forms Mg silicates. The free SiO_2 content in the VK-92 can also be reduced by introducing alkali-earth and alkali-metal oxides. $Tg\delta$ of the VK-92 mass decreases upon introduction of MgO. A plot of conductance against temperature testifies to the fact that the nature of current carriers does not change in this case. Addition of alkali-metal and alkali-earth metal oxides reduces the maximum temperature coefficients of mass expansion and strengthens it mechanically. An ultraporcelain-53 to which 3% of ZrO_2 or SiO_2 was added to improve its cohesion with metals was also investigated. This changed its electrical and mechanical properties slightly. A juxtaposition of the properties of ceramic materials with the characteristics of their fundamental crystalline phases shows that material properties are primarily determined in their amorphous phase. Bibliography: 17 items. Sibirskiy fiziko-tekhnicheskiy institut (Siberian Physics-and-Engineering Institute).

F.B.G.

15(2)

SOV/112-59-2-2333

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 2, p 7 (USSR)

AUTHOR: Presnov, V. A., and Yakubenya, M. P.

TITLE: Ceramic-Metal Vacuumtight Seals
(O vakuumnoplotnykh spayakh keramiki s metallom)

PERIODICAL: Tr. 1-y Mezhvuzovsk. konferentsii po sovrem. tekhn. dielektrikov i poluprovodnikov. 1956, L., 1957, pp 85-91

ABSTRACT: In coating steatite ceramics with molybdenum, the layer of ceramics next to the metal changes its properties. X-ray diffraction study shows that, during the metal-coating, an acid-base interaction between the ceramic components SiO_2, B_2O_3 and the oxides of Mo takes place. It is assumed that Si atoms can diffuse preserving their valence bonds; the diffusion is carried out by a transformation of these bonds between the atoms. To obtain a strong coating, Mo should be fired on in a slightly oxidizing medium where Mo is oxidized to a basic oxide at the ceramic boundary. In this case, the metal-

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SOV/112-59-2-2333

Ceramic-Metal Vacuumtight Seals

ceramic bond is realized through intermediate oxygen atoms. In joining the ceramics by solders that contain active metals (Ti, Zr), a chemical reaction of the solder with the active metal takes place, and intermetallic compounds are formed; also, the active metal reacts with the ceramic components and a junction region is formed Bibliography: 10 items. Sibirskiy fiziko-tekhnich. in-t (Siberian Physics-and-Engineering Institute).

F.B.G.

Card 2/2

SOV/137-57-10-18626

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 10, p 23 (USSR)

AUTHORS: Presnov, V.A., Vyatkin, A.P.

TITLE: The Electrical Conductivity of Magnesite Refractories at Elevated Temperatures (Elektroprovodnost' magnezitovykh ogneuporov pri vysokikh temperaturakh)

PERIODICAL: Tr. Sibirsk. fiz. tekhn. in-ta pri Tomskom un-te, 1956, Nr 35, pp 268-273

ABSTRACT: An investigation is made of the conductivity versus temperature relationships in the 100 900°C range of periclase high refractories of three types, namely, simple magnesite, magnesite with additions, and fused magnesite. The materials investigated have greater resistivity than P at temperatures of under 1000°. Refractories of burnt magnesite demonstrate a semiconductor type of conductivity, while fused magnesite is dielectric. The samples were metallized by soldering to metal.

Card 1/1

A.S.

LAVRENT'YEVA, L.G.; PRESNOV, V.A.

Polymorphism of steatite ceramics. Part 1:X-ray study of the structure of steatite. Izv.vys.ucheb.zav.; fiz. no.4:135-139 '58. (MIRA 11:11)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva.
(Steatite) (Crystallography)

SOV/139-58-5-9/35

AUTHORS: Lavrent'yeva, L. G. and Presnov, V. A.

TITLE: Polymorphism of Steatite Ceramics. II. The Effect of Heat Treatment of the Ceramic on the Composition of the Crystal Phase (O polimorfizme steatitovoy keramiki. II. Vliyaniye temperaturnoy obrabotki keramiki na sostav kristallicheskoy fazy)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, fizika, 1958, Nr 5, pp 48-51 (USSR)

ABSTRACT: This paper was presented at the Conference of Higher Educational Establishments on Dielectrics and Semiconductors, Tomsk, February, 1958. The main crystal component of steatite ceramics is either magnesium metasilicate $MgSiO_3$ or orthosilicate Mg_2SiO_4, the latter in materials with higher concentrations of magnesium oxide. Magnesium orthosilicate (forsterite) exhibits no polymorphic transitions. It is generally assumed (Refs. 1, 2) that magnesium metasilicate exists in 2 modifications: α-clino-enstatite and β-enstatite; these 2 modifications are enantiotropic and the transition

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[illegible]-58-5-9/35

Polymorphism of Steatite Ceramics. II. The Effect of Heat Treatment of the Ceramic on the Composition of the Crystal Phase

temperature lies near 1190°C. A third modification, known as proto-enstatite, consists of clino-enstatite with a somewhat deformed crystal lattice. Some workers (Refs.3-6) regard proto-enstatite as a separate modification of magnesium metasilicate. A fourth modification, called δ-$MgSiO_3$, has also been reported (Ref.7). The present paper deals with X-ray crystallographic studies of steatite samples which have undergone various thermal treatments. The authors investigated polymorphism and stability of modifications of $MgSiO_3$. The authors used materials whose predominant crystal phase was in the form of proto-enstatite and subjected them to thermal treatment in order to study stability of clino-enstatite. Thermal treatment below 1000°C and of several hours' duration produced a small increase in the amount of clino-enstatite. Transformation into clino-enstatite occurs faster if the material is in powder form. Longer treatments produce complete transformation of proto-enstatite into clino-enstatite. Heating the ceramic for 25 hours at 1150°C transforms clino-enstatite into proto-enstatite (Table 1). Longer heating with LiF flux

Card 2/4 induces the reverse transformation with proto-enstatite chang-

Polymorphism of Steatite Ceramics. II. The Effect of Heat Treatment of the Ceramic on the Composition of the Crystal Phase

ing into clino-enstatite on cooling to room temperature. The authors also studied the structure of samples subjected to multiple heating at temperatures close to the firing temperature. The relative changes in the amounts of proto-enstatite and clino-enstatite, deduced from the X-ray crystallographic data, are shown in Fig.1. Composition of 4 ceramics (VK-91, M-4, K-1, K-2) studied is given in Table 2; all 4 of them consist mainly of talc. The following conclusions are made from the results obtained. 1) Proto-enstatite is the stable modification of $MgSiO_3$ at high temperatures. 2) A polymorphic transition of proto-enstatite into clino-enstatite, accompanied by a change in volume, is possible on cooling of a sample, on heat treatment below 1000°C and in storage. 3) The change in volume occurring in the polymorphic transition referred to above may be the reason for the poorer mechanical strength and the loss of impermeability to gases useful in vacuum work. 4) The rate of polymorphic transformations depends on the composition of the glassy phase of the ceramic and on the dimensions of crystallites; the rate increases with decrease of viscosity of the glassy phase and with increase of dimensions of proto-

Polymorphism of Steatite Ceramics. II. The Effect of Heat Treatment of the Ceramic on the Composition of the Crystal Phase

enstatite crystallites. 5) The mechanical strength of steatite ceramic materials increases with decrease of the free silicon content in the form of cristobalite, as shown in Fig.2 (data on mechanical strength were obtained from the laboratory directed by Kh. B. Kogan). The work reported in the present paper is part of a wider programme at the Siberian Physico-Technical Institute, carried out in conjunction with engineers. There are 2 figures, 2 tables and 9 references, 5 of which are Soviet and 4 German.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V. V. Kuybysheva (Siberian Physico-Technical Institute at Tomsk State University im.V.V.Kuybyshev)

SUBMITTED: March 19, 1958.

[illegible]169-58-5-11/35

AUTHORS: Presnov, V. A. and Zasypkina, A. R.

