

SIDORENKO, Aleksandr Konstantinovich; inzh.; ADAM, Yakov Isaakovich,
kand.tekhn.nauk; OVUMYAN, Gagik Gagamovich, kand.tekhn.nauk;
GINZBURG, Ye.G., kand.tekhn.nauk, retsenzent; RIKBERG, D.B.,
red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

[Manufacture of large-tooth gears; experience of the Novo-
Kramatorsk Machinery Plant named after Stalin] Proizvodstvo
krupnykh zubchatykh peredach; opyt Novo-Kramatorskogo mashino-
stroitel'nogo zavoda im. Stalina. Moskva, Mashgiz, 1961.
152 p. (MIRA 15:2)

(Kramatorsk--Gearing)

SIDORENKO, A.K., dotsent, kand.tekhn.nauk

Dependence of the boring speed and durability of the bore
bit on the nature of the rotation of the boring machine
renko. Sbor.nauch.trud. KGBI no. 21:197-199 '63.
(MIRA 17:7)

MALAKHOV, G.M., doktor tekhn.nauk; LYAPOTA, P.P.; SIDORENKO, A.K.

Mechanization of rock drilling. Met. i gornorud. prom. no. 2:
47-49 Mr.-Ap '64. (MIRA 17:9)

SIDORINKO, A.K., inzh.

Using compressed-wood bearings for the operation in an abrasive
medium. Mashinostroenie no.3:51-53 My-Je '64.

(MIRA 17:11)

SIDORENKO, A.K., detent; SAVEL'YEV, A.S., inaa.

Effect of the degree of wear of a boring bit on its efficiency during boring. Izv. vysshchey zav. gor.zhur. 7 no. 4: 106-109 1974. (MIRA 17:7)

1. Krivorechenskiy gosnauodnyy institut. Rekomendovana k fedroy rudnichnogo transporta i gornykh mashin.

СИДОРЕНКО, А.К., dotsent

Calculating the basic parameters of pilot bits. Izv. vys. ucheb.
sav.; gor. zhur. 7 no.10:75-79 '64. (MIRA 12:1)

1. Krivorozhskiy gornorudnyy institut. Rekomendovana kafedroy
gornyykh mashin i rudnichnogo transporta.

SIDORENKO, A.K.; KHUKHRYANSKIY, P.N., doktor tekhn. nauk, prof.,
retsenzent; GORBOV, P.S., kand. tekhn. nauk, red.

[Using compressed wood in friction units of machinery]
Primenenie pressovannoi drevesiny v uzlakh trenia mashin.
Moskva, Mashinostroenie, 1965. 95 p. (MIRA 18:3)

L 43690-66 EMP(m)/EMP(j)/T/EMP(t)/ETI IJP(c) JD/RM

ACC NR: AR6019869 (N) SOURCE CODE: UR/0398/66/000/001/V026/V026

30

AUTHOR: Sidorenko, A. K.

ORG: none

TITLE: Efficiency of using parts made of pressed wood^{1/2}

SOURCE: Ref zh. Vodnyy transport, Abs. 1V210

REF SOURCE: Proizv. -tekhn. sb. Tekhn. upr. M-va rechn. flota RSFSR, no. 3(47), 1965, 63-65

TOPIC TAGS: pressed wood, bronze, engineering machinery, cost estimate, paddle wheel, cam, *FOREST PRODUCT, SHIP COMPONENT, MARINE.*
ENGINE

ABSTRACT: It has been reported that 1 kg of pressed wood can replace 6-8 kg of bronze. Comparative tables of the cost and periods of serviceability of cam guards and hubs of paddle wheels have been presented. The cost of pressed wood is con-

Card 1/2

UDC: 674.812.004:629.12

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ACC NR: AR6019869

siderably lower than the cost of materials replaced. Orig. art. has: 3 tables.
[Translation of abstract] [NT]

SUB CODE: 13/

Card 2/2

SIDORENKO, Aleksandr Mikhaylovich, kandidat tekhnicheskikh nauk;
SHASHURIN, L.M., inzhener, redaktor; YUDZON, D.M., tekhnicheskii redaktor.

[Ways for improving technical inspection work] Puti uluchsheniia raboty punktov tekhnicheskogo osmotra. Moskva, Gos. transportnoe zhel-dor.izd-vo, 1955. 28 p. (MLRA 8:11)
(Railroads--Maintenance and repair)

SIDORENKO, A.M., kand.tekhn.nauk

New method of track management organization. Zhel.dor.transp. 44
no.8:13-19 Ag '62. (MIRA 15:8)

1. Zamestitel' nachal'nika Severo-Kavkazskoy dorogi.
(Railroads--Track)

SIDORENKO, Aleksandr Mikhaylovich, kand. tekhn. nauk; PAVLOV, V.I.,
red.; SERGEYEVA, A.I., red.; DROZDOVA, N.D., tekhn. red.

[Consolidation of track management subdivisions; experience
of the Northern Caucasus Railroad] Ukreplenie puteiskikh
podrazdelenii; opyt Severo-Kavkazskoi dorogi. Moskva, Trans-
zheldorizdat, 1963. 47 p. (MIRA 16:5)
(Caucasus, Northern--Railroads--Management)

SIDORENKO, A. N.

The Second All-Union Conference on the Preparation and Analysis of High-Purity Elements, held on 24-28 December 1963 at Gorky State University im. N. I. Lobachevskiy, was sponsored by the Institute of Chemistry of the Gorky State University, the Physicochemical and Technological Department for Inorganic Materials of the Academy of Sciences USSR, and the Gorky Section of the All-Union Chemical Society im. D. I. Mendeleev. The opening address was made by Academician N. M. Zhavoronkov. Some 90 papers were presented, among them the following:

A. A. Tumanov, A. N. Sidorenko, and Ya. I. Korenman. Determination of iodine (up to 10^{-5} micrograms in 5 ml) in Si or Ge semiconductor thin films by means of a catalytic method.

Zh. Anal. Khim. 19 No. 6, 1964 (p. 777-79)

ACCESSION NR: AP4039249

S/0032/64/030/006/0652/0654

AUTHOR: Tumanov, A. A.; Sidorenko, A. N.; Taradenkova, F. S.

TITLE: Determination of arsenic in silicon and germanium, and in gallium arsenide

SOURCE: Zavodskaya laboratoriya, v. 30, no. 6, 1964, 652-654

TOPIC TAGS: ultrapure semiconductor, microanalysis, arsenic, silicon, germanium, gallium arsenide, microquantities, impurity, arsenic hydride, arsine, mercuric bromide, analytical determination, coprecipitation, manganese dioxide, ethyl alcohol, isopropyl alcohol

ABSTRACT: Two methods for the determination of microquantities (less than 0.01 microgram) of arsenic in metallic silicon or germanium are described. For the silicon the basic principle of the method consists in the reduction of As to AsH_3 ; the latter reacts with mercuric bromide producing the yellow compound $As(HgBr)_3$. The quantitative determination is carried out by comparing the discoloration obtained with the standard samples. The method has

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ACCESSION NR: AP4039249

been experimentally controlled; the analysis requires 3.5 hr. The direct reduction, as above, cannot be achieved in germanium salt solutions. In this case, As is first separated from germanium by a coprecipitation with manganese dioxide, which can be repeated if the arsenic content in the sample is less than 10 micrograms. After the separation the method described above can be applied. In addition, it is recommended the separation of metallic arsenic from gallium arsenide be accomplished by extraction with ethyl or isopropyl alcohol in which As is more than 4000 times as soluble, compared with GaAs. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: none /

SUBMITTED: 00

DATE ACQ: 18Jun64

ENCL: 00

SUB CODE: GC

NO REF SOV: 002

OTHER: 000

Card 2/2

ACCESSION NR: AP4044894

S/0032/64/030/009/1058/1060

AUTHORS: Tumanov, A. A.; Sidorenko, A. N.; Korenman, Ya. I.

