L 32851-65

ACCESSION NR: AP5006341

tions. The behavior of iron films followed a similar pattern. The maximum H_μ of Fe films was close to that of hardened medium-carbon steel; the strength decreased with increasing temperature of the substrate. Fe films, even when deposited at high temperatures, had a strength of 66—74 kg/mm^2 and a microhardness of 240—260 kg/mm^2, i. e., several times higher than those of annealed solid iron. In contrast with Cu and Ag films, Ni films have stable strength properties at room temperature. For example, 20-μ thick nickel film aged for 8 months at room temperature exhibited no marked change in strength properties. Orig. art. has: 2 figures and 1 table. [MS]

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina (Kharkov Polytechnic Institute)

SUBMITTED: 04Jun64 ENCL: 00 SUB CODE: MM

NO REF SOV: 004 OTHER: 001 ATD PRESS: 3205

Card 2/2

L 51512-65 EWT(l)/EWT(m)/EWP(w)/EWG(m)/EWA(d)/T/EWP(t)/EWP(b)/EWA(h)
Pz-6/Peb IJP(c) RDW/JD/AT

ACCESSION NR: AP5010787 UR/0021/65/000/004/0464/0468

AUTHOR: Palatnik, L. S.; Komnik, Yu. F.; Koshkin, V. M.; Gal'chynets'kyy, L. P. (Gal'chinetskiy, L. P.); Manyukova, L. N. (Manyukova, L. G.)

TITLE: Electrical and optical properties of alloys of the $CuInSe_2$-In_2Se_3 system

SOURCE: AN UkrRSR. Dopovidi, no. 4, 1965, 464-468

TOPIC TAGS: copper alloy, indium alloy, semiconductor, lattice defect, carrier mobility, thermal emf, electric conductivity

ABSTRACT: The authors investigated the electrical and some optical properties of n-type semiconductors of the system $CuInSe_2$-In_2Se_3. The results show that the electric conductivity decreases with increasing content of lattice defects in the alloy, while the thermal emf increases. When the In_2Se_3 content exceeds 66%, the electric conductivity increases abruptly, and the thermal emf decreases abruptly. The carrier density, the electron mobility, and the Hall mobility all decrease with increasing content of In_2Se_3. The width of the forbidden band has a minimum near about 30% In_2Se_3. It is concluded that impurity conductivity is produced in many

Card 1/2

L 51532-65

ACCESSION NR: AP5010787

2

alloys in spite of the high content of lattice imperfections, and that the decrease in the carrier density begins as soon as a small concentration of stoichiometric defects appears. The suppression of the electric activity of the impurities is attributed to the penetration of the impurity atoms either into the vacant sites of the cation sublattice or into octahedral voids, or into tetrahedral voids of a different type. Depending on the dimensions of the atom, these impurities can either be neutral or ionized, and their electric activity suppressed. This report was presented by Y. Ye. Lashkar'ov (V. Ye. Lashkarev). Orig. art. has: 2 figures.

ASSOCIATION: Kharkivs'kyy politekhnichnyy institut [Khar'kovskiy politekhnicheskiy institut] (Khar'kov Polytechnic Institute); N.-d. instytut osnovnoyi khimiyi [N.-i. institut osnovnoy khimii] (Scientific Research Institute of Basic Chemistry)

SUBMITTED: 28Feb64 ENCL: 00 SUB CODE: SS, MM

NR REF SOV: 010 OTHER: 005

Card 2/2

PALATNIK, L.S.; BELOVA, Ye.K.

Polymorphism of selenide Ga_2Se_3 of variable composition. Izv. AN SSSR. Neorg. mat. 1 no.11:1883-1888 N '65.

(MIRA 18:12)

1. Nauchno-issledovatel'skiy institut osnovsnoy khimii, Khar'kov, i Politekhnicheskiy institut imeni V.I. Lenina, Khar'kov.
Submitted April 19, 1965.

KLYUCHAREV, A.P. [Kliucharev, O.P.]; PALATNIK, L.S. [Palatnyk, L.S.]; NIKOLAYCHUK, A.I.

X-ray structural analysis of isotope targets designed for nuclear research. Ukr.fiz.zhur. 10 no.12:1369-1371 D '65. (MIRA 19:1)

1. Fiziko-tekhnicheskiy institut AN Ukr.SSR, Khar'kov, i Khar'kovskiy politekhnicheskiy institut im. Lenina. Submitted April 19, 1965.

KOS, M.Ya.; [illegible], A.I.; PLATNIK, I.S.

Investigating the defects of packing the dispersion of content scattering regions, and microdeformations in permalloy and nickel condensation films. Fiz. met. i metalloved. 20 no.4: 103-110 O '65. (MIRA 18:11)

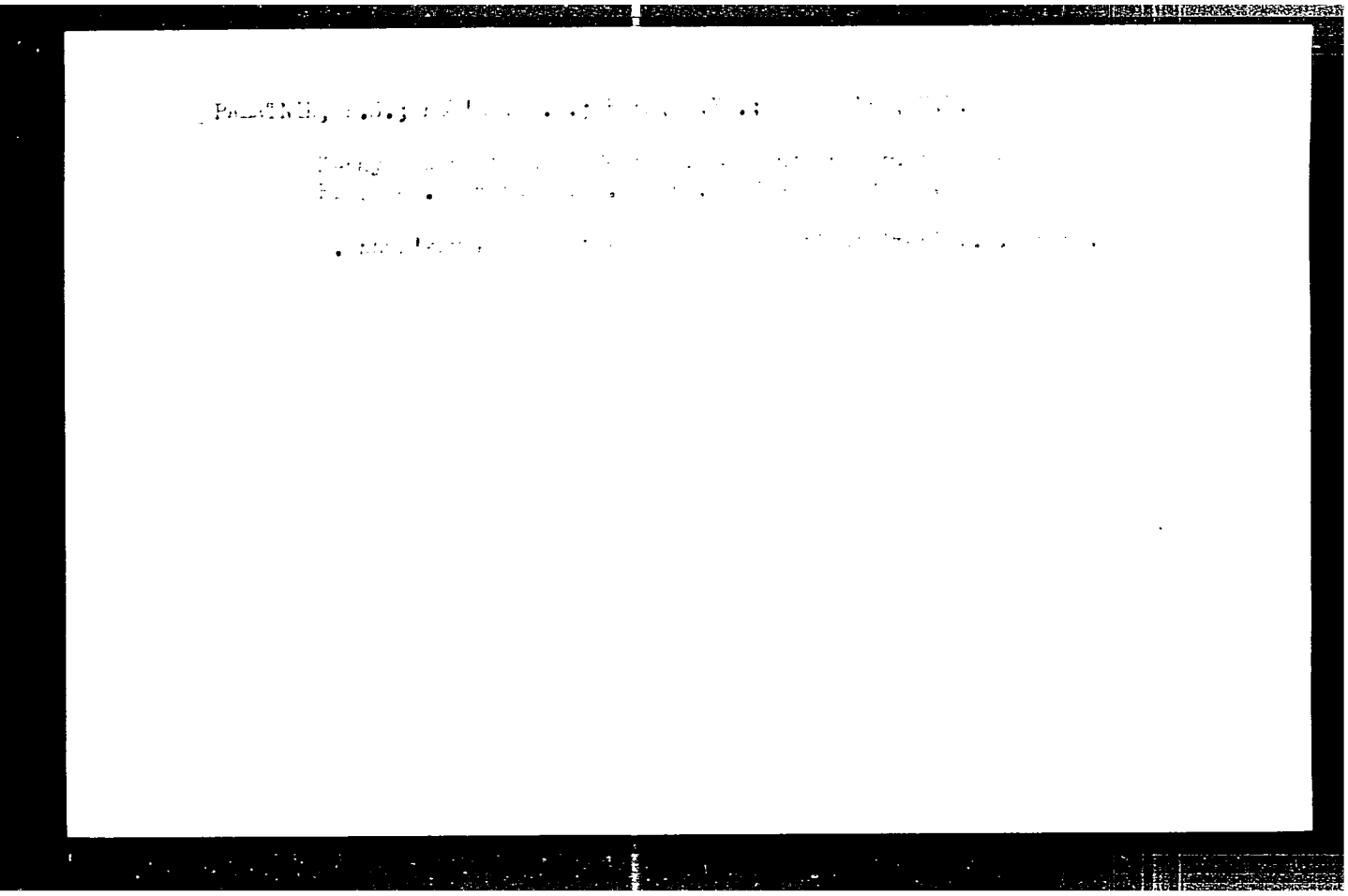
1. Khar'kovskiy politekhnicheskiy institut imeni V.I. Lenina.

[illegible], I. [illegible]; [illegible], [illegible].M.

Eff[illegible] [illegible]dering on the [illegible] [illegible] semiconductors. Dop. AN URSR no. [illegible]

[illegible] A [illegible])

[illegible] Khar'kovskiy politekhnicheskiy institut [illegible]. Nauchno-issledovatel'skiy institut osnovnoy khimii.



PALATNIK, L.S.; GLADKIKH, N.T.; GERLOVSKAYA, L.V.

Effect of annealing on vacuum metal condensates. Fiz. met. i metalloved. 20 no.3:396-400 S '65.

(MIRA 18:11)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo i Khar'kovskiy politekhnicheskiy institut imeni V.I.Lenina.

L 8916-66 EWT(m)/EWP(w)/T/EWP(t)/EWP(b) LIP(c) JD

ACC NR: AP5027144 UR/0126/65/020/004/0574/0578

AUTHOR: Palatnik, L. S.; Fedorov, G. V.; Prokhvatilov, A. I.; Fedorenko, A. I.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Mechanical properties of vacuum condensates of aluminum

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, 574-578

TOPIC TAGS: aluminum, condensation reaction, vacuum sublimation

ABSTRACT: The article is devoted to a study of aluminum vacuum condensates obtained by vaporization of the metal from crucibles made of alundum and beryllium oxide. Aluminum and its alloys were vaporized in a vacuum of 10^{-5} mm Hg. The condensates were formed on polished and carefully cleaned open steel rings, located coaxially with the crucible at a distance of 80 mm. A temperature gradient of 50-550°C was created by heating one end of the ring and cooling the other. The thickness of the condensate film was approximately 40 microns. Vaporization of aluminum from alundum

Card 1/2 UDC:539.23 + 546.261

L 8916-66

ACC NR: AP5027144

crucibles at 1200°C was accompanied by the reaction of the material of the crucible with the molten aluminum. At the end of 3-4 hours there was formed a solid solution 1.5 mm thick on the walls of the crucible. In this, the amount of the alloying aluminum oxide was evaluated at from 8 to 10%. It was found that at a condensation temperature greater than 450°, the aluminum oxide in the condensate is formed in the crystalline state of gamma aluminum oxide; at lower temperatures, in ar amorphous or subdispersed state. Aluminum oxide increases considerably the microhardness of the aluminum condensate (up to 330 kg/mm^2). Annealing at 230-490° has the opposite effect. Samples condensed at temperatures of 450-520° do not recrystallize during annealing. Condensates of a multi-component alloy of aluminum, copper, magnesium, manganese, silicon, and iron, based on aluminum reinforced with aluminum oxide, have considerable strength (50-60 kg/mm^2) and greater ductility than condensates of aluminum obtained under analogous conditions. Orig. art. has: 1 formula, 3 figures and 1 table.

SUB CODE: MM/ SUBM DATE: 24Jul64/ ORIG REF: 011/

OTH REF: 002

Card 2/2

GEGUZIN, Ya.Ye.; GERLOVSKAYA, L.A.; GLAZUNOV, V.P.; KALINOVICH, L.A.; PARITSKAYA, L.N.

Diffusion activity of vacancies in connection with the effect of increasing the [illegible] of vacancies. Fiz. met. i metalloved. 8 no.4 [illegible] 59. (MIRA 12:12)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.

PALATNIK, L.S.; FEDOROV, G.V.; BOGATOV, P.N.

Some regular features of the volume condensation of metals and alloys.
Fiz. tver. tela 7 no.9:2648-2654 S '65.
(MIRA 18:10)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I.Lenina.

L 8849-66 EWT(l)/EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) JD/GG
ACC NR: AP5022731 SOURCE CODE: UR/0181/65/007/009/2829/2833

AUTHOR: Palatnik, L. S.; Lukashenko, L. I.; Ravlik, A. G.

ORG: Kharkov Polytechnical Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Investigation of Permalloy films with a "supercritical" hysteresis loop

SOURCE: Fizika tverdogo tela, v. 7, no. 9, 1965, 2829-2833

TOPIC TAGS: magnetic thin film, Permalloy, hysteresis loop

ABSTRACT: The authors studied Permalloy films of various thicknesses having a "supercritical" hysteresis loop with an initial composition of 83% Ni and 17% Fe. The purpose of the work was a detailed analysis of the domain structure and behavior of the hysteresis loop parameters over a wide range of film thicknesses (0.4-20 μ) and substrate temperatures (230-450°C). The methods used for preparation of the specimens and the experimental conditions are described. Oscillograms of the hysteresis loops at various temperatures for a single specimen are given. A "supercritical" hysteresis loop is shown in figure 1. An increase in the substrate temperature from ~230 to ~350°C causes a considerable reduction in H_c and H_s, and an increase in B_r/B_s and the angle β. With a further increase in the substrate temperature, the sharp break at

Card 1/2

L 8849-66

ACC NR: AP5022791

point H_s is smoothed out, the coercive force is reduced, and the loop loses its "supercritical" shape. The ratio H_s/H_c falls from 10 to 2-3 in the 230-360°C temperature range. The ratio B_r/B_s increases with a reduction in film thickness varying from 0.05 to 0.85. This is in contradiction to previously proposed theoretical models which do not allow a value less than 0.5. A model is proposed for distribution of magnetization intensity in a film with "supercritical" hysteresis loop. Orig. art. has: 6 figures, 1 formula.

