Alloys of rare metals...

function and slow evaporation which shows the prospect of using them as thermionic emitters. Their disadvantage is the small electrical resistance which makes their heating difficult. This property can be considerably improved by dissolving ceriumboride in them which leads to a solid solution of high electric resistance preserving the thermoelectric properties of the original borides. [Abstracter's note: Complete translation]

Card 2/2

S/081/61/000/020/009/089
B145/B101

AUTHOR: Neshpor, V. S.

TITLE: Physical properties of metal-like compounds

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 20, 1961, 32, abstract 20B214 (Tr. Seminara po zharostoykim materialam. (In-t metallokeramiki i spets. splavov AN USSR, no. 5). Kiyev, 1960, 5 - 14)

TEXT: A review of physical properties of metal-like compounds (MC) (compounds of transition metals with B, C, N, and Si) is given. On the strength of their structure, two types of MC are distinguished: interstitial structures with tightly packed metal atoms, and compounds with more complex structure displaying besides metal - metalloid bonds also bonds between metalloid atoms. Several conclusions concerning the electronic structure of MC were drawn on the basis of studies of electrophysical properties. Experimental data, theoretical calculations of the interatomic interaction energy, stability of bonds with MC and some rules

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S/081/61/000/020/009/089
B145/B101

Physical properties of metal-like...

concerning the physico mechanical properties of MC are discussed. There are 29 references. [Abstracter's note: Complete translation.]

Card 2/2

27756
S/058/61/000/007/054/086
A001/A101

15.2660

AUTHORS: Samsonov, G.V., Neshpor, V.S.

TITLE: On the problem of magnetic properties of metal-like compounds

PERIODICAL: Referativnyy zhurnal. Fizika, no. 7, 1961, 282, abstract 7E472 (V sb. "Vopr. poroshk. metallurgii i prochnosti materialov", no. 8, Kiyev, AN UkrSSR, 1960, 90 - 98)

TEXT: The results of investigating magnetic properties of compounds of transition elements with C, N, B and Si make it possible to judge on the nature of interatomic bonds in these compounds. The data known in literature on molecular susceptibility χ_m and magnetic moment μ_{ef} of metallic ions are presented. The χ_m and μ_{ef} values of the studied compounds, reduced in comparison with the values of the pure metals, indicate the formation in these compounds of a collective of electrons filling the overlapped dsp- band in the crystal. The reduction degree of χ_m is related to the ionization potential magnitude of the metalloid. In the case of hexaborides of rare earths there is no decrease of χ_m.

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27756
S/058/61/000/007/054/086
A001/A101

On the problem of magnetic properties ...

since the incomplete 4f-shell is screened by outer 6s- and 5d-electrons. The data are presented on temperature dependence of $\varkappa_m$ in hexaborides of rare earths, as well as on the concentration dependence of $\varkappa_m$ for some carbides, borides and nitrides.

L. Boyarskiy

[Abstracter's note: Complete translation]

Card 2/2

S/181/60/002/009/025/036
B004/B056

9.4173

AUTHORS: Neshpor, V. S., Samsonov, G. V.

TITLE: Investigation of the Electrical Conductivity of Silicides of the Transition Metals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2202 - 2209

TEXT: A report is given on the potentiometric measurement of the specific electric resistance of silicides of d- and fd-metals of groups IV - VIII of the periodic system as a function of their silicon content. The results obtained are given in a table. The temperature dependence of the electric resistance was measured on the disilicides of Ti, Nb, W, Mo, Re, and La, as well as on silicides of Mo with different Si-content, and on partly Al-substituted Si (Figs. 1,2). Fig. 3 shows the electric resistance of $LaSi_2$ as a function of temperature, and Fig. 4 the electric resistance of disilicides of transition metals of groups IV - VI as a function of the acceptor properties $\xi_{Me} = 1/N_d n_d$, where N_d is the main quantum number of the d-shell of the metal atom, and n_d is

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84084

Investigation of the Electrical Conductivity of Silicides of the Transition Metals

S/181/60/002/009/025/036
B004/B056

4 figures, 1 table, and 24 references: 17 Soviet, 1 US, 2 British, 1 German, and 1 Australian.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR, Kiyev (Institute of Powder Metallurgy and Special Alloys of the AS UkrSSR, Kiyev)

SUBMITTED: November 9, 1959

Card 3/3

NESHPOR, V.S.; NEMCHENKO, V.F. [Niemchenko, V.P.]; L'VOV, S.N.[Samsonov, H.V.]

Some electrophysical properties of titanium compounds with nonmetallic elements of the fourth group of the periodic table. Ukr. fiz. zhur. 5 no.5:839-842 N-D '60. (MIRA 14:3)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR i Khersonskiy pedagogicheskiy institut im. N.K. Krupskoy.
(Titanium compounds—Electric properties)

NESHPOR, V.S.; KOROLENKO, Yu.I.; KARAL'NIK, S.M.

Studying the characteristic absorption of X radiation from transitional elements of the first group by their silicides. Ukr.fiz.zhur. 5 no.6:826-864 N-D '60. (MIRA 14:4)

1. Kiyevskiy ordena Lenina gosudarstvennyy universitet im. T. G. Shevchenko i Institut metallokeramiki i spetsial'nykh splavov AN USSR, g. Kiyev.

(Absorption)
(Transition metal silicides)

80604

S/080/60/033/005/001/008

24.7700

AUTHORS: Neshpor, V.S., Samsonov, G.V.

TITLE: The Investigation of the Conditions for the Silicon-Thermal Production of Lanthanum Silicide and Some of Its Properties

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, No 5, pp 993 - 1001

TEXT: The condition of obtaining $LaSi_2$ by reduction of the metal oxide with silicon was studied by the strain gauge method, developed earlier by one of the authors [Refs 2, 3], for application to carbides and borides of transitional metals. Mixtures of lanthanum and silicon oxide powders were subjected to heating in the vacuum at temperatures from 1,200 to 1,600°C. A temperature increase beyond 1,600°C causes melting and volatilization of the reaction products. At lower temperatures LaSi is formed which reacts with an excess of silicon and is partially transformed to $LaSi_2$. At higher temperatures La_2O_3 is directly reduced to disilicide. Lanthanum disilicide in the form of a practically one-phase product is obtained at 1,500°C and at an initial vacuum of 10^{-3} mm Hg in the furnace. The approximate values of the formation heats of lanthanum mono-

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80604

S/080/60/033/005/001/008

The Investigation of the Conditions for the Silicon-Thermal Production of Lanthanum Silicide and Some of Its Properties

and disilicide are 64 and 52 kcal/mole, respectively, which is similar to the formation heat of $CeSi_2$. The microhardness of $LaSi_2$ is 324 kg/mm^2, which is lower than the microhardness of the disilicides of the transitional metals of the groups IV-III of the Periodic System, as well as that of pure silicon. There are, however, some sections of the phase with a gray color, having a microhardness of 626 kg/mm^2. The low microhardness is due to the loosening effect of lanthanum atoms enclosed in the empty spaces of the three-dimensional lattice of the bonds between the silicon atoms. The absolute thermo-emf is negative in the temperature range investigated and passes through a minimum at 500 - 600°C. Hall's constant of $LaSi_2$ at room temperature is negative and has a value of $17.5 \cdot 10^{-5}$ cm^3/coulomb.
There are: 6 graphs, 1 diagram, 2 tables and 15 references; 11 Soviet, 2 English, 1 American and 1 German.

SUBMITTED: August 9, 1959

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82519

S/020/60/133/04/17/031
B019/B060

24.7700

AUTHORS: Neshpor, V. S., Samsonov, G. V.

TITLE: Electric, Thermoelectric, and Galvanomagnetic Properties of Silicides of Transition Metals

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 4, pp. 817-820

TEXT: The authors studied the electric resistivity, the thermo-emf, and the Hall effect of silicides of a number of transition metals from group IV to VII of the periodic system, as well as of lanthanum, cerium, and praseodymium. Fig. 1 shows graphically the electric resistivity of the silicides as a function of the silicon atom content. Depending on the character of this function the authors divide silicides into two groups: the first group comprises the silicides of Ti, Zr, V, Ta, W, and Mo, in which the resistance of the intermediate phases drops with increasing Si content. The second group includes the silicides of Cr, Fe, Re, Mn, in which the electric resistivity of the intermediate phases rises with increasing Si content. The silicides of the first group

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82519

Electric, Thermoelectric, and Galvanomagnetic Properties of Silicides of Transition Metals

S/020/60/133/04/17/031
B019/B060

have metallic conductivity, and those of the second group possess semiconductor properties, such as a negative temperature coefficient of electric resistivity and a high thermo-emf. The respective values are tabulated in Table 1. The character of the interatomic bond in the two groups is inferred. It was found by measuring the Hall constants and the thermo-emf coefficients that silicides, unlike transition metals which essentially possess p-type conductivity, with the exception of molybdenum and tungsten disilicides, possess n-type conductivity, just like borides (Ref. 7) as well as carbides and nitrides in titanium compounds. Details of the conductivity and of the magnetic properties are discussed, and the specific character of electron motion in the semiconductor is dealt with. Most of the measurements were conducted by the authors with the aid of apparatus belonging to the Chair of Physics at the Khersonskiy pedagogicheskiy institut (Kherson Pedagogical Institute) with the assistance of S. N. L'vov, V. F. Nemchenko, and A. Ya. Kuchmy. The authors express their gratitude to the aforementioned persons for their help. There are 2 figures, 1 table, and 16 references: 11 Soviet, 1 Australian, 2 US, and 2 German.

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82519

Electric, Thermoelectric, and Galvanomagnetic Properties of Silicides of Transition Metals

S/020/60/133/04/17/031
B019/B060

ASSOCIATION: Institut metallokeramiki i spetsial'nykh spalvov Akademii nauk SSSR (Institute of Powder Metallurgy and Special Alloys of the Academy of Sciences, USSR)

PRESENTED: March 25, 1960, by S. A. Vekshinskiy, Academician

SUBMITTED: February 30, 1960

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83553

S/020/60/134/001/004/021
B019/B060

24.7600 also 2308

AUTHORS: Vaynshteyn, E. Ye., Zhurakovskiy, Ye. A., Neshpor, V. S., Samsonov, G. V.