TITLE: Kinetic method for determining the microadmixture of iodine in metallic silicon and germanium

SOURCE: Zavodskaya laboratoriy, v. 30, no. 9, 1964, 1058-1060

TOPIC TAGS: iodine, cerium reduction, arsenic acid/ FEK N 57 photoelectric colorimeter

ABSTRACT: The method for determining small iodine admixtures is based on the reaction of tetravalent cerium salts with arsenious acid. This reaction is catalyzed by traces of iodine contained in silicon and germanium. In this process the yellow tetravalent cerium is reduced to the colorless trivalent state, while the arsenious acid is oxidized to arsenic acid. The rate of color fading is recorded with a FEK-N-57 photoelectric colorimeter. The analysis should be performed at 20C, using beakers of P-1 glass (glass types 49-2, 23-1, and Ergon were found unsuitable). A standard calibration curve was charted for the optical density of tetravalent cerium in the presence of metallic silicon and various known concentrations of iodine. The procedure consisted of adding 5 ml of a 10% KOH solution and 0.2 ml of a 30% H₂O₂ to 10 mg of powdered silicon. This was heated until
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ACCESSION NR: AP4044894

dissolved, after which measured amounts of KI were added. The solution was next neutralized with sulfuric acid, diluted to 25 ml, and transferred in 5-ml aliquots into test tubes where it was acidified with sulfuric acid and mixed with 0.2 ml of 0.1 normal solution of $Ce(SO_4)_2$ and with 0.2 normal solution of Na_3AsO_3 . A maximum fading of the solution was observed within 60 minutes. A similar procedure was used in plotting a calibration curve in the presence of germanium, the determination of optical density being conducted after 30 minutes. By such a technique it was possible to determine $5 \cdot 10^{-5}\%$ iodine in 10 mg of silicon, and $5 \cdot 10^{-4}\%$ iodine in 1 mg of cerium. The cations of mercury, silver, lead, and tellurium inhibited the reaction. The determination was not possible in the presence of over 50 micrograms of chlorine or 20 micrograms bromine. Orig. art. has: 1 formula and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete (Scientific Research Institute of Chemistry, Gorkiy State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: IC

NO REF SOV: 003

OTHER: 003

Card 2/2

СШАМ СШАМ, СШАМ; КОРЕЯМ, СШАМ.

Kinetic method of determining iodine impurities in cadmium
sulfide and germanium. Zav. lab. 30 no.9:1058-1060 '84.

(MIRA 1813)

I. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom
gosudarstvennom universitete imeni Lobachevskogo.

МАШИНЫ, И. П.; ПИЛОВА, И. П.; ПИЛОВА, И. П.; ПИЛОВА, И. П.

Structure of germanium receiver. In: *Изв. ВУЗ. Радиофизика*, no. 7:
1957-1958, p. 165. (ISSN 1819)

1. Условно-государственный проект по созданию метал-
лургии.

SPIVAK, M.S., glavnyy red.; BELOZUB, V.G., red.; VASILENKO, P.M., red.;
ZORIN, I.G., red.; IL'CHENKO, I.K., red.; KOVAL', A.G., red.;
KRYLOV, A.P., red.; PUKHAL'SKIY, A.V., red.; SIDORENKO, A.P.,
red.; FEDCHENKO, A.N., red.; ANGELINA, P.N., red.; BUZINOV, I.P.,
red.; BOYKO, D.V., red.; BURKATSKAYA, G.Ye., red.; VASILENKO, A.A.,
red.; VLASYUK, P.A., red.; GORODNIY, N.G., red.; DEMIDENKO, T.T.,
red.; DUBKOVETSKIY, F.J., red.; KIRICHENKO, F.G., red.; LITOVCHENKO,
G.P., red.; OZERNYY, M.Ye., red.; PERSHIN, P.N., red.; POPOV, F.A.,
red.; POSMITNYY, M.A., red.; PSHENICHNYY, P.D., red.; RADCHENKO,
B.P., red.; ROMANENKO, I.N., red.; RUBIN, S.S., red.; SAVCHENKO,
M.Kh., red.; SOKOLOVSKIY, A.N., red.; TSYBENKO, K.Ye., red.;
KOVAL'SKIY, V.F., tekhn.red.

[Practical collective farm encyclopedia] Kolkhoznia proizvodstven-
naia entsiklopediia. Izd. 2-oe, perer. i dop. Kiev, Gos. izd-vo
sel'khoz. lit-ry USSR. Vol.2. Malina-Iashchur. 1957. 923 p.
(Agriculture--Dictionaries) (MIRA 11:4)

RAZDOGIN, Yurii Vladimirovich; SIDORENKO, A. P., nauchn. red.;
TURANINA, L. A., red.

[Mounting of mechanisms on plastic ships] Kreplenie me-
khanizmov na sudakh iz plastmass. Leningrad, Sudostroenie,
1965. 147 p. (MIRA 18:6)

SIBIRIA, 1917.

Darkest pyrite deposits. (1) to geol. i pol. iskor. 1917h.
Krala no. 3 1917 9 161. (1917 1917)

SOLOV'YANOV, Leonid Nikolayevich; MAKASHOV, Leonid Nikolayevich;
KUCHEN, Yakov Andreyevich; SIDORENKO, A.P., kand. tekhn.
nauk, retsenzent, HAZAROV, P.P., kand. tekhn. nauk,
retsenzent

[Boring machinery for metal mines] Burovye mashiny dlia
metallicheskih rudnikov. Moskva, Nedra, 1964. 253 p.
(MIRA 17:11)

SIDORENKO, A.S., kandidat meditsinskikh nauk

Treatment of arthrogryposis. Ortop., travm. i protez. 17 no.2:
51-53 Mr-Apr '56. (MLBA 9:12)

1. Iz kafedry detskoy khirurgii (zav. - prof. A.N.Abramova) Denpro-
petrovskogo meditsinskogo instituta (dir. - dotsent D.P.Chukhriyenko)
(JOINTS, abnormalities,
arthrogryposis, ther. (Rus))
(ABNORMALITIES,
same)

Sidorenko A.S.
SIDORENKO, A.S., kand.med.nauk

Course of intestinal invagination resulting from dysentery. Vest.
khir. 79 no.7:59-64 J1 '57. (MIRA 10:10)

1. Iz kafedry khirurgii detskogo vozrasta (zav. - prof. A.N.
Abramova) Dnepropetrovskogo meditsinskogo instituta. Avtor adresa:
Dnepropetrovsk, pr. Pushkina, d.26, detskaya klinicheskaya bol'nitsa.
(INTUSSUSCEPTION, in infant and child,
in dysentery (Rus))
(DYSENTERY, in infant and child,
with intussusception (Rus))

SIDORENKO, A.S., kand.med.nauk

Observations of external pancreatic secretion in a patient with a
pancreatic fistula following surgery for a traumatic cyst. Vrach.
delo no.1:85-87 Ja '58. (MIRA 11:3)

1. Kafedra detskoy khirurgii (zav.-prof. A.N.Abramova) i kafedra
normal'noy fiziologii (zav.-prof. M.M.Denisenko) Dnepropetrovskogo
meditsinskogo instituta.
(PANCREAS--SECRETIONS)

SIDORENKO, A.S.

Late results of stomach resections in peptic ulcer. Nov.khir.
arkh. no.3:113 My-Je '59. (MIRA 12:10)

1. Vtoraya gosnital'naya khirurgicheskaya klinika Dnepropetrov-
skogo meditsinskogo instituta.
(STOMACH--SURGERY) (PEPTIC ULCER)

SIDORENKO, A. S., kand. med. nauk,

Influence of displacement of fragments on the form and function of the elbow joint in children in epicondylar fracture of the humerus. Ortop., travm. i protez. 22 no.8:17-20 Ag '61.

(MIRA 14:12)

1. Iz kafedry detskoy khirurgii (zav. - prof. A. D. Khristich) Dnepropetrovskogo meditsinskogo instituta (dir. - doktor med. nauk N. Ya. Khoroshmanenko)

(HUMERUS FRACTURE)

SIDORENKO, A.S., kand.med.nauk

Acute suppurative pleural diseases in children. *Pediatrics* 41
no.9:15-18 S '62. (MIRA 15:12)

1. Iz kafedry detskoy khirurgii (zav. - prof. A.D.Khristich)
Dnepropetrovskogo meditsinskogo instituta.
(PLEURISY)

SIDORENKO, A.V.