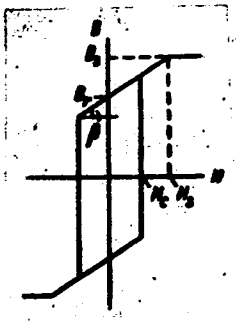


Fig. 1. "Supercritical" hysteresis loop: B_s--saturation induction; B_r--remanence; H_c--coercive force; H_s--saturation field

$$\tan\beta = \frac{B_s - B_r}{H_s}$$

SUB CODE: 20/ SUBM DATE: 26Apr65/ ORIG REF: 006/ OTH REF: 006

Card 2/2

PALATNIK, L.S.; GLADKIKH, N.T.; NABOKA, M.N.

Study of condensed films of ZnS - CdS and Zn-Cd-S of variable composition. Fiz. tver. tela 7 no.9:2851-2852 S '65. (MIRA 18:10)

1. Politekhnicheskiy institut imeni V.I.Lenina, Khar'kov.

L 5364-66 EWT(m)/EWP(i)/EWP(t)/EWP(b) IJP(c) JD/JG
ACC NR: AP5027387 SOURCE CODE: UR/0181/65/007/011/3163/3168

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.

ORG: Kharkov Polytechnic Institute (Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina)

TITLE: Condensation coefficient of beryllium

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3163-3168

TOPIC TAGS: beryllium, vapor condensation, metal film, vapor plating

ABSTRACT: The condensation coefficient α of beryllium is experimentally studied as a function of substrate temperature T_s, deposition rate w_k, and the angle ϕ between the molecular beam and the normal to the film surface. Vaporized Be was deposited on a polished iron substrate with a sublayer of NaCl in a vacuum of $8 \cdot 10^{-5}$ mm Hg. The experimental method and equipment are briefly described. It is found that film thickness is a function of all three parameters, T_s, w_k and ϕ. An increase in T_s causes a reduction in thickness, which may be due to an increase in the density of

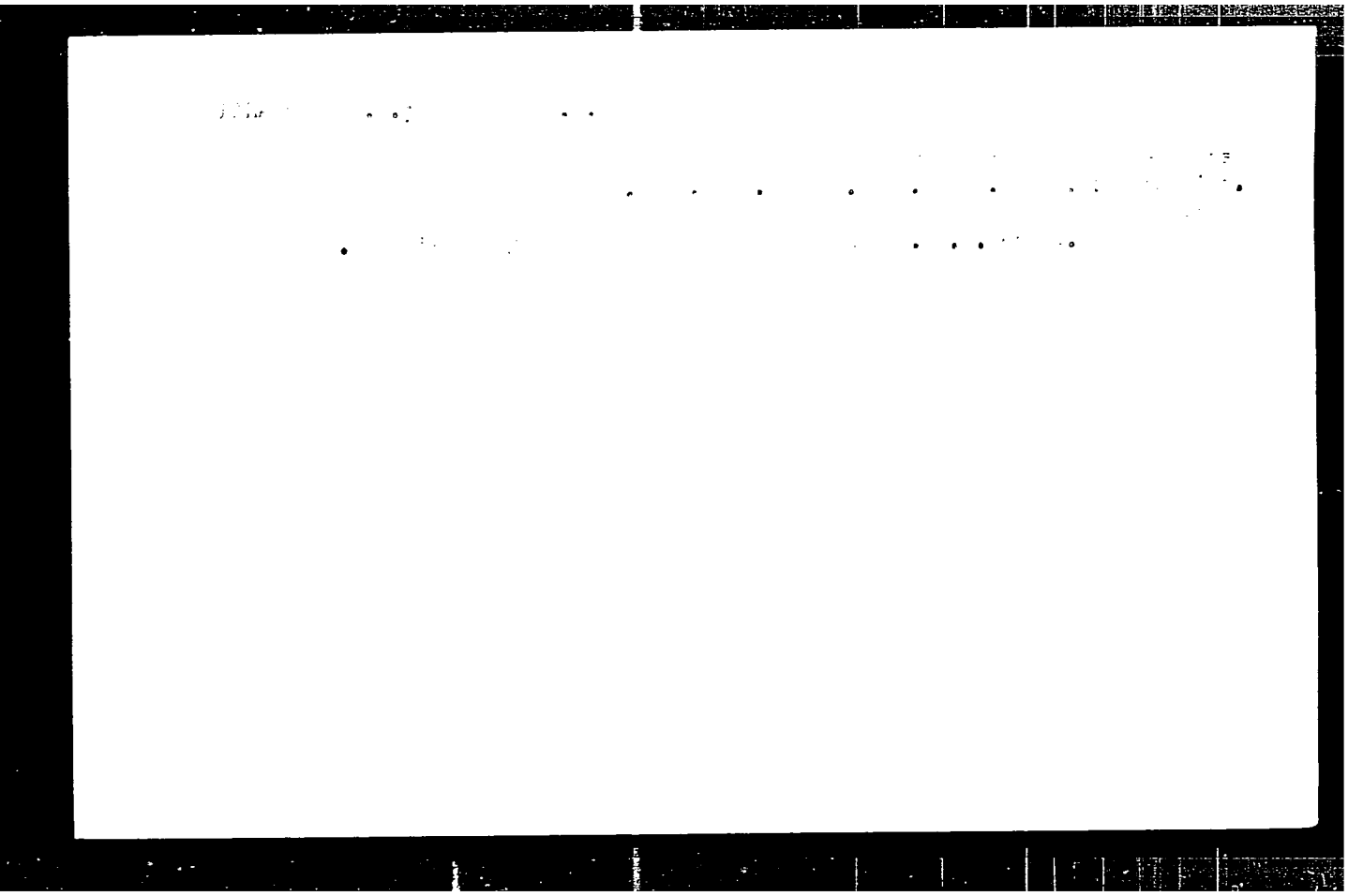
Card 1/2

L 5364-66
ACC NR: AP5027387

the film, a change in the surface contour of the deposition, and a reduction in α. Diffusion processes are intensified as T_s is increased, resulting in denser condensates. A reduction in density was observed with an increase in ϕ due to increased porosity. An increase in ω_k results in increased density and smoother deposits. Curves for α as a function of T_s show a sharp reduction in a narrow temperature interval (>300-400°C) with only a slight reduction in the condensation coefficient as the temperature is increased above this interval. The anomalous behavior of the condensation coefficient for Be is apparently due to the high ratio of the interatomic energy in the crystal lattice (Debye temperature 1000°K) to the atomic weight of beryllium (9.013). Orig. art. has: 3 figures, 1 table.

SUB CODE: MM/ SUBM DATE: 02Mar65/ ORIG REF: 008/ OTH REF: 009

Card 2/2



1 10867-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD

ACC NR: AP5028716 SOURCE CODE: UR/0363/65/001/011/1883/1888

48
45B

AUTHOR: Palatnik, L. S.; Belova, Ye. K.
44.55 44.55 44.55

ORG: Scientific Research Institute of Fundamental Chemistry (Nauchno-issledovatel'skiy institut osnovnoy khimii); Polytechnic Institute im. V. I. Lenin, Kharkov (Politekhnicheskiy institut)
44.55

TITLE: Study of the polymorphism of the variable-composition selenide Ga_2Se_3
27 27

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 11, 1965, 1883-1888

TOPIC TAGS: gallium alloy, selenium alloy, gallium compound, selenium compound, phase transition

ABSTRACT: Ga-Se alloys close to Ga_2Se_3 in composition (38.5-42.5 at % Ga) were studied. The microstructure, microhardness, and x-ray diffraction patterns were determined. Ga_2Se_3 was found to be a compound of variable composition. Selenium dissolves in Ga_2Se_3 to the extent of $\leq$0.2 at %; the boundary of the solubility region of Ga lies at 40.24-40.59 at % Ga. New β and γ phases of gallium selenide were observed in the range of 60.4-60.2 at % Se. The conditions of existence of the α, β, and γ phases were investigated. Like the α phase, the γ phase has a zinc blende type structure and differs in the value of the lattice parameter (a_α = 5.422 $\pm$ 0.003 Å, a_γ =

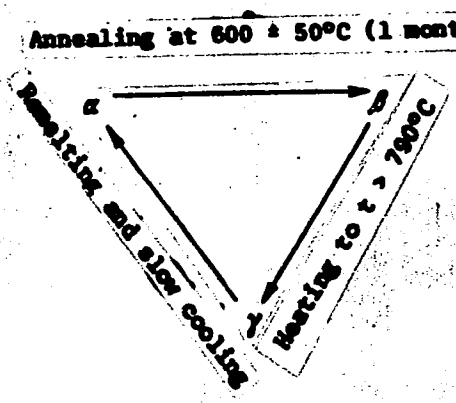
UDC: 546.681'231:539.261

Card 1/2

L 10867-65

ACC NR: AP5028716

= 5.463 ± 0.003 Å). A cation-vacancy ordering takes place in alloys of the β phase. The following scheme of phase transitions in Ge_2Se_3-Se alloys is proposed:



Orig. art. has: 3 figures, 2 tables.

SUB CODE: 20,07 11/ SUBM DATE: 19Apr65/ ORIG REF: 004/ OTH REF: 004

Card 2/2

ATROSHCHENKO, L.V.; GAL'CHINETSKIY, L.P.; KOSHKIN, V.M.; PALATNIK, L.S.

Deviations from stoichiometry and dissolution of impurities in semiconductor compounds of the B^{III}_2 C^{VI}_3 type. Izv. AN SSSR. Neorg. mat. 1 no.12:2140-2150 D '65. (MIRA 18:12)

1. Nauchno-issledovatel'skiy institut osnovnoy khimii, Khar'kov, i Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina. Submitted May 31, 1965.

L 12097-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACC NR: AP6000530 SOURCE CODE: UR/0070/65/010/006/0858/0861

AUTHOR: Palatnik, L.S.; Belova, Ye. K. 33 B

ORG: Khar'kov Scientific-Research Institute of Basic Chemistry (Khar'kovskiy nauchno-issledovatel'skiy institut osnovnoy khimii); Khar'kov Polytechnic Institute im. V.I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: The structure of semiconducting Gu*GaTe$_2$-Ga$_2$Te$_3$ alloys

SOURCE: Kristallografiya, v. 10, no. 6, 1965, 858-861

TOPIC TAGS: semiconductor alloy, gallium containing alloy, crystal structure

ABSTRACT: The knowledge of the structure of Gu*GaTe$_2$-Ga$_2$Te$_3$ alloys is of interest for the study of interactions between defect-containing and defect-free compounds. The authors carried out the study of the structure of the alloy by means of the x-ray and microstructural analysis and established the state diagram of the system. The results show that 1) there exist significant regions of solutions with chalcopyrite and sphalerite lattices; 2) the creation of a two-phase region is related to the decay into the two phases of the solid solution during cooling (the two phases having an ordered and a nonordered cation lattice, respectively); 3) at high temperatures there exist within the systems under investigation a continuous series of solid solutions; and 4) the magnitude of the effective covalent tetrahedral radius of cation vacancies in alloys with sphalerite structure is constant and smaller than the covalent radii of the copper

Card 1/2 UDC: 548.736

* Probably Copper is meant

L 12097-66

ACC NR: AP6000530

and gallium cations. Orig. art. has: 4 figures.

SUB CODE: 07,11 / SUBM DATE: 28Nov64 / ORIG REF: 003 / OTH REF: 004

Card 2/2

L 23111-66 EWT(m)/EWP(t) IJP(c) JD/HW

ACC NR: AP6009486 UR/0020/66/167/001/0077/0079

AUTHOR: Palatnik, L.S.; Boyko, B.T.; Fuks, M.Ya.; Pugachev, A.T.

ORG: Kharkov Polytechnic Institute im. V.I.Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Elastic anisotropy of polycrystalline condensed films

SOURCE: AN SSSR. Doklady, v.167, no.1, 1966, 77-79

TOPIC TAGS: polycrystalline film, crystal anisotropy

ABSTRACT: The article describes electronographic studies of the deformation of thin polycrystalline films of aluminu, silver, and nickel, with thicknesses of 400-500 Å, condensed in a vacuum of 5 x 10^{-5} torr, at different temperatures of the support. The rate of condensation was 20-40 Å/sec. The films, separated from the support, were transferred to a plate with a slit and were put into the electronograph by means of a special device. Results of examination showed that, for thin polycrystalline vacuum condensates of the elastically anisotropic metals silver and nickel, the elastic anisotropy of the individual crystals was preserved, although not to the degree that might be expected for complete isotropy of the stress field, such as for example, for isolated mono-

Card 1/2 UDC: 539.4.015 + 539.23 + 539.27

L 23111-66
ACC NR: AP6009486

crystals. For aluminum films with a weakly marded elastic anisotropy, anisotropic elastic deformations of the lattice were not observed electronographically. In nickel films, condensed at a temperature of 65°, the average size of the crystal blocks, observed by diffraction expansion, was 30 Å. Even with such a dispersed structure the elastic anisotropy of the individual blocks was preserved, but there was observed a tendency for it to become weaker in comparison with coarse grained films. Orig. art. has: 1 formula and 3 figures.

SUB CODE: 20/ SUBM DATE: 06Dec65/ ORIG REF: 006/ OTH REF: 001

Card 2/2

L 23231-66 EWT(m)/EWP(t) IJP(c) JD

ACC NR: AP6008081 SOURCE CODE: UR/0020/66/166/005/1095/1097

AUTHOR: Palatnik, L. S.; Fedorov, G. V.