TITLE: The Fine Structure of X-Ray K-Absorption Spectra and the Hall Effect in Vanadium Silicides

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1, pp. 68-70

TEXT: The authors studied the fine structure of X-ray K-absorption spectra of vanadium and its silicides V_3Si, V_5Si_3, and VSi_2. The crystal structure of these compounds and the production of silicides are discussed in the introduction. The free silicon content in silicides did not exceed 0.6%. The apparatus has already been described. Fig. 1 shows the fine structures of the K-absorption edges of vanadium, its above-mentioned silicides, and V_2O_5. The Hall effect of these three silicides and vanadium was likewise determined. In accordance with the n-type conductivity of the silicides they possess a negative Hall

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The Fine Structure of X-Ray K-Absorption Spectra and the Hall Effect in Vanadium Silicides

S/020/60/134/001/004/021
B019/B060

constant, while metallic vanadium, in accordance with its p-type conductivity, has a positive Hall constant. The effective carrier concentration n^* and its Hall mobility were determined with the aid of the Hall constants obtained. Results are compiled in Table 1. As may be seen from Fig. 1, the K-absorption edge undergoes a considerable and regular alteration in the case of increasing silicon content. Only that point of the edge remains unchanged, which characterizes the position of the original absorption range in the energy spectrum. The absorption maximum shifts toward higher energies on a transition of metallic vanadium to the silicides with rising Si content, and on a further transition to V_2O_5. Owing to the invariable position of the original absorption range, the shift of the maximum leads to a widening of the edge and, hence, causes the "mean point" of the K-edge to shift toward shorter wavelengths. With increasing Si content the width of the K-edge approaches that of V_2O_5, which is a compound with a large part of ionic bond. This indicates a polarization of the metal atoms in the silicon-rich silicides and a heteropolar component in metal-silicon compounds.

83553

The Fine Structure of X-Ray K-Absorption Spectra and the Hall Effect in Vanadium Silicides

S/020/60/134/001/004/021
B019/B060

PRESENTED: April 29, 1960, by A. P. Vinogradov, Academician

SUBMITTED: April 29, 1960

Card 4/4

84570

9.4300 (1035, 1138, 1143)
26.2420

S/020/60/134/006/013/031
B019/B067

AUTHORS: Neshpor, V. S. and Samsonov, G. V.

TITLE: Study of the Hall Effect in the Silicides of Transition Metals

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 6, pp. 1337 - 1338

TEXT: The authors measured the Hall coefficient, and calculated the carrier concentration and their Hall mobility in silicides of transition metals of different silicon content. The production of the samples and the methods of measurement were described in Refs. 1, 2, and 3. The results of measurements made on 30 silicides are summarized in Table 1. From these values the authors conclude the following: 1) A reduction of the carrier concentration is observed with increasing atomic number of the metallic component of the silicide. This is probably related to the strengthening of the covalent bonds. 2) Most of the silicides investigated are metallic conductors. 3) The disilicides of rhenium and chromium have low carrier concentrations and are impurity semiconductors at room temperature. 4) The

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81670

Study of the Hall Effect in the Silicides of Transition Metals

S/020/60/134/006/013/031
B019/B067

carrier concentration of the silicides of the transition metals of the first period and of the Mo and Rh-silicides decreases with increasing silicon content in the phase M_xSi_y. 5) In the metallic compounds of the second period (Zr-Si) and the third period (Ta-Si), an increase in the carrier concentration is observed on the transition from low to high silicides, with the carrier mobility being reduced. 6) With increasing atomic number of metallic disilicides, a transition is observed from n-type conductivity to p-type conductivity. Several silicides were found to be ferromagnetic. The Hall coefficients of eight ferromagnetic disilicides are given in Table 2. There are 2 tables and 5 Soviet references.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov Akademii nauk USSR (Institute for Powder Metallurgy and Special Alloys of the Academy of Sciences UkrSSR)

PRESENTED: June 8, 1960, by S. A. Vekshinskiy, Academician

SUBMITTED: June 1, 1960

Card 2/2

NESHPOR, V. S.

Cand Tech Sci - (diss) "Study of conditions of the production and several physical properties of silicides of transition metals." Kiev, 1961. 16 pp; 2 pp tables; (Ministry of Higher and Secondary Specialist Education Ukrainian SSR, Kiev Order of Lenin Polytechnic Inst); 180 copies; price not given; list of author's works on p 16 (15 entries); (KL, 10-61 sup, 217)

NESHPOR, V.S.

Crystalline structure of monosilicides of transition metals. Kristallografiia 6 no.3:466-469 My-Je '61. (MIRA 14:8)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR.
(Silicides) (Transition metals) (Crystal lattices)

9.4300 (1158, 1150, 1137)
15.2220 2808, 1273, 1043, 1145

21357
S/126/61/011/004/023/023
E021/E435

AUTHORS: Neshpor, V.S. and Samsonov, G.V.

TITLE: Rhenium Disilicide as a New Refractory Semiconductor

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.4, pp.638-640

TEXT: The electrical conductivity and thermo e.m.f. of $ReSi_2$ were studied at 20 to 1000°C. The Hall-effect, the hardness and oxidation resistance in air were also investigated. Rhenium disilicide was prepared by sintering the stoichiometric mixture of powders of rhenium and silicon in a tube furnace at 1300°C for 3 hours using an argon atmosphere. X-ray studies showed that no lines other than those of $ReSi_2$ were present. The $ReSi_2$ was then ground into powder and samples were prepared by hot pressing at 1600°C and 200 kg/cm^2 in argon. They were annealed for 10 hours at 1400°C and slowly cooled to room temperature. Metallographic analysis showed only one phase which had a microhardness of 1500 $\pm$ 40 kg/mm^2. The figure shows the relation between log. electrical resistance log ρ (ρ in ohm cm) (curve 1) and thermo e.m.f. μV/deg (curve 2) with temperature °K. It can be seen

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S/126/61/011/004/023/023
E021/E435

Rhenium Disilicide ...

that $ReSi_2$ is a semiconductor. The width of the forbidden zone is about 0.13 eV. The electrical resistance at room temperature is about 10^2 $ohm^{-1}cm^{-1}$. At this temperature the Hall coefficient has a positive sign. The conductivity is of the hole type. The concentration of admixture current carriers is about $10^{18}cm^{-3}$. The resistance to oxidation was tested at 1400°C. The change in weight during oxidation stops after 30 min oxidation, because of the protective film of silica formed on the surface. The film had a coarse grained polyhedral structure. The electrical resistance of the sample during oxidation did not change, showing that oxygen was not penetrating the sample. $ReSi_2$ has a tetragonal structure with a = 3.131 and c = 7.676 Å. There are 1 figure and 13 references: 7 Soviet and 6 non-Soviet.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: July 16, 1960

S/849/62/000/000/007/016
A006/A101

AUTHOR: Neshpor, V. S.

TITLE: X-ray spectra and the interatomic bond in solid metal-like compounds

SOURCE: Vysokotemperaturnyye metallokeramicheskiye materialy. Inst. Metalloker. i spets. spl. AN Ukr.SSR, Kiev, Izd-vo AN Ukr.SSR, 1962, 46 - 74

TEXT: An attempt is made to establish a qualitative correlation between the basic physical properties and structure of metal-like compounds and the state of their metallic components, determined by the nature of their soft X-ray spectra. Ti, V, Nb, Cr and Mo carbides, nitrides, borides, and silicides were investigated. Many of the carbides and nitrides are associated with the group of interstition phases with six-fold coordination of metal atoms around metalloid atoms and of metalloid around metal atoms, so that a Me_6X or MeX_6 molecule with six oriented Me-X bonds of σ-nature can be singled out in the crystal (Figure 2). An analysis of emission and absorption spectra shows a substantial analogy in the state of metal atoms in carbides and nitrides. It is possible that polari-

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zation of atom shells of metals takes place and that part of the electrons pass over to d-symmetry levels of the metalloid. This concept is in agreement with regularities in the changes of physical properties of these compounds, depending on the acceptor capacity of metal atom shells, and the ionization potential of the metalloid previously established by Umanskiy and Samsonov. Their interpretation of reduced electric resistivity and increased strength of atomic bonds may be maintained, if the shifting of the gravity center of the common cloud of interchanging electrons in σ-bonds of Me-X is considered to be the result of a donor acceptor interaction, connected with deficient d-shells of transition metal atoms, but not as a result of the full transition of electrons from the metalloid to the metal. Transition metal borides do not show interstition phases, but a normal covalent nature of bond. Like carbides and nitrides of Ti, they possess electronic conductivity. The nature of d-states of metal atoms in borides does not differ very much from that of pure metals, as to the degree of completeness and the nature of hybridization with s- and p-states. It is possible that the d-states of metal are partly filled up with boron electrons; this is in agreement with the division of the emission band into two components, if this division is connected with the division of d-state into 2 groups. The

42434

S/849/62/000/000/011/016
A006/A101

9.3120

AUTHORS: Kudintseva, G. A., Neshpor, V. S., Samsonov, G. V., Tsarev, B. M., Paderno, Yu. B.

TITLE: Thermo-emission properties of scandium and gadolinium borides

SOURCE: Vysokotemperaturnyye metallokeramicheskiye materialy, Inst. metalloker. i spets. spl. AN Ukr.SSR, Kiev, Izd-vo AN Ukr. SSR. 1962, 109 - 112

TEXT: The authors investigated the electronic emission of scandium and gadolinium borides produced by Samsonov's vacuum thermal method. The thermo--electronic emission of the borides was studied in experimental diodes with cylindrical anodes and tantalum cathodes. Values of current efficiency and of constant A in the emission equation $I = AT^2 \exp - \frac{e\varphi}{kT}$ were obtained by measuring the emission. These data are tabulated. It was found that the regularities established by Samsonov for some physical properties in the diboride series of scandium-titanium-vanadium-chromium are also applicable to the work function of electrons (2.9; 3.88; 3.95; 3.36 respectively). Samsonov has stated that the

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properties of scandium borides are mainly predetermined by the state of 4s-electrons. The dominant part of 4s-electrons in this case is confirmed. Low values of work function of gadolinium boride electrons in the boride series of rare-earth metals can be explained by the presence of one substantially free 5d-electron and a stable half-filled 4f-shell. There are 1 table and 1 figure.

42635

24.7600

S/849/62/000/000/012/016
A006/A101

AUTHORS: Neshpor, V. S., Samsonov, G. V.