TITLE: Investigation of the Contact Between a Semiconductor and a Metal with an Intermediate Insulating Layer (Issledovaniye kontakta poluprovodnika s metallom s promezhutochnym sloyem izolyatora)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, fizika, 1958, Nr 5, pp 55-59 (USSR)

ABSTRACT: This paper was presented at the Conference of Higher Educational Establishments on Dielectrics and Semiconductors, Tomsk, February, 1958. Rectification of an alternating current is possible at a contact of a semiconductor with a metal, the two being separated by a thin layer of a dielectric (Refs.1-4). The authors investigated systems consisting of a germanium semiconductor (5-7 Ω.cm resistance, dimensions 5 x 5 x 2 mm), a lacquer layer and a metal plate (silver, magnesium or lead). The germanium surface was polished and etched in hydrogen peroxide. One side of the germanium plate was painted with a layer of polystyrene, linoxyn (oxidised linseed oil) or vinyflex lacquer. The other side of the germanium plate had a layer of tin deposited on it to produce an ohmic contact. Measurements of the distribution of potential in such systems showed that the potential falls mainly (90% and

Investigation of the Contact Between a Semiconductor and a Metal with an Intermediate Insulating Layer

mobile in the blocking direction) at the rectifying contact. Volt-ampere characteristics were obtained for the samples studied. The rectification coefficients were of the order of 100 to over 10 000 at 1 V applied voltage. The lacquer layer thickness, found by weighing, was of the order of 0.001cm. Rectification in many samples was still quite high at voltages of 10-30 V. The dynamic characteristics show a loop in the blocking direction (Fig.2). The static characteristic of a sample covered by linoxyn lacquer and with a lead electrode, is shown in Fig.3. The forward (conducting) direction corresponds to the positive potential on the metal. The effects observed do not depend greatly on the work function of the materials in contact. The dynamic and static characteristics of the same sample with electrodes of silver and magnesium differ somewhat in the forward direction (Fig.4). The lacquer films were found to have defects (pin-holes). Schottky (Ref. 17) indicated that such defects may play an important role in

Investigation of the Contact Between a Semiconductor and a Metal with an Intermediate Insulating Layer

rectification at insulating barrier layers, but this is disputed by other authors (Refs.3-8). The present authors found that the samples with defects in the lacquer film possess considerable rectification coefficients (over 1000) if the electrodes are of the pressure type. Deposition of electrodes by evaporation in vacuo lowers the rectification coefficients very considerably. These coefficients are also lowered if the press-on electrodes are placed on such parts of the lacquer film which are free of defects. Very high rectification coefficients (of the order of several thousand) were also obtained in systems with an insulating KCl and S layers deposited in vacuo on germanium plates. Mercury electrodes were used in this case and the optimum thickness of the dielectric was found to be 10^{-4} cm. As in the case of the lacquer films, vacuum deposition of electrodes produced a lowering of the rectification coefficient. Rectification via an insulating layer was dealt with theoretically by Pekar and Mott in 1939. Their work was extended by Gilinskiy and Cheglokov (Ref.5), who allowed for the fall of potential across the semiconductor. Conduction through a very thin dielectric is possible by means of the tunnel effect. Thermal injection of electrons into the

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Investigation of the Contact Between a Semiconductor and a Metal with an Intermediate Insulating Layer

conduction band of the dielectric is possible at larger dielectric thicknesses. The high field strength in the dielectric may also contribute (Ref.6) to the rectification mechanism. The present authors add that the formation of a p-n junction in the semiconductor is also possible. The energy bands in the semiconductor next to the dielectric may be so deformed as to produce a p-layer in an n-type semiconductor. There are 4 figures and 8 references, 4 of which are Soviet, 2 German, 1 Dutch and 1 Soviet translated from English.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V. V. Kuybysheva (Siberian Physico-Technical Institute at Tomsk State University imeni V. V. Kuybyshev)

SUBMITTED: March 20, 1958.

SOV/112-58-2-1877

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 2, p 13 (USSR)

AUTHOR: Presnov, V. A., and Yakubenya, M. P.

TITLE: Metal-Ceramic Seals (Spaivaniye keramiki s metallom)

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1956, Vol 91, pp 437-451

ABSTRACT: Metal-ceramic parts obtained by joining ceramic parts with metallic ones find wide application in electro-vacuum and capacitor technology. Joining metal to ceramics is a complicated process, and the phenomena accompanying it are as yet little known. The following conventional methods for making a hermetic and mechanically solid metal-ceramic seal are considered: (1) metal-oxide seals; (2) compacted-powder seals; (3) Ti-hydride and active metal seals; (4) ceramics coated with high-melting metal (W, Mo, Re) powders. The intention of the investigation was to find a transition region in the metal-ceramic seal, and to study its formation and structure. Seals between a metal and steatite vacuum-tight BK-92 ceramics obtained by molybdenum coating method were tested. It is pointed out that a vacuum-tight seal between ceramics

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Metal-Ceramic Seals

and metal is realized as a result of acid-base interaction between ceramic components and molybdenum oxides. Effect of surface adhesion and mechanical cohesion on the seal tightness is of secondary importance. A decisive factor in obtaining a tight seal is the control of molybdenum oxidation up to a certain oxide at the boundary with the ceramic. If the ceramic has an acid characteristic, the adjoining molybdenum surface should be oxidized up to a basic oxide, and conversely, if the ceramic has a basic characteristic, the adjoining molybdenum surface should be oxidized up to an acidic oxide. The more pronounced the difference in acidity-basicity of the interacting components, the tighter, apparently, is the resulting seal. Oxygen for molybdenum oxidation is derived from a gas medium. As a result of a chemical interaction between ceramic components and molybdenum oxides, a transition layer consisting of reaction products is formed between the ceramics and molybdenum. The transition layer forms in a step-by-step manner and passes a number of intermediate active states. The transition region may comprise molybdenum

Metal-Ceramic Seals

silicates and borates, and also products of interaction between molybdenum oxides and more complicated ceramic components. Fundamental phenomena which take place in metal-ceramic seals are due to diffusion processes accompanied by partial breaks in valency bonds. The diffusion mechanism of the seal is corroborated experimentally by x-ray studies.

M.D.M.

Card 3/3

SOV/137-58-8-17564

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 194 (USSR)

AUTHOR: Presnov, V.A.

TITLE: On the Electronic Theory of Strong Cohesion Between the Surfaces of Metallic and Nonmetallic Bodies (K voprosu ob elektronnoy teorii prochnogo soyedineniya poverkhnostey metallicheskikh i nemetallicheskikh tel)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy, Fizika, 1957, Nr 1, pp 103-110

ABSTRACT: The results of the investigations of welding of glass and ceramics with metals conducted at the Siberian Institute of Physical Technology are generalized. A transitional layer of changing composition and structure forms in the process of welding together of heterogeneous materials. A single electronic process of formation of a strong cohesion is proposed, issuing from the conception of the donor-acceptor interrelationship. The formation of a stronger cohesion between glass and ceramics with metal in cases when the interaction of basic and acid oxides takes place is explained from this point of view. Two stages stand out in the process of the formation of a

Card 1/2

On the Electronic Theory of Strong Cohesion (cont.)

strong bond. In the preparatory stage occurs the oxidation of the metal and the wetting of its surface with molten glass, i.e., the conditions for electronic interaction are provided. In the second stage the transitional region of changing composition and structure forms creating strong bonds of the valence type. The mechanism of welding heterogeneous materials with the aid of active Ti- and Zr-base solder alloy is discussed.

M K.

1. Metals--Bonding 2. Glass- Bonding
3. Ceramic materials--Bonding
4. Adhesion--Theory

Card 2/2

AUTHORS: Lavrent'yeva, L. G. and Presnov, V. A. SOV/139-58-4-22/30

TITLE: On the Polymorphism of Steatite Ceramics
(O polimorfizme steatitovoy keramiki)
I. X-ray Investigation of the Structure of Steatite
(I. Rentgenograficheskiye issledovaniya struktury steatita)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, 1958, Nr 4, pp 135-139 (USSR)

ABSTRACT: Paper presented at the Inter-University Conference on Dielectrics and Semiconductors, Tomsk, February, 1958. In the past much attention has been paid to the physical and technological properties of the manufacture of steatite but too little attention has been given to the microscopic processes, i.e. to structural changes, in spite of the fact that these changes govern the observed changes in properties. The main aim of the here described work was to study the structure and structural changes of vacuum-tight ceramics. The process of forming was studied of the crystalline component of various steatite materials which were produced by pressing and also by casting under pressure in the hot state. First, the structural studies are described of specimens produced by

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pressing. In studying the ceramic material VK-92 (B) the lines enumerated in Table 1, p 156, were selected as being the most characteristic for each phase under consideration. The changes of the phase composition of this ceramic is graphed in Fig.1a; it can be seen that up to 850°C talc predominates, then, due to decomposition of the talc, an intermediate product, hydroenstatite, forms which becomes transformed at more elevated temperatures into protoenstatite; the silica which separates out during the decomposition manifests itself in the X-ray patterns as christobalite from 1100°C onwards. Specimens fired above 1250 to 1320°C show a partial transformation of protoenstatite into clinoenstatite but even specimens fired at 1400°C contain magnesium metasilicate, predominantly in the form of protoenstatite. Magnesium oxide additions between 1 and 6% were tried and also barium oxide additions as well as additions of oxides of alkali metals (1% Na_2O or K_2O). In Table 2 an enumeration is given of the bending strength of specimens from three types of materials produced by casting under pressure and, for

comparison, the data for the same materials are given if produced by pressing. Some of the results obtained on specimens produced by casting under pressure in the hot state are graphed in Fig.3 and it can be seen that generally the dependence of the phase composition on the temperature is comparable for all the tested ceramic materials. The determined higher mechanical strength of ceramic materials produced by casting under pressure is attributed to the absence of polymorphous transformations of magnesium metasilicate, due to the stabilisation of protoenstatite and also to the saturation of the glass phase and possibly also of the crystal phase with silica which results in an improvement in the physico-chemical and mechanical properties of the glass phase, which in turn brings about a stabilisation of the protoenstatite. The results are summarised thus:

