDRORESORCINOL IN 20 ML CONCD. H SUB2 SO SUB4 AND STIRRING THE MIXT. 15 MIN. WHEN THE ABOVE MIXT. WAS POURED OVER ICE AND HEATED TO 60DEGREES, 69PERCENT O SUB2 NCH SUB2 CO, (CH SUB2) SUB3 CO SUB2 H (II), M.96-7DEGREES (C SUB2 H SUB4 CL SUB2) IN 69PERCENT WAS PREPD. CHLORINATION OF I IN C SUB2 H SUB4 CL SUB2 YIELDED ONLY II AND O SUB2 NCHCLCO (CH SUB2) SUB3 PRIME NEGATIVE CO SUB2 H. FACILITY: RIZH. POLITEKH. INST., RIGA, USSR.

UNCLASSIFIED

USSR

UDC: 772.99

AVRORIN, A. V., KOPYLOV, Ye. A., KUZNETSOV, V. V., LAZAKOV, V. N., Novosibirsk

"Optical Production of Images by Means of SHF Holograms"

Novosibirsk, Avtometriya, No 5, Sep-Oct 73, pp 78-79.

Abstract: This article presents the results of experiments on SHF holography in the centimeter waveband, in which an improvement is achieved in the quality of images produced by some improvements in the circuit for electronic processing of the signals received, to achieve linearity of recording of the signals on the photographic material. The maximum Rayleigh resolution, defined by the geometry of the equipment was 2.7 cm. Indeed, bands separated by 30 mm are clearly shown as separate bands in the photographs presented with the article.

1/1

1/2 023 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--EXPERIMENTAL CONDUCTING OF AN OPTIONAL COURSE IN FIRM IX CLASSES, CONCLUSION -U-
AUTHOR--LAZARENKO, A.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. SHK. 1970, 25(2), 01-5

DATE PUBLISHED-------7C

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL BONDING, CRYSTAL STRUCTURE, CHROMIUM, COPPER, MANGANESE, METAL COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605002/E12 STEP NO--UR/0509/70/025/002/0081/0085

CIRC ACCESSION NO--AP0139467
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11DEC70

2/2 023

CIRC ACCESSION NO--AP0139487

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHAPTERS V AND VI CONCERNING GENERAL INFORMATION ON METALS AND METALS OF SUBORDINATE GROUPS ARE DESCRIBED AS PART OF AN OPTIONAL COURSE IN FORM IX CLASSES. CHAPTER V CONTAINS SECTIONS ON THE METAL BOND AND CRYST. STRUCTURE, TYPES OF REACTIONS OF METALS AND THEIR COMPDS., OXIDN. REDN. REACTIONS, CHEM. AND ELECTROCHEM. CORROSION, AND ALLOYS. CHAPTER VI CONTAINS SECTIONS ON THE PROPERTIES AND OCCURRENCE OF ELEMENTS OF THE CU SUBGROUP, COMPLEX FORMATION, PROPERTIES OF CR AND MEMBERS OF ITS SUBGROUP, AND PROPERTIES OF MN AND ITS COMPDS. FACILITY: SHK. NO. 114, MOSCOW, USSR.

UNCLASSIFIED

USSR UDC 621.165-762.001.45

FEDORCHENKO, I. M., Academician of the Academy of Sciences Ukrainian SSR; KOSYAK, YU. F., LAZARENKO, A. V., MIROSHNIKOV, V. N., Candidates of Technical Sciences; KANTEMIR, A. D., and UGOL'NIKOVA, L. A., Engineers

"Full-Scale Tests of Bronze-Graphite Powder Metallurgy Sealing Materials in PVK-150 Turbine"

Leningrad, Energomashinostroyeniye, No 12, Dec 71, pp 27-29

Abstract: In high- and intermediate-pressure cylinders designed by the Khar'kov Turbogenerator Plant, minimum clearance over the moving blades is provided by sealing strips in the stator. Certain heat-resistant materials should not be used for the strips, e.g. nickel, German silver, EI811T steel. New turbine designs use seals with the strips made in conjunction with the shroud. Until recently such designs used only cast materials, chiefly iron alloyed with 6% chromium. Full-scale tests of the nickel-graphite sealing material UPG-1 in VK-50, VK-100 and K-300 turbines showed that this nickel-base material is not promising for high-parameter turbines because of intercrystalline corrosion. Copper-base materials have proved more promising in this respect.

1/2

USSR

FEDORCHENKO, I. M., et al., Energomashinostroyeniye, No 12, Dec 71, pp 27-29

Full-scale tests were made of bronze-graphite materials in the PVK-150 turbine at the Berezovskaya State Regional Electric Power Station. The experimental materials contain aluminum, iron and manganese as the principal alloying elements, as well as graphite as an antifriction addition. The results indicate satisfactory performance for 10,500 hours. The best materials are brands 43, 53 and 71, which should be used for sealing inserts for high-parameter turbines. The graphite content of the sealing materials should not exceed 3% (by weight). The average clearance was found to increase from 0-0.3 mm in the initial state to 0.8-0.9 mm after the tests. Assembly of the seal unit requires nonconcentric radial clearance. The condition of the rotor strips is satisfactory. The use of bronze-graphite sealing materials can be recommended after check tests in a K-500-240 type turbine.

2/2

USSR

LAZARENKO, B.P., GITLEVICH, A.Ye., TKACHENKO, V.N. and FURSOV, S.P., Kishinev

"Effect of Electric Discharge Parameters and Discharge System Design on Metal Powder Deposition Process"

Kishinev, Electronnaya Obrabotka Materialov, Applied Physics Institute, Academy of Sciences, Moldavian SSR, No 6, 1972, pp 24-26

Abstract: Experiments were made with discharging metal powder out of a 8 mm diameter barrel against a flat surface. The effectiveness was defined as the ratio of powder deposited to the initial charge. According to the graphs the effectiveness varied a lot with the electric discharge energy and with the distance from the barrel outlet to the flat surface, but depended little on the length of the barrel. However, according to the photographs in the article the character of deposit depends on the length of the barrel; with longer barrel the powder is deposited in liquid phase, probably because of cooling in the barrel. With shorter barrel the vapor phase appears. Photographs of plasma jets leaving the barrel show shock waves.

1/1

LAZARENKO, B.R.

Metal Working Electrical Erosion

UDC: 621.789.1

THE USE OF ELECTRICAL EROSION IN METAL WORKING

[Article by Academician of the AS Moldavian SSR B. R. Lazarenko; Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 42, No 10, October 1972, pp 86-92]

When one speaks of the electrical finishing of materials, that is, of the formation or alloying of their surface, one understands the behavior of the material of electrodes which are some distance apart and which commutate the space between the electrodes, filled with a liquid or a gas.

In that case the parameters of the commutated electrical circuit and the composition of the interelectrode medium are so selected that there are, firstly, selective removal (electrical erosion) of the material from the surface of one of the electrodes and, secondly, depending on the selected conditions, deposition of the removed portion of the material on the opposite electrode (alloying of surfaces) or ejection of it into the space surrounding the electrodes (formation of surface).

It should be noted that practically all electrical methods of working metals have been discovered in the USSR. The most widespread among them is electro-spark machining, which differs from other methods by the fact that the process is accomplished by means of electric pulses at atmospheric pressure. Almost 30 years have passed since the main regularities of that method were formulated. They have not only completely stood the test of time but have also served as the base for the development of electro-spark technology.