Some problems in the study of the sedimentary cover of the Kola
Peninsula. Vop.geomorf. i geol.osad.pokr.Kol'.poluost. 1:5-31
'60. (MIRA 15:1)
(Kola Peninsula--Rocks, Sedimentary) (Ore deposits)

SIDORENKO, Aleksandr Vasil'yevich; LUNEVA, Ol'ga Ivanovna; TOCHILIN,
M.S., prof., otv.red.; BUSORGINA, N.I., red.izd-va; ARONS, R.A.,
tekhn.red.

[Lithologic study of metamorphic formations] K voprosu o lito-
logicheskom izuchenii metamorficheskikh tolshch. Moskva, Izd-vo
Akad.nauk SSSR, 1961. 196 p. (MIRA 14-4)
(Petrology)

SIDORENEG, A.V.

Problem of the over-all utilization of mineral raw materials.
Vest. AN SSSR 31 no. 2:16-21 1961. (MIRA 14:2)

1. Chlen-korrespondent AN SSSR.
(Mines and mineral resources)

POSPELOV, P.N., akademik; MINTS, A.L., akademik; ALEKSANDROV, A.P.,
akademik; FEDOSEYEV, P.N., akademik; LAVRENT'YEV, M.A., akademik;
BERG, A.I., akademik; PETROVSKIY, I.G., akademik; SIDORENKO, A.V.;
SKRYABIN, G.K., kand.biolog.nauk; KONSTANTINOV, B.P., akademik;
GOLUNSKIY, S.A.; SHUBNIKOV, A.V., akademik; BLOKHINTSEV, D.I.;
DORODNITSYN, A.A., akademik; KEDROV, B.M.; SISAKYAN, N.M., akademik

Discussing the reports. Vest. AN SSSR 31 no.12:49-66 D '61.
(MIRA 14:12)

1. Chleny-korrespondenty AN SSSR (for Sidorenko, Golunskiy,
Blokhintsev, Kedrov).

(Research)

TOCHILIN, M.S., otv. red.; BEL'KOV, I.V., red.; GORBUNOV, G.I., red.;
KOZLOV, Ye.K., red.; SIDORENKO, A.V., red.; TOKAREV, V.A., red.;
SHENGER, I.A., red. ~~izd-va~~; KONDRAT'YEVA, M.N., tekhn. red.

[Geology of the Kola Peninsula] Voprosy geologii Kol'skogo polu-
ostrova. Moskva, Izd-vo Akad. nauk SSSR, 1962. 146 p.
(MIRA 15:6)

1. Akademiya nauk SSSR. Kol'skiy filial, Kirovsk.
(Kola Peninsula--Geology)

LEVADNYUK, Andrey Terent'yevich; SIDORENKO, A.V., doktor geologo-
miner. nauk, otv. red.; KUZ'MENKO, A.I., red. izd-va;
IVONT'YEVA, G.A., tekhn. red.

[Sand massifs in the West Turkmenian Lowland] Peschanye mas-
sivy severnoi chasti Zapadno-Turk'menskoi nizmennosti. Ash-
khabad, Izd-vo AN Turkm.SSR, 1963. 140 p. (MIRA 16:8)

1. Chlen-korrespondent AN SSSR (for Sidorenko).
(Caspian Sea region—Sand dunes)

SIDORENKO, A.V., glav. red.; ZORICHEVA, A.I., red.; VOLKOV, S.N.,
soredaktor; SOLOMATINA, Z.D., red. izd-va; VLASOV, I.S.,
red.izd-va; GUROVA, O.A., tekhn. red.

[Geology of the U.S.S.R.] Geologia SSSR. Glav.red.A.V.
Sidorenko. Moskva, Gosgeoltekhnizdat. Vol.2. [Archangel
and Vologda Provinces and the Komi A.S.S.R.] Arkhangel'-
skaia, Vologdskaia oblasti i Komi ASSR. Pt.1.[Geological
description] Geologicheskoe opisanie. Red. A.I.Zoricheva.
1963. 1077 p. (MIRA 16:12)

(Archangel Province--Geology)

(Vologda Province--Geology)

(Komi A.S.S.R.--Geology)

SIDORENKO, A.V.

Pre-Cambrian sedimentary geology. Sov.geol. 6 no.4:4-23 Ap '63.
(MIRA 16:4)

1. Gosudarstvennyy geologicheskii komitet SSSR.
(Earth—Surface) (Rocks, Sedimentary)

1 SIDORENKO, A.V.

Basic tasks of the Geological Survey of the nation in light
of decisions taken at the November Plenum of the Central
Committee of the CPSU. Razved. i ckh. nedr 29 no.5:1-11
My '63. (MIRA 16:7)

1. Predsedatel' Gosudarstvennogo geologicheskogo komiteta SSSR.
(Prospecting)

SIDORENKO, A.V.

Problems of the sedimentary geology of the Pre-Cambrian period.
Vest. AN SSSR 33 no.6:39-45 June '63. (MIRA 16:7)

1. Chlen-korrespondent AN SSSR.
(Geology, Stratigraphic)

SILORENKO, A.V., glav. red.; ROSTOVTSSEV, N.N., red.; GURARI, F.G.,
red.; YEGOROV, S.V., red.

[Geology of the U.S.S.R.] Geologia SSSR. Moskva, Nedra.
Vol. 44. 1964. 275 p. (MIRA 18:9)

SIDORENKO, A.V., glav. red.; ROSTOVTSEV, N.N., red.; KAZARINOV,
V.P., red.; OSYKO, T.I., red.; RUDKEVICH, M.Ya., red.

[Geology of the U.S.S.R.] Geologiya SSSR. Glav. red.
A.V.Sidorenko. Moskva, Nedra. Vol.44. Pt.1. 1964. 550 p.
(MIRA 18:5)

SIDORENKO, A.V., glav. red.; FLORENSOV, N.A., red.; RYABENKO,
V.Ye., sovedaktor; ZUBAREV, B.M., sovedaktor

[Geology of the U.S.S.R.] Geologiya SSSR. Moskva, Nedra.
Vol.35. Pt.1. 1964. 628 p. (IRA 18:1)

1. Glavnyy inzhener Buryatskogo geologicheskogo upravle-
niya (for Ryabenko). 2. Glavnyy geolog Buryatskogo geolo-
gicheskogo upravleniya (for Zubarev).

SIDORENKO, A.V., glav. red.; GAMKRELIDZE, P.D., red.; DZOTSENIDZE,
G.S., red.; ZARIDZE, G.M., red.; KACHAROVA, I.V., red.;
RUBINSHTEYN, M.M., red.; TSAGARELI, A.L., red.; CHELIDZE,
G.F., red.

[Geology of the U.S.S.R.] Geologia SSSR. Glav. red. A.V.
Sidorenko. Moskva, Nedra. Vol.10. Pt.1. 1964. 654 p.
(MIRA 17:12)

SIDORENKO, Aleksandr Vasil'evich, minist. SSSR

In leisure hours. NTC 6 no.2:60-63 F '64.

(MIRA 17:4)

SIDORENKO, A.V.

Development of the mineral resources of the Soviet Union and
the tasks of science. Vest. AN SSSR 34 no.7:12-24 J1 '64
(MIRA 17:8)

1. Chlen-korrespondent AN SSSR i predsedatel' Gosudarstven-
nogo geologicheskogo komiteta SSSR.

SIBIRSKO, A.V.

