USSR UDC: 539.26:536.5.081.7

SIROTA, N. N., et al, Doklady Akademii Nauk SSSR, vol 204, No 3, 1972, pp 583-585

associated with the Institute of Semiconductors and Solid State Physics at Minsk.

2/2

UDC 621.315.592

USSR

SIROTA, N. N., Academician of the Academy of Sciences Belorussian SSR, and
MIKHNEVICH, V. V., Institute of Solid-State and Semiconductor Physics, Academy of Sciences Belorussian SSR

"Magnetic Field Effect on Radiation of Indium Phosphide p-n Junctions"

Minsk, Doklady Akademii Nauk BSSR, Vol 16, No 3, Mar 72, pp 205-207

Abstract: The article describes results of a study of the effect of a longitudinal magnetic field on the spectral radiation distribution of InP diodes obtained by diffusion of zinc into an n-type material. The diodes were fabricated by the authors, who used indium phosphide with impurity concentrations of $n = 8 \cdot 10^{15}$, $6.7 \cdot 10^{17}$, and $3 \cdot 10^{18}$ cm^{-3} as the initial material. Radiation emerging in the p-n junction plane was studied on an IKM-1 monochromator with a glass prism. Two types of radiation ($h\nu_1$, $h\nu_2$) of varying intensity were observed, readily distinguishable for diodes with a low impurity concentration. The low-energy band $h\nu_2$ is a phonon repetition of the main band $h\nu_1$. The maximum of the band with energies $h\nu_1$ and $h\nu_2$ shifts towards

UDC 539.26

USSR

BIROTA, N. N., Academician Belorussian Academy of Sciences, and SOKOLOV, S. F.

"Germanium Reaction Diffusion in Niobium"

Minsk, Doklady Akademii Nauk BSSR, vol. 15, No. 10, 1971, pp 881-884

Abstract: Asserting that the literature contains no research into the laws of diffusion reaction of germanium in niobium, the authors present the results of their experimental work on this subject. They diffused germanium into niobium from the gas phase by a method similar to that described in an earlier article by the same authors in the same journal (15, 1, 1971), using plates measuring 20×5×1 mm and wires 0.3 mm in diameter up to 7 cm in length of electron-beam niobium. The niobium specimens and pure germanium powder were contaminated in a double, unbalanced quartz ampoule with a zirconium getter. Isothermic diffusion was conducted at temperatures of 800 to 1100° C in steps of 100°, over a period of 5 to 200 hours, and the thickness of the diffused layers was controlled microscopically and roentgenographically. Measurements obtained for the diffusion are given in a table. For an accurate test of the composition of the layers formed in the diffusion region, the authors conducted

1/2

USSR

SIROTA, N. N. et al, Doklady Akademii Nauk BSSR, vol. 15, No. 10, 1971, pp 881-884

their investigations with the x-ray microanalyzer of the "Kameka" firm. Curves are plotted for the change in diffusion layers with time; they indicate the growth of those layers in parabolic form at all temperatures. The authors are connected with the Institute of Semiconductors and Solid State Physics, Belorussian Academy of Sciences.

2/2

UDC 539.26

USSR

SIROTA, N. N., Academician Belorussian Academy of Sciences, and SOKOLOV, S. K.

"Germanium Reaction Diffusion in Niobium"

Minsk, Doklady Akademii Nauk BSSR, vol. 15, No. 10, 1971, pp 881-884

Abstract: Asserting that the literature contains no research into the laws of diffusion reaction of germanium in niobium, the authors present the results of their experimental work on this subject. They diffused germanium into niobium from the gas phase by a method similar to that described in an earlier article by the same authors in the same journal (15, 1, 1971), using plates measuring 20×5×1 mm and wires 0.3 mm in diameter up to 7 cm in length of electron-beam niobium. The niobium specimens and pure germanium powder were contaminated in a double, unbalanced quartz ampoule with a zirconium getter. Isothermic diffusion was conducted at temperatures of 800 to 1100° C in steps of 100°, over a period of 5 to 200 hours, and the thickness of the diffused layers was controlled microscopically and roentgenographically. Measurements obtained for the diffusion are given in a table. For an accurate test of the composition of the layers formed in the diffusion region, the authors conducted

1/2

USSR

SIROTA, N. N. et al, Doklady Akademii Nauk BSSR, vol. 15, No. 10, 1971, pp 881-884

their investigations with the x-ray microanalyzer of the "Kameka" firm. Curves are plotted for the change in diffusion layers with time; they indicate the growth of those layers in parabolic form at all temperatures. The authors are connected with the Institute of Semiconductors and Solid State Physics, Belorussian Academy of Sciences.

2/2

UDC 538.318

USSR

SIROTA, N. N., and SHCHERBATSEVICH, V. YE.

"Study of Ferromagnetic Resonance in Nickel-Magnesium-Chromium Ferrites"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No 5, 1971, pp 95-100

Abstract: The article describes results of a study of properties of ferrites of the ternary system $NiO \cdot Fe_2O_3 - MgO \cdot Fe_2O_3 - Cr_2O_3 \cdot Fe_2O_3$ in the resonance region in a wide temperature range on cylindrical specimens of varying diameter. The study included variations in the resonance linewidth and the value of the resonance field of the ferrites according to their composition and temperature, a determination of values of the minimum resonance linewidth and g-factors of ferrites of the single-phase region of the system, as well as a study of the effect of electromagnetic wave propagation in ferrite specimens on the resonance field value and linewidth. The SHF properties of the ferrites were measured by the waveguide method on a frequency of 9370 Mhz. A study was also made of the effect of the specimen diameter on resonance linewidth and field

1/2

USSR

SIROTA, N. N., and SHCHERBATSEVICH, V. YE., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No 5, 1971, pp 95-100

value. It is shown that the location of the ascending branch of the resonance curves does not depend on the diameter of the ferrite specimen but is determined by its composition.

2/2

UDC 539.21:536.42

USSR

SIROTA, N. N. and TROFIMOVA, Zh. P.

"Investigating Ordering Processes in Films Similar in Composition to Ni_3Fe"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations--collection of works) Minsk, "Nauka i tekhn." 1971, pp 146-151 (from RZh-Fizika, No. 9, 1971, Abstract No. 9E350)

Translation: The ordering process in ferromagnetic films similar in composition to Ni_3Fe was studied. The investigation was made by measuring the electrical resistivity of the films directly in the course of isothermic annealing. For the sake of comparison, similar curves were plotted for nickel films. Analysis of the results obtained permit the assertion that regions of the Ni_3Fe compound are formed and grow along with the annealing processes of defects in permalloy films. Author's abstract

1/1

UDC 621.382.2

USSR

SIROTA, N. N., KORSHUNOV, F. P., GATAL'SKIY, G. V., and [illegible], G. V.

"Effect of Neutron Irradiation on Silicon Carbide p-n Junctions"

Minsk, Izvestiya Akademii Nauk BSSR, No. 3, 1971, pp 109-111

Abstract: This brief communication describes experiments performed in irradiation by reactor neutrons of p-n junctions of 6Hα-SiC with electronic conductivity. The junctions were obtained by diffusion of aluminum and boron. The original SiC crystals had a resistivity of $1 \cdot 10^{-1}$ to $1 \cdot 10^{-2}$ ohm cm. Irradiation by the fast neutrons was done in the IRT-2000 reactor of the Belorussian Academy of Sciences, at a temperature of 60° C, with the thermal neutrons cut out by a cadmium filter. The intensity of the fast-neutron current was $4 \cdot 10^{10}$ neutrons/cm^2 sec. The effect of the neutrons on the volt-ampere and light characteristics of the p-n junctions was studied. Curves are plotted for the effect of the irradiation on the forward and reverse sections of the volt-ampere characteristic, for the effect of the irradiation on the spectral characteristic of the recombination glow, and for the change in integral intensity of the recombination glow as a function of the forward current before and after irradiation by various neutron dosages.

1/2

USSR

SIROTA, N. N., et al, Izvestiya Akademii Nauk BSSR, No. 3, 1971, pp 109-111

It is noted that the volt-ampere characteristics changed markedly after irradiation by fast neutrons of a dosage greater than $1 \cdot 10^{14}$ neutrons/cm^2, and that the spectral and integral characteristics of the electroluminescence show a monotonic drop in the glow intensity with increasing neutron dosages. The authors are members of the Institute of Solid State and Semiconductor Physics, Academy of Sciences, BSSR.

USSR

UDC 557.311.33:546.28

SIROTA, N.N., KORSHUNOV, F.P., RAYNES, L.YU.

"Investigation Of Radiation Effects On Semiconductor Crystals And P-N Junctions"

V sb. Radiatsion. fiz. nemet. kristallov (Radiations Physics Of Nonmetal Crystals--Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 6-17 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B123)

Translation: The effect is studied of neutron irradiation on single crystals of Si and the p-n junctions prepared on their base. The radiation defects are determined which play a dominant role in the change of the electrical properties in Si in the process of irradiation by fast neutrons. It is also shown that an increase of resistance of the base of the p-n junctions during the time of irradiation leads to attenuation of modulation of its conductivity and to a decrease of the forward current. The overall dependences mentioned make it possible to clarify the process of change of the volt-ampere characteristics of the p-n junction. It is established that irradiation leads to a decrease of the contact potential differences and the displacement of the p-n junction to the side of the high-resistance base. 10 ill. 24 ref. Author's abstract.

1/1

USSR

UDC 621.382.2

SIROTA, N.N., IVANOV, G.M., KORSHUNOV, F.P., KOSOLAPOV, N.N.

"Effect Of Electron Irradiation On P-N Junctions In Silicon"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Non-Metallic Crystals--Collection Of Works), Minsk, "Nauka i tekhn.," 1970, pp 136-141 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2B131)

Translation: The irreversible changes of the voltampere characteristics of p-n junctions in Si on exposure to irradiation by electrons with energies of 10--25 Mev are investigated. It is established that at low injection levels the forward voltage drop after irradiation is decreased, which is explained by the reduction of concentration and lifetime of the majority charge carriers in the p- and n-regions. At high injection levels, as a result of an increase of resistance of the base during irradiation, its effect on the form of the characteristics becomes noticeable. With an increase of the temperature, equal changes of the forward drop begin with large flux density. The effectiveness of the action of irradiation by electrons on the forward characteristics grows with an increase of the energy of the electrons, while the back characteristics remain practically without change. 6 ill. 6 ref. V.M.

1/1

USSR

UDC 537.226:536.42:54-165

SIROTA, N. N., Academician, and CHOBOT, M. A., Institute of Solids and Semiconductors, Academy of Sciences Belorussian SSR

"Curie Temperatures of Solid Solutions in the Ternary System Lead Zirconate-Lead Titanate-Lead Metaniobate"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 2, 1971, pp 113-115

Abstract: The Curie temperatures of solid solutions in the system $PbZrO_3$-$PbTiO_3$-$PbTiO_3$-$Pb_{0.5}NbO_3$ were determined and the characteristics of the dependence of the constant Curie temperatures on concentration were found. The Curie temperatures were determined by the position of the maxima on the curve for the dependence of the dielectric permeability as a function of temperature. Specimens in the form of disks of 10-15 mm diameter and 1-2 mm thick were prepared. The surface of the disks was coated with a layer of silver paste, which was then brazed at 600°C. The dielectric permeability measurements were taken at a frequency of 5 kHz in the temperature range from room temperature to 700°C. In contrast to solid solutions with a perovskite structure and a potassium-tungsten bronze structure, solid solutions of the system investigated with the pyrochlorite structure have low Curie temperatures,

1/2

USSR

SIROTA, N. N, and CHOBOT, M. A., Doklady Akademii Nauk BSSR, Vol 15, No.2, 1971, pp 113-115

within the limits from 23°K (in the binary system $PbZrO_3$-$Pb_{0.5}NbO_3$ with a 50 mole % $PbZrO_3$ content) to 46°K (in the binary system $PbTiO_3$-$Pb_{0.5}NbO_3$ with a 50 mole % $PbTiO_3$ content). Curie temperatures decrease practically in direct proportion with increase in $PbZrO_3$ content. It was found that the highest Curie temperatures are exhibited by solid solutions in the boundary of the binary system $PbTiO_3$-$Pb_{0.5}NbO_3$ with an approximate 10 mole % $PbTiO_3$ content.

2/2

USSR

UDC 535.33 : 621.382.2

SIROTA, N. N., LUKOMSKIY, A. I.

"Recombination Radiation of Aluminum Antimonide pn Junctions"

Minsk, Zhurnal Prikladnoy Spektroskopii, No. 5, May 71, pp 937-938

Abstract: The spectrum of recombination radiation of pn junctions prepared from aluminum antimonide single crystals is discussed. Graphs of the current-voltage characteristics and the spectrum of the recombination radiation of aluminum antimonide diodes are given. The spectrum of recombination radiation of the diodes was made at current densities of the order of 30 a/cm^2 and at a temperature of 77°K. The radiation spectrum of the diodes shows that the maximum of the radiation intensity corresponds to a photon energy of 1.28 ev, which is considerably less than the width of the forbidden zone of aluminum antimonide. It is pointed out that F. Kover in 1958 noted the presence of a photoconductivity peak in aluminum antimonide at 1.27 ev and considered this to be an impurity effect.