TITLE: Electric properties of molybdenum silicides

SOURCE: Vysokotemperaturnyye metallokeramicheskiye materialy, Inst. metalloker. i spets. spl. AN Ukr. SSR., Kiev. Izd-vo AN Ukr. SSR., 1962, 113 - 119

TEXT: For the purpose of studying the effect of silicon concentration and structure upon the electric properties of silicides, the authors investigated the temperature dependence of electric resistivity, thermo-emf and the Hall effect of molybdenum silicides. Molybdenum silicide powders Mo_3Si, Mo_5Si_3 and $MoSi_2$ were prepared by sintering pressed mixtures of components in argon atmosphere. Specimens, 6 mm in diameter and 15 mm high, were not pressed. Their residual porosity was 2 - 8%. The temperature dependence of electric resistivity and thermo-emf of the compounds were determined for a 250 - 1300°K temperature range. The measured differential thermo-emf was converted to an absolute value using the temperature dependence of absolute thermo-emf of a platinum comparison electrode for $MoSi_2$ and of an alumel electrode for Mo_5Si_3. The Hall constants were

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S/849/62/000/000/012/016
A006/A101

Electric properties of molybdenum silicides

measured in a constant magnetic flux of 12,000 oersted strength at about 300 amp/cm^2 current density. Hall constants and specific resistivity of Mo silicides were measured at room temperature and from these values the effective concentrations of current carriers and Hall mobilities were calculated. As a result, the metallic type of conductivity of the investigated compounds was established. The Mo_3Si and Mo_5Si_3 silicides are electronic conductors, whereas $MoSi_2$ is a hole conductor. The latter fact is in accordance with the result predicted by H. Schenk and U. Dehlinger in 1956 on the basis of the quantum-mechanical calculation of the energy spectrum for this compound. The probability of scattering of current carriers in molybdenum metal and silicides Mo_3Si, Mo_5So_3 and $MoSi_2$ are in a 1:20:20:1.5 ratio and their Hall mobilities in a 1:0.055:0.04:2.7 ratio. This indicates the high density of electronic states in the conductivity zones of lower molybdenum silicides Mo_3Si and Mo_5Si_3. It is shown that the lower molybdenum silicides are similar to σ-phases in binary systems of transition metals as regards both their crystalline properties and electronic structure. The ordered substitution of a portion of silicon atoms in molybdenum disilicide by aluminum,

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Electric properties of molybdenum silicides

having lower valences, causes an increase in both electric resistivity and its temperature coefficient. There are 2 figures and 3 tables.

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45256
S/226/62/000/006/003/016
E039/E535

24.7100
24.7700

AUTHORS: Neshpor, V.S. and Samsonov, G.V.

TITLE: On the electron structure of silicides

PERIODICAL: Poroshkovaya metallurgiya, no.6 , 1962, 14-19

TEXT: The physical properties of the disilicides of the transition metals are studied; the results allow some general conclusions to be drawn on the electron structure and the nature of the interatomic bonds in silicides. The majority of the silicides of the transition metals possess metallic conductivity which is of the same order as the transition metals (10^3-10^4 $\Omega^{-1}cm^{-1}$). These silicides also have an effective concentration of current carriers which is comparable with that in the metals 10^{22}-10^{23} cm^{-3}). An examination of the magnetic susceptibility of a number of silicides showed that many of them are diamagnetic and for those which showed paramagnetism it is significantly weaker than in the corresponding transition metals. Semiconductor properties have been found experimentally in the disilicides of chromium, iron, manganese, rhenium and barium. From qualitative estimates of the division of electron and hole conductivity the following ratio is

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On the electron structure of ... S/226/62/000/006/003/016
E039/E535

obtained: $R/\rho = \sigma_h u_h - \sigma_e u_e$, which follows from the theory of conductivity and the Hall effect in solid bodies with two types of current carrier. Here R is the Hall constant; ρ is the specific electrical resistance; σ_h and σ_e the specific electrical conductivity possessed by holes and electrons and u_h and u_e the mobility of holes and electrons. An examination of this ratio for the investigated silicides of the transition metals having less than half filled d-shells shows that the electron conductivity is strengthened while in the case when the d-shell is more than half filled the hole conductivity is strengthened. There are 2 figures.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR
(Institute of Metalceramics and Special Alloys AS UkrSSR)

SUBMITTED: April 14, 1962

Card 2/2

KOVAL'CHENKO, M.S.; NESHPOR, V.S.

Session of the Department of Technical Sciences of the Academy of Sciences of the Ukrainian S.S.R. on problems involving the effect of nuclear radiations on the properties of materials. Atom. energ. 13 no.4:388-390 O '62. (MIRA 15:9)
(Materials, Effect of radiation on—Congresses)

S/279/63/000/001/015/023
E040/E451

AUTHORS: Neshpor, V.S., Samsonov, G.V. (Kiyev)

TITLE: Electrical and thermoelectrical properties of some transition metal silicides

PERIODICAL: Akademiya nauk SSSR, Izvestiya, Otdeleniye tekhnicheskikh nauk, Metallurgiya i gornoye delo, no.1, 1963, 147-151

TEXT: The effect was studied of temperature on the electrical resistance of $TiSi_2$, $ZrSi_2$, $NiSi_2$ and Ti_5Si_3 silicides and on the absolute differential thermoelectric potential of the $TiSi_2$, $ZrSi_2$, $NiSi_2$, $MoSi_2$, WSi_2, Mo_3Si, Mo_5Si_3 and CrSi silicides. The silicides were prepared by sintering silica (99.98% pure) with high purity metal powders by the method previously described by G.V.Samsonov et al (Ogneupory, no.2, 1958, 28: Zhrn.neorg. khimii, v.4, 1959, 2759). X-ray analysis of the silicides so prepared

S/279/63/000/001/015/023
E040/E451

Electrical and thermoelectrical ...

the Ti_5Si_3 and $TiSi_2$ silicides from room temperature to about 800°C but for the silicides $ZrSi_2$ and $NiSi_2$ the relationship is linear only above 200°C. Differential thermal coefficients of resistivity were calculated for all the silicides investigated and their values compared with the corresponding Debye temperatures and

Electrical and thermoelectrical ...

respect to temperature (which should be the same as the sign of Hall coefficient). Chromium silicide (CrSi) is an exception in this respect. Smidt's expression for the absolute differential thermo-emf is expanded to show that the absolute differential thermo-emf is independent of temperature in the case when the Fermi energy and the energy of the A band overlap vary linearly with temperature, as is illustrated by the $MoSi_2$ and WSi_2 silicides. There are 3 figures and 3 tables.

SUBMITTED: November 18, 1961

Card 3/3

AF NESHPOR, V. S.

AID Nr. 983-5 5 June

ELECTRIC AND THERMOELECTRIC PROPERTIES OF SILICIDES OF TRANSITION METALS (USSR)

Neshpor, V. S., and V. L. Yupko. Poroshkovaya metallurgiya, no. 2, Mar-Apr 1963, 55-59. S/226/63/000/002/008/014

The temperature dependence of electric resistivity (in the 20-1000°C range) and of the thermal emf (in the 20-600°C range) of silicides of V (15.9, 25.2, and 51.5% Si), Mn (33.4, 23.0, and 51.0% Si), and Fe (14.2, 33.1, and 50.8% Si) and of Co_3Si (19.1% Si), $CoSi_2$ (48.9% Si), Ni_3Si (13.5% Si), Ni_2Si (19.1% Si), $ZrSi_2$ (38.5% Si), $TiSi_2$ (23.9% Si), Re_5Si, and ReSi has been studied at the Institute of Powder Metallurgy and Special Alloys of the Ukrainian Academy of Sciences. Silicides were obtained by the synthesis of components; the sintered specimens were prepared by hot compacting. Microscopic examination and the x-ray diffraction patterns showed the silicides to have a single-phase structure, except for Co_3Si, Ni_3Si, Ni_2Si, and Re_5Si, which had inclusions of a second phase concentrated along grain boundaries. The nature of the temperature dependence of the electric resistivity of $MnSi_2$, Mn_5Si_3, and ReSi showed these silicides to be semiconductors. The Fe_3Si and Co_3Si appeared to be ferromagnetic semimetals. The temperature dependence of the electric resistivity of all other silicides studied

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AID Nr. 983-5 5 June

ELECTRIC AND THERMOELECTRIC PROPERTIES [Cont'd] S/226/63/000/002/008/014

was characteristic for metallic conductors; the increase of resistivity with temperature was linear in V_3Si, Ni_2Si, and $CoSi_2$, but nonlinear in all other silicides. The absolute magnitude of thermal emf and its temperature dependence for most silicides studied were characteristic for compounds with metallic conductivity. In general, the temperature dependence of thermal emf was nonlinear and had maxima, which indicates the presence of positive and negative current carriers. The temperature dependence of thermal emf in $FeSi_2$, $MnSi_2$, and $ReSi_2$ was characteristic for doped semiconductors. In general, with increasing relative content of Si in the intermediate phases of Me-Si systems, the absolute values of thermal emf increased and the nature of their temperature dependence became more complex. This probably was caused by an increasing share of covalent bond in silicides and by their electron energy spectrum becoming more complex with increasing Si content. For Re_3Si the thermal emf in the entire range of temperatures tested was found to be zero, which makes this silicide a prospective material for high-temperature thermocouples. [MS]

Card 2/2

ACCESSION NR: AT4035159 S/0000/63/000/000/0022/0035

AUTHOR: Samsonov, G. V.; Neshpor, V. S.; Paderno, Yu. B.

TITLE: Preparation and properties of the silicides of some rare-earth elements

SOURCE: AN SSSR. Institut geokhimii i analiticheskoy khimii. Redkozemel'ny*ye elementy* (Rare-earth elements). Moscow, Izd-vo AN SSSR, 1963, 22-35

TOPIC TAGS: rare earth element, rare earth, silicide, silicon, lanthanum, cerium, yttrium, neodymium, scandium

ABSTRACT: The reaction between silicon and the oxides of lanthanum, cerium, yttrium, neodymium and scandium:

$$Me_2O_3 + 7Si = 2MeSi_2 + 3SiO \ (Me = Sc, Y, La, Nd), \quad (1)$$

$$CeO_2 + 4Si = CeSi_2 + 2SiO,$$

$$Sc_2O_3 + 5Si = 2ScSi + 3SiO,$$

was investigated in a vacuum at high temperatures by determining the relationship between SiO vapor pressure and reaction time at gradually increasing temperatures. The variations

ACCESSION NR: AT4035159

in SiO pressure at different reaction temperatures and the variation in the chemical composition of the reaction products are also tabulated. In the case of La_2O_3, as the reaction temperature increases, the amount of free silicon continuously decreases and becomes zero at 1600C. At the same time, the lanthanum content amount of bound silicon become close to the theoretical for $LaSiO_2$. X-ray diffraction patterns of the reaction products show that at 1100-1400C LaSi and $LaSi_2$ are formed, while at higher temperatures $LaSi_2$ is formed directly. X-ray analysis of the other reaction products showed that monophase $CeSi_2$ and $PrSi_2$ were formed. At 1200-1500C, YSi is formed rather than YSi_2; over the temperature range 1200-1400C, the x-ray diagrams show lines of yttrium oxide and free silicon, the intensity of which weakens with increasing temperature. The composition of the silicide corresponding to the product containing no free silicon (obtained at 1500C) can be written $YSi_{1.4}$. Theproduct thus contains some disilicide in addition to monosilicide. The chemical composition of the reaction products of neodymium oxide with silicon at different temperatures shows that $NdSi_2$ is formed at a relatively low temperature, but that the reduction is not complete; on the x-ray diagrams, ND_2O_3 lines can be seen up to 1500C. The products obtained at 1470 and 1580C are not homogeneous. Gadolinium disilicide was prepared at 1000-1800C in a vacuum, and the possible preparation of scandium silicides ScSi and $ScSi_2$ was investigated. Data are also given on the crystalline structure,

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Card

ACCESSION NR: AT4035159

microhardness, thermal stability and electrical properties of the rare-earth silicides. Orig. art. has: 14 figures and 3 tables.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii AN SSSR (Institute of Geochemistry and Analytical Chemistry AN SSSR)

SUBMITTED: 31Oct63	DATE ACQ: 30Apr64	ENCL: 00
SUB CODE: IC	NO REF SOV: 008	OTHER: 014

Card 3/3

NESHPOR, V.S.