ORG: Kharkov Polytechnical Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Intraphase step rule in structural formation of vacuum condensates

SOURCE: AN SSSR. Doklady, v. 166, no. 5, 1966, 1095-1097

TOPIC TAGS: copper, vacuum technology, vaporization, vapor condensation, epitaxial growing, metastable state, phase transition

ABSTRACT: The authors study intermediate metastable structural (and substructural) states and transitions in vacuum condensates of metals where the ordinary thermodynamic phase transformations in the solid state are missing (polymorphic transformations, eutectoid decay, decay of supersaturated solid solutions, ordering or disordering, etc.). The specimens were massive vacuum condensates of copper with a thickness of approximately 1 mm produced at condensation rates of 0.25-1 μ/sec. The copper was vaporized in a vacuum of 10^{-5} mm Hg from alundum crucibles placed 20-25 mm away from a copper substrate which was heated to a temperature of 80-750°. The microstructure and microhardness of the surface and transverse sections of the condensates were studied. The first stage in formation of the condensate is natural condensation accord-

Card 1/2

L 23231-66
ACC NR: AP6008081 2

ing to one of the mechanisms: vapor → liquid → crystal or vapor → crystal. An extreme nonequilibrium structure is formed at rather low temperatures. This is due to the high dispersion of various lattice defects and to alloying of the condensate by residual gases. The second stage is characterized by parallel lines on the transverse section. The orientation of these lines is independent of the condensate temperature and the rate of condensation. The microhardness in this stage drops from 200 to 120 kg/mm^2. Recrystallization begins in the third stage accompanied by a further reduction in microhardness to 90-100 kg/mm^2 and the formation of a polycrystal with a large grain size. The fourth stage in the formation of the condensate is epitaxial recrystallization beginning at 250°. There is also a further slight reduction in microhardness and increase in the grain size at the condensate-substrate interface. At temperatures above 500°, condensation takes place by epitaxial growth of the crystals in the substrate. The experimental data indicate that processes of structural formation in vacuum condensates of pure metals conform to the general intraphase step rule. Orig. art. has: 2 figures.

SUB CODE: 11,20/ SUBM DATE: 22Jun65/ ORIG REF: 002/ OTH REF: 000

Card 2/2 BLG

L 26504-66 EWT(1)/EWT(m)/ETC(f)/EWG(m)/T/EWP(t)/ETI IJP(c) RDW/GG/JD

ACC NR: AF6012466 SOURCE CODE: UR/0181/66/008/004/1088/1090

AUTHOR: Palatnik, L. S.; Sorokin, V. K.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: On oriented growing of lead selenide and telluride films

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1088-1090

TOPIC TAGS: lead compound, selenide, telluride, epitaxial growing, temperature dependence, thin film growing, vapor condensation, electric conductivity, Hall effect

ABSTRACT: This is a continuation of earlier work (FTT v. 7, 1699, 1965) where it was found that in the temperature interval 180 - 300C it is difficult to grow thin epitaxial films of PbTe on NaCl, in spite of the fact that growth at lower (140 - 180C) and higher (300 - 400C) temperatures is possible. To investigate this phenomenon further, and to determine the influence of the type of substrate (NaCl, KCl) and the condensation rate, the authors investigated the influence of the preparation temperature and the rate of condensation on the carrier mobility in PbSe and PbTe films 1 - 5 μ thick. The PbSe and PbTe condensates were prepared in a vacuum ~5 x 10^{-4} Torr on freshly cleaved single crystals of NaCl and KCl. A special geometry was used to check on the effect of the preparation temperature, as described in the earlier paper. The carrier mobility was determined by measuring the Hall effect and the conductivity. The results show that substitution of KCl for NaCl shifts the entire plot

Card 1/2

L 26504-66
ACC NR: AF6012466

of the temperature corresponding to minimum mobility vs. the condensation rate toward higher temperatures. In the case of PbSe the temperature of the minimum increases practically linearly with the condensation rate, while for PbTe the relation is parabolic. An empirical relation between this temperature and the condensation rate is derived. The results confirm a hypothesis advanced in the earlier paper that at the temperature of minimum mobility a change takes place in the manner of formation of condensation nuclei. Orig. art. has: 3 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 16Aug65/ ORIG REF: 006/ OTH REF: 001

Card 2/2 CC

L 29225-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6019365 SOURCE CODE: UR/0126/66/021/002/0217/0222

48
46
B

AUTHOR: Palatnik, L. S.; Bronin, S. V.; Ravlik, A. G.; D'yachenko, V. S.

ORG: Kar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Electronographic and electron microscopic investigation of carbides in iron carbide films condensed in a vacuum

19 27

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 2, 1966, 217-222

TOPIC TAGS: iron compound, carbide, nucleation, electron microscopy, annealing, alloy, metal film

ABSTRACT: Thin film Fe-C alloys were obtained by simultaneous and successive condensation of the components of specimens with variable composition. The effect of preparative conditions on the formation of the carbide phases was studied. Epsilon-carbide was obtained in the multilayered films. When it was vacuum annealed, an irreversible transformation was observed: $\varepsilon Fe_xC \rightarrow \chi Fe_xC \rightarrow Fe_3C + (x-3)Fe$.

In multilayered preparations obtained by successive condensation of Fe and C, the formation of cementite passes through the metastable phases: epsilon-Fe_xC and chi-Fe_xC; in the bilayered films, as well as in films obtained by the simultaneous condensation of Fe and C, the immediate formation of cementite occurs.

Card 1/2 UDC: 669.11:548.74

L 29225-66

ACC NR: AP6019365

2

The transition $\varepsilon \rightarrow \chi$ has a polymorphic transformation character and occurs by nucleation and growth of crystal centers of chi-carbide which, during further annealing, is decomposed into cementite and iron. The composition of epsilon- and chi-carbides can be described by the formula Fe_4C. The authors express their gratitude to A. T. Pugachev and N. I. Gorbenko for aid in photographing the electronograms. Orig. art. has: 2 figures and 1 table. [JPRS]

SUB CODE: 11, 20 / SUBM DATE: 07Apr65 / ORIG REF: 010 / OTH REF: 006

Card 2/2

L 00739-67 EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD/AT/JH

ACC NR: AP6018942 SOURCE CODE: UR/0126/66/021/006/0848/0853

AUTHOR: Palatnik, L. S.; Fuks, M. Ya.; Boyko, B. T.; Panchekha, P. A. 41

ORG: Kharkov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut) 5

TITLE: Electron diffraction study of the block structure of aluminum condensates 27

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 6, 1966, 848-853

TOPIC TAGS: aluminum, metal film, electron diffraction analysis

ABSTRACT: In an earlier paper, the authors described the electron diffraction microbeam method for determining the size and disorientation of block crystallites in aluminum vacuum condensates 60-200 Å thick after annealing at 300° and above. In the present work, this technique was developed by increasing the resolution of the various reflections, so that the point diffraction lines on the electron diffraction patterns were obtained with films in the initial (unannealed) state. This made it possible to study the substructure of the films without altering it by the subsequent action of heat. The average length of the blocks in unannealed Al films condensed on an unheated substrate changes from 220 to 320 Å as the film thickness changes from 150 to 750 Å. The lower limit of the disorientation angles is 1.5-2°. Films 150 Å thick have a monoblock structure in their thickness. At 400 Å and higher, the monoblock character is impaired; it is probably a structural factor which determines the effect of the thick-

Card 1/2 UDC: 548.4

L 00739-67

ACC NR: AP6018942

ness on certain structurally sensitive properties. The presence of a sufficiently large number of blocks in the thickness of the film makes the latter similar to massive bodies. The density of the stream of condensing atoms is one of the parameters determining the form of the blocks, i. e., their size in the plane of the film and along the normal to it. Physical properties sensitive to the substructure may be different in the plane of the film and along the normal. Orig. art. has: 1 figure, 1 table, and 5 formulas.

SUB CODE: 11/ SUBM DATE: 15Jun65/ ORIG REF: 006/ OTH REF: 004

Card 2/2 ZC

L 06486-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6028298 SOURCE CODE: UR/0363/66/002/006/1025/1030

AUTHOR: Palatnik, L. S.; Belova, Ye. K.

ORG: Scientific Research Institute of Basic Chemistry (Nauchno-issledovatel'skiy institut osnovnoy khimii); Polytechnic Institute im. V. I. Lenin, Kharkov (Politekhnicheskiy institut)

TITLE: Structure of the semiconductor alloys Ag_2Te-Ga_2Te_3

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 6, 1966, 1025-1030

TOPIC TAGS: semiconductor alloy, silver compound, gallium compound, telluride, alloy phase diagram

ABSTRACT: The structure of alloys of the binary section Ag_2Te-Ga_2Te_3 of the ternary system Ag-Ga-Te was studied by x-ray diffraction, microscopy, thermal analysis, and microhardness measurements. The phase diagram plotted for the Ag_2Te-$GaTe_3$ system shows that alloys containing 77-100 mole % Ga_2Te_3 crystallize with the formation of γ solid solutions. At room temperature, there is observed a region of solid solutions (γ) based on Ga_2Te_3 (90-100 mole % Ga_2Te_3) and a narrow region of homogeneity based on the $AgGa_5Te_8$ phase with an ordered cation-vacancy sublattice γ'. A two-phase region in the range of 85-90 mole % Ga_2Te_3 arises when the solid solution decomposes into two phases: one with an ordered and one with a disordered cationic sublattice. In the

Card 1/2 UDC: 546.57'141+546.681

L 06486-67
ACC NR: AP6028298

range of 45-75 mole % Ga_2Te_3 (including the compound $AgGaTe_2$), the fusion proceeds via a peritectic reaction at 727°C. In the vicinity of the composition $AgGaTe_2$ there is a low-temperature region of β solid solutions. On cooling, the β solid solution decomposes, and all alloys containing less than 85 mole % Ga_2Te_3 consist of two phases ($AgGaTe_2$ + γ') at room temperature. Alloys in the range of 0-50 mole % Ga_2Te_3 consist of a mixture of two phases, Ag_2Te and $AgGaTe_2$. They form a eutectic at a composition of about 25 mole % Ga_2Te_3. Authors are grateful to L. I. Berger for his suggestions on the problem of the technique for purifying tellurium and to N. M. Panasenko for plotting the thermograms. Orig. art. has: 5 figures and 2 tables.

SUB CODE: 11,20/SUBM DATE: 09Aug65/ ORIG REF: 005/ OTH REF: 003

Card 2/2 nlc

L 06487-67 EWI(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6028299 SOURCE CODE: UR/0363/66/002/006/1031/1037

AUTHOR: Palatnik, L. S.; Manyukova, L. G.; Koshkin, V. M.

ORG: Scientific Research Institute of Basic Chemistry (Nauchno-issledovatel'skiy institut osnovnoy khimii); Kharkov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Electric properties of alloys in the $CuGaSe_2$-Ga_2Se_3 system

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 6, 1966, 1031-1037

TOPIC TAGS: selenide, copper compound, gallium compound, selenium compound, semiconductor alloy, thermal emf, forbidden zone width, semiconductor conductivity

ABSTRACT: The paper continues the study of the semiconductor systems $A^{I}B^{III}C_2^{IV}$ (chalcopyrites) - $B_2^{III}C_3^{VI}$ (compounds with a sphalerite lattice), which contain broad regions of solid solutions with a diamondlike lattice in which the concentration of stoichiometric vacancies changes monotonically. Some physical properties (optical width of the forbidden gap $\Delta\epsilon$, electric conductivity σ and thermal emf α) of furnace-cooled alloys of one such system, $CuGaSe_2$-Ga_2Se_3, were measured. As in the $CuInSe_2$-In_2Se_3 system studied earlier, the conductivity decreases even at low Ga_2Se_3 concentrations, and $\Delta\epsilon$ remains practically unchanged in the existence domain of the chalcopyrite phase and changes very rapidly in the region of the sphalerite structure. The

Card 1/2 UDC: 546.681.231:537.311.33

L 06487-67
ACC NR: AP6028299

effect of increase in $\Delta\epsilon$ during ordering annealing was observed on some alloys with stoichiometric defects. Both the concentration ordering and thermal ordering of the crystal of a multicomponent semiconductor increase $\Delta\epsilon$. The observed influence of the light and thermal conditions of the history of the sample on the magnitude of the thermal emf is thought to be due to the presence of a considerable number of electron traps. The concentration of free charge carriers was estimated from the thermal emf. It is concluded that the decrease in the concentration of impurity carriers is due to the specific property of semiconductors with a defect lattice of depressing the electric activity of impurities. Orig. art. has: 5 figures and 3 formulas.

SUB CODE: 11,20/ SUBM DATE: 04Jul65/ ORIG REF: 014/ OTH REF: 003

Card 2/2 mfc

L 05484-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6028296 (A) SOURCE CODE: UR/0363/66/002/006/0997/1000

AUTHOR: Palatnik, L. S.; Sorokin, V. K.