1/1

PHYSICS
Crystals and Semiconductors

USSR

UDC 539.23

SIROTA, N. N., Academician of the Academy of Sciences Belorussian SSR, and SOKOLOV, S. N., Institute of Solid State and Semiconductor Physics, Academy of Sciences Belorussian SSR

"Study of the Process of Silicon Reaction Diffusion Into Niobium"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 1, Jan 71, pp 14-17

Abstract: The authors made a systematic study of the isothermal diffusion of silicon (of semiconductor purity) into niobium (99.7 percent pure) at 800-1100° C at 100° C intervals for different lengths of time (5-200 hours). It was found as a result of metallographic and X-ray diffraction analysis that an $NbSi_2$ layer forms after diffusion annealing at 800° C, two layers -- outer $NbSi_2$ and inner Nb_5Si_3 -- form at 900-1100° C. The relative thickness of the Nb_5Si_3 layer with respect to the thickness of the entire layer increases with a temperature increase, which is also noticeable in the ratio of line inten-

USSR

SIROTA, N. N., and SOKOLOV, S. N., Doklady Akademii Nauk BSSR, Vol 15, No 1, Jan 71, pp 14-17

sities of the indicated phases. Two layers (Nb_5Si_3 and Nb_3Si) are formed at diffusion annealing temperatures of 1200-1220° C. The appearance of these phases is in accordance with the Nb-Si phase diagram. Diffusion coefficients, preexponential factors, and activation energies are calculated for the reaction diffusion of silicon into niobium in the above-indicated temperature range.

2/2

USSR

UDC 539.23

SIROTA, N. N., Academician of the Academy of Sciences Belorussian SSR, and SOKOLOV, S. N., Institute of Solid State and Semiconductor Physics, Academy of Sciences Belorussian SSR

"Study of the Process of Silicon Reaction Diffusion Into Niobium"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 1, Jan 71, pp 14-17

Abstract: The authors made a systematic study of the isothermal diffusion of silicon (of semiconductor purity) into niobium (99.7 percent pure) at 800-1100°C at 100° C intervals for different lengths of time (5-200 hours). It was found as a result of metallographic and X-ray diffraction analysis that an $NbSi_2$ layer forms after diffusion annealing at 800° C, two layers -- outer $NbSi_2$ and inner Nb_5Si_3 -- form at 900-1100° C. The relative thickness of the Nb_5Si_3 layer with respect to the thickness of the entire layer increases with a temperature increase, which is also noticeable in the ratio of line inten-

USSR

SIROTA, N. N., and SOKOLOV, S. N., Doklady Akademii Nauk BSSR, Vol 15, No 1, Jan 71, pp 14-17

sities of the indicated phases. Two layers (Nb_5Si_3 and Nb_3Si) are formed at diffusion annealing temperatures of 1200-1220° C. The appearance of these phases is in accordance with the Nb-Si phase diagram. Diffusion coefficients, preexponential factors, and activation energies are calculated for the reaction diffusion of silicon into niobium in the above-indicated temperature range.

2/2

Acc. Nr: AT0048607

Abstracting Service: CHEMICAL ABST. 5-70

Ref. Code: UR0250

103180z Modulus of elasticity of iron–nickel–cobalt alloys. Sirota, N. N.; Mazovko, A. Y. (Inst. Fiz. Tverd. Tela Poluprov., Minsk, USSR). *Dokl. Akad. Nauk Beloruss. SSR* 1970, 14(1), 10-12 (Russ). The elasticity of ternary Fe–Ni–Co alloys were studied. The isolines of Young's modulus values of this system are presented by means of the Gibbs concn. triangle indicating the relation of Young's modulus E and the shear elasticity modulus G. The anal. of the concn. relation of these 2 values is used to det. the ranges with min. E and G values and also to det. the characteristic of the elasticity modulus in the entire ternary system. Two ranges with max. E and G were found, one at Fe 35–80 and Ni 0–15 at. %, which approaches the binary system Fe–Co and the 2nd one with hexagonal structure in the range of Co 80–100 and Fe 0–10 at. %, which is near the binary system Ni–Co. The ranges of min. G and E values are in the heterogenous α–γ region in concn. of 20–50 at. % Ni and 30–80 at. % Fe. The min. range of the E and G values corresponds to binary Fe–Ni and Ni–Co systems, to the min. Curie temps., and also to the heterogenous γ–α transition range. J. Polacek

1/1

REEL/FRAME 19800334

18

USSR

UDC: None

GOVOR, G. A. and SIROTA, N. N.

"Investigating the Magnetic Transition in Manganese Arsenide Under Light Pulses"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16, No 3, 1972, pp 137-140

Abstract: This letter describes experiments performed to investigate the change in the magnetism of manganese arsenide subjected to 3.5-msec pulses generated by an IFK-500 lamp with an energy of about 500 joules. The coil of an electromagnet was wound directly around a core abutting the specimen, which was a plate measuring 20X10X1 mm. Also wound on the same core is an output winding wired to the input terminals of an oscillograph. The shape of the light pulse and the corresponding pulse appearing on the oscillograph screen are shown and compared, and a curve for the change in specimen magnetization under illumination as a function of the temperature is plotted. A sketch of the experimental apparatus is reproduced. The authors are associated with the Institute of Solid State and Semiconductor Physics, Belorussian Academy of Sciences.

1/1

SIROTA, N. N., GOSTISHCHEV, V. I., and DROZD, A. A.

"Investigating the Thermal Conductivity of Aluminum at Low Temperatures and in Strong Magnetic Fields"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16, No 4, 1972, pp 242-245

Abstract: Experimental work designed to study the thermal conductivity of an aluminum monocrystal, cut from an ingot, with an electrical resistance of $1.2\ 10^{-10}$ ohms·cm, is described in this letter. The crystal is at a low temperature in the range of 6 to 57° K and is placed in a transverse magnetic field with intensities of up to 50 kilooersteds. Measurements were made by the stationary heat flow method, with the difference in temperature along the specimen generated by two electric heaters attached to its terminals, and the magnetic field was produced by an electromagnet with superconductive windings. Curves are plotted for the thermal conductivity as a function of the temperature and the magnetic field intensity. The authors, affiliated with the Institute of Solid State and Semiconductor Physics of the Belorussian Academy of Sciences, find that the transverse magnetic field has a profound effect on the thermal conductivity of high-purity aluminum.

1/1

USSR UDC: 621.391.19

ZAYEZDNYY, A. M., PLOTKIN, Ye. I., RABOTKIN, O. N., TRAKHTMAN, V. Yu., SIROTA, O. L.

"A Speech Recognition Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, 1970, Author's Certificate No 271921, Filed 17 Mar 69, p 117

Abstract: This Author's Certificate introduces a speech recognition device which contains an analyzer, a decision unit, and a logical processing unit. As a distinguishing feature of the patent, the reliability of speech pattern recognition is improved by adding a phase coordinate shaping circuit and a boundary hypersurface simultation unit connected in series. The inputs of the phase coordinate shaping circuit are connected to the inputs and outputs of the analyzer, while the outputs of the boundary hypersurface simulation unit are connected to the inputs of the decision unit.

1/1

USSR

UDC 537.521

SIROTA, S.M., UDRIS, YA.YA.

"Cathode Units For High-Voltage Shunting Rectifier"

USSR Author's Certificate No 262277, filed 26 Jan 68, published 2 June 70 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A117P)

Translation: The design is proposed for a rectifier [ВЕНТИЛЬ] which assures an increase of its short-duration load capacity. This is achieved by implementation of a cathode unit with a catch, the length of which does not exceed half of the cathode diameter. Creation of the vapor regime necessary to assure short-duration flow of large direct (uninterrupted) currents is attained with the help of an evaporator of the mercury trickle which is emitted by the cathode spot. In contrast to ordinary rectifiers which are used as shunting rectifiers in multibridge converter circuits, the boiler [КОТЕЛ] of the proposed rectifier has a small condensation surface and a general "geometry." The latter eliminates the necessity for installation of special hoods [ЗОНТ] in the boiler. V.M.

1/1

SIROTA, S.S.

UDC 612.821.7??.22

STUDY OF SOME INDICES OF THE HIGHER NERVOUS ACTIVITY OF MEN SUBJECTED TO UNDERWATER ENVIRONMENT FOR MANY HOURS

[Article by S. O. Hulyar, Ye. Kiklevych, S. A. Pevnyy, and S. S. Sirota, Donetsk State University; Kiev, Fiziolohichnyy Zhurnal Akademiyi Nauk Ukrayins'koyi RSR, Ukrainian, Vol 18, No 6, 1972, pp 744-750]

A long confinement of men to underwater laboratories of an open type with an inside pressure equaling that of the surrounding environment is one of the most promising methods for the study of oceans. An effective use of the underwater dwelling depends on the ability of aquanauts to perform some physical and scientific tasks directly in the water for long time intervals.

Little is known about the mental activity of aquanauts in an underwater environment. In fact, only initial attempts were made to evaluate the activity of men at great ocean depths [16]. A positive correlation was established between alpha rhythms on EEG and underwater swimming [14]. There are literature data indicating that the ability to perform physical work and that work output decreases with increasing water depth [11]. It was established during the Sealab II experiments that motion coordination and work effectiveness deteriorate under water [12]. Lack of a uniform methodological basis, the multifaceted approach to the problem, and environmental variation make it impossible to establish the functional state of the higher nervous activity of aquanauts. Furthermore, a short underwater stay of aquanauts cannot be extrapolated for such longer time intervals.

The aim of this work was to study some indicators of the higher nervous activity of aquanauts subjected to an underwater environment for many hours.

Experimental Methods

Two types of experiments were carried out: with 10 divers 18-23 years old performing pediodically a definite kind of physical work while under water for 3-6 hours; and with aquanauts subjected to relative hypodynamics for 26 (1 aquanaut) and for 38 hours (2 aquanauts). In order to dif-

USSR

UDC 632.95

REVEL'SKIY, I. A., IOONSON, V. A., IL'MOYA, K. A., KARAVAYEVA, V. G., LOOG, E. P., SIROTA, T. S.

"Sensitivity of Flame Photometric Detector for Phosphorus-Containing Pesticides as a Function of the Experimental Parameters"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh. sredy (Works of the Second All-Union Conference on the Investigation of Pesticide Residues and Preventive Contamination of Food Products, Feeds and Environment), Tallin, 1971, pp 108-111 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N422)

Translation: In studying the dependence of the sensitivity of the two-channel flame-photometric detector to phosphorus-containing pesticides on the experimental parameters, a solution of triethyl phosphate (I) in alcohol is used. The optimal O_2 flow rate (20-40 cm^3/min), N_2 and H_2 flow rates were found from the point of view of sensitivity of the two-channel flame photometric detector. For an amount of I on the order of 10^{-7} grams, the signal of the phosphorus channel exceeds the signal of the sulfur channel approximately 400 fold.

1/1

USSR

UDC: 538.4

SIROTENKO, V. G., FOLIFOROV, V. M.

"Combined Use of MHD Devices in the Production of Mercury"

Riga, Magnitnaya Gidrodinamika, No 1, 1972, pp 140-146.

Abstract: Results are studied from investigations and experimental design work on the creation and introduction of a combination of devices for automatic production of high grade mercury based on the principles of magnetic hydrodynamics. A commercial technological plan and equipment are described for purification of mercury and certain data are presented on its operation under plant conditions.

1/1

USSR

UDC 621.357.621.9.047.4

SEDYKIN, F. V., DMITRIYEV, L. B., ALESHIN, S. A., SIROTIN, A. I. and FILIN, V. I.

"Hydrodynamic Characteristics of Electrochemical Machining of Shaped Cavities"

V sb. Vopr. gidrodinamiki protsessa elektrokhim. razmern. obrabotki met. (Problems of Hydrodynamics of Electrochemical Dimensional Machining of Metals--collection of works), Tula, Tula Polytechnic Institute, 1969, pp 22-32 (from RZh-Khimiya, No 1(II), 10 Jan 70, Abstract No 1 I285)

Translation: An analysis of experimental data showed that the micro- and macro-actions of an electrolyte flow in the electrochemical machining of shaped cavities are governed by a single mechanism. Thus, a qualitative consideration of the problems of surface cleanness and precision in machining is possible using the same mathematical functions. Bibliography: 5 entries.

A. D. Davydov

1/1

USSR UDC: 534-8

SIROTINA, Ye. F., PIROGOV, B. N., SIROTIN, G. F.