The Second All-Union Conference on Rhenium, sponsored by the Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR, and the State Institute of Rare Metals, was held in Moscow 19-21 November 1962. A total of 335 representatives from 83 scientific institutions and industrial establishments participated. Among the reports presented were the following: autoclave extraction of Re from Cu concentrates (A. P. Zelikman and A. A. Peredereyev); Re extraction from the gaseous phase (V. P. Savrayev and N. L. Peysakhov); recovery of Re by sorption and ion interchange (V. I. Bibikova, V. V. Il'ichenko, K. B. Lebedev, G. Sh. Tyurekhodzhayeva, V. V. Yermilov, Ye. S. Raimbekov, and M. I. Filimonov); production of carbonyl Re (A. A. Ginzburg); electrolytic produqtion of high-purity Re and electroplating with Re (Z. M. Sominskaya and A. A. Nikitina); Re coatings on refractory metals produced by thermal dissociation of Re chlorides (A. N. Zelikman and N. V. Baryshnikov); plastic deformation and thermomechanical treatment of Re (V. I. Karavaytsev and Yu. A. Sokolov); growth of Re single crystals and effect of O_2 on their properties (Ye. M. Savitskiy and G. Ye. Chuprikov); Re-Mo, Re-W, and Re-precious-metal alloys (Ye. M. Savitskiy, M. A. Tylkina, and K. B. Povarova); synthesis of Re nitrides, silicides, phosphides, and selenides (G. V. Samsonov, V. A. Obolonchik, and V. S. Neshpor); weldability of Re-Mo and Re-W alloys (V. V. D'yachenko, B. P. Morozov, and G. N. Klabanov); new fields of application for Re and Re alloys (M. A. Tylkina and Ye. M. Savitskiy); and Re-Mo alloy for thermocouples (S. K. Danishevskiy, Yu. A. Kocherzhinskiy, and G. B. Lapp). [WW]

Tsvetnyye metally, no. 4, Apr 1963, pp 92-93

S/170/63/006/001/014/015
B108/B186

AUTHORS: Neshpor, V. S., Barantseva, I. G.

TITLE: Investigation of the heat conductivity of the molybdenum silicides

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 6, no. 1, 1963, 109-113

TEXT: To improve and amplify the published data, the authors measured the heat conductivities of Mo_3Si, Mo_5Si_3, and $MoSi_2$ at room temperature. The measurements were made under steady-state conditions. The small, pressed cylindrical samples of 6-8 mm diameter and 10-12 mm height, heated by a copper cylinder, contained two 1.5-mm bores with thermocouples to measure the temperature gradient. Heat losses from the sample were reduced by an asbestos insulation. The heat conduction due to free carriers and the lattice heat conduction were calculated. The latter amounts to about half the total heat conductivity and depends greatly on the type of crystallization. This indicates that the interatomic bonds possess an essential covalent component. After introducing a correction

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Investigation of the heat ...

for the porosity of the samples the following results were obtained: Mo_2Si 95.0 $cal.cm^{-1}sec^{-1}deg^{-1}$; Mo_5Si_3 52.0 $cal.cm^{-1}sec^{-1}deg^{-1}$; $MoSi_2$ 116.5 $cal.cm^{-1}sec^{-1}deg^{-1}$. There are 1 figure and 2 tables.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR, g. Kiyev (Institute of Powder Metallurgy and Special Alloys AS UkrSSR, Kiyev)

SUBMITTED: April 28, 1962

Card 2/2

NESHPOR, V.S.; REZNICHENKO, M.I.

Investigating the thermal expansion of certain silicides. Ogneupory 28 no.3:134-137 '63. (MIRA 16:2)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Silicides) (Expansion (Heat))

AUTHOR: Neshpor, V. S.; Yupko, V. L.

TITLE: Investigation of preparation conditions and physical properties of barium disilicide

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 5, 1963, 1139-1142

TOPIC TAGS: alkaline earth silicides, barium disilicide, barium disilicide preparation, semiconductor, refractory, microhardness, melting point, thermal expansion coefficient, thermal conductivity, thermoelectric power, oxidation

ABSTRACT: The preparation and physical properties of barium disilicide have been studied because of its semiconductor properties. $BaSi_2$ was prepared in a vacuum at 1300--1420C by reduction of barium oxide with silicon. Chemical analysis indicated that at 1420C the composition of $BaSi_2$ is close to the stoichiometric; at higher temperatures sublimation or dissociation probably occurs. X-ray analysis showed that line position and intensity corresponds to the $BaSi_2$ crystalline structure. Unresolved lines which did not correspond

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to the crystalline structures of BaSi sub 2, BaO, or Si were also present. Compacted specimens, obtained in an argon atmosphere by hot pressing, were black with a metallic luster. Metallographic analysis of these specimens showed a composition primarily of single-phase polyhedral grains with microhardness of 930 + or - 50g/mm sup 2. Melting point, measured with a pyrometer, was 1850 + or - 50C, and the thermal expansion coefficient was 8.2(10 sup -6)/C at 20--650C and 8.6(10 sup -6)/C at 650--1100C. Thermal conductivity was about 3.7(10 sup -3)cal/(cm)(sec)(C). From measurements of electrical resistivity and temperature dependence at 20--1000C, it was concluded that BaSi sub 2 is a semiconductor with a resistivity of 0.4 (ohm)(cm) at room temperature. A change from impurity to intrinsic conduction occurs at 600C. The width of the forbidden band, determined from a plot of the temperature dependence of resistivity, was found to be 0.48 ev. Absolute thermoelectric power was found to be +600 Microvolts/C at room temperature. In view of the interest in BaSi sub 2 as a possible refractory semiconducting material, its air oxidation was determined gravimetrically at 1300C and was found to follow a parabolic law with an

Figures and 2 formulas.
ASSOCIATION: none
SUBMITTED: 25Dec61 DATE ACQ: 24Jul63 ENCL: 00
SUB CODE: CO NO REF SOV: 015 OTHER: 001
Card 2/2 27/44

SAMSONOV, G.V.; LYUTAYA, M.D.; NESHPOR, V.S.

Preparation and physicochemical properties of scandium nitride. Zhur. prikl. khim. 36 no.10:2108-2115 O '63. (MIRA 17:1)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.

MESHPOR, V.S.; L'VOV, S.N.; SAMSONOV, G.V.

Magnetic susceptibility of silicides of certain transition metals. Izv. vys. ucheb. zav.; fiz. no.1:160-163 '64. (MIRA 17:3)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR i Khersonskiy pedagogicheskiy institut imeni Krupskoy.

ACCESSION NR: AP4038443 S/0294/64/002/002/0274/0279

AUTHOR: Vil'k, Yu. N.; Avarbe, R. G.; Neshpor, V. S.; Ry*zhkova, T. P.; Omel'chenko, Yu. A.

TITLE: Interaction of niobium carbide with tungsten

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 2, 1964, 274-279

TOPIC TAGS: tungsten, niobium carbide, sintered tungsten niobium carbide alloy, tungsten niobium carbide interaction, tungsten niobium carbide alloy, alloy property, alloy microstructure, alloy phase diagram

ABSTRACT: Two sections of the W-Nb-C system, the W-$NbC_{0.98}$ with 5—95 wt% W and W-$NbC_{0.85}$ with 5—50 wt% W, at 2000, 2600, 2700, and 3000C, have been investigated by means of metallographic and x-ray phase analyses, visual thermal analysis, and microhardness measurements. The alloys, sintered in a vacuum of 10^{-4} mm Hg, contained 0.1 wt% max. of N and O. Heat treatment of the alloys was carried out in an ultrapure

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ACCESSION NR: AP4038443

helium atmosphere. Results of the analyses showed that the W-$NbC_{0.98}$ and W-$NbC_{0.85}$ sections are not pseudobinary systems and (in the solid state) pass through the two-phase equilibrium regions $\alpha+\delta$ (α-W and W_2C base solid solutions), $\alpha+\gamma$ (α-W and NbC base solid solutions), and $\gamma+\beta$ (NbC and Nb_2C base solid solutions) and through a three-phase $\alpha+\delta+\gamma$ region. No ternary compounds were found in that region of the compositions investigated. On the basis of the results obtained, isothermal sections of the ternary phase diagram for 2000, 2600—2700, and 3000C, and a hypothetic diagram of the W-NbC section were plotted (see Enclosure 1). The W-NbC alloys with less than 20 wt% W were found to be stable at temperatures $\leq$ 3000C, but alloys with a higher W content begin to melt at $\leq$ 2600C. At 2000C all alloys are in the solid state and can be used as a base for high-temperature materials. Orig. art. has: 5 figures.

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii (State Institute of Applied Chemistry)