Two regularities are especially important for an understanding of the character of electrical erosion: the weight of the material ejected from the electrodes by the spark electrical pulse is strictly proportional to the energy of the pulse; other

1/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PURIFICATION OF LEUCOPARAFUCHSINE -U-

AUTHOR--(05)-ILMUSHKIN, V.M., LAZARENKO, L.I., KHOMENKO, V.V., KOLCHEV, V.D., FOTCHENKO, A.S.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,977
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHEMICAL PATENT, CHEMICAL PURIFICATION, BIOLOGIC PIGMENT, DYE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1809 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132075
UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0132075

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LEUCOPARAFUCHSINE (I) WAS PURIFIED BY TREATING TECH. I WITH HCL AND NACL IN THE PRESENCE OF 5-20PERCENT NA SUB2 S SUB2 O SUB4.2H SUB2 O (ON THE WT. OF I) AT 20-110DEGREES. THE RESULTING I.3HCL WAS FILTERED, DISSOLVED IN DISTD. WATER IN THE PRESENCE OF AACTIVATED C, AND REFILTERED. THE RESULTING FILTRATE WAS TREATED WITH NH SUB4 OH AND PURE I FILTERED AND DRIED.

UNCLASSIFIED

USSR

LAZEBNIK, A. I., KHRANOVICH, I. L.

"Solution of the Generalized Travelling Salesman Problem by the Method of Branches and Bounds"

Ekonomika i mat. metody [Economics and Mathematical Methods], 1973, 9, No 2, pp 563-564 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V499 by Ye. Gabovich)

Translation: Two details are discussed in the solution of the travelling salesman problem, as well as a number of its generalizations, by the method of branches and bounds. The supplementary problems of assignment are to be solved by a general purpose analog computer or a special analog computer designed to determine trajectories of extreme length. It is noted that the solution of all these supplementary problems can be produced by analog computers practically instantly. A slightly altered branching plan is also suggested, providing for successive subdivision into nonintersecting subsets. No report is made on the realization of the algorithm by an analog-digital complex, and the requirements based on such a complex are not formulated. The generalization of the travelling salesman problem discussed

USSR

LAZEBNIK, A. I., KHRANOVICH, I. L., Ekonomika i mat. metody, 1973, 9, No 2, pp 563-564

as follows. First of all, the points of the graph of cities are divided into two groups and the travelling salesman must visit all cities in the first group, but may fail to visit some or all of the cities of the second group. Secondly, the travelling salesman can visit the same cities many times, although the number of passages through certain cities and along certain routes may be given upper or lower limits. For each such generalization, a formulation is presented of the corresponding "assignments problem" used to determine the lower boundaries in branching.

2/2

Acc. Nr: AA0101004 Abstracting Service: 3-70 Ref. Code: UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent,

244132 RESPIRATOR BREATHING BOX comprises cylinders 1 contained one within the other, and forming compressed air channel with deflector 2. The air is fed by adaptor 3, and flanges 4 are used for attaching the box to mask 5. The inner cylinder is fitted with stop valve 6 protected by screen 7. Valve 8 ensures glass blowing when the latter is steamed up. 23.3.65. as 948236/31-16. P.T LAZARENKO. (7.10.69.) Bul.17/ 14.5.69. Class 61a. Int.Cl. A62b.

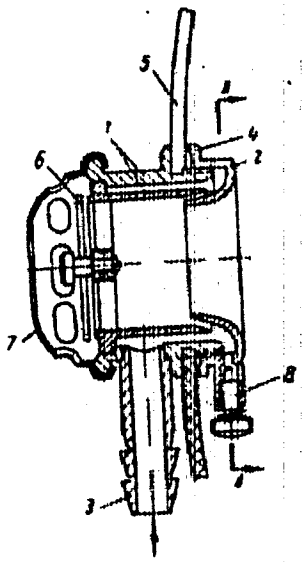
1/2

CK

2

REEL/FRAME
19850553

AA0101004



2/2

19850554

CK

USSR

KORENBLUM, I. Ya., and LAZARENKO, Yu. P. (Joffe Physicotechnical Institute of the USSR Academy of Sciences, Leningrad)

"Electron-Magnon Interaction and the Kinetic Effects in Degenerate Ferromagnetic Semiconductors"

Leningrad, Fizika Tverdogo Tela, May 1971, pp 1431-1437

Abstract: The attenuation of electrons and magnons in a degenerate ferromagnetic semiconductor with a wide conduction band caused by processes involving two magnons was determined. It was assumed that the Fermi energy was less than the exchange energy of the s-d interaction, so that single-magnon interaction is ineffective. A system of kinetic equations for the electrons and magnons was derived by the method of Konstantinov and Perel' (ZhETF, 39, 197, 1960). The electron relaxation time and the thermoelectromotive force of the electron drag by magnons were calculated. The thermoelectromotive force is a nonmonotonic function of the temperature. If long-wave magnon relaxation occurs mainly with magnons and electrons, then at the maximum the thermoelectromotive force can exceed k_B/e.

1/1

UDC 656.259.12

USSR

BERZIN, M.A., GIZHDEU, V.V., LAZARENKO, YU. V., LAZER, V.B., CHIMASHKOV, YE.S., PLAVNIK, YA. YU., and SOKOLOV, V.F., Design Office of the Main Administration of Signaling and Communication, Ministry of Railroads

"A Device for Monitoring a Locomotive's Transit of Block Section Boundaries"

USSR Authors' Certificate No 297522, Cl. B 61 L 3/20; B 61 L 1/08, Filed 12 Sep 69, published 20 May 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 1, Jan 72, Abstract No 1A383P)

Translation: A device is suggested for monitoring a locomotive's transit of block section boundaries. It contains locomotive pick-up coils connected via a filter to an amplifier input, a rectifier unit whose input is connected to the aplifier output, OR circuits, a flip-flop, and an actuating unit. For purposes of simplification the device contains code separation units, the output of the rectifier unit being connected to the inputs of the code separation units, with the outputs of the code separation units connected to the inputs of the corresponding OR circuits, the outputs of the OR circuits connected to the flip-flop inputs, and the flip-flop output connected to the actuating unit input. 2 illustrations.

1/1

USSR

UDC 612.465.014.45

PINCHUK, V. G., GEKHMAN, B. S., and LAZARETNIK, A. Sh., Kiev Institute of Experimental and Clinical Oncology; Kiev District Army Hospital

"Renal Ultrastructural Shifts Under the Influence of Ultrasound"

Kiev, Fiziologicheskiy Zhurnal, Vol 17, No 1, Jan/Feb 71, pp 109-113

Abstract: Shifts in the ultrastructure of the renal organs induced by ultrasound with a frequency of 880 kc and an intensity of 2 w/cm^2 for a period of 20 minutes were studied. Three dogs -- two experimental and one control -- were used in the experiments with the left kidney subcutaneously exposed. A single continuous acoustic stimulus was applied to the experimental dogs through the undamaged skin. The third dog was not subjected to the action of ultrasound. An examination of kidney sections excised from the animals established functional shifts in the glomeruli and tubules of the organs, indicating disturbed membrane permeability. Neither radical changes pointing to dystrophy,

USSR

PINCHUK, V. G., GEKHMAN, B. S., and LAZARETNIK, A. Sh.,
Fiziologicheskiy Zhurnal, Vol 17, No 1, Jan/Feb 71, pp 109-113

nor the presence of necrobiotic cells was discovered.