"Excitation and Reception of Ultrasonic Surface Waves by Multiple-Element Converters on Higher Spatial Harmonics"

Leningrad, Tr. Leningr. in-t aviats. priborostr. (Works. Leningrad Institute of Aviation Instrument Building), 1972, vyp. 76, pp 71-77 (from RZh-Fizika, No 5, May 73, abstract No 5Zh606 [résumé])

Translation: A comparative description is given of methods of excitation and reception of ultrasonic surface waves. Most effective are multielement converters of the two-phase type; however, making such converters for a high-frequency band involves considerable difficulties. This paper deals with the feasibility of using higher spatial harmonics. Results are given from experimental and theoretical studies on the operation of multiple-element converters on space harmonics. The experimental results agree satisfactorily with theory in the 10-70 MHz frequency range.

1/1

USSR

UDC: 534-8

PIROGOV, B. N., SIROTIN, G. F., SMIRNOV, Yu. G., KAVERINA, G. M.

"Excitation, Reception, and Propagation of Ultrasonic Surface Waves in Lithium Niobate Plates"

Leningrad, Tr. Leningr. in-t aviats. priborostr. (Works. Leningrad Institute of Aviation Instrument Building), 1972, vyp. 76, pp 44-49 (from RZh-Fizika, No 5, May 73, abstract No 5Zh612 [résumé])

Translation: The paper gives the results of experimental studies of excitation and reception of ultrasonic surface waves in Y-cut lithium niobate plates on space harmonics of multielement converters. During propagation of the surface wave, a reflection was observed under the multielement converter due to electrical and mechanical loading of the free surface. An investigation was made of the coefficient of reflection as a function of the number of electrodes and their geometry. The propagation of surface waves over the free and metallized surface of X, Y, Y_{+45}, and Z-cut lithium niobate was examined. Experimental velocity diagrams are compared with theoretical diagrams published by Campbell and Jones.

1/1

USSR

UDC: 621.374.55:666.593.5

KAVERINA, G. M., SIROTINA, YE. F., PIROGOV, B. N., and SIROTIN, G. F.

"Using Piezoceramic Materials for Ultrasonic Delay Lines Based on Surface Waves"

Tr. Leningr. in-t aviats. priborostr. (Works of the Leningrad Institute of Aviation Instrument Building), Leningrad, 1972, vyp.76, pp 66-70 (from RZh-32.Metrologiya i Izmeritel'naya Tekhnika, No 5, 1973, Abstract No 5.32.468)

Translation: The authors study experimentally the excitation, reception, and propagation of ultrasonic surface waves in piezoceramic materials. It is shown that the attenuation of surface waves in the 1-10 Mc frequency range for the studied types of piezoceramics primarily depends on the granularity of the structure. Dispersion and nondispersion type delay line models are made on a piezoceramic soundguide from barium titanate and calcium with an admixture of cobalt. The frequency-amplitude and dispersion characteristics are given. Original article: three illustrations, four bibliographic entries, and one table.

1/1

1/2 039 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THEORY OF THE IDEAL ELASTOPLASTICITY OF CRYSTALS -U-

AUTHOR--SIROTIN, YU.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, MEKH. TVERD. TELA 1970, (1), 39-47

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELASTICITY THEORY, PLASTIC FLOW, THERMAL STRESS, SHEAR STRESS, TENSOR, VECTOR FUNCTION, CRYSTAL DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1211 STEP NO--UR/0484/70/000/001/0039/0047

CIRC ACCESSION NO--AP0124865

UNCLASSIFIED

2/2 039 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSICN NO--AP0124865

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FLUIDITY FUNCTIONS WERE DERIVED ON THE BASIS OF THE GENERALIZED THEORY OF ELASTIC PLASTIC MEDIA WITH A SINGULAR YIELD SURFACE (KOITER, 1953). STRESS AND DEFORMATION TENSORS AND DYADICS OF THE SYSTEM ARE EXAMD. AS VECTORS, AND THE ELASTICITY CONSTS. AS VECTORS, IN 6 DIMENSIONAL SPACE. THE BASE IN THE 7 DIMENSIONAL SPACE IS SELCTED SUCH THAT THE UNIT VECTORS WILL TRANSFORM INTO PHYS. IRREDUCIBLE REPRESENTATIONS OF ROTATIONAL AND CRYSTALLOGRAPHIC GROUPS. IN THIS SPACE THE FLUIDITY SURFACE WAS CONSTRUCTED; IT WAS PIECEWISE LINEAR AND IN GENERAL WAS NONCENTROSYMMETRIC. THE ASSOCD. LAW OF PLASTIC FLOW WAS OBTAINED AS WELL AS ITS TRANSFORMATIONS TO ACCOUNT FOR THERMAL STRESSES AND THE TEMP. DEPENDENCE OF THE CRIT. SHEAR STRESSES.

UNCLASSIFIED

1/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--COMPARISON OF PHOSPHORITES OF VARIOUS ORIGINS DURING THE FERTILIZATION OF PLANTS DIFFERING IN THE ABILITY TO USE HARD TO

AUTHOR-(02)-SIROTIN, YU.P., MARTYNOVA, T.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. VSES. AKAD. SEL'SKOKHOZ. NAUK 1970, (2), 17-19

DATE PUBLISHED-------70

SUBJECT AREAS--AGRICULTURE

TOPIC TAGS--CEREAL CROP, PHOSPHORUS FERTILIZER, PARTICLE SIZE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605009/009 STEP NO--UR/3275/70/000/002/0017/0019

CIRC ACCESSION NO--AT0140083

UNCLASSIFIED

2/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0140083

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING GROWTH TESTS WITH MILLET, OATS, AND BUCKWHEAT (PLANTS WITH LOW, AV., AND HIGH ABILITY TO ASSIMILATE P FROM THE SOIL) THE EFFECTIVENESS OF 11 SAMPLES OF PHOSPHORITE MEAL OF VARIOUS ORIGINS WERE INVESTIGATED. THE SAMPLES DIFFERED MAINLY IN CHEM. COMPN., ESP. LEVELS OF R SUB2 O SUB3, CAO, F, CO SUB2, AND INSOL. RESIDUE, WHILE THE PARTICLE SIZE WAS THE SAME. THE FERTILIZING EFFECTIVENESS DEPENDED MAINLY ON THE PROPERTIES OF THE INITIAL PHOSPHORITE. FACILITY: GOR'K. SEL'SKOKHOZ. INST., GORKI, USSR.

UNCLASSIFIED

USSR

UDC 537.311.33:546.28'26

SIROTINA, N.YE.

"Electrical Properties, Technology, And Use Of Silicon Carbide"

V sb. Elektronika i yeye primeneniye (Electronics And Its Applications--Collection Of Works), Moscow, Izd-vo VINITI, 1971, pp 5-68

Abstract: The paper considers the electrical properties of SiC (general characteristics, semiconductor properties and parameters, electrical properties of thin films, electrical properties of p-n junctions in SiC and point-contacts metal--SiC, luminescence properties), practical applications of SiC in electronic devices (over-all survey of SiC applications, use of polycrystalline SiC, use of monocrystalline SiC), SiC technology and devices based on it (over-all survey of methods used, preparation of industrial SiC [carborundum], preparation of SiC monocrystals by crystallization from gaseous phase, preparation of SiC monocrystals and films with the aid of gaseous reactions, preparation of SiC films by the method of crystallization from solutions, use of industrial monocrystals of SiC for production of semiconductor devices, methods of producing p-n junctions and production of devices based on SiC). 23 fig. 1 tab. 129 ref.

1/1

USSR

UDC: 534-8

SIROTINA, Ye. F., PIROGOV, B. N., SIROTIN, G. F.

"Excitation and Reception of Ultrasonic Surface Waves by Multiple-Element Converters on Higher Spatial Harmonics"

Leningrad, Tr. Leningr. in-t aviats. priborostr. (Works. Leningrad Institute of Aviation Instrument Building), 1972, vyp. 76, pp 71-77 (from RZh-Fizika, No 5, May 73, abstract No 5Zh606 [résumé])

Translation: A comparative description is given of methods of excitation and reception of ultrasonic surface waves. Most effective are multielement converters of the two-phase type; however, making such converters for a high-frequency band involves considerable difficulties. This paper deals with the feasibility of using higher spatial harmonics. Results are given from experimental and theoretical studies on the operation of multiple-element converters on space harmonics. The experimental results agree satisfactorily with theory in the 10-70 MHz frequency range.

1/1

USSR

UDC: 621.374.55:666.593.5

KAVERINA, G. M., SIROTINA, YE. F., PIROGOV, B. N., and SIROTIN, G. F.

"Using Piezoceramic Materials for Ultrasonic Delay Lines Based on Surface Waves"

Tr. Leningr. in-t aviats. priborostr. (Works of the Leningrad Institute of Aviation Instrument Building), Leningrad, 1972, vyp.76, pp 66-70 (from RZh-32.Metrologiya i Izmeritel'naya Tekhnika, No 5, 1973, Abstract No 5.32.468)

Translation: The authors study experimentally the excitation, reception, and propagation of ultrasonic surface waves in piezoceramic materials. It is shown that the attenuation of surface waves in the 1-10 Mc frequency range for the studied types of piezoceramics primarily depends on the granularity of the structure. Dispersion and nondispersion type delay line models are made on a piezoceramic soundguide from barium titanate and calcium with an admixture of cobalt. The frequency-amplitude and dispersion characteristics are given. Original article: three illustrations, four bibliographic entries, and one table.

1/1

Acc. Nr: AP0052301 Ref. Code: UR0238

PRIMARY SOURCE: Fiziologichniy Zhurnal, 1970, Vol 16, Nr 2, pp 205-210

MOUNTAINS AND RED BLOOD

(Some Results of Studying Red Blood in the Mountain Heights)

M. M. Sirotinin

Department of Hypo- and Hyperoxic States, the A. A. Bogomoletz, Institute of Physiology, Academy of Sciences, Ukrainian SSR, Kiev

Beginning from Jourdanet [25], the investigations of red blood in the heights attract the attention of research workers. His main statement, that the organism in the heights is as if in the state of anemia, was confirmed by numerous authors. First investigators, when ascending the heights noted a great increase in the quantity of erythrocytes and hemoglobin. Our investigations showed that hemopoiesis in the mountains might be intensified by different stimulators, by liver preparations in particular.

Since 1959, hemoglobin has been investigated in the heights by means of electrophoresis. An increase in the hemoglobin mobility, the growth of the fractions A_2 and A_3, as well as of hemoglobin F were established.

USSR

UDC 612.288+612.273.2

SIROTININ, N. N., Institute of Physiology imeni A. A. Bogomolets, Academy of Sciences UkSSR, Kiev

"Regulation of Respiration and Physiological Adaptation to Hypoxia"

Leningrad, Fiziologicheskiy Zhurnal SSSR, No 12, 1971, pp 1,788-1,792

Abstract: Life arose under anaerobic conditions as a result of the accumulation of oxygen in the earth's atmosphere. The change to respiration was apparently caused by intensification of the energy demand associated with movements made to obtain food. (External respiration is 20 times more efficient than glycolysis). As organisms and their adaptation to hypoxia became more complex, regulation of the respiratory function became more precise and complete. The earliest type of adaptation to hypoxia seems to have been a decrease in the energy demand. This was followed first by passive adaptation through a lowering of metabolism and theny by active adaptation through intensification of external respiration achieved by increased frequency of respiratory movements. The further evolution of life was attended by increasing sensitivity to a deficiency of oxygen, especially in man in whom the regulation of respiration is most highly developed. Repeated exposure to hypoxic conditions led to the development of various interrelated forms of physiological adaptation (hemoglobin, gluthathione).

