OSIPOV, I.O.

Rayleigh-type waves at the interface of two media of cubic anisotropy. Izv. AN SSSR. Ser; geofiz. no.9:1170-1190 S '62.
(MIRA 15:8)

1. Petrozavodskiy gosudarstvennyy universitet.
(Seismic waves)

OSIPOV, I.O.

Reflection and refraction of elastic plane waves at the interface between a liquid and a solid anisotropic body. Izv. AN SSSR. Ser. geofiz. no.12:1768-1783 D '61. (MIRA 14:12)

1. Petrozavodskiy gosudarstvennyy universitet.
(Elastic waves)

OSIPOV, I.O.

Nature of changes in the propagation velocity of elastic waves in anisotropic media. Izv. AN SSSR. Ser. geofiz. no.1:3-10 Ja '62. (MIRA 15:2)

1. Petrozavodskiy gosudarstvennyy universitet.
(Elastic waves)

OSIPOV, I.O.

Motion of seismic energy in anisotropic media. Izv. AN SSSR. Ser. geofiz. no. [illegible] F '6[illegible]. (MIRA 15:[illegible])

1. Petrozavodskiy gosudarstvennyy universitet.
(Elastic waves)

OSIPOV, I.O.

Reflection and refraction of elastic plane waves at the boundary between two anisotropic media. Izv.AN SSSR.Ser.geofiz. no.5: 649-665 My '61. (MIRA 14:4)

1. Petrozavodskiy gosudarstvennyy universitet.
(Elastic waves)

OSIPOV, I. P.

CA

18

PROCESSES AND PROPERTIES INDEX

A method and apparatus for continuous denitration of commercial sulfuric acid. I. P. Osipov. *Coke and Chem.* (U. S. S. R.) 1939, No. 12, 35-6; *Khim. Referat. Zhur.* 1940, No. 5, 86.—Denitration of tower H_2SO_4 in a continuous app. is described. The acid, the mother soln. from the saturator, compressed air, steam and $(NH_4)_2SO_4$ denitrating reagent are passed into the app. Approx. 3-4 tons of the acid can be denitrated in a 2 cu. m. app. The dependence of the denitration velocity on a no. of tech. factors is described briefly. Observations on the compn. of gases, contg. N oxides after the saturator, indicate that the reaction velocity between the N oxides of coke-oven gas and $(NH_4)_2SO_4$ present in the mother soln. of the saturator, can be so great that the gas can be freed nearly completely from N oxides. This conclusion needs further verification. W. R. Henn

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

ACC NR: AP6035598 SOURCE CODE: UR/0387/66/000/010/0062/0068

AUTHOR: Osipov, I. O.

ORG: Petrozavodsk State University imeni O. V. Kuusinen (Petrozavodskiy gosudarstvennyy universitet)

TITLE: Love waves in the layer separating two anisotropic media of monoclinic symmetry

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 10, 1966, 62-68

TOPIC TAGS: seismic wave, anisotropic medium, phase velocity, propagation velocity

ABSTRACT: The present work is an extension of previous studies by I. O. Osipov (Volny Lyava v anizotropnom sloye monoklinnoy simmetrii. Izv. AN SSSR, Ser. geofiz., No. 5, 1963). The author investigates the dispersion of Love waves in a monoclinic layer separating two anisotropic media of monoclinic symmetry but with different elastic constants. Dispersion curves are plotted for phase and group velocities for 0, 1, and 2 nodal planes. The three monoclinic media employed are aegerine, potassium tartrate, and tartaric acid. The Love waves under the stipulated conditions must satisfy the conditions:

$$\sqrt{\varkappa_{11} - \frac{\varkappa_{13}'^2}{\varkappa_{33}}} < c < \sqrt{\varkappa_{11} - \frac{\varkappa_{13}^2}{\varkappa_{33}}},$$

 UDC: 534.222

where each χ represents the ratio of the corresponding elastic constant (c) to the density of the medium. The dispersion is represented by

$$\frac{\lambda}{H}=\frac{2\pi\sqrt{D_2}}{\pi n+\operatorname{arctg}\dfrac{c_{44}^{(2)}\left(c_{44}^{(1)}\sqrt{D_1}+c_{44}^{(3)}\sqrt{D_3}\right)}{c_{44}^{(2)2}\sqrt{D_2}-c_{44}^{(1)}c_{44}^{(3)}\dfrac{\sqrt{D_1}\sqrt{D_3}}{\sqrt{D_2}}}},$$

$$(n=0,1,2,3,\ldots),$$

where n defines the number of nodal planes. It is found that when the ratio λ/H changes at the site (0,Q) the phase velocity of the Love wave at any value of n changes within the intervals indicated above. The velocity increases with increase in λ/H. When the value of λ/H tends toward zero or toward Q, the group velocities tend toward the phase velocities as defined above. At other values of λ/H, the group velocity exceeds phase velocity. From a consideration of the conditions for monoclinic media and other media, it follows that the phase velocity of Love waves for a monoclinic layer at the contact between anisotropic media of the same symmetry--in contrast to the case when the media have orthorhombic symmetry or are isotropic--has lower and higher boundaries that are less than the velocities of SH waves along the x axis for a layer and a half space y > H under the conditions of

$$\varkappa_{13}-\frac{\varkappa_{23}^2}{\varkappa_{33}}<\varkappa_{11}-\frac{\varkappa_{21}^2}{\varkappa_{31}}.$$

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

ACC NR: AP6035598

It was found that the dispersion curves for the monoclinic and orthorhombic media have the same form as for isotropic media. Orig. art. has: 4 figures, 1 table, and 36 formulas.

SUB CODE: 08/ SUBM DATE: 27Oct64/ ORIG REF: 005/ OTH REF: 004

Card 3/3

OSIPOV, I.P.

Osipov, I.P. -- "Morphology of the Vegetative Nervous System of Large-Horned Cattle." Dr Biol Sci, Moscow Technological Inst of the Meat and Dairy Industry, 21 Jan 54. (Vechernyaya Moskva, 11 Jan 54)

SO: SUM 168, 22 July 1954

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

Country : USSR
Category : [illegible]

Abs. Jour : [illegible]

Author : [illegible]
Institut. : [illegible]
Title : [illegible]

Orig Pub. : [illegible]

Abstract : [illegible]

Card: 1/1

VLA[illegible]V, G.G.; [illegible]

[illegible]

21(8)

AUTHORS: Tokh..., Ya. ..., [redacted] I. S.

TITLE: Determination of Specific α-Activity and the Half-Life of ...

(Opredeleniye udel'noy α-aktivnosti i perioda poluraspada ...)

PERIODICAL: Atomnaya energiya, 1959, Vol ..., Nr 1, pp ... (USSR)

ABSTRACT: The specific activity of ... uranium samples was determined. The isotope composition, which was measured mass-spectroscopically, fluctuated in the case of individual samples between

U^{232} 4.10^{-3} percentage by weight

U^{233} ... up to ... .24 percentage by weight

U^{234} 2.25 up to 2.36 (± 0.07) percentage by weight

U^{235} < 0.1 percentage by weight

U^{236} ... .46 up to 4.38 (± 0.07) percentage by weight.

A nitric acid solution is produced from each uranium sample. From each of these solutions 30 preparations having a diameter

Card 1/2

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

SOV/8... -1-1... ...

Determination of Specific α-Activity and the Half-Life of U^{233}

of 10 ± 0.. mm was made. The ... material is not given. The preparations were measured by two pulse ionization chambers with a small solid angle. From the multiplicity of measurements it follows that the specific activity of 1 μg U^{233} corresponds to 20.950 ± 100 α-decays. To this specific α-activity there corresponds a half-life of (16.26 ± 0.08) .10^4 years. This result is in good agreement with the data given by references 1 and 2. There are 2 references.