ORG: Scientific Research Institute of Basic Chemistry, Kharkov (Nauchno-issledovatel'skiy institut osnovnoy khimii)

TITLE: Effect of substrate on the concentration and sign of current carriers in PbTe films

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 6, 1966, 997-1000

TOPIC TAGS: lead compound, telluride, semiconducting film, semiconductor carrier

ABSTRACT: Polycrystalline and single-crystal PbTe condensates 2-5 μ thick were obtained on glass, NaCl, and KCl, and the sign of the current carriers and their concentration in these films were studied as functions of the conditions of oriented growth and structure formed. It was found that in PbTe films containing a 0.5 wt. % excess of tellurium, p-type conductivity is retained up to 250°C and above. An anomalously high electron concentration indicating an enrichment of the film with the metallic component appears only in a narrow temperature range at 270-300°C. The relationship between this effect and the change in the type of formation of nuclei and also the change from oriented to unoriented growth was demonstrated. The anomalously high enrichment of the film with the metallic component (lead) is the result of decomposition (fractionation) of the film material during the intense mass transfer over the sub-

Card 1/2 UDC: 537.311.33:539.216.2

L 06484-67
ACC NR: AP6028296

strate due to the reevaporation and recondensation of PbTe molecules. The change of the composition in the film PbTe // (100)NaCl is appearently characteristic of other semiconducting compounds as well; this change substantially contributes to the drop in the reproducibility of the electric properties of the films. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 04Aug65/ ORIG REF: 006/ OTH REF: 015

Card 2/2 mc

L 0626[illegible] EWP(t)/ETI IJP(c) JD

ACC NR: AP6030980 SOURCE CODE: UR/0181/66/008/009/2795/2796

AUTHOR: Palatnik, L. S.; Sorokin, V. K.

ORG: Kharkov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Effect of substrate on the photoemf in CdTe films

SOURCE: Fizika tverdogo tela, v. 8, no. 9, 1966, 2795-2796

TOPIC TAGS: photo emf, cadmium telluride, aluminum oxide

ABSTRACT: The article reports preliminary data on the effect of single-crystal leucosapphire (Al_2O_3) substrate on the anomalously high photovoltage (APV) in CdTe films. Fig. 1 shows the dependence of APV on the temperature and type of substrate. The single-crystal leucosapphire substrate with axis c in the plane of the leucosapphire plate substantially affects APV in CdTe. The absolute value of the photoemf in the CdTe film deposited on Al_2O_3 is 3-5 times greater than in the film on glass. The effect of the single-crystal substrate is particularly manifest in the 150-200°C range. In the temperature range where the preparation is carried out and where the epitaxial growth of CdTe on Al_2O_3 determines the optimum size of blocks and the phase composition, a photoeffect is observed that considerably exceeds the APV which can be obtained under the same conditions on a glass substrate. Orig. art. has: 1 figure.

Card 1/2

ACC NR: AP6030980

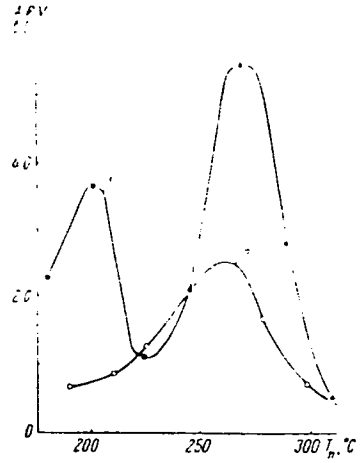


Fig. 1. Dependence of APV on temperature of substrate. 1 - CdTe on Al_2O_3; 2 - CdTe on glass.

SUB CODE: 20/ SUBM DATE: 02Apr66/ ORIG REF: 003/ OTH REF: 002

Card 2/2 egh

L 06437-67 EWT(m)/EWP(t)/ETI LJP(c) JD
ACC NR: AP6026714 SOURCE CODE: UR/0181/66/008/008/2484/2486

AUTHOR: Kosevich, V. M.; Palatnik, L. S.; Moskalev, V. M.

ORG: Kharkov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Distribution of growth microsteps on faces of NaCl crystals

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2484-2486

TOPIC TAGS: sodium chloride, single crystal growth

ABSTRACT: The distribution of microsteps on (001) faces of NaCl crystals was studied on single-crystal layers grown by vacuum condensation on NaCl single crystals. The temperature T_s of the single-crystal substrates was varied between 150 and 450°C. Growth microsteps of unimolecular height were revealed with an electron microscope by using decoration with gold particles. The maximum area of a smooth surface (free of microsteps) S_m was used for a description of the distribution of the microsteps. The experimental dependence of S_m on T_s for a condensation rate $\omega = 30$ A/sec was determined, and S_m was evaluated theoretically. The experimental data show that the growth of NaCl crystals in the 150-450°C range is controlled primarily by processes of surface migration of molecules. The remaining quantitative characteristics of the distribution of microsteps are directly related to S_m: thus, the mean distance between the microsteps $\bar{l} \sim 0.3\sqrt{S_m}$, and the area of the growth microfigure $\Sigma \sim 15\, S_m$. The

Card 1/2

L 06437-67

ACC NR: AP6026714

critical condition determining the size of a growth microfigure is that the free area between the microsteps be close to S_m. Orig. art. has: 2 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 11Feb66/ ORIG REF: 002/ OTH REF: 002

Card 2/2

PALATNIK, L.S.; [illegible]

X-ray diffraction study of semiconducting alloys in the system [illegible]. Fiz. zhur. 9 no.8:864-866 Ag '54.

PALATNIK, L.S.; PYACHENKO, S.S.; IL'INSKIY, A.I.; VOLOVIK, I.D.

Electron microscopy of copper vacuum condensates. Fiz. met. i metalloved. 18 no.3:461-464 S '64. (MIRA 17:11)

1. Khar'kovskiy politekhnicheskiy institut imeni Lenina.

PALATNIK, L.S.; FED[illegible], O.V.; [illegible]

Processes of vaporizat[illegible] (MIRA 17:2)
SSSR 158 no.3:588-589 S '64.

1. Khar'kovskiy politekhnicheskiy institut im. V.I.Lenina. Predstavleno akademikom S.A.Vekshinskim.

ACC NR: AP6032618 SOURCE CODE: UR/0126/66/0022/003/0400/0403

AUTHOR: Fedorov, G. V.; Palatnik, L. S.; Dudkin, V. A.

ORG: Kharkov Polytechnical Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: The effect of the type of vaporization on the structure and properties of Al and Cu vacuum condensates

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 3, 1966, 400-403

TOPIC TAGS: aluminum plating, copper coating, metal vapor deposition, metal physical property, metal recrystallization

ABSTRACT: The authors carried out comparative tests on copper and aluminum vacuum condensates made by the crucible and noncrucible methods. It was shown that the method of vaporization has a considerable effect on the structure and properties of the condensates. Rapid recrystallization occurs at room temperatures in copper condensates made by the noncrucible method. Recrystallization is retarded by impurities in crucible-produced condensates. The noncrucible method consisted of using the electrodynamic interaction effect of induced eddy currents with a high frequency field in the vaporized metal. The microstructure and microhardness of the condensates was studied under various loads and the width of interference lines (400) Cu and (420) Al

UDC: 669.31.71:536.423.1

Card 1/2

ACC NR: AP6032618

was measured on the DRON-1 unit. It was shown that the physico-mechanical properties of the condensates are a function both of block recrystallization and of variations in relaxation of the crystal substructure. Orig. art. has: 2 figures.

SUB CODE: 11, 07/ SUBM DATE: 23Feb66/ ORIG REF: 009/ OTH REF: 004

Card 2/2

L [illegible]-67 EWT(m)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AP6027786 (N) SOURCE CODE: UR/0126/66/022/001/0058/0065

AUTHOR: Palatnik, L. S.; Kosevich, V. M.; Antonova, V. A.; Arkhipov, P. P.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Phase composition of cobalt condensates during the initial stage of their formation

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 1, 1966, 58-65

TOPIC TAGS: phase composition, cobalt, metal vapor deposition, crystal structure

ABSTRACT: The published data on the phase composition of Co films obtained by vacuum condensation are highly contradictory; this is apparently associated with the non-uniformity of experimental conditions. Accordingly, the authors performed a systematic investigation of the phase composition of these films as a function of the chief parameters determining the manner of growth of the condensates: 1) substrate temperature T_s; 2) condensation rate ω; 3) degree of vacuum; 4) effective film thickness h. 99.98% pure Co was condensed on carbon substrates in a vaccuum of 10^{-4}-10^{-5} mm Hg at ω = 1-500 Å/min and T_s = 20 - 450°C. The resulting Co thin films (h = 1-70 Å) were subjected to electron-diffraction analysis. Findings: the following phase transitions are observed with increase in h at T_s = 20-300°C: quasimorphic

UDC: 539.23:539.27:669.25

Card 1/2

L 09009-67

ACC NR: AP6027786

phase → CoO → CoO → Co^h [hexagonal variety of Co]. The vacuum heating of oxide-containing condensed Co films, at ~300°C, leads to the reduction of CoO with transition to Co^c [cubic variety of Co]; this reduction is accompanied by recrystallization. The phase composition of specimens 30-100 Å thick, obtained for the T_s gradient and ω= 180 Å /min undergoes an abrupt change when the substrate temperature is ~350°C. Below this temperature Co^h is the predominant phase, while above this temperature Co^c predominates. When ω= 180 Å no oxide formation could be detected by electron-diffraction analysis, regardless of T_s. Thus it may be concluded that the processes of the formation and reduction of oxides are an essential factor only when ω < 150 Å /min at T_s <300°C. Orig. art. has: 6 figures, 2 tables.

SUB CODE: 11, 20/ SUBM DATE: 19Jul65/ ORIG REF: 007/ OTH REF: 013

nst

L 09010-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JH

ACC NR: AP6027788 (A) SOURCE CODE: UR/0126/66/022/001/0073/0077

AUTHOR: Palatnik, L. S.; Fuks, M. Ya.; Boyko, B. T.; Panchekha, P. A.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: X-ray diffractometric investigation of the substructure of thin aluminum condensates

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 1, 1966, 73-77

TOPIC TAGS: diffractometer, x ray diffraction analysis, aluminum, metal vapor deposition / / URS-50IM diffractometer

ABSTRACT: This work is a continuation of a previous investigation (Palatnik, L. S., et al. FMM, 1966, 21, 848), with the difference that it employs the x-ray diffractometric method to verify the possibility of differences between certain structurally sensitive physical properties in the plane of the thin film and along the normal with respect to this plane, which is assumed to be conditioned by different mechanisms of formation of regions of coherent scattering as a function of the condensation rate. To this end, 99.999 % pure Al was vacuum-evaporated on two unheated glass substrates coated with NaCl and located at different distances

UDC: 620.183.48

Card 1/2

from the evaporator. The mean condensation rate on one substrate was 7 Å· sec^{-1} and on the other substrate, 23 Å· sec^{-1}. The film obtained on the substrate closer to the evaporator was 1600 Å thick, while the film obtained on the more distant substrate was 500 Å thick. Packets of these films were then investigated with the aid of an URS-50IM diffractometer. Findings: for the thicker films (1600 Å), due to the higher condensation rate as compared with the thinner films (500 Å), the mean volume of regions of coherent scattering (r.c.s.) is greater, with the size of these regions increasing both the plane of the film and at right angles thereto. Even so, however, the increase in film thickness becomes greater than the increase in the size of the r.c.s. in the direction normal to the film plane so that, after passing through some critical thickness, the formerly monocrystalline film now becomes polycrystalline in thickness. Orig. art. has: 1 figure, 2 tables.

SUB CODE: 20, 11, 13/ SUBM DATE: 16Jul65/ ORIG REF: 006/ OTH REF: 002

EWT(m)/EWP(t)/ETI IJP(c) JD/HW

SOURCE CODE: UR/0056/66/030/006/1055/1058

AUTHOR: [illegible]; Kaplik, A.G.; Kolmachenko, S.T.

ORG: Kuybyshev Polytechnic Institute im. V.I.Lenin (Kuybyshevskiy politekhnicheskiy institut)

TITLE: Influence of the structure and phase composition on the coercive force of cobalt films [Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 1055-1058

TOPIC TAGS: ferromagnetic film, cobalt, magnetic coercive force, annealing, phase composition, crystal orientation, [illegible]

ABSTRACT: The authors have investigated the coercive force, phase composition, and orientation of 5 to 20 micron thick cobalt films vacuum deposited (10^{-4} mm Hg) from a 99.9% pure melt onto 2000 to 5000 Å thick NaCl films previously deposited on metal plates. The substrates were maintained at temperatures between 300 and 800° C during deposition of the cobalt, and the films were annealed at different temperatures for from 1 to 8 hours. The films were removed from the substrate by dissolving the NaCl, and their phase compositions (relative contents of the cubic and hexagonal modifications) and orientations were determined by an x-ray technique and their coercive forces were obtained from hysteresis loops recorded in 50 Hz fields not exceeding 1.1

Card 1/2

L 08765-67
ACC NR: AP6029132

Abs. The orientation in the films was due practically entirely to growth orientation of the hexagonal crystallites. Both the coercive force and the hexagonal phase content decreased with increasing annealing temperature, the rate of decrease being most rapid at annealing temperatures near 490° C, which is within the range given in the literature for the transition temperature between the cubic and hexagonal phases of cobalt. In unannealed films the hexagonal phase content, the coercive force, and the degree of ordering decreased with increasing temperature of the substrate during deposition. The decrease of the coercive force is ascribed to the combined influence of the decreasing content and orientation of the hexagonal phase. Earlier findings of one of the authors and other collaborators are adduced to explain a small decrease of the coercive force with increasing annealing temperature at annealing temperatures below 480° as a result of coarsening of the block structure. It is concluded that the principal factors determining the coercive force of cobalt films are, in order of importance, the phase composition, the orientation of the hexagonal crystallites, and the dispersity of the structure. Orig. art. has: 2 figures.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 009 OTH REF: 008

Card 2/2 bc

ACC NR: AP7000658 (A) SOURCE CODE: UR/0126/66/022/005/0744/0751

AUTHOR: Palatnik, L. S.; Fuks, M. Ya.; Il'inskiy, A. I.; Alaverdova, O. G.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: The structure and mechanical properties of vacuum-deposited copper films

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 5, 1966, 744-751

TOPIC TAGS: copper thin film, vacuum deposited film, film substructure, film mechanical property, thin film, metal film, metal deposition

