1/2 022 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--CERTAIN MIXED PLANE PROBELMS OF ELASTICITY THEORY AND THEIR APPLICATION TO THE CALCULATION OF STRAIN MEASUREMENT ERRORS -U-

AUTHOR-(02)-SOLOVYEV, A.S., ALEKSANDROV, V.M.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA TVERDOGO TELA JAN FEB 1970, P 122-129

DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS

TOPIC TAGS--ELASTICITY, YOUNG MODULUS, STRAIN GAGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0145 STEP NO--UR/0484/70/000/000/0122/0129

CIRC ACCESSION NO--AP0054941

UNCLASSIFIED

USSR UDC 539.3

ALEKSANDROV, V. M., BURYAK, V. G., Rostov-na-Donu, Voroshilovgrad

"Dynamic Mixed Problem of Pure Shear for an Elastic Halfspace"

Kiev, Prikladnaya Mekhanika, Vol VII, No 4, 1971, pp 16-22

Abstract: A study is made of the dynamic problem of pure shear of an isotropic elastic halfspace by a nondeformable strip loaded along its generatrix by a shearing force reduced to a unit length. Complete contact between the surfaces of the strip and the halfspace is assumed. Asymptotic solutions are found to the problem for large and small values of the relative frequency. These solutions interlock in a significant range of variation of the relative frequency, insuring complete and effective investigation of all basic characteristics of the problem. Numerical results and graphs are presented.

The methods of operation calculus are used to reduce the problem to integral equation form. Formulas are also presented for calculating the phase shift angle and modulus of the complex amplitude of the strip oscillations.

1/1

USSR

ALEKSANDROV, V. M., etal, Prikladnaya matematika i mekhanik., 1971, vol 35, No 1, pp 80-87

where $\lambda \in (0,\infty)$ is a dimensionless parameter, and the equation kernel can be represented by the Fourier integral

$$K(y) = \int_0^\infty \frac{L(u)}{u} \cos uy \, du.$$

A method is proposed for solving the equation with small values of the characteristic parameter λ and with series of Laguerre polynomials. Several theorems are developed and proved.

2/2

USSR

UDC: None

ALEKSANDROV, V. M. and SMETANIN, B. I., Kertov-on-Don

"An Effective Method for Solving Nonclassical Mixed Problems in Elasticity Theory"

Moscow, Prikladnaya matematika i mekhanika, 1971, vol. 35, No. 1, pp 80-87

Abstract: This article discusses an integral equation of the first kind which is encountered in many plane and three-dimensional mixed problems in the theory of elasticity and in mathematical physics. The equation is

$$\int_{-1}^{+1} q(\xi)\, K\left(\frac{\xi - x}{\lambda}\right) d\xi = \pi f(x), \quad |x| \leq 1$$

1/2

Acc. Nr: AP0052438 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code: 41 0460

101706b **Effect of the extent of orientation on the kinetics of the mechanical degradation of polymers.** Komissarov, S. A.; Aleksandrov, V. I.; Baramboim, N. K. (Vses. Zaoch. Inst. Tekst. Legk. Prom., Moscow, USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(2), 112-14 (Russ). The method of least squares was used to derive an equation describing the mech. degradation of Kapron, Lavsan, and Nitron fibers taking into account the structural ordering coeffs. An equation relating the elongation multiplicity factor, the mol. wt., and the dispersion time for highly oriented systems was also derived. The equation $M_\tau = (M_0 - M_\infty)e^{-1.882 - 0.084\tau} - 182\delta + 6750$, where M_τ = mol. wt. at any time τ, M_0 = initial mol. wt., M_∞ = limiting mol. wt., and τ = the elongation multiplicity factor, satisfactorily described the mech. degradation of Nitron fibers. DBJR

REEL/FRAME
19821072

USSR

TROP, I. YE., et al., Sovetskaya Meditsina, Vol 34, No 3, Mar 71, pp 104-107

tion to gamma-globulin shortened the length of the fever period, led to a more rapid disappearance of meningeal symptoms, accelerated return of the cerebrospinal fluid to a normal state, and had the effect of bringing about a considerably more favorable outcome of the disease. While treatment with RNA-ase was effective in focal forms of encephalitis, reducing the mortality (8 deaths among 42 patients vs. 13 among 26 in the control group) and the number of cases in which paralysis developed, it was ineffective in two cases of the polyencephalomyelitic form of the disease.

2/2

Therapy

UDC 616.988.25-002.395.42-085.355:577.155.2

USSR

TROP, I. YE., KANTER, V. M., KAZANTSEVA, S. I., ALEKSANDROV, V. I., POSTNOVA, L. S., and NIKOLAYEVA, S. P., Khabarovsk Scientific Research Institute of Epidemiology and Microbiology Clinic of Nerve Diseases of the Khabarovsk Medical Institute, Khabarovskiy Kray Hospital, Kharabarovsk City Hospital No 3, and City Hospital No 7, Komsomol'sk-on-Amur

"The Use of Ribonuclease in the Treatment of Patients With Tickborne Encephalitis"

Moscow, Sovetskaya Meditsina, No 3, Mar 71, pp 104-107

Abstract: The beneficial effect of RNA-ase in the treatment of tockborne encephalitis has been established at foci of this disease in Western Siberia. In this instance, clinical studies pertaining to treatment with RNA-ase were conducted on 79 cases that originated in the Far East, where the disease occurs in a much more severe form. RNA-ase was administered to the patients intramuscularly, intravenously, or in the endolumbar region in doses of 300-500 mg per day and 3-5 g per course of treatment. The treatment was carried out in the majority of cases in combination with serum therapy that consisted of asministration of titrated human placental or fetal gamma-globulin. Comparison of the results obtained with those for a control group of patients treated with gamma-globulin only showed that application of RNA-ase in addi-

1/2

USSR

ALEKSANDROV, V. I., et al., Doklady Akademii Nauk SSSR, Vol 199, No 6, 1971, pp 1282-1283

absorption group, and the spectrum of luminescence transition. The table gives two structural types of crystals with their properties. The article contains 1 figure, 1 table, and 9 bibliographic entries.

2/2

USSR

ALEKSANDROV, V. I., VORON'KO, YU. K., MIKHALEVICH, V. G., OSIKO, V. V., PROKHOROV, A. M., Academician, TATARINTSEV, V. M., UDOVENCHIK, V. T., and SHIPULO, G. P., Physics Institute imeni P. N. Lebedev, USSR Academy of Sciences, Moscow

"Spectroscopic Properties and Generation of Nd^{3+} in Crystals of ZnO_2 and HfO_2"

Doklady Akademii Nauk SSSR, Vol 199, No 6, 1971, pp 1282-1283

Abstract: The spectroscopic properties of Nd^{3+} are known in various crystals and glasses. Materials such as crystals of $Y_3Al_5O_{12}$ and silicate glasses activated with neodymium have been widely used in lasers. The authors of this article first describe the spectroscopic properties and generation of Nd^{3+} in cubic crystals of ZrO_2 and HfO_2. These materials have a fluorite type crystal lattice in which the Nd^{3+} ions replace the tetravalent ions of zirconium or hafnium. In addition to the Nd^{3+} the crystals contained impurities of CaO or Y_2O_3 for the purpose of stabilizing the cubic structure of the ZrO_2 and HfO_2. The authors describe the experiment and give 1 figure and 1 table to illustrate the results. The figure graphically shows the optical spectra of HfO_2-Nd^{3+} crystals, including the spectrum of absorption, the

1/2

USSR

UDC 621.366.82

ALEKSANDROV, V. I., MURINA, T. M., ZhEKOV, F. I., and TATARINTsEV, V. M.

"Induced Radiation of Tu^{3+}, Ho^{3+} in Crystals of Zircon Dioxide"

Kratkiye soobshch. po fiz (Brief Communications on Physics), No 2, 1973, pp 17-21 RZh-Fizika, No 9, Sep 73, Abstract No 9D726

Translation: The absorption, luminescence and induced radiation spectra of two kinds of crystals are studied -- $ZrO_2:Tu^{3+}$ (1% by weight), $ZrO_2:Ho^{3+}$ (1% by weight) -- both with 20% Er_2O_3 by weight. The wavelength of oscillation for Ho^{3+} was 2.115 microns, for Tu^{3+} -- 1.896 microns. The lifetime of radiation levels was measured with T=77°K and 300°K. It was found that zirconates activated by Ho^{3+} and Tu^{3+} have oscillation thresholds intermediate between YAG or $YAlO_3$ and glasses. Eleven bibliographic citations. S.A.K.

1/1

USSR

ALEKSANDROV, V. I., et al., Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 3, 21 Jul 73, pp 567 - 570

similar properties, and a spectrum is given for only the first of these. It shows lasing at both the transitions.

2/2

USSR UDC 539.89

ALEKSANDROV, V. I., KAMINSKIY, A. A., MAKSIMOVA, G. V., PROKHOROV, A. M. (Academician), SARKISOV, S. E., SOBOL', A. A., TATARINTsEV, V. M., Physical Institute imeni P. N. Lebedev, and Institute of Crystallography imeni A. V. SHUBNIKOV, Academy of Sciences of the USSR, Moscow

"A Study of Stimulated Emission by Nd^{3+} Ions in Crystals at the $^4F_{3/2} \rightarrow {}^4I_{13/2}$ Transition"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 3, 21 Jul 73, pp 567 - 570

Abstract: The prevailing transition for neodymium is $^4F_{3/2} \rightarrow {}^4I_{11/2}$ (about 60%), but the transition to $^4I_{13/2}$ is of both practical and theoretical interest. The authors studied doped crystals of CaF_2-YF_3, $Ca_2Y_5F_{19}$, $Ca_5(PO_4)_3F$, ZrO_2-Y_2O_3, and HfO_2-Y_2O_3. Samples were tested at 77°K and 300°K. Laser action was observed at three frequencies near 1.35 microns in yttrofluorite, at two points in tysonite, and at several locations in fluorapatite with a 99° angle between the optical and geometric axes. Analysis of the low-temperature spectra showed that in all observations their lines were insensitive to concentration.

The cubic crystals of ZrO_2-Y_2O_3 and HfO_2-Y_2O_3 with Nd^{3+} ions showed very

1/2

SPRAVOCHNIK PO AVIATSIONNYM MATERIALAM (Handbook of Aviation Materials) by V. G. Aleksandrov, Moscow 1972, 326 pp

2/2

USSR

UDC 629.7:620.1.004(031)

SPRAVOCHNIK PO AVIATSIONNYM MATERIALAM (Handbook of Aviation Materials) by V. G. Aleksandrov, Moscow "Transport" 1972, 328 pp., illus, subject index, 12,000 copies printed

The book gives the physical-chemical and mechanical properties of steels, nonferrous alloys, nickel alloys, refractory metals, metalloceramics, plastics, inhibiting and cleansing fluids, fuels and lubricants. In addition to the statistical data on the various materials, the book also recommends applications and rational use, servicing and repair of aviation equipment.

The book is intended for engineering-technical workers in civil aviation, the Airforce and DOSAAF, and for students in the aviation VUZ and tekhnikums.

Contents

1/2

USSR

ALEKSANDROV, V. F., Tr. Leningr. tekhnol. in-ta tsellyulozno-bum. prom-sti. 1970, No. 25, pp 236-239

Let the value δ equal to δ_1 correspond to the point M_n. Finally then, as an element of the integral curve in the plane Opq, there is taken the arc M_0M_1 of the circumference with the center $O_1(-\delta_0 + \delta_1)/2, 0)$ of length $O_1M_0 \cdot \Delta O$. The relation between $d\theta$ and dt is found. G. Drinfel'd.

2/2

MATHEMATICS

Differential and Integral Equations

UDC 517.917

USSR

ALEKSANDROV, V. F.

"Graphical Dependence of the Elementary Angle of an Arc of the Integral Curve of a n-Order Nonlinear Differential Equation on Time"

Tr. Leningr. tekhnol. in-ta tsellyulozno-bum. prom-sti (Works of Leningrad Technological Institute of the Cellulose-Paper Industry), 1970, No. 25, pp 236-239 (from RZh-Matematika, No 4, Apr 71, Abstract No 4B254)

Translation: With appropriate notation, the equation

$$x^{(n)} + f(x, x', \ldots, x^{(n-1)}, t) = 0, \quad ' = d/dt,$$

is written in the form

$$q\dot{q} + p + \delta = 0, \quad \dot{} = d/dp, \quad \delta = f(x, v, a, \ldots, p, q, t) - p,$$

and δ is considered constant in a small neighborhood of the point $(x_0, v_0, a_0, \ldots, p_0, q_0, t_0)$. In the plane Opq from the center $O_n(-\delta_0, 0)$ there is drawn a circle through the point $M_0(p_0, q_0)$, and the arc M_0M_n of length $O_nM_0 \cdot \Delta\theta$ is taken on it.