SUBMITTED: October 2., 19..

Card 2/2

SHCHERBAKOV, V.N.; NAGOVITSYNA, L.N.; OSIPOV, I.S.

X-ray investigation of structural changes and mutual arrangement of individual grains in specimens of low-alloy iron in the process of deformation by pure tension. Fiz. met. i metalloved. 9 no. 4:510-514 Ap '60. (MIRA 14:5)

1. Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy institut.
(Iron alloys—Metallography) (Deformations (Mechanics))

PETROV, V.A.; OSIPOV, I.S.; PIVANOVA, P.S.; NOVIKOVA, R.E.

Distribution of doses in the surface layers of the tissue along the beam axis of the GUT-Co-400-1 gamma apparatus. Med. rad. 8 no.7:78-81 Jl '63. (MIRA 17:1)

1. Iz TSentral'nogo nauchno-issledovatel'skogo instituta meditsinskoy radiologii (dir. Ye.I. Vorob'yev) Ministerstva zdravookhraneniya SSSR.

PETROV, V.A.; OSIPOV, I.S.; PIVANOVA, P.S., NOVIKOVA, R.E.

Relation of the surface dose distribution in gamma therapy to the state of collimation. Med. rad. 9 no.2:86-89 F '64.
(MIRA 17:9)

1. TSentral'nyy nauchno-issledovatel'skiy institut meditsinskoy radiologii (dir. Ye.I. Vorob'yev) Ministerstva zdravookhraneniya SSSR.

ZEDGENIDZE, G.A.; OSIPOV, [illegible]

International symposium on evaluation of the content of radioactive substances in the human body. Med. rad. 9 no.11:79-91 N '64. (MIRA 18:9)

OSIPOV, I.S.; PROKOF'YEV, A.Ya.

10th annual conference of the Society of Nuclear Medicine (Montreal, Canada). Med. rad. 10 no.5:84-91 My '65. (MIRA 18:6)

OSIPOV, Ivan Terent'yevich

[From two centners to record crops; practices of a flax crew]
Ot dvukh tsentnerov do rekordnykh urozhaev; iz opyta l'novodnogo
zvena. [Moskva] Moskovskii rabochii, 1957. 30 p. (MIRA 11:4)
(Flax)

OSIPOV, Iosif Zinov'yevich

[Tataria's treasure] Sokrovishcha Tatarii. Kazan', Tatarskoe knizhnoe izd-vo, 1959. 246 p. (MIRA 13:7)
(Tatar A.S.S.R.--Petroleum)

OSIPOV, Iosif Zinov'yevich; SOLOV'YEV, B.I., redaktor; KAKHRAMANOVA, I.M., tekhnicheskiy redaktor

[Long journeys; notes on the Maritime Territory] Dal'nie dorogi; iz primorskoi tetradi. Moskva, Sovetskii pisatel', 1957. 156 p. (MIRA 10:7)

(Maritime Territory--Description and travel)

KRASNOV, A.I.; OSIPOV, I.Z., redaktor; YERSHOV, P.R., redaktor; TROFIMOV, A.V., tekhnicheskiy redaktor.

[Drop of gasoline] Kaplia benzina. Moskva, Gos.nauchno-tekhnicheskoe izd-vo neftianoi i gorno-toplivnoi lit-ry, 1955. 47 p. (MIRA 8:4)
(Gasoline)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

OSIPOV, Iosif Zinov'yevich

OSIPOV, Iosif Zinov'yevich; BOYARKINA, V., redaktor; MOROZOVA, G., tekhnicheskiy redaktor

[From a tourist's notebook] Iz putevogo bloknota turista. [Moskva] Izd-vo TsK VLKSM "Molodaia gvardiia," 1957. 83 p. (MLRA 10:9)
(Europe--Description and travel)

OSIPOV, Iosif Zinov'yevich; BOYARKINA, V., redaktor; TERYUSHIN, M., tekhnicheskiy redaktor

[Sakhalin notes] Sakhalinskie zapisi. [Moskva] Izd-vo TsK VLKSM "Molodaia gvardiia," 1956. 285 p. (MLRA 9:10)
(Sakhalin--Description and travel)

OSIPOV, I. Z.

"In Zhigul; on the Oil Shores of the Volga," Moscow, 1948

XXX

PALENKO, I., kand.geograf.nauk; RIVLIN, A., zhurnalist; OSIPOV, K., zhurnalist; OVSCHKINA, L.S., red.

[Blagoveshchensk is 100 years old] Blagoveshchensku 100 let. Blagoveshchensk, Amurskoe knizhnoe izd-vo, 1958. 53 p. (Blagoveshchensk--Description) (MIRA 12:2)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

MEDVEDEV, N., MARTSINYUK, V., OSIPOV, K.

Operative electrified model of a "regulating relay" stand.
Avt.transp. 39 no.2:44-45 F '6. (MIRA 14:3)
(Visual aids)
(Highway transportation workers--Education and training)

NIKITIN, I.; SLAVUTSKIY, S.; BELEN'KIY, V.; LAVRENT'YEV, V., konstruktor; OSIPOV, K., inzh.

Along the road of technical progress. Mast.ugl. no.4:16-17 '59. (MIRA 12:6)

1. Nachal'nik tekhnicheskogo otdela Malakhovskogo eksperimental'nogo zavoda (for Nikitin). 2. Glavnyy inzh. kontory Proyektgidromekhanizatsiya (for Slavutskiy). 3. Glavnyy konstruktor kontory "Proyektgidromekhanizatsiya" (for Belen'kiy). 4. Stalinogorskiy filial Giprougleмasha (for Lavrent'yev). 5. Proyektnaya kontora tresta Soyuzshakhtoosusheniye (for Osipov).
(Coal mining machinery)

[illegible], [illegible].

"First Russian Polar Aviators," published by the [illegible] Publishing [illegible] Pedagogical Literature, Moscow, 1949. 102pp.

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123[illegible]

18

Low-Alloy High-Speed Steels. A Gulyaev and K. Osipov (Stal, 1939, No. 12, pp. 47-54). (In Russian). The authors consider that high-speed steels should contain alloying elements to form carbides which dissociate with difficulty. The high-speed steel substitutes used in Russia (*e.g.*, steels *EI*116, *EI*172, *EI*173 and *EI*184), in which chromium is the chief alloying constituent, are not of this type. Consideration of previous work led the authors to the choice of the following compositions:

	(1)	(2)	(3)	(4)	(5)
Carbon, %	1·01	1·19	1·56	1·3	1·35
Vanadium, %	3·18	4·56	6·68	4·88	4·77
Tungsten, %	3·13	3·34	2·84		3·03
Molybdenum, %	3·50	3·35	3·20	3·13	
Chromium, %	4·3	4·4	4·4	4·6	4·5

In these steels the carbon content is based on the vanadium content. The above alloys were prepared in an H.F. furnace, cast, forged into billets, annealed at 900° C. and cooled in the furnace. Curves from data obtained with a dilatometer showed that the Ac_1 points of the steels were between 820° and 890° C. S-curves for the steels showed that they all possessed minimum austenite stability within the range 720–770° C. Maximum cooling rates on annealing and critical cooling rates for quenching were also obtained from the S-curves. Investigation of the optimum quenching temperatures showed that the permissible range was wide. In all the