ABSTRACT: Copper films, 0.5—70 μ thick, were made by vacuum deposition of 99.95%-pure copper at a rate of 0.5—1.6 μ/min on copper substrate maintained at 90—250C and their substructure and mechanical properties were investigated by various methods of physical analysis and by mechanical tests. It was found that the film strength, microhardness, and microstresses decreased with increasing temperature of the substrate, while the size of the mosaic blocks increased. The microstresses in the films were significantly higher than the yield strength of solid copper and in a film deposited on the substrate at 90C in a vacuum of 10^{-4} mm Hg reached 60 kg/mm^2. The film thickness in the 0.5—50 μ range had little or no effect on the mosaic block size and microstresses. In films 40—50 μ thick, the

Card 1/2 UDC: 669.3 : 539.23

ACC NR: AP7000658

substructure characteristics varied along the film thickness: mosaic blocks on the substrate side were substantially larger and the microstresses much lower than on the opposite side, which is explained by the relaxation and recrystallization processes under the effect of substrate heat. Films 0.5—20 μ thick had the maximum tensile strength, 80—88 kg/mm^2. With increasing film thickness to 50—70 μ, the strength dropped 30—35% because of the inhomogeneity of thick films. The size of mosaic blocks increased and the level of microstresses sharply decreased with a deeper vacuum. The residual gases and impurities from the crucible cause absorption phenomena and also "alloying" or oxidation of condensed copper, and retard the relaxation and recrystallization processes, i.e., increase the stability of the condensate. Orig. art. has: 6 figures and 4 tables. [MS]

SUB CODE: 11/ SUBM DATE: 17Jan66/ ORIG REF: 008/ OTH REF: 005/ ATD PRESS: 5109

Card 2/2

ACC NR: AP7002714 SOURCE CODE: UR/0126/66/022/006/0936/0938

AUTHOR: Palatnik, L. S., Fedorenko, A. I.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Surface microrelief of beryllium condensates

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 6, 1966, 936-938

TOPIC TAGS: electron microscope, beryllium, metal vapor deposition, crystal structure analysis, crystal surface / UEMV-100 electron microscope

ABSTRACT: Since the surface structure of crystals is determined by their growth kinetics, it was of interest to investigate the surface microrelief of Be condensates with the aid of an UEMV-100 electron microscope to elucidate the effect of conditions of deposition (substrate temperature T_s, deposition rate ω_k and the angle φ of incidence of the molecular beam) on their structure and growth mechanism. For $T_s = \sim 120$ to $\sim 700°C$, φ from 0 to 50°C, ω_k = = 5-300 Å/sec and thickness h of Be films = 0.5 to 100 μ, it was found that the surface relief of Be films is greatly affected by T_s. For $\sim 220°C < T < \sim 350°C$ well-developed forms of

 UDC: 669.725:548.5

laminar-spiral crystal growth (Fig. 1) are observed on the surface of Be condensates with h > >10 μ; this mosaic relief is due to the striving of the film toward a minimal surface energy,

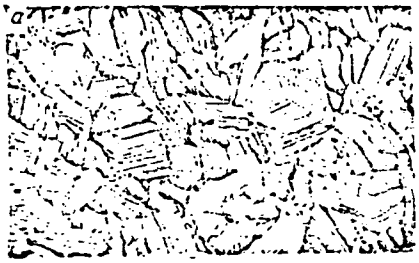


Fig. 1. Surface structure of beryllium films: $T_s = 275°C$, $\omega_k = 40$ Å/sec, $\varphi = 0°$, magnified 3750 times

and it disappears when $T_s <\sim 200°C$ owing to the shortening of the migration path of the condensing atoms. When $T_s >\sim 350°C$ this mosaic relief likewise fades, this time owing to the intensification of diffusion processes at the film surface. This mosaic relief makes it possible to determine the dimensions and orientation of crystals and the degree of random orientation between adjacent grains, i.e. characteristics which play an important role in the physical properties of films. As for the variation of φ, it does not markedly affect the surface microrelief

ACC NR: AP7002711

of Be films. As regards ω_k, it is established that lamellar hexahedral crystals (Fig. 2) begin to grow at the film surface above a certain substrate temperature $T_{s.k.}$ which is a function of ω_k, and which decreases with increase in ω_k. E.g. when $\omega_k = 140$ Å/sec, $T_{s.k} \approx 500$°C and

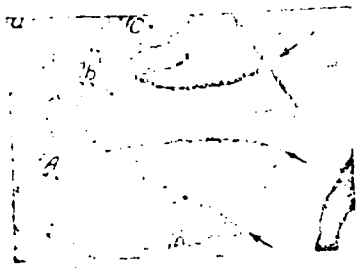


Fig. 2. Lamellar monocrystal of beryllium: $T_s = 320$°C, $\omega_k = 270$ Å/sec, magnified 4500 times

when $\omega_k = 270$ Å/sec, $T_{s.k} \approx 300$°C. With the aid of microdiffraction it is established that these lamellar crystals represent regular Be monocrystals with a highly perfect crystal lattice due to the reversibility of condensation processes (extensive re-evaporation of Be atoms when $T_s > \sim 300$°C), which provides the conditions for rapid correction of defects in the crystalline structure of these monocrystals. Considering the distinctness of mosaic relief on the surface of Be films, it may be assumed that these lamellar hexahedral monocrystals of Be, forming on

ACC NR: AP7002744

condensation of its vapors in the presence of considerable supersaturations ($\Delta\mu_K$ ~ 150-300 Å/sec and $T_s \approx 300$-600°C) represent the realization of the case where a layer hangs suspended above the crystal surface. The existence of an "atmosphere" of condensing atoms above the film surface apparently is a prerequisite for the formation of lamellar monocrystals and accounts for their absence when $T_s <\sim 300$°C. In conclusion, it should be noted that the surface relief of Be films points to a primarily laminar growth mechanism of condensates, with growth spirals being rarely encountered. Orig. art. has: 3 figures.

SUB CODE: 20/11/ SUBM DATE: 04Apr66/ ORIG REF: 006

Card 4/4

ACC NR: AP6033898 SOURCE CODE: GE/0030/66/017/002/0543/0554

AUTHOR: Palatnik, L. S.; Fuks, M. Ya.; Lukashenko, L. I.; Ravlik, A. G.; Kozma, A. A.

ORG: Polytechnical Institute imeni V. I. Lenin, Khar'kov (Polytechnisches Institut)

TITLE: The structure and magnetic properties of condensed ferromagnetic films

SOURCE: Physica status solidi, v. 17, no. 2, 1966, 543-554

TOPIC TAGS: magnetic thin film, electromagnetic film, vacuum degassing, cobalt, permalloy, magnetic anisotropy, ferromagnetic film

ABSTRACT: Two series of permalloy, Fe, Ni and Co films were prepared by conventional degassing and vacuum deposition at 10^{-4} to 10^{-5} torr; the thickness h of the film varied from 0.1 to 30.0 μ. The first series included films with $h \approx 1.5$ μ, the second series included films with $h \approx 0.5$ μ. The films were examined for oriented and disoriented microstresses, the grade of the dispersion of blocks, and the concentration rate of stacking faults. Various forms of structural and phase nonequilibrium were also examined. The structural peculiarities are caused by the preparation conditions as well as by the heat treatment of the film. Thus in Ni and permalloy condensates, oriented microstresses were found to exist in a direction close to normal to the film; they reach the order of 25 kg/mm^2 and decrease with increasing substrate temperature. It is believed that at least to some extent these microstresses affect

Card 1/2

ACC NR: AP6033898

the magnetic anisotropy in the direction of the normal. The films have a high rate of block dispersion; the mean linear block size is 100 Å at a substrate temperature of ~200°C. The concentration of twin stacking faults in permalloy films reaches up to 60%. In Co films, the deformation stacking faults were found to predominate on account of the polymorphism. The observed decrease of the coercive force in Co films at substrate temperature ~480°C is related to the decreasing concentration of the hexagonal phase. There is a distinct correlation between the structural state of the films, and their magnetic properties. This correlation is especially pronounced for the phase nonequilibrium (Co films), and for structural nonequilibrium (the effect of the texture upon the magnetic anisotropy of Co and Fe condensates). The correlation of other characteristics (stacking faults, block dimensions, disoriented microstresses, etc.) requires further study. Orig. art. has: 3 figures, 4 tables.

SUB CODE: 11,20/ SUBM DATE: 31May66/ ORIG REF: 010/ OTH REF: 008

Card 2/2

L 25764-66

ACC NR: AP6016366 SOURCE CODE: UR/0070/65/010/003/0399/0404

17
B

AUTHOR: Palatnik, L. S.; Naboka, M. N.; Gladkikh, N. T.

ORG: Khar'kov State University im. A. M. Gor'kiy (Khar'kovskiy gosudarstvennyy universitet); Polytechnic Institute im. V. I. Lenin (Politekhnicheskiy institut)

TITLE: Study of the aging process of vacuum condensates

SOURCE: Kristallografiya, v. 10, no. 3, 1965, 399-404

TOPIC TAGS: solid solution, cadmium, sulfur, spherulite, hardness, metal crystal

ABSTRACT: The condensation mechanism and structural conversions occurring in condensates of pure sulfur and its alloys in various concentrations are studied after ageing two years at room temperature. When solid solutions of Cd-S age, they decompose, and filamentary and conical cadmium crystals are formed (5 to 18 at. % S and 50 at. %S, resp.). When the sulfur content is 70 to 80 at. %, the sulfur recrystalizes. Filamentary crystals of antimony form when Sb-Se alloys age over a period of 5 years. Sulfur condenses as a liquid from the vapor phase on a glass substrate at 20°C; at - 80°C, the vapor condenses in crystals. Spherulites form in sulfur films deposited on molybdenum substrates at - 80°C and in deposits of sulfur alloys of Cd, Zn, and Sb-Se at - 20°C on polished glass. Curves of microhardness as a function of composition are plotted for Cd-S. Orig. art. has: 6 figures and 1 table. [JPRS]

SUB CODE: 20 / SUBM DATE: 01Jul64 / ORIG REF: 009

UDC: 548.526

Card 1/1 CC

L 46709-66 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/GG/GD

ACC NR: AT6020704 (N) SOURCE CODE: UR/0000/65/000/000/0040/0058

38
37

AUTHOR: Palatnik, L. S.; Boyko, B. T.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Production of thin films by evaporation in vacuum and by cathode sputtering in a gas discharge

SOURCE: AN UkrSSR. Fizika metallicheskikh plenok (Physics of metal films). Kiev, Naukova dumka, 1965, 40-58

TOPIC TAGS: metal film, polycrystalline film, epitaxial growth, crystal growth

ABSTRACT: The article consists of a survey of material reported at the Cleveland seminar on thin films (October 1963) and work done by the Metal-physics department of the Khark'kov Polytechnic Institute. A brief review is presented of two methods of thin-film production, evaporation in vacuum and cathode sputtering, and the main parameters influencing the formation of the condensate on the substrate are discussed. Topics dealt with are the apparatus used for evaporation and sputtering, the effect of aggressive gas impurities, apparatus used for the measurement of thin-film properties, the effect produced on the film by factors such as the substrate and its purity, the condensation rate, and the substrate temperature (and effective means for its control). It is deduced that cathode sputtering has certain advantages over evaporation in vacuum, especially when it is desired to produce pure single-crystal and poly-

Card 1/2

ACC NR: AP7005140 SOURCE CODE: UR/0126/66/022/004/0637/0639

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.

ORG: Khar'kov Polytechnical Institute imeni V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: About growth textures in beryllium condensates

SOURCE: Fizika metallov e metallovedeniye, v. 22, no. 4, 1966, 637-639

TOPIC TAGS: beryllium, thin film, crystal orientation, crystal morphology, metallographic examination, x ray analysis

ABSTRACT: The structure of beryllium layers 30-50 mm thick and condensed on hot substrates was studied. The techniques for condensing and studying these films were developed by the authors (FTT, 1965, 7, 819). Transverse cross sections were etched in a weak (<1%) aqueous solution of oxalic acid. The development of growth texture in the columnar crystals proceeded to a definite thickness h_c, after which crystals of a single orientation remained on the surface layers, growing with a constant velocity. Microstructures showed that for $h > h_c$ the crystal dimensions in the surface layer do not change, since they experience the same growth conditions as the neighboring grains. The scattering angle of the maximum growth direction of the separate crystals to the -

ACC NR: AP7005140

texture axis was less than 10° for $h > h_c$. With rise in substrate temperature (T_p), h_c increased because of decreased nuclei size: at T_p = 190°C, h_c = 30 μ; at T_p = = 250°C, h_c > 80 μ. For T_p = 260-330°C micrographs of the surface showed two types of crystals, one of the [100] and the other of the [001] texture. The angle between the normal to the layer and the [001] and [100] direction (β) was given as a function of T_p for different orientations (φ) of crystallite clusters. Above 360°C, β increased sharply (to ±60° or more) for both [100] and [001] textures. Misorientation of texture depended on φ. The greatest degree of texture misorientation (β-(-β)= =120°) occurred at φ = 0, due to the equalized addition of vapor atoms to the growing velocities to dominate the growth of neighboring grains. However, at φ > 40° the perfection of the growth texture decreased. The optimum growth conditions for obtaining ideal [001] and [100] textures in beryllium layers were as follows: φ = 15--30°, T_p = 210° for [001] and T_p = 340-370°C for [100]. Orig. art. has: 3 figures.