1) It was found that additions of magnesium oxide bring about a transformation of the protoenstatite into clinoenstatite, whilst BaO, Na_2O and K_2O brake such transformation. This is probably due to the change in the composition of the glass phase resulting from the

On the Polymorphism of Steatite Ceramics SOV/139-58-4-22/30

simultaneous transformation of the silica into the glass phase.
2) During firing of cast specimens, a transformation of clinoenstatite into protoenstatite was observed (1100-1150°C). The formed protoenstatite has a higher stability to polymorphism and this can be due to either a partial dissolution of the christobalite into the glass phase, which brings about an increase in viscosity, or formation of a solid solution of silica in the protoenstatite which slows down the process of polymorphous transformation. There are 3 figures, 2 tables and 7 references, 6 of which are Soviet, 1 English.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V. V. Kuybysheva
(Siberian Physico-Technical Institute at the Tomsk State University imeni V. V. Kuybyshev)

SUBMITTED: March 19, 1958

Card 4/4

PRESNOV, V. A.

Docent V.A.Presnov and others (SFTI)
Investigations of the vacuum-tight ceramic structure and the nature of the ceramic-metal boundary.

Report presented at a Conference on Solid Dielectrics and Semiconductors, Tomsk Polytechnical Inst., 3-8 Feb. 58.
(Elektrichestvo, '58, No. 7, 83-86)

PRESNOV, V.A.; GAMAN, V.I.

Electric conductivity of glass and its dependence on the strength of an electric field. Izv. vys. ucheb. zav.; fiz. no.2:92-94 '58. (MIRA 11:6)

1.Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete im. V.V. Kuybysheva.
(Glass--Electric properties)

PRESNOV, V.A.

USSR/Electricity - Dielectrics

G-2

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1242

Author : Presnov, V.A., Gaman, V.I.

Inst : Siberian Physical-Technical Institute, Tomsk.

Title : Dependence of the Electric Conductivity of Glass on the Electric Field Intensity.

Orig Pub : Zh. tekhn. fiziki, 1957, 27, No 5, 936-939

Abstract : A formula is derived, characterizing the electron conductivity in a strong electric field.

Card 1/2

PRESNOV, V.A.

120-5-31/35

AUTHORS: Presnov, V.A., Pyatnichuk, G.K., and Synorov, V.F.

TITLE: An Instrument for the Measurement of Electrical Conductivity and Hall's Constant in Thin Semi-conducting Layers. (Pribor dlya izmereniya elektroprovodnosti i postoyannoy kholla v tonkikh sloyakh poluprovodnikov)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.5, pp. 119-120 (USSR).

ABSTRACT: The instrument (Fig.1) can be used for rapid measurement of electrical conductivity and Hall's constant for given areas on thin specimens deposited on slides of glass or other dielectric material. The slide 3 with the deposited samples 4 is kept in position by the cam 2 on a moveable table 1. The table moves on a lath along the guide 7. The fixer 5 keeps the table and, consequently, also the sample in the required positions. A panel 8 on a moveable table has current, compensation and Hall electrodes 6 attached to it. This panel is kept in place by springs 13 and is moved by means of the lever 9 and cam 10, perpendicularly to the plane of the specimen, and keeps the direction of motion by means of the four rods 12. The electrodes can move freely along the bushes, pressed into the panel, under the action of bronze springs 11. The scheme produces the

 necessary control of contact pressure on the specimen and the

An Instrument for the Measurement of Electrical Conductivity and Hall's Constant in Thin Semi-conducting Layers.

panel can be raised when the table 1 carrying the specimen is moved. The simple construction of the electrodes means that one can have a collection of electrodes made from different materials and having contact surfaces of different form and size, and that one can deposit on their surface various coatings. When working with very thin layers one can put end pieces of soft metal (e.g. indium or tin) on the ends of the electrodes to protect the layer. The distance between the electrodes on the panel can be varied depending on the size of the sample. The samples were deposited on slides 23 x 80 mm^2 in area, the surface area of the samples themselves being 23 x 50 mm^2. After the deposition, the latter surface is divided by means of a standard pattern into sections 23 x 4 mm^2 with gaps of 1 mm between them. The device is suspended between the poles of an electromagnet on two pivots 14, connecting the device with a platform placed on the windings of the electromagnet. Provision is made for the control of the position of the device between the poles of the electromagnet. The device lies in a gap of 25 mm between the poles of the electromagnet. Brass was used for the metallic parts and organic glass for insulation. Measurements were carried out (Ref.1) of

120-5-31/35

An Instrument for the Measurement of Electrical Conductivity and Hall's Constant in Thin Semi-conducting Layers.

the properties of thin layers of separate elements obtained by evaporation in a vacuum and also of thin layers of binary specimens obtained by Vekshinskiy's method (Ref.2) from elements of group III and V of the periodic table. By a comparison of the distribution of electrical properties along the length of a specimen, and the distribution function of concentration of the components calculated from Vekshinskiy's formulae, it is possible to obtain the dependence of electric properties on composition in a wide range of concentrations of the binary alloy. Fig. 2 shows the results of measurements of specific resistance of a thin layer of variable composition of indium-antimony. There are 2 figures and 2 Slavic references.

ASSOCIATION: The Siberian Physico-technical Scientific Research Institute TGU (Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut TGU)

SUBMITTED: April 1, 1957.

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Synorov, V.F., and Presnov, V.A. 120-6-33/36

TITLE: Method of Investigating the Electrical Properties of Thin Layers on an Insulated Base in a High Vacuum (Metodika issledovaniya elektricheskikh svoystv tonkikh sloyev na izoliruyushchey podlozhke v vysokom vakuume)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.6, p. 115 (USSR).

ABSTRACT: Investigation of the electric conductivity, the thermal e.m.f. coefficient and the Hall constant of thin layers of semi-conductors deposited on a glass base in vacuum requires evolving special methods of measurement.. Frequently, new experimental tasks occur, for instance, investigation of the properties of specimens stored for a long time in a high vacuum. This task imposes the necessity of ensuring the possibility of repetition of the measurements at definite intervals of time, maintaining the ambient conditions constant. The solution of these problems is possible if mechanically-strong and stable specimens of ohmic contacts are available. In this paper, a method is described of producing such contacts for specimens which are then fitted into an ampule 200 mm long, 15 - 20 mm dia. with 6 external leads. The sequence of the operations is illustrated by Fig.1, p.115. It is based on

Card1/3

Method of Investigating the Electrical Properties of Thin Layers on an Insulated Base in a High Vacuum.

cutting off a certain length of the glass ampule, soldering on the specimen at the bottom of the leads and then replacing the cut-off part of the glass ampule which is joined to the other part of the ampule by applying heat. In the case of thin layers, deposited on pure glass or on pure quartz, this method permits obtaining mechanically-strong and stable contacts. To prevent destruction of the thin layer, no soldering flux is used; the molten indium diffuses through the deposited layer and forms a strong bond with the base. After soldering of the specimen, the cut-off part of the ampule is replaced and joined on by applying heat (Fig.1, d). The fact that the specimen and the contacts are at a distance of 12 to 15 cm from the point of soldering on of the glass prevents their being heated. Following that, the ampule is evacuated and then sealed. The ampules also contain two thermocouples and two platinum leads. This method was used for investigating the temperature dependence of the electric properties of thin layers of AlSb, InSb and GaSb deposited by means of the method of S.A. Vekshinskiy on a glass base.

Card2/3 There is 1 figure and 4 references, 3 of which are Slavic.

120-6-33/36

Method of Investigating the Electrical Properties of Thin Layers on an Insulated Base in a High Vacuum.

ASSOCIATION. Siberian Physico-technical Scientific Research Institute (Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy Institut)

SUBMITTED: May 18, 1957.

AVAILABLE: Library of Congress

Card 3/3

PRESNOV, V.A.; GAMAN, V.I.