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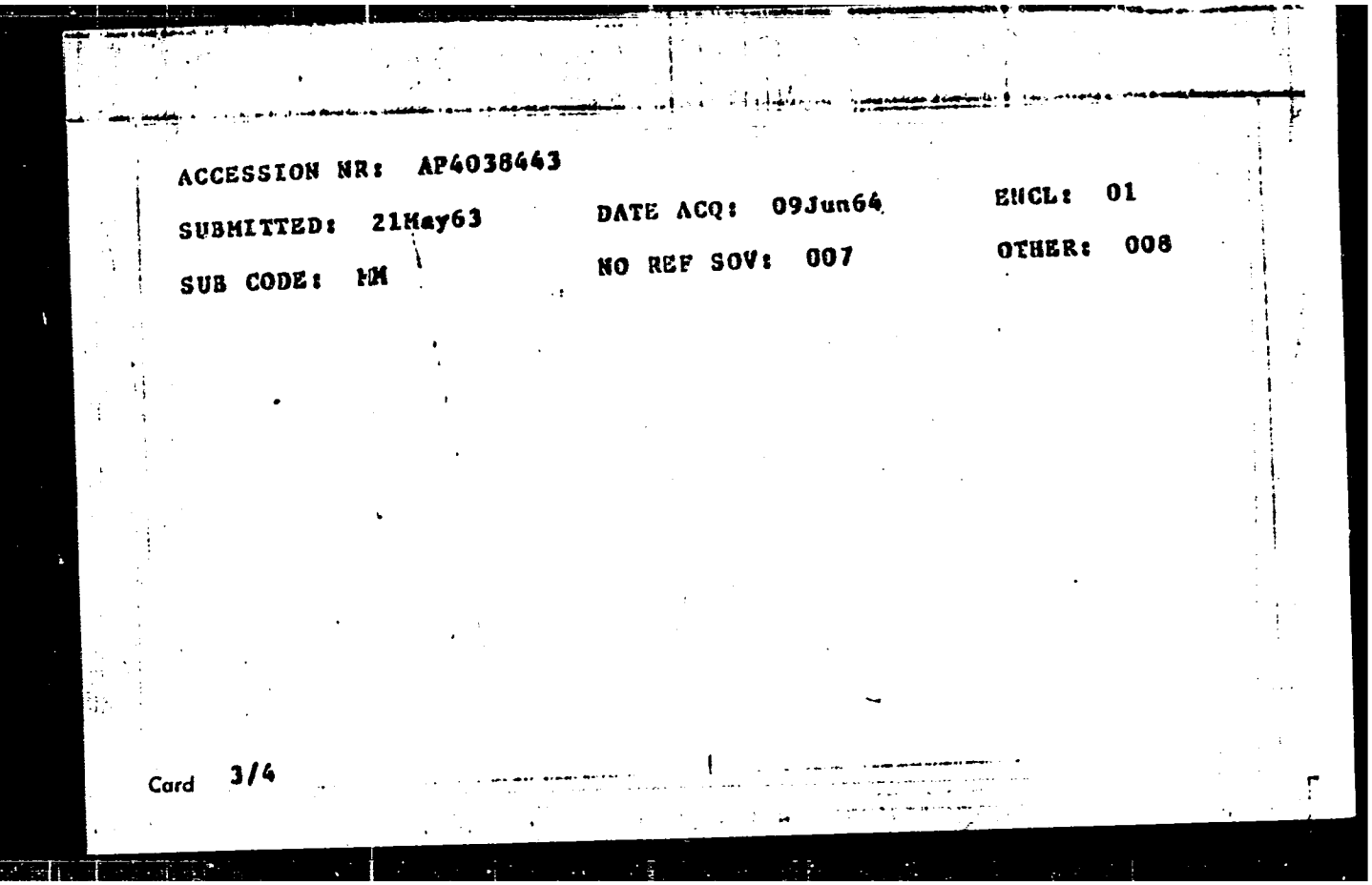

ACCESSION NR: AP4038443

SUBMITTED: 21May63 DATE ACQ: 09Jun64 ENCL: 01

SUB CODE: MM NO REF SOV: 007 OTHER: 008

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ACCESSION NR: AP4038443

ENCLOSURE: 01

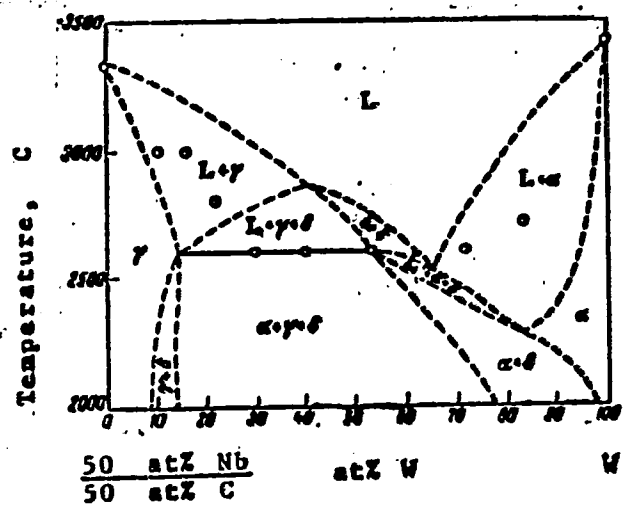

Fig. 1. Hypothetical phase diagram of the W-NbC system

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L 29602-66 EWT(m)/ETC(f)/EWP(e)/EWP(t)/ETI IJP(c) AT/WH/JD/JG/GD

ACC NR: AT6013560 (A) SOURCE CODE: UR/0000/65/000/000/0219/0236

AUTHOR: Vil'k, Yu. N.; Avarbe, R. G.; Neshpor, V. S.; Ryzhkova, T. P.; Omel'chenko, Yu. A.

ORG: State "Order of the Red Banner of Labor" Institute of Applied Chemistry (Gosudarstvennyy ordena trudovogo krasnogo znamenii institut prikladnoy khimii)

TITLE: About interaction between niobium carbide and tungsten

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Vysokotemperaturnyye neorganicheskiye soyedineniya (High temperature inorganic compounds). Kiev, Naukova dumka, 1965, 219-236

TOPIC TAGS: niobium, tungsten, carbide, carbon, nonferrous metal

ABSTRACT: The phase equilibrium of tungsten and niobium carbide, $NbC_{0.98}$ (from 5 to 95 wt % W), and $NbC_{0.85}$ (from 5 to 50 wt % W), was examined by x-rays in the 2000°-3000°C range. It was found that the system has true two-phase region (α+δ-solid solution based on W and W_2C, α+γ-solid solution based on W and NbC, and γ+β-solid solution based on NbC and Nb_2C) and also a region of a three-phase equilibrium, α+β+γ. In the tertiary W-Nb-C region the liquid phase occurs below 2600°C. In the tertiary W-Nb-C region binary eutectic α+β, a tertiary eutectic α+β+γ, and a tertiary eutectic α+δ+γ were detected. The hypothetic profile of the Nb-W-C system is shown in figure 1. The dependence of the lattice parameter of the α-phase upon Nb content and of the NbC solid solu-

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L 29602-66
ACC NR: AT6013560

tion upon WC content are graphed. The melting ranges and the possible shape of the polythermal profile of the W-NbC system are also shown. Orig. art. has: 8 figures, 3 tables.

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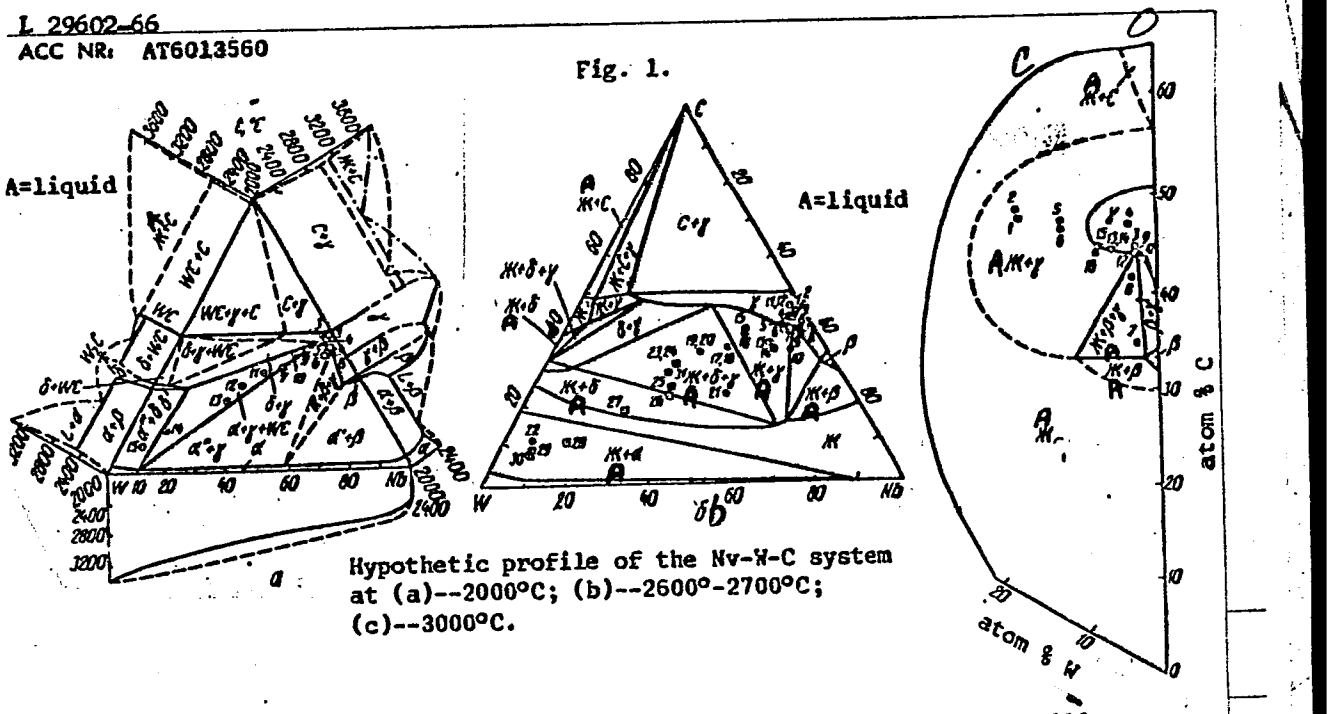
L 29602-66
ACC NR: AT6013560

Fig. 1.



Hypothetic profile of the Nv-W-C system at (a)--2000°C; (b)--2600°-2700°C; (c)--3000°C.

SUB CODE: 07/ SUBM DATE: 03Jul65/ ORIG REF: 008/ OTH REF: 010

Card 3/3 CC

ACC NR: AP5025791 SOURCE CODE: UR/0363/65/001/009/1545/1546

AUTHOR: Neshpor, V. S.; Klimashin, G. M.

ORG: State Order of the Labor Red Banner Institute of Applied Chemistry (Gosudarstvennyy ordena Trudovogo Krasnogo znameni institut prikladnoy khimii); Leningrad Technological Institute (Leningradskiy tekhnologicheskiy institut)

TITLE: Thermal conductivity of titanium monocarbide as a function of carbon content in the region of homogeneity

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 9, 1965, 1545-1546

TOPIC TAGS: titanium compound, carbide, heat conductivity

ABSTRACT: Samples of titanium monocarbides $TiC_{0.971-0.525}$ were obtained by direct synthesis of the carbide from the components followed by sintering of bars pressed from the carbide. The samples consisted of a single phase and had a cubic NaCl-type lattice. The dependence of the thermal conductivity on the mole fraction (1-x) of carbon vacancies in TiC_x monocarbides was measured and is shown in fig. 1. The contribution of free electrons to thermal conductivity was determined from the Wiede-

UDC: 546.824'261

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L 13106-66
ACC NR: AP5025791

mann-Franz law by measuring the electric resistivity. The change in the electronic component of thermal conductivity λ_e is represented by curve 2. The increase in λ_e from carbon rich to carbon poor monocarbides is due to a substantial increase in the concentration of free electrons (from 0.1 for $TiC_{0.971}$ to 1.0 per formula unit for $TiC_{0.525}$), as indicated by Hall coefficients measured on the same samples. The lattice component of thermal conductivity λ_g was determined as the difference between the measured and the electronic conductivity $\lambda_g = \lambda_0 - \lambda_e$. Orig. art. has: 1 figure.