1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--30OCT7(

TITLE--MECHANISM OF POLYURETHANE SYNTHESIS IN THE PRESENCE OF DIBUTYLTIN DILAURATE -U-

AUTHOR-(04)-LIPATOVA, T.E., BAKALO, L.A., SIROTINSKAYA, A.L., LOPATINA, V.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 911-16

DATE PUBLISHED----------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--POLYURETHANE RESIN, POLYCONDENSATION, ORGANOTIN COMPOUND, GLYCOL, ISOCYANATE, COMPLEX COMPOUND, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0676 STEP NO--UR/0459/70/012/004/0911/0916

CIRC ACCESSION NO--AP0124348

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--30OCT7

CIRC ACCESSION NO--AP0124348

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYCONDENSATION OF OCN(CH SUB2)SUB6 NCO WITH HO(CH SUB2 CH SUB2 O)SUB2 H IN THE PRESENCE OF BU SUB2 SN DILAURATE (I) PROCEEDS AT A CONST. RATE LESS THAN OR EQUAL TO 70PERCENT CONVERSION, I.E., IT IS INDEPENDENT OF THE MONOMER CONCN. NO SIDE PRODUCTS ARE PRODUCED AND POLYURETHANES EITHER HAVE NO EFFECT OR RETARD THE REACTION. THE REACTION RATE INCREASES WITH I CONCN. A REACTION MECHANISM IS PROPOSED INVOLVING THE FORMATION OF A GLYCOL DIISOCYANATE I COMPLEX. FACILITY: INST. KHIM. VYSOKOMOL. SOEDIN., KIEV, USSR.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--ELECTROCHEMICAL SEISMIC RECEIVER -U-

AUTHOR--NOVITSKIY, M.A., SIROTINSKIY, YU.V.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, PRIRODA, NO. 1, 1970, P 118

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--SOLION, ELECTROLYTE, CAPILLARY, CATHODE, ANODE, EARTHQUAKE, VIBRATION, ELECTROCHEMICAL EFFECT, SEISMOLOGIC INSTRUMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1435 STEP NO--UR/0026/70/000/001/0118/0118

CIRC ACCESSION NO--AP0104744

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0104744

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INSTITUTE OF ELECTROCHEMISTRY OF THE USSR ACADEMY OF SCIENCES, IN CONJUNCTION WITH THE INSTITUTE OF THE PHYSICS OF THE EARTH, HAS DEVELOPED A MINIATURE ELECTROCHEMICAL SEISMIC RECEIVER (BASED ON THE SOLION PRINCIPLE) WHICH HAS HIGH SENSITIVITY IN THE INFRALOW FREQUENCIES. THE RECEIVER IS A SMALL HOLLOW CYLINDER DIVIDED IN TWO BY A WALL HAVING A CAPILLARY BETWEEN THE TWO HALVES. THE ENDS OF THE RECEIVER ARE FITTED WITH ELASTIC MEMBRANES TO SEAL AN ELECTROLYTE WITHIN THE CYLINDER. THERE ARE TWO PLATINUM ELECTRODES MOUNTED ON THE INNER WALLS OF THE CAPILLARY. THE ELECTROLYTE USED IS AN AQUEOUS SOLUTION OF IODINE AND POTASSIUM IODIDE. THE UNIT IS POWERED BY A 0.5-VOLT D.C. SOURCE. WHEN A SEISMIC EVENT OSCILLATES THE FLEXIBLE MEMBRANES, THE ELECTROLYTE MOVES IN THE CAPILLARY AND AFFECTS THE PARAMETERS IN THE ANODE AND CATHODE. THE RESULTANT CURRENT FLUCTUATIONS REPRESENT THE OUTPUT SIGNAL FROM THE RECEIVER. DISTANT EARTHQUAKES IN THE TIEN SHAN AREA HAVE BEEN RECORDED USING THIS RECEIVER, AND THE RECORDS WERE IDENTICAL TO THOSE FROM A CONVENTIONAL SEISMIC RECORDER. ONE STATED ADVANTAGE OF THIS UNIT IS ITS ABILITY TO REGISTER VERTICAL AND HORIZONTAL VIBRATION COMPONENTS WITHOUT THE NEED FOR READJUSTMENT.

UNCLASSIFIED

Acc. Nr.: AP0045868 S

Ref. Code: UR0026
JPRS 52052

Electrochemical Seismic Detector

The Institute of Electrochemistry, in collaboration with the Institute of Physics of the Earth, has developed a miniaturized electrochemical seismic detector. (Summary: "Electrochemical Seismic Detector," by M. A. Novitskiy and Yu. V. Sirotinskiy; Moscow, Priroda, No. 1, 1970, p. 118)

It is designed to react to random tremors in a wide range of subsonic frequencies. cies. This seismic detector is an inertial instrument with a fluid seismic mass which employs an electrochemical method for converting the relative oscillations of the fluid and housing into an electric output signal. The detector is designed in the following way. A hollow cylindrical body of fluoroplastic is divided by a partition arranged perpendicular to the axis of rotation into two chambers to whose end walls are attached elastic membranes of a chemically stable rubber. The partition has a through opening connecting both chambers and within it, parallel to the plane of the partition, there are two electrodes made of a platinum grid. The internal cavity of the housing is filled with an electrolyte: an aqueous solution of iodine and potassium iodine. When a d-c voltage of about 0.5 V is applied across the electrodes of the seismic detector an electric

12

Reel/Frame
19780873

current appears in the circuit: at the cathode the iodine molecules are reduced to negatively charged iodide ions and a reverse process occurs at the plate. Since the surface of the cathode and the iodine concentration are smaller than the surface of the plate and the concentration of iodide ions, the main resistance to the electric current is exerted by processes transpiring near the cathode. Before the voltage is applied the iodine concentration at the surface of the cathode and in the electrolyte volume is the same. The electric current leads to an impoverishment of the space near the cathode with iodine. This is partially compensated by the diffusion of iodine from the volume. The flow of electrolyte to the cathode, caused by the oscillation of the seismic detector housing, favors the movement of iodine to the cathode and thereby exerts an effect on the current responsible for its oscillations. These current oscillations are the electric output signal of the detector when seismic phenomena are registered. Field tests have shown that during the registry of distant earthquakes in the Northern Tien Shan the records of the output signal of the electrochemical seismic detector are identical to the records of standard seismic detectors. The miniature size of the new seismic detector is an important advantage when registering seismic phenomena in deep boreholes. The same instrument can be used for investigating both the vertical and horizontal components of oscillations.

USSR

UDC 669.245.018.44(088.8)

PANASYUK, I. O., BRUSILOVSKIY, B. S., VILKOV, V. I., VORONIN, G. M., YEGOROV, YE. YE., YELKIN, I. S., KLIMOV, L. YA., KOVROVA, YE. A., KONTSEVAYA, YE. M., LYUBINSKAYA, M. A., MILENINA, YE. G., MIKHAYLOV, I. A., RAZUVAYEV, YE. I., SIROTKIN, A. I., SOLDATCHENKO, V. A., SPILITSIN, R. I., SHAPIRO, S. M.

"Nickel-Chromium Base Alloy"

USSR Author's Certificate No 276418, Filed 2 Jun 69, Published 16 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I766P)

Translation: The heat-resistant alloy has the following composition (in %): C 0.03-0.1, Cr 30-40, W 3-5.5, Mo 2-4, Ti 0.5-1.5, Al 0.5-1.5, Nb 0.5-1.5, Ce 0.01-0.3, B 0.003-0.008, Ni, the rest. The alloy has increased heat resistance and also the following mechanical and physical-chemical properties at 1,100°: σ_B 8 kg/mm^2, δ 65%, σ stress-rupture 1 kg/mm^2, coefficient of linear expansion $15 \cdot 10^{-6}$ deg^{-1}, increase in weight after 100 hours of heating at 1,200° in the air 0.6 g/m^2. It is corrosion-resistant in a moist atmosphere under tropical conditions, in sea water, and in the products of combustion of highly sulfurous fuel.

1/1

1/2 031 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ABSORPTION AND DISTRIBUTION OF CESIUM 137 IN CALVES OF DIFFERENT AGES -U-
AUTHOR-(03)-SIROTKIN, A.N., SHILOV, V.P., KORNEYEV, N.A.

COUNTRY OF INFO--USSR

SOURCE--RADIOBIOLOGIYA 1970, 10(2), 309

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CESIUM ISOTOPE, DAIRY CATTLE, RADIOACTIVE CONTAMINATION, MUSCLE TISSUE, BONE, SKIN, LIVER, KIDNEY, LUNG, HEART, BLOOD PLASMA, SPLEEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605004/B11 STEP NO--UR/0205/70/010/002/0309/0309

CIRC ACCESSION NO--AP0139606

UNCLASSIFIED

2/2 031 UNCLASSIFIED

CIRC ACCESSION NO--AP0139606 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISTRIBUTION OF PRIME137 CS AND ITS RESORPTION FROM THE GASTROINTESTINAL TRACT HAS BEEN STUDIED IN 12 CALVES OF DIFFERENT AGES FOLLOWING SINGLE PERORAL OR I.V. ADMINISTRATION. RESORPTION DEPENDED ON CALF AGE AND IN 3, 9, 14, AND 26 MONTHS OLD CALVES IT WAS 81-93, 57, 58, AND 53-9PERCENT OF THE DOSE APPLIED, RESP. OUT OF THE RESORBED AMT. OF PRIME137 CS, 7.27-13.0 WAS FOUND IN MUSCLES, 0.77-3.7 IN THE SKELETON, 0.74-2.86 IN THE LIVER, 1.14-2.72 IN THE SKIN, 0.18-1.73 IN THE KIDNEYS, 0.42-1.38 IN THE LUNGS, 0.24-1.66 IN THE HEART, 0.70-1.56 IN THE BLOOD, 0.22-0.49 IN THE BLOOD PLASMA, AND 0.09-0.28PERCENT IN THE SPLEEN. MAX. CONCN. OF PRIME137 CS, ADMINISTERED PERORALLY, IN VARIOUS PARTS OF THE SKELETON OF CALVES 3, 9, 14, AND 26 MONTHS OLD DIFFERED FROM THE MIN. CONCN. BY A FACTOR OF 8.7, 7.0, 4.3, AND 4.5, RESP., AND AFTER I.V. ADMINISTRATION, BY A FACTOR OF 7.0, 4.0, 3.3, AND 2.5, RESP.

UNCLASSIFIED

USSR

UDC 669.71.48

BRUSAKOV, YU. I., SIROTKIN, N. N., RZHAVIN, S. A., AVDEYEV, M. P., ALIVOYVODICH, M. KH., KUCHERENKO, A. G.

"Processing Metal-Containing Slags in the Production of Silicon Aluminate Alloys"

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 177-183 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G197)

Translation: Test results with respect to ore recovery processing of metal slags formed when obtaining and defining aluminum alloys with silicon are discussed. The technical possibility and expediency of recovery of crushed slags in the indicated alloy production process are confirmed. The specific consumption indexes of the alloys in large 120 and 16,500 kilowatt-ampere laboratory and industrial furnaces are presented. The extraction of alloy from the slags exceeded the content of metal phase in them. This indicates additional extraction of metal from the carbides and oxides contained in the slags in the amount of up to 55% in a large laboratory furnace and 27% in an industrial furnaces. There are 5 tables.

1/1

USSR

(18)

BALOSHIN, O. N., BLAGORODOV, A. M., BOLONKIN, B. V., VLADIMIRSKIY, V. V., GORIN, YU. P., GRIGOR'YEV, V. K., GRISHIN, A. P., YEROFEYEV, I. A., KOROL'KOV, I. YA., LUZIN, V. N., MILLER, V. V., NIKOLAYEVSKIY, YE. S., PETRUKHIN, V. N., PLIGIN, YU. S., PONOMAREV, L. A., SIROTKIN, S. M., SOKOLOVSKIY, V. V., TARASOV, YE. K., TIKHOMIROV, G. D., TROSTINA, K. A., TURCHANOVICH, L. K., and SHKURENKO, YU. P., Institute of Theoretical and Experimental Physics GKI AE (State Committee for the Use of Atomic Energy)

"The $K^-p \rightarrow \bar{K}^0n$ Charge Exchange Reaction at a Pulse of 39 Gev/sec"

Moscow, Yadernaya Fizika, Vol 18, No 3, Sep 73, pp 542-544

Abstract: The authors present the measurement results from studying the charge exchange reaction of K^--mesons on protons ($K^-p \rightarrow \bar{K}^0n$) at a pulse of 39 Gev/sec. The study was carried out using the ITEF 6-m magnetic track spectrometer. The working volume of the magnetic field of the spectrometer was 1.0 x 1.5 x 6 m . Twelve optical spark chambers were located inside the magnet, with each chamber having eight spark gaps (10 mm each). The chamber electrodes consisted of two layers of aluminum foil 14 microns thick. The photographs were taken through a special slit in the magnet yoke. A mirror system made it possible to obtain three stereoprojections of all of the chambers