METALLURGICAL LITERATURE CLASSIFICATION

METALLURGICAL LITERATURE CLASSIFICATION

New high speed tool steel. K. Osipov. *Vestn. Tekhniki* **1939**, No. 23-24, 28-9. The following 2 steels were found satisfactory as substitutes for the high-speed steel of 18% W: (1) C 1-1.2, V 2.8-3.5, Mo 2.5-1.5, W 2.5-3.2, and Cr 3.8-4.5%, and (2) C 1.2-1.4, V 4.5-4.5, Mo 2.5-3.5, W 2.5-3.2 and Cr 3.8-4.5%. The steels should have the following properties: Brinell hardness of 255-207 after annealing, 61-65 Rockwell scale C after hardening, and 61-65 Rockwell scale C after tempering. Heat-treatments are described. B. Z. Kamich

CA

1

Effect of chemical elements on isothermal decomposition of austenite in low alloy high speed cutting steels
[illegible]

An investigation of the effects of C, Cr, V, Mn, W, Mo and Co on the stability of austenite in the region of pearlite decompn. The stability of austenite depends on its compn., on the compn. of the carbides which entered soln. and on the presence of excess carbides. Alloying elements dissolved in austenite raise its stability. Such elements proved to be Mo, Mn, Co and Cr when present in quantities at which no Cr carbide forms. V and W dissolved in austenite apparently increase the stability of the latter. Cr_7C dissolved in austenite can lower its stability. This effect of unstable Cr carbides was observed also in the presence of more stable carbides such as Fe-W-Mo-C and VC. M. Hosch

[illegible]

[illegible]

[illegible]

[redacted]

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

PROCESSES AND PROPERTIES INDEX

14

Structure and properties of high speed steels containing Ti. K. A. Osipov. *Stal* [illegible] 4, [illegible] ([illegible]). The phase compn. and the structure of 11 high speed steel were studied. The carbides of the steels were complex and mutually sol. Ti carbides could dissolve all the alloying elements. On heating to 1280° Ti carbides did not dissolve in austenite, but the passing of alloying elements from the austenite into the carbide is likely. An increase in the Ti and C contents led to an increase in austenite after hardening the steel. However, the residual austenite was not stable and decompd. easily after tempering. No steels hardened at 1280-300° contained less austenite. The effect of Ti on the size of austenite grains depended on the compn. of the steel. M. H. [illegible]

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

9

The isothermal transformation diagram of undercooled austenite. K. A. Osipov *Bull acad sci U.R.S.S., Classe sci tech.* 1945, 862-5(in Russian). On both the simple and the double S-curve, transition from one branch to another indicates a change of the nature of the new phase initiating the transformation of austenite and resulting in a change of the temp. dependence of the velocity of transformation. Hence, an S-curve cannot be expressed by one single equation. In terms of the theory of absolute reaction rates, appearance of a new transformation nucleus corresponds to a sharp change or even change of sign of the heat and particularly of the entropy of activation. Thon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

9

The hardness curve of nickel-copper alloys. K. A. Osipov. *Compt. rend. acad. sci. U.R.S.S.* 53, 811-13 (1946). The course of the hardness curve in continuous solid Ni-Cu solns. was interpreted. Alloys of electrolytic Cu and Ni were prepd. and annealed at 900° for 64 hrs. The hardness max. corresponded very closely to the Cu concn. at which the ferromagnetic properties of the alloys disappeared. These 2 property changes can thus be explained according to the theory of zonal structure of metals, in which the 3d-band of Ni is completely filled up by electrons (at 60 at. % of Cu) and, accordingly, changes in the bond energy occur. In the Ni-Cu system the forces of interatomic bonds influence hardness more effectively than do lattice distortions, which would cause a max. at 50 at. % of Cu. At 60 at. % Cu, Ni-Cu alloys also change from passive to active behavior in acids. H. I. Fiedl

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

A

Q

3-63. Hardness Curve of Nickel-Copper Alloys. K. A. Osipov. *Reports of the Academy of Sciences of U S S R*, v. 53, Sept. 21, 1946, p. 821-823. (In Russian.)

Maximum hardness of Ni-Cu alloys was found to occur at about 60 atomic % (62 wt. %) Cu. A theory is presented which explains the shape of the hardness curve and the location of its maximum point in terms of atomic structure.

Inst. Gen. Inorganic Chem. im. N. S. Kurnakov, AS USSR

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

2

CA

Mutual solubility of metals. K. A. Osipov. *Doklady Akad. Nauk S.S.S.R.* 58, 1055-6(1947).—Citing soly. data of Owen and Roberts (*C.A.* 39, 3198[1]) and Hansen (*Aufbau der Zweistofflegierungen*, 1941 (*C.A.* 38, 2002[9])) for soly. of metals in Au, it is shown that the theoretical curve of soly. vs. max. valence of the dissolved metal does not follow the exptl. values at all. However, a plot of soly. vs. ionization potentials of the metals gives an excellent fit of theoretical and exptl. data. G. M. Kosolapoff

11 Jan 1948

USSR/Physics
Crystallization
Magnetic Fields

"Crystallizations of the Chemical Compound Al_3Ni from Fusion in a Constant Magnetic Field," K. A. Osipov, A. V. Kuz'min, Inst General and Inorg Chem imeni N. S. Kurnakov, Acad Sci USSR, 2 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LIX, No 2

Authors conducted some experiments on crystallization of chemical compounds of metals from fusion in constant magnetic field. All prior study on crystallization of metallic alloys in alternating magnetic field. Describes experiment with nickel-aluminum al-

43T103

[redacted]

11 Jan 1948

U[redacted]R/Physics (Contd)

loys containing 20% nickel. Experiments show that in constant magnetic field, oriented crystallization of chemical compounds of metals take place. Submitted by Academician G. G. Urazov, 28 Sep 1947.

43T103

[redacted]

OSIPOV, K. A.

9

Ca

Fundamental principles of alloying of hot strength metallic alloys. K. A. Osipov. *Doklady Akad. Nauk S.S.S.R.* 60, 1535-8(1948). -- The analysis is based on the $N(E)$ curves (no. of electrons having the energy E) for α- and γ-iron. The higher hot strength of the γ-lattice is explained by its lower density of electron states at the top of the occupied levels. Under plastic deformation the energy and distribution of the electrons in the lattice must change. The probability of redistribution is lower the fewer the permitted states in the vicinity. This corresponds to a greater resistance to deformation. Components having the γ-lattice and an $N(E)$ curve similar to those of γ-iron have little effect on the hot strength of γ-iron when they form a solid soln. with it. This is explained by the insignificant change of the $N(E)$ curve in this case. Components having an α-lattice and an $N(E)$ curve different from those of γ-iron increase the hot strength of γ-iron. There is sharp nonuniformity of electron distribution within the lattice, and there is deviation from the metallic bond. Generally, components having distributions of electron states differing sharply from the distribution in γ-iron will increase the hot strength of γ-iron when a solid soln. is formed. Since the formation of a chem. compd. is indicative of differences in distributions, this phenomenon may be useful in development projects instead of data on $N(E)$ curves.

A. G. Guy

Inst. Gen. & Inorganic Chem. im. N. S. Kurnakov, AS USSR

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PA

OSIPOV, K. A.

Jul 48

USSR/Metals
Alloys, High-Temperature
Melting Points

"The Relation Between the Melting Point and the Heat Resistance of Metal Alloys," K. A. Osipov, Inst Gen and Inorg Chem imeni N. S. Kurnakov, Acad Sci USSR, 3½ pp

"Dok Ak Nauk SSSR" Vol LXI, No 1

Describes experiments on heat resistance of various alloys--iron-chromium, iron-nickel, cobalt-nickel, and manganese-nickel. Discusses relation between heat resistance and melting point. Submitted 7 Apr 1948.