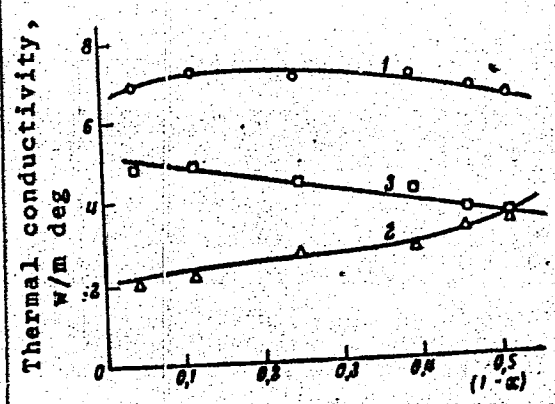

Fig. 1. Thermal conductivity of titanium monocarbides TiC_α vs mole fraction of carbon vacancies $(1-\alpha)$: 1--total thermal conductivity; 2--electronic thermal conductivity; 3--lattice thermal conductivity.

SUB CODE: 07/ SUBM DATE: 10May65/ ORIG REF: 003/ OTH REF: 002

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L 06295-67
ACC NR: AT5027151 O

creasing free electron concentration. The Hall mobility of electrons decreases from carbon-rich to carbon-poor titanium monocarbides, due to an increase in the fraction of conduction electrons scattered by the carbon vacancies. Orig. art. has: 3 figures and 1 table.

SUB CODE: 07,20/ SUBM DATE: 31Mar65/ ORIG REF: 009/ OTH REF: 016

Card 2/2 gf

L 06295-67 EWT(m)/EWP(e)/EWP(t)/ETI IJP(c) AT/WH/JD/JG/GD

ACC NR: AT7027151 SOURCE CODE: UR/0000/65/000/000/0241/0244

AUTHOR: Avgustinik, A. I.; Golikova, O. A.; Klimashin, G. M.; Kozlovskiy, L. V.; Neshpor, V. S.

58
B+1

ORG: none

TITLE: Dependence of certain electrophysical properties of titanium monocarbide on the carbon content

SOURCE: AN SSSR. Otdeleniye obshchey i tekhnicheskoy khimii. Issledovaniya v oblasti khimii silikatov i okislov (Studies in the field of chemistry of silicates and oxides). Moscow, Izd-vo Nauka, 1965, 241-244

TOPIC TAGS: titanium compound, carbide, Hall constant, Hall mobility, conduction electron, resistivity, carbon

ABSTRACT: The dependence of the resistivity ρ, thermal emf α and Hall constant R of titanium monocarbides on the carbon content was studied in the region of homogeneity on samples prepared from powdered Ti and acetylene black at 1750°. All the samples showed a negative Hall constant, indicating an n-type conductivity; the absolute value of R decreases rapidly with decreasing carbon content, indicating an increase in the concentration of free conduction electrons. The absolute differential thermal emf also decreases with diminishing carbon content. The resistivity decreases with decreasing carbon content in monocarbide phases TiCx, this being in accord with the in-

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L 06576-67 EWT(m)/EWP(e)/EWP(w)/EWP(t)/ETI IJP(c) AT/WH/JD/JG
ACC NR: AP6029818 (A) SOURCE CODE: UR/0363/66/002/008/1439/1443

55

AUTHOR: Avgustinik, A. I.; Golikova, O. A.; Klimashin, G. M.; Neshpor, V. S.; Ordan'yan, S. S.; Snetkova, V. A.

B

ORG: Leningrad Institute of Technology im. Lensovet (Leningradskiy tekhnologicheskiy institut); Semiconductor Institute, Academy of Sciences SSSR (Institut poluprovodnikov Akademii Nauk SSSR)

27

TITLE: Dependence of certain electro- and thermophysical properties of zirconium monocarbide on the carbon content within the range of homogeneity

27

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 8, 1966, 1439-1443

TOPIC TAGS: zirconium carbide, solid mechanical property, solid physical property, electric conductivity, thermal emf, Hall coefficient

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ABSTRACT: The dependence of electrical resistivity, absolute thermal emf, Hall coefficient, and thermal conductivity of zirconium monocarbide was studied for 36-48 atom % C contents in the carbide. The zirconium carbide samples were prepared by fusing high purity zirconium and carbon at 1800°C in vacuo followed by sintering at 2200°C. The properties, compositions, and lattice parameters for various zirconium samples are graphed and tabulated. It was found that free electrons act as current carriers within zirconium carbide. The electrical resistivity, the thermal emf, and the Hall coefficient were found to decline and the thermal conductivity was found to increase with

UDC: 546.831'261:541.12.03

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L 06576-67

ACC NR: AP6029818

declining contents of the combined carbon in zirconium monocarbide. This phenomena are related to the release of a portion of the zirconium electrons from the localized metal-carbon bonds. The specific resistivity and absolute thermal emf were found to increase linearly with increasing temperature. The slope of these lines was found to decrease with decreasing carbon content in zirconium carbonate. This phenomenon is apparently due to the decline in the effective mass of the conduction electrons. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11,20/SUBM DATE: 06Oct65/ ORIG REF: 013/ OTH REF: 015

Card 2/2

ACC NR: AP7004404 SOURCE CODE: UR/0226/67/000/001/0089/0094

AUTHOR: Neshpor, V. S.; Vil'k, Yu. N.; Danisina, I. N.

ORG: State Institute of Applied Chemistry (Gosudarstvennyy institut prikladnoy khimii)

TITLE: Changes in the electric and thermophysical properties of pseudobinary alloys of the section $ZrC_{0.92}$—$ZrN_{0.85}$ of the zirconium—nitrogen—carbon system

SOURCE: Poroshkovaya metallurgiya, no. 1, 1967, 89-94

TOPIC TAGS: carbon alloy, binary alloy, pseudobinary alloy, zirconium carbide, zirconium nitride

ABSTRACT: The dependence of the variation in electroconductivity, absolute differential thermal e. m. f., and characteristic temperature on chemical composition for alloys of the pseudobinary region of the state diagram of zirconium-nitrogen-carbon hardened from 2000 C has been studied. The nature of a change in value of the electroconductivity, thermal conductivity and characteristic temperature indicates that in the zirconium carbide-zirconium nitride system, a continuous series of solid solutions are formed with unlimited mutual solubility of the

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ACC NR: AP7004404

components. The authors express their gratitude to O. V. Molchanova, A. V. Suvorova, Yu. A. Omel'chenko, and V. D. Novozhilova, for chemical and x-ray analyses of samples. Orig. art. has: 3 figures. [Authors' abstract] [AM]

SUB CODE: 11/SUBM DATE: 29May66/ORIG REF: 021/OTH REF: 009/

Card 2/2

SOV/169-59-4-4233

Translation from: Referativnyy zhurnal, Geofizika, 1959, Nr 4, p 144 (USSR)

AUTHORS: Yeryushev, N.N., Neshpor, Yu.I.

TITLE: On the Connection Between Solar Flares 12 and Phenomena in the Lower Ionosphere 12

PERIODICAL: Izv. Krymsk. astrofiz. observ., 1958, Vol 20, pp 12 - 21 (Engl. Res.)

ABSTRACT: A correlation between solar flares and corresponding phenomena on atmospherics (f = 37 kc) and on the minimum ionospheric reflection frequencies (f_{min}) has been carried out, using the vertical sounding method. Results of studying the quantitative connection between them are given. The author discusses problems of the effectiveness of solar flares on the aforementioned types of phenomena in dependence on the location of the flares on the solar disk and on the daytime.

Authors' résumé

Card 1/1

cc371

S/035/61/000/005/026/042
A001/A101

9,9130

AUTHORS: Neshpor, Yu.I., Savich, N.A.

TITLE: On the possible structure of D-region during sudden ionospheric disturbances

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1961, 58, abstract 5A381 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 24, 41-47, Engl. summary)

TEXT: The authors propose a method of determining the structure of D-region during sudden ionospheric disturbances. On the basis of experimental results obtained during disturbances of August 31, 1956, and August 22, 1958, the conclusion was drawn that ionizing radiation of those flares was not identical to radiation creating a quiet D-region, but represents apparently X-radiation. There are 5 references.

Authors' summary

[Abstracter's note: Complete translation]

Card 1/1

S/169/62/000/008/081/090
E032/E114

AUTHORS: Vladimirskiy, B.M., Dvoryashin, A.S., Yeryushev, N.N., Moiseyev, I.G., Neshpor, Yu.I., Ogir', M.B., and Odintsova, I.N.

TITLE: The chromospheric flare of August 22, 1958 and the associated radio- and geophysical effects

PERIODICAL: Referativnyy zhurnal, Geofizika, no.8, 1962, 25, abstract 8 G 191. (Izv. Krynsk. astrofiz. observ., v.26, 1961, 74-89). (abstract in English)

TEXT: Describes the results of observations of the flare of August 22, 1958, which were carried out at the Krymskaya astrofizicheskaya observatoriya (Crimean Astrophysical Observatory) using the coronagraph, radio telescopes, the ionospheric station, the apparatus for the recording of atmospherics, and the geomagnetic station, as well as observations at a number of cosmic-ray stations.

[Abstractor's note: Complete translation.]

Card 1/1

S/035/62/000/006/023/064
A001/A101

9.9100

AUTHORS: Abramenko, A. N., Neshpor, Yu. I.

TITLE: Measurement of absorption of cosmic radio waves

PERIODICAL: Referativnyy zhurnal, 'Astronomiya i Geodeziya, no. 6, 1962, 58, abstract 6A434 ("Izv. Krymsk. astrofiz. observ.", 1961, v. 26, 149 - 155, English summary)

/B

TEXT: The authors describe the equipment and preliminary results of observations. They propose a method to calculate absorption of radio waves in region D of the ionosphere using the records of intensity of cosmic radio radiation. There are 8 references.

Authors' summary

[Abstracter's note: Complete translation]

Card 1/1

42831
S/169/62/000/010/065/071
D228/D307

3,1720

AUTHOR: Neshpor, Yu.I.