*Study of the Pro-Cambrian rocks in the southern problem of modern
geology. Vest. AN SSSR 35 no.14:14-15 1965.*

(MIRA 12:10)

1. Chlen-korrespondent AN SSSR.

SIDORENKO, B.F., polkovnik meditsinskoy sluzhby

Treating gastrectomies at the resort of Pyatigorsk. Voen.-med.
zhur. no.7:74 J1 '59. (MIRA 12:11)
(STOMACH--SURGERY)

SIDORENKO, B.F., polkovnik meditsinskoy sluzhby

Case of staphylococcal alimentary intoxication. Voen.-med. zhur.
no.6:48-49 Ja '61. (MIRA 14:8)
(STAPHYLOCOCCAL DISEASE) (FOOD POISONING)

00000001, R.F.

Complications in patients with obliterating endarteritis.
top. klin. kirurg. i lech. fist. kul't. 28 no.4-313-314
1963. (MIRA 17:9)

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S/058/63/000/002/063/070
A160/A101

AUTHORS: Adonina, A. I., Sidorenko, B. G.

TITLE: The propagation of electromagnetic waves in a ring-type waveguide with a dielectric film

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 25 - 26, abstract 2Zh159 ("Uch. zap. Khar'kovsk. un-t", 1962, v. 121, Tr. Radiofiz. fak., 5, 95 -99)

TEXT: An investigation is carried out of a waveguide consisting of infinitely thin coaxial rings provided with a dielectric film on their external or internal side. A characteristic equation for the waves E_{mn} and H_{01} was obtained. The equation was solved by the method of small perturbations - assuming that the gaps between the rings are narrow and the thickness of the dielectric film is small. The attenuation of the waves E_{11} and H_{01} was calculated as an imaginary part of the longitudinal propagation constant. It is considered that the attenuation was caused by the presence of ϵ'' in the dielectric-film material and by the energy leaked through the gaps between the rings. Numerical calcula-

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The propagation of electromagnetic waves in...

S 058/63/000/002/063/070
A100, A101

tions were carried out for the values ϵ' of the film material 2.5 and 5, and for $\epsilon''/\epsilon' = 4 \cdot 10^{-4}$. It follows from the calculations that in case the dielectric film is located outside of the waveguide, the attenuation does not depend on the thickness of the dielectric film. In case the dielectric film is located on the internal side of the waveguide, the attenuation of the wave E_{11} is proportional to the thickness of the dielectric film, and the attenuation of the wave H_{01} is proportional to the third power of the thickness of the dielectric film. The attenuation of the wave E_{11} is directly proportional to ϵ'' and is inversely proportional to ϵ' of the dielectric film material, and the attenuation of the wave H_{01} does not depend on ϵ' and ϵ'' (the dielectric is located on the external side of the waveguide). To attain a stronger filtration, it is necessary to select a dielectric film with a higher ϵ'' value and a small ϵ' value. When decreasing the structure period, if the fill factor remains constant, the attenuation of the wave E_{11} increases, and the attenuation of the wave H_{01} decreases.

V. Vzyatyshev

[Abstracter's note: Complete translation]

Card 2/2

L 19179-03

ENT(1)/BDS AFFTC/ASD/IJF(C)/SSD

ACCESSION NR: AR3004395

S/0274/63/000/005/A076/A077

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Ab. 5A477

56

AUTHOR: Provalov, A.V., Sheyko, V.P., Sidorenko, B.G.

TITLE: The possibility of employing dense wire gratings in interferometers for ultrahigh frequency measurements

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 121, 1962, Tr. Radiofiz. fak., 5, 139-144

TOPIC TAGS: interferometer, diffraction grating, ultrahigh frequency measurement, wavelength measurement

TRANSLATION: The authors present the results of an experimental determination of the parameters of dense wire diffraction gratings in the 8-mm range. A diffraction grating was placed between the emitting and receiving speakers. A determination was made of the coefficient of passage and reflection of the grating as a function of the angle of wavefront incidence. The disparity between the computed and experimental values did not exceed 20%. It was concluded that the

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L 19179-63

ACCESSION NR: AR3004395

rotary interferometer with a diffraction grating makes possible the measurement
of wavelengths in the millimeter range with an accuracy of $10^{-3} \div 10^{-4}$. R.M.

DATE ACQ: 25Jun63

SUB CODE: GE

ENCL: 00

Card 2/2

POLULYAKH, Konstantin Stepanovich; SIDCHENKO, B.G., kand. tekhn.
nauk, otv. red.; DEREVYANCHENKO, R.M., red.

[Electronic measuring devices] Elektronnye izmeritel'nye
pribory. Khar'kov, Izd-vo Khar'kovskogo univ., 1963. 311 p.
(MIRA 17:5)

VALITOV, R.A. Primalni uchastiys: LEYKIN, A.Ya.; SIDORENKO, B.G.;
KUKOLEVA, T.V., red.; BELYAYEVA, V.V., tekhn. red.

[Radio-engineering measurements] Radiotekhnicheskie iz-
mereniia. Moskva, Sovetskoe radio, 1963. 631 p.
(MIRA 16:8)

(Radio measurements)

MOROZOV, N.G.; uchitel' (selo Klyuchevki, Chelyabinskoy oblasti);
PRUDNIKOV, S., uchitel'; GORB, Ye.V.; SIDORENKO, B.P., uchitel';
LAZAREV, V.; SVIDUNOVICH, A., uchitel'; RUBIN, M., metodist;
VASIL'YEV, Ye.T., uchitel'

Letters to the editors. Geog. v shkole 23 no. 6:67-69 H-D
'60. (MIRA 13:11)

1. 4-ya shkola shkoly g.Nevelya (for Prudnikov).
2. Direktor 16-y shkoly g. Vinnitsy (for Gorb).
3. 81-ya shkola g.Baku (for Sidorenko).
4. 11-ya shkola g.Tyumeni (for Lazarev).
5. Velemichskaya shkola Brestskoy oblasti (for Svidunovich).
6. Vinnitskiy oblastnoy institut usovershenstvovaniya vrachey (for Rubin).
7. Sanitorno-lesnaya shkola poselka Klyuchi, Kamchatskoy oblasti (for Vasil'yev).
(Geography)

LEVASHOV, A.A.; YERMAKOV, N.V.; DRYAMIN, S.V.; SIDORENKO, B.V.

Experience with the use of VIKV (All-Union Institute of Experimental Veterinary Science) vaccine (G.M. Bash'ian vaccine) against infectious anemia in horses. Veterinariia 30 no.3:20-24 Mr '53.
(MLRA 6:3)

SIDORENKO, B. V.

SIDORENKO, B. V. "Experimental study of dry vaccines against infectious equine encephalomyelitis." Leningrad Veterinary Inst, Min Higher Education USSR. Leningrad, 1956. (Dissertation for the Degree of Candidate in Veterinary Science)

So: Knizhnaya letopis', No. 15, 1956. Moscow.

SHCHERBATYKH, P.Ya., doktor veterinarnykh nauk, professor; SIDORENKO, B.V.,
veterinarnyy vrach.

Vitality and resistance of the dry virus of epidemic encephalitis
of horses to some physical factors. Veterinariia 33 no.11:39-42 N
'56. (MLBA 9:11)
(Encephalitis viruses)

SHCHERBATYKH, P.Ya., prof.; TSION, R.A., prof.; PROTASOV, A.I., dots.;
URBAN, V.P., kand.vet.nauk.; UZUMOV, V.L., kand.vet.nauk.;
SIDORENKO, B.V.

Production and use of gamma globulin in treating swine for plague.
Veterinariia 34 no.12:64 D '57. (MIRA 11:1)
(Swine plague) (Gamma globulin)

L 11222-57

ARG/EMP(C)/EWI(G)/EMP(H)/EIS/ISS

(A)

SOURCE CODE: UR/0256/66/000/006/0035/0038

ACC NR: AP6029347

27

AUTHOR: Sidorenko, D. F. (Colonel)

ORG: None

TITLE: Training of missile defense unit

SOURCE: Vestnik protivovozdushnoy oborony, no. 6, 1966, 35-38

TOPIC TAGS: missile force organization, missile defense tactic, guided missile training

ABSTRACT: The organization of tactical training of an antiaircraft missile unit is discussed including the operation of moving the unit to a new position. The preliminary actions covering the study of regulations, planning of movements, inspection of vehicles and other preparations are briefly reviewed. The most difficult combat conditions are assessed for the execution of exercises by using flying aircraft as targets or by simulating the enemy attack by means of imitating equipment. The preparation of the training program is examined including the cartographic representation on a 1:200000 map and the textual description of the training procedures. The proposed composition of the training program is shown in a table. It is divided in four stages reflecting the assembly operation, the movement to a combat position, the deployment and combat operation and finally, the return to the basic position. The table contains information on the problems to be solved, on the air and ground conditions and on the actions of trainees and training officers. The execution of this program is briefly explained. The results of the training exercises are usually compiled, examined and analysed. Orig. art. has: 1 table.