8/49T93

OSIPOV, K. A.

Oct 48

USSR/Metals
Alloys, High Temperature
Eutectics

"Heat Resistance Factors of Heterogeneous Metallic Alloys," K. A. Osipov, Inst of Cryst, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LXII, No 4

Discusses factors which promote viscous flow in transition regions and, consequently, increase plasticity of alloys. Concludes that, at high temperatures, heterogenization of alloys in systems with a eutectic must lower their heat resistance, while, in systems with a peritectic,

[redacted] 33/49T80

Oct 48

USSR/Metals (Contd)

heterogeneous alloys must have greater heat resistance than do phases with a lower melting point, and smaller heat resistance than do phases with a higher melting point. Submitted by Acad G. G. Urazov, 17 Jul 48.

[redacted] 33/49T80

OSIPOV, K. A.

27117

Analiticheskoye vyrazheniye svyazi mezhdu temperaturoy plavleniya i zharoprochnost'yu metallicheskikh splavov. Doklady Akad. Nauk SSSR, novaya seriya, T. LXVIII, No 1, 1949, S.81-82 - Bibliogr: 5 Nazv.

SO: LETOPIS' No. 34

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

OSIPOV, K. A.

[redacted]

PA 150T82

USSR/Physics - Plasticity
Metals - Alloys

Sep 49

"Mechanism of the Plasticity of Homogeneous Metallic Alloys at High Temperatures," K. A. Osipov Inst of Cryst, Acad Sci USSR, 5½ pp

"Iz Ak Nauk SSSR, Otdel Tekn Nauk" No 9

Experimental study of binary and quaternary metallic alloys confirmed that one of the basic factors in subject mechanism is intensification of heterogeneous distribution of components--a process involving different degrees of stratification of the components until a new phase is

150T82

[redacted]

USSR/Physics - Plasticity
Metals - Alloys (Contd)

Sep 49

created. Concluded that solid solutions most resistant to plastic flow should be those for which maximum solubility is only slightly changed with temperature increase. Submitted 21 Dec 48.

150T82

PROCESSES AND PROPERTIES INDEX

13

Strength of Alloys at High Temperature. *Metal Progress*, v. 56, Aug. 1949, p. 262, 266, 268, 270, 272.

Based on three papers by K. A. Osipov in *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR): "Fundamental Principles of Alloying of Hot Strength Metallic Alloys," v. 60, June 21, 1948, p. 1535-1538; "The Relation Between the Melting Temperature and the High-Temperature Strength of Alloys," v. 61, July 1, 1948, p. 71-74; and "Factors in the High-Temperature Strength of Heterogeneous Alloys," v. 62, Oct. 1, 1948, p. 493-495.

Results of theoretical and experimental studies indicate the possible value of theory in the design of alloys for use at high temperature. (Original papers previously abstracted.)

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

OSIPOV, K. A.

PA 2/50T94

USSR/Metals - Alloys, Metallic Melting Point — Sep 49

"An Analytical Expression for the Relation Between the Melting Point and the Heat-Resistance of Metallic Alloys," K. A. Osipov, 2 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 1

Uses a formula obtained by Mott for slip velocity on boundaries of grains of monoatomic metals and a formula obtained by Kelley for ratio of heat of fusion to Boltzmann's constant to find a formula which expresses relation between slip velocity on boundaries of grains of solid solution and liquid and solid curves. This velocity

[redacted] 2/50T94

USSR/Metals - Alloys, Metallic Melting Point (Contd) — Sep 49

Will be lower, the greater the solid temperature and the wider the alloy's crystallization interval. Slip velocity also depends upon such values as frequency of atomic oscillations, parameters of lattice, dimensions of atoms, and number of atoms which take part in slipping process. Submitted by Acad N. T. Gudtsov 6 Jul 49.

[redacted] 2/50T94

[illegible], A. A.

[illegible] of Minor[illegible], [illegible]mary, [illegible]
[illegible]
Jun[illegible] Inst[illegible] st[illegible], [illegible]

[illegible], [illegible] Dissert[illegible]
for Degree [illegible]
In [illegible] [illegible]skva. [illegible]

OSIPOV, K. A.

USSR/Metals - Alloys, Structure Jun 51

"Investigation of Plastic and Other Properties of Alloys in Iron-Nickel-Tantalum System," K. A. Osipov

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 6, pp 848-851

Studies microstructure, elec cond, hardness and deflection of alloys using specimens 2.6 mm in diam and 85 mm long. Outlines expansion of lambda-solid soln in Fe-Ni-Ta system at definite temp. Resistance to plastic deformation of ternary gamma-solid soln in Fe-Ni-Ta system increases with approach of alloys to boundary of max soly. Submitted by Acad N. T. Gudtsov.

205T77

OSIPOV, K.A.

Met

Journal of the Institute of Metals
Vol. 21 Part 7
Mar. 1954
Properties of Alloys

*Microradiographic Investigation of the Distribution of Alloying Elements in Nickel Solid Solution. K. A. Osipov and E. G. Fedotov (*Doklady Akad. Nauk S.S.S.R.*, 1951, 78, (1), 51–53).—[In Russian]. O. and F. studied the binary alloys of Ni with 5 at.-% of W, Mo, Nb, Ti, and Ta, as single-phase solid soln. Using electrolytic Ni and the commercially pure metals, 100-g. ingots were prepared from alloys melted in corundum crucibles in a H.-F. furnace. Coarse grains were produced by slow cooling during the crystn. and by long annealing at 950° and 1100° C. Plates 0·05–0·025 mm. thick (near to the thickness of individual grains) were prepared from the undeformed alloys and microradiographs obtained with Fe radiation of 24 kV. Annealing for 96 hr. at 950° C. + 50 hr. at 1100° C. did not homogenize the dendritic grains in cast Ni–W alloy. The dendrite axes appeared lighter in the radiographs, being enriched in W. The grain boundaries appear as broken lines, X-rays being weakly absorbed by ~50% of the whole grain surface. This weak absorption can be attributed to the presence of easily melting impurities, shrinkage porosity, or solid soln. low in W. In Ni–Mo alloy annealed for 96 hr. at 950° C., flakes and needles enriched in Mo were observed. Microscopic investigation showed that the needles represent an independent phase, possibly a compound of Mo and N or one of Mo and Ni. However, the flakes were not observed under the microscope. The parts of the grains near the boundaries were also enriched in Mo. As-cast Ni–Nb alloy had a cored dendritic structure, but became homogenized after 50 hr. at 1100° C., although the edges of the grains were still enriched in Nb and the grain boundaries absorbed X-rays weakly. The Ni–Ti alloy used contained only 1·8 at.-% Ti, and was prepared from Ni-4 wt.-% Ti master alloy; annealing for 50 hr. at 1100° C. removed areas of a weakly absorbing phase, but not the coring inside the grains of solid soln. The heterogeneity of the Ni–Ta alloy was greatly reduced on annealing. Microscopic investigation of the various alloys indicated heterogeneity in the as-cast condition, but not after annealing.

USSR/Metals - Structural Analysis 1 Oct 51

"Thermodynamic Criterion of the Resistivity to Plastic Deformation of Completely Saturated Solid Solutions of Metals," K. A. Osipov, B. P. Stoyukhin

"Dok Ak Nauk SSSR" Vol LXXX, No 4, pp 627-630

Discusses mechanism of plasticity and introduces concept of thermodynamic criterion, analysis of which shows that solid solns near satn limit may possess high resistivity to plastic deformation when 2d phase, coexistent with the solid solns according to phase diagram or sepd from them in

222T29

deformation process, considerably differs from the solid solns by its chem compn, cryst structure and specific vol. Submitted by Acad G. G. Urazov 29 Jun 51.