2/2

UDC 612.46.014.45

USSR

GEKHMAN, B. S., LAZARENKO, A. Sh., VANSHAVER, L. G., BONDARENKO, V. P., DANILENKO, N. F., Kiev District Military Hospital

"The Effect of Supersonic Waves on Kidneys and Urinary Tracts"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 3, May/Jun 70, pp 17-21

Abstract: A high-intensity source emitting a spherical supersonic wave was used for irradiating 30 dogs, ten of which were in an acute test, 19 of which had been under observation for six months, and one control. The vesical, center, and peripheral parts of the ureter, the renal pelvis, and kidney were subjected to the supersonic waves. In 12 tests, temperature gradients were measured. No significant morphological changes in the tissues of the urinary bladder or ureters were detected after short or long periods of treatment. In no case was thrombocytolysis of the tissues observed. Results of histochemical studies of the kidneys were in agreement with histological data. The results were explained by the fact that a supersonic source producing a spherical wave comparatively rapidly, i.e., over short distances, loses its intensity. When a 1:5 irradiation rhythm was used, elimination of heat by the systems of the organism regulating heat exchange was assured.

1/1

1/2 032 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--CALIBRATION OF TELERADIOMETERS -U-

AUTHOR--LAZAREV, A.I.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO MEKHANICHESKAYA PROMYSHLENNOST' NO 1, JAN 70, PP 10-13

DATE PUBLISHED----JAN70

SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS

TOPIC TAGS--INSTRUMENT CALIBRATION EQUIPMENT, RADIOMETER, PHOTOMETRY, ATMOSPHERIC TRANSPARENCY, LIGHT POINT SOURCE, ILLUMINANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0915 STEP NO--UR/0237/70/000/001/0010/0013

CIRC ACCESSION NO--AP0119806

UNCLASSIFIED

2/2 032 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0119806

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE DESCRIBES THREE METHODS OF CALIBRATING TELERADIOMETERS USED FOR MEASURING THE EMISSION OF POINT SOURCES IN THE ABSENCE OF A BACKGROUND EMISSION. THESE METHODS ARE: 1) THE METHOD OF A REMOTE POINT SOURCE; 2) THE COLLIMATOR METHOD; AND 3) THE METHOD OF A POINT SOURCE AT FINITE DISTANCE. WHEN THE FIRST METHOD IS USED, SERIOUS DIFFICULTIES MAY ARISE IN REGARD TO SETTING UP OF AN EXTENDED PHOTOMETRIC LINE, AND IN REGARD TO THE TRANSPARENCY OF THE ATMOSPHERE. THE SECOND METHOD, USING A COLLIMATOR AT A SHORT DISTANCE FROM THE RADIOMETER, IS A LABORATORY METHOD. THE THIRD METHOD, USUALLY EMPLOYED UNDER FIELD CONDITIONS, MAKES USE OF A POINT SOURCE LOCATED AT A SHORT DISTANCE FROM A RADIOMETER. FORMULAS FOR SOURCE BRIGHTNESS, ILLUMINATION, LIGHT FLUX, THRESHOLD LUMINOUS INTENSITY AND OTHERS ARE DERIVED FOR THE THIRD METHOD. THE MEASURING TECHNIQUES FOR THE LUMINOUS INTENSITY OF POINT SOURCES AT FINITE DISTANCE ARE OUTLINED.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002201720013-3"

LAZAREV, A.N.

Chemical Science

JPRS 54142
28 Sep 71

USE OF OSCILLATION SPECTRA TO INVESTIGATE INORGANIC AND COORDINATION COMPOUNDS

(Seminar in Leningrad)

[Article by Doctor of Chemical Sciences A. N. Lazarev, Moscow; [illegible], Russian, Vol 41, No 7, July 1971, [illegible]]

Seminars on the use of oscillation spectra to investigate inorganic and coordination compounds are held annually, alternately in Moscow and Leningrad, upon the initiative of the Scientific Council for Organic Chemistry. In a short time they have become very popular not only among spectroscopists — chemists and physicists working in institutes of the AS USSR and universities on general problems of the structure of inorganic compounds, but also among co-workers of the academies of [illegible] of the union republics and branch institutes, who are helped by such seminars to master new methods and ideas with the purpose of using them in spectrochemical investigations of an applied character.

At the fourth seminar, held in Leningrad on 13-17 April, 50 reports were presented. The doubling of their number in comparison with the preceding third seminar confirms the timeliness of the organization of such seminars, but simultaneously [illegible] the need to limit the themes to a relatively narrow group [illegible] to have a sufficiently detailed discussion of the problems.

Participating in the fourth seminar were over 150 co-workers of institutes of Moscow, Leningrad, Kiev, Sverdlovsk, Novosibirsk, [illegible], Riga and some other cities. [illegible] questions regarding the study [illegible] crystals. Among the survey reports, [illegible] of inorganic crystals [illegible] by the report of N. V. Chisler on [illegible] of solid-phase transitions and spectroscopic investigations [illegible] that of Yu. I. Ryskin on the oscillation spectra of hydrogen

UNCLASSIFIED PROCESSING DATE--09OCT70

1/2 013

TITLE--EFFECT OF THE R SUB3 SI GROUP ON THE CHEMICAL STRUCTURE OF SILICON SUBSTITUTED ALKOXYACETYLENES AND KETENES -U-

AUTHOR-(04)-LAZAREV, A.N., TENISHEVA, T.F., SHCHUKOVSKAYA, L.L., PALCHIK, R.I.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1106-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOSILICON COMPOUND, ACETYLENE, KETONE, CARBONYL RADICAL, MOLECULAR ORBITAL, DIPOLE MOMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/2025 STEP NO--UR/0020/70/190/005/1106/1108

CIRC ACCESSION NO--AT0112980
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--09OCT70

2/2 013

CIRC ACCESSION NO--AT0112980

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING VALUES WERE CALCD. FROM SPECTRAL DATA FOR RR PRIMEI C:CO RESP. FOR INDICATED RR PRIMEI (CARBONYL BOND FORCE CONST. (X 10 PRIMED CM PRIME NEGATIVE2), C:C BOND FORCE CONST., SUMMARY POLAR TAFT CONST. GIVEN): H, H, 25.95, 14.3, 0.98; ME, ME, 26.47, 14.65, 0; ME SUB3 SI, H, 25.22, 14.8, MINUS 0.23; AND ME SUB3 SI, ME SUB3 SI 23.24, 16.27, MINUS 1.44. THE VALUES OF FORCE CONSTS. WERE SIMILARLY CALCD. FROM SPECTRA OF HC TRIPLE BOND COME AND ME SUB3 SIC TRIPLE BOND COME, RESP., FOR INDICATED BONDS: R-C 10.88, 5.8, C TRIPLE BOND C 26.3, 25.0; TRIPLE BOND C-O 13.6, 13.6; AND OC(H SUB3) 8.0, 7.2. THE APPARENT DIFFERENCE IN THE EFFECT OF THE ME SUB3 SI GROUP IN ALLENES AND ACETYLENES INDICATES A GREATER ENERGETIC ADVANTAGE IN THE CASE OF ACETYLENES OF THE ELECTRON ACCEPTANCE AT THE D ORBITALS OF SI TO YIELD A FORMAL STRUCTURE SUCH AS SI PRIME NEGATIVE:C:C:O POSITIVE IN COMPARISON WITH A SIMILAR PROCESS IN THE ALLENES. THE INDICATIONS AGREE WITH EARLIER DIPOLE MOMENT DATA. FACILITY: INST. KHIM. SILIKAT. IM. GREBENSHCHIKOVA, LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