SUB CODE: 15/ SUBM DATE: None

Card 1/1

SIDORENKO, D.N.

Complete osseous atresia of the choana narium. Zhur. ush., nos.
i gorl. bol. 20 no. 3:69-70 My-Je '60. (MIRA 14:4)

1. Iz otolaringologicheskogo otdeleniya (nachal'nik - kand.
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(NOSE—ABNORMITIES AND DEFORMITIES)

ASHKINUZI, Z.K., rukovoditel' brigady; BERENSHTEYN, A.F.; KUZNETSOV, N.M.;
RABINOVICH, B.D.; CHATSKIY, P.A.; SIDORENKO, D.P.; KOVALEVSKAYA,
A.I., red.; YAROV, E.M., tekhn.red.

[Continuous thermal processing of starchy raw materials] Npre-
ryvnaia teplovaia obrabotka krakmalistogo syr'ia. Moskva, Pishche-
promizdat, 1957. 59 p. (MIRA 12:4)

1. Kiyevskiy filial Vsesoyuznogo nauchno-issledovatel'skogo insti-
tuta spirtovoy promyshlennosti (for Ashkinuzi).
(Distilling industries)

ALESHIN, B. V.; DEMIDENKO, N. S.; MAMINA, V. V.; SIDORENKO, E. V.

Significance of higher parts of the central nervous system in the pathogenesis of goiter disease. *Activ. nerv. sup.* 3 no.3:289-304 '61.

1. Ukrainskiy institut eksperimental'noy endokrinologii i Khar'kovskiy meditsinskiy institut, Khar'kov, SSSR.

(CENTRAL NERVOUS SYSTEM physiol)
(GOITER etiol)

SIDORENKO, F.A.

ДЕГАЗАЦИЯ СТАЛИ И СПЛАВОВ

| | |
|--|---|
| В.А.Шумяков
И.В.Галд
Ф.А.Сидоренко | Некоторые особенности процесса
раскисления ферросплавов. |
| В.А.Рабин
Т.В.Галд | Влияние углерода на водородную
емкость стали. |
| Г.И.Осипов
А.И.Поленин
А.М.Семарев | Особенности раскисления стали при
дуговой вакуумной переработке. |
| А.М.Семарев
М.П.Кузнецов
П.П.Ульянов
Л.М.Новик
А.И.Лукутин | Повышение качества бескислородных
раскислов методами вакуумной обработ-
ки в стали. |
| Г.И.Обин
И.И.Алимов
Г.А.Савельев
В.И.Шевкин
Б.И.Маслов | Новые возможности производства ин-
терметаллической стали с приме-
нением вакуума. |
| Т.В.Агеев
В.Г.Чернов | Влияние окислителей на содержание
кислорода в стали при жидком огне
в вакууме. |
| И.В.Полон
Э.И.Серебрянский | Влияние технологических факторов
вакуумной дуговой плавки на хими-
ческий состав жидкой стали и металлур-
гическая оценка и нормирование
стали. |
| Т.М.Вербына
И.П.Войтович
В.С.Малышев | Влияние вакуумирования при перера-
ботке на жидкой стали на качество
стали ВМГСА. |

report submitted for the 5th Physical Chemical
Conference on Steel Production, Moscow-- 30 Jun 1959.

66239

SOV/126-8-3-26/33

18.1150

AUTHORS: Sidorenko, F.A., Gel'd, P.V. and Dubrovskaya, L.B.

TITLE: On the Type of Defects in α -Leboite

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 3, pp 465-466 (USSR)

ABSTRACT: In view of the fact that the lattice parameters decrease with increase in silicon content in the γ _{α} -phase (α -leboite) of the Fe-Si system, the assumption was made by Phragmen (Ref 1) that iron bi-silicide-base substitutional solid solutions are formed. A precise determination of the densities of leboite alloys and their lattice parameters have, however, led to results which contradict this assumption. An investigation has been carried out with alloys prepared in a tungsten vacuum furnace from pure (99.95% Si) silicon and P-4 carbonyl iron. The alloys were homogenized in vacuum at 1080°C for 100 hours. The densities of powders, crushed in an agate mortar, were measured by a pycnometric method in an evacuated pycnometer. The lattice parameters were determined with a BPC-3 camera. Their dimensions for alloys of different compositions (see Table) show that the phase under investigation is stable in the concentration

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On the Type of Defects in α -Leboite

range 53.5 to 56.5% Si, which agrees with Haughton and Becker's data (Ref 2). From the density and lattice parameters the number of atoms of iron and silicon per unit cell have been calculated (see Table). It was found that in the whole α -leboite range there are almost exactly 2 atoms of silicon (1.99) per unit cell and the number of atoms of iron decreases steadily from 0.87 (53.5% Si) to 0.77 (56.5% Si) which points to the formation of holes in the iron sublattice. A comparison between X-ray and experimental densities confirms the above conclusion. X-ray determination of thermal expansion coefficients along the axes of the α -leboite lattice has shown that the expansion coefficients increase on transition to low-iron leboite; the expansion coefficient increases particularly in the (001) planes along iron atoms which corresponds to the hole model structure of the β α -phase. There are 1 table and 2 English references. ✓

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n.b. This is a complete translation, except Table.

66239

SOV/126-8-3-26/33

On the Type of Defects in α -Leboite

ASSOCIATION: Ural'skiy politekhnicheskiy Institut im S.M.Kirova
(Urals Polytechnic Institute imeni S.M.Kirov)

SUBMITTED: June 2, 1959

Card 3/3



SHUMILOV, M.A. ; SIDORENKO, F.A.

Solubility and diffusion of iron in silicon. Trudy Ural. politekh.
inst. no.92:114-121 '59. (MIRA 13:12)
(Iron-silicon alloys--Metallography) (Solubility)

PETRUSHINSKIY, M.S.; SHUMILOV, M.A.; SIDORENKO, F.A.

Phase constitution of iron-silicon-manganese alloys. Trudy Ural.
politekh. inst. no.92:147-157 '59. (MIRA 13:12)
(Iron-Silicon-manganese alloys--Metallography)
(Phase rule and equilibrium)

15.9200

77707

SOV/148-60-1-30/34

AUTHORS: Sidorenko, F. A., Gel'd, P. V.

TITLE: Concerning the Structure of High-Temperature Leboite

PERIODICAL: Izvestiya vysshikh nauchnykh zavedeniy. Chernaya metal-lurgiya, 1960, Nr 1, pp 171-174 (USSR)

ABSTRACT: The electric properties of leboite, i.e., semiconducting α -phase in Fe-Si system, are very sensitive to changes in the composition and alter abruptly at the transformation from high- to low-temperature modifications. According to G. Phragmen and other investigators, leboite of about FeSi_2 composition is tetragonal; its space group is $D_{4h}^1 = P4/mmm$; 1 molecular weight per unit cell; some Fe positions are occupied by Si atoms. The authors produced technically pure and highly pure leboite specimens of FeSi_2 composition (51.1 to 53% Si) by melting 99.95% pure silicon with iron carbonyl in quartz crucible placed in tungsten furnace in 0.001 to

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Concerning the Structure of High-Temperature
Lebeite

77707
SOV/146-60-1-30/34

0.0001 mm vacuum, powdered the specimens, homogenized in vacuum at 1,050° C for 75 hrs, hardened in air and took powder diffraction photographs with camera VRS-3 and Co radiation, or with camera URS-50I and Fe radiation. Some specimens were powdered again and annealed at 1,050° C before taking the diffraction photographs. No difference in the diffraction intensity of different specimens was evident at visual inspection if photographs had been taken with VRS-3 and Co radiation. On the other hand, the intensity differences of different diffraction lines could be measured having taken the diffraction photographs from powder layers in slides with camera URS-50I and Fe radiation. The unit cell dimensions were found to be $a = 2.69 \text{ kX}$ and $c = 5.13 \text{ kX}$; the Si-to-Si interatomic distance = 2.26 kX and Si-to-Fe = 2.38 kX . There are 2 figures; 2 tables; and 6 references, 5 Soviet, 1 U.K. The U.K. reference is G. Phragmen, J. Iron and Steel Inst., 114, 397-403, 1926. Ural Polytechnic Institute (Ural'skiy politekhnicheskii institut)

ASSOCIATION:

SUBMITTED:

November 17, 1958

Card 2/2

S/148/60/000/003/008/018
A161/A029

AUTHORS: Arkharov, V.I.; Sidorenko, F.A.