1/2

2/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126678

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING EXTIRPATION OF THE RECTUM FOR CANCER SYNCHRONOUSLY BY TWO SURGICAL TEAMS MOBILIZATION OF THE INTESTINE TO A GREATER MEASURE WAS PERFORMED BY THE PERINEAL TEAM OF SURGEONS. THE AUTHORS HAVE ELABORATED AND PROPOSE A DETAILED DESCRIPTION OF THE SURGICAL TECHNIQUE OF THE PERINEAL STAGE OF THE OPERATION COMBINED EXTIRPATION OF THE RECTUM. THE REFERRED TO TECHNIQUE WAS EMPLOYED IN OVER 180 PATIENTS. FACILITY: NI LABORATORII PO PROKTOLOGII S KLINIKOY.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--SYNCHRONOUS EXTIRPATION OF THE RECTUM FOR CANCER -U-

AUTHOR-(03)-ALEKSANDROV, V.B., FAYN, S.N., INOYATOV, I.M.

COUNTRY OF INFO--USSR

SOURCE--KHIRURGIYA, 1970, NR 5, PP 63-67

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CANCER, LARGE INTESTINE, SURGERY

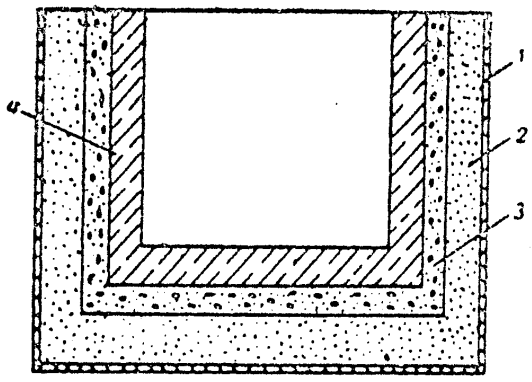
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1040 STEP NO--UR/0531/70/000/005/0063/0067

CIRC ACCESSION NO--AP0126678

UNCLASSIFIED

AA0040676



26.2.68 as 1221183/22-1. A.I. SPRYGIN et alia
(25.8.69) Bul 14/18.4.69. Class 40c. Int.Cl.C22d.

2/2

19750280

ALEKSANDROV V.D.

AA0040676

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent

241694 MAGNESIUM ELECTROLYSER LINING is made up of a thin asbestos layer 1, furnace slag 2, heat resistant concrete 3, and firebricks 4. This reduces the liner cost by 8-15 times without adversely affecting thermal insulation.

AUTHORS: Sprygin, A. I.; Kuz'min, V. V.; Bashkatov, V. V.; Volchkov, G. V.; Devyatkin, V. N.; Aleksandrov, V. A.; and Kolesnikov, V. A.

19750279

USSR

UDC 621.385.032:621.385.642.3 (088.8)

ALEKSANDROV, V.A., MARIN, V.P., PUSHKAREV, A.G.

"Decelerating System"

USSR Author's Certificate No 261587, filed 29 July 67, published 17 May 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A165P)

Translation: The decelerating system of an inverted m-type microwave device contains strapped resonators $3/4\,\lambda_0$ long and nonstrapped $1/4\,\lambda_0$ long, and a stabilizing circuit. With the object of increasing the effectiveness of liquid cooling of the lamella, with a decrease in length of the wave being generated, and an increase of the intrinsic Q-factor of the system, the nonstrapped resonators are united into groups which have a common metal base in which cooling channels are located. The number of groups is determined by the formula N/n where N is the total number of resonators, and n is the positive whole number selected from the condition $N/2 > n > 2$. Summary.

1/1

USSR

SOLYAKOV, S. P., BELKIN, G. I., TATAKIN, A. N., NACHAYEV, V. M., ZOBNIN, S. I., ZYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SVALOV, G. N., DEVYATKIN, V. N., ALEKSANDROV, V. A., GRIBOV, V. I.

"Method of Processing Slimes from Electrolytic Production of Magnesium"

Author's Certificate No 278126, filed 11/02/69, published 18/11/70. (Translated from Referativnyy Zhurnal Metallurgiya, No 2, 1972, Abstract No 2G185).

Translation: In order to use the slime for production of Mg, it is fed from the electrolyzers to chlorinators together with the depleted $MgCl_2$ electrolyte in the form of a pulp containing 1-10% MgO and 5-25% $MgCl_2$. The chlorinators also receive the Cl-Mg raw material and Cl_2, after which the electrolyte, enriched with $MgCl_2$, is fed to the electrolyzers.

1/1

USSR

KORYTNAYA, L. A., ALEKSANDROV, V. YA., USSR Author's Certificate No 370669, No 11, 1973, p 152.

the microcycle module, the output module, the module for signal analysis and recording and the commutation module, the outputs of the signal analysis and recording module are connected to the inputs of the control module and the output module, the outputs of the commutation module are connected to the inputs of the control module, the signal analysis and recording module and the output module, and the inputs of the commutation module are connected to the control points of the monitored elements of the digital computer.

2/2

USSR

KORYTNAYA, L. A., ALEKSANDROV, V. YA.

"Programmed Device for Detecting Failures in Digital Computers"

USSR Author's Certificate No 370609 (from Otkrytiya, Izobreteniya, Promyshlennyye obraztsy, Tovarnyye znaki (Discoveries, Inventions, Industrial Models, Trademarks), No 11, 1973, page 152)

Translation: This programmed unit for detecting failures in digital computers contains a commutation module and a signal analysis and recording module which includes the matrix for recording the operating signals, the matrix for recording noise, the decoder controlling the matrices and a counter of the number of the monitored element connected to the decoder. The device is distinguished by the fact that in order to increase the reliability of a digital computer it contains a module for control code output, a control module, counting microcycles and an output module. The outputs of the control code generation module are connected to the code buses of the digital computer, the inputs of the microcycle counter and the output module, the outputs of the microcycle counter are connected to the inputs of the control code generation module and the output module, the outputs of which are connected to the inputs of the control module connected to the inputs of the control code generation module,

1/2

Molecular Biology

USSR UDC 577.11

KRITSKIY, G. A., BATISHCHEV, A. I., ALEKSANDROV, S. V., FEDOROV, N. A., and ABRAMOV, R. Ye., Institute of Biochemistry imeni A. N. Bakh, Academy of Sciences USSR, Moscow

"Comparative Characteristics of Nucleotide Blocks of DNA After Radiation Injury and in Leukemia"

Moscow, Doklady Akademii Nauk SSSR, No 1, 1972, pp 233-236

Abstract: DNA was isolated from bone marrow of Wistar rats irradiated at 500 r and from spleens of $C_{57}Bl_6$ mice 6 days after induction of La leukemia. Determination of the pyrimidine nucleotide blocks of the DNA by paper chromatography revealed good separation of most of the spots, 7 and 8 in particular. The changes in distribution of the pyrimidine nucleotide blocks were found to be the same in both DNA's. There was a significant increase in the relative content of spot 10 material compared with the total content of the material of all the spots as well as a maximum decrease in the nucleotide blocks corresponding to chromatographic spot 7. The destruction of these portions of DNA resulted in an increase in the amount of material corresponding to spots 8 and 10. The similarity of the changes in nucleic acids produced by irradiation and leukemia may account for the increased frequency of tumors and especially leukemias after exposure to ionizing radiation.

1/1

USSR

UDC 577.11

KRITSKIY, G. A., and ALEKSANDROV, S. V., Bakh Institute of Biochemistry, USSR Academy of Sciences

"Diagnosis of Radiation Lesions From the Level of Blood Nucleic Acids"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 3, 1973, pp 728-731

Abstract: A small and precisely measured volume of blood is mixed with a hemolyzing substance (e.g., saponin) and centrifuged, after which the supernatant is decanted to remove the hemoglobin. The nucleic acids are extracted from the leukocyte sediment with perchloric acid. The extract is examined with a spectrometer in ultraviolet light at three wavelengths. The decrease in content of nucleic acids and the index characterizing change in the quantity of admixtures in the extract are calculated from the extinctions. The method reveals statistically significant changes shortly after irradiation starting with doses from 2 r and higher. Abnormalities increase with the size of the dose. The procedure requires 0.5 to 1.5 ml of blood per sample and takes 1 to 2 hours. The proposed method can supplement existing ones (e.g., determination of serum proteins, creatine) that are not as sensitive to very low radiation doses.

1/1

2/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120619

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL STUDY OF THE HEREDITARY UV LUMINESCENCE OF CANCEROUS CELLS OF MICE AND LYMPHOSARCOMATOUS CELLS OF RATS TRANSPLANTED TO NONIRRADIATED ANIMALS AFTER EXPOSURE TO A 500 R DOSE OF IONIZING RADIATION. IT IS FOUND THAT THE DAUGHTER CELLS PRODUCED BY SUCH TRANSPLANTED CELLS RETAINED THE FLUORESCENT PROPERTIES OF THEIR PARENT CELLS AND PASSED ON THESE PROPERTIES TO THEIR OFFSPRING DURING THE MULTIPLICATION IN NONIRRADIATED OGRANISMS. THE HEREDITARY TRANSMISSION OF RADIATION INDUCED CHANGES IN THE MYELOCYTES, METAMYELOCYTES AND SEGMENTAL NUCLEUS NEUTROPHPHILS OF IRRADIATED RATS IS ALSO DEMONSTRATED. THE VARIOUS TYPES OF RADIATION DAMAGE LEADING TO THE INTENSIFICATION OF UV FLUORESCEMCE IN IRRADIATED CELLS ARE DISCUSSED.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--ULTRAVIOLET FLUORESCENCE OF BIOLOGICAL OBJECTS EXPOSED TO IONIZING RADIATION EFFECTS -U-

AUTHOR-(05)-ALEKSANDROV, S.N., BRUMBERG, I.YE., VOROBTSOVA, I.YE., KONDRATYEVA, T.M., SAFRONOVA, V.G.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL. 4, JAN.-FEB. 1970, P. 66-72

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CANCER, RADIATION BIOLOGIC EFFECT, CELL PHYSIOLOGY, UV IRRADIATION, FLUORESCENCE, TISSUE TRANSPLANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1967 STEP NO--UR/0453/70/004/000/0066/0072

CIRC ACCESSION NO--AP0120619

UNCLASSIFIED

USSR UDC: 519.2

ALEKSANDROV, S. N.

"Investigation of an Algorithm for Estimating the Mathematical Expectation of a Normally Distributed Random Quantity"

Tr. VNII elektroizmerit. priborov (Works of the All-Union Scientific Research Institute of Electric Measuring Instruments), 1972, 13, pp 14-19 (from RZh-Kibernetika, No 5, May 73, abstract No 5V208 by the author)

Translation: A numerical analysis is made of the two-stage Stein procedure for estimating the mathematical expectation of a normal random quantity.

1/1

USSR

ALEKSANDROV, S. I., et al., Radiatsion. fiz. tverd. tela i reaktornoye materialoved., Moscow, 1970, pp 139-140

hardening of cast Mo higher than that of p/m Mo. There is found to be a decline in the uniform elongation of specimens of single-crystal Mo from 8.5 to 4.5% without an appreciable decline in the overall specific elongation. The brittle point of cast Mo rises after irradiation. Bibliography with 17 titles.

2/2

UDC 669.28:539.4:539.125.18:669-977

USSR

ALEKSANDROV, S. I., BAZYUKIN, V. G., VOTINOV, S. N., ZAKHAROV, A. R., KAZAKOV, V. A., and RAZOV, I. A.