1/2 028

TITLE--INFRARED SPECTRA AND CLASSIFICATION OF RARE EARTH ORTHOGERMANATES

-U-

AUTHOR-(04)-TENISHEVA, T.F., LAZAREV, A.N., BONDAR, I.A., PETROVA, M.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(4), 766-72

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS, CHEMISTRY

TOPIC TAGS--IR SPECTRUM, SPECTROSCOPIC ANALYSIS, CRYSTAL STRUCTURE, GERMANIUM COMPOUND, SILICATE, RARE EARTH COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0902 STEP NO--UR/0363/70/006/004/0766/0772

CIRC ACCESSION NO--AP0131488

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

2/2 028

CIRC ACCESSION NO--AP0131488

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IR ABSORPTION SPECTRA OF GERMANATES OF THE COMPN. 4LN SUB2 O SUB3 .9GEO SUB2, LN SUB2 O SUB3 .GEO SUB2, AND 2LN SUB2 O SUB3 .GEO SUB2 WERE INVESTIGATED. COMPOS. OF THE COMPN. 7LN SUB2 O SUB3 .9GEO SUB2 AND 2 STRUCTURAL TYPES OF COMPOS. OF THE COMPN. LN SUB2 O SUB3 .GEO SUB2 ARE SIMILAR IN CRYSTAL STRUCTURE TO THE CORRESPONDING SILICATES. THE STABILITY OF THESE COMPOS. WERE EXAMD. AS A FUNCTION OF THE TEMP. AND RADIUS OF THE CATION. IN COMPARISON TO THE CORRESPONDING SILICATES, THE STABILITY OF THE GERMANATES DECREASES WITH DECREASING CONCN. OF GEO SUB2. ANAL. OF IR SPECTRA FOR COMPOS. OF THE COMPN. 2LN SUB2 O SUB3 .GEO SUB2 LEAD TO THE STRUCTURAL FORMULA LN SUB4 (GEO SUB4) O SUB4, AND TO THE IDENTIFICATION OF 2 TYPES OF CRYST. STRUCTURE. FACILITY: INST. KHIM. SILIKAT. IM. GREBENSHCHIKOVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--VIBRATIONAL SPECTRA AND CHEMICAL STRUCTURE OF COMPLEX IONS AND MOLECULES OF THE X SUB3 O SUB9 TYPE -U-

AUTHOR-(02)-IGNATYEV, I.S., LAZAREV, A.N.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 596-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--COMPLEX COMPOUND, ION, SULFUR, CHLORINE, VIBRATION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0596 STEP NO--UR/0020/70/191/003/0596/0599

CIRC ACCESSION NO--AT0124283

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0124283

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CYCLIC MOLS. X SUB3 O SUB9 FORMED BY CONDENSATION OF 3 TETRAHEDRA XO SUB4 INTO A CONFIGURATION EACH WITH 2 COMMON AND 2 FREE O ATOMS ARE KNOWN FOR SI, P, AND S. BASED ON THEIR KNOWN CONFIGURATIONS, AT. DISTANCES, AND ESTD. FORCE CONSTS. OF THE X O BONDS, THE VIBRATIONAL FREQUENCIES WERE CALCD. AND COMPARED WITH THE EXPTL. DETD. VALUES FOR SI SUB3 O SUB9 AND P SUB3 O SUB9. THE OBTAINED FORCE CONSTS. INDICATE FURTHER THAT, FOR SI AND P OXIDES, THE CONDENSATION INTO THE CYCLIC X SUB3 O SUB9 CONFIGURATION IS MORE PROBABLE WHILE FOR S AND CL THE NONCONDENSED XO SUB4 FORM IS MORE STABLE. FACILITY: INST. KHIM. SILIKAT. IM. GREBENSHCHIKOVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--THERMODYNAMICS OF HYDROGEN HEXACYANOFERRATE, II -U-

AUTHOR-(03)-LAZAREV, A.N., MAKASHEV, YU.A., MIRONOV, V.YE.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 459-61

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--THERMODYNAMICS, HYDROGEN COMPOUND, CYANIDE, IRON COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1077 STEP NO--UR/0078/70/015/002/0459/0461

CIRC ACCESSION NO--AP0123070
UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123070

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROTONIZATION OF (FE(CN) SUB6) PRIME4 NEGATIVE IN AN AQ. SOLN. HAVING A CONST. IONIC STRENGTH OF 3 (LICLO SUB4) WAS STUDIED POTENTIOMETRICALLY AND THERMOCHEM. DELTA H, DELTA S, AND DELTA F VALUES FOR THE 1ST AND 2ND PROTONATION OF (FE(CN) SUB6) PRIME2 NEGATIVE WAS NOT OBSD. FACILITY: LENINGRAD. GOS. PEDAGOG. INST. IM. GERTSENA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--THE E.S.R. LINE SHAPE FOR THE IMINOXYL RADICAL IN HIGH VISCOSITY MEDIA -U-

AUTHOR-(05)-ALEXANDROV, I.V., IVANOVA, A.N., KORST, N.N., LAZAREV, A.V., PRIKHOZHENKO, A.I.

COUNTRY OF INFO--USSR

SOURCE--MOLECULAR PHYS. (GB), VOL. 18, NO. 5, P. 681-91 (MAY 1970)

DATE PUBLISHED-----MAY70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRON SPIN RESONANCE, IMINE, FREE RADICAL, CALCULATION, VISCOUS FLUID, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0640 STEP NO--UR/0000/70/018/005/0681/0691

CIRC ACCESSION NO--AP0111833

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111833

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE E.S.R. LINE SHAPE OF THE IMINOXYL RADICAL IN VISCOUS LIQUIDS WAS INVESTIGATED AT SEVERAL TEMPERATURES. THE RESULTS ARE INTERPRETED BY THEORETICAL CALCULATION OF THE LINE SHAPE AT AN ARBITRARY VALUE BY USING A DIFFUSION MODEL FOR THE MOTION OF THE MOLECULES (11 REFS.). FACILITY: ACAD. SCI. USSR., MOSCOW.