SUB CODE: 11/ 20/ SUBM DATE: 02Feb66/ ORIG REF: 002/ OTH REF: 001

Card 2/2

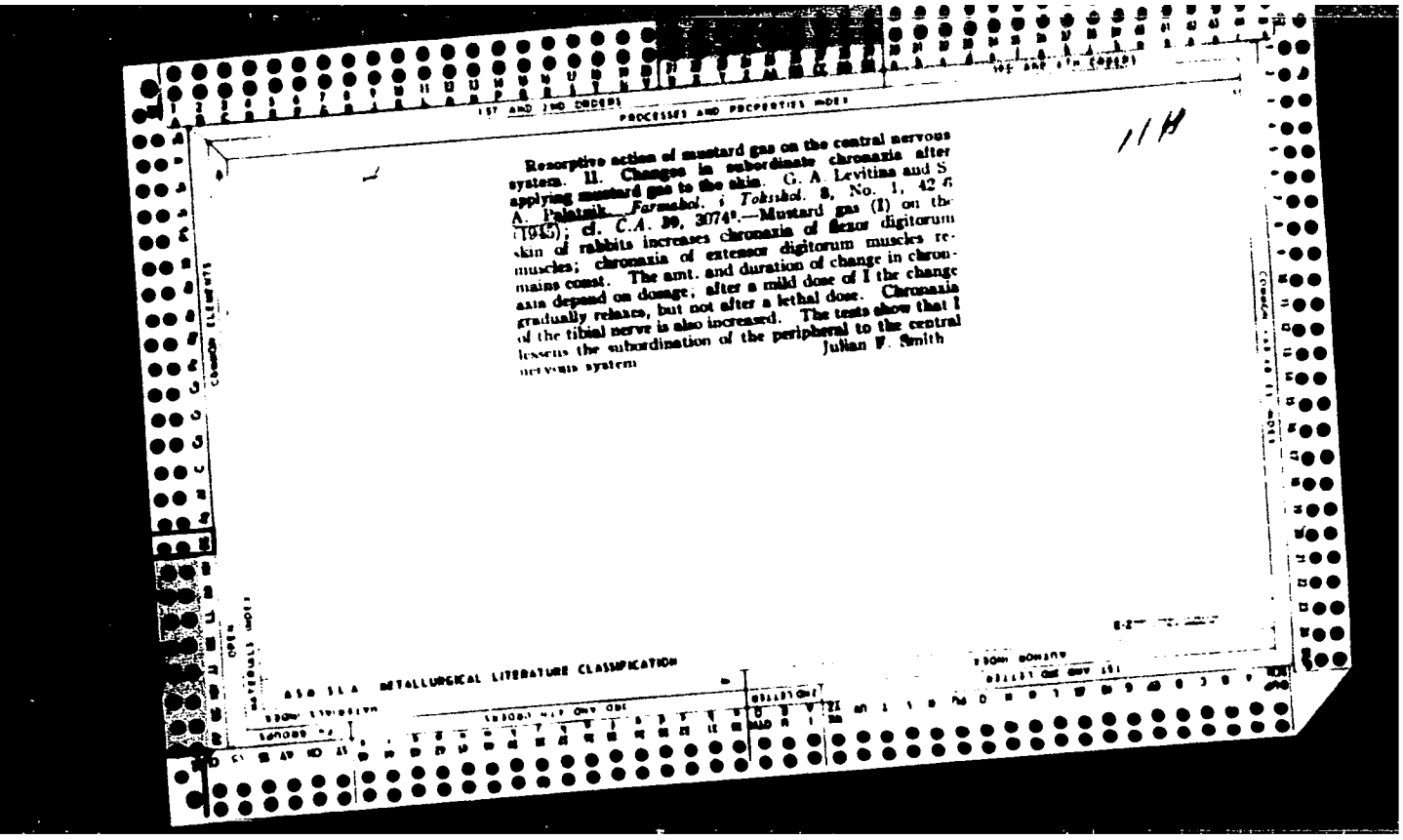
PROCESSES AND PROPERTIES INDEX

C4

11-H

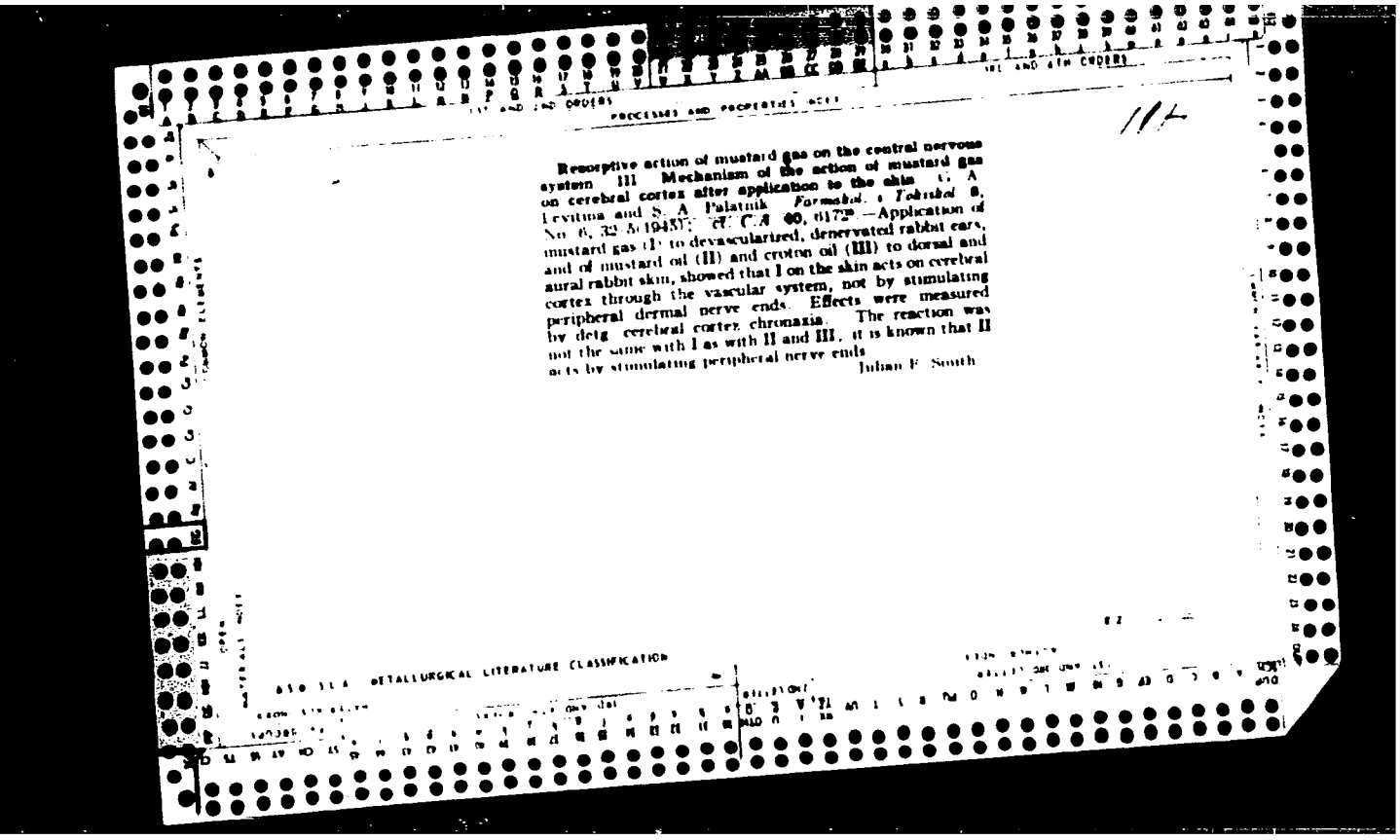
Resorptive action of mustard gas on the central nervous system. I. Dynamics of chronaxia in cerebral cortex after applying mustard gas to the skin. G. A. Levitina and S. A. Palatnik. *Farmakol. i Toksikol.* 7, No. 3, 30-3 (1944). Chronaxia (I) of the cerebral motor area in rabbits was detd. before and after application of a lethal dose (LD) of mustard gas (100-115 mg./kg.) to a shaved patch (8 x 8 cm.) of dorsal skin, or 1/4 x 4 cm. for 1/4 the LD. The poison increases I, i.e., it decreases the functional lability of cerebral cortex cells. Thus, of 9 rabbits given the LD the increase of I in 6 rabbits after a latent period of 13-48 min. was 10-60%; in the other 3 (latent period 10-30 min.) an initial small decrease in I was followed by an increase. Of 5 rabbits given 1/4 the LD the increase in I (latent period 12-18 min.) was 10-40% in 3; in the other 2 a small initial decrease was followed by an increase. Julian F. Smith

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Resorptive action of mustard gas on the central nervous system. II. Changes in subordinate chronaxia after applying mustard gas to the skin. G. A. Levitina and S. A. Palatnik. *Farmakol. i Toksikol.* 8, No. 1, 42-6 (1945); *cf. C.A.* 39, 3074⁶.—Mustard gas (I) on the skin of rabbits increases chronaxia of flexor digitorum muscles; chronaxia of extensor digitorum muscles remains const. The amt. and duration of change in chronaxia depend on dosage; after a mild dose of I the change gradually relaxes, but not after a lethal dose. Chronaxia of the tibial nerve is also increased. The tests show that I lessens the subordination of the peripheral to the central nervous system. Julian F. Smith

A50 S1 A METALLURGICAL LITERATURE CLASSIFICATION



Resorptive action of mustard gas on the central nervous system. III. Mechanism of the action of mustard gas on cerebral cortex after application to the skin. G. A. Levitina and S. A. Palatnik. *Farmakol. i Toksikol.* 8, No. 6, 32-8 (1945); *C. A.* 40, 6172.—Application of mustard gas (I) to devascularized, denervated rabbit ears, and of mustard oil (II) and croton oil (III) to dorsal and aural rabbit skin, showed that I on the skin acts on cerebral cortex through the vascular system, not by stimulating peripheral dermal nerve ends. Effects were measured by detg. cerebral cortex chronaxia. The reaction was not the same with I as with II and III; it is known that II acts by stimulating peripheral nerve ends.

Julian F. Smith

PALATNIK, S. A.

PA 16/49T73

USSR/Medicine - Brain, Physiology Jul/Aug 48
Medicine - Electrophysiology

"Maximum Subliminal Irritation of the Locomotory Zone of the Cerebral Cortex," S. A. Palatnik, Electrophysiol Lab, VIEM Moscow, 7½ pp

"Fiziol Zhur SSSR" Vol XXXIV, No 4

Reports experiments on cats. Describes method, giving diagram of electric circuit. Tabulates and plots results. Concludes that locomotory fibers of cerebral cortex can be irritated to subliminal condition. Critical irritative frequency is 20 - 40 per second. Maximum time is 0.24 - 0.5 second.
Submitted 3 Dec 1946.

16/49T73

USSR/Medicine - Nervous System, Jan/Feb 49
Physiology
Medicine - Central Summation

"I. M. Sechenov's Studies on Central Summation," S. A. Palatnik, Moscow, 14 pp

PA 47/49T69

"Uspekhi Sovrem Biol" Vol XXVII, No 1

Brief compilation of studies by Sechenov on central summation. Concludes his studies are much more significant than usually acknowledged. Nevertheless, many of them were not conclusive, and later scientists further developed his theories. Pavlov, Tarkhanov, Ukhtomskiy and others were among those responsible for completing some of Sechenov's studies.

47/49T69

PALATNIK, S. A.

47/49T69

USSR/Medicine - Nervous System, Jan/Feb 49
Physiology (Contd)

47/49T69

USSR/Medicine - Nervous System
Medicine - Bulbocapnine, [illegible]

"Summation of Subthreshold Stimuli of the Motor Zone of the Cerebral Cortex [illegible] Cataleptoid States," S. A. Palatnik, Electrophysiol Lab [illegible]

"Fiziol Zhur SSSR" Vol XXXV, No 1

Various dosages of bulbocapnine produced radical changes in chronaxia and parameter of subthreshold stimulation of motor neurons of the cerebral cortex. Chronaxia has a tendency to increase independent of dosage. Parameter of the summation of subthreshold stimulation of cells of the cerebral cortex varies according to dosage. Concludes that [illegible]

47/49T67

USSR/Medicine - Nervous System (Contd)

of the integration of processes of stimulation in the cerebral cortex includes not only processes related to development of stimuli and iso- and heterochronism of cerebral cortex neurons, but also processes related to unknown summation of stimuli and sympathetic transmission of nervous impluses to the interneural neurons.

PALATNIK, S. A.

47/49T67

PARAMONOVA E. G., PALATNIK S.A., LIMCHER L.F., LEVITINA G.A.

Funktsional'noe sostoianie kory golovnogo mozga bol'nykh giper-tonicheskoi bolezn'iu i vliianie na nego lechebnogo pitaniia (Po dannym elektroentsefalografii). /Functional state of the cerebral cortex in hypertensives and effect of therapeutic diet; electroencephalographic data/ Ter. arkh. 23:2 Mar-Apr 51 p. 26-40.

1. S. A. Palatnik of the Group for the Study of the Pathology of the Brain (Supervisor--Prof. M. O. Gurevich, Active Member of the Academy of Medical Sciences USSR) attached to the Psychiatric Clinic of First Moscow Order of Lenin Medical Institute. 2. L. F. Limcher and E. G. Paramonova of the Clinic of Therapeutic Nutrition (Director--Honored Worker in Science Prof. M. I. Pevzner), Institute of Nutrition of the Academy of Medical Sciences USSR. 3. Of the Electrophysiological Laboratory (Head--Prof. A. N. Magnitskiy, Active Member of the Academy of Medical Sciences USSR), Institute of Physiology of the Academy of Medical Sciences USSR.
CIML Vol. 20, No. 10 Oct 1951

USSR / Human and Animal Physiology (Normal and Patholo- T
gical). Physiology of the Skeleton

Abs Jour: Ref Zhur-Biologiya, No 21, 1958, 97808

Author : Palatnik, S. K., Tel'nova, Ye. P.