"Effect of Initial State of Molybdenum on Radiation Hardening at High Temperatures"

V sb. Radiatsion. fiz. tverd. tela i reaktornoye materialoved. (Radiation Solid-State Physics and Reactor Materials Science -- Collection of Works), Moscow, Publishing House of the State Committee of the Council of Ministers USSR for the Use of Atomic Energy, 1970, pp 139-140 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 31733 by V. Kudryashov)

Translation: The authors studied the effect of irradiation with an integral dose of up to $1.5 \cdot 10^{20}$ neutrons/cm^2 ($E \geqslant 1$ Mev) at high temperatures (750 and 1200°) on Mo produced by different methods (single crystal, powder metallurgy, and cast) in different states (recrystallized and unrecrystallized). Tensile testing was performed by remote control on an MM-150D machine at a deformation rate of 10^{-3} sec^{-1} at 20-8000 in a vacuum of 10^{-4} mm Hg. After irradiation at 750° an increase is observed in strength properties, lattice spacing and microhardness and a decrease in ductility, with the radiation

1/2

USSR

ALEKSANDROV, S. I., Khladostoikost' stali i stal'n. konstruktsiy, Novosibirsk, "Nauka", 1971, pp 110-122

critical for stresses 0.25-0.30 σ_T and is independent of further drop in temperature and a change in the reserve elastic energy. In the region of transitional temperatures above the critical temperature, a crack may develop at stresses of $\sim$0.9 σ_T. Residual stresses directed along the action of the external load can lower the strength of the structure at temperatures below critical. 11 ref. V. N. Geminov.

2/2

UDC 539.4

USSR

ALEKSANDROV, S. I.

"Evaluation of the Cold Brittleness of Steels on the Basis of Tests for the Stretching of Large Plates With a Cut"

V sb. Khladostoikost' stali i stal'n. konstruktsiy (Cold Resistance of Steel and Steel Structures -- Collection of Works), Novosibirsk, "Nauka", 1971, pp 110-122 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12V1394)

Translation: The effect of temperature on the level of stresses corresponding to the appearance and propagation of brittle cracks in plates of steels of types St.4, MS-1 and SKhL-4 was investigated, and a relationship was established between these stresses and a tendency toward brittleness of standard samples. The cross section of the plates was (8-20) × 250 and 10 × 500 mm and the length varied from 1000 to 4400 mm. The ductile-to-brittle transition temperature of St. 4 and SKhL-4 for large plates was ~20° higher than for standard samples with a sharp notch under static bending and approximately coincides with the critical temperature determined in bent samples over the total thickness of the sheet. A crack propagates at temperatures below the

2/2 039 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SPECTRAL DEPENDENCES OF THE QUANTUM YIELD AND THE ENERGY DISTRIBUTION OF THE ELECTRONS EMITTED FROM TETRATHIOTETRACENE (I) FILMS SMALLER THAN OR EQUAL TO 1 THICK DEPOSITED ON STEEL PLATES WERE MEASURED PRIOR TO AND AFTER IRRADIATING THE FILMS WITH AN ELECTRON BEAM (OPERATING AT AN INTENSITY OF 10 PRIME NEGATIVE12 A AND AN ACCELERATING VOLTAGE OF 70 V FOR 1 HR) AT 80DEGREESK AND 5 TIMES 10 PRIME NEGATIVE6 TORR. ON "FRESH" I SURFACES, A DOWNWARD BENDING OF ENERGY BANDS OF SIMILAR TO 0.3 EV TAKES PLACE, AND ELECTRON BEAM IRRADN. OF THE SURFACES LOWERS THE VALUE A LITTLE. THE PHOTOELEC. WORK FUNCTION FOR I UNDER THE GIVEN CONDITIONS WAS CALCD. AS 4.75 PLUS OR MINUS 0.10 EV. FACILITY: FIX.-ENERG. INST., RIGA, USSR.

UNCLASSIFIED

1/2 039 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--SURFACE STATE INFLUENCE ON PHOTOELECTRON EMISSION FROM TETRATHIOTETRACENE FILMS -U-

AUTHOR-(02)-ALEKSANDROV, S.B., BELKIND, A.I.

COUNTRY OF INFO--USSR

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, FIZ. TEH. ZINAT. SER. 1970, (1), 59-66

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, CHEMISTRY, PHYSICS

TOPIC TAGS--SPECTRUM, ELECTRON EMISSION, ORGANIC SULFUR COMPOUND, STEEL, ELECTRON BEAM, IRRADIATION EFFECT, PHOTOELECTRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0669 STEP NO--UR/0371/70/000/001/0059/0066

CIRC ACCESSION NO--AP0119577

UNCLASSIFIED

USSR

UDC 5[illegible].21[illegible].1

ALEKSANDROV, S.B., BALODE, D.R., BELKIND, A.I., NEYLAND, O.Ya., RAUSKINA, I.A., SILIN'SH, E.A., TAURE, L.F.

"Photoelectronic Properties And Energy Structure Of Transbisbindonilen"

V sb. Poluprovodniki i ikh primeneniye v elektrotekh. (Semiconductors And Their Application To Electrical Engineering--Collection Of Works), No 1, Riga, "Zinatne," 1971, pp 221-230 (from RZh:Elektronika i yeye primeneniye, No 8, Feb 72, Abstract No 8A20)

Translation: The results are discussed of a study by the method of photoconductivity and photoelectronic emission of the properties of a thin film system of transbisbindonilen. Possible mechanisms are considered of photoproduction of charge carriers, and an energy scheme of a molecular crystal of transbisbindonilen is proposed. 6 ill. 10 ref.

1/1

USSR

ALEKSANDROV, S. B., et al, V sb. Poluprovodniki i ikh primeneniye v elektrotekhn, No 5, Riga, "Zinatne," 1971, pp 231- 42

tetracene (allowing for BEB) equals 5.40 plus or minus 0.05 ev. The effect is investigated of the brightening in a singlet absorption band on photoelectric emission from tetracene. 11 ill. 43 ref.

2/2

Photoelectric Effect

USSR

UDC 535.215.1

ALEKSANDROV, S. B., BELKIND, A. I., ALEKSANDROV, V. V., GRINKOV, V. V., MEYSHLOS, YA. D.

"Photoelectric Emission From Tetracene. Effect of the Condition of the Surface and of Brightening"

V sb. Poluprovodniki i ikh primeneniye v elektrotekhn (Semiconductors and Their Application to Electrical Engineering--Collection of Works), No 5, Riga, "Zinatne," 1971, pp 231-249 (from RZh: Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2B19)

Translation: Various mechanisms are considered of photoelectric emission from tetracene: photoionization of defects of trapped electrons, ionization of such defects by excitons and photoionization of molecules of the basic substance. An analysis is conducted of the effect of a bend [zagib] of the energy bands (EB) on photoelectric emission: on the spectral dependence of the current yield, the distribution of the electrons with respect to energy, the photoelectric work function, and others. The parameters of the BEB are obtained. The photoelectric work function of the

1/2

USSR

UDC 621.394.14

KULIKOVSKIY, L. F., MOROZOV, V. K., ALEKSANDROV, O. P., MITEL'MAN, M. B.,
Kuybyshev Polytechnical Institute imeni V. V. Kuybyshev

"A Device for Compressing and Transmitting Textual Data With Coding by Word"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 36, Soviet Patent No 288021, class 21, filed 7 Jul 69, published 3 Dec 70, pp 50-51

Translation: This Author's Certificate introduces a device for compressing and transmitting textual data with coding by word. The device contains an input register, a converter-encoder, control logic circuits, and an output puncher. As a distinguishing feature of the patent, the data traffic handling capacity of the communications channel is increased by connecting the above-mentioned encoder to some inputs of the shift register, while its input is connected to other inputs of the shift register through switches which are controlled from an AND circuit and are connected to the encoder outputs. The output of the shift register is connected to the puncher through a series-parallel output register.

ALEKSANDROV, N. P.

AGRICULTURE

SO: JPRS 64668
09 Dec 75

Perspectives Open to Agriculture

Report by N. P. Aleksandrov, Academician in the All-Union Academy of Agricultural Sciences imeni V. I. Lenin, Director of the All-Union Scientific Research Institute for Agriculture; Moscow, Sel'skiy Mekhanizator, Russian, No 10, October 1971, pp 4-5

Tremendous Economic Force

Agriculture is an inherent part of the country's national economy and its development is closely related to the growth of industry.

USSR UDC 619:616.981.42+616.982.2-084:636.22/.28

YERMAKOV, P. I., ALEKSANDROV, N. A., AFANAS'YEV, V. M., ALEKSEYEV, K. K., and IKONNIKOV, V. D., Saratov Oblast Veterinary Department

"Organization of Measures to Control Brucellosis and Tuberculosis in Cattle"

Moscow, Veterinariya, No 1, 1972, pp 46-48

Abstract: The incidence of tuberculosis and brucellosis among cattle and the incidence of brucellosis among sheep in Saratovskaya Oblast (a region of southeastern Russia on both sides of the lower Volga) built up by 1964 to the point where almost one-quarter of all the animals were suffering from chronic infection. Following a detailed study of the situation on each affected farm, comprehensive plans were drawn up to halt the spread of the diseases. These plans included regular examination of the animals for brucellosis and tuberculosis, isolation of young healthy animals to create new herds, compulsory pasteurization of milk, disinfection measures, and plowing up and liming soils on infected farms. Conference and visiting experts were organized to propagandize modern control measures. As a result of these steps, the number of affected localities was sharply reduced within five years (fourfold and twofold in the case of brucellosis and tuberculosis, respectively). The infection rate of both diseases dropped from about 2.3 to 1.1%. Efforts are now under way to eradicate these and other chronic diseases of cattle.
1/1

3/3 038 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103218

ABSTRACT/EXTRACT--THE SPECIFIC CONDITIONS PREVAILING IN SPACE (A DEEP VACUUM, WEIGHTLESSNESS, INTENSE SOLAR AND COSMIC RADIATION, CONSIDERABLE TEMPERATURE DROP, ETC.) WILL BE USED ON ORBITING STATIONS FOR STUDYING PROCESSES AND PHENOMENA SUCH AS SUPERLOW TEMPERATURES, SUPERHIGH PRESSURES AND AN ALMOST ABSOLUTE VACUUM, A PLASMA STATE OF MATTER, POWERFUL RADIATION AND MAGNETIC FIELDS. SUCH STUDIES AFFORD UNLIMITED POSSIBILITIES FOR LEARNING HOW TO CONTROL THE FORCES OF NATURE ON EARTH. THESE CONDITIONS ON ORBITAL STATIONS WILL ALLOW EXTRAORDINARY PHYSICAL AND CHEMICAL EXPERIMENTS WHICH COULD NOT BE CARRIED OUT ON EARTH. SPECIALISTS ON SUCH STATIONS WILL CONDUCT BIOMEDICAL INVESTIGATIONS WHICH WILL IMPROVE TERRESTRIAL BIOLOGY AND MEDICINE. ASTRONOMY WILL BE ADVANCED ENORMOUSLY BY OBSERVING THE UNIVERSE FROM AN ORBITAL STATION BEYOND THE LIMITS OF THE EARTH'S ATMOSPHERE. SUCH STATIONS WILL ALSO SERVE AS "DOCKS" FROM WHICH SPACESHIPS WILL BE LAUNCHED TO THE OTHER PLANETS. SHIPS RETURNING FROM DISTANT VOYAGES IN THE UNIVERSE WILL RETURN TO SUCH "DOCKS" AND COSMONAUTS WILL THEN RETURN TO THE EARTH IN OTHER, SMALLER SHUTTLE SHIPS.

UNCLASSIFIED

2/3 038 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103218

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STATIONS OF ANY SIZE AND CONFIGURATION CAN BE CREATED IN ORBIT. THE GEOMETRIC CONFIGURATION OF THE COMPARTMENTS FROM WHICH SPACE STATIONS ARE ASSEMBLED WILL EVIDENTLY BE SPHERICAL OR CYLINDRICAL. THE PREFERRED SHAPES WOULD BE A CYLINDER OR TORUS. CYLINDRICAL STATIONS ARE WELL SUITED FOR BEING LOFTED BY CARRIER ROCKETS WHEREAS STATIONS WITH A TORUS CONFIGURATION ARE NOT WELL ADAPTED FOR THIS PURPOSE. ON THE OTHER HAND, THE LATTER ARE EXTREMELY CONVENIENT FOR THE CREATION OF ARTIFICIAL GRAVITY. ARTIFICIAL SATELLITES AND ORBITAL STATIONS WILL BECOME INCREASINGLY IMPORTANT FOR STUDYING METEOROLOGICAL PROCESSES TRANSPIRING IN THE ATMOSPHERE. SATELLITES ARE ALREADY ASSISTING THE WEATHER SERVICE IN LONG RANGE FORECASTING AND PROVIDING INFORMATION ON CLOUD FORMATIONS, HIGH AND LOW PRESSURE FORMATIONS. SPACE LABORATORIES WILL PROVIDE GREAT OPPORTUNITIES FOR STUDYING THE COMPOSITION OF THE EARTH'S CRUST, GRAVITY AND MAGNETIC ANOMALIES, AND HELP IN THE DISCOVERY OF NEW MINERAL DEPOSITS. ALL TYPES OF RELIEF CAN BE DISTINGUISHED ON PHOTOGRAPHS TAKEN FROM ORBIT. THIS TYPE OF INFORMATION IS NEEDED FOR COMPILING TOPOGRAPHIC MAPS, PARTICULARLY FOR INACCESSIBLE MOUNTAIN REGIONS. IN THE NOT DISTANT FUTURE ELECTRONIC INSTRUMENTATION ABOARD ORBITAL STATIONS WILL PROVIDE HIGHLY PRECISE NAVIGATIONAL INFORMATION FOR SHIPS AND AIRCRAFT. SATELLITES ARE ALREADY SERVING AS TELEVISION RELAY STATIONS.

