CHUKHLANTSEV, V.G.; ALYAMOVSKAYA, K.V.

Potassium zirconium silicate, its preparation and properties. Zhur.
neorg.khim. 9 no.1:216-218 Ja '64.   (MIRA 17:2)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.

L 11004-66   EWT(m)/EWP(e)/EWP(t)/EWP(b)   IJP(c)   JD/WH

ACC NR: AP5028730   SOURCE CODE: UR/0363/65/001/011/1994/1999

AUTHOR: Chukhlantsev, V. G.; Alyamovskaya, K. V.

ORG: Ural Polytechnic Institute im. S. M. Kirov, Sverdlovsk (Ural'skiy politekhnicheskiy institut)

TITLE: Reaction of zircon with rubidium carbonate and silicate

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 11, 1965, 1994--1999

TOPIC TAGS: silicate, rubidium compound, zirconium compound, chemical reaction, powder metal sintering, chemical analysis, x ray diffraction analysis, phase composition

ABSTRACT: The reaction of zircon with Rb_2CO_3 and Rb_2SiO_3 was studied at 800-1000°C by sintering pressed powder mixtures containing various proportions of the components. Chemical phase and x-ray diffraction analyses of the products showed that the following reaction may occur:

$$2ZrSiO_4 + Rb_2CO_3 \rightarrow Rb_2ZrSi_2O_7 + ZrO_2 + CO_2$$

To refine the phase composition of the products of the reaction of zircon or a mixture of zircon and SiO_2 with Rb_2CO_3, the reaction of the sinters obtained with water at 20-80°C was studied under hydrothermal conditions. The following reaction is
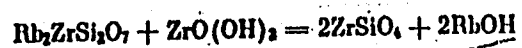
UDC: 546.831'284'35

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L 11004-66

ACC NR: AP5028730

3.

postulated:

$$Rb_2ZrSi_2O_7 + ZrO(OH)_2 = 2ZrSiO_4 + 2RbOH$$

On the basis of the investigations, a method is proposed for preparing rubidium zirconium silicate $Rb_2ZrSi_2O_7$. The physical characteristics of this compound were determined. The authors thank laboratory technicians T. M. Arkhipova and L. V. Poduzova for carrying out all the analytical determinations. Orig. art. has: 1 figure, 5 tables.

SUB CODE: 07,11   SUBM DATE: 19Feb65/   ORIG REF: 005/   OTH REF: 001

HW

Card 2/2

GORBATOV, A.L.; ALYAMOVSKAYA, M.N., red.

[Biological method of plan protection; bibliographical
list of Soviet literature published in 1964-1965 com-
prising 210 items] Biologicheskii metod zashchity rastenii;
bibliograficheskii spisok otechestvennoi literatury za
1964-1965 gg. v kolichestve 210 nazvanii. Moskva, 1965. 27 p.
(MIRA 18:10)

1. Moscow. TSentral'naya nauchnaya sel'skokhozyaystvennaya
biblioteka. Spravochno-bibliograficheskiy otdel.

NEMTSOVA,N.P.; ALYAMOVSKAYA,T.S.

Nutrient yeasts made of sunflower seed arils. Gidroliz. i leso-
khim. prom. 8 no.3:16-17 '55.   (MIRA 8:9)

1. Moskovskoye otdeleniye Vsesoyuznogo nauchno-issledovatel'skogo
instituta gidroliznoy i sul'fitno spirtovoy promyshlennosti
                        (Sunflower seeds)

FISHER, P.N.; KEYL', I.A.; VOROB'YEVA, G.I.; SHVARSKROYN, B.M.; ALYAMOVSKAYA, T.S.; ZYBIN, S.Ye.; DRUZHININA, A.T.; SHILOV, Yu.P.

Growing yeast on hydrolysates from coniferous wood. Gidroliz. i lesokhim. prom. 16 no.5:7-12 '63.   (MIRA 17:2)

1. Moskovskoye otdeleniye Gosudarstvennogo nauchno-issledovatel'-skogo instituta gidroliznoy i sul'fitno-spirtovoy promyshlennosti (for Fisher, Keyl', Vorob'yeva, Shvartskroyh, Alyamovskaya).
2. Ivdel'skiy gidroliznyy zavod (for Zybin, Druzhinina, Shilov).