TITLE: Crystallographic Correlations in Thermoelastic Martensite Transformation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. - Chernaya metallurgiya, 1960
No. 3, pp 78 - 85

TEXT: The article presents the contents of a report delivered at the 6th scientific-technical conference on the application of X-rays for investigation of materials. The purpose of the report was to draw attention to certain features of the mechanism of thermoelastic martensite transformation in alloys investigated by G.V. Kurdyumov and L.G. Khandros (15.2% Al, 1.3% Ni, 83.5% Cu). These features were revealed by geometrical calculations based on the orientation correlation of the cubical β_1 and the low-temperature rhombical γ' phases established by Greninger (Ref. 1). The correlation is illustrated by superimposing the two crystallographic lattices (Fig. 1) (the shifts of atoms in transformation are marked by arrows). The transformation process is analyzed and the observed transformation hysteresis is explained by diffusion of atoms "wedged out" from the lattice in

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S/148/60/000/003/008/018
A161/A029

Crystallographic Correlations in Thermoelastic Martensite Transformation

transformation $\beta_1 \rightarrow \gamma'$. For more detailed explanation of the thermoelastic martensite transformation mechanism the authors determined the heat expansion coefficients of the Kurdyumov-Khandros alloy by roentgenographic means. The statements show the effect of dimensional correlations and their variations with temperature in the transformation process. There are 3 figures and 2 English references. ✓

ASSOCIATION: Ural'skiy gosudarstvennyy universitet (Ural State University)

SUBMITTED: January 21, 1959

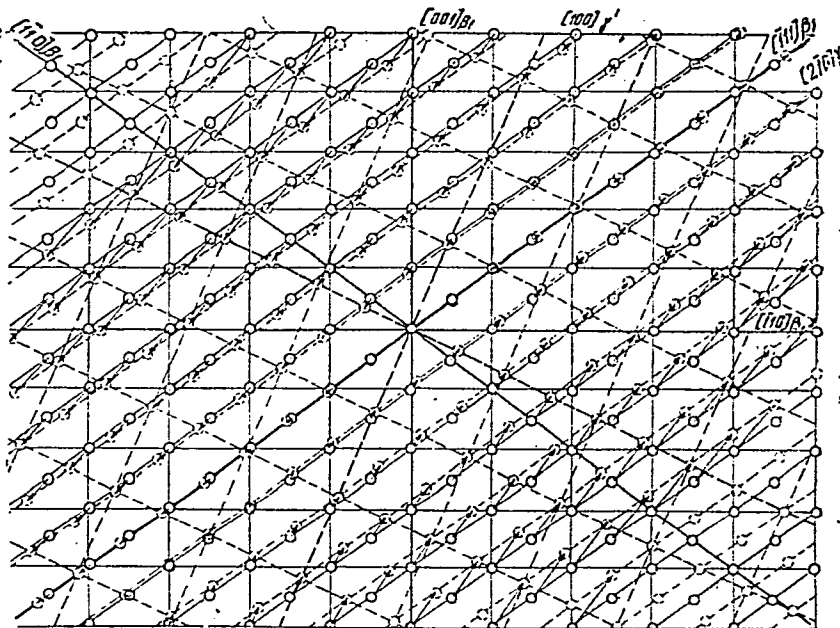
Card 2/3

S/148/60/000/003/008/018
A161/A029

Crystallographic Correlations in Thermoelastic Martensite Transformation

Figure 1:

Superimposition of the lattices of the $(110)\beta_1$ - and $(001)\alpha'$ - phases



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80884

S/126/60/009/06/009/025

E111/E352

18.7500

AUTHORS: Sidorenko, F.A., Gel'd, P.V. and Shumilov, M.A.

TITLE: Investigation of the Transformations of Alpha-lebeauite

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 6,
pp 861 - 867

ABSTRACT: The zeta phase (lebeauite) in the system iron-silicon (phase diagram in Figure 1) is of technological interest. The transformations of this phase have been studied by Gel'd and his co-workers (Refs 1, 8-11) and Abriksov (Ref 7); two modifications were established but the published data on the kinetics of the three reactions relate to alloys of technical purity. The present work describes the metallographic, dilatometric and X-ray analytical study of products of three possible reactions (see below) for high-purity alloys. Metallographic specimens were prepared from vacuum annealed carbonyl iron (grade R-4) and chemically purified silicon (99.95% Si and 0.03% Fe). Mixed powders were compressed into tablets and melted in a vacuum tungsten furnace, the cast specimens then being homogenized in vacuo at 1 080 °C for 100 hours. Dilatometric specimens were prepared from

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E111/E552

Investigation of the Transformations of Alpha-lebeaute

electrolytic iron and pieces of silicon single crystals; the melted alloy was sucked into 2-4 mm diameter quartz tubes, both untreated and homogenized specimens being tested by a procedure described previously (Ref 10). The microstructure was studied with a MIM-8 microscope and microhardness with a PNT-3 apparatus. Phase analysis was carried out by the Debye-Scherrer method. Figures 2, 4 and 5 show microstructures for the 57, 50 and 50% Si alloy after various annealing times and temperatures. Dilatometric curves for alloys containing lebeaute are shown in Figure 3. Some optical characteristics of lebeaute, facilitating the detection of its alpha and beta phases in alloys are given. The microhardness of the alpha and beta forms was found to be 630-780 and 750-850 kg/mm², respectively. The authors interpret their results in the following terms. In the first 15-20 min of annealing reaction I (decomposition of alpha into beta lebeaute and silicon) proceeds on the Σ -phase and alpha-lebeaute phase boundaries, leading, in the presence of much monosilicide, to appreciable volume contraction of the system.

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Investigation of the Transformations of Alpha-lebeaite

With increasing thickness of the "pure" beta-lebeaite edge increased resistance to diffusion of iron and silicon leads to reduction in the rate of solid-phase reaction II (reaction of ϵ -phase with alpha-lebeaite to give the beta-lebeaite). With the appearance of eutectoidal (beta-lebeaite + Si) silicon its reaction with ϵ -phase to form beta-lebeaite begins (reaction III, leading to volume contraction). When the temperature is lowered to 660 °C changed rate of reaction II is reflected in an appreciable reduction in specimen length. The kinetics of the process are very sensitive to monosilicide particle dispersion and distribution (and hence the specimen geometry and treatment).

There are 5 figures and 12 references, 10 of which are Soviet and 2 are English.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M. Kirova
(Ural Polytechnical Institute im. S.M. Kirov)

SUBMITTED: January 11, 1960

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PHASE I BOOK EXPLOITATION

SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th,
Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii
(Physicochemical Bases of Steel Making; Transactions of the
Fifth Conference on the Physicochemical Bases of Steelmaking)
Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted.
3,700 copies printed.

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

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy
of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg.
Tech. Ed.: V. V. Mikhaylova.

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115

Physicochemical Bases of (Cont.)

SOV/5411

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

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Physicochemical Bases of (Cont.)