UNCLASSIFIED

1/3 · 038 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SPACE ORBITAL STATIONS -U-

AUTHOR--ALEKSANDROV, N.

COUNTRY OF INFO--USSR

SOURCE--SOVETSKIY VOIN, NO. 1, JANUARY 1970, PP 35-36

DATE PUBLISHED-------70

SUBJECT AREAS--SPACE TECHNOLOGY, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--SPACE STATION, MANNED ORBITAL LABORATORY, UNMANNED ORBITAL LABORATORY, EARTH CRUST, MAGNETIC ANOMALY, MINERAL DEPOSIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/1359 STEP NO--UR/9075/70/000/001/0035/0036

CIRC ACCESSION NO--AP0103218

UNCLASSIFIED

USSR

UDC 532.517.4

BORONIN, V. V., ALEKSANDROV, M. A., MIROSHNICHENKO, G. V., SHENIN, Ye. K.

"Study of the Structure of Turbulence With the Aid of the 'Dnepr-1' Controlling Computer"

Tr. VNII gidrotekhn. i melior. (Works of the All-Union Scientific Research Institute of Hydraulic Engineering and Land Reclamation), 1972, Vol. 53, pp 167-179 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B1062)

Translation: The results of a computer assisted automated calculation of the physical characteristics of the turbulence field with direct recording of measurements into the ready access memory of the computer are presented. Using transducers based on measuring the force action of the flow on the receiving element mechanically connected to the tensometric converter, the flow of water into a hydraulic chute with a working area of 160 × 160 mm was investigated. The frequency of interrogation of the transducers was 100 Hz and the time for carrying out the process was 20 sec. The distributions of the average velocity, the intensities of the pulsations in the flow rate and pressures and certain correlation functions are given for the range of Reynolds numbers $10\text{-}50\cdot10^3$. The effect of measurement time on the values measured was investigated. The results are similar to results of other investigators. 7 ref. V. A. Frost.

1/1

2/2 024 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AN0110849

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE REPORTS THAT DOCTOR OF TECHNICAL SCIENCES, V. I. KLASSEN, ET AL, HAVE DISCOVERED THAT DENSITY, SURFACE TENSION, AND ELECTRICAL CONDUCTIVITY OF WATER CAN BE ALTERED BY TREATING IT WITH A MAGNETIC FIELD. THIS TREATMENT ALSO ALTERS APPRECIABLY THE RATE OF SOLUBILITY OF SALTS AND THE RATE OF CHEMICAL REACTIONS. N. B. ADYRKHAYEV SUCCEEDED IN OBTAINING A UNIPOLAR WATER WHICH RETAINS ITS NEW PROPERTIES FOR SEVERAL WEEKS. HE HAS ALSO STUDIED THE EFFECT OF SUCH WATER ON BIOLOGICAL SUBJECTS. A TEAM OF SCIENTISTS, LED BY CORRESPONDING MEMBER OF THE ACADEMY OF SCIENCES, U.S.S.R., B. DERYAGIN, HAS FOUND THAT THE DENSITY OF WATER PRODUCED BY THE CONDENSATION OF THE MAGNETIZED WATER IS 15 TIMES AS HIGH AS NORMAL. WATER HAS BEEN OBTAINED BY ARTIFICIAL VAPORIZATION THAT HAS THE HIGHEST DENSITY AT 20-25 DEGREES C. ALSO WATER HAS BEEN OBTAINED THAT DOES NOT SOLIDIFY AT MINUS 100 C.

ZZZZZZZZZZZZ UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--A REMARKABLE FLUID WATER -U-

AUTHOR--ALEKSANDROV, M.

COUNTRY OF INFO--USSR

SOURCE--KRASNAYA ZVEZDA, MAY 17, 1970, P 4, COL 1

DATE PUBLISHED--17MAY70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SURFACE TENSION, SPECIFIC DENSITY, ELECTRIC CONDUCTIVITY, MAGNETIC FIELD EFFECT, CHEMICAL REACTION RATE, SOLUBILITY, BIOCHEMISTRY, ANOMALOUS WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/1221 STEP NO--UR/9008/70/000/000/0004/0004

CIRC ACCESSION NO--AN0110849

ZZZZZZZZZZZZ UNCLASSIFIED

USSR

PETROSYAN, V. I., et al., Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 725-730

originated, demonstrated that the derived characteristics are related to a polycrystallinity. Three figures, six formulas, eight bibliographic refs.

2/2

USSR

UDC 669.76:539.216.2:5317.311.3

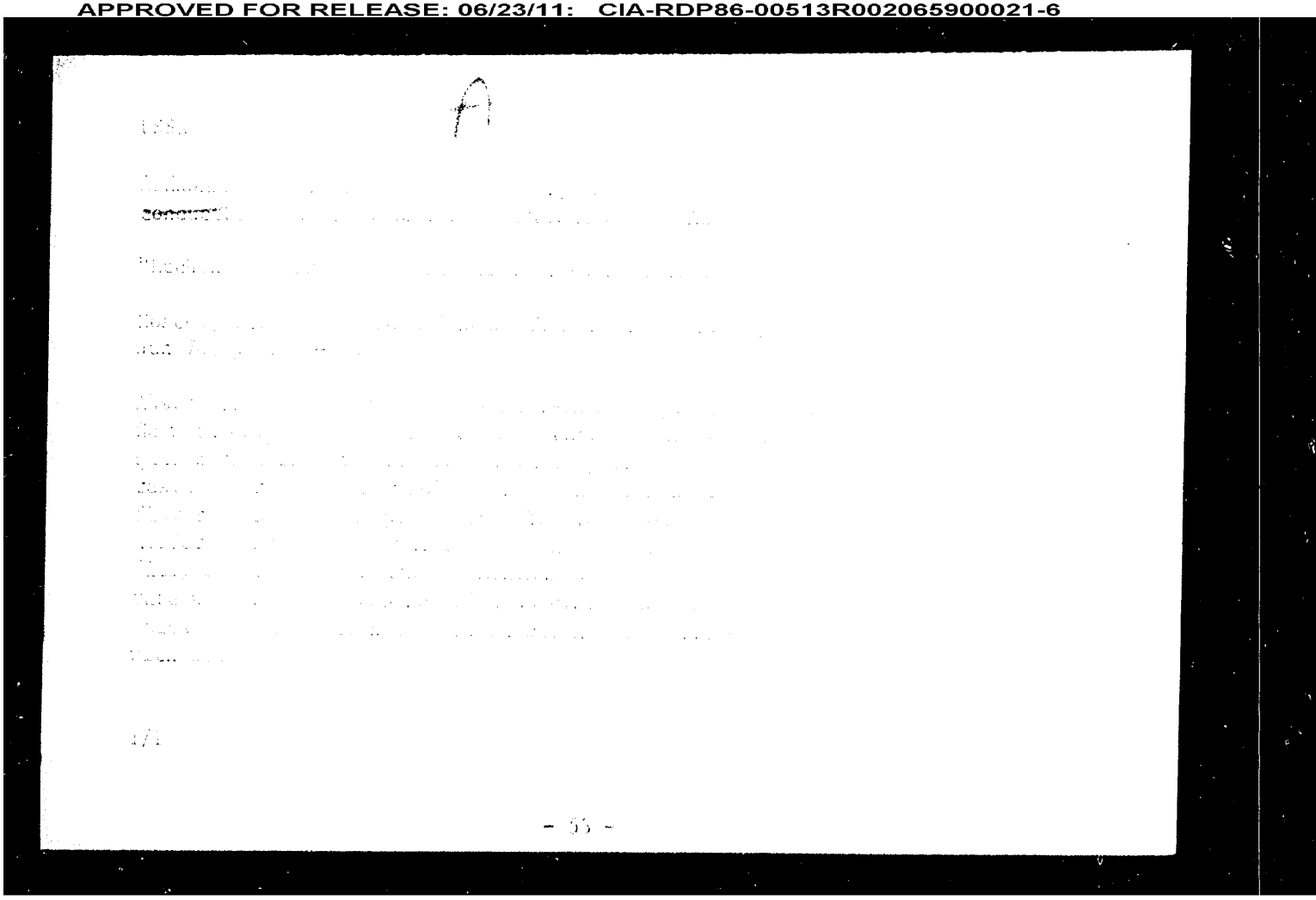
PETROSYAN, V. I., MOLIN, V. N., DAGMAN, E. I., TAGVER, B. A., SKRIPKINA, P. A., and ALEKSANDROV, L. N., Institute of Semiconductor Physics, Siberian Department of the Academy of Sciences USSR

"Characteristics of Quantum Size Effects in Thin Untextured Polycrystalline Films of Bismuth Produced by the Electric Explosion Method"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 725-730

Abstract: Possibilities of the occurrence of quantum size effects (QSE), their peculiarities in untextured polycrystalline bismuth films, and the role of crystallographic anisotropy in QSE were investigated on the basis of oscillation (period ~200 Å) dependences of the specific resistance ρ and the Hall constant R on the thickness in untextured polycrystalline foils. The foils were produced by the electric explosion method in the thickness interval of 50-700 Å. In contrast to previous findings, the Hall constant was found to be negative. The experimental results are discussed by reference to diagrams showing temperature dependences of ρ and R and densities of electron and hole conditions as functions of the film thickness. Control measurements made on the same films, annealed at 70°C, on which the texture

1/2



2/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054929

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PREPN. OF EPITAXIAL THIN FILM LAYERS OF SI ON THE SINGLE CRYST. SI BEARING PLATE (18 TIMES 5 TIMES 1 MM) WITH SURFACE ORIENTATION (111) BY THE METHOD OF CATHODIC SPUTTERING (USING A LOW VOLTAGE ARC WITH MAGNETICAL PLASMA FOCUSING) IN AR AT 1-2 TIMES 10 NEGATIVE PRIME3 TORR WAS STUDIED. THE RELATION BETWEEN FLOW STRENGTH OF SPUTTERING, TEMP. OF THE BEARING PLATE, AND STRUCTURE OF SI FILMS DETD. BY ELECTRON DIFFRACTION IS PRESENTED. FOR 1800 V AND C.D.1.2 MA-CM PRIME2, THE LAYERS OBTAINED AT ROOM TEMP. ON BEARING PLATE ARE AMORPHOUS, AT 250DEGREES (GRAIN 60-80 ANGSTROM) THEY ARE POLYCRYST., AT 450DEGREES THERE IS A MAIN ORIENTATION. AT 750DEGREES A SYSTEM OF SPOTS CONSIDERABLY DOUBLED WAS OBSD. ON THE ELECTRON PATTERNS, EPITAXIAL LAYERS ORIENTED ALONG (111) FORMED AT 800DEGREES. AT 850DEGREES AN ENTIRE SINGLE CRYSTAL FILM FORMS. ANALOGOUS DEPENDENCE WAS OBSD. AT THE HIGHER C.D. (TO 2.4), BUT THERE ARE SOME DIFFERENCES. DEFECT SINGLE CRYSTAL FILMS ARE FORMED AT 800DEGREES UNDER THESE CONDITIONS. THIS DEFECT OF EPITAXIAL FILMS DECREASES WHEN THE TEMP. INCREASES TO 850DEGREES. A PERFECT SINGLE CRYSTAL STRUCTURE WAS OBSERVED AT 900DEGREES. THE VALUE OF OUT OF FLATNESS IS MAX. 150 ANGSTROM.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EPITAXY OF SILICON DURING CATHODIC SPUTTERING -U-