TITLE: Penetration depth of ionizing chromospheric flare radiation

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 10, 1962, 27, abstract 10G206 (Izv. Krymsk. astrofiz. observ., 26, 1961, 156-160)

TEXT: Proceeding from the general formula of the absorption factor, the expression

$$\Delta\rho = B\left[\int \frac{N_t \nu_z dz}{\nu_z^2 + (\omega + \omega_L)^2} - \int \frac{N_o\, z dz}{\nu_z^2 + (\omega + \omega_L)^2}\right] \qquad (1)$$

was obtained for the excess absorption of cosmic radio emission during a sudden ionospheric disturbance, in the case of quasi-longitudinal radio wave propagation. In it $B = 2\pi e^2/mc$, N_t is the ionization density at the time of a disturbance, and N_o is the normal density. If $\nu^2 \ll (\omega + \omega_L)^2$,

Card 1/3

S/169/62/000/010/065/071
D228/D307

Penetration depth ...

$$\Delta\rho\,\omega_1)/\Delta\rho\ \ (\omega_2) = (\omega_2 + \omega_L)^2/(\omega_1 + \omega_L)^2,$$

where ω_1 and ω_2 are the two operating frequencies. If $\nu^2 \gg (\omega + \omega_L)^2$,

$$\Delta\rho\,(\omega_1)/\Delta\rho\,(\omega_2) = [(\omega_2 + \omega_L)/(\omega_1 + \omega_L)]^n,$$

when, depending on the form of the curve of N(z), n can assume various values between 0 and +2. At Simferopol' cosmic radio emission is continuously recorded on the frequencies $\omega_1 = 26.7$ Mc/s and $\omega_2 = 32.5$ Mc/s. The author computed the time dependence of $\Delta\rho\omega_2$ during a sudden ionospheric disturbance for ω_1. Then, assuming $\Delta\rho$ to be inversely proportional to the square of the frequency, he calculated $\Delta\rho\omega_2$ and compared the results with the observations. It was found that the calculated curve coincided with the observed in six cases; in two cases, however, the calculated curve was above the experimental (sudden ionospheric disturbances of April 1 and November 12, 1960). It follows from this that $n < 2$ on April 1 and November 12, 1960, and that the anomalous ionization of the sudden ionospheric disturbances was localized in the region where $\nu \geqslant \omega$,

Card 2/3

Penetration depth ...

i.e. 10^8 c/s. Proceeding from data about the height distribution ν, it may be inferred that a height of $\sim$ 50 km corresponds to the values of $\nu \geqslant 10$ c/s.
[Abstracter's note: Complete translation]

Card 3/3

MESHPOR, Yu.I.

Use of radio astronomy in studying L-radiation from solar flares.
Izv. Krym. astrofiz. obser. 29:152-159 '63. (MIRA 16:10)

ACC NR: AR6028707 SOURCE CODE: UR/0269/66/000/006/0063/0063

AUTHOR: Neshpor, Yu. I.

TITLE: On the variation of x-ray radiation spectrum of solar flares in time

SOURCE: Ref. zh. Astronomiya, Abs. 6.51.480

REF SOURCE: Izv. Krymsk. astrofiz. observ., no. 34, 1965, 313-318

TOPIC TAGS: solar x radiation, solar flare, astronomic observatory, ionosphere

TRANSLATION: A method is suggested to obtain the variation curve of the flux of solar x-radiation in time using data on the changes in the electron density in the ionosphere. The data are collected by earth-based equipment during sudden ionospheric excitations. The nature of the change of the x-ray spectrum in time is determined from changes in flux for two levels of the ionosphere (two frequencies). It is demonstrated that the x-radiation spectrum during the solar flare on 23 February 1957 changed in time. 8 references. A. P.

SUB CODE: 03

UDC: 523.7:525.23

Card 1/1

DUBROVSKIY, M.M., inzh.; MESHTA, G.F., inzh.

Lashing of the wires of an overhead power transmission line. Elek. sta. 34 no.8:76-78 Ag '63. (MIRA 16:11)

SIDOROV, I.A.; NESHTA, P.I.

Studying the corrosion resistance of cement samples using molds at great depths. Burenie no.10:25-28 '64.
(MIRA 18:6)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, g. Bugul'ma.

RUMANIA / Human and Animal Physiology. The Nervous System. T

Abs Jour: Ref Zhur-Biol., No 9, 1958, 41697.

Author : Zager, O.; Broshtianu, R.; Neshtianu, V.; Floria-Chokiu, V.
Inst : Academy of RPR.
Title : The Connection Between the Optical Tract and the Frontal Lobe.

Orig Pub: Zh. med. nauk. Akad. RNR, 1956, 1, No 2, 163-170.

Abstract: The cortex of the hemispheres in cats, with the exception of the right frontal lobe, was removed. Within 2 1/2 years the bilateral loss of the protective defense reflex was noted, together with

Card 1/3

RUMANIA / Human and Animal Physiology. The Nervous System. T

Abs Jour: Ref Zhur-Biol., No 9, 1958, 41697.

Abstract: the loss of the rightsided tactile reflex for standing and posture correction. Rhythm adoption was observed only in the right frontal area after rhythmical stimulation with light at frequencies of 140-470 osc./min. In leads from other areas of the skull, irregular, high amplitude waves of frequency ~1 osc/sec. were observed. Inclusion of total illumination blocked the adoption of the stimulation rhythm in the frontal lobe. Interrupted sound stimulation was followed only by respiratory changes and the appearance in all leads of waves of 1 osc./sec. Histologically-total bilateral degeneration of the lateral geniculate bodies was demonstrated. It was established by this method that there exist direct pathways

Card 2/3

T-10

USSR/Human and Animal Physiology - Nervous System.
Cortex of Cerebral Hemispheres.

Abs Jour : Ref Zhur - Biol., No 7, 1958, 32152

Author : Krigel', E., Broshtyanu, R., Neshtiev, V.
Inst : -
Title : Electroencephalographic Investigation of Cortical Activity. Changes of the Curve of the Latent Period of Cortical Reaction to Interrupted Light Stimulation. Role of Experimentally-Induced Spasm Attack and of Barbituric Sleep.

Orig Pub : Zh. med. nauk Akad. RNR, 1956, 1, No 2, 171-180

Abstract : In unanesthetized cats, the latent period of reactions (LPR) in the cortex in the region of the area striate to a second or third flash of light (relation of time of light and darkness 1/11) significantly exceeded the LPR to the first flash. After 7 flashes, LPR began to undergo uniform oscillations, which the author characterize by a calculated degree of standard deviation.

Card 1/2

HUMANIA/Human and Animal Physiology - Nervous System. T-10
Cortex of Cerebral Hemispheres.

Abs Jour : Ref Zhur - Biol., No 7, 1958, 32153

Author : Krigel, Broshtyanu, Neshtianu, V.
Inst : -
Title : Electroencephalographic Investigation of Cortical Reactiveness. II. Influence of Afterspasm and Medicated (Barbituate) Sleep. Retardation of the Latent Period of Cortical Responses During Interrupted Light Stimulations.

Orig Pub : Studii si cercetari neurol. Acad. RPR. Inst. neurol., 1957, 2, No 1, 53-67.

Abstract : Part I see RZhBiol, 1958, 4439.

Card 1/1

KRIGEL', E., KESHTIANU, V.

Electroencephalographic studies on cortical reactivity [with summary in English]. Zhur.vys.nerv.deiat. 8 no.4:570-581 Jl-Ag '58 (MIRA 11:9)

1. Institut nevrologii im. I.P. Pavlova Akademii Rumynskoy Narodnoy Respubliki.

(ELECTROENCEPHALOGRAPHY,
eff. of cortical stimulation & inhib. (Rus))
(CEREBRAL CORTEX, physiology
eff. of inhib. & stimulation, electrophysiol. (Rus))

KREYNDLER, A.; KRIGEL', E.; NESHTIANU, V.; ANGELESKU, N.[Angelescu, N.]

Experimental studies on the problem of changes in the secondary reaction during barbiturate sleep following bilateral ligature of the common carotid arteries. Nauch. trudy Inst. nevr. AMN SSSR no.1:278-283 '60. (MIRA 15:7)

(CAROTID ARTERY—LIGATURE)
(CEREBRAL CORTEX)
(SLEEP THERAPY)

NESHUKAYTIS, V. V.

"Investigation of a Photoelectronic Amplifier, Development of the Foundations of Its Theory and Methods of Calculation." Cand Tech Sci, L'vov Polytechnical Inst, Min Higher Education, Kaunas-L'vov, 1954. (KL, No 7, Feb 55)

SO: Sum. No. 631, 26 Aug 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

S/194/61/000/006/020/077
D201/D302

AUTHORS: Neshukaytis, V.V and Sryubas, V.A.

TITLE: Applying an electron-optical scanning system for automating optical control of paper

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1961, 24, abstract 6 V190 (Tr. AN LitSSR, 1960, B3(23), 183-188)

TEXT: The Institut energetiki i elektrotekhniki AN Litovskoy SSR (Institute of Energetics and of Electrotechnology of the AS Lithuanian SSR) has designed a device for detecting holes, stains, folds and similar defects at the surface of paper sheets. The controlled surface is illuminated through an objective with a moving light spot (LS) obtained from the screen of a CRT. The light, reflected from the controlled surface, is detected by a photocell and transformed into a corresponding el. signal. The movement of the electron beam at the screen of CRT is controlled by a saw-tooth voltage

Card 1/2

S/194/61/000/006/020/077
D201/D302

Applying an electron-optical...

from a special generator. The whole surface is scanned by means of simultaneous scanning and shifting of the controlled object. The experimental installation had type 18Л047 (18L047) CRT (spot diameter ~ 0.5 ÷ 1 mm, persistence 2 x 10^{-5} sec) and photoelectron multiplier ФЭУ-19м (FEU-19m). Maximum shifting speed of paper is 30 m/min. To obtain a high efficiency of the arrangement, it should have a CRT persistence 10^{-6} - 10^{-7} sec and with a spot diameter 0.06 ÷ 0.07 mm. The oscillograms of signals are given at the output of the multiplier together with experimental curves relating the amplitude of a pulse, produced by a black stain having dimensions of 2 cm, to the scanning frequency. 3 figures. 3 references.
[Abstracter's note: Complete translation]

Card 2/2

23466

S/115/61/000/006/002/006
E073/E535

9,6100
26.4140

AUTHORS: Neshukaytis, V. V. and Valteris, S. E.

TITLE: Low Frequency Vibrometer with a Liquid Seismic Mass

PERIODICAL: Izmeritel'naya tekhnika, 1961, No.6, pp.18-21

TEXT: At the Kaunasskiy politekhnicheskiy institut (Kaunas Polytechnical Institute) a vibration sensor was developed which permits measuring low frequency vibrations in any orientation in space. By means of a relatively simple electronic amplifier circuit it is possible to measure the amplitude and frequency of vibrations and to determine their shape. The apparatus is now being perfected at the Institut energetiki i elektroniki Akademii nauk Litovskoy SSR (Institute of Power Engineering and Electronics, Academy of Sciences, Lithuanian SSR). The principle of operation is shown in Fig.1. A circular tube, which is narrow in the centre, is closed at the ends by elastic goffered diaphragms, the space between the diaphragms being filled with a liquid. The liquid and the diaphragms form a seismic system with the suspension springs. The mechanical vibrations are transformed into electric signals by means of a coreless transformer pick-up, Fig.3 ($E_{вых}$ - output

Card 1/6

voltage; U_{num} - input voltage). Voltage to this pick-up is fed either to the coils 1 and 3 or to the coil 2 using high frequency current. The coils 1 and 3 are so connected that they generate fluxes in opposite directions when current is fed into the coil 2. The e.m.f. amplitude at the output depends on the position of the coil 2 relative to the coils 1 and 3, being zero in the centre position and maximum at extreme positions. In some cases it may be convenient that the neutral point is shifted from the central position, which is achieved by connecting a condenser C_1 into the circuit and by a suitable choice of the capacitance of this condenser the desired shift of the neutral position can be obtained. By connecting a condenser C_2 parallel to the output, an oscillation circuit is created. If the resonant frequency of this circuit is the same as the supply frequency, the sensitivity is considerably increased. The maximum linearity of the characteristic, i.e. of the dependence of the output e.m.f. on the displacement of the middle coil, is obtained if $D = d \pm 0.5\ell$, where D and d - diameters of the centre and end coils, respectively, ℓ - distance between the end coils.