1/2

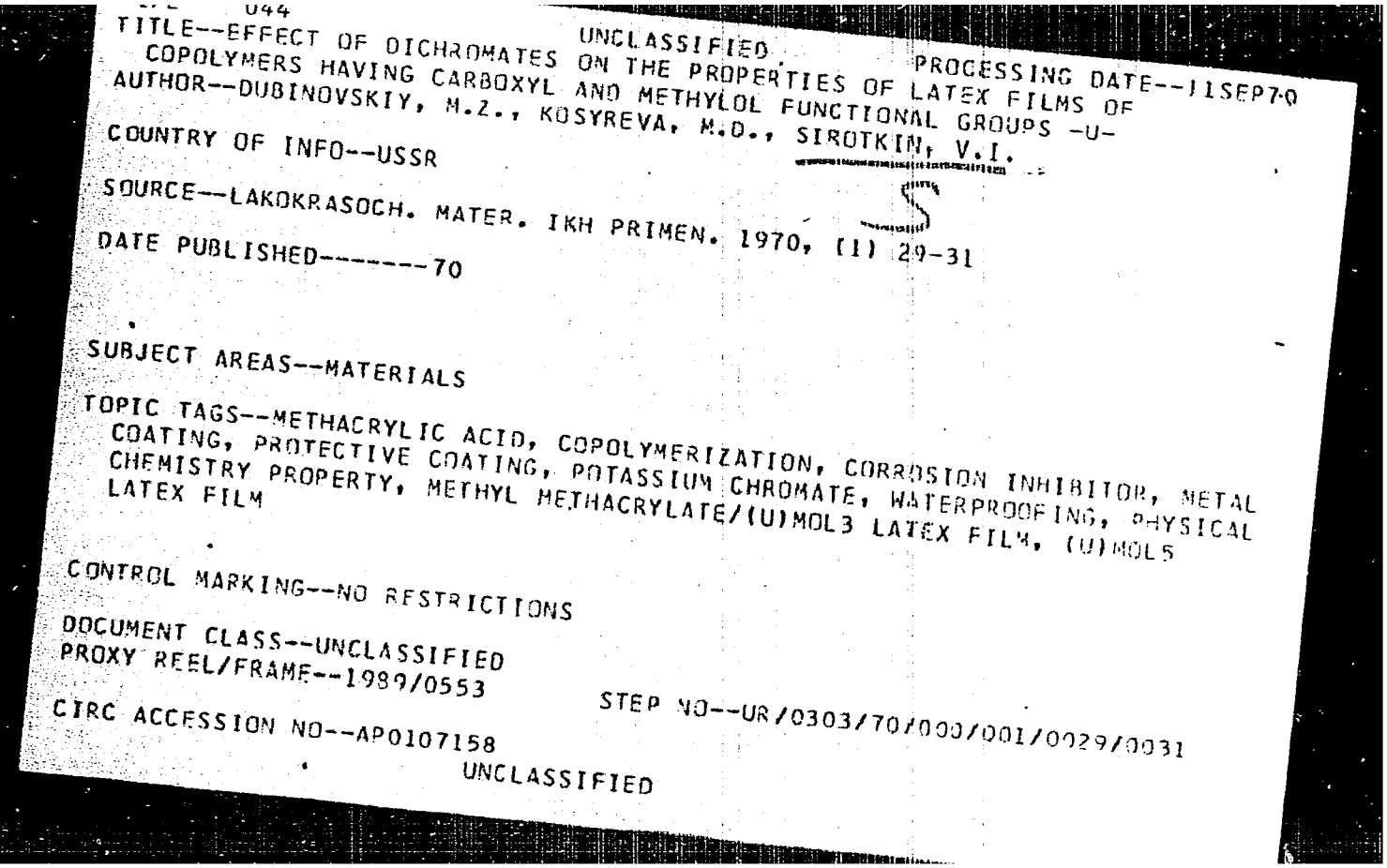
USSR

(18)

BALOSHIN, O. N., et al., Yadernaya Fizika, Vol 18, No 3, Sep 73, pp 542-544

with one camera. The reaction was studied on the negative particle beam of the IFVE accelerator. The K^--mesons were distinguished by a differential Cerenkov counter. The beam was focused on a liquid hydrogen target 40 cm long which was set approximately three meters from the first chamber of the spectrometer. Approximately $5 \cdot 10^7$ K^--mesons were passed through the equipment and 1020 photographs taken. Pairs of uniformly charged tracks were measured on the photographs. The measurement results were then processed on the Razdan-3 computer. Only 270 intersecting tracks were found. A graph is given for the differential cross section of the reaction. The results show that the cross section value of 7.4 ± 1.2 microbarns obtained by the authors in comparison to data obtained for lower energies elsewhere shows the logarithmic dependence of the charge exchange cross section on the pulse, equal to -1.58 ± 0.05. The authors thank K. G. Boreskov, A. M. Lapidus, S. T. Sukhorukov, and K. A. Ter-Martirosyan for their presentation of the computational results as the dependence of the differential cross section onpulse transfer (do/dt). This dependence is compared with predictions of the Regge pole model.

1/1



044 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--EFFECT OF DICHROMATES ON THE PROPERTIES OF LATEX FILMS OF COPOLYMERS HAVING CARBOXYL AND METHYLOL FUNCTIONAL GROUPS -U-

AUTHOR--DUBINOVSKIY, M.Z., KOSYREVA, M.D., SIROTKIN, V.I.

COUNTRY OF INFO--USSR

SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (1) 29-31

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--METHACRYLIC ACID, COPOLYMERIZATION, CORROSION INHIBITOR, METAL COATING, PROTECTIVE COATING, POTASSIUM CHROMATE, WATERPROOFING, PHYSICAL CHEMISTRY PROPERTY, METHYL METHACRYLATE/(U)MOL3 LATEX FILM, (U)MOL5 LATEX FILM

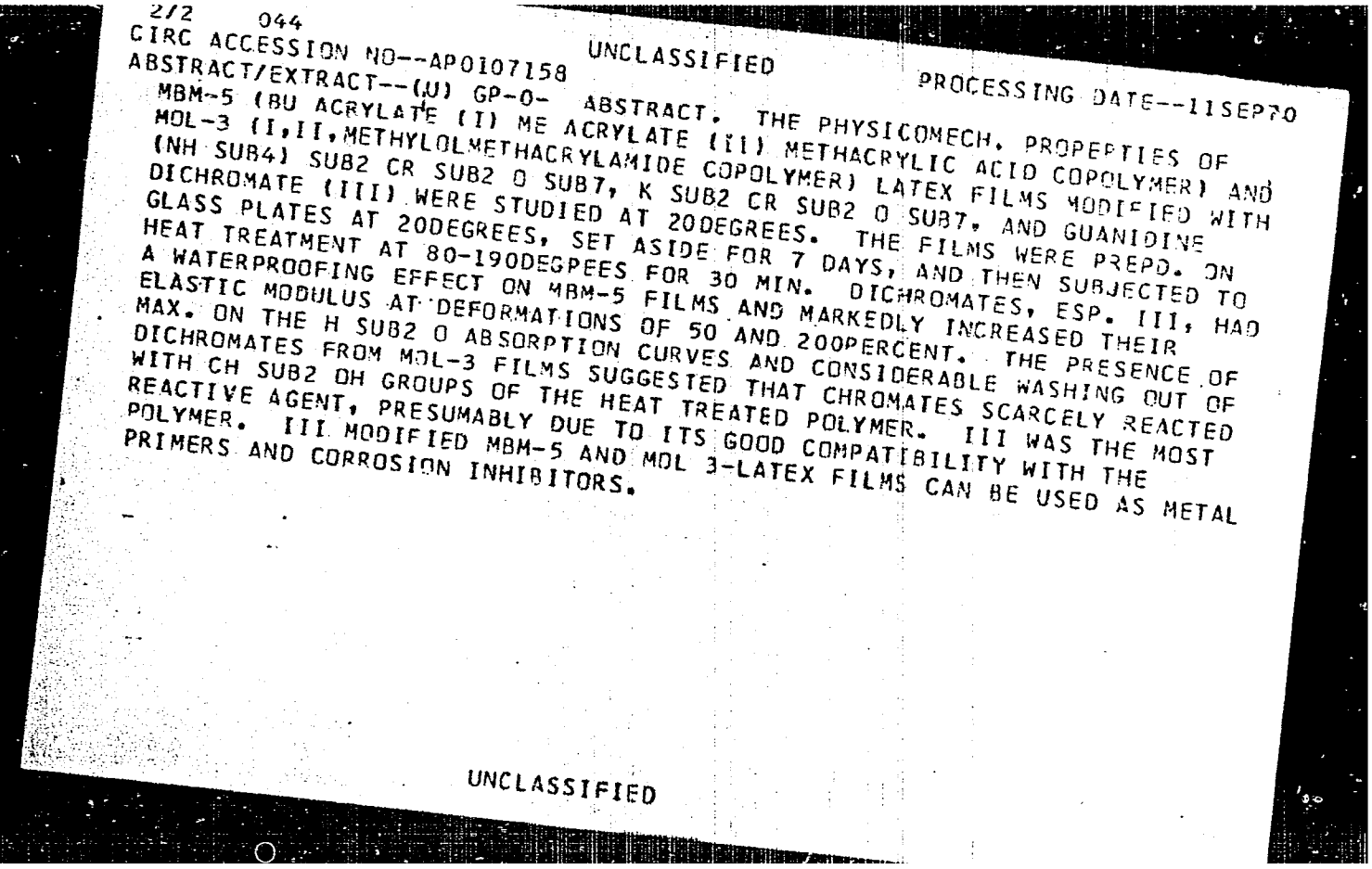
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0553 STEP NO--UR/0303/70/000/001/0029/0031

CIRC ACCESSION NO--AP0107158

UNCLASSIFIED



2/2 044 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0107158
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHYSICOMECH. PROPERTIES OF MBM-5 (BU ACRYLATE (I) ME ACRYLATE (II) METHACRYLIC ACID COPOLYMER) AND MOL-3 (I,II,METHYLOLMETHACRYLAMIDE COPOLYMER) LATEX FILMS MODIFIED WITH (NH SUB4) SUB2 CR SUB2 O SUB7, K SUB2 CR SUB2 O SUB7, AND GUANIDINE DICHROMATE (III) WERE STUDIED AT 20DEGREES. THE FILMS WERE PREPD. ON GLASS PLATES AT 20DEGREES, SET ASIDE FOR 7 DAYS, AND THEN SUBJECTED TO HEAT TREATMENT AT 80-190DEGREES FOR 30 MIN. DICHROMATES, ESP. III, HAD A WATERPROOFING EFFECT ON MBM-5 FILMS AND MARKEDLY INCREASED THEIR ELASTIC MODULUS AT DEFORMATIONS OF 50 AND 200PERCENT. THE PRESENCE OF MAX. ON THE H SUB2 O ABSORPTION CURVES AND CONSIDERABLE WASHING OUT OF DICHROMATES FROM MOL-3 FILMS SUGGESTED THAT CHROMATES SCARCELY REACTED WITH CH SUB2 OH GROUPS OF THE HEAT TREATED POLYMER. III WAS THE MOST REACTIVE AGENT, PRESUMABLY DUE TO ITS GOOD COMPATIBILITY WITH THE POLYMER. III MODIFIED MBM-5 AND MOL 3-LATEX FILMS CAN BE USED AS METAL PRIMERS AND CORROSION INHIBITORS.

UNCLASSIFIED

SIROTKINA, A.G.

JPRS 59208
6-73

C

X-4. ALLOYING EPITAXIAL LAYERS OF SILICON BY THE GAS DISCHARGE METHOD IN THE GLOW DISCHARGE MODE

[Article by O. M. Borisov, L. M. Skvortsov, M. I. Rakhlis, R. F. Kurchavskiy, L. I. Gerganova, A. G. Sirotkina, Minsk, Moscow; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 131]

An experimental study was made of the possibility of gas discharge alloying of epitaxial layers of silicon under glow discharge conditions between the electrode containing the alloying admixture.

The variation in alloying level by admixture groups V and III was investigated for transmission of H_2Ar and mixtures of the gases through the discharge chamber.

In order to discover the mechanism of the formation of the alloying mixtures, the ion energies of H^+ and Ar^+ and the threshold energies of deposition of the electrodes made of As-Sb and LaB_6 alloys were calculated. The calculations indicate the different mechanism of formation of alloying mixtures on transmission of H_2 and Ar through the discharge chamber and explain the observed experimental characteristics of alloying.

UNCLASSIFIED

020

TITLE--NUCLEAR MAGNETIC RESONANCE SPECTRA OF ARENECYCLOPENTADIENYLIRON COMPOUNDS -U-

PROCESSING DATE--27NOV70

AUTHOR-(05)-NESMEYANOV, A.N., LESHCHEVA, I.F., USTYNYUK, YU.A., SIROTKINA, E.I., BOLESOVA, I.N.