AUTHOR-(04)-ALEKSANDROV, L.N., LOVYAGIN, R.N., KRIVOROTOV, YE.A., DOZHDIKOVA, N.YE.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, (1), 203-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--CATHODE SPUTTERING, SILICON, EPITAXIAL GROWTH, SINGLE CRYSTAL FIRM, MAGNETIC FIELD PLASMA EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0133 STEP NO--UR/0070/70/015/001/0203/0204

CIRC ACCESSION NO--AP0054929

UNCLASSIFIED

USSR UDC 611.8:534.612.1

ALEKSANDROV, L. N., DYSKIN, YE. A., ZLATISKAYA, N. N., KONKIN, I. F., DEV, I. D., TIKHONOVA, L. P., FILATOV, A. I., and SHADRINA, N. S., Department of Normal Anatomy, Military-Medical Academy imeni S. M. Kirov

"Condition of Some Nerve Structures After Exposure to Powerful Shock Waves"

Leningrad, Arkhiv Anatomii, Gistologii i Imbriologii, No 10, 1971, pp 12-20

Abstract: Cats were exposed to a powerful shock wave with an excess pressure of 0.1 to 10 kg/cm^2 lasting about 0.1 sec. The effect was not lethal and after the experiment the animals were externally indistinguishable from normal cats. They were sacrificed at various times during the 30 days following exposure to the shock wave and the nerves in the walls of the vena cava, digestive organs, dura and pia mater of the brain and spinal cord, pancreas, and thyroid were histologically examined. The medullated fibers and preterminal portions of the receptors underwent the most distinct changes. The axial cylinders were swollen and the contours uneven. Along the course of the fibers were solitary or multiple varicosities. These reactive changes were largely reversible. However, some of the nerve elements proved to be quite resistant to the shock wave, notably the nonmedullated fibers, some afferent structures (e.g., diffuse receptors), and encapsulated cell bodies.

1/1

2/2 027 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0108798

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE PAPER THE RESULTS OF EXPERIMENTS ON CADAVERS AND ANIMALS TO THE END OF STUDYING CRANIOCEREBRAL CHANGES DURING GUNSHOT INJURIES ARE REPORTED. THE HIGH SPEED FILMING AND IMPULSE ROENTGENOGRAPHY WERE EMPLOYED. THE DEVELOPMENT OF A TEMPORY PULSATING CAVITY AND DISPLACEMENT OF AN ORGAN AFTER BULLET PENETRATING IT ARE DESCRIBED. KAFEDRY VOYENNO POLEVOY KHIRURGII AND KAFEDRY NORMAL'NOY ANATOMII VOYENNO MEDITSINSKOY ORDENA LENINA KRASNOZNAMENNOY AKADEMII IM. S. M. KIROVA.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--ON THE MECHANISM OF GUNSHOT CRANIOCEREBRAL INJURIES -U-

AUTHOR-(04)-ALEKSANDROV, L.N., DYSKIN, YE.A., OZERETSKOVSKIY, L.B., ALEKSEYEV, A.V.
COUNTRY OF INFO--USSR

SOURCE--VESTNIK KHIRURGII IMENI I. I. GREKOVA, 1970, VOL 104, NR 5, PP 81-85
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--GUNSHOT WOUND, CEREBRUM, RADIOLOGY, MEDICAL EXPERIMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0583 STEP NO--UR/0589/70/104/005/0081/0085

CIRC ACCESSION NO--AP0108798
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 032

CIRC ACCESSION NO--AP0124875

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CALCN. AND EXPTL. INVESTIGATION OF THE TEMP. DISTRIBUTION IN THIN FILMS DEPOSITED BY THE ELEC. EXPLOSION METHOD WERE MADE. AS A RESULT OF RELEASING THE CONDENSATION ENERGY, CRYSTN. PROCESSES OCCUR FROM THE MELT. FILMS OF INSB AND INAS DEPOSITED ON ISOLATED NONORIENTED SUBSTRATES WERE INVESTIGATED BY ELECTRON DIFFRACTION, AND THEIR MOBILITY, CARRIER CONCN., AND COND. WERE MEASURED. THE UNUSUALLY SMALL VALUES OF MOBILITY ARE DISCUSSED IN TERMS OF THE DIMENSIONAL EFFECT IN VERY THIN FILMS. FACILITY: INST. SEMICOND. PHYS., NOVOSIBIRSK, USSR.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PECULIARITIES OF FORMATION AND PROPERTIES OF SEMICONDUCTOR FILMS DEPOSITED BY ELECTRICAL EXPLOSION -U-

AUTHOR-(05)-ALEKSANDROV, L.N., DAGMAN, E.I., ZELEVINSKAYA, V.I., PETROSYAN, V.I., SKRIPKINA, P.A.

COUNTRY OF INFO--USSR

SOURCE--THIN SOLID FILMS 1970, 5(1), 1-6

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--THIN FILM SEMICONDUCTOR, TEMPERATURE DISTRIBUTION, CRYSTALLIZATION, INDIUM ANTIMONIDE, INDIUM ARSENIDE, ELECTRON DIFFRACTION, ELECTRON MOBILITY, CRYSTAL GROWING, ELECTRIC DISCHARGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1221 STEP NO--NE/0000/70/005/001/0001/0006

CIRC ACCESSION NO--AP0124875
UNCLASSIFIED

USSR

ALEKSANDROV, L. N., and SIDOROV, Yu. G., Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 14-26 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B62)

displaced from (111). Basically, the 3-dimensional growth of the film is the cause of the formation of the wide transition region between the film and the substrate which is marked by the discontinuity of the electrophysical properties. 15 ref.V.G.

2/2

USSR

UDC 621.315.592:546.19'681

ALEKSANDROV, L. N., and SIDOROV, Yu. G.

"Formation and Growth of Thin Epitaxial Layers (Homoepitaxial Semiconductors"

V sb. Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 14-26 (from RZh-Elektronika i yeye primenenive, No 7, July 1971, Abstract No 7B62)

Translation: An analysis of the distinctive features of the course of a homoepitaxial process on the surface of semiconductor crystals shows that under actual conditions of deposition of the film, the mechanism of 3-dimensional nucleation is principally realized as the result of the presence of impurities adsorbed by the surface and also as a result of the probability of disorientation of the lattice of the nucleus and substrate. Subsequent growth of the nucleus as well as epitaxy on the pure sections of the substrate surface can take place by combination of the individual atoms or by a 2-dimensional mechanism of laminar growth (TG). The existence of imperfections and defects on the surface considerably decreases the necessary work for their formation. For quasispherical nuclei, small departures from the surface (111) should facilitate TG, and transition to the planes (110) or (100) should hinder it. For rectangular nuclei, transition to the surfaces (110) and (100) assists TG. Experimental studies of autoepitaxial GaAs principally show a 3-dimensional character of nucleation at surface (111) and the appearance of individual sections of TG at the surfaces

1/2

USSR

UDC 550.421.4+669.421.1

ALEKSANDROV, [illegible], FINKEL', [illegible]

"Mechanism of Epitaxial Crystallization Through Inclined Dislocations"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations--collection of works) Minsk, "Nauka i tekhn." 1971, pp 80-85 (from Mat-Fizika, No. 9, 1971, Abstract No. 9B299)

Translation: On the basis of data of electron microscope investigation of the generation of epitaxial Ge and GaAs layers in the gas-transport method, the effect of supercooling (Δ) and the disorientation of seeds on the velocity of their formation is computed. It is shown that with an increase in Δ, an increase is obtained in the generation rate and the nucleation probability of seeds disoriented with respect to the substrate. The minimum thickness of the solid film is reduced.

1/1

ALEKSANDROV, L.N.

SESSION I

I-1. EPITAXIAL GROWTH OF SEMICONDUCTOR FILMS (THERMODYNAMICS AND KINETICS)

[Article by L. N. Aleksandrov, Novosibirsk, Institute of Semiconductor Physics, Siberian Department, Academy of Sciences, USSR]

Proceedings Report [illegible] Poluprovodnikovykh Materialov i Priborov, Kuybyshev, 12-17 June, 1972, p 3]

The epitaxial methods of growth permit us to obtain monocrystalline films of semiconductors with the required properties for use in microelectronics, quantum electronics and other areas of engineering. Here, the control of the local values of the film parameters with respect to thickness requires establishment of the correlation between the properties of the films and the characteristic features of their growth mechanisms.

The thermodynamic examination of the growth of films occurring under nonequilibrium conditions permits estimation of the magnitude of the active supersaturation in various methods of deposition on variation of the temperature of the source and the substrate, the vapor pressure, supersolubility, supersaturation and other parameters. The noncorrespondence between the concentrated and thermal stresses acting on the film-substrate boundary are calculated; the effect of the external electric and magnetic fields and the surface energy of the substrate-nucleus boundary is estimated. As applied to the stationary growth conditions of the films, the probabilities of three-dimensional and two-dimensional nucleus formation and the succession of the orientation of the substrate, the rate of displacement of the steps, and the variation of the growth surface configuration are estimated.

The investigation of the film growth kinetics will be carried out for the surface breakdown and steps limiting the diffusion processes or the surface reactions. It is demonstrated that the variation with time of the effective growth rate of the film in the initial stage of epitaxy is connected with variation of the growth mechanism and will lead to the formation of the transient region between the substrate and the film. The dependence of the film thickness on time for various cases of epitaxy has been established.

USSR

ALEKSANDROV, L. N., et al. Fizika Tverdogo Tela, Vol 12, No [illegible] 1970, pp 1[illegible]

concerning the relationship of the attenuation of sound waves in plastically deformed silicon are in qualitative agreement with the Koller-Granato-Lücke theory in the area of the dependence of the decrement on amplitude.

2/2

A Acoustics

USSR

ALEKSANDROV, L. N.: [illegible], V. M.: [illegible], A. L., Institute of Semiconductor Physics, Siberian Department, Academy of Sciences, USSR, Novosibirsk

"Some Mechanisms of Sound Wave Attenuation in Plastically Deformed Silicon"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 6, June 1970, pp 1654-1660

Abstract: In an earlier study the authors [illegible] the effect of heat treatment and alloying with copper [illegible] internal friction in silicon containing a relatively small number of dislocations. In the present work a study is made of the internal friction in plastically deformed silicon, the effect of alloying with copper upon the internal friction in the silicon, and the dependence of attenuation on amplitude. It is found that the experimental data

1/2

USSR

ALEKSANDROV, L. N., Problemy Epitaksii Polyprovodnikovykh Plenok, Nauka Press, Novosibirsk, 1972.

4/4

USSR

ALEKSANDROV, L. N., Problemy Epitaksii Poluprovodnikovykh Plenok, Nauka Press, Novosibirsk, 1972.

The monograph includes review materials on some individual problems of epitaxy, summarizing the results of experimental and theoretical studies of the process of epitaxial crystallization of semiconductor films, conducted in 1968-1969 in the laboratories of thin film physics and crystal growth of the Institute of Semiconductor Physics, Siberian Affiliate, Academy of Sciences, USSR. One doubtless advantage of the materials is their originality. Problems of the preferential three-dimensional nature of seed formation during epitaxy in gas transport processes, crystallization from a low-temperature plasma produced by the method of electric explosion, oriented crystallization on non-oriented substrates were stated and studied in detail for the first time at the Institute of Semiconductor Physics, Siberian Affiliate, Academy of Sciences, USSR.

TABLE OF CONTENTS

USSR

ALEKSANDROV, L. N., Problemy Epitaksii Poluprovodnikovykh Plenok, Nauka Press, Novosibirsk, 1972.

have been analyzed in the collections Protsessy Rosta i Struktura Monocristallicheskikh Sloyev Poluprovodnikov [Growth Processes and Structure of Monocrystalline Semiconductor Layers], Part I and II, Protsessy Rosta Kristallov i Plenok Poluprovodnikov [Growth Processes of Crystals and Semiconductor Films], in the monograph of L. N. Aleksandrov Kinetika Obrazovaniya i Struktura Tverdykh Sloyev [Kinetics of the Formation and Structure of Solid Layers], and in other publications of the Siberian Division of Nauka Press.