On the relation between the electric properties of crystals and the crystal lattice constants. Dokl. AN SSSR 114 no.1:67-69 My '57. (MIRA 10:7)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete im. V.V. Kuybysheva. Predstavleno akademikom A.F. Ioffe.

(Crystals--Electric properties)

Presnov, V. A.

USSR/Chemical Technology. Chemical Products and Their Application -- Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5181

Author: Presnov, V. A.

Institution: Academy of Sciences USSR

Title: I. Electric Conductivity of Glasses in Strong Electric Fields
II. Wetting of Metals by Glass

Original Publication: Sb. Stroyeniye stekla, M.-L., AN SSSR, 1955, 267-269

Abstract: Specific dependence of electric conductivity of glasses in strong electric fields and the presence of maxima on the corresponding curves, are attributed to the possibility of reversible structural transformations in glasses. Better wetting of metals by glasses has been ascertained when these metals have a surface of lower degree of oxidation. Wetting becomes worse on an increase of the degree of oxidation of the metal surface. This, in the opinion of the author, indicates that the process of wetting and the process of welding of glass and metal take place as a result of chemical interaction of silica with the corresponding metal oxides.

Card 1/1

NEKRASOV, K.D., doktor tekhn.nauk, prof.; PRESNOV, V.I., kand.tekhn.nauk

Heat-resistant asbestos cement. Trudy NIIZHB no.7:5-29 '59. (MIRA 12:11)

(Asbestos coment)

L 15623-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD JD
ACCESSION NR: AP3006726 S/0285/63/000/007/0019/0019 60

AUTHOR: Presnova, L. A.; Ruchen'kina, N. F.; Shvarts, A. A.; Yerastova, V. I.

TITLE: Magnetostriction ferrite. Class 21, No. 153755

SOURCE: Byul. izobret. i tovarn. znakov, no. 7, 1963, 19

TOPIC TAGS: magnetostriction ferrite, ferrite, ferric oxide, cobalt oxide, nickel oxide, copper

ABSTRACT: This Author Certificate was issued for a magnetostriction ferrite made from solid solutions of nickel and cobalt salts designed to ensure temperature stability of the resonant frequency and constant electromechanical coupling coefficient in the +60 to -60C temperature range. The ferrite was prepared from 50—55 mol% Fe_2O_3, 0.2—0.4 mol% CoO, 42—47 mol% NiO, and an admixture of 2—5 mol% copper.

ASSOCIATION: none

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FRESNOVA, Zh.F.; CHERNOV, V.A., prof.

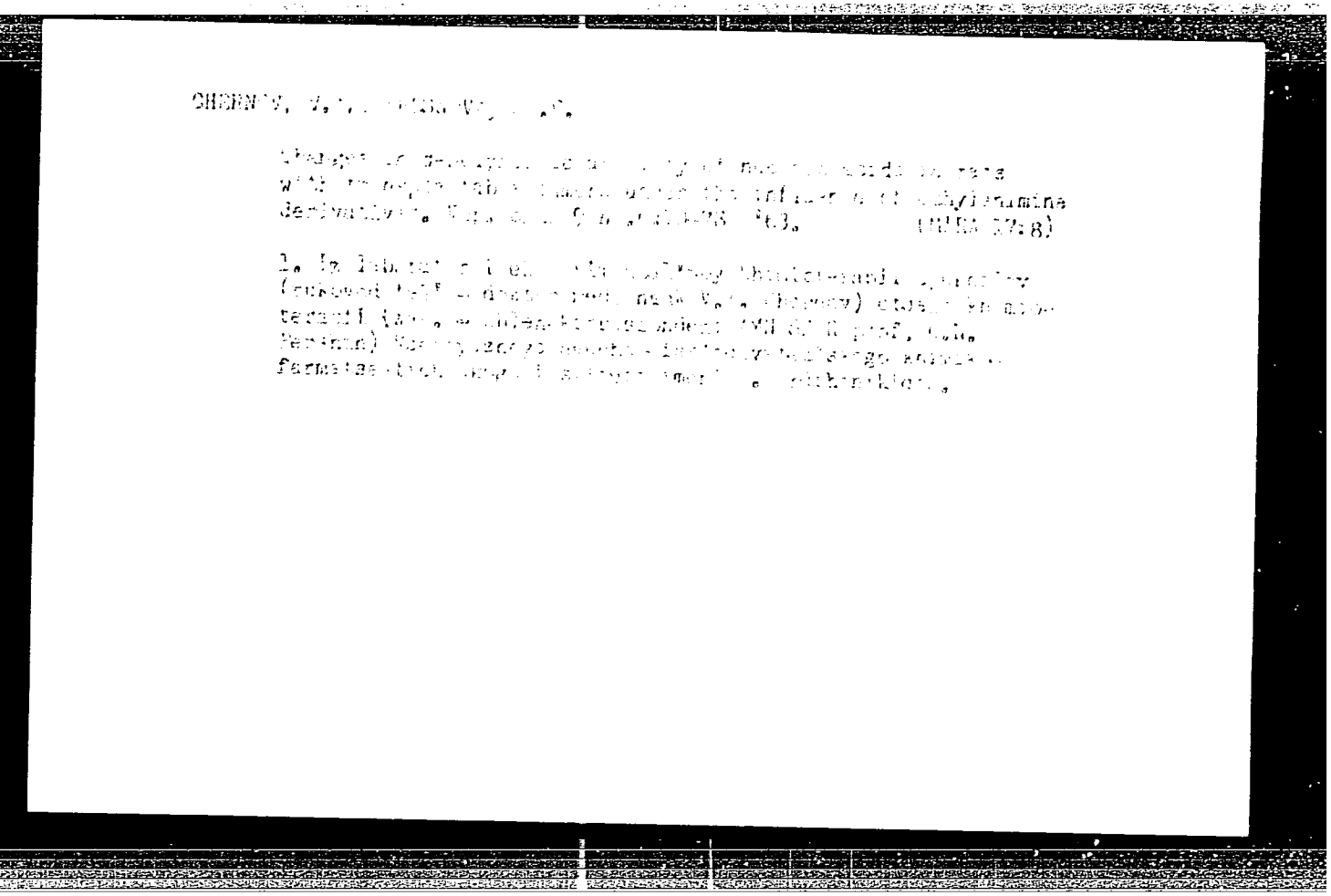
Effect of the triethyleneimide of phosphoric acid on the glycogen content in the liver of rats with transplantable tumors. Farm. i toks. 28 no.5:581-584 S-O '65. (MIRA 18:12)

1. Laboratoriya eksperimental'noy khimioterapii opukholey (rukovoditel' - prof. V.A.Chernov) otdela khimioterapii (rukovoditel' - chlen korrespondent AMN SSSR prof. G.N. Pershin) Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni S.Ordzhonikidze, Moskva. Submitted June 25, 1964.

PRESNOVA, Zh.F.; CHERNOV, V.A.

Changes in the antineoplastic activity of thiophosphamide under the influence by adrenaline under experimental conditions. Biul.eksp.biol.i med. 58 no.10:90-92 O '64. (MIRA 18:12)

1. Laboratoriya eksperimental'noy khimioterapii opukholey (rukovoditel' - doktor med.nauk V.A.Chernov) otdela khimioterapii (zav. - chlen-korrespondent AMN SSSR prof. G.N. Pershin) Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni Ordzhonikidze, Moskva.



28(2) PHASE I BOOK EXPLOITATION SOV/3254

Moscow. Vyssheye tekhnicheskoye uchilishche imeni Baumana.

Schetno-reshayushchiye pribory (Computers) Moscow, Mashgiz, 1959. 84 p. (Series: Its: Sbornik trudov, vyp. 82) 6,000 copies printed.

Ed.: S. O. Dobrogurskiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: A. L. Tairova; Tech. Ed.: A. F. Uvarova; Managing Ed. for Literature on Machine Building and Instrument Making (Mashgiz): N. V. Pokrovskiy, Engineer

PURPOSE: This collection of articles is intended for engineers, scientific personnel and students working in the field of computers.

COVERAGE: This is a collection of articles compiled by the department of computers at MVTU and devoted to analysis of computer components: diode circuits which perform mathematical operations; drive circuits with a servomotor in the form of a powder magnetic

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clutch, with a mushroom-shape friction clutch and with a friction clutch of the Svetozarov system; investigation of a pulse tracking system and of the drifts occurring in a single-shaft gyrostabilizer. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

and, consequently, in low inertia. The author presents several schematic diagrams of various types of function generators and derives their equations according to functions of these generators (reproduction of a parabola, sine and cosine functions, multiplication of two independent variables, etc.). The author concludes that errors occurring in the operation of diode function generators are mostly errors of method and instrument errors.