UNCLASSIFIED

USSR UDC 537.312.62:621.318.3

LAZAREV, B. G., LAZAREVA, L. S., GOLIK, V. R., GORIDOV, S. I.,
Physicotechnical Institute, Ukrainian Academy of Sciences

"Experiences in the Development and Application of Laboratory Superconductive Solenoids With Fields of up to 119 kOe"

Moscow, Izvestiya Akademii Nauk SSSR -- Seriya Fizicheskaya, No 11, 1972, pp 2475-2478

Abstract: An account is given of the work in the laboratory of the Physics Institute, USSR Academy of Sciences, on superconductive water-cooled solenoids capable of generating magnetic fields of as much as 175 kOe in the limit, and in the range of 100-120 kOe for average operation. There are many such laboratory solenoids operating throughout the country. Some of the results of the production work on these solenoids and of the experiences of the personnel involved are presented. It is noted that conductors of 25% Nb, 25% Zr, and Ti have been replaced by 60% Nb and Ti alloy, the critical magnetic field for which is 118 and 145 kOe at 4.2 and 2° K respectively and is 165 kOe when the temperature is extrapolated to 0° K. Thirty-five such solenoids generating fields of up to 90 kOe are now in use in scientific establishments in Moscow,
1/2

USSR

LAZAREV, B. G., et al, Izvestiya Akademii Nauk SSSR -- Seriya Fizicheskaya, No 11, 1972, pp 2475-2478

Leningrad, Kiev, Donetsk, Sverdlovsk, Riga, Vil'nyus, Sukhumi, Makhachkala, and Kharkov. Technical data for some of the solenoids in operation is given in two tables. It is noted that this paper was presented before the All-Union Conference on Magnetism, held in 1971.

2/2

UDC 539.21

USSR

KUZ'MENKO, V. M., LAZAREV, B. G., MEL'NIKOV, V. I., and BUDOVTSOV, A. I., Physicotechnical Institute, Academy of Sciences Ukrainian SSR, Khar'kov

"Dependence of Amorphous-Crystalline Transition Temperature on Thickness of Metallic Layers Condensed at Liquid-Helium Temperature"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 4, Apr 72, pp 682-683

Abstract: The article describes results of a study of the dependence of the amorphous-crystalline transition temperature on layer thickness d for a series of metals (iron, bismuth, ytterbium, beryllium, gallium) condensed on glass substrates cooled with liquid helium. It was found for iron, bismuth, and ytterbium that there is a smooth decline in T_t with an increase in thickness right up to the critical value, at which a discontinuous phase transition occurs at the condensation temperature (in the present case at the liquid-helium temperature). Similar variations are found in gallium and beryllium layers, but the phenomenon is complicated by their incomplete transition from the amorphous to the crystalline state, after which in the layers above the critical thickness there remain residues of the amorphous phase in the crystalline matrix formed. The function $T_t(d)$ is related to the thermodynamic peculiarities of the thin films.

1/1

UDC 539.21

USSR

LAZAREV, B. G., (Academician, Academy of Sciences UkrSSR), KUZ'MENKO, V. M., SUDOVTSOV, A. I., and MEL'NIKOV, V. M.

"Specific Features of Bismuth Films Condensed at Liquid Helium Temperatures"

Moscow, Doklady Akademii Nauk SSSR (Proceedings Academy of Sciences USSR), Vol 194, No 2, 1970, pp 302-305

Abstract: Ytterbium and iron films deposited on substrates cooled by liquid helium appear to be amorphous until a critical thickness is reached, at which point they sudeenly assume their normal bulk structure. The purpose of this work is to study thin superconducting films of nonsuperconducting materials, such as bismuth, and to determine the critical thickness at which the superconducting structure changes into the nonsuperconducting modification.

Hilsch showed that fresh bismuth films are amorphous and superconducting at 6°K, but not at 14 to 20°K, at which temperature the bismuth crystalizes.

Disk-shaped films of 99.9999% pure bismuth were vacuum-deposited on glass substrates at temperatures < 2°K. A stepwise crystallization occurs

1/2

USSR

LAZAREV, B. G., et al., Doklady Akademii Nauk SSSR, Vol 194, No 2, 1971 pp 302-305

at a film thickness of ~600 Å. The change in phase also occurs at temperatures of 12 to 35°K, accompanied by a twenty-fold increase in resistance. For less pure films, phase conversion occurs at about 1300 Å.

From resistance-temperature curves it is found that traces of the amorphous phase remain up to temperatures of 25°K. Films thicker than 1300 Å develop cracks. Comparisons are made with films of differemr geometries. Ribbins exhibit different behavior, possibly due to edge effects, where thickness is less than at the center. The 14 disks tested produced identical results.

Orig. art. has 4 figures and 12 refs.

2/2

USSR

L

LAZAREV, B. G., et al., (Physics-Engineering Institute, Ukrainian Academy of Sciences)

"Minimum of Electrical Resistance in Layers of Iron, Copper, Lutetium, Thulium Obtained by Low-Temperature Condensation"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, February 1970, pp 434-437

Abstract: The variation with temperature of the electrical resistance of layers of iron, copper, lutetium, and thulium obtained by condensation of the vapor of the metals on a substrate cooled by liquid helium is studied. In all freshly condensed layers a minimum of electrical resistance is observed in the region of 4° to 25°K. The temperature of the minimum is found to depend on the thickness of the metal and on its degree of annealing. As a rule, high-temperature annealing results in the disappearance of the resistance minimum in the thicker layers. It is suggested that a new singularity of conductivity electron scattering may exist in strongly distorted metallic lattices.

The article includes 4 figures showing curves for some of the relationships mentioned above. There are 11 references.
1/1

1/2 041 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE SUPERCONDUCTING STATE ON THE CREEP OF METALS -U-

AUTHOR-(04)-GINDIN, I.A., LAZAREV, B.G., LEBEDEV, V.P., STARODUBOV, YA.D.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(6), 288-90

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL CREEP, INDIUM ALLOY, THALLIUM ALLOY, MERCURY, MECHANICAL PROPERTY, SUPERCONDUCTING ALLOY, SUPERCONDUCTIVITY, CRYSTAL DISLOCATION, TIN, LOW TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0925 STEP NO--UR/0396/70/011/006/0288/0290

CIRC ACCESSION NO--AP0116435

UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116435

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ELECTRONS ON THE MECH. PROPERTIES WAS STUDIED FOR SUPER CONDUCTING IN, TL, HG, AND SN UNDER CREEP CONDITIONS AT 1.8-4.2DEGREE$K. IN ALL OF THE CASES A WEAKENING WAS OBSD. DURING THE CREEP TESTS IN THE SUPERCONDUCTING STATE AS SHOWN BY A MARKED INCREASE IN THE CREEP, THE EFFECT INCREASING AS THE TEMP. IS LOWERED BELOW T SUBC. THE INCREASE IN THE WEAKENING BELOW T SUBC MAY BE DUE TO A DECREASE IN THE RETAXDATION OF THE MOVING DISLOCATIONS AS THE NORMAL COND. ELECTRONS ARE EXHAUSTED.

FACILITY: FIZ.-TEKH. INST., KHARKOV, U$SR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--A 115-KOE, 157-KOE WITH DYSPROSIUM CONCENTRATOR, SUPERCONDUCTING SOLENOID MADE FROM DUCTILE ALLOYS -U-

AUTHOR-(04)-LAZAREV, B.G., LAZAREVA, L.S., GOLIK, V.M., GORIDOV, S.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, APR. 1970, 29, (4), 874-876

DATE PUBLISHED----APR70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MATERIALS

TOPIC TAGS--SUPERCONDUCTOR, SOLENOID, BINARY ALLOY, TERNARY ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0674 STEP NO--UR/0126/70/029/004/0874/0876

CIRC ACCESSION NO--AP0129839
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--13NOV70

2/2 016

CIRC ACCESSION NO--AP0129839

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CREATION OF SUPERCONDUCTING SOLENOIDS FROM DUCTILE BINARY AND TERNARY ALLOYS (NB-TI, NB-ZR-TI, ETC.) IS DESCRIBED. BY CAREFUL ATTENTION TO THE CONDITIONS OF MANUFACTURE AS WELL AS AN OPTIMUM CHOICE OF ALLOY COMPOSITION AND PROCESSING, A SOLENOID WITH A MOX. FIELD OF 115 KOE IN A SPACE OF 12 MM IN DIA. WAS ACHIEVED. BY INCORPORATING A SIMPLE DY FIELD CONCENTRATOR IN THE FORM OF A PAIR OF CYLINDERS WITH A 1-MM GAP BETWEEN THEIR ENDS, THE FIELD WAS INCREASED TO 157 KOE.