The present monograph is dedicated to important problems involved in the process of epitaxy of semiconductor films in gas transport methods of growing, with crystallization in a vacuum, and crystallization from a melt. Primary attention is given to the peculiarities of the initial stage of epitaxy, related to the formation and growth of films, the formation of the transition layer between the film and the crystalline substrate, to crystallographic correspondence of the film and substrate during epitaxy of semiconductors, and to the diffusion of impurities during growth of epitaxial films. A special Chapter discusses problems of formation of monocrystalline films of germanium and silicon on foreign, non-oriented substrates.

2/4

Semiconductor Technology

USSR UDC 539.23+548.51+621.315.592

ALEKSANDROV, L. N., Editor

"Problems in the Epitaxy of Semiconductor Films"

Problemy Epitaksii Poluprovodnikovykh Plenok, Nauka Press, Novosibirsk, 1972.

Translation of Foreword: The rapid development of semiconductor and thin-film integrated microelectronics in recent years has required the establishment of the interrelationship between conditions of formation of solid layers with various growth methods and alloying methods and the properties of the films produced. The necessity of providing stable film properties for semiconductor integrated circuits based on semiconductor monocrystals and for film integrated microcircuits produced on insulating substrates has resulted in a tendency toward the creation of monocrystalline perfect films. This task is solved either by epitaxial growth of semiconductor films on oriented substrates, or by stimulating oriented crystallization during growth on unoriented insulating substrates.

A great contribution has been made to the development of each of these two closely related trends by the works of Soviet scientists, in particular the studies of physicists and physical chemists of the Siberian Division of the Academy of Sciences, USSR. Some results of these studies

ALEKSANDROV, L.N.

- 232 -

the elastic stresses arising during transformation of the coherent separations into carbide particles.

JPRS 69903

6 73

5

AVI-2. STUDY OF THE INITIAL STAGES OF EPITAXIAL GROWTH FILMS OF CADMIUM SELENIDE ON MICA

[Article by L. T. Denisova, I. F. Kalinkin, F. K. Murav'yeva, V. B. Aleshovskiy, L. . Alexandrov, Leningrad, Novosibirsk, Novosibirsk, III Simpozium po Fotoeffektam Poeta i Sintezu Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 221]

An electron microscope study was made of the nuclear formation and growth of epitaxial CdSe films on mica (muscovite) in a vacuum of $5 \cdot 10^{-5}$ torr at T_e = 550-650° C and T_{test} = 700-1,000° C. The results of a survey of the electron microscope pictures presented in the form of graphical relations permitted the growth kinetics to be traced and the series of laws of the epitaxial growth process of CdSe films on mica to be established:

a) In the nucleation stage on the substrate, two types of particles are observed: small particles with triangular faceting (the cubic phase) and larger unfaceted particles.

b) The maximum density of the nuclei of two types is determined by the thermodynamic conditions of synthesis (T_e, T_{test}, the degree of deviation from the equilibrium state inside the evaporator). The knowledge of the maximum particle density of both types under different conditions of growth permitted estimation of the activation energy of the nucleation, adsorption and diffusion.

c) The nature of the variation in altitude and transverse dimensions of the particles with time permitted establishment of the predominant effect of the surface diffusion during the growth process.

d) The growth rate in individual stages is not a constant and increases by a power law.

e) The filling coefficients for each type of particle as a function of the condensation time permitted establishment that the phase composition of the continuous film is determined by the ratio of the areas occupied by particles of each type directly before coalescence which, in turn, is determined by the synthesis thermodynamics.

ALEKSHANDROV, L. N.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R002065900021-6

ALEKSANDROV, L.N.

STRS 59208
6-73

5

XV-5. EFFECT OF THE CRYSTALLIZATION CONDITIONS ON THE DISLOCATION STRUCTURE AND PROPERTIES OF HOMOEPITAXIAL LAYERS OF GERMANIUM

[Article by Yu. D. Vaulin, S. N. Migal', V. P. Migal', L. N. Aleksandrov, S. I. Stenin, Novosibirsk; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 219]

Epitaxy was realized by the iodide transport reaction in a sealed ampoule. The deposition temperatures of the layers were 500, 550 and 600° C, the initial iodine concentrations defining the supersaturation varied within the limits of 0.1-6.0 milligrams/cm^3, and the substrate orientation was (111). The crystallographic imperfections arising in epitaxial germanium were studied by x-ray Borman topography using symmetric and asymmetric surveys.

The variation of the dislocation structure is observed as a function of supersaturation at constant deposition temperature. For small iodine concentrations the dislocations are located in the transition layer with an increase in supersaturation these dislocations are transformed by sliding into a system of half loops fastened in the film-substrate junction. Closed loops are also detected. A further increase in iodine concentration leads to the disappearance of the dislocations. The variation of the deposition temperature shifts the described picture along the supersaturation scale. An analysis of the topograms demonstrated that for deposition temperatures of 500 and 550° C in the layer, dislocations with the <111> axis perpendicular to the substrate surface predominate, and at 600° C-60°, dislocations.

In this paper the mechanism of the formation of dislocations in the junction and the causes of the evolution of the dislocation structure as a function of supersaturation and temperature are discussed.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R002065900021-6

ALEKSANDROV, L.N.

JPRS 5720

6 73

XIII-4. NEW METHOD OF OBTAINING MONOCRYSTALLINE LAYERS OF SILICON ON NONORIENTING SUBSTRATES

[Article by L. A. Klimenko, A. G. Klimenko, A. V. Rzhanov, N. Sh. Ibragimov, L. N. Aleksandrov, Novosibirsk; Novosibirskiy gosudarstvennyy universitet; Sintezu poluprovodnikovykh kristallov i plenok, Kuybyshev, 12-17 June 1972, p 165]

A new procedure has been developed for connecting monocrystalline plates of silicon to nonorienting substrates (ceramic) via an intermediate layer of solid solution (Ge + Si). The characteristic feature of the process of the process and its difference from soldering and fusing consists in the fact that the transient layer (the solid solution of germanium with silicon) is monocrystalline. It has electrophysical and chemical properties close to the properties of the connected plate of silicon. The crystallization begins with the surface of the monocrystalline silicon plate and develops in the direction of the nonorienting substrate. This insures the monocrystalline nature of the transient layer of solid solution with respect to its entire thickness. The silicon layers obtained in this way on the nonorienting substrates withstand the usually used chemical, thermal and mechanical (structure, polishing, coating and heating from liquid helium to ordinary diffusion temperatures in Si) treatment. The enclosures made demonstrated that the transient layer can have a thickness on the order of several microns. Thicknesses of the solid solution (Ge + Si) of 6-8 microns could be obtained experimentally. It was established that obviously the dislocation density in the silicon itself originates from the difference in coefficients of thermal expansion of the substrate and the silicon. The silicon layers were obtained on substrates of mullite ceramic with a dislocation density of $5 \cdot 10^4$-$1 \cdot 10^5$ cm^{-2}. On the basis of the experiments performed, the heating and cooling rate conditions of the layers were selected which do not lead to a noticeable variation of their electrical properties. Monocrystalline layers of silicon were obtained with a specific resistance to 1,500 ohm-cm and electron mobility to 1,500 cm^2/ per second at room temperature. For all of the specimens, the particular scattering of the carriers and the absence of deep levels are characteristic.

ALEKSANDROV, L.I.

SPIS 5925

6.73

3

SESSION XI

XI-1. STUDY OF THE CRYSTALLIZATION LAWS OF SEMICONDUCTOR SUBSTANCES

[Article by B. I. Kidyarov, P. L. Mitnitskiy, L. I. Aleksandrov, Novosibirsk; Novosibirsk, Ill Simposium po Poluprovodnikam i Poverkhnostnym Yavleniyam, Kristallov i Plenok, Russian, 15-17 June 1965, p 144]

A statistical study was made of the initial stage of crystallization of semiconductors: lithium and tellurium tellurate from their melt and also lithium tantalate from an aqueous solution. It was demonstrated that there is a discrete series of temperatures and concentrations for which the beginning of crystallization of the supercooled melts and solutions is most probable. The height of the peaks of the nucleation probabilities holding in the supercooled state, and their position does not depend on the preliminary treatment of the melt. The existence of such a discrete series of temperatures is detected at the present time for the following substances which melt with different variation of the chemical bond type: semiconductor (TeO$_2$), semiconductor-metal (Ge, In, Sb), semiconductor-ion melt (LiTaO$_3$), metal-metal (Hg, Sn), dielectric-ion melt (LiKO$_3$).

The waiting time distribution function for the appearance of the first crystallization center (1) at the peaks of the nucleation rate is subjected to the exponential law of the nonuniform batch (1) and at the minima it has a more general form connected with the presence of prolonged nonstationary crystallization periods (2):

$$(1)\ f_1(\tau_1) = \frac{1}{\tau_0}\exp\left(-\frac{\tau_1}{\tau_0}\right),$$

$$(2)\ f_2(\tau_1) = \frac{1}{\tau_0}\exp\left(-\frac{\tau_1}{\tau_0}\right) + \frac{1}{\tau_0}\exp\left(-\frac{\tau_1}{\tau_0}\right),$$

where n_0 is the total number of samples for the number of tests on one sample, n is the number of samples crystallized by the time t.

The indicated relations (1) and (2) were also observed when studying the crystallization of tin melts, and they obviously have a general nature.

USSR UDC: 621.319.4

LISKER, K. Ye., ALEKSANDROV, L. A.

"On Synthesizing High-Frequency Capacitor Ceramic in Oxygen-Free Gas Atmospheres"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 4(21), pp 27-37 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V323)

Translation: The authors investigate the effect which a reducing gas atmosphere during annealing has on the properties of titanium-containing and titanium-free ceramic. A high-frequency capacitor material based on calcium and barium zirconates annealed in hydrogen is recommended. It is shown that it is possible in principle to use this material in combination with molybdenum electrodes to make monolithic capacitors. Resumé.

1/1

2/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0141768

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN IMPULSE ULTRASONIC METHOD IS USED TO MEASURE THE WAVE VELOCITIES IN APPROPRIATE DIRECTIONS IN DIPHENYL AND HENCE TO DERIVE THE 13 INDEPENDENT STIFFNESSES C SUBIJ AT NORMAL TEMPERATURE. INVERSION OF THE MATRIX OF THE C SUBIJ GIVES THE COMPLIANCES WHICH ARE ALSO TABULATED.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ELASTIC CONSTA ITS OF DIPHENYL -U-

AUTHOR-(03)-KRUPNYY, .I., ALEKSANDROV, K.S., BELIKOVA, G.S.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA (USSR), VOL. 15, NO. 3, P. 589-90 (MAY 1970)

DATE PUBLISHED----MAY70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ULTRASONIC VELOCITY, ELASTICITY, POLYNUCLEAR HYDROCARBON, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605029/F04 STEP NO--UR/0070/70/015/003/0589/0590

CIRC ACCESSION NO--AP0141768

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126121

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ORIENTATION MOBILITY OF THE POLAR GROUPS OF THE FERROELEC. NA NH SUB4 SEO SUB4 2H SUB2 O WAS INVESTIGATED IN A BROAD TEMP. INTERVAL AND THE POSITION OF THE PROTON PROTON VECTORS OF WATER MOLS. IN THE 2 PHASES WAS DETD. BY PMR. THE INVESTIGATED CRYSTAL, AS WELL AS AMMONIUM SULFATE AND FLUOROBERYLLATE, IS A FERROELEC. WITH A HIGH ORIENTATION MOBILITY OF AMMONIUM GROUPS BELOW THE CURIE POINT. THE POSSIBILITY WAS CONSIDEED OF THE EXISTENCE OF A TIME AVERAGED CONST. DIPOLE MOMENT OF THE DISTORTED AMMONIUM GROUP WHICH RECRIENTS RELATIVE TO LARGER THAN 1 SYMMETRY AXIS. THE POLAR WATER MOLS. DO NOT CONTRIBUTE TO POLARIZATION. FACILITY: INST. FIZ., KRASNOYARSK, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--FERROELECTRICS WITH ORIENTATIONAL MOBILITY OF AMMONIUM GROUPS M PRIMEI NH SUB4 BX SUB4 TYPE COMPOUNDS -U-

AUTHOR-(03)-ALEKSANDROVA, I.P., ALEXSANDROV, K.S., KRUPNAYA, V.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1024-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--AMMONIUM COMPOUND, FERROELECTRICITY, PROTON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0366 STEP NO--UR/0181/70/012/004/1024/1029

CIRC ACCESSION NO--AP0126121

UNCLASSIFIED

USSR

ALEKSANDROV, K.