Inst : Uzbek Scientific Research Institute of Orthopedics, Traumatology, and Prosthesis

Title : Dynamics of Subordinative Chronaxis of the Muscles in Bone Tissue Regeneration

Orig Pub: Tr. Uzb. n.-i. in-ta ortopedii, travmatol. i protez., 1955, 6, 69-81

Abstract: Under ether narcosis, the tibia was fractured and a plaster cast reaching to the lower third of the femur was applied, fixing the calf in a position of flexion for 9 to 20 days. Before cast application

Card 1/3

55

USSR / Human and Animal Physiology (Normal and Pathologi- T
cal). Physiology of the Skeleton

Abs Jour: Ref Zhur-Biologiya, No 21, 1955, 97808

and fracture of the long bone, rheobase (R) of musculus vastus lateralis equaled, on the average, 48 to 50 for both extremities and chronaxis (C) averaged 0.22 to 0.25 msec. R of musculus semitendinosus equaled on the average 20 to 30 v and C to 0.17 to 0.22 msec. R and C of musculus vastus lateralis were greater than that of musculus semitendinosus. On the average, the ratio of C of these antagonists was 1.5:1.0. Under the influence of the cast, displacement in the size of C of musculus vastus lateralis and musculus semtendinosus of both extremities occurred, expressed more in the fractured extremity. In the majority of estimations, a tendency toward shortening of the size of C was noted. The influence of a cast applied

Card 2/3

USSR / Human and Animal Physiology (Normal and Patholo- T
gical). Physiology of the Skeleton

Abs Jour: Ref Zhur-Biologiya, No 21, 1958, 97808

to healthy extremity was extremely clear. The size of R and C remained lower than normal during bone regeneration. Deviations of R and C from normal were observed in reference to the muscles of extremity to which a plaster cast was applied, as well as to the muscles of the opposite extremity. The greatest decrease of R and C was noted in the period of development of periostal reaction and formation of fibrous callous. In the period of regeneration of osseous tissue, when rebuilding of fibrous callous into osseous took place, the C of muscles, being lower than normal, had a tendency to approach it. --F. I. Mumladze

Card 3/3

PALATNIK, Ye. Ye.

"A Case of Dermal Leishmaniasis in a Patient With Active Tuberculosis of the Lungs", Med. Paraz. i Paraz. Bolez., Vol. 17, No. 1, pp 91-92, 1948.

FRIDKIN, A.Ya., inzh.; PALATNIKOV, I.B., inzh.

Precast foundations for rotary kilns at cement plants. Prom. stroi. 40 [i.e. 41.] no.3:24-27 Mr '63. (MIRA 16:3)
(Kilns, Rotary—Foundations)

AUTHOR: Palatnikov, Ye.A., Engineer SOV/122-58-7-7/31

TITLE: The Stability of I-Beams in the Plane of Bending (Ustoychivost' dvutavrovykh balok v ploskosti izgiba)

PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 7, pp 26-30 (USSR)

ABSTRACT: A simply supported symmetrical I-Beam under a general load system in the plane of the web is considered. Eq (1) describes the twist of the beam at any point along its length in terms of the local bending moment and the total load, the torsional stiffness of the beam, its height, the edgewise bending stiffness of each flange and the vertical distance between the point of load application and the neutral axis of the beam in bending. A solution exists for the case of pure bending, where Eqs (2) and (3) express the critical bending moment, at which the beam collapses by torsion. S.P. Timoshenko has produced well-known tables to deal with different load systems. They are confined to a uniformly distributed load and a load concentrated in the centre of the beam. However, even a simultaneous application of the two requires special analysis. To simplify the use of the energy method, an approximate procedure is given in the paper to determine critical conditions for any load system acting on a single

Card1/3

span beam, including cases of bracing with intermediate supports. The method is based on the assumption of a sinusoidal distribution of twist, which is strictly true only of the pure bending case. In practical computation, the geometric cross-section of the beam yields the required data and the load system yields the maximum bending moment. The moments [illegible] each component of the load system are computed and in each case the ratio of the component bending moment and the total bending moment is found. Table 1 gives for 17 loading cases certain coefficients with the help of which several auxiliary quantities are computed. The final quantity has the effect and notation of the slenderness ratio for compressed struts. Eq (9) expresses the critical stress in the manner of the well-known Euler formula, using the simulated slenderness ratio so obtained. Table 2, for different slenderness ratios, yields a factor by which the standard bending stress of the beam must be reduced to yield the allowable stress from the point of view of torsional instability. Table 3 gives the corrections in this multiplying factor when it exceeds 0.85, which are necessary to allow for exceeding the

 bending yield stress of the beam. When the beam is braced

SOV/[illegible]

The Stability of I-Beams ... [illegible] Bending

inside the span against torsional displacement, each section is considered a separate span with additional end fixing moments. The maximum error of this method is evaluated separately for symmetrical and non-symmetrical loads. Several comparisons are given in Tables 4 and 5, showing errors of 1.5% and 4%, respectively. It is pointed out that the nature of the load system has a great effect on the critical stress. The range for the same height of load application is a factor of 1.5 The load height has an even greater effect. In a numerical example given, the ratio of the critical stresses due to the same load system applied to the upper or lower flanges of the beam is about 2:1. There are 4 figures and 5 tables.

Card 3/3

PALATNIKOV, Yevgeniy Andreyevich

[Rectangular slabs on elastic foundations] Priamougol'naia plita na uprugom osnovanii. Moskva, Stroiizdat, 1964. 235 p. (MIRA 17:12)

PALATNIKOV, Yevgeniy Andreyevich; SUVOROVA, I.A., izdatel'skiy redaktor; ZUDAKIN, I.M., tekhnicheskiy redaktor

[Calculating axle compensators placed in pipelines] Raschet osevykh kompensatorov, vvodimykh v truboprovody. Moskva, Gos.izd-vo obor. promyshl., 1957. 95 p. (MLRA 10:9)
(Pipelines)

PHASE I BOOK EXPLOITATION SOV/5636

Palatnikov, Yevgeniy Andreyevich

Raschet zhelezobetonnykh plit pokrytiy aeroportov (Calculation of Reinforced-Concrete Slabs of Airport Surfacing) Moscow, Oborongiz, 1961. 94 p. 3,050 copies printed.

Reviewers: P. L. Pasternak, Member of the Academy of Construction and Architecture of the USSR, and I. Ya. Shtayerman, Corresponding Member, Academy of Sciences UkrSSR; Ed.: S. L. Martens, Engineer; Ed. of Publishing House: L I. Sheynfayn; Tech. Ed.: V. P. Rozhin; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE : This book is intended for engineers and scientists in the field of construction and designing of roads, airports, and foundations. It may also be useful to instructors and advanced students in schools of higher technical education.

COVERAGE: The author discusses calculation methods for reinforced-concrete slabs laid on an elastic foundation. Solutions to

Card 1/3-

problems of calculating rectangular slabs and infinite and semi-infinite variously loaded strips are presented. Calculations of unlimited slabs loaded at their center, edge, and corner are considered in detail. Calculation tables are included. The author thanks Professor P. L. Pasternak, Doctor of Technical Sciences, Professor I. Ya Shtayerman, Doctor of Physics and Mathematics, and Professor B. G. Korenev, Doctor of Technical Sciences. There are no references.

TABLE OF CONTENTS:

PALATNIKOV, Yevgeniy Andreyevich; PASTERNAK, P.L., doktor tekhn. nauk, prof., retsenzent; SHTAYERMAN, I.Ya., doktor fiz.-mat. nauk, prof., retsenzent; MARTENS, S.L., inzh., red.; SHEYNFAYN, L.I., izd. red.; ROZHIN, V.P., tekhn. red.

[Designing reinforced-concrete slabs for airport pavements] Raschet zhelezobetonnykh plit pokrytii aeroportov. Moskva, Gos.nauchno-tekhn. izd-vo Oborongiz, Moskva, 1961. 94 p. (MIRA 14:6)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Pasternak). 2. Chlen-korrespondent AN USSR (for Shtayerman)
(Concrete slabs) (Airports--Runways)

L 1941-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) MJW/JD/HM
ACCESSION NR: AP5025135 UR/0133/65/000/010/0944/0947
669.18-412 : 621.746.753

AUTHOR: Palatnikova, Ye. S.; Krutasova, Ye. I.

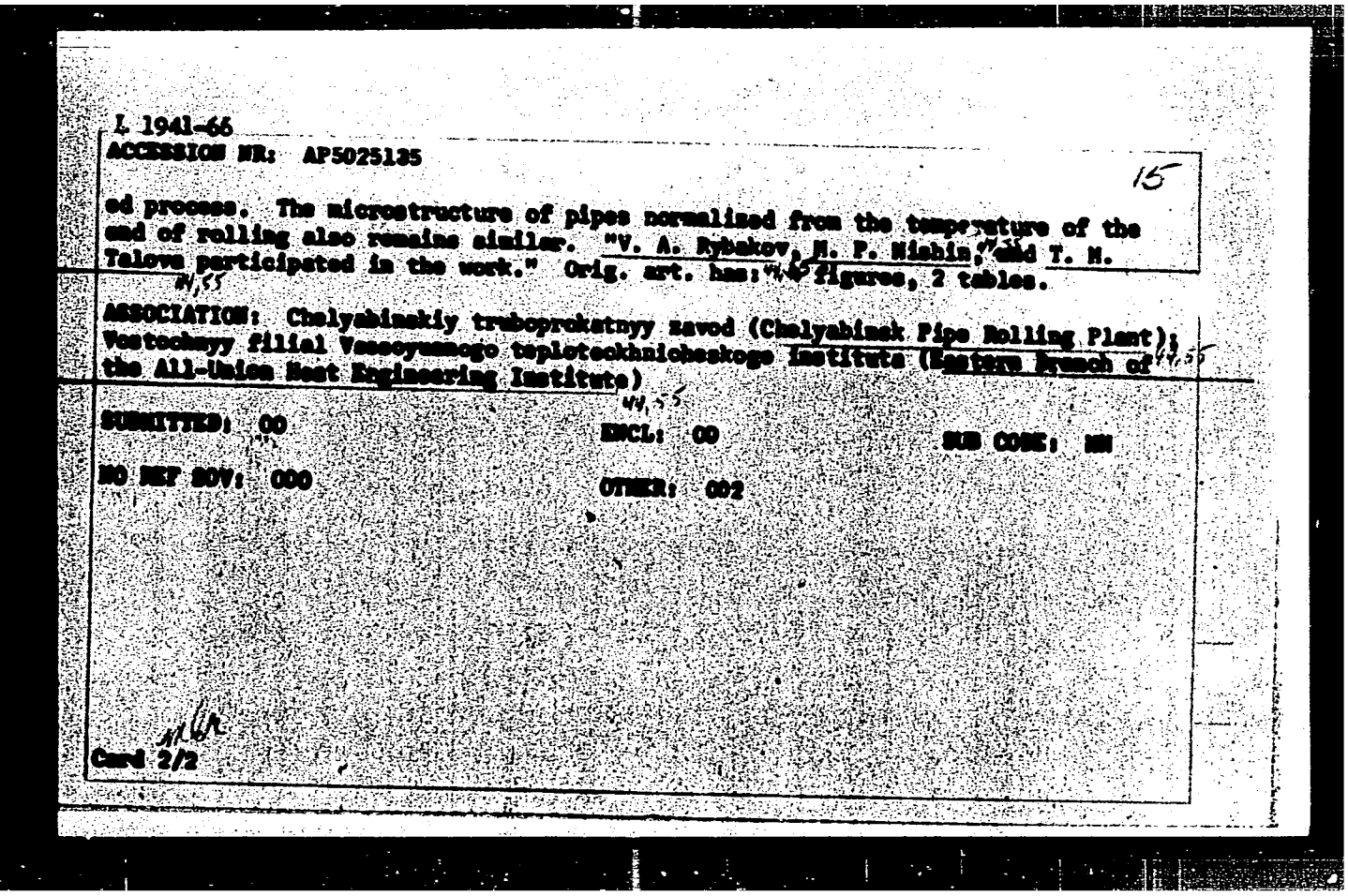
TITLE: Normalizing of large-diameter boiler pipes of 12KhlMF steel from the rolling temperature

SOURCE: Stal', no. 10, 1965, 944-947

TOPIC TAGS: pipe, metal rolling, metal aging, metal property, metal heat treatment, 12KhlMF steel

ABSTRACT: Normalizing of pipes of 12KhlMF steel with a wall thickness of 15 to 20 mm from the temperature of the end of rolling (980-1070°C), followed by high tempering provides for the required mechanical properties. The stress rupture strength of the pipe metal thus normalized and aged is as high as that of pipes treated by the standard adopted process. The normalizing does not cause a decline in the stress rupture strength and mechanical properties when the temperature of the end of rolling is raised from 980 to 1070°. The plastic properties are high and almost equal in absolute value to those of pipes treated by the standard adopt-

Card 1/2



L 1941-66
ACCESSION NR: AP5025135

15

ed process. The microstructure of pipes normalized from the temperature of the end of rolling also remains similar. "V. A. Rybakov, M. P. Mishin," and T. M. Talova participated in the work." Orig. art. has: 4 figures, 2 tables.