UNCLASSIFIED

USSR

UDC 669.295'71:669.046.42.001

IGNATOV, D. V., KORNILOVA, Z. I., LAZAREV, E. M., and POPOVA, V. M.,

"Oxidizability of Ti-Al Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 2, Mar-Apr 72, pp 204-209

Abstract: Ti-Al alloys containing 6.8, 10, and 14% Al (by weight) were made in order to study the oxidation kinetics and determine phase composition of the scale formed. Oxidation kinetics was determined according to increase in sample mass after heating in air in muffle furnaces at 800 and 1000°C. Phase composition was determined by electronographic and x-ray methods. Distribution of titanium and aluminum in the scale and alloy was studied by x-ray spectral analysis.

The mechanism of the effect of aluminum on decreasing the oxidation rate of titanium at 800 and 1000°C (at 10-14% Al) resulted in the following: a) an increase in the forces of interatomic reaction (especially when the Ti_3Al phase is formed) significantly reduces the solubility of oxygen in the alloys; and b) the formation of an oxide (γ-Al_2O_3) in an intermediate layer through which the oxygen diffusion rate to the metal-scale interface is decreased.

The alloy containing 14% Al is oxidized approximately 10 times faster at 1000°C in comparison with the oxidation rate of nickel- and chromium-base

1/2

USSR

IGNATOV, D. V., et al., Izvestiya Akademii Nauk SSSR, Metally, No 2, Mar-Apr 72, pp 204-209

alloys. This difference in oxidizability of the indicated alloys with aluminum can be explained as follows: a) addition of 6-8% Al may not suppress the allotropic transformation from alpha- to beta-titanium which is the main cause of reduced heat resistance in alpha-titanium alloys; b) for an aluminum content above 10% a multiphase scale is formed consisting of titanium oxides (mainly TiO_2) and the aluminum oxide γ-Al_2O_3, whereupon these oxides do not form a stable chemical compound between themselves.

2/2

USSR

UDC 669.2.935;539.376

LAZAREV, E. M., UGASTE, Yu. E., Moscow

"Influence of Molybdenum on High Temperature Creep of Niobium"

Problemy Prochnosti, No 3, 1972, pp 54-56.

Abstract: Methods of measurement of long term hot hardness, twisting and extension are used to study the high temperature creep of alloys of niobium with molybdenum (from 15 wt.% Mo) in the 1,100-1,500°C temperature interval in a vacuum of approximately $5 \cdot 10^{-4}$ mmhg. The activation energy of high-temperature stable creep is determined and it is demonstrated that its value correlates well with the activation energy of diffusion in the niobium-molybdenum system. It is established that the dependence of creep rate of the alloys studied on stress is an exponential dependance. Direct experiments indicate that throughout the entire range of concentrations studied, alloying of niobium with molybdenum increases the creep resistance of the solid solutions.

1/1

USSR

UDC: 621.79

VERGASOVA, L. L., and LAZAREV, E. M.

"Diffusion Interaction of Components in Alitizing Niobium Alloys With Titanium"

Moscow, Fizika i Khimiya Obrabotki Materialov, no 6, Nov-Dec 70, pp 46-49

Abstract: Despite the advancement of studies in protective coatings for refractory metals and heat-resistant alloys on refractory-metal base, the processes occurring at the metal-coating interface, both during coating application and in service, are still not clearly understood. This study concerns the process of thermal diffusion calorization of niobium alloys with titanium (from 5 to 50 wt.%), the redistribution of components in both the alloy and coating, and the "ascending" diffusion of titanium into the coating, which is explained by the high diffusion mobility of titanium and the thermodynamic characteristics of its interaction with aluminum. The resistance of the coating to oxidation at 1100 and 1200°C has been analyzed and the composition of the corrosion products of the alitized alloys determined. Alloying of $NbAl_3$ with titanium increases its

USSR

VERGASOVA, L. L., and LAZAREV, E. M., Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 70, pp 46-49

heat resistance and, consequently, the advisability of applying a titanium "barrier" prior to alitization of heat-resistant niobium alloys not containing titanium.

2/2

USSR

UDC 539.376:661.793

KORNILOVA, Z. I., IGNATOV, D. V., and LAZAREV, E. M., Moscow

"Investigation of the Heat-Resistance of the ST-4 Titanium Alloy and of Some Protecting Coatings On It"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May-Jun 71, pp 113-115

Abstract: A kinetic and structural investigation was carried out of the oxidizability in the temperature interval of 700-1000°C of the ST-4 titanium alloy, unprotected and protected by coatings based on Si and Mo-Si. The Si coating consisted mainly of the compound Ti_5Si_3 and TiSi and $TiSi_2$ traces; the Mo-Si coating consisted mainly of $MoSi_2$ and of Mo_5Si_3. The Ti_5Si_3 coating showed the best protective properties against gaseous corrosion at 800-1000°C. The heat-resistance of the ST-4 alloy coated with Ti_5Si_3 at 800°C was 70 times greater than the heat-resistance of the 80%Ni + 20%Cr alloy. Protection of the ST-4 alloy by the investigated coatings makes it possible to eliminate the negative influence on the oxidation rate of titanium and its alloys of effects of the high solubility of oxygen (and nitrogen) in them and of the $\alpha \rightarrow \beta$ transformation. Two figures, one table, eleven bibliographic references.

1/1

LAZAREV, E. M.

(3)

JPRS 58777

18 April 1973

UDC 669.018.45

STRUCTURAL-KINETIC STUDY OF THE OXIDIZABILITY OF NICKEL-CHROMIUM BASED ALLOYS

[Article by E. B. Abramova, V. V. Ignatov, E. M. Lazarev, Metallurgy Institute imeni A. A. Baykov, USSR Academy of Sciences, Moscow, Moscow, Zhurnal fizicheskoy khimii, Russian, Vol 46, No 5, 1972, submitted 22 November 1971, pp 1340-1341]

A structural and kinetic study was made of the oxidizability of Ni + 10% Cr and Ni + 10% Cr + 6% W alloys containing 0.2 percent Ce, La and Y each at 1000°C.

It was found that the introduction of additives of rare earth elements into the indicated alloys decreases their oxidation rate by 3-8 times; alloys containing yttrium have the greatest oxidation resistance.

Modern oxidation-resistant nickel-chromium based alloys are usually alloyed with such elements as tungsten, molybdenum and cobalt. While increasing the high-temperature strength of the alloy, these elements lower its oxidation resistance. Accordingly, we are faced with the problem of lowering the oxidation rate of such alloys. The published literature contains data on the effect of rare earth elements on the oxidizability of Kh20N80 alloys [1].