Karasev, V. P., and P. Ya. Ageyev. Feasible Ways of Accelerating the Deoxidation of Metal 432

PART IV. THE APPLICATION OF VACUUM AND THE GAS CONTENT IN STEEL

Shumilov, M. A., P. V. Gel'd, and F. A. Sidorenko. Some Specific Features of the Process of Ferrosilicon Disintegration 445

Gel'd, P. V., and R. A. Ryabov. Effect of Carbon on the Permeability of Steel to Hydrogen 457

Novik, L. M., A. M. Samarin, M. P. Kuznetsov, A. I. Lukutin, and D. P. Ul'yanov. Improving the Quality of Rails Made of Bessemer-Converter Steel by Applying Vacuum Treatment 461

Oyks, G. N., V. I. Danilin, I. I. Ansheles, G. A. Sokolov, and
Card 14/16

S/137/61/000/012/119/149
A006/A101

AUTHORS: Sidorenko, F.A., Dubrovskaya, L.B.

TITLE: The structure of the ζ_{∞} -phase in the iron-silicon system

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 15, abstract 12Zh102 ("Tr. Ural'skogo politekhn. in-ta", 1961, no. 114, 107-114)

TEXT: The structural parameter z of a cell of high-temperature ζ_{∞} -phase was made more precise in the range of 53-55 weight percent Si with the aid of radiography (powder method, YPC-50M (URS-50I) apparatus). Projections of electronic density were plotted on the planes (001), (000.275), (110). Along the line $[1/2, 1/2, z]$ 2 maxima of electronic density were observed. One of them was associated with the Si atom at $z = 0.272$. The second maximum located in the middle between atoms of Si $[1/2, 1/2, 0.272]$ and Si $[1/2, 2/2, 0.172]$ is assumed to indicate the existence of an ordinary covalent bond between Si atoms. The presence of such a bond is indicated also by the Si-Si distance in the cell of the ζ_{∞} -phase, equal to 2.34 \AA at $z = 0.272$. The Fe-Si distance is 2.37 \AA , which is close to the Fe-Si distance in FeSi.

[Abstracter's note: Complete translation]

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A. Loshmanov

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AUTHORS: Strekalovskiy, V.N., Bessonov, A.F., Vlasov, V.G. and
Sidorenko, F.A.

TITLE: Phase Transformations During Reduction and Oxydation
of Uranium Oxides

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.3,
pp.400-403 + 1 plate

TEXT: The uranium-oxygen system has lately attracted a great deal of attention owing to the possibility of using uranium oxides (dioxide in particular) in the manufacture of ceramic fuel elements. However, the experimental work has been mainly confined to studies of oxydation or thermal decomposition of uranium oxides, and the object of the present investigation was to study (a) the kinetics of hydrogen reduction of amorphous UO_3 and green U_3O_8 at 300 to 700°C, (b) the process of oxydation of UO_2 in air, oxygen and CO_2 at 165 to 860°C and (c) the phase transformations taking place during these reactions. The results of the study of kinetics of the reduction process are reproduced schematically in Fig.1, where the rate of reduction (A in arbitrary units) is plotted against the overall composition of the

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Phase Transformations

resultant product, i.e. against the oxygen/uranium (O/U) ratio. It is pointed out, in this connection, that neither the rates of reduction of UO_3 and UO_8 , nor the energy barriers during the crystallo-chemical transformations of these oxides are the same; thus, for instance, hydrogen reduction of UO_3 begins at $350^\circ C$, the corresponding temperature for UO_8 being $450^\circ C$. In addition, reduction of UO_3 at temperatures $\leq 500^\circ C$ practically ceases when the oxide reaches the oxide content corresponding to $UO_{2.33}$; at higher temperatures, U_4O_9 and oxides with a still lower oxygen content are produced. The results of the kinetic studies were correlated with the results of X-ray diffraction analysis of the products of the reduction of U_3O_8 , and the following conclusions were reached regarding the phase transformations, taking place during the reduction process. In the initial stages, U_3O_8 gradually loses its oxygen, this process continuing until the starting material is reduced to 46.9% (100% reduction corresponding to complete conversion of UO_3 to UO_2) which corresponds to the overall composition of the product given by the formula $UO_{2.539}$; at this stage, the X-ray diffraction pattern still shows the

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Phase Transformations

lines of the U₃O₈ phase; the lattice parameters of the initial phase have changed but no lines of a new phase have yet appeared; at 62 and 69% reduction, the lines of the starting oxide are still present in the X-ray pattern and lines of the cubic U₄O₇ phase appear; at 75% reduction, the U₃O₈ lines completely disappear and only the U₄O₇ lines remain; after a further decrease in the oxygen content, the crystal structure of the oxide remains cubic but the lattice parameter increases. Reduction of UO₃ takes place in a similar manner, the crystalline U₃O₈ phase being formed directly from the amorphous UO₃ which does not pass through the crystalline form during this process. The whole reduction process can be represented in the following manner:

Amorphous UO₃ → Solid solution, based on UO_{2.67} → UO_{2.2} → UO₂ + x.
Regarding the process of oxydation of UO₂ in air or in oxygen, it can be represented by:

UO₂ → UO₂ + x → UO_{2.36} + 0.05 → Solid solution, based on UO_{2.67}.
The tetragonal phases (UO_{2.32} + 0.01, UO_{2.35}, UO_{2.37}, UO_{2.41})

whose presence can be inferred from the kinetics of the process studied, are unstable and decompose to form U₄O₉ and U₃O₈. When
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Phase Transformations ...

the oxydation reaction takes place (in air or oxygen) at temperatures $\geq 400^{\circ}\text{C}$, no formation of the tetragonal phases occurs, and the process proceeds according to:
 $\text{UO}_2 \rightarrow \text{UO}_2 + x \rightarrow \text{UO}_{2.25} \rightarrow \text{Solid solution, based on UO}_{2.67}$.

Finally, it was established that UO_2 does not oxidize in carbon dioxide. There are 3 figures and 12 references: 8 Soviet and 4 non-Soviet.

ASSOCIATION: Ural'skiy politekhnicheskii institut im. S.M.Kirova
(Ural Polytechnical Institute imeni S.M.Kirov)

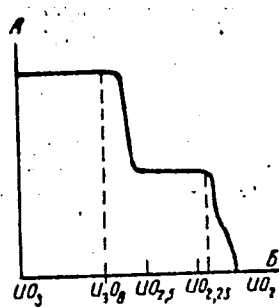
SUBMITTED: July 18, 1960

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Phase Transformations ...

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E193/E483

Fig.1.



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E021/E480

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26563

AUTHORS: Korshunov, V.A., Sidorenko, F.A., Gel'd, P.V. and Davydov, K.N.

TITLE: The phase constituents of the MnSi-Si system

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.12, No.2, pp.277-284

TEXT: The present work concentrated on establishing the character of silicides present in the MnSi-Si system. The samples were prepared from manganese (containing less than 0.05% impurities) and KM-1 silicon. Alloying was carried out in an evacuated and sealed quartz flask in a high frequency induction furnace. Alloys containing 44 to 55% Si were prepared. Metallographic, X-ray and thermal analysis was carried out. When viewed by polarized light under the microscope, the alloy containing 44% Si consisted of an optically active matrix of a higher silicide (Mn_nSi_{2n-x}) with optically inactive inclusions of monosilicide. With increasing Si content, the quantity of monosilicide decreased. The microhardness of the higher silicide was 1050 kg/mm² and that of the monosilicide 850 kg/mm². An alloy containing 46.5% Si was single-phased. Traces of a new
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26563

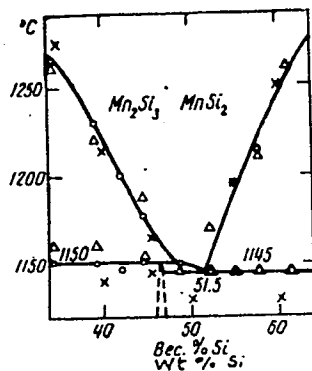
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E021/E480

The phase constituents ...