COUNTRY OF INFO--USSR

SOURCE--J. ORGANOMETAL. CHEM. 1970, 22(3), 689-96

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--NMR SPECTRUM, IRON COMPOUND, CYCLIC GROUP, COMPLEX COMPOUND, ORGANIC PHOSPHATE, FLUORINE ISOTOPE, ELECTRON ACCEPTOR

CONTROL MARKING--NO RESTRICTIONS

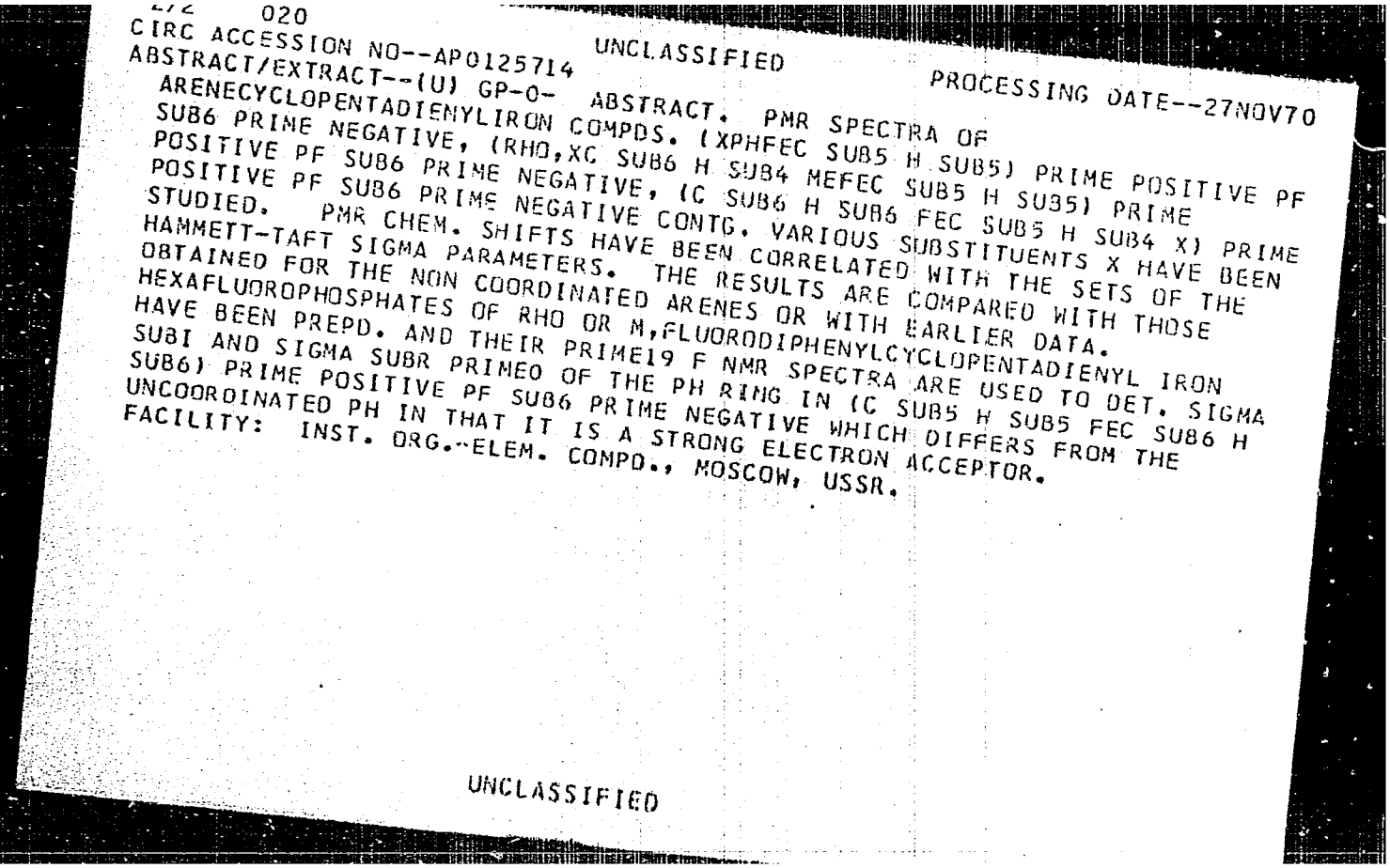
DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2130

STEP NO--NE/0000/70/022/003/0689/0696

CIRC ACCESSION NO--AP0125714

UNCLASSIFIED



272 020 UNCLASSIFIED

CIRC ACCESSION NO--AP0125714 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PMR SPECTRA OF ARENECYCLOPENTADIENYLIRON COMPDS. (XPHFEC SUB5 H SUB5) PRIME POSITIVE PF SUB6 PRIME NEGATIVE, (RHO,XC SUB6 H SUB4 MEFEC SUB5 H SUB5) PRIME POSITIVE PF SUB6 PRIME NEGATIVE, (C SUB6 H SUB6 FEC SUB5 H SUB4 X) PRIME POSITIVE PF SUB6 PRIME NEGATIVE CONTG. VARIOUS SUBSTITUENTS X HAVE BEEN STUDIED. PMR CHEM. SHIFTS HAVE BEEN CORRELATED WITH THE SETS OF THE HAMMETT-TAFT SIGMA PARAMETERS. THE RESULTS ARE COMPARED WITH THOSE OBTAINED FOR THE NON COORDINATED ARENES OR WITH EARLIER DATA. HEXAFLUOROPHOSPHATES OF RHO OR M,FLUORODIPHENYLCYCLOPENTADIENYL IRON HAVE BEEN PREPD. AND THEIR PRIME19 F NMR SPECTRA ARE USED TO DET. SIGMA SUBI AND SIGMA SUBR PRIMED OF THE PH RING IN (C SUB5 H SUB5 FEC SUB6 H SUB6) PRIME POSITIVE PF SUB6 PRIME NEGATIVE WHICH DIFFERS FROM THE UNCOORDINATED PH IN THAT IT IS A STRONG ELECTRON ACCEPTOR.

FACILITY: INST. ORG.-ELEM. COMPD., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 615.832.97/.98

SIROTKINA, M. G., GOL'DINA, B. G., GUTKIN, V. S., KOMAROV, B. A., KONDRAT'YEVA, N. I., MIKHALOYTS, S. N., and RUDNYA, P. G., All Union Scientific Research Institute of Surgical Apparatus and Instruments, Ministry of Health USSR

"Status of and Prospects for Developement of Cryosurgery"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 1, 1970, pp 3-10

Abstract: The development of cryosurgery during the past 20 years has been purely empirical. A variety of cooling agents, degrees of cooling, times of exposure, cycles of freezing and complexity of apparatus have been used for the same purposes. Thus, while the results have been encouraging in a number of specialties (dermatology, opthalmology, gynecology, urology, and some others), many questions reamin. What is needed now is a thorough study of the anatomical and physiological characteristics of the organs to be treated and the effects of exposure to cold, as well as a scientific determination of the optimum parameters of cryosurgical instruments and the most efficient way of using them. As a model for such studies, the authors describe

1/2

USSR

SIROTKINA, M. G., et al., Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 1, 1970, pp 3-10

the results immediate and long-term, of experiments on dogs whose tonsils were destroyed with a specially constructed cryoapplicator using liquid notrigen (-196° C).

2/2

Acc. Nr: AP0040312 S

Ref. Code: UR0481

PRIMARY SOURCE: Eksperimental'naya Khirurgiya i Anesteziologiya, 1970, Nr / , pp 3-10

ON THE STATE AND PERSPECTIVES IN DEVELOPMENT OF CRYOSURGERY

Sirotkina, M. G.; Gol'dina, B. G.; Gutkin, V. S.; Komarov, B. A.; Kondrat'yeva, N. I.; Mikhaloyts, S. N.; Rudnya, P. G.

The trends of development and practical evaluation of cryosurgical methods of treatment in the last two decades are presented. Their use being of pure empiric nature it has been decided to use canine palate tonsils as a suitable model for scientific optimization of demands applied to cryosurgical apparatuses and rationalization of their application. The dynamics of general and local changes after tonsilectomy in the fluid nitrogen (—196° C) as a cold source have been studied by clinical, haemathological and pathomorphological investigations. By lowering the temperature in the tissue under tonsil to —7° C a subsequent expressed destructive effect can be anticipated. Complete disappearance of the tonsil tissue was observed in 51.8 per cent of cases, partial destruction — in 35.1 per cent. The authors believe that along with an intensive biological search for complex evaluation of the method a simple cryogen technique for a number of surgical fields to be equipped with must be developed.

//

REEL/FRAME
19741743

02 kc

USSR

UDC 621.396.677.71

GOROBETS, N. N., LYASHCHENKO, V. A., SIROTNIKOV, A. I.

"Experimental Study of the Field Distribution in Slot Waveguide Radiators"

Antenno-fidern. i izmerit. ustroystva sverkhvysok. chastot -- V sb. (Superhigh Frequency Antenna Feeder and Measuring Devices — Collection of Works), Khar'kov, Khar'kov University, 1971, pp 14-22 (from RZh-Radiotekhnika, No 10, Oct 71, Abstract No 10B29)

Translation: The distribution of the tangential component of the electric vector on the surface of a slot is determined from the condition of continuity of the tangential component of the magnetic vector on transition through the slot. A method of direct measurement of the electric field distribution in slot radiators is described. The field is measured by means of a disturbing body which moves along the slot. Here, the amplitude of the reflected wave varies proportionally to the field distribution in the slot. The block diagram of the measuring device and the results of an experimental study of the field distribution along longitudinal slots in the wide wall of a rectangular waveguide are presented. It is demonstrated that the distribution along the nonresonance slots differs from sinusoidal by no more than 10%. The field distribution along the dumbbell-shaped slots has a table shape. There are 6 illustrations and a 4-entry bibliography.

1/1

Acc. Nr: AP0052308 S Ref. Code: UK0238

PRIMARY SOURCE: Fiziologichniy Zhurnal, 1970, Vol 16, Nr 1, pp 161-171

FURTHER DEVELOPMENT OF STUDY ON THE TYPES OF HIGHER NERVOUS ACTIVITY

V. O. Troshikhin and V. V. Sirotskiy

Department of Physiology of Higher Nervous Activity, the A. A. Bogomoletz Institute of Physiology, Academy of Sciences, Ukrainian SSR, Kiev

Summary

A number of suppositions is expressed as to the ways of solving the problem on the types of higher nervous activity.

On the basis of new data obtained by the research workers of the department a conclusion is drawn that the weak type of nervous activity finishes its formation in ontogeny before sexual maturity and the strong one at the age of sexual maturity (by 4 years of postnatal life and probably later). Intensity of excitative process is one of the

1/2

REEL/FRAME
19820881

2

leading (determining) properties of the nervous system type. It means that with the change in the level of brain excitability in dogs and rats qualitatively new reactions are observed which correspond to a new level of excitation.

On the basis of studying different components of a conditioned reflex, a conclusion is drawn that starting (specific) components of the conditioned reflex are the most demonstrative indicators of the typological properties of the animal higher nervous activity. A respiratory component may be referred to the universal indicators of the typological properties.

2/2

19820882

(2)

USSR

UDC 612.82-089:615.837.3

TYURIN, S. I., BRAZOVSKAYA, F. A., ININ, Yu. S., PAYKIN, D. I., SIROTYUK, M. G., and GAVRILOV, L. R., Institute of Higher Nervous Activity and Neurophysiology, Academy of Sciences USSR, Central Design Bureau, Academy of Medical Sciences USSR, and Acoustic Institute, Academy of Sciences USSR

"Use of Focused Ultrasound for Local Destruction of Brain Structures Through Intact Skull"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 5, 1973, pp 120-121

Abstract: Using a focusing emitter to create an ultrasonic field, the authors irradiated portions of rabbit brains 16 to 20 mm from the surface in the region of the hypothalamus and mesencephalon without preliminary trephination. A single sonication produced a lesion 0.2 to 1 mm in diameter and 1 to 3 mm in length. No pathological changes were noted on the way to the target area in which histological examination of frontal sections revealed a focus of coagulation necrosis.

1/1

USSR UDC 615.371:576.851.45].001.5(47+57)

SALTYKOV, R. A., MOTORNAYA, V. P., and SIROTYUK, L. V., State Control Institute of Medical Biological Preparations imeni Tarasevich, Moscow

"Experience Gained During 25 Years of Investigating the Stability of the Properties of Vaccinal Tularemia Strains"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 12, 1972, pp 64-70

Abstract: Stability of immunogenicity and apathogenicity was investigated in Gayskiy's vaccinal strains No 15 and Ondatra-4 since 1943 and in Faybich-Saltykov-Tamarina's vaccinal strains No 10, 33, and 53 since 1944-1947. While the loss of pathogenicity proved to be permanent, strain Ondatra-4 did not retain its full immunogenicity for long and was pronounced unsuitable for live vaccine in 1946. Since that time, efforts were concentrated on developing methods of stabilizing high immunogenicity in vaccinal strains. Freeze-drying according to Faybich-Tamarova's method yielded a dry stock which was convenient for storage but which lost its immunogenicity to a high degree by 1950. Therefore, the strains were cultivated in guinea pig ovaries which have a high hyaluronidase concentration, and in 1953, after 10 passages, they regained their previous high immunogenicity and retained it after freeze-drying. After vaccination of volunteers proved their avirulence, the strains were ratified for

1/2

USSR

SALTYKOV, R. A., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 12, 1972, pp 64-70

serial manufacture of dry live tularemia vaccine. Albino mice are most suitable for testing the pathogenicity and guinea pigs for testing the immunogenicity of vaccinal strains. Currently, Gayskiy's NIIEG strain No 15 yields the most immunologically potent tularemia vaccine.

UDC 612.85

USSR

GAVRILOV, L. R., GERSHUNI, G. V., IL'INSKIY, O. B., SIROTYUK, M. G., TSIRUL'-NIKOV, Ye. M., and TSUKERMAN, V. A., Laboratory of the Physiology of Hearing, Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Laboratory of the Physiology of the Sensory Organs, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Laboratory of General Physiology of Reception, Institute of Physiology imeni I. P. Pavlov, and Laboratory of Ultrasonic Cavitation, Acoustics Institute, USSR Academy of Sciences

"Study of the Skin Sensitivity by Means of Focused Ultrasound"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 9, 1972, pp 1,366-1,371

Abstract: A study was made of the effect of focused ultrasound on the skin of a human hand. The sensitivity of the skin of the palm surface of the fingers, wrist and lower third of the forearm was investigated in five people (2 men and 3 women). The sensitivity thresholds were determined with a gradual increase and decrease in the stimulus. As a rule, the thresholds were higher with an increase in stimulus. The intensity for which no less than 50% positive responses occurred to 8-10 stimulations was taken as the threshold. Stimulation of the skin by identical stimuli with an intensity of 30-500 watts/cm^2 usually

USSR

GAVRILOV, L. R., et al., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 9, 1972, pp 1,366-1,371

aroused a tactile sensation, the nature of which depended on the stimulated section. When the focal point went deeper into the tissue, the tactile thresholds gradually increased and, finally, the sensation gradually went away altogether (and then in certain cases reappeared on the opposite side). The effect of sound streams on the occurrence of tactile sensations was tested leading to tickling sensations and sensations of heat and cold. Pain occurred at intensities of 1,400-1,600 watts/cm^2 lasting 100 milliseconds and more.