The purpose of the present paper is to study the effect of yttrium, lanthanum and cerium additives on the oxidation kinetics of Ni + 10% Cr and Ni + + 10% Cr + 6% W alloys.

Experimental Section

The alloys were made in an arc furnace with permanent electrodes in a helium atmosphere. In order to achieve uniform distribution of the alloying additives in the ingots, fivefold remelting of them with subsequent homogenization annealing was performed. The rare earth elements were introduced calculating 0.2 percent of the charge mass. Their loss was 30-50 percent. The procedure for manufacturing samples for structural-kinetic studies of the oxidizability of the alloys is analogous to that described in reference [2]. The samples had the shape of cylinders 10 mm in diameter and 5 mm high.

USSR UDC 62-50:66-93.012-52

KAFAROV, V. V., Corresponding Member USSR Academy of Sciences, LAZAREV, G. B., and AVDEYEV, V. I., Moscow Chemico-Technological Institute imeni D. I. Mendeleyev, Northern Donets Branch of the Experimental Design Office of Automation

"A Method for Solving Multicriterial Problems of Control in a Composite Chemicotechnological System"

Moscow, Doklady Akademii Nauk SSSR, Vol 198, No 1, 1 May 71, pp 62-63

Abstract: Control of composite chemicotechnological systems, when a number of goals are involved, is often an intuitive process based on experience. This article seeks ways to solve this problem mathematically and lists several factors which illustrate the diversity of the basic problem: maximal output of production (in conditional units), maximal gain, maximal volume output, and maximal productivity.

The authors divide the multicriterial problems into four categories:

1. Solution on the basis of ranking the criteria of optimality, including summation with weight factors.

USSR

KAFAROV, V. V., et al., Doklady Akademii Nauk SSSR, Vol 198, No 1, 1 May 71, pp 62-63

2. Solution involving choice of one main criterion and limitation of the other goals.

3. Solution based on certain intuitive arguments prompted by the nature of the problem itself for constructing a generalized criterion, depending on the investigator.

4. This category, which is most amenable to mathematical treatment, involves the use of normalized criterial space to seek a solution that will ensure minimal distance of the specific function (F_i) from the individual optima.

It is this latter category which the authors use in the experiment, although it has wider application than just that discussed in the article.

Rosen's method of projectible gradients was used in solving the problems, and testing was done at the Northern Donets Chemical Complex using a Minsk-22 computer. The program used permits solving multicriterial problems containing up to 40 variables.

2/3

USSR

KAFAROV, V. V., et al., Doklady Akademif Nauk SSSR, Vol 198, No 1, 1 May 71, pp 62-63

The article contains three equations and a bibliography of four titles.

3/3

USSR

UDC 62-50:66-93.012-52

KAFAROV, V. V., Member Correspondent of the USSR Academy of Sciences, LAZAREV, G. B., and AVDEYEV, V. I., Moscow Chemico-Technological Institute imeni D. M. Mendeleyev and The Experimental Design Office of Automation in Severodonetsk

"Operational-Production Planning and Control of a Composite Chemicotechnological System"

Moscow, Doklady Akademii Nauk SSSR, Vol 198, No 2, 1971, pp 303-306

Abstract: A composite chemicotechnological system (CTS) is defined as a chemical enterprise with technological branches constructed on a raw-material and power-production base; it is concerned with the composite processing of raw materials and intermediate products and involves the utilization of raw material and power wastes.

This paper treats the CTS not only as a dynamic component but also as heuristic and logical components. Three variations of the problem are posed: (1) The position of point M, into which the object from the initial state (t_0, M_0) is transformed for the time T, is given; (2) the position of point M requires determination based on a certain criterion

USSR

KAFAROV, V. V., et al., Doklady Akademii Nauk SSSR, Vol 198, No 2, 1971, pp 303-306

or set of criteria; and (3) the position of point M is a random function of time and must be determined by prediction.

The authors present and solve the problem mathematically, giving the appropriate equations and one table.

The investigations show the possibility of expanding formulation of the problem with fixed ends for a new class of objects of control and solution to the problem for a composite CTS with continuous production processes.

The article contains 1 table, 9 equations, and a bibliography of 2 titles.

2/2

USSR

UDC 669.71.43

MERKULOV, L. G., YAKOVLEV, L. A., GUSEVA, YE. K., LAZAREV, G. I., MARATHV, S. YE.

"New Method of Ultrasonic Control of the Purity of Aluminum Ingots Purified by Zone Melting"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 128-134 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G176)

Translation: The ultrasonic method of controlling the purity of aluminum is based on the effect of dislocation absorption of the ultrasonic vibrations in crystalline materials. Practical implementation of this procedure is realized as applied to the problem of finding the boundary of the pure part of the aluminum ingots obtained by zone melting. Comparison of the data from ultrasonic measurements and the method of residual electrical resistance demonstrated good correspondence of the results. Application of the ultrasonic method of finding the boundary of the pure part of the ingots permitted the yield of Al type A999 to be increased by 8% on the average under plant conditions. The

1/2

USSR

MERKULOV, L. G., et al., Tr. Vses. n.-i. i proyektn. in-ta alyumin. magn. i elektrodn. prom-sti, 1970, No 71, pp 128-134

procedure developed was used during the process of developing the optimal technological process for zone purification of large aluminum ingots weighing up to 70 kg. High sensitivity, simplicity, and reliability of the ultrasonic method permit it to be recommended as an express method of industrial control of aluminum purified by zone melting. There are 3 illustrations.

2/2

USSR

LAZAREV, G. L.

"A Theory of the Anomalous Hall Effect in Ferromagnetic Semiconductors with Strong s-d Coupling"

Leningrad, Fizika Tverdogo Tela, January, 1972, pp 29-34

Abstract: The author studied the anomalous Hall effect in ferromagnetic semiconductors with strong s-d coupling when the s-d interaction can not be described by means of ordinary perturbation theory. He considered the region of low temperatures in which the electrons are scattered mainly by spin waves, whereas the scattering anisotropy is due to the interaction of the spins of "magnetic" electrons with the orbit of a conduction electron. The anomalous Hall constant was calculated by a transition to the spin-polaron representation and the solution of the kinetic equation for the density matrix. The ratio of the anomalous Hall constant to the normal Hall constant was shown to be proportional to $T^{5/2}$, whereas the relation between the anomalous Hall constant and the magnetic part of the electrical resistance is linear to within a factor of $T^{1/2}$. A comparison with experimental results was made.