"Bacteria as Filters"

Riga, Sovetskaya Latviya, 12 February 1972, p 2

Translation: In the Slokskiy cellulose-paper combine, construction is proceeding on experimental reservoirs for purifying drainage water. Here, there will be neither high-powered pumps nor purifying filters. Chemical substances which endanger flora and fauna will be destroyed by bacteria.

The vital activity of the micro-organisms is insured by a simple system of mechanical aerators. Biological processes in the reservoirs prevent the accumulation of a biomass. Therefore, it is not necessary to remove it periodically.

The experimental installation was developed by the specialists of the Leningrad institute "Vodokanalproyekt." Construction is being done by the combine "Yurmalastroy."

1/1

2/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0137003

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLY(STYRENESULFONIC ACID) IS SEPD. FROM A REACTION MIXT. IN THE FORM OF ITS SALT. THE MIXT. IS TREATED WITH AMMONIA AND THEN ACETONE UNTIL IMMISCIBLE LAYERS ARE OBTAINED.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ISOLATION OF POLY,STYRENESULFONIC ACID, FROM A REACTION MIXTURE -U-

AUTHOR-(05)-ALEKSANDROV, I.V., YEVDOKIMOVSKOPINSKIY, A.N., PETROVA, N.A., DUSHEYKO, D.A., ZAYTSEVA, V.N.
COUNTRY OF INFO--USSR

A

SOURCE--U.S.S.R. 265,439
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYMER, STYRENE, SULFONIC ACID, CHEMICAL SEPARATION, CHEMICAL PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1763 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137003
UNCLASSIFIED

USSR UDC 621.314.51 (088.8)

PRIVALOV, A.I., OSOKIN, YE. I., PRIKHOD'KO, A. YA., [illegible], LAZAREV, L.A., TSYPLYAYEV, M.S., ALEKSANDROV, I.V., SHARIFO, V.I.

"Multiphase Rectifier Using Controlled [Semiconductor] Rectifiers"

USSR Author's Certificate No 262230, filed 29 Nov 66, published 29 June 70 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2B576P)

Translation: A circuit is proposed for control of a 3-phase bridge semicontrolled rectifier [vypryamitel']. The control circuit contains an auxiliary bridge noncontrolled rectifier, a relaxation oscillator for triple frequency using a dynistor, 3 auxiliary thyristors, and 3 output pulse transformers. The relaxation oscillator supplies pulses to the gates of the auxiliary thyristors. The anodes of these thyristors are connected with the primary windings of the pulse transformers. The second terminals of these windings are switched in to phases of the voltage for inherent [sobstvennyy] needs, from which is also supplied the noncontrolled bridge rectifier of the relaxation oscillator. The cathodes of the auxiliary thyristors are connected at a common point and are connected across a resistor to the negative terminal of the noncontrolled 3-phase rectifier. The secondary windings of the pulse transformers are connected with the gates of the power thyristors. 1 ill.
L.R.
1/1

UDC 53.07/.08+53.001.5

USSR

SOLTAMOV, U. B., ALEKSANDROV, I. R., DUNAYEVSKAYA, N. V., KLIMIN, A. I., LEPILIN, V. A., SMIRNOV, V. I.

"The Use of Silicon Multiplying Elements in Photoelectron Devices. (Brief Note)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektronnoluch. i fotoelektr. pribory (Electronic Engineering. Scientific-Technical Collection. Electron Ray and Photoelectric Devices), 1970, No 1(15), pp 58-61 (from RZh-Fizika, No 1, Jan 71, Abstract No 1A260)

Translation: The phenomenon of cathode amplification in silicon pn-structures is investigated. The use of this phenomenon in photoelectron devices was shown in mockups of photomultipliers with silicon multiplying elements. Authors abstract.

1/1

USSR

SOLTAMOV, U. B., et al, Elektron. tekhnika. Nauchno-tekhn. sb. Elektronnoluch. i fotoelektr. pribory, 1970, Issue 1(15), pp 58-61

of results. The dependences obtained for $a(U_a)$ are presented. At a number of diffusion junctions the anomalous effect is detected of cathode amplification with the coefficient "a" considerably exceeding the limit which is determined by the theory of impact ionization. Using as an example models of a photomultiplier with silicon photomultiplier elements, the use of this phenomenom in photoelectron devices is shown. 6 ill. 8 ref. N.S.

2/2

USSR UDC 621.383.292/52

SOLTANOV, U.B., ALEKSANDROV, I.R., DUNAYEVSKAYA, N.V., KLIMIN, A.I., LEPILIN, V.A., SMIRNOV, V.I.

"Use Of Silicon Multiplier Elements In Photoelectron Devices"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektronnoluch. i fotoelektr. pribory (Electronics Technology. Scientific-Technical Collections. Electron Beam And Photoelectric Devices), 1970, Issue 1(15), pp 58-61 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A243)

Translation: The phenomenon is investigated of cathode amplification in silicon p-n structures developed for hybrid photomultipliers. The phenomenon consists of the fact that during bombardment of a crystal with a shallow lying p-n junction by an electron stream with a power $U_a \cdot I_a$ in the circuit of a backward-biased junction, the current $I = aI_a$ ($a \gg 1$) appears. The diffusion p-n structures with the depth of occurence $<$ 1 micrometer is investigated, as well as junctions obtained by the method of ion implantation which are characterized by better reproducibility

1/2

5/5 041 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109604

ABSTRACT/EXTRACT--THE LATTER WAS NOT ENVISAGED IN THE EXPERIMENT, BUT THE CREW OF THE SOYUZ 5 HAD DECIDED TO GIVE SHATALOV A PLEASANT SURPRISE AND THUS BECAME THE FIRST SPACE POSTMEN. IN THIS CASE, TOO, THE ADVANTAGE OF A SPACECRAFT CONSISTING OF THE TWO COMPARTMENTS, NAMELY THE ORBITAL COMPARTMENT AND THE LANDING MODULE, BECAME APPARENT. ALTHOUGH THE ORBITAL COMPARTMENT WAS USED AS AN AIRLOCK AND CHANGING ROOM, THIS DID NOT AFFECT THE WORK OF CREW COMMANDERS SHATALOV AND VOLYNOV: THEY DID NOT HAVE TO PUT ON SPACESUITS, WHICH RESTRICT MOVEMENT, BUT REMAINED IN THEIR CASUAL CLOTHES. EVEN MORE SIGNIFICANT IN THIS RESPECT WAS THE EXPERIMENT CARRIED OUT DURING THE FLIGHT OF SOYUZ 6, 7 AND 8 IN OCTOBER 1969, WHEN IN THE SOYUZ 6 CRAFT WELDING IN SPACE WAS CARRIED OUT FOR THE FIRST TIME. THE POSSIBILITY OF USING WELDING TECHNIQUES IN ASSEMBLING SPACE STATIONS IN ORBIT WAS EXPERIMENTALLY TESTED. THE LAUNCHING OF THESE THREE SPACESHIPS IS AN OUTSTANDING ACHIEVEMENT OF OUR SPACE TECHNOLOGY. IT DEMONSTRATES THE GREAT POTENTIAL CAPABILITIES OF OUR LAUNCHING COMPLEXES, SERVICES, AND FLIGHT TRAINING. DETAILED MANEUVERING OF ALL THREE SHIPS BY MANUAL CONTROL DEMONSTRATED THAT MAN CAN DO IN CONDITIONS OF MANUALLY CONTROLLED FLIGHT. IT SHOULD BE NOTED THAT THE DATA FOR SEVERAL MANEUVERS WAS COMPUTED ON BOARD FROM INFORMATION RECEIVED BY THE COSMONAUTS WITH THE AID OF THE [illegible] BOARD THE SPACE VEHICLE.

ZZZZZZZZZZZZ UNCLASSIFIED

4/5 041 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109604

ABSTRACT/EXTRACT--DISTINCT FROM ALL OTHER MANNED SPACECRAFT, PAST AND PRESENT, THE SOYUZ SPACECRAFT HAS A COMPARTMENT FOR SCIENTIFIC AND TECHNICAL EXPERIMENTS, AND ALTHOUGH IT IS STILL THE ORBITAL MODULE WHICH SERVES AS AN EXPERIMENTAL COMPARTMENT, THE WORK OF THE CREW IN PUTTING THE SHIP IS NOT AFFECTED BY EXPERIMENTAL WORK OF ANY KIND EVEN ON OCCASIONS WHEN IT INVOLVES THE CREATION OF SPACE VACUUM, SINCE THE LIFE SUPPORT SYSTEM IN THE LANDING MODEULE IS NOT AFFECTED EITHER, AND THERE IS NO NEED TO PUT ON SAPCESUITS, AS IS THE CASE WITH THE SERIES OF APOLLO MODULES.' I HAVE DELIBERATELY SINGLED OUT THESE FEATURES TO DEMONSTRATE THE CONSISTENCY OF THE RESEARCH CARRIED OUT IN THIS COUNTRY AIMED AT THE CREATION OF PERMANENT ORBITING STATIONS. ALREADY THE FIRST TEST FLIGHTS BY VLADIMIR KOMAROV AND GEORGIY BEREGOVOY PROVED THAT THE DESIGNERS OF THE SOYUZ SPACECRAFT, WORKING IN A COMPLETELYUZ VE4 266073 OAD SOLVED MANY FUNDAMENTAL PROBLEMS RELATING TO THE CREATION OF PERMANENT ORBITAL STATIONS. AT A MINIMUM COST A VEHICLE WAS DESIGNED WHICH WAS TO BECOME AN ELEMENT OF AN EXPERIMENTAL SPACE STATION, THE FIRST OF THIS TYPE IN THE WORLD. AS YOU WILL REMEMBER, IT WAS CREATED IN JANUARY 1969 ON THE BASIS OF A RIGID DOCKING OF THE SOYUZ 4 AND SOYUZ 5, THUS SOLVING THE PROBLEM OF ASSEMBLING A PERMANENT ORBITAL STATION FROM MODULES PLACED IN ORBIT AT DIFFERENT TIMES. BESIDES, THE DOCKING RESULTED IN A SOLUTION OF OTHER PROBLEMS RELATING TO THE CREATION OF SPACE STATIONS. THE SPACE WALK OF YELISEYEV AND KHRUNOV, WHO TRANSFERRED FROM THE SOYUZ 5 TO THE SOYUZ 4, WAS A STEP TOWARD CREW RELIEF AND RESCUE OPERATIONS, SPACE VEHICLE MAINTENANCE WORK, AND EVEN THE DELIVERY OF MAIL.

ZZZZZZZZZZZZ UNCLASSIFIED

3/5 041 UNCLASSIFIED PROCESSING DATE--11[illegible]

CIRC ACCESSION NO--AP0109604

ABSTRACT/EXTRACT--THE GOOD MANEUVERABILITY OF SOYUZ SPACECRAFT MAKES [illegible] EMINENTLY SUITABLE FOR SUCH OPERATIONS AS SHORT RANGE AND LONG RANGE APPROACH, WHICH IS ESSENTIAL FOR AN EFFICIENT SHUTTLE SERVICE BETWEEN THE EARTH AND THE PERMANENT ORBITING STATION, AS WELL AS FOR CARRYING OUT ASSEMBLY OPERATIONS, EMERGENCY MAINTENANCE, AND RESCUE OPERATIONS. THE POWER PACK OF THE SPACESHIP IS A COMBINATION OF SOLAR BATTERIES COMPOSED OF TWO WING SHAPED BATTERIES AND A BUFFER BATTERY. THE LATTER IS CHARGED FROM THE SOLAR BATTERIES AND IS USED WHEN THE SHIP MOVES ON THE SHADOW SIDE OF THE EARTH, OR WHERE THE POWER OF THE SOLAR BATTERIES IS EITHER INSUFFICIENT OR EXCESSIVELY HIGH. THIS ARRANGEMENT OF POWER SUPPLY IS MORE RELIABLE, AT THE PRESENT STAGE OF DEVELOPMENT, THAN THE THERMAL ELEMENTS WHICH WERE USED, AND ARE STILL IN USE, IN THE SOYUZ AND APOLLO SPACECRAFT. FREQUENT EMERGENCY SITUATIONS WHILE [illegible] THE AMERICAN MANNED SPACE FLIGHTS WERE PRIMARILY DUE TO THE FAILURE OF THE POWER SUPPLY PACK. FOR BIGGER SPACE VEHICLES, SUCH AS [illegible] ORBITAL STATION, NUCLEAR POWER UNITS OF THE "ROMASHKA" TYPE [illegible] A MORE EFFICIENT ARRANGEMENT, FROM AN ECONOMICAL AND TECHNICAL POINT OF VIEW.