Chetverikov, V. N. Candidate of Technical Sciences. Tracking Drives With Powder Magnetic Clutches 22

The author investigates the possibilities of developing drives with position control or with the rate of change of position or with both methods combined. A powder magnetic clutch was used as the actuating element. As setting elements, a potentiometer and a tachogenerator were used. From these a voltage proportional to the angle and speed of rotation of the flywheel is delivered as the input signal, from which a corresponding clutch velocity is

obtained. The author establishes equations for the system, determines its efficiency and investigates methods for its improvement.

Presnukhin, L. N. Doctor of Technical Sciences, Professor. Components of Semi-automatic Drives 29

The author describes various types of mechanical variable speed drives. Three types of friction mechanisms are described and the principles of their operation presented: the disk friction clutch, the mushroom-shaped friction clutch and the friction mechanism of Svetozarov. Characteristic equations and some specifications of these three types are presented.

Smirnov, Yu. M., Candidate of Technical Sciences. Investigation of Tracking Systems Operating Under Pulse Conditions 44

The author investigates the quality of performance of a semi-automatic tracking system with a manual drive. Assuming the linearity of the system and, consequently,

utilizing the superposition principle, the author finds optimum values of system parameters by comparing results obtained from the investigation of the three most characteristic features of the operation of tracking systems under pulse conditions. These features are: 1) effect of the initial error of the indicator device on the stability and quality of the tracking system. 2) distortion of the coordinate incoming on the system input by tracking errors and the determination of the accuracy of continuous adjustment of this coordinate. 3) effect of acceleration in the rate of change of the input coordinate on the value of the systematic error of adjustment. The results of investigation of these three cases permit making recommendations as to the selection of optimum values of the basic system parameters and particularly, of the optimum value of the time constant of the drive. This, in turn, permits calculating the function generator of the system according to the pulse sequence periods, which change within wide limits.

Computers (Cont.) 30V/3254

Nikitin, Ye. A. Candidate of Technical Sciences. Drifts of a Single-Shaft Stabilizer During the Swinging of Its Framework 77

The author assumes that the swingings are harmonic and have a small amplitude and that harmful Coulomb friction and damping moments act along the stabilization axis, Y. The author derives equations for the system and derives a formula for the averaged drift velocity.

AVAILABLE: Library of Congress

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JP/mmh
4-11-60

PRESNUKHIN, L.N., doktor tekhn. nauk, prof.

Elements of semiautomatic drives. [Trudy] MVTU no.82:29-43 '59.
(MIRA 13:3)

(Electric driving)

PHASE I BOOK EXPLOITATION SOV/4276

Presnukhin, Leonid Nikolayevich, Doctor of Technical Sciences, Professor, Lev Aleksandrovich Serebrovskiy, and David Berkovich Yudin

Osnovy teorii i proyektirovaniya priborov upravleniya (Fundamentals of the Theory and Design of Control Devices) Moscow, Oborongiz, 1960. 263 p. Errata slip inserted. 10,000 copies printed.

Ed. (Title page): L.N. Presnukhin, Doctor of Technical Sciences, Professor; Ed. (Inside book):; S.O. Dobrogurskiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: M.F. Bogomolova; Tech. Ed.: V.I. Oreshkina; Managing Ed.: S.D. Krasil'nikov, Engineer.

PURPOSE: This is a textbook for students of schools of higher technical education. It may also be useful to engineers and technicians working in industry and in scientific research institutes.

COVERAGE: The book discusses the theory and practice of designing the fundamental elements of artillery control devices, tracking systems for the continuous measurement of the moving coordinates of a target, differentiating-adjusting devices for the determination of the parameters of target motion, and the adjustment of errors obtained in the process of measuring the moving coordinates of the target. Impact solving methods which reduce to the combined solution

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of a system of equations by means of servosystems are cited. Information on ballistic functions and devices for their solution are given. The book was written on the initiative of P.P. Chechulin on the basis of material selected and systematized by the authors. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

PHASE I BOOK EXPLOITATION SOV/4233

Moscow. Vyssheye tekhnicheskoye uchilishche

Raschety detaley i mekhanizmov tochnykh priborov; sbornik statey (Design of Parts and Mechanisms of Precision Instruments; Collection of Articles) Moscow, Mashgiz, 1960. 260 p. 5,000 copies printed.

Ed. (Title page): T. A. Gevondyan, Doctor of Technical Sciences, Professor; Ed. (Inside book): Ya. G. Alaverdov, Engineer; Tech. Ed.: A. F. Uvarova; Managing Ed. for Literature on Machine Building and Instrument Making (Mashgiz): N. V. Pokrovskiy, Engineer.

PURPOSE: This collection of articles is intended for scientific workers and engineers engaged in instrument making.

COVERAGE: The results of investigations on making instruments with complex and design-perfect parts, pairs, and mechanisms, it is claimed, are published here for the first time. The articles cover theory and methods of spherical cogwheel engagement, a new method of manufacturing toothed wheels with

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alternating ratio within one revolution, a universal method for designing an oscillating system for stability by means of complex variables, and precision methods for designing brake centrifugal governors used in instrument design. Some of the articles are accompanied by Soviet and non-Soviet references. No personalities are mentioned.

TABLE OF CONTENTS:

112-57-7-14984

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 7, p 168 (USSR)

AUTHOR: Presnukhin, L. N.

TITLE: Methods of Investigating Semiautomatic Tracking and Regulation Systems (Metody issledovaniya sistemy poluavtomaticheskogo slezheniya i regulirovaniya)

PERIODICAL: Sb.: Schetno-reshayushchiye pribory, Moscow, Oborongiz, 1955, pp 6-12

ABSTRACT: Methodology of the problem of investigating regulating systems in which a man (operator) takes part is presented. It is pointed out that the experiment should be combined correctly with calculations, that physiological data of the operator should be taken into consideration, that human reactions should be expressed as mathematical functions, and that the functions should be introduced into the system equations. As a result of testing models, it is pointed out that tracking errors depend materially on the indicator sensitivity and on the multiplying factor of one revolution of the controller. Sensitivity of fine reading should be of such value that the fine-reading limit is not lower than

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112-57-7-14984

Methods of Investigating Semiautomatic Tracking and Regulation Systems

the coarse-reading error. Reduction of the one-revolution multiplier of the controller is limited by the permissible speed of flywheel rotation. An experimental formula is presented for permissible flywheel speed as a function of the operator's power and the load torque.

L. I. T.

Card 2/2

PRESNUKHIN, L.N., kandidat tekhnicheskikh nauk, dotsent.

Methods for investigating semiautomatic tracking and control systems. [Trudy] MVTU no.49:6-12 '55. (MIRA 9:7)
(Automatic control) (Servomechanisms)

PRESNUKHIN, L.N., kandidat tekhnicheskikh nauk, dotsent.

Cam mechanisms. [Trudy]MVTU no.49:73-102 '55. (MLRA 9:7)
(Cams)

PRESNUKHIN, L.N., kandidat tekhnicheskikh nauk, dotsent.

Methods for investigating semiautomatic tracking and control systems. [Trudy] MVTU no.49:6-12 '55. (MLRA 9:7)
(Automatic control) (Servomechanisms)

DOBROGURSKIY, Sergey Osipovich, prof.; KAZAKOV, Vyacheslav Antipovich, dotsent; TITOV, Viktor Konstantinovich, dotsent; PCHEL'NIKOV, N.I., prof., doktor tekhn.nauk; retsenzent; PRESNUKHIN, L.N., prof., doktor tekhn.nauk, nauchnyy red.; BOGOMOLOVA, M.F., izdat.red.; ROZHIN, V.P., tekhn.red.

[Computing machines] Schetno-reshaiushchie ustroistva. Moskva, Gos.izd-vo obor.promyshl., 1959. 463 p. (MIRA 12:8)
(Calculating machines)

ACC NR: AM6008486 Monograph UR/

Presnukhin, Leonid Nikolayevich; Smirnov, YUriy Matveyevich; Solomonov, Lev Anatol'yevich; Temnov, Ivan Vasil'yevich

Principles of computer design (Osnovy rascheta i proyektirovaniya schetno-reshayushchikh ustroystv) Moscow, Izd-vo "Vysshaya shkola", 1965. 459 p. illus., biblio. Textbook for students of technical higher educational institutions. 10,000 copies printed.