The mechanism of the effect of the focused ultrasound and its value in the study of the receptor structures are discussed. All the basic types of feelings in the skin can be isolated by the application of ultrasound.

2/2

-1/2 030 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--THE IMPORTANCE OF THERMOMETRY IN STOMATOLOGY -U-

AUTHOR-(02)-CHEPULIS, S.P., SIRVIDENE, YE.A.

COUNTRY OF INFO--USSR

SOURCE--STOMATOLOGIYA, 1970, VOL 49, NR 2, PP 22-25

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ORAL DISEASE, DENTAL CARIES, BODY TEMPERATURE, TUMOR, X RAY RADIATION BIOLOGIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1846 STEP NO--UR/0511/70/049/002/0022/0025

CIRC ACCESSION NO--AP0101891

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0101891

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY. WITH THE AID OF THE PROPOSED MONITORS THE AUTHORS MEASURED THE TEMPERATURE IN DIFFERENT AREAS OF THE MAXILLOFACIAL REGION IN HEALTHY PERSONS AND IN PATHOLOGY. IN NONCOMPLICATED AND COMPLICATED DENTAL CARIES THE TEMPERATURE IN DIFFERENT AREAS OF THE CARIOUS CAVITY AND ADJACENT HEALTHY TEETH WAS DIVERSE. THE TEMPERATURE OF THE SKIN AND ORAL MUCOUS MEMBRANE IN THE CENTER OF MALIGNANT TUMOR WAS HIGHER THAN IN THE SYMMETRICAL AREA. FROM THE NEOPLASTIC CENTER TO THE PERIPHERAL REGION THE TEMPERATURE DECLINES. X RAY IRRADIATION OF MALIGNANT TUMORS CAUSES AN INCREASED TEMPERATURE OF THE SKIN AND ORAL MUCOUS MEMBRANE WITHIN THE IRRADIATED FIELD, WHEREBY IN ACTINORMYCOSIS, THE TEMPERATURE DROPS.

UNCLASSIFIED

SIRYACHENKO, T. M.

JPRS 53378
16 Jun 71

UDC: 616.895.8-056.76

GENEALOGICAL STUDIES RELATED TO SCHIZOPHRENIA

All (psychiatry)

[Article by I.V. Shakhmatova-Pavlova, I.L. Akopova, L.K. Lobova, T.M. Siryachenko, V.L. Shenderova, Institute of Psychiatry, USSR Academy of Medical Sciences, Moscow; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 5, May 1971, pp 65-50]

Extensive investigations of recent years have confirmed the previously known fact that there is definite accumulation of pathology in the families of schizophrenics. The studies of Rosenthal, Kety, Wender, Heston, and others, based on representative material, revealed that "disorders in the schizophrenic spectrum" (Rosenthal) are encountered more often, with statistical reliability, in the blood relatives of a proband as compared to the total population. However, practice has shown that discrete forms of psychoses and different types of borderline states, as well as marked personality anomalies may be detected, described, and classified only if the physician makes a complete examination of the family. Therefore, a meticulous clinical description of the probands and their immediate relatives should be the basis of a genealogical study which is the first stage of genetic analysis.

The present study is based on observations made in the genetic group of the Institute of Psychiatry, USSR AMS [Academy of Medical Sciences] in 1965-1969. The genealogical method was used to study 270 families of patients with different forms (continuous, sporadic processual, and periodic) of schizophrenia.

We did not make the traditional division of probands into Kraepelin's types, since such division is based on static syndromal evaluation, in which the leading syndrome at the time the patient is examined is used as the base. This does not take into consideration the course of the disease as a whole. Studies pursued at the Institute of Psychiatry, USSR AMS, for a number of years revealed that such a basic parameter as course is the closest to the biological essence of the process.

The classification of schizophrenia according to type of course, which has been adopted at the Institute of Psychiatry, USSR AMS, is quite consistent with the division of endogenous psychoses established in psychiatry (Table 1).

USSR

UDC 612.013.7-06:612.766

SIRYK, L. A., Institute of Normal and Pathological Physiology of the Academy of Medical Sciences USSR, Moscow

"Characteristics of the Energy Metabolism in Rats Subjected to Skeletomuscular Load and to Hypodynamic Conditions"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 74, No 10, 1972, pp 22-25

Abstract: Rats subjected to physical load (treadmill) at the age of 1 month consumed less oxygen at rest compared with control and hypodynamic rats. The actual consumption of oxygen by control, treadmill, and hypodynamic rats was 22.6, 18.8, 36.4 ml./kg/min, respectively. The concentration of ATP in muscles of the same group of rats was 34.3, 45.0, 31.2 mg%; of creatine phosphate 198, 276, 216.4 mg %; of inorganic phosphorus 37.3, 25.2, 31.9 mg%; of creatine 549, 400, 389 mg%; of glycogen in muscles 497, 679, 416 mg %; of glycogen in liver 2403, 3730, 2926 mg%; lactic acid 56.6, 36.4, 121.7 mg %; of pyruvate 7.7, 9.05, 7.2 mg%; of lactate/pyruvate 7.48, 4.08, 17.2 mg%, respectively. A considerable decrease of the lactate/pyruvate ratio in comparison with control rats indicates that the respiratory phosphorylation in the treadmill rats dominated the glycolytic phosphorylation. The low concentration of inorganic phosphorus and creatine in muscles of the treadmill rats

1/2

USSR

SIRYK, L. A., Buylleten' Eksperimental'noy Biologii i Meditsiny, Vol 74, No 10, 1972, pp 22-25

(compared with control) is attributed to an intensive consumption of these components for the production of the creatine phosphate. A high ratio of lactate/pyruvate in hypodynamic rats indicates that both the respiratory and glycolytic phosphorylation takes place at an almost equal level. The above readings were taken at rest in the case of the treadmill rats.

2/2

Acc. Nr: AP0046165

Ref. Code: UR0646

PRIMARY SOURCE: Teoreticheskaya i Matematicheskaya Fizika, 1970, Vol 2, Nr 1, pp 73-79

THE GLAUBER-TYPE REPRESENTATION FOR THE AMPLITUDE OF THE SCATTERING OF HIGH-ENERGY DIRAC PARTICLES ON SMOOTH POTENTIALS

Kuleshov, S. P.; Matveyev, V. A.; Sisakyan, A. N.

The Glauber-type representation is deduced for the amplitude of the scattering of spin 1/2 particles on smooth potentials in the region of high energy of incident particles. The consideration is carried out in the two-component formalism and also with the aid of Dirac equation.

1/1

REEL/FRAME
19781242

DI

2/

USSR

KULESHOV, S. P., MATVEYEV, V. A., SISAKYAN, A. N., and SMONDYREV, M. A.

"Operator Method for Solving Quasi-Potential Equations, and the Concept of Rectilinear Paths at High Energies"

Moscow, Teoreticheskaya i Matematicheskaya Fizika, No 3, 1973, pp 325-331

Abstract: An operator method is proposed for finding approximate solutions for quasi-potential equations. The formula for the latter is given. It is noted that this method is sufficiently general and can be applied to other equations in quantum field theory. The approximate solution thus obtained can be used for finding the asymptotic behavior of dispersion amplitudes in the limit of high energies and fixed impulse transfer; it can also be used for developing a regular procedure for finding corrections for the chief asymptotic term. The final section of the article indicates the connection between the operator method and functional integration methods in quantum field theory. It is stressed that, at high energies, the method is the realization of the rectilinear path concept and can be applied to the investigation of various elastic and inelastic dispersion processes. The authors express their

1/2

USSR

KULESHOV, S. P., et al, Teoreticheskaya i Matematicheskaya Fizika, No 3, 1973, pp 325-331

gratitude to N. N. Bogolyubov, M. K. Polivanov, and A. N. Tavkhelidze for their advice and comments.

2/2

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ACCOUNT OF RADIATION CORRECTIONS FOR THE EIKONAL SCATTERING AMPLITUDE IN QUANTUM FIELD THEORY MODEL -U-

AUTHOR-(04)-BARBASHOV, B.M., KULESHOV, S.P., MATVEYEV, V.A., SISAKYAN, A.N.

COUNTRY OF INFO--USSR

SOURCE--(JINR E2-4983)

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--QUANTUM FIELD THEORY, SCATTERING AMPLITUDE, APPROXIMATION METHOD, ERROR CORRECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/2180 STEP NO--UR/0000/70/000/000/0007/0007

CIRC ACCESSION NO--AT0127544

UNCLASSIFIED

2/2 016 UNCLASSIFIED

CIRC ACCESSION NO--AT0127544 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EIKONAL REPRESENTATION FOR THE SCATTERING AMPLITUDE TAKING INTO ACCOUNT THE RADIATION CORRECTIONS IS OBTAINED BY MEANS OF THE FUNCTIONAL INTEGRATION METHOD. IN THE APPROXIMATION USED THE SUMMATION OF THE RADIATION CORRECTIONS LEADS TO THE APPEARANCE IN THE EXPRESSION FOR THE SCATTERING AMPLITUDE OF THE MULTIPLICATIVE FACTOR DEPENDING ONLY ON THE MOMENTUM TRANSFER.

FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA (USSR).

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--EIKONAL APPROXIMATION IN QUANTUM FIELD THEORY -U-

AUTHOR-(04)-BARBASHOV, B.M., KULESHOV, S.P., MATVEYEV, V.A., SISAKYAN, A.N.
COUNTRY OF INFO--USSR

SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 3, PP 342-352
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--QUANTUM FIELD THEORY, QUANTUM MECHANICS, SCATTERING AMPLITUDE, FUNCTIONAL EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1315 STEP NO--UR/0646/70/003/003/0342/0352

CIRC ACCESSION NO--AP0124966
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0124966

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ASYMPTOTIC BEHAVIOR OF THE SCATTERING AMPLITUDE AT HIGH ENERGIES AND FIXED MOMENTUM TRANSFERS IS INVESTIGATED IN THE (FORMULA SHOWN ON MICROFICHE): MODEL BY MEANS OF THE FUNCTIONAL INTEGRATION METHOD IN QUANTUM FIELD THEORY.

FACILITY: OB'YEDINENNYY INSTITUT. FACILITY: YADERNYKH ISSLEDOVANIY.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--QUANTITATIVE DETERMINATION OF ANTIBODIES IN IMMUNE SERUM THROUGH A COMPLEMENT FIXATION REACTION -U-

AUTHOR-(02)-SISENKO, V.I., YEGIZAROVA, I.G.

S

COUNTRY OF INFO--USSR

SOURCE--LAB. DELO 1970, (3), 167-70

DATE PUBLISHED----------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTIBODY, COMPLEMENT FIXATION TEST, IMMUNE SERUM, QUANTITATIVE ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1789 STEP NO--UR/9099/70/000/003/0167/0170

CIRC ACCESSION NO--AP0127203

UNCLASSIFIED

2/2 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0127203 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POSSIBILITIES OF QUANT. DETN. OF CONCNS. OF ANTIBODIES IN IMMUNE SERUM BY THE REACTION OF COMPLEMENT FIXATION WERE INVESTIGATED. TWO ANTIGEN ANTIBODY SERUMS WERE USED: (1) BOVINE SERUM ALBUMIN RABBIT ANTISERUM, (2) HORSE SERUM ALBUMIN RABBIT ANTISERUM. THE PROCEDURES ARE DESCRIBED. THE METHOD IS SATISFACTORY IN GENERAL, BUT FOR EVERY SYSTEM OPTIMUM EXPTL. CONDITIONS MUST BE VERIFIED. FACILITY: INST. EKSP. MED., LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED

TITLE--QUANTITATIVE DETERMINATION OF ANTIBODIES IN THE REACTION OF PRECIPITATION IN GEL -U- PROCESSING DATE--17JUL70

AUTHOR--YEGIAZARCVA, I.G., SISENKC, V.I.