222T29

OSIPOV, K. A.

[illegible]

[illegible]

[illegible]

[illegible] Restr[illegible]

1. OSIPOV, K. A., Eng.

2. USSR 600

4. Planing Machines

7. Work experience of Yu. Motakov, an efficient planing machine operator, Vest. mash, 32, No. 12, 1952.

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

CA

2

Thermodynamic analysis of the resistance of two-phase metal alloys to plastic deformation K. A. Osipov and B. P. Stovukhin. *Doklady Akad. Nauk S.S.S.R.* **83**, 439-42 (1952). In stressed two-phase alloys, the free energy is lowered mainly through decompn. of the phases that are supersatd. in the stressed state. Consideration of the free-energy relations of an alloy of an α and a γ phase, in stressed and unstressed states, as a function of the at. compn. reveals the role of the grain sizes of the interacting phases under stress. A 2nd phase can have a hardening effect only if it is finely dispersed and its crystal size does not exceed a crit. dimension, otherwise, diffusion to the boundaries of the grains of the 2nd phase involves a decrease of the free energy and of the resistance to plastic deformation. N. Thon

Metals transformations and resulting structures

1217*. The Softenability of Limited Solid Solutions of Metals. (Russian.) K. A. Osipov and S. G. Fedotov. *Doklady Akademii Nauk SSSR*, v. 85, Aug. 11, 1952, p. 1081-1084.

Cu-Al, Cu-Zn, and Cu-Sn alloys were used to study the [illegible] Data are tabulated. [illegible]

OSIPOV, K.A.

USSR

Investigation of the diagram "composition-temperature-strength" of the quaternary system iron-chromium-nickel-manganese. I. I. Kornilov and K. A. Osipov. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* [illegible] (Engl. translation).—See *C.A.* 48, 13392*d*. H. I. H.

OSIPOV, K.A.; FEDOTOV, S.G.; LOZINSKIY, M.G.

A new mechanism of plasticity of metallic solid solutions. Doklady Akad. Nauk S.S.S.R. 89, 57-60 '53. [Engl. translation issued by Natl. Sci. Foundation, Wash., D.C. as NSF-tr-19, 5 pp. (June '53)]. (CA 48 no.1:93 '54) (MLRA 6:2)

1. Inst. Machine Practice, Acad. Sci. U.S.S.R.

Authors summarize conclusions of several British investigators, whose works on "new" mechanism of plasticity in Al and Zn when they are deformed with low rates at elevated temps were published in "Journal of the Inst of Metals" for 1949-1952. They discuss exptl data which corroborate possibility of similar mechanism of plasticity in so[illegible] considering possible interpretations of the nature of this mechanism and disputing assumption that this mechanism in "new", not actually representing phenomenon of recrystallization. Four micrographs accompany article. Presented by Acad. N.T.Gudtsov, 12 Dec 52. 259T15

evaluation B-76505

The high-temperature hardness of the γ-solid solutions of the iron-carbon system. K. A. Osipov and R. M. Mirzakhina. *Doklady Akad. Nauk S.S.S.R.* 94, 1003-7(1954).— The hardness of Armco iron and of iron alloys contg. 0.86, 0.91, and 1.04% C with 0.18-0.21% Si and 0.30-0.50% Mn was studied. The samples, 10 × 10 mm. in size, were annealed at 1000° for 40 hrs. in evacuated quartz ampuls [illegible]

[illegible] the basal principal of the crystal lattice. W. [illegible]

OSIPOV, K. A.

(2)

11560* (Hardness of Gamma-Solid Solutions in the System Iron-Carbon at High Temperatures.) Tverdost' Gamma-Tverdogo Rastvora Sistemy Zhelezo-uglerod Pri Vysokikh Temperaturakh. K. A. Osipov and E. M. Miroshkina. Doklody Akademii Nauk SSSR, v. 94, no. 6, Feb. 21, 1954, p. 1065-1067. Studies Armco Fe and Fe with 0.36 to 1.04% C, 0.13 to 0.20% Si, and 0.20 to 0.33% Mn at temperatures from 910 to 1100 C. Tables, graphs. 5 ref.

11-5-54
ml

Card 1/1 Pub 41-9/17

Author : Osipov, K. A. and Fedotov, S. G., Moscow

Title : The heat content and mechanical properties of metals

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 2, 98-104, Feb 1955

Abstract : Cites experimental data on the relationship between the heat content and the mechanical properties of various metals. Diagrams, tables. Thirty references, 10 USSR

Institution: Institute of Metallurgy imeni A. A. Baykov and Institute of Machine Science, Academy of Sciences USSR

Submitted : November 22, 1954

[illegible]V, K. A.

[illegible]rinov, K. A., "Sliding Along [illegible] Edges of Grains [illegible] Metal at [illegible] Temperatures."

[illegible]

OSIPOV, K. A.

Osipov, K. A., "Con[illegible] the Heat of Activation of Self-Diffusion in Hard Metals."

in book Research on Heat Resistant Alloys, [illegible] Acad. Sc., USSR, Moscow, 1956, 160 pp.

Inst. Metallurgy im A. A. [illegible]

[illegible] Physics [illegible] Mechanical Properties of Crystals [illegible]

Abs Jour Ref Zhur - Fizika, No 2, 1957 No 3904

Author Osipov, K A

Title Slippage Along Grain Boundaries in Metals at High Temperatures

Orig Pub Issledovaniya po zharoprochnym splavam M., AN SSSR, 1956, 48-51

Abstract Further modifications are made to the theory of inter-crystallite slippage in metals, proposed by Mott (Mott, N.F., Proc. Phys. Soc., 1948, 60, 340, 391). It is proposed that in the islets located at the place of mutual contact between the grains, where the atomic surfaces show good adhesion, the potential-energy barrier, overcome by a group of n atoms as they approach the liquid state, is determined by the value of the energy $E = n\ (w_{\ell} - w_s T/T_m)$, where W_{ℓ} is the heat content of the liquid metal, and w_s is the heat content of the solid metal at the melting point (per atom). Calculations made for aluminum on the basis of this assumption give results that are in satisfactory agreement with the experiments.

Card : 1/1

Orig Pub : Prochnost' metallov. M., AN SSSR, 1956, 55-57

Abstract : In an earlier work (Referat Zhur Fizika, 1957, No 2, 3882) it was shown that for many metals there takes place the relation $Q \approx 4w_{\ell}$, where Q is the heat of [illegible]

Author : [illegible]

Title : On the Heat of Activation of Self-Diffusion in Solid Metals

Orig Pub : Issledovaniya po zharoprochnym splavam M., AN SSSR, 1956, 151-159

Abstract : It is shown that for most metals, regardless of the type of the crystal lattice the relationship Q 4w holds quite well (Q is the energy of activation of self-diffusion, w the heat content of the liquid metal at the melting point) This indicates a close connection between the self-diffusion in solid metals and melting from the energy point of view. It is possible that the self-diffusion mechanism contains the same disturbance to the order in the crystalline lattices as the melting process. This agrees with the ideas introduced by Ya.I. Frenkel' (Kineticheskaya teoriya zhidkostey /Kinetic Theory of Liquids/, Publ. by Academy of Sciences, USSR, 1945). Bibliography, 55 titles.

Card 1/1

OSIPOV, K. A. (Moscow)

"Activation Energy Limit and Variation Values of Creeping and Other Phenomena Occurring in Solid Metals."