1/1

1/2 006 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--REACTION OF THE COMPONENTS OF BEAN SERIAL GRASS MIXTURES TO A VARYING REPEATEDNESS OF MOWING -U-

AUTHOR-(02)-ZAKHARYEV, N.I., LAZAREV, I.P.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3, PP 382-388

DATE PUBLISHED--------70

SUBJECT AREAS--AGRICULTURE

TOPIC TAGS--LEGUME CROP, PLANT PHYSIOLOGY, BIOLOGIC PIGMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0491 STEP NO--UR/0216/70/000/003/0382/0388

CIRC ACCESSION NO--AP0126242

UNCLASSIFIED

2/2 CC6 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126242

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF BEAN SERIAL GROSS MIXTURES UNDER CONDITIONS OF INTENSE CULTIVATION HAS REVEALED THE POSSIBILITY OF OBTAINING A LARGE YIELD OF GREEN MASS, BEING OF UTMOST QUALITY. PERENNIAL GRASSES UTILIZED IN CULTURED PHYTOCENOSIS ON IRRIGATED SOILS UNDER CONDITION OF SIMULTANEOUS SOWING OF THREE BEAN SPECIES (BLUE ALFALFA WHITE AND RED CLOVER) AND THREE SERIALS (AND REPEATED MOWING) PROVIDE A MEANS OF OBTAINING THE BEST CORRELATION IN THE PLANTS OF THE LEAVES AND STEMS FRACTIONS. EXPERIMENTS CARRIED OUT AT THE LABORATORY OF CHEMISTRY OF PLANT FORAGE (INSTITUTE OF BIOCHEMISTRY AND PHYSIOLOGY AC. SCI., KIRGHIZ SSR) HAVE SHOWN THE EFFECT OF REPEATED MOWING ON THE FOLIAGE PRODUCTION OF ALFALFA, THE PRINCIPAL PLANT OF THE BEAN FRACTION OF GRASS MIXTURES. THIS MAY SERVE AS AN IMPORTANT CRITERION OF THE INTENSITY GRADE OF REMOVAL OF THE UPPER PLANT MASS AS WELL AS CREATING OF OPTIMAL CONDITIONS IN ORDER TO OBTAIN A FORAGE PLANT BIOMASS OF EXCELLENT QUALITY AND CONTAINING THE HIGHEST AMOUNT OF PORTEIN, CAROTIN AND OTHER VALUABLE GROUPS OF NUTRITIVE SUBSTANCES. FACILITY: INSTITUTE OF BIOLOGY AND PHYSIOLOGY, ACADEMY OF SCIENCES, KIRGHIS SSR.

UNCLASSIFIED

USSR UDC 616:003.874616.5-003.871-085.849.19.015

LAZAREV, I. R., EPSHTEYN, A. B., FOLISHCHUK, YE. I., and ALPATYEVA, S. YU., Kiev Institute of Experimental and Clnilcal Oncology, Ukrainian Academy of Sciences

"LAser Treatment of Bowen's Disease Associated With Fungus"

Kiev, Vrachebnoye Delo, No 4, 1972, pp 133-135

Abstract: Description of a case history of a 55-year-old female who had been suffering for 12 years from Bowen's disease (diagnosis histologically confirmed) did not respond to steroid or antibiotics therapy. Examination of biopsy material revealed the presence of the fungus Geotrichum. Eleven lesions on the abdomen, buttocks, back, upper and lower extremities were exposed to laser rays (total energy on each lesion 910 to 2760 joules). Coagulation necrosis occurred in each lesion in the form of a dry crust with slight edema, and hemorrhage and erythema of the surrounding tissue. These phenomena gradually subsided and the crusts darkened, became compact, and fell off within 3 to 5 weeks, leaving a pink smooth scar at the exposure site. Analysis of the blood and urine showed no abnormalities. No new lesions or traces of Geotrichum were detected in the follow-up period (duration not specified).

1/1

LAZAREV, I. R.

JPRS 55478
20 Jan 1972
UDC 616-006-085.849.19

ORGANIZATION OF THE ONCOLOGICAL DIVISION OF LASER THERAPY

[Article by N. F. Gamaleya, I. R. Lazarev, and Kh. A. Baraiov, Scientific-Research Institute for Experimental and Clinical Oncology, Kiev; Moscow, Meditsinskaya Tekhnika, Russian, No 5, 1971, submitted 16 November 1970, pp 40-43]

During the 10 years of their existence, lasers have begun to be more widely adapted in various fields of science and technology. With each year the use of lasers expands also in medico-biological research. In a number of branches of medicine (oncology, dermatology and, possibly surgery) attempts at clinical adaptation of laser radiation are being undertaken. Laser ophthalmocoagulators have already been in use for several years in the ophthalmological clinic.

The clinical use of lasers requires the presence of special operating personnel whose assignment consists of adapting themselves to laser technology for solving therapeutic problems by means of appropriate devices (light guides, protective shields, etc.) under conditions assuring the safety of personnel and patients. Safety technology must be the central thought in organizing and equipping laser operations. The eyes, because of their natural focusing ability, are the most sensitive of human organs to laser radiation.

The damage to human tissues and organs by laser radiation can be the result of direct action from radiation or its indirect effect on the surrounding media. Taking into account these two aspects of the injurious action of laser radiation on the human organism, safety technology in work with lasers should include individual as well as general measures of protection. Individual measures of protection include wearing special tightly-fitting goggles and opaque material for the protection of the skin. General safety measures include correct planning of laser operating facilities and placing in them the instruments, outfitting the rooms with the proper equipment, etc.

During irradiation of patients by laser the air becomes contaminated by the scattered particles of irradiated skin or, for example, tumor

USSR

UDC: 362.11:615.849.12/:658.5

SIDORIK, YE. P., LAZAREV, L. B., and KOGUT, T. S., Institute of Experimental and Clinical Oncology, Kiev

"Organization of a Laser Therapy Department"

Moscow, Gigiyena Truda i Professionalnyye Zabolevaniya, No 12, Dec 70, pp 41-43

Abstract: Measures for the protection on personnel in laser therapy departments against the known harmful effects of laser radiation on vision and the mucous membranes are of paramount importance. The arrangement of the laser therapy department set up at the Kiev Scientific Research Institute of Experimental Oncology, Ministry of Public Health Ukranian SSR, is described. A block diagram of a laser modified for clinical use is presented. All personnel working in the unit are kept under continuous medical surveillance. Closed-circuit TV is used for monitoring the patients during treatment.

1/1

UDC 621.438

USSR

DEYCH, M. Ye. and LAZAREV, L. Ya.

"Investigation of Nozzle Cascades With Release of the Cooling Air Through the Exhaust Edge"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 2, 1972, pp 107-112

Abstract: The process of air and gas mixing behind cooled blades is dealt with; relationships are presented for calculation of stream parameters after mixing. Experimental research on parameters behind a nozzle and in the wake behind the exhaust edge, conducted on a model packet in an open wind tunnel, confirms the premises underlying the calculation and indicates the sources of loss, as well as pointing out possible ways of decreasing the losses. 6 figures. 5 references.

1/1

USSR UDC 532.525.621-226.3

DEYCH, M. E., Doctor of Technical Sciences, LAZAREV, L. Ya., Candidate of Technical Sciences and LOKTEV, A. L. (Moscow Power Institute)

"On Meridional Shaping of Turbine Supersonic Nozzle Grid"

Moscow, Teploenergetika, No 3, March 72, pp 61-66

Abstract: A three-dimensional flow in a meridionally shaped nozzle grid operating steadily in a wide range of M is analyzed. In this grid the interblade passage is convergent in the cylindrical cross section, and divergent in the meridian cross section. It is assumed that a medium passage cross section ensures an efficient operation at near and supersonic velocities, while the divergent passage allows to obtain small losses at high supersonic velocity. This assumption was experimentally substantiated by tests conducted on a meridionally shaped grid C-9012BM of low height. The experimental results are presented in the form of pressure distribution, variation of the flow exit angle and of the coefficient of total losses. They show that this grid type is between the convergent and divergent types presenting moderate and practically constant losses in the Mach range of M=0.6 to 1.8.

1/1