CCUNTRY CF INFC--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BICLCGII I MEDITSINY, 1970, VOL 69, NR 2, PP 118-120

DATE PUBLISHEC--------70

13
5
17

SUBJECT AREAS--BICLCGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTIBODY, GEL, ANTIGEN, CHEMICAL PRECIPITATION

CONTROL MARKING--NO RESTRICTICNS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/0464 STEP NC--UR/0219/70/069/002/0118/0120

CIRC ACCESSICN NC--APOC51977

UNCLASSIFIED

Acc. Nr: AP0051977 Ref. Code: UR0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol 69, Nr 2, pp 118-120

QUANTITATIVE DETERMINATION OF ANTIBODIES IN THE REACTION OF PRECIPITATION IN GEL

I. G. Yegiazarova, V. I. Sisenko

Institute of Experimental Medicine, Academy of Medical Sciences of the USSR, Leningrad

It is established that in the reaction of precipitation in gel there is a direct relationship between, the concentration of antibodies and the antigens concentration, at which the precipitation band vanishes (over the range of antibody excess). This dependence allows the determination of the concentration of antibodies in immune sera.

//

REEL/FRAME
19820464

2 pp

1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--RECOVERY OF SULFURIC ACID BY HIGH TEMPERATURE DECOMPOSITION OF SPENT ACID -U-

AUTHOR-(05)-SISIN, M.F., LAKIZA, S.M., MANAYEV, A.KH., KOLBASIN, A.YA., LANGE, S.A.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB, NEFTEKHIM. (MOSCOW) 1970, (1), 23-5

DATE PUBLISHED--------70

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

TOPIC TAGS--SULFURIC ACID, THERMAL DECOMPOSITION, WASTE TREATMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1819 STEP NO--UR/0318/70/000/001/0023/0025

CIRC ACCESSION NO--AP0118783

UNCLASSIFIED

2/2 010 UNCLASSIFIED

CIRC ACCESSION NO--AP0118783 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPENT H SUB2 SO SUB4 FROM DITOLYLMETHANE MANUF. AND ALKYLATION WAS DECOMPO. IN A FURNACE AT 1200DEGREES, WHERE H SUB2 S WAS BURNT. THE TEMP. IN THE FURNACE WAS CONTROLLED BY ENDOTHERMIC DECOMPN. OF THE ACID, THE LATTER BEING FED IN DETD. AMTS. THE METHOD WAS RECOMMENDED FOR THE PRODUCTION OF H SUB2 SO SUB4 BY DRY CATALYSIS. THE DECOMPN. CONDITIONS ARE TABULATED AND A FLOW SHEET IS PRESENTED FACILITY: SALAVAT. NKHK, SALAVANT, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--DETERMINATION OF THE INTRINSIC VISCOSITY OF POLYETHYLENE SOLUTIONS -U-

AUTHOR-(05)-RYAZANTSEV, V.I., KONDRATYEV, A.A., SISIN, M.F., NASYROVA, Z.M., BOGATYKH, K.F.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 954-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--INTRINSIC VISCOSITY, POLYETHYLENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0663 STEP NO--UR/0459/70/012/004/0954/0956

CIRC ACCESSION NO--AP0124335

UNCLASSIFIED

2/2 012 UNCLASSIFIED

CIRC ACCESSION NO--AP0124335 PROCESSING DATE--30OCT7(

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE 0.4-2.3 DL-G RANGE THE REDUCED VISCOSITY (N-C) OF POLYETHYLENE (I) SOLNS. IN P EXLENE CHANGES LINERALY WITH I CONCN. (C); THE HUGGINS CONSTS WAS 0.62.

FACILITY: UFIM. NEFT. INST., UFA, USSR.

UNCLASSIFIED

USSR

(12)

UDC 539.1.074.3

BORISOV, A. A., BUGORSKIY, A. P., BUSHNIN, Yu. A., DEREVSHCHIKOV, A. A., DUNAYTSEV, A. F., ZHIL'CHENKOV, V. D., MATULENKO, Yu. A., MESHCHANIN, A. P., MIKHAYLOV, Yu. V., NURUSHEV, S. B., SEN'KO, V. A., SMIRNOV, V. V., SMIRNOV, Ye. V., SISKIN, V. V., SOLOV'YEV, L. F., and SOLOV'YANOV, V. L., Institute of High-Energy Physics, Serpukhov

"A Hodoscopic Installation for Investigation of the Elastic Scattering of High-Energy Particles"

Moscow, Pribory i Tekhnika Eksperimenta, No 3, May/Jun 73, pp 49-53

Abstract: A description is given of a hodoscopic installation, developed at the Institute of High-Energy Physics, for investigation of the elastic scattering of high-energy particles within the pulse range of 30-60 gigaelectron volts/sec. The range of dispersion angles covered by the installation is 0-29 millirads with an angular resolution of $\pm$ 0.17 millirad. The total solid angle is 39 microsteres. The pulse is determined to within $\pm$ 0.22%. The resolving time is 35 nanosec. The dead time is 50 microsec. The pulse pass band of the spectrometer is 8%. The statistics-setup is up to 10^6 per hour. The installation is electrically coupled to a "Minsk-22" computer, which stores and processes the information during the experiment. The

1/2

(12)

USSR

BORISOV, A. A., et al., Pribory i Tekhnika Eksperimenta, No 3, May/Jun 73, pp 49-53

obtained results are immediately printed out in the form of tables and graphs, and also appear on the oscillograph screen. Monitoring equipment has been developed, which keeps track of proper operation of the hodoscopes. The first results have been obtained on the scattering of π^--mesons on nuclei at a pulse of 50 gigaelectron volts/sec and of protons within the initial-pulse range of 30-60 gigaelectron volts/sec. 3 figures. 2 tables. 3 references.

2/2

1/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ANNULAR POLARIMETER FOR MEASUREMENTS OF NUCLEON POLARIZATION IN NUCLEAR REACTIONS -U-

AUTHOR-(05)-OEHLER, H., KRIVOPUSTOV, M., SCHIRMER, G., SISOV, I.M., ASFOUR, F.

COUNTRY OF INFO--USSR

SOURCE--NUCL. INSTRUM. METHODS: 77: 292-9(1970)

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEUTRON POLARIZATION, PROTON POLARIZATION, POLAR METER, MONTE CARLO METHOD, ELASTIC SCATTERING, ANGULAR DISTRIBUTION, NUCLEON INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1816 STEP NO--NE/0000/70/077/000/0292/0299

CIRC ACCESSION NO--AP0054650

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054650

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE METHOD OF THE ANNULAR POLARIMETER FOR MEASURING THE NUCLEON POLARIZATION IN NUCLEAR REACTIONS IS DESCRIBED IN DETAIL AND ITS ADVANTAGES AGAINST THE USUAL LEFT RIGHT ASYMMETRY METHOD ARE SHOWN. THE CALCULATIONS OF THE GEOMETRICAL FACTOR AND THE AVERAGED ANALYZING POWER WERE CARRIED OUT USING THE MONTE CARLO METHOD. FOR AN EXAMPLE THE POLARIZATION OF PROTONS FROM THE REACTION PRIME12 C(PRIME3 HE, P SUB0) PRIME14 N(G.S.) AT E(PRIME3 HE) EQUALS 2.87 MEV WAS MEASURED AS A FUNCTION OF THE SCATTERING ANGLE USING THE ELASTIC SCATTERING PRIME12 C(P,P) PRIME12 C AS AN ANALYZER. FACILITY: JOINT INST, FOR NUCLEAR RESEARCH, DUBNA, USSR.

UNCLASSIFIED

SISOYEV L.A.

1.

JPRS 57208

6-73

4

VIII-9a. PERFECTION OF THE STRUCTURE AND MECHANICAL STRENGTH OF SINGLE CRYSTALS OF THE $A^{II}B^{VI}$ TYPE GROWN FROM A MELT AND FROM THE VAPOR PHASE

[Article by L. A. Sisoyev, D. V. Atroshchenko, O. A. Fedorenko, V. V. Kukoli, Khar'kov; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 110]

The single CdS and CdSe crystals grown from a melt under inert gas pressure have the structure of wurtzite and ZnSe, CdTe and ZnTe have the structure of sphalerite. The nonalloyed single crystals of ZnS have the structure of sphalerite but they contain a large number of imperfections connected with the statistical disordering and errors in the superposition of the atomic layers. The type of crystal of ZnS single crystals grown from the vapor phase is determined by the synthesis conditions and, above all, by the temperature.

The etching pictures of different planes of ZnS single crystals grown from a melt and from the vapor phase are compared. A study was made of the microstrength characteristics of single $A^{II}B^{VI}$ crystals as a function of the crystal structure, the degree of its perfection and the lattice parameters.

It was demonstrated that alloying single ZnS crystals with donor admixtures (aluminum) stabilizes the wurtzite structure, and alloying with acceptor admixtures (copper), the sphalerite structure. For alloyed single crystals, a study was made of the anisotropy of the microhardness, and conclusions were drawn regarding the laws of plastic flow caused by the indentor of the microhardness meter.

Sisoyev, V. I.

JPRS 59208

6.73

4

XI-15. STUDY OF THE CRYSTALLIZATION CONDITIONS OF ZINC DIPHOSPHIDE

[Article by V. I. Sisoyev, K. B. Aleynikova, V. P. Syuorov, Ya. A. Ugay, Voronezh State University; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 161]

A study was made of the conditions of crystallization of zinc diphosphide in a broad temperature range (640-1050)°C under the pressure of a volatile component—phosphorus — (0.1-45) atmospheres. Under the selected optimal conditions, single crystals of the black version of ZnP_2 to 30 mm in length and (6-13) mm in diameter were obtained by crystallization from the melts. In the gas phase, monocrystalline plates of the tetragonal (red) version of α-ZnP_2 more than 100 mm^2 in area and (0.3-2) mm thick and also individual single crystals of the black version of ZnP_2 were obtained.

X-ray structural and chemical analyses demonstrated that the single crystals of ZnP_2 of the black version obtained by crystallization from a melt (1) and in the gas phase (2) differ somewhat with respect to composition and structure. The crystals of the first type belong to the monoclinic syngony described earlier. The crystals (2) have rhombic symmetry which occurs as a result of insignificant rearrangement of the monoclinic structure caused by variation of the chemical composition.

USSR

UDC: 632.95

SYPIN, G. S., SISTER, Yu. D., KOZLOVA, I. V.

"Polarographic Methods of Analysis of Pesticides"

Probl. analit. khimii [Problems of Analytic Chemistry -- Collection of Works], Vol 2, Moscow, Nauka Press, 1972, pp 145-155 (Translated from Referativnyy Zhurnal Khimiya, No 24(II), 1972, Abstract No 24N574, by T. A. Belyayeva)

Translation: A review of literature data on the use of classical (differential and indirect) polarography, oscillating and alternating current polarography in the analysis of pesticides. The advantages of the use of oscillating polarography over classical polarography for the determination of residues of various pesticides are demonstrated. A summary table is presented on the application of polarography analysis of 70 pesticides. The possibility is demonstrated of using polarographic methods for the study of the mechanism of action and metabolism of pesticides.

1/1

USSR

UDC 543.8:632.951

LYALIKOV, YU. S. (Editor-in-Chief), Academician of Academy of Sciences Moldavian SSR, VAYNTRAUB, F. P., VYLEGZHANINA, G. F., Candidates of Agricultural Sciences, SISTER, YU. D., Candidate of Chemical Sciences (Editors) Metody Analiza Pestitsidov (Analysis Methods of Pesticides), Moscow, Izdatel'stvo Nauka, 1972

Translation: Annotation: This book includes articles presented at the All-Union Conference on Analysis Methods of Pesticides in Preparations, Food Products, Soil, and Water.

Many analytical problems of pesticides in commercial products are considered, including the determination of their concentration in different objects. The latter is of particular importance for the environment and food products from the point of view of the sanitary and hygiene engineering.

Different analysis methods of pesticides are suggested, including gas and thin-layer chromatography, spectrophotometry, and polarography.

The book is intended for researchers, personnel of industrial laboratories, and sanitary-epidemiological stations.

Foreword: An intensive development of agriculture requires a maximal decrease of losses caused by insects, diseases, and weeds. In order to meet these requirements, chemical protection of plants is needed.

1/8

USSR

LYALIKOV, YU. S., et al., Metody Analiza Pestitsidov, Izdatel'stvo Nauka, 1972

However, a wide application of pesticides and herbicides causes many unwanted aftereffects. Some compounds, chiefly the chlorine-containing organic compounds (DDT, HCCH [hexachlorocyclohexane], heptachlor, and others) are preserved for a long time in plants in a crop. They are also capable of accumulating in organisms of man and animals in quantities dangerous for health. Other compounds (derivatives of carbamic, thio- and dithiophosphoric acids) are highly toxic during their application and they are capable of penetrating the plant and animal organisms and migrate in plants.

Thorough studies must be conducted before wide application of effective compounds. Research scientists of ministries of agriculture, health, and chemical industry are working on problems to find new low-toxic and selective compounds, to establish acceptable residue doses of pesticides in different products of animal and plant origin, and to investigate their behavior in the biological materials.

Solution of the majority of these problems requires the use of highly sensitive and specific analytical methods.

A development of these methods is complicated by the presence of high amounts of the coextractive substances together with the micro-quantities of active substances in samples subjected to analysis. This requires the use of the newest analytical instruments.