Paper presented at the Annual Meeting of the Society of [illegible]

[illegible]

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

Fusion and self-diffusion of solid metals. (Cont.)

assumed that the free activation energy of [illegible] per diffusing atom must equal [illegible] of self-diffusion [illegible] of the difference in the [illegible] [illegible]

[illegible]

Inst. po [illegible] splav, [illegible] (M.[illegible])

(Activity coefficients) (Diffusion) (Solutions, Solid)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R0012[illegible]

OSIPOV, K.A.; MIROSHKINA, Ye.M.; SOTNICHENKO, A.N.

Heat resistance of Ni-Cu system alloys. Trudy Inst.met. no.3:152-159 '58. (MIRA 12:11)

(Heat resistant alloys)
(Copper-nickel alloys)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

OSIPOV, K.A.; MIROSHKINA, Ye.M.

Investigating nickel-chromium system alloys by the hot hardness method.
Trudy Inst.met. no.3:160-164 '58. (MIRA 12:3)
(Nickel-chromium alloys--Testing)
(Metals at high temperatures)

[illegible]

Investigating the resistance to plastic deformation of alloys of the nickel - iron system. Issl. po zharopr. splav. 3:388-393 '58. (MIRA 11:11)

(Nickel-iron alloys--Testing) (Deformations (Mechanics))

SOV

AUTHOR: [illegible]

[illegible] the [illegible] atoms. This paper [illegible] hypothesis in a more accurate manner. According to [illegible] thesis, the activated state of the atoms is essentially [illegible] same for all the above-mentioned phenomena: it is an extreme critical state of the thermodynamic instability of the [illegible]

Card 1/3

The Calculation of the Limit Values of the Activation Energy of Vari Processes in Solid Metals

in the crystal. Some special cases of this state are they may occur separately or simultaneously. For the tivation energy one may write $\Delta H = nq$, where $n \gg$ the number of the simultaneously activated atoms in and q - the activation energy of the formation of of the extreme thermodynamic instability in the cryst one activated atom). The author assumes that the value (for the same metal and for the same special case of vation) varies only slightly if the external conditi changed. The variety of the experimental values of energy is caused mainly by the difference between of n, i.e. by the difference between the activated Some special cases are discussed in a few lines. perimental data are arguments in favor of the hypothesis and they demonstrate that the quantity be considered as the limit value of the activ [illegible]

SOV/20-121-4-1...

The Calculation of the Limit Values of the Activation Energy of Various Processes in Solid Metals

periodic function of the atomic number Z of the element. There are 1 figure, 1 table, and 5 references, 3 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov, AS USSR)

PRESENTED: April 11, 1958, by I. P. Bardin, Academician

SUBMITTED: April 1, 1958

Card 3/3

AUTHOR: Osipov, K.A. (Moscow)

TITLE: [illegible]

[illegible]

attained at T_n, [illegible]

thermodynamic stability and may change into the [illegible] state. In metals in which polymorphous transformations occur, deviations of different types may take place side by side with those described above. In this case at a given temperature $T < T_{\alpha\beta}$ (where $T_{\alpha\beta}$ = the temperature at which the low-temperature modification α changes into β) some atoms may attain the state by which they are normally characterised at $T_{\alpha\beta}$. These deviations

Card1/6

Activation Energy for Creep and Other Processes in Solid Metals

from the ideal structure, called by the author 'domains of limiting thermodynamic instability', may be also referred to as domains of "local fusion" or "local polyphormous transformation". To each of such domains a certain average number, n, of atoms can be ascribed, which can vary depending on the temperature, applied stress and other factors. It was shown by the author in one of his earlier works (Ref 4) that in solid metals with the face-centred cubic crystal structure, the experimental values of ΔH, the energy of activation of volume self-diffusion, obey the law $\Delta H = nq$, where n is the number of atoms, q is the heat of formation of domains of limiting thermodynamic instability per atom. The values of q calculated by the author [illegible] are quoted elsewhere (Dokl. Ak. Nauk SSSR [illegible]). [illegible] in every case, be expressed by the equation $\Delta H = nq$, or by a similar equation of the same type. The activated state of atoms in each of these processes is essentially identical: it represents the limiting, critical state of thermal instability in the crystal. In particular cases, this state corresponds to that which is characteristic of a transition from the solid to the liquid state, or of a solid state transformation of the $\alpha \rightarrow \beta$ type, where α and β are the low- and high-temperature modifications. The critical state of elastic stability can also represent the activated state. Depending on the conditions, all these cases of activated state may exist separately or jointly. The limiting state of thermodynamical instability of the activated group of atoms may be caused by the action of various factors such as thermal fluctuations, applied stresses or various types of radiation. In any given metal, the quantity q is hardly affected by the variation of the external factors governing the course of the studied phenomenon and it appears to be a link connecting various different phenomena and reflecting the identity of the nature of activation of those processes. All the differences in the values of the activation energy obtained from

[illegible]
[illegible] ΔH [illegible]
of aluminium [illegible]
deformation (Ref [illegible]) [illegible] shown [illegible]
primary creep of aluminium [illegible]
orientation angle of the crystals (Ref [illegible]) [illegible]
in Figure 4. Figures 5 and 6 shows ΔH [illegible]
aluminium as a function of the applied stress (Ref [illegible]) and
the temperature (Ref 51). In all these cases, the minimum
value of ΔH is very near or equal to the [illegible]

Card4/6

Activation Energy for Creep [illegible]

[illegible] mechanism [illegible] at different temperatures [illegible] author, the nature of the [illegible] not change with temperature [illegible] described by ΔH [illegible] only n varies as the temperature changes. Th[illegible] is also supported by the fact that the time dependence of deformation in creep, determined for aluminium by Sherby et al., had the same character at all the investigated temperatures. There are [illegible] figures and [illegible] 5 of which are Soviet and [illegible] English.

Card 5/6

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

18(7)
AUTHOR: Osipov, K. A. SOV/[illegible]

TITLE: On the Energy of the Formation of Vacancies in Solid Metals (Ob energii obrazovaniya vakansiy v tverd[illegible] metal[illegible])

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol [illegible], Nr [illegible], pp 85[illegible] - 85[illegible] (USSR)

ABSTRACT: Many authors acknowledged the important influence of the vacancies on self-diffusion, and they derived the relation $\Delta H = E_0 + E_{motion}$. ΔH denotes the activation energy of volume selfdiffusion (and diffusion), E_0 - the energy of the formation of vacancies, E_{motion} - the activation energy of the motion of the [illegible]

[illegible]

q has to be considered a more general quantity, that is as the activation energy of the appearing of centers of thermodynamic instability (or as "centers of local melting"). No special model was assumed for these centers. The values of q calculated according to the above mentioned expression, and also some values of the so-called energy of "hole formation" (found by various methods for the experimental investigation of 5 metals) are given in a table. According to this table, the results of this paper and of some previous papers on this subject show very good agreement. For metals with polymorphous conversions, the conception of the centers of thermodynamic instability may be generalized for the case that the state in these centers corresponds to the transition of a low-temperature modification α into another high-temperature modification β. The value $q_{\alpha,\beta}$ of the activation energy corresponds to this state. The author found the values 11701, 11[illegible], and 13162 kal.mol^{-1} for the α-modifications of iron, titanium, and zirconium, respectively. The author then returns to

Card 2/3

SUBMITTED April , 1958

Card 3/3

SOV/20-1..1- -1 ..

18(0)

AUTHOR: Osipov, K. A.