If the coils 1 and 3 are connected opposite to each other, the pick-up will be insensitive to external magnetic fields. By fitting the pick-up into a metallic housing, the influence of external fields can be entirely eliminated. Fig.4 shows a variant of the design of such a vibration pick-up. The liquid seismic mass 1 fills the body 2 which is closed at both ends by elastic rubber membranes 3; the output coils 4 of the transformer pick-up are rigidly connected with the housing and the feeding coil 5 is suspended on elastic springs 6. The feeding coil has a celluloid bubble 7 of a size such that the reduced specific weight of the coil with the bubble is equal to the specific weight of the seismic liquid. Depending on the orientation of the vibration pick-up in space, the seismic mass will take up a certain position by seeping through special holes 8 into the body. In the case of steady state conditions, due to the effect of the pressure of the springs 6 the coil 5 will occupy the same position relative to the coils 4 regardless of the orientation of the vibration pick-up, since its specific weight and that of the seismic liquid are equal. During the measurements the vibration sensor is either pressed on

by hand or glued onto the object under test. The output coils as well as the housing vibrate with the object, whilst the liquid, the seismic mass, remains immobile and holds the input coils in the same position. The modulated signal from the output of the vibration sensor is demodulated and amplified. The amplified signal is then fed to the terminals of amplitude or frequency measuring instruments or to an oscillograph. The sensor has a low sensitivity (2%) to transverse vibrations because the movement of the liquid in the narrow channel proceeds only along the axis. The amplitude, A vs. frequency, f, c.p.s. characteristics of the instrument are plotted in Fig.5: curve 1 - applies to the system filled with distilled water, curve 2 to glycerine, curve 3 to glycerine diluted with water. The instrument is designed for measuring low frequency (5 to 200 c.p.s.) vibrations of amplitudes between 1 and 5000 μ. The carrier frequency is 50 c.p.s. Two variants of sensors have been produced, one (Fig.4) for measuring small amplitudes, weighing 120 g, the other (Fig.6) for measuring larger amplitudes and weighing 300 g. The total weight of the measuring equipment is 15 kg. There are

Low Frequency Vibrometer ...

23466
S/115/61/000/006/002/006
E073/E535

7 figures.

Fig.1

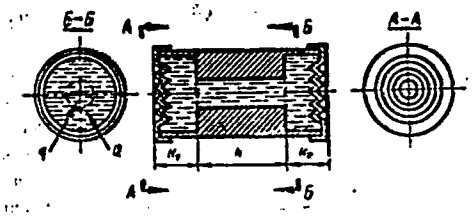


Fig.3

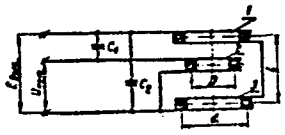
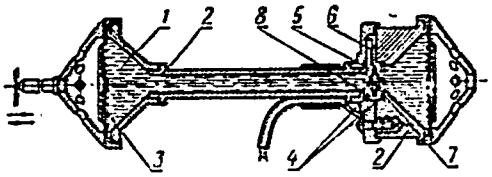


Fig.4



Card 5/6

Fig.5

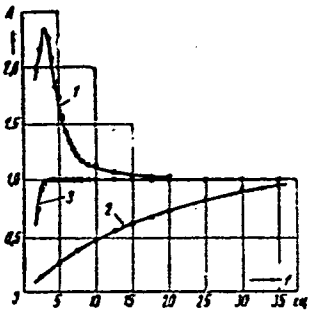
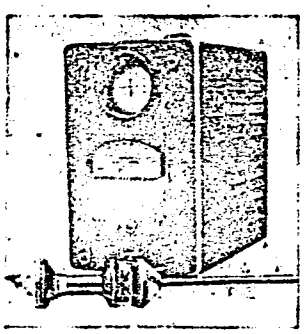


Fig.6



NESHUMOV, B. ; GIL'TER, I.

Turned wood toys. IUn.tekh. no.6:49-50 Je '57. (MIRA 10:7)
(Toys)

NESHUMOV, B., kandidat iskusstvovedcheskikh nauk, Moskva.

Turning oval frames on a lathe. Prom.koop. no.8:29 Ag '57.
(MLRA 10:9)

(Turning)

NESHUMOV, B. V., kandidat iskusstovedcheskikh nauk.

Imitation relief. Prom. koop. no.9:17 S '57. (MLRA 10:9)
(Woodwork)

NESHUMOV, B.V., kand.iskusstvoved.nauk; KOSHELEV, A.Ye., arkhitektor; ASTROVA, T.Ye., arkhitektor; SHIKHEYEV, V.N., arkhitektor; VOSHCHANOVA, G.K., arkhitektor; GORBUNOVA, V.A., arkhitektor; KOVAL'KOV, V.G., arkhitektor; MARKEYEV, Yu.S., arkhitektor; YAVOROVSKAYA, M.E., arkhitektor; OGRYZKO, P.V., arkhitektor; TIKHONOVA, N.V., arkhitektor; MANANNIKOVA, L.V., arkhitektor; GRADOV, G.A., red.; PAVLENKO, M.V., red.

[Furniture and equipment for public buildings; catalog based on materials from the Exhibition of Furniture and Equipment for Public Buildings, 1959-1960] Mebel' i oborudovanie dlia obshchestvennykh zdanii; katalog sostavlen po materialam vystavki mebeli i oborudovaniia dlia obshchestvennykh zdanii, 1959-1960 gg. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 186 plates. (MIRA 14:2)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut obshchestvennykh zdaniy i sooruzheniy. 2. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Gradov). (Furniture--Catalogs) (Public buildings--Equipment and supplies)

MESHKOV, S., inzh.-polkovnik

Crossing on ice. Voen.znan. 34 no.12:18-19 D '58.
(MIRA 12:2)

(Stream crossing, Military)

ACCESSION NR: AP4043823 S/0303/64/000/004/0054/0056

AUTHOR: Moiseyev, A. F., Olenin, S. S., Neshumova, A. I.

TITLE: Use of polyorganosiloxane coatings to protect parts of DM-6 differential manometers against corrosion in aggressive media

SOURCE: Lakokrasochny*ye materialy* i ikh primeneniye, no. 4, 1964, 54-56

TOPIC TAGS: anticorrosion coating, polyorganosiloxane coating, differential manometer, coating FG-9, coating 192T, coating FG-50, coating MK-4, coating FG-35, chromic oxide coating, aluminum powder coating, titanium dioxide coating, metallic coating, phosphate precoating, polyorganosiloxane, corrosion, sea water

ABSTRACT: Modified polyorganosiloxane coatings 192T, FG-9 (+ 12% chromic oxide or 6% Al powder by weight), FG-35 (+ 5% Al powder), FG-50 (+ 5% Al powder) and MK-4 (+ 12% titanium dioxide) were used to coat the housings, seats and membrane chambers of DM-6 differential manometers in a study of optimal protection against corrosion in various aggressive media. Housings and seats were prepared by sandblasting, membrane blocks were either untreated or etched in nitric-hydrochloric acid mixture. Sprayed parts (1 or 2 coats) were exposed for one month to tap water at room temperature, 5% sodium chloride at room temperature or 50C, or 5% solutions of sulfuric, hydrochloric or nitric acids;

Card 1/2

ACCESSION NR: AP4043823

dipped parts were exposed for 10 days to sea water or nitric acid (~17% concentration). Prior phosphating did not improve the corrosion resistance of coatings. FG-9, FG-50 and MK-4 were best in tap water, FG-9 and FG-50 were adequate in 5% sodium chloride at 50C and 5% solutions of nitric or hydrochloric acids, but not in sulfuric acid. MK-4 protected only in dilute solutions of nitric acid. Adhesion to an untreated scale surface was poor for all coatings. Two coats of FG-9 or FG-50 provided adequate protection in sea water. FG-50 was somewhat better in nitric acid and is recommended. The stability of its film increases when curing temperature is increased to 200C. Orig. art. has: 5 tables.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00

SUB CODE: MT NO REF SOV: 000 OTHER: 000

Card 2/2

AUTHORS: Syavtsillo, S. v., Shemyatenkova, V.T., Neshumova, A. M. 32-3-13/52

TITLE: The Analysis of Silicoorganic Compounds With Respect to Their Chlorine Content (Analiz kremniyorganicheskikh soyedineniy na soderzhaniye khlora)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 3, pp. 287-289 (USSR)

ABSTRACT: In the present work hydrolysis of the compounds to be investigated is carried out in a mixture of alcohol and water (1:1), after which the iron of chlorine is determined mercurymetrically by using a mixed indicator (methylene blue - diphenyl carbazone), which changes from blue to dark blue or violet at the end point. Separtaion by a solution of metallic sodium in liquid ammonia is described as the most simplemethod of determining halides. If the silicon compounds contain hydrogen it must be removed by boiling in a concentrated lye, whereupon neutralization is carried out with 0.5n nitric acid. Good results were obtained also when determining chlorine in alkyl- and arylchlorosilanes by the method developed by Volhard. Two processes of analysis are mentioned from which several possiblities of modifying the method of determination may be seen. From the results shown in tables it may be seen that the method works with sufficient accuracy. There are 3 tables, and 7 references, 5 of which are Slavic.

AVAILABLE: Library of Congress

Card 1/1 1. Silicoorganic compounds-Chlorine-Determination 2. Hydrolysis

32-3-13/52

AUTHORS: Syavtsillo, S. V., Shemyatenkova, V. T., Neshumova, A. M.

TITLE: The Analysis of Silicoorganic Compounds With Respect to Their Chlorine Content (Analiz kremniyorganicheskikh soyedineniy na soderzhaniye khlora)

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AVAILABLE: Library of Congress

Card 1/1 1. Silicoorganic compounds-Chlorine-Determination 2. Hydrolysis

PILIS, I.; NESIC, B.; MLAKAR, J.; MUZIKRAVIC, T.

Our further experiences with secondary antitubercular agents.
Tuberkuloza 15 no.2:204-213 Ap-Je '63.

1. Institut za tuberkulozu APV[Avtonomna pokrajina Vojvodina]
Sremska Kamenica - Direktor: prof. dr Stevan Goldman.
(ANTITUBERCULAR AGENTS)

S