TOPIC TAGS: computer design, computer component, *pulse counter*

PURPOSE AND COVERAGE: This textbook has been approved by the Ministry of Higher and Secondary Special Education USSR and is intended for students in advanced instrument-building courses in schools of higher education. It may also be useful to designers, engineers, and technicians concerned with calculation and design of computers and mathematical machines. The author's intention was to create a practical manual on the calculation and design of computers and calculators containing typical examples of calculations as well as recommendations on the selection of elements and the construction of designed circuits, taking their operating conditions, production, and technology into consideration. Ch.I and III were written by L. N. Presnukhin, Ch.II by I. V. Temnov, Ch.IV. by Yu. M. Smirnov, and Ch.V. by L. A. Solomonov

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The general arrangement was supervised by L. N. Presnukhin. There are 36 references, all Soviet.

TABLE OF CONTENTS:

ACC NR: AM6008486

AVAILABLE: Library of Congress

SUB CODE: 09/ SUBM DATE: 16Jun65/ ORIG REF: 036

Card 3/3

PRESNUKHIN, N.

Fixture for peat unloading. Avt.transp. 41 no.1:54 Ja '63. (MIRA 16:2)

(Peat machinery)

GRINEVA, A.V.; PRESNYAK, N.T.

Reaction of thallium (III) chloride with glycol. Zhur. ob. khim. 32 no.1:316-317 Ja '62. (MIRA 15:2)

1. Odesskiy gosudarstvennyy universitet imeni I.I.Mechnikova. (Thallium chloride) (Glycols)

PRESNYAK, S.I.

"The Influence of Anti-reticular Cytotoxie Serum (ATsS) on the Effectiveness of the Fattening of Young Steers of the Large Horned Cattle";

dissertation for the degree of Candidate of Agricultural Sciences
(awarded by the Timiryazev Agricultural Academy, 1962)

(Izvestiya Timiryazevskoy Sel'skokhozyaystvennoy Akademii, Moscow, No. 2, 1963, pp 232-236)

PRESNYAK, S.I., starshiy nauchnyy sotrudnik

Use of antireticular cytotoxic serum. Veterinariia 39 no.9: 60-61 S '62. (MIRA 16:10)

1. Tambovskaya oblastnaya sel'skokhozyaystvennaya opytnaya stantsiya.

PRESNYAK, S. I. (Senior Scientific Worker, Tambov Oblast' Agricultural Experimental Station).

"Use of antireticular cytotoxic sera"

Veterinariya, vol. 39, no. 9, September 1962, p. 60

1. N. FRAKMAN, V. PRESNYAK
2. USSR (600)
4. Chucks
7. Repairing self-centering chucks. MTS 12 no. 11. 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

PRESNYAKOV, A.

Pneumatic "mathematics". IUn. tekh. 2 no.7:12-13 Jl '58.
(Calculating machines) (MIRA 11:10)

PRESNYAKOV, A.

Nitrogen from the air. Izobr. i rats. no.10:36-37 O '58.
(Nitrogen) (MIRA 11:11)

AUTHOR: Presnyakov, A. SOV-25-58-10-29/48

TITLE: Automatic Fishing Methods (Lov vedut avtomaty)

PERIODICAL: Nauka i zhizn', 1958, Nr 10, p 66 (USSR)

ABSTRACT: The author describes automatic fishing methods used by the USSR in catching herrings in the North Atlantic.

1. Fisheries--Equipment

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28(2) SOV/25-59-2-35/48

AUTHOR: Presnyakov, A.

TITLE: A Pneumatic "Mathematician" (Pnevmaticheskiy "Matematik")

PERIODICAL: Nauka i zhizn', 1959, Nr 2, p 73 (USSR)

ABSTRACT: This article deals with a pneumatic computer recently designed by two collaborators of the Institut avtomatiki i telemekhaniki (Institute of Automatics and Telemechanics) of the AS of USSR, E. Nadzhafov and Yu. Ivlichev. The installation consists of three parts: a balloon with compressed air, a control box with handles and the computer itself, which is an assembly of metallic discs containing inner membranes of rubberized linine. In conformity with the operations carried out on the control box, the introduced air diffuses within the discs and renders possible the performance of

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A Pneumatic "Mathematician" SOV/25-59-2-35/48

arithmetical operations such as multiplication, division, involution, evolution and also the solution of tasks of higher mathematics. The new computer is small in size, easily produced and reliable in operation.

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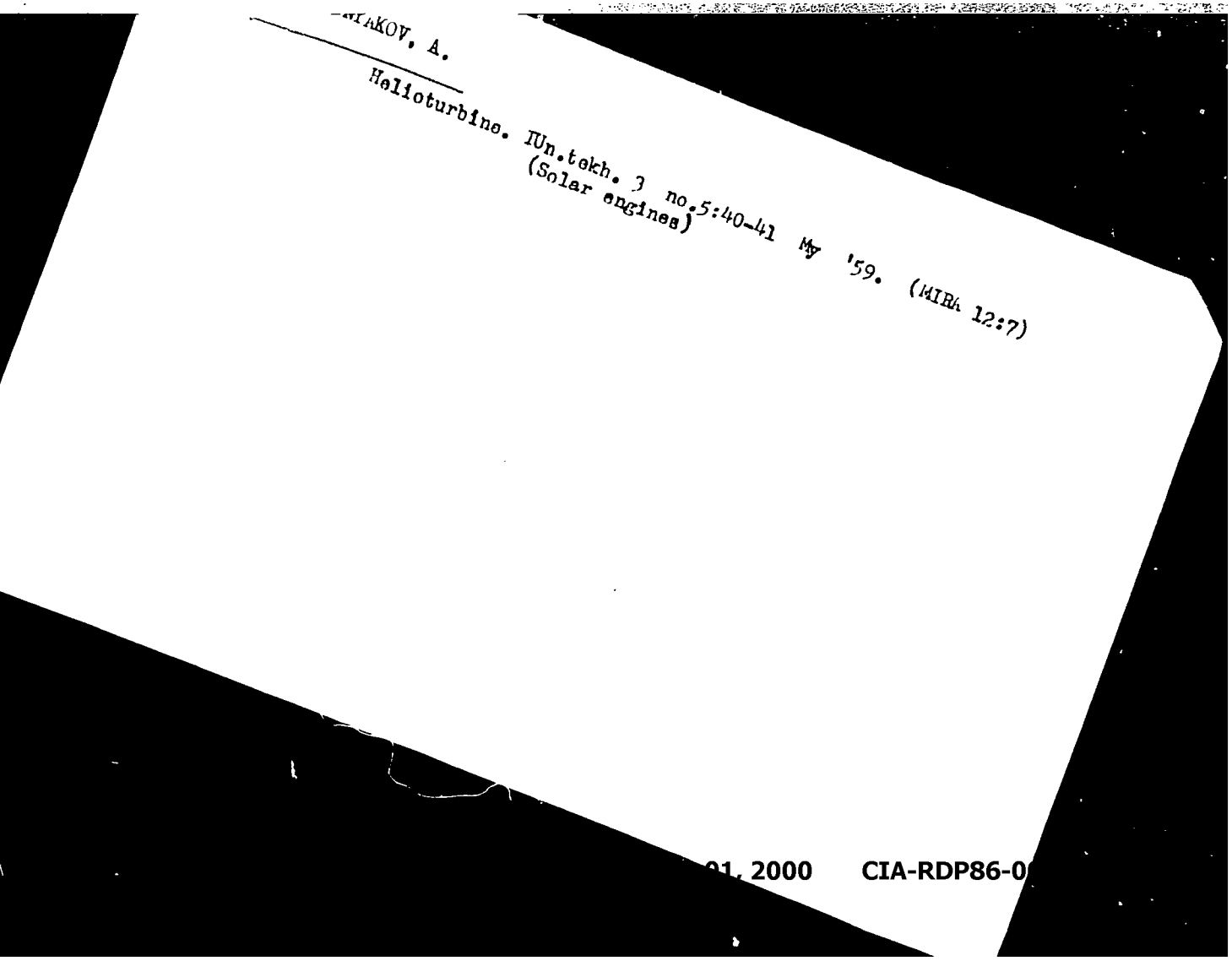

-MIAKOV, A.

Helioturbine. IUn.tekh. 3 no.5:40-41 My '59. (MIRA 12:7)
(Solar engines)

ACC NR: AN7003350 SOURCE CODE: UR/9009/67/000/011/0004/0004

AUTHOR: Rakitin, V.; Presnyakov, A. (TASS Correspondent)

ORG: none

TITLE: Self reproducing machine

SOURCE: Leningradskaya pravda, no. 11, 13 Jan 67, p. 4, col. 6-7

TOPIC TAGS: electronic computer, computer programming, computer design, computer application / Ural-4 electronic computer

ABSTRACT:
A self-reproducing machine has been designed at an electronic computer plant. The Ural-4 was used to work out technological processes for creating parts identical to those from which it was made. Having obtained the program, the Ural-4 models the intellectual activity of a highly qualified technologist. After about 1.5 minutes, the machine starts to deliver the projected technological diagram, which contains all the data for making the parts. The computer reduced the time of preparing the technological documentation by 5—6 times and halved the cost.