TITLE: On the Values of the Activation Energy of Selfdiffusion in Liquid Metals (O znacheniyakh energii aktivatsii samodiffuzii v zhidkikh metallakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 1.1, Nr ., pp 1.1. - 1.2. (USSR)

ABSTRACT: According to a previous paper by the same author (Ref .) the values of the activation energy of the volume selfdiffusion ΔH in solid metals (which were deduced from the experimental measurements of the selfdiffusion coefficients ... be expressed by the equation ΔH = nq. n denotes the number of the simul-taneously activated atoms in the group and ... [illegible]

SOV/20-121-4-14/4

On the Values of the Activation Energy of Selfdiffusion in Liquid Metals

which may occur in solid metals. The experimental data hitherto available permit the following conclusion: The values of the activation energy of the self-diffusion ΔH_{liquid} in liquid metals near melting point have to satisfy the equation $\Delta H_{liquid} = q - L$ where L denotes the latent heat of fusion. A table gives the values calculated by means of this equation for 6 elements. According to the data of this paper, the method of viscosity in no case permits a proper determination of ΔH_{liquid}. For iron and iron-carbon alloys, the method of viscosity and the method of the radioactive isotopes give equal values of ΔH_{liquid}. Naturally, the above-discussed experimental data are insufficient for the application of the equation $\Delta H_{liquid} = q - L$ for any metal. By comparing the equations $\Delta H = nq$ and $\Delta H_{liquid} = q - L$ the conclusion may be drawn that the self-diffusion in liquid metals (differently from the self-diffusion in solid metals) is connected with an individual activation (and not with a group activation) of the atoms. There are 1 figure, 1 table, and 11 references,

Card 2/3

[illegible]

[illegible] Soviet.

ASSOCIATION: [illegible] Institute of Metallurgy [illegible] A. A. [illegible], AS USSR

PRESENTED: April 11, 19[illegible], by I. P. Bardin, Academician

SUBMITTED: April 4, 19[illegible]

Card 3/3

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

OSTROV, K.A.

PHASE I BOOK EXPLOITATION SOV/3438

[illegible] Institut mashinovedeniya

[illegible] nauchno-tekhnicheskaya konferentsiya [illegible] nauchnykh sotrudnikov (Transactions of [illegible] of Machine Science, Academy of Sciences, USSR, [illegible] Scientific and Technical Conference of Aspirants [illegible] Scientific Workers) Moscow, 1959. 182 p. Errata [illegible] copies printed.

[illegible], Doctor of Technical Sciences, Professor; [illegible]

PURPOSE: This book is intended for technical personnel engaged in [illegible] of machines and mechanisms.

COVERAGE: This collection of scientific papers, presented at a conference [illegible] 1958, deals with the theory of machines [illegible] strength of machine parts, friction and wear [illegible] machine-building technology.

18(3) PHASE I BOOK EXPLOITATION SOV/2103

Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya

Struktura i svoystva zharoprochnykh materialov; [sbornik] (Structure and Properties of Heat-resisting Materials; Collection of Articles) Moscow, Mashgiz, 1959. (Series: Its: [Trudy] kn. 93) Errata slip inserted. 4,000 copies printed.

Additional Sponsoring Agencies: USSR. Gosudarstvennaya planovaya komissiya and Glavnoye upravleniye nauchno-issledovatel'skikh i proyektnykh organizatsiy.

Ed.: Z.N. Petropavlovskaya, Candidate of Technical Sciences; Ed. of Publishing House: N.A. Ivanova; Tech. Ed.: A. F. Uvarova; Managing Ed. for Literature on Metal Working and Tool Making: R. D. Beyzel'man.

PURPOSE: This book is intended for workers of scientific research institutes and for engineering staffs of plant laboratories of the boiler and turbine industries and power stations. It may also be useful to staff members of higher educational institutions studying problems of physical metallurgy.

Card 1/9

[illegible]

[illegible] (Studies on Heat-resistant Alloys, vol. [illegible]) Moscow, Izd-vo AN SSSR, [illegible] p. Errata slip inserted. [illegible] copies printed.

Ed. of Publishing house: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev, Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

TABLE OF CONTENTS:

Card 2/12

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123

VOL, Abram Yevgen'yevich; AGEYEV, N.V., red.; ABRIKOSOV, N.Kh., doktor tekhn.nauk, red.; KORNILOV, I.I., red.; SAVITSKIY, Ye.M., red.; OSIPOV, K.A., doktor tekhn.nauk, red.; GUSEVA, L.N., kand.khim. nauk, red.; MIRGALOVSKAYA, M.S., kand.khim.nauk, red.; SHKLOV-SKAYA, I.Yu., red.; MURASHOVA, N.Ya., tekhn.red.

[Structure and properties of binary metal systems] Stroenie i svoistva dvoinykh metallicheskikh sistem. Pod rukovodstvom N.V.Ageeva. Moskva, Gos.izd-vo fiziko-matem.lit-ry. Vol.1. [Physicochemical properties of elements; nitrogen, actinium, aluminum, americium, barium, beryllium, and boron systems] Fiziko-khimicheskie svoistva elementov; Sistemy azota, aktiniia, aliuminiia, ameritsiia, bariia, berilliia, bora. 1959. 755 p. (MIRA [illegible])

1. Chlen-korrespondent AN SSSR (for Ageyev).
(Metals) (Phase rule and equilibrium)

SOV/180-59-3-27/43

AUTHORS: Osipov, K.A. and Sotnichenko, A.L. (Moscow)

TITLE: Values of the Activation Energy of Creep and Fracture for Aluminium During Tension

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 3, pp 139-141 (USSR)

ABSTRACT: Previous work is briefly discussed. The present work was carried out on 99.99% Al after rolling at room temperature. Testing took place in vacuo (10^{-4} mm Hg) and at temperatures of up to 550°C. The specimen was 80 mm long with a gauge length of 22 mm and diameter 3 mm. The results confirm the relationship:

$$\tau = \tau_0 \exp(\Delta H_1/RT)$$

where τ is time to fracture, τ_0 is a constant, ΔH_1 is the activation energy of the process, and R and T have the usual meanings. Fig 1 shows the straight line graphs obtained for log time against inverse temperature for different stresses. Fig 2 shows the relationship between ΔH_1 and the applied stress. The curve is not linear and ΔH_1 approaches a limiting value, believed to be 7.2 k cal/g atom (the theoretically

Card 1/2

OSIPOV, K.A.

Diffusion and heat resistance of metal phases. Issl.po zharopr. splav. 4:21-25 '59. (MIRA 13:5)
(Heat-resistant alloys) (Diffusion)

AUTHOR: [illegible]

TITLE: [illegible]
Solutions by the Method of Hot Hardness

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 4, pp 77-81 (USSR)

ABSTRACT: Binary alloys of nickel with iron, chromium, vanadium, titanium, molybdenum, tungsten and tantalum were made from metals of high purity and heated in vacuo at 1150 to 1200°C for 40 to 48 hours. The hardness was determined on polished samples using VIM-I apparatus with a diamond pyramid and a load of 1 kg at 850 and 1000°C for one to twenty minutes. The diagonal (d) of the impression varied with time (t) as follows:

$$d = at^b$$

where a and b depend on the alloy composition, temperature and load. Fig 1 and 2 show typical curves for the relation of d and t for Ni-Mo and Ni-W alloys. Fig 3 shows the relation of (a) with alloy composition; a is the characteristic parameter for short-term hardness. Fig 4 shows the relation of rate of plastic deformation V_t

Card 1/2

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00123[illegible]

18(6) SOV/20-128-2-17/59

AUTHOR: Osipov, K. A.