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova
(Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: November 24, 1960

Fig. 5.



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30455

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E111/E335

15 2240

AUTHORS: Davydov, K.N., Sidorenko, F.A. and Gel'd, P.V.
TITLE: The martensitic transformation in Mn_3Si
PERIODICAL: Fizika metallov i metallovedeniye, v. 12, no. 3,
1961, 424 - 430
TEXT: It would be of great interest to establish whether
martensitic diffusionless processes of the type observed in
wustite (Ref. 4 - R. Collongues - Acta Cryst., 1954, 7, 213)
occur in other oxides, carbides, borides, nitrides and silicides.
This would further substantiate the views of G.B. Kurdyumov
(Ref. 5 - Problems of Metallurgy and Metal Physics, Sbornik 3,
Metallurgizdat, Moscow, 1952) on the universality of martensitic
transformations. Davydov and Gel'd (Ref. 7 - Tr. UPI, 1957,
Sb. 67, p. 96) have previously shown that the lowest silicide
of manganese undergoes a phase-transformation over a somewhat
extended temperature range, giving considerable property changes.
Quenching of specimens containing Mn_3Si changes their properties
and heating for 3-5 min at or over 400 °C causes the density to
rise to values higher than reported (Ref. 8 - R. Frilley,
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The martensitic transformation ... E111/E335

Rev. Metall., 1911, 8, 468). The authors report additional metallographic and X-ray structural investigations of an alloy with about 14.5 wt.% Si, carried out to establish the nature and peculiarities of this transformation. The alloy was induction-melted from electrolytic manganese (over 99.9% Mn) and purified technical silicon (over 99.2% Si) and homogenized at 1 020 °C for 50 hours. Before testing, some specimens were annealed at 500 °C and others were water- or air-quenched from 800 °C. Polished sections were etched in a 4% solution of hydrofluoric acid in alcohol. The annealed alloy consisted of fairly coarse polyhedral Mn_3Si grains lined, probably, with Mn_5Si_3 . The water-quenched specimen had a structure typical of martensite-transformation products; this was less pronounced in the air-quenched and absent in the slowly-cooled alloy. The martensitic phase thus formed recrystallizes easily. Vacuum-heating to 800 °C of a polished section of a previously annealed alloy gave a relief characteristic of martensitic phases. X-ray investigations, carried out in $CrK_{\alpha, \beta}$ radiation gave a lattice

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The martensitic transformation E111/E335

parameter value of $a = 2.854 \text{ kX}$ for Mn_5Si , which is in poor agreement with published values (Ref. 10 - W.B. Pearson - Handbook of Lattice Spacings and Structures of Metals and Alloys, Pergamon Press, N.Y., 1958; Ref. 11 - Ye.I. Gladyshevskiy, P.I. Kripyakevich and Yu.B. Kuz'ma - FMM, 1956, 2, 454). The Debye patterns of annealed and quenched alloy powders were identical. To elucidate the reproducibility of crystallographic orientations obtained under various conditions, special experiments were carried out. The specimen was mounted in a miniature furnace, in a type KPOC-1 (KPOS-1) camera, 62 mm from the film. The beam was passed through two 0.8-mm diameter diaphragms. Spots obtained at an angle of 78.6° were registered on a flat film. Significant differences as well as similarities were found in the patterns obtained from an annealed specimen and from the same spot of the specimen water-quenched from 750°C . Additional spots on the pattern of the quenched specimen can be related to the needle-like structural component. This and other evidence indicates that the needle-phase occupies most of the volume in the quenched alloy and that the needles (or plates) are mutually

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The martensitic transformation E111/E335

ordered. In another series, the patterns were obtained at a specimen-film distance of only 30 mm, at various temperatures from specimens subjected to various treatments; both factors influenced the pattern. Interpretation is made difficult by insufficient information on the phase diagram of the Mn-Si system and absence of high-temperature Debye patterns. The existence of a transformation, probably polymorphic, in Mn_3Si on heating at about 600 - 650 °C has, however, been confirmed. The transformation is martensitic on rapid and diffusional on slow cooling. The nature of the previously observed dilatometric and thermal effects near 400 °C remains obscure and further high-temperature X-ray work is needed. There are 5 figures and 14 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The four latest English-language references mentioned are: Ref. 1 - E.O. Hall - Twinning and diffusionless transformations in metals, Butterworths Sci.Publ., L, 1954; Refs. 4 and 10 (quoted in text) and Ref. 12 - M. Hansen and K. Anderko - Constitution of Binary Alloys, McGraw-Hill Comp., N.Y., 1958.

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30455

S/126/61/012/003/014/021

The martensitic transformation E111/E335

ASSOCIATION: Ural'skiy politekhnicheskiy institut
im. S.M. Kirova
(Ural Polytechnical Institute im.
S.M. Kirov)

SUBMITTED: February 4, 1961

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Card 5/5

SIDORENKO, F.A.; DUBROVSKAYA, L.B.

Structure of the ζ_a -phase of the system iron - silicon. Trudy
Ural.politekh.inst. no.14:107-114 '61. (MIRA 16:6)
(Iron-silicon alloys—Metallography)
(Phase rule and equilibrium)

S/849/62/000/000/013/016
A006/A101

AUTHORS: Sidorenko, F. A., Gel'd, P. V., Dubrovskaya, L. B.
TITLE: Roentgenostructural analysis of leboite
SOURCE: Vysokotemperaturnyye metallokeramicheskiye materialy, Inst.
metallokerm. i spets. spl. AN Ukr. SSR, Kiev, Izd-vo AN Ukr. SSR,
1962, 124 - 132

TEXT: It was experimentally established that leboite is able to show diametrically opposite properties depending on its structural state, i.e. metallic properties in high-temperature modification and semiconductor properties in low-temperature modification. The authors present additional data on structural peculiarities of α - and β -leboite, which explain to a certain degree the causes of their different electric properties. Results are given of metallographic and roentgenographic determinations of the concentration limits of α -leboite stability; of the pycnometrical determination of the alloy density and the type of silicon solid solutions in disilicide. Moreover, the authors determined expansion coefficients of α -leboite along the crystal lattice axes by comparing experimental and calculated intensities. The structural parameter z was made more

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Roentgenostructural analysis of leboite

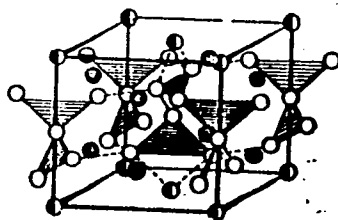
precise by plotting $[F]^2$ -series and series of electronic density. At 1080°C α -leboite was found to be stable in a concentration range from 53.5 to 56.5% Si. α -leboite represents a phase of variable composition (on disilicide base) with vacancies in the iron sublattice. The concentration of vacancies changes within 12 to 23%. The values of expansion coefficients along the lattice axes correspond to the given model. The structural parameter z of the α -leboite lattice is equal to 0.275 and describes its structure better than value $z = 0.25$, previously used. A schematic model of β -leboite structure is proposed. (Figure 3) The bright circles represent the centers of silicon atoms; centers of iron atoms are designated by dark circles; the bright-and-dark circles represent the locations whose halves are statistically occupied by iron atoms. The model proposed yields, to the first approximation, satisfactory values of calculated intensities including the mean angles. Dislocations of atoms leading to normal interatomic distances, improve the agreement of calculated and measured intensities. It is assumed that the semiconductor properties of β -leboite may be explained by the primary coordination sphere of silicon atoms which is very similar to that of pure silicon and germanium. There are 3 figures and 2 tables.

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Roentgenostructural analysis of leboite

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Figure 3. The model of β -leboite structure.



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SIDORENKO, F.A.; GEL'D, P.V.; REMPEL', P.S.

Stability range of alpha-lebeauite. Izv.vys.ucheb.zav.; Chern.Me+
5 no.4:102-108 '62. (MIRA 15:5)

1. Ural'skiy politekhnicheskiy institut.
(Ferrosilicon-Metallography) (Phase rule and equilibrium)