SUB CODE: 09 / SUBM DATE: none / ATD PRESS: 5113

Card 1/1

PRESNYAKOV, A.

"Rolled" storage batteries. IUn.tekh.5 no.1:31 Ja '61.
(MIRA 14:5)
(Storage batteries)

PRESNYAKOV, A.

Magnetism in agriculture. Iun.tekh. 4 no.11:29-30 N '59. (MIRA 13:4)

(Growth (Plants) (Magnetochemistry)

S/817/62/005/000/012/012
A006/A101

AUTHORS: Presnyakov, A. A., Starikova, G. V.

TITLE: Experimental investigation of kinetic correspondence in the development of super-ductility in metastable eutectics

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut metallurgii i obogashcheniya. Trudy. v. 5, 1962, Tsvetnaya metallurgiya, 184 - 185

TEXT: The investigation was made with metastable specimens of lead-tin eutectics on a special machine designed by V. Ya. Shtraus operating with tension velocities as high as 1.25; 4; 20; 78; 504; and 960 mm/min. The tests were carried out at 20, 40, 65, 90, 115, 140, 155, 165 and 180°C. Maximum indices of super-ductility attaining 425%, are obtained at 4 mm/min tension velocity. Elongation approaching this value takes place at 20 mm/min. At all the other, higher or lower, velocities, ductility indices do not exceed 250%. At 960 mm/min tension velocity, maximum elongation is not over 85%. The ductility maximum varies with temperature. At 1.25 mm/min tension velocity, it is located at about 175°C. At a higher deformation speed (up to 4 mm/min) the

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ductility maximum is attained at 155°C. The results obtained show that in the tension of metastable cast eutectics, highest indices of super-ductility are revealed at a particularly favorable kinetic correspondence of deformation and stabilization processes; they decrease when this correspondence is elimi-nated. There is 1 figure.

Card 2/2

FRESNYAKOV, A.A.; CHERVYAKOVA, V.V.; KLYUCHNIKOV, Yu.F.

X-ray investigation of hardened L75 brass during the tempering process. Trudy Inst. met. i obogashch. AN Kazakh. SSR 4: 87-90 '62. (MIRA 15:8)

(Brass--Metallography)

S/817/62/005/000/011/012
A006/A101

AUTHORS: Starikova, G. V., Presnyakov, A. A.

TITLE: Investigating electric resistivity of the Al-Zn eutectoid

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut metallurgii i obogashcheniya. Trudy. v. 5, 1962, Tsvetnaya metallurgiya, 175 - 178

TEXT: Anomalously high ductility (δ = 1,000%) is observed in Al-Zn eutectoid after quenching from a temperature exceeding that of eutectoid transformation. This is explained by the course of a diffusion process of stabilization during deformation. The authors attempted to establish also an anomaly in the variation of electric resistivity of the Al-Zn eutectoid. Al-Zn alloy specimens (79% Zn) were annealed and quenched at 320°C. Electric resistivity was measured after different time of holding at room temperature. The electric resistivity of quenched specimens decreased abruptly during the first 8 - 10 minutes after quenching. After measuring electric resistivity at room temperature, the specimens were heated within 5 minutes to 250°C. The electric resistivity of the quenched and annealed specimens was then equal, and no anomalous effect was ob-

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served. Measurements of quenched specimens, heated to 130°C with different holding time, showed no anomaly. The experiments prove that the initial stage of decomposition of a quenched Al-Zn eutectoid, proceeding at room temperature, is accompanied by an anomalous effect of increased electric resistivity. But at room temperature the specimen does not fully attain the equilibrium state. The degree of non-equilibrium can be evaluated by the difference in the electric resistivity in quenched and annealed state. During heating the metastable alloy passes over into an equilibrium alloy and the electric resistivities of quenched and annealed specimens show close values. There are 3 figures.

Card 2/2

PRESNYAKOV, A.A., inzh.

Degree of plasticity of metals. Obr.met.davl. no.2:42-55 '53. (MIRA 12:10)

(Rolling (metalwork)) (Plasticity)

PRESNYAKOV, A.A.

PRESNYAKOV, A.A., kand.tekhn.nauk; ROZENBERG, M.D., inzhener; PRIMATOVA, L.V.; VOLKOGON, G.T.

Technological problems in the production of strips of MZhN-1 alloy. (MIRA 10:10)
TSvet.met. 27 no.6:60-65 N-D '54.
(Copper-iron-nickel alloys)

PRESNYAKOV, A.A.; TARATYNOVA, Z.G.

Use of hardness tests for determining the mechanical properties of sheet metals. Zav. lab. 21 no.2:228-229 '55 (MLRA 8:6)
(Sheet metal--Testing)

PRESNYAKOV, A.A.

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Determination of flowability of metals. A. A. Presnyakov and L. M. Novikova. *Liteinoe Proizvodstvo* 1956, No. 10, 26-8.—A known quantity of a metal is poured in a container provided with a calibrated vertical hole and allowed to run down in a cast iron chill equipped with elec. metal-level gages. The time taken for the metal to flow through is held as its flowability index. With Pb, Sn, Zn, Al, and Cu the device showed a longer flowability index at higher temps. which is attributed to a greater contamination with oxides. J. D. Gat

PRESNYAKOV, A.A.

27 27

4
AEC

Some Data on the Plasticity of Nickel and Its Alloys at Elevated Temperatures. A. A. Presnyakov and L. M. Novikova. (*Tsvet. Metally*, 1956, (11), 76-78; *Referat. Zhur., Met.*, 1957, (8), 279).— [In Russian]. The plasticity of Ni and some of its alloys, both as-cast and worked, was studied from room temp. to 1200° C., using the reduction of area in tensile testing as the criterion of plasticity. It was found that Ni with a high C content has the greatest plasticity at temp. 700° C. Cast sheet Ni, deoxidized with Si, C, and Mg, has the lowest plasticity in the range 600-1000° C.; at higher temp. this difference in plasticity completely disappears. All kinds of Ni, except worked anode Ni, have a range of reduced plasticity between 300° and 700° C. It is shown that hot working (rolling) raises the plasticity of Ni and its alloys. The smallest increase in plasticity after hot rolling is shown by pure Ni; the properties of Melchior alloy change more noticeably, and the plasticity of Monel metal increases markedly. Plasticity in the zone of hot brittleness decreases to a smaller degree in worked alloys than in cast ones.

M-T

PRESNYAKOV, A.A.

Attachment for the MI type of machine for friction tests at high temperatures. Zav.lab.22 no.1:124 '56. (MLRA 9:5)

1. Zaveduyushchiy laboratoriyey metallovedeniya i metallofiziki fiziko-tekhnicheskogo instituta Akademii nauk KazSSR.
(Testing machines)

PRESNYAKOV, A.A.

Effect of specimen defects on the value of the plasticity index. (MLRA 9:8)
Zav.lab. 22 no.5:585-586 '56.

1. Fiziko-tekhnicheskiy institut Akademii nauk Kazakhskoy SSR.
(Plasticity)

AUTHOR: Presnyakov, A. A., Candidate of Technical Sciences. (Physico-Technical Institute, Ac.Sc., Kazakhstan).

TITLE: On the influence of admixtures on the plasticity of L62 brass. (K voprosu o vliyanii primesey na plastichnost' latuni L62).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.5, pp.53-55 (U.S.S.R.)

ABSTRACT: The influence of low melting point admixtures, for instance of lead, on reducing the plasticity of certain alloys at 500 to 700°C and subsequent sharp increase at higher temperatures is not dealt with sufficiently in literature. The changes in the plasticity of brass was investigated in presence of Pb and Sb for brasses of the chemical compositions as enumerated in Table 1, p.53 (about 60% Cu, impurities of Fe, Pb and Sb, rest Zn). The plasticity was defined as the relative contraction of the cross section of the specimens during dynamic stretching. The obtained data as a function of the Pb and Sb contents valid for various temperatures between 20 and 850°C are summarised in Tables 2 and 3, p.53. It was found that during the shaping process contaminated L62 brass should not be allowed to cool down during the process of deformation to temperatures corresponding to the temperatures of brittleness formation, i.e. that the shaping should be carried out at higher temperatures than for brass without any contaminations. 3 Tables, 8 Russian references.

PRESNYAKOV, A.A.

AUTHOR: Presnyakov, A.A., Candidate of Technical Sciences.

TITLE: On the relation between the ductility and the degree of alloying of solid solutions. (O svyazi plastichnosti s legirovannost'yu tverdykh rastvorov). 129 - 8 - 6/16

PERIODICAL: "Metallovedeniye i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.8, pp.21-24 (U.S.S.R.)