TITLE: Structure and Energy of Grain Boundaries in Metals

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 2, pp 284-287 (USSR)

ABSTRACT: By the theory of dislocations (Refs 1-4) it was shown that the boundaries between the crystals at small angles of [illegible]

[illegible]

defined as follows: $\gamma = \frac{\mu b}{4\pi(1 - \nu)} \theta(A - \ln \theta)$, where γ denotes the energy per unit of area of the boundary, μ the shear modulus under the assumption of an elastic-isotropic medium, b the Burgers vector, ν the Poisson coefficient, θ the angle

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of disorientation or the angle of relative rotation of the crystals which are in contact with one another round the common axis in the boundary plane, A a parameter dependent on the nonelastic energy of the center of dislocation. Theory restricts the applicability of the above equation to the range of small angles of disorientation (no more than 15°) if $h \gg b$ holds for the distance h between the dislocations, but also at relatively large angles (25-30°) (if $h \sim b$) this equation is in agreement with experimental data. This agreement indicates that the errors partly cancel at large angles. R. Smolukhovskiy's dislocation model (Ref 5) permits an explanation of this agreement. With the help of metals with face-centered and cubic body-centered lattice, the author demonstrates that the energy at grain boundaries with large disorientation angles as calculated by the above equation agree, with respect to the quantity, very accurately with the activation energy of certain processes in the crystals. These processes mean the development of centers with extreme thermodynamic instability of the crystal atoms or of centers of "local melting" (Refs 6-10). Under the conditions assumed by the author, $E \simeq 1.35\,\theta\,(1 - \ln\theta)\,\mu r^3$ is

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AUTHOR: Osipov, K. A.

TITLE: Grain Growth and Creep in Metals

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 529-531 (USSR)

ABSTRACT: P. Feltham (Refs 1, 2) showed that isothermal grain growth in recrystallized metals of a very high degree of purity may be defined by the equation $D^2 - D_o^2 = K_o \exp(-\Delta H_1/kT)t$, where D_o and D denote the average values of the initial and variable diameter of the grains (measured at the instant t of isothermal annealing). K_o denotes a parameter defined by the values of atomic volume, lattice constant, and surface tension at the grain boundaries. ΔH_1 denotes activation energy, k Boltzmann's constant, T the temperature in ^oK. In pure metals, the deformation ε satisfies the equation $\varepsilon = \beta t^n$ at high temperatures within the unsteady range of the creep curve with one rotation. β and n denote temperature-dependent constants, t the period of isothermal creep. Theoretical investigations in accordance with experiments yielded the relation

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$\beta = \beta_0 \exp(-\Delta H_2/kT) \sin h(v\sigma/kT)$, where β_0 denotes a constant, ΔH_2 the creep activation energy, v the activated volume, σ the voltage applied during expansion. In a previous article (Ref 5) the author showed that the maximum values E_m of energy of the grain boundaries (determined at great values of their disorientation) for metals with face-centered and cubic body-centered lattice may be defined by the formulas $E_m \simeq 1.35\ \mu r^3$ or $E_m \simeq \mu r^3$, where μ denotes the shear modulus at moderate temperatures. In the same previous paper, the author proved the existence of the relation $E_m \simeq q$, where q denotes the limiting energy of the occurrence of shifts within the crystal lattice. The quantity q represents the activation energy of those processes in which centers of extreme thermodynamic instability are formed in the crystal or in the metals without polymorphous transformations of the centers of "local melting". q is calculated by the formula

$$q = -T_s \left[\frac{H_{T_s} - H_{298^\circ}}{T_s - 298^\circ} (6.7 - \ln T_s) - S_{298^\circ} \right],$$

where $H_{T_s} - H_{298^\circ}$ denotes the difference in heat content of the solid

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metal at the melting point T_S and standard temperature 298.16 °K; S_{298^o} denotes the entropy of the solid metal at the latter temperature. $\Delta H_1 \simeq \Delta H_2 \simeq E_m \simeq q$ holds for metals of a high degree of purity. The following experimental values of activation energy (in $kcal.g\text{-}at^{-1}$) are obtained for lead: $\Delta H_1 = 6.7$ (Pb 99.9999%) and $\Delta H_2 = 7.7$ (Pb 99.99%). The validity of the above relations confirms the assumption that with increasing grain size and also with unsteady creep the activated state represents the state of maximum disorder in the crystal lattice (or the state of "local flow", or the "origin of the transition to melting" according to N. H. Nachtrieb's terminology (Ref 11)). The vacancies, which are "centers of local melting", may form activated sites within the lattice. There are 13 references, 5 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences, USSR)

PRESENTED: May 27, 1959, by I. P. Bardin, Academician

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PHASE I BOOK EXPLOITATION SOV/3880

Osipov, Kirill Afanas'yevich

Voprosy teorii zharoprochnosti metallov i splavov (Heat Resistance of Metals and Alloys) Moscow, AN SSSR, 1960. 284 p. 3,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova.

Resp. Ed.: I.A. Oding, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: G.B. Gorshkov; Tech. Ed.: Ye.V. Makuni.

PURPOSE: This book is intended for metallurgical engineers and scientific research workers studying problems of heat resistance of metals and alloys.

COVERAGE: The book deals with theoretical problems of heat resistance of metals and metal phases in various combinations. Atomic bonding, the distortion of the crystal lattice, structure of alloys, relation between the strength and the plasticity characteristics and melting, temperature dependence of mechanical properties of metal phases, relationship between diffusion and heat resistance,

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AUTHORS: Ivanov, V.I., and Osipov, K.A. (Moscow)

TITLE: Investigation of the Kinetics of Recrystallization of Technically Pure Iron during Rapid Electric Heating

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, Nr 2, pp 87-92 (USSR)

ABSTRACT: The authors point out that recent investigations
(Refs 1-8) of the recrystallization of cold-worked metal
at high rates of heating have enabled recrystallization
time to be reduced to fractions of a second. But the
various explanations proposed (Refs 4, 8) have not been
supported by adequate experimental data. In the present
work the authors describe their investigation of
recrystallization kinetics under isothermal conditions of
iron (0.016% C, 0.15% Mn, 0.06% Si, 0.008% P, 0.01% S)
in relation to heating rate. Ring specimens, 50 mm in
diameter, and 1 mm wall thickness, were machined from a
deep-drawn cup. During deformation and machining the
specimens were carefully cooled and kept at below -10 °C
between operations. Heating in the experiments was in a
single-coil inductor at 2500 c.p.s. and in a salt bath:

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heating rates were 500 and 0.5 °C/sec respectively. The temperature was measured with 0.08 mm diameter chromel-alumel thermocouples welded to the specimen. On reaching the required temperature the specimen was kept at that temperature ± 3 °C. Fig 1 shows a typical oscillograph. After the isothermal holding the specimen was quenched in water after induction heating or in an air jet after salt-bath heating. Fig 2 shows the logarithm of time of start of recrystallization as a function of annealing temperature in the salt-bath (curve 1) and inductor (curve 2). In Fig 3 the same relationships are shown for a heating rate of 500 °C/sec but for different heat treatments: tempering at 450 °C (curves 1 and 3); heating for 15 min before annealing (curves [illegible] for 15 min (curves [illegible]
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fractions of a second of the time of start of recrystallization .nd a reduction in the activation energy of the initial stage from 57.25 to 26.9 kcal/g atom. The main cause of these changes is the coexistence of the reversion and recrystallization in time and temperature (a schematic representation is given in Fig 4 in terms of the relations illustrated previously). Preliminary reversion can have a different effect on recrystallization kinetics depending on heating rate and annealing temperature. There are 4 figures, 2 tables and 18 references, of which 13 are Soviet, 2 English, 2 German and 1 Czech.

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