ASSOCIATION: Chelyabinskiy truboprokatnyy zavod (Chelyabinsk Pipe Rolling Plant); Vostochnyy filial Vsesoyuznogo teplotekhnicheskogo instituta (Eastern Branch of the All-Union Heat Engineering Institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 002

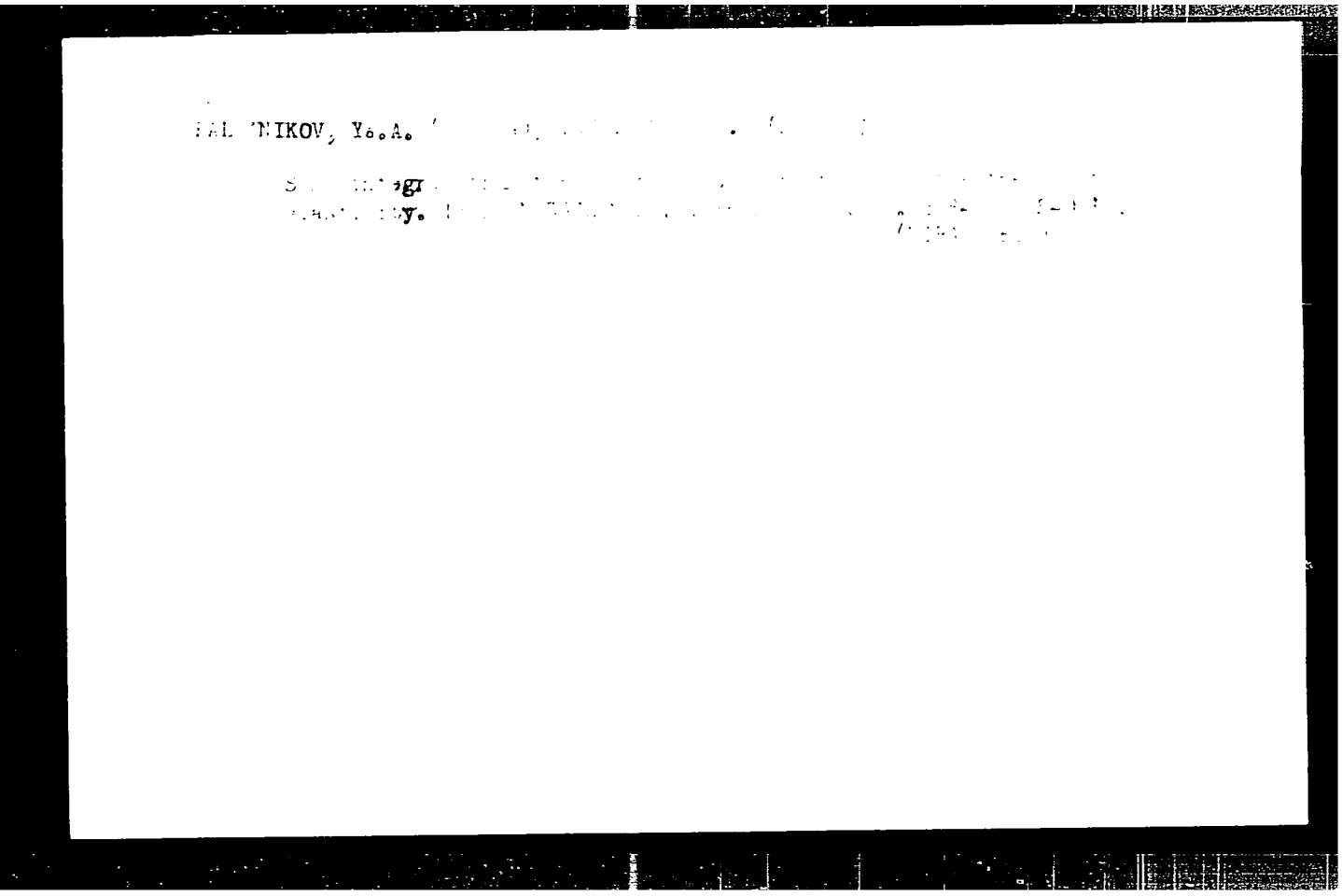
Card 2/2

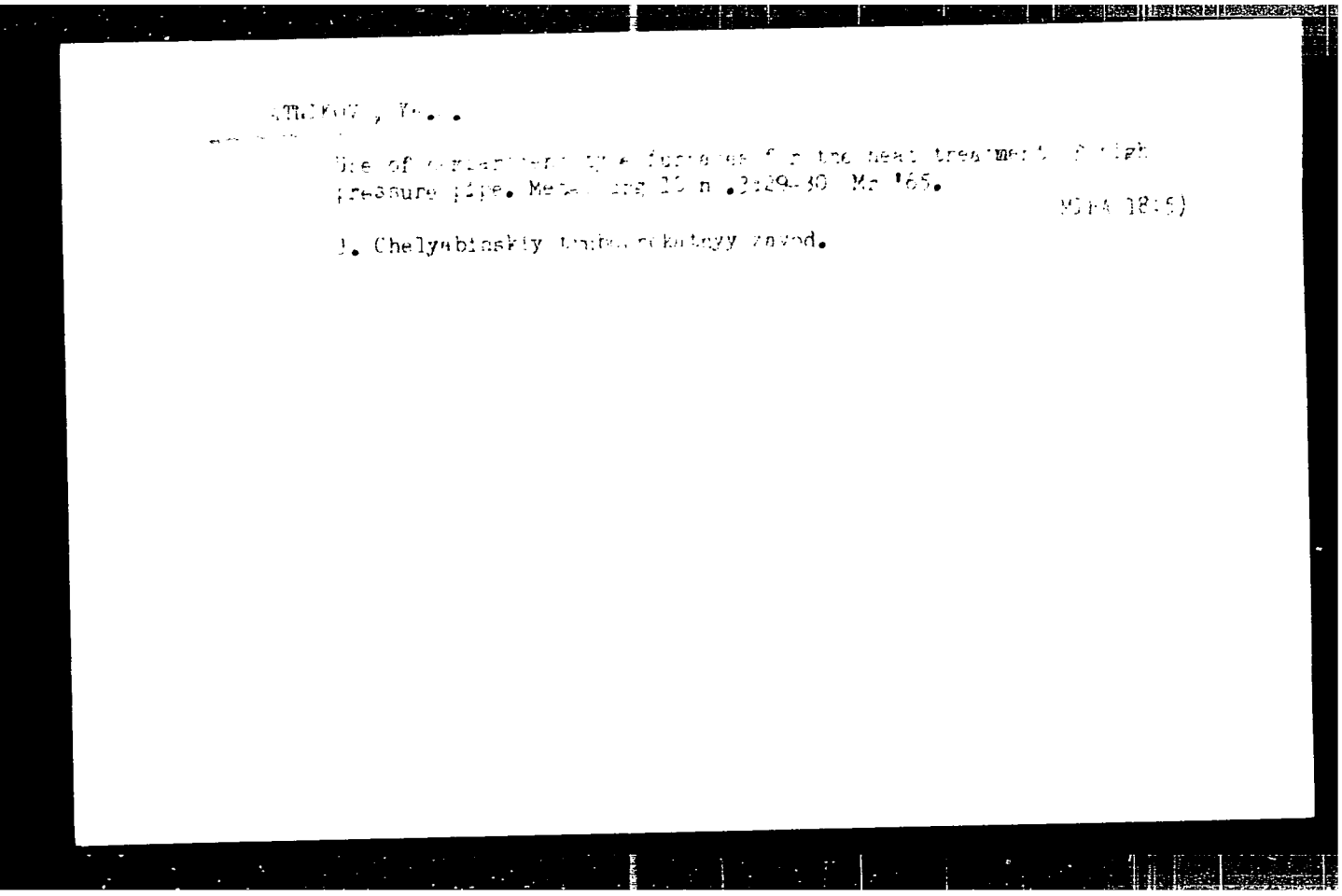
KUZMAK, Ye.M., doktor tekhn.nauk; MILANCHEV, V.S., kand.tekhn.nauk; KROSHKIN, V.A., inzh.; SUVOROVA, V.I., inzh.; SERGEYEV, S.I., inzh.; BARYSHEV, S.P., inzh.; Prinimali uchastiye: SHCHERBACHENKO, S.V., inzh.; PALATNIKOVA, Ye.G., inzh.

Testing 14GN steel for thermal strengthening and weldability. Stroi. truboprov. 7 no.12:13-14 D '62. (MIRA 16:1)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akademika Gubkina (for Kuzmak, Milanchev, Kroshkin).
2. Chelyabinskiy truboprokatnyy zavod (for Suvorova, Sergeyev, Baryshev).

(Steel—Testing)





[illegible], Yu. [illegible]

Use of [illegible] furnaces for the heat treatment [illegible] high pressure pipe. Metallurg 10 n.3:29-30 Mr '65.

(MIRA 18:5)

1. Chelyabinskiy [illegible] zavod.

002031 EPF(n)-2/EWP(j)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c) JD/WW/
(A) SOURCE CODE: UR/0185/65/010/012/1369/1371
HW/JG/RM

AUTHORS: Klyucharev, O. P.; Palatnyk, L. S.; Nykolaychuk, A. D.

ORG: Physicotechnical Institute AN UkrSSR, Kharkov (Fizyko-tekhnichnyy instytut AN URSR), Kharkov Polytechnic Institute im. V. I. Lenin (Kharkivs'kyy politekhnichnyy instytut)

TITLE: X-ray structure analysis of isotope targets used for nuclear investigations

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 12, 1965, 1369-1371

TOPIC TAGS: x ray study, crystal structure analysis, titanium, hafnium, zirconium

ABSTRACT: Titanium, zirconium, and hafnium foils 1 -- 7 μ thick were prepared by thermal dissociation of their iodides. The deposition of thin isotope layers on a heated substrate was carried out in two stages: preparation of the break up of the iodides outside the chamber, and thermal dissociation of the end product in the form of a directed flux of molecules in a continuously evacuated chamber. X-ray investigations were carried out of foils deposited on a molybdenum substrate at temperatures of 950 -- 1250C every 50C using 20 -- 30 samples of each

Card 1/2

L 13135-66

ACC NR: AP6002031

element. The photos were taken using a sintered silver powder standard. The texture was observed on flat-plate photographs. In the case of zirconium there was practically no texture in this temperature range. The texture of the titanium and hafnium foils depends on the temperature of dissociation of the iodides, a change in the temperature during dissociation giving rise to unordered orientation of the crystallites relative to the substrate. The foils consisted of fine crystallites, their size depending on the temperature at which the iodides were dissociated -- the higher the substrate temperature, the larger the crystals. Metallographic investigation of the surfaces of the foils revealed no pores or other microscopic defects (at a magnification of 200 -- 400). The foils could find use as protective (anticorrosive, fire-resistant, etc) covering. Orig. art. has: 1 table and 2 figures.

SUB CODE: 20/ SUBM DATE: 19Apr65/ ORIG REF: 003

Card 2/2 HW

REYMAN, V.M.; LYSKOV, L.M.; ZAVALKO, Ye.V.; PALATNYY, P.S.

Recent tectonic movements in the Vakhsh Valley. Dokl.AN Tadzh.SSR 2 no.2:13-19 '59. (MIRA 13:4)

1. Institut geologii AN Tadzhikskoy SSR. Predstavleno chlenom-korrespondentom AN Tadzhikskoy SSR R.B.Baratovym.
(Vakhsh Valley--Geology, Structural)

PLATONOV, K. I.

Therapeutics, Suggestive

Review of K. I. Platonov's book "Suggestion and hypnosis in the light of Pavlov's theory." A. K. Mikhaylov. Zhur. nevr. i psikh. 52 No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1, 52, Uncl.

PALATOV, A.A.

Reconditioning frontal parts of the RMK-2,3, and 4 pumps. (MIRA 13:2)
Khim.volok. no.4:69 '59.

1. Barnaul'skiy zavod.
(Pumping machinery) (Textile fibers, Synthetic)

PALATOV, [illegible]

Horizons of "space" radio-electronics. Av. i kosm. 45 no.9:90 '62. (MIRA 15:10)

1. Uchenyy sekretar' Instituta radiotekhniki i elektroniki AN SSSR

(Radio astronomy)

9(2,3)

AUTHOR: Palatov, K.I.

TITLE: The Problem of Considering Multiple Internal Reflections When Investigating Complicated Transmission Lines With SHF Instruments

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 6, pp 51-54 (USSR)

ABSTRACT: The author considers in this paper one of the methods of precise estimation of the influence of multiple internal reflections on the properties of a superhigh-frequency line. When estimating the quality of a complicated superhigh-frequency transmission line, i.e., if it contains a great number of mismatched circuit elements, a consideration of multiple internal reflections of separate non-uniformities will be difficult. Consequently, for solving the problem, a number of simplifications is necessary which will result in extremely high requirements for matching of individual components. The general diagram of such a line is presented in fig.1. For the analysis of such complicated circuits, transmission line elements may be characterized by the equivalent circuit, shown in fig. 2. For composing the equivalent circuit a wave propagation was assumed occuring only in forward

Card 1/3

The Problem of Considering Multiple Internal Reflections When Investigating Complicated Transmission Lines With SHF Instruments

direction, while there is only a reverse wave in the lower parts. In this case an interaction of the direct and the reflected waves is assumed as taking place only in the area of reflection, i.e., at the boundaries of the elements characterized by the reflection factors. The reflection and transmission factors are regarded as complex magnitudes. The magnitude of the signal transmitted in different sections of the element, represented by fig.2, is characterized by the field intensity vector **E**. The direct and the reflected wave are considered as being of one type. The suggested method of considering internal reflections facilitates the solution of problems of any difficulty degree by means of subsequent consideration of individual elements of the system and their further unification to larger elements. In this case it will be possible to limit oneself mathematically only to the consideration of the most simple circuits, shown in fig. 2 and 4. The suggested calculation method may be applied for the solution of a wide range of problems. In the next paper, the author will consider the application of this method for separate measurements