ABSTRACT: On the basis of literary data and his own results the author studies the relation between ductility and the chemical composition of alloys. The "coefficient of relative alloying", λ, is taken as a characteristic of the chemical composition of solid solutions: $\lambda = 100 \times C_1/C_{sat.}$ (C_1 - concentration of the second component in the solid solution; $C_{sat.}$ - maximum concentration in the saturated solid solution), λ being also a function of the temperature. The graph, Fig.1, gives data on the ductility of steels with various degrees of alloying as a function of the temperature on the basis of the data given by Zuyev, M.I. et alii (8); most of the alloys have high ductility indices at elevated temperatures and the higher the degree of alloying with carbon, the greater is the drop in ductility at temperatures above 0.6 $T_{fus.abs.}$. Analogous phenomena are observed also in the case of α-brass (zinc-copper solid solution),

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On the relation between the ductility and the degree of alloying of solid solutions. (Cont.) 129 - 8 - 6/16

see Fig.2. Fig.3 shows the change in ductility of copper-nickel alloys of various degrees of alloying on the basis of literary data and the results of the author himself and Fig.4 shows the same relation for the ductility of certain nickel alloys. More complex (ternary, quaternary) alloys show lower ductility than binary ones. Solid solutions built on the basis of the face centred cubic lattice show a drop in ductility according to a well defined relationship: the drop is lowest at room temperature, it is somewhat larger at 0.85-0.95% $T_{fus.abs.}$ and largest in the temperature range 0.35-0.85% $T_{fus.abs.}$. The obtained results also provide an explanation for the formation of a zone of brittleness of brasses in the temperature range 400 to 700 C; this is attributed to the influence of certain distortions of the crystal lattice.
There are 4 figures and 10 references, all of which are Slavic.

ASSOCIATION: Physico-Technical Institute Ac.Sc. Kazakhstan SSR. (Fiziko-Tekhnicheskiy Institut AN Kazakhskoy SSR).

AVAILABLE:

Card 2/2

PRUSNI[illegible], F.A.

[illegible] no.5:82-87
(MLRA 10:9)

AUTHORS: Presnyakov, A.A., Matveyeva, K.T., Mironenko, Yu.P. 32-12-32/71

TITLE: On the Measuring of Temperature in Thermal Mechanical Investigations of Metals (Ob izmerenii temperatur pri goryachikh mekhanicheskikh ispytaniyakh metallov).

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 12, pp. 1515-1515 (USSR)

ABSTRACT: In the introduction it is said that the results of measurements carried out with thermocouples often do not agree, which can mostly be explained by the fact that the sample and the thermocouple in the respective case do not possess the same optical properties. For reasons of the precise definition of a number of experimental data concerning aluminum- and zinc alloys, a uniform investigation of these materials was carried out. For this purpose a differential-nichrome constantan thermocouple, made of a wire of 0.30 mm thickness, and a round nichrome electric furnace was used. Between the sample and the heater a nickel screen was fitted in order to attain uniform heating of the sample. Both soldering seams of the thermocouple were fastened in the middle part of the sample by means of copper wire at opposing points. As a measuring device a "M-21"

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On the Measuring of Temperature in Thermal Mechanical Investigations of Metals 32-12-32/71

galvanometer was used. Experiments show that in the case of a heating lasting up to 20 minutes no definite equalization of temperature between the sample and the thermocouple could be attained, so that in aluminum alloys differences of 6-8% were observed in results. A checking of data concerning zinc alloys showed still higher results. In the case of the soldered parts being badly fastened to the sample, the error is greater.

ASSOCIATION: Physical-Technical Institute AN Kazakh SSR (Fiziko-tekhnicheskiy institut Akademii nauk Kazakh SSR).

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Card 2/2 1. Heat treatment-Temperature measurement

PA - 2549

AUTHOR: PRESNYAKOV,A.A.

TITLE: Plastic Deformation Influence on Diffusion Velocity. (K voprosu o vliyanii plasticheskoy deformatsii na skorost' diffuzii, Russian)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 3, pp 575 - 576 (U.S.S.R.)

Received: 4 / 1957 Reviewed: 5 / 1957

ABSTRACT: The diffusion of sulphur in nickel was investigated and data concerning the influence of deformation on the diffusion velocity of the element concerned were collected. The working method is described, for which purpose the depth of the layer d, which is affected by sulphur, served as a measure for diffusion velocity. The structure observed confirms the opinion of some authors concerning the solubility of sulphur in nickel. From the analysis carried out it may be concluded that with an increased amount of the previous cold deformation the diffusion of sulphur in nickel can be suppressed. The experimental data obtained by the author are in contradiction to the opinion expressed in published works concerning the rules governing "a considerable increase of diffusion velocity in bodies with a distorted lattice". The author is of the opinion that the distortion of the lattice exercises influence on the diffusion velocity, but that in some cases it may also slow down the diffusion process. (1 table and 1 illustration).

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Plastic Deformation Influence on Diffusion Velocity. PA - 2549

ASSOCIATION: Physical-Technical Institute of the Academy of Science of the Kazakian SSR, Alma-Ata.
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AVAILABLE: Library of Congress.

Card 2/2

130-2-13/22

AUTHOR: Presnyakov, A.A. and Novikova, L.I., Candidates of Technical Sciences.

TITLE: Investigation of the Diffusion of Sulphur in Nickel. (Issledovaniye diffuzii sery v nikel')

PERIODICAL: Tsvetnyye Metally, 1957, V 30 No.2, pp. 73 - 76 (USSR)

ABSTRACT: Brittleness of nickel parts has been found to be associated with the presence of sulphur vapour in heat-treatment furnace atmospheres. This effect has been studied by A.K. Chertaskikh but with insufficient thoroughness, and the authors present their own experimental results in this article. These were based on metallographic investigation of various nickel specimens exposed to sulphur vapours under various conditions. The rate of diffusion of sulphur into nickel was found to depend on temperature becoming appreciable at 500 °C; the rate decreases with increasing degree of preliminary deformation. A photomicrograph of deformed nickel with a sulphur-saturated surface layer is shown and graphs of thickness of sulphur-affected layer vs time and vs degree of deformation are given. Tables of temperature, annealing time and depth of diffusion and of changes in composition during annealing in sulphur vapour are given. There are 4 figures and 2 tables. There is 1 Slavic reference.

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24(6) PHASE I BOOK EXPLOITATION SOV/3172

Presnyakov, Aleksandr Aleksandrovich

Opredeleniye plastichnosti metallov (Determining the Plasticity of Metals) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1958. 90 p. Errata slip inserted. 1,400 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR. Fiziko-tekhnicheskiy institut.

Ed.: Yu. N. Kuznetsov; Tech. Ed.: Z.P. Rorokina.

PURPOSE: The book is intended for engineers.

COVERAGE: The book deals with contemporary research on the plasticity of metals. Metal failure and determination of plasticity are included. No personalities are mentioned. There are 67 references: 64 Soviet, 2 English, and 1 German.

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Determining the Plasticity of Metals SOV/3172

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PRESNYAKOV, A.A.

21(8) PHASE I BOOK EXPLOITATION SOV/1316

Akademiya nauk Kazakhskoy SSR. Institut yadernoy fiziki

Trudy, t. 1 (Transactions of the Institute of Nuclear Physics, Kazakh SSR Academy of Sciences. v.1) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1958. 2,000 copies printed.

Ed.: Osadchiy, F. Ya.; Tech. Ed.: Alferova, P.F.; Editorial Board of Series: Griman, I.G., I.G. Dem'yanikov (resp. ed.), T.P. Diogenova, and S.K. Kalinin.

PURPOSE: This volume of the "Trudy" is intended for specialists (Physicists, physicochemists, physicist-metallurgists, etc.), scientists, engineers, teachers, and postgraduate students (aspiranty).

Coverage: This volume of the "Trudy" contains results of research performed at the "Institut yadernoy fiziki" (Institute of Nuclear Physics) in the years 1954-1956. The first article is concerned with the interaction of cosmic-ray particles with nuclei of

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various substances, and with the nature of secondary particles. Particular attention is given to the generation of mesons in showers. The next article discusses the motion of charged particles from the point of view of the general theory of relativity. A series of articles presents the problems of changes in the plasticity, strength, and hardness of alloys at various temperatures in relation to their chemical and phase compositions. Data are given on the properties of alloys during crystallization with reference to hot-shortness. Separate problems of the theory of shaping are also included. Spectrum analysis is discussed as applied to the study of arc performance and to the determination of rare earth elements in minerals. The text also describes quantitative x-ray spectrum analysis based on the various spectrum series.

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