ZZZZZZZZZZZZ UNCLASSIFIED

2/5 041 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109604

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FLIGHT OF THE SOYUZ 9 SPACECRAFT CONTINUES SUCCESSFULLY. IN COMMON WITH ALL PREVIOUS FLIGHTS OF THE SOYUZ TYPE SPACECRAFT, THE PRESENT FLIGHT IS IN FOLLOWING UP INTEGRATED AND PURPOSEFUL PROGRAM DESIGNED TO ANSWER A NUMBER OF SCIENTIFIC, TECHNICAL AND MEDICO BIOLOGICAL PROBLEMS ASSOCIATED WITH THE CREATION OF A PERMANENT ORBITING STATION, WHICH IS THE SPACE HIGHWAY TOWARDS THE EXPLOITATION OF OUTER SPACE FOR THE BENEFIT OF MAN. THE SOYUZ SPACECRAFT WAS DESIGNED AND BUILT UNDER THE DIRECT SUPERVISION OF AND WITH THE PARTICIPATION OF SERGEY PAVLOVICH KOROLEV, THE EMINENT DESIGNER OF ROCKET POWERED SPACE SYSTEMS. THIS MANNED CRAFT WAS DESIGNED AS A PROTOTYPE OF A PERMANENT ORBITAL STATION. ITS DESIGN PROVIDES ALL THE BASIC FEATURES OF A SPACE STRUCTURE OF THIS TYPE. BECAUSE OF MAN'S PROLONGED STAY IN SPACE, THE ORBITAL MODULE MUST HAVE COMFORTABLE CONDITIONS SO THE CREW CAN WORK AND REST NORMALLY. THE SOYUZ SPACECRAFT IS FITTED WITH A DOCKING DEVICE, ESSENTIAL IN A PERMANENT ORBITAL STATION FOR THE RECEPTION OF SUPPLY SHIPS CARRYING MEN AND EQUIPMENT. THE ORBITAL MODULE ALSO SERVES AS AN AIR LOCK AND A "DRESSING ROOM" FOR CHANGING INTO AND OUT OF SPACESUITS. IN AN ORBITAL STATION PROPER, "SPECIALIZATION" OF VARIOUS MODULES WILL BE MUCH MORE CLEARLY DEFINED. MOREOVER, A SHOWER ROOM IS ENVISAGED IN WHICH THE CREW MEMBERS, UPON RETURNING TO THE SPACESHIP AFTER ASSEMBLY OR MAINTENANCE WORK IN SPACE, WILL BE ABLE TO BATHE.

ZZZZZZZZZZZZ UNCLASSIFIED

1/5 041 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--ALEKSANDROV TALK -U-

AUTHOR--ALEKSANDROV, I.P.

COUNTRY OF INFO--USSR

SOURCE--FBIS DAILY REPORT, SOVIET UNION, 5, JUNE 1970, VOL 2, NO 109, P D 5-6

DATE PUBLISHED-------70

SUBJECT AREAS--SPACE TECHNOLOGY

TOPIC TAGS--MANNED SPACECRAFT, MANNED ORBITAL LABORATORY, UNMANNED ORBITAL LABORATORY, SPACE STATION, MANEUVERABLE SATELLITE/[illegible] MANNED SPACECRAFT

CONTROL MARKINGS--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1553 STEP NO--US/0030/70/002/109/0005/[illegible]

CIRC ACCESSION NO--AP0109604

ZZZZZZZZZZZZ UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0103801

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EQUATIONS FOR MULTICOMPONENT MASS TRANSFER ARE TREATED IN A MATRIX FORM. COMPARED TO THE USUAL METHOD OF DIRECT SOLN. THESE EQUATIONS HAVE THE FOLLOWING ADVANTAGES: (1) THEY ENABLE TO CONSIDER THE INTERACTION OF THE COMPONENTS IN THE MIXT. AND TO COMPUTE THE MASS TRANSFER OF ORDINARY, REVERSE, OSMOTIC PROCESSES, AND PROCESSES WITH A DIFFUSION BARRIER; (2) THEY ENABLE TO MAKE A SHIFT FROM MULTICOMPONENT TO PSEUDOBINARY MIXTS. IN COMPUTING MASS TRANSFER KINETICS AND TO TAKE INTO ACCOUNT THE EFFECT OF HYDRODYNAMIC CONDITIONS; AND (3) THEY RETAIN THE GENERAL SYSTEM OF NOTATION OF MASS TRANSFER EQUATIONS IN BINARY AND MULTICOMPONENT SYSTEMS, THE FORMER BEING A SINGULAR CASE OF THE LATTER. FACILITY: VSES. NAUCH.-ISSLED. INST. PRIR. GAZOV, MOSCOW, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--CALCULATION OF MASS TRANSFER IN MULTICOMPONENT SYSTEMS -U-

AUTHOR--ALEKSANDROV, I.A.

COUNTRY OF INFO--USSR

SOURCE--TEOR. OSN. KHIM. TEKHNOL. 1970, 4(1), 48-55

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MASS TRANSFER, MULTICOMPONENT SYSTEM, MATRIX FUNCTION, HYDRODYNAMIC PROPERTY, TWO PHASE FLOW

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1967/0121 STEP NO--UR/0459/70/004/001/0048/0055

CIRC ACCESSION NO--AP0103801

UNCLASSIFIED

Acc. Nr: AP6049916 Abstracting Service: GEOPHYSICAL ABST. 5/10 Ref. Code: UR0492

91744w Analysis of the technological scheme of two-stage absorption. Tyrevskii, E. N.; Aleksandrov, L. A.; Khalif, A. L. (USSR). *Gazov. Prom.* 1970, 15(1), 35–7 (Russ). A comparison of 2-stage and single-stage absorption sepn. of multicomponent gas mixts. was made based on straight equil. and operating lines. An example is given for the calcn. of the sepn. of a mixt. consisting of N_2 and C_{1-4} hydrocarbons. The economic advantage of the 2-stage system over the single-stage one was proved. Relations are given enabling the detn. of the amt. of solvent decrease in the 2-stage system. The calcn. of the amt. of solvent for the 2-stage absorption must be done for lower sections of the app. Z. Sterbacek

REEL/FRAME
19801852

USSR

ALEKSANDROV, I. A., et al., Atomnaya Energiya, Vol 29, No 1, Jul 70, pp 29-34

resolution of the channel, the beam profile with momentum of 50 gigaelectron volts/second in the parallel section and slit width of the aperture collimators of +20 mm and the pulse collimator +6mm, the beam profile with momentum of 50 gigaelectron volts/second in the final representation on including the lens doublet, and the beam profile with momentum of 50 gigaelectron volts/second in the final representation on including a lens triplet.

USSR

ALEKSANDROV, I. A., et al., Atomnaya Energoya, Vol 29, No 1, Jul 70, pp 29-34

are presented. The limiting solid capture angle of the secondary particles by the channel is 32 microsteradians. The best resolution with respect to momentum is 0.3 percent without decreasing the pacture angle. The channel was investigated primarily using a secondary beam with a momentum of p = 50 giga-electron volts/second. The procedure for adjusting the channel and the calculated data are described. The differences between the calculated operating conditions of the elements and the conditions after adjustment together do not exceed the errors of the fringing field of the accelerator, the magnetization curve, and the curve for calibrating the bypasses of the magnet. On the whole, the beam parameters agree well with the calculated data.

A detailed diagram of the channel layout is presented, and graphs are presented for the radial position of the targets and the production angle as functions of the momentum of the secondary particles, the optical system of the channel and path of the beams in the horizontal and vertical planes, the momentum

2/3

UDC 621.384.634

USSR

ALEKSANDROV, I. A., ERACHEV, M. I., GUBARIYENKO, K. I., YEMENKO, YE. V., KOTOV, V. I., NEKRASOV, A. N., PRILEPIN, A. A., PICHUGIN, V. A., RSAYEV, R. A., SAMOYLOV, A. V., SELEZNEV, V. S., SEREBRSAKOV, B. A., KHANAMIRYAN, A. YE., and KHODYREV, YU. S.

"Negative Particle Channel With Momentum up to 60 Gigaelectron Volts/Second"

Moscow, Atomnaya Energiya, Vol 29, No 1, Jul 70, pp 29-34

Abstract: This article contains a description of a channel for transporting negative particles generated in an internal accelerator target with momentum up to 60 fifaelectron volts/second and an accelerated proton energy of 70 gigalectron volts. The channel is designed so that for an accelerated proton energy of 70 gigaelectron volts it can be adjusted to momentum in the range of 40-60 gigaelectron volts/second. On reducing the energy of the accelerated protons, the channel can be adjusted to lower momentum. The lower limit corresponds to an accelerated proton energy of 20 gigaelectron volts and is equal to 11.4 gigaelectron volts/second.

The optical system of the channel and its characteristics

USSR UDC: 519.21

ALEKSANDROV, I. A.

"Numerical Characteristics of the Distribution of Probabilities of a Sum of Independent Modulated Random Processes"

V sb. Metody predstavleniya i apparaturn. analiz sluchayn. protsessov i poley. 3-y Vses. simpozium. Sekts. 2 (Methods of Representation and Instrumental Analysis of Random Processes and Fields. Third All-Union Symposium. Section 2), Leningrad, 1970, pp 50-52 (from Kzh-Kibernetika, No 7, Jul 71, Abstract No 7V138)

[No abstract]

1/1 - 13 -

USSR

ALEKSANDROV, I. A., et al., Atomnaya Energiya, Vol 31, No 6, Dec 71, pp 589-593

with a gap of 200 mm and a working area of 400 x 400 mm. Between the spark chambers is an SP-12Al magnet. A Minsk-2 computer was used in analyzing the films. Differential cross sections are calculated for production of negative particles in collisions between protons and aluminum nuclei. A comparison of theoretical and experimental beam characteristics shows that the accuracy with which the phase parameters of the beam were calculated is fairly high and technical realization of this accuracy is feasible. The results of calculation of the differential cross sections for negative particle production agree satisfactorily with the data in the literature found by another method. The authors thank Yu. D. Prokoshkin, responsible for initiation of this work; V. I. Kolov for interest in the work; and also Yu. S. Khodyrev and S. P. Denisov for constructive criticism. Five figures, bibliography of eight titles.

2/2

UDC: 539.1.071

USSR

ALEKSANDROV, I. A., BOLOTOV, V. I., DEVISHEVA, M. N., DEVISHEV, M. I., ISAKOV, V. V., SAMOYLOV, A. V.

"Spark Spectrometer Investigation of a 70-GeV Particle Beam"

Moscow, Atomnaya Energiya, Vol 31, No 6, Dec 71, pp 589-593

Abstract: The authors evaluate the accuracy of the theoretical calculations for one of the channels of the accelerator at the Institute of High-Energy Physics by comparison with experimental measurements using a spark spectrometer. The initial statistics were gathered during graduation measurements made in an experiment to detect particles with a fractional charge (quarks). In these measurements, the channel was adjusted to a momentum of 60 or 65 GeV/s with an average angle of emergence $\bar{\theta}$ = 11 and 0.14 mrad respectively. The magnetic spark spectrometer consists of four neon-filled spark chambers

1/2

USSR

UDC 629.78.015.0.17.2

ALEKSANDROV, G. V., KUZMAK, G. Ye.

"Calculation of Static Stability of Flight Vehicles at High Angles of Attack"

Uch. zap. Tsentr. Aero-gidrodinam. In-ta [Scientific Writings of Central Aero-Hydrodynamics Institute], Vol 3, No 1, 1972, pp 58-44, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 4, 1972, Abstract No 4.41.124 from the Resume).

Translation: The problem is studied of calculating the static stability of a vehicle with various positions of its center of mass. A formula is produced, relating the increment in aerodynamic moment to the increment of aerodynamic force and the position of the metacenter. Maximum attention is given to the case when the range of angles of attack studied includes supercritical angles. It is demonstrated that in these cases the area of positions of the center of mass at which there is stability for the entire range of angles of attack of interest is limited or does not exist at all. With limited dimensions of this area, an attempt to increase the static stability of the vehicle by displacement of its center of mass forward, as is done for low angles of attack, may have the opposite effect. 3 Figures; 3 Biblio. Refs.

1/1