1. CZERNOV, B.; DITTIK, I.e.; ANTANOVSKIY, I.

2. USSR (600)

4. Cheese - Analysis

7. Method for speed, determination of moisture in process cheese.   Mol. prom. 12,
   No. 12, 1952.

9. Monthly List of Russian Accessions. Library of Congress. March, 1953. Unclassified

1. OVCHINNIKOV, Docent A. and ALYAMOVSKIY, I. Eng.

2. USSR (630)

4. Tartaric Acid

7. Crystals of tartaric acid in process cheese. Mol.prom. 13 no. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

ALYAMOVSKIY, I.

The cause of the darkening of foil. Molochnaya Prom. 14, No.5,
26 '53.   (MLRA 6:4)
(CA 47 no.15:7685 '53)

1. Process Cheese Plant, Leningrad.

ALYAMOVSKIY, I.G.

Separation of tartrate crystals in processed cheese.
A. I. Ovchinnikov and I. G. Alyamovskii. *Trudy Lenin-*
grad. Tekhnol. Inst. Kholodil'noi Prom. **5**, 102-4(1954)]
Referat. Zhur., Khim. 1955, No. 3120.—Use of tartrates in
the production of processed cheese causes the formation of
Ca tartrate which in turn imparts to the cheese a "sandy"
— or gritty structure. If the initial material contains a large
quantity of Ca it is unadvisable to add tartrates.
M. Husch

ALYAMOVSKIY, I.

Chemical Abstracts
May 25, 1954
Foods

Colorimetric method for estimation of moisture in process cheese. B. Ozimov, I. Alyamovskii, and E. Ratner (Techol. Inst. Refrigeration Ind., Leningrad). *Molochnaya Prom.* 15, No. 1, 30-8(1954).—A description with diagrams of a specially designed photometer (ONB-1) for measuring the intensity of a monochromatic beam of light (yellow-green filter), which is reflected from the surface of a circular filter-paper (I) impregnated with CoCl₃ and in contact with melted process cheese. The method is based on anhyd. CoCl₃ changing its color from blue to pink upon contact with water. I is prepd. by soaking in a 15% soln. of CoCl₃ and allowing it to dry in an oven. I is kept in desiccator prior to use.   Vladimir N. Krukovsky

ALYAMOVSKIY, I.

GOLOVKIN, N.; SHAGAN, O.; ALYAMOVSKIY, I.

Examination of the processes of meat cooling. Mias. ind. SSSR 25
no.1:12-16 '54.   (MLRA 7:3)

1. Leningradskiy institut kholodil'noy i molochnoy promyshlennosti.
(Meat--Preservation)

ALYAN... KIV I G

Use of colorimetric methods for analysis of certain raw materials for preparation of processed cheese. Ozunov, I. G. Alyanovskii and ... M. ... Leningrad. Tekhnol. Inst. Khmun ... Three analytical procedures are presented ... method for detn. of As is given for use on the ... ing salt mixts. (Na citrate, phosphate salts, etc ... detn. on Al foil wrapping is based on titration of FeCl₃ with K₄Fe(CN)₆; and (c) a Cu detn. on natural and processed cheeses is based on the intensity of the ... produced by the CuSO₄ of the ash in soln. contg. NH₄SO₄ and NH₄OH

M. M. ...

ALYAMOVSKIY, I.

GOLOVKIN, N., doktor tekhnicheskikh nauk; SHAGAN, O.; ALYAMOVSKIY, I.

Dependence of meat refrigeration time on air circulation rate. Mias.
ind.SSSR 26 no.1:15-19 '55.   (MLRA 8:5)

1. Leningradskiy tekhnologicheskiy institut kholodil'noy promyshlen-
nosti.
          (Meat--Preservation) (Refrigeration and refrigerating machinery)

GOLOVKIN, N.; SHAGAN, O.; ALYAMOVSKIY, I.

Variation in natural losses of meat during refrigeration. Mias.
ind. SSSR. 26 no.6:11-15 '55.   (MLRA 9:2)

1.Leningradskiy tekhnologicheskiy institut kholodil'noy promy-
shennosti.
            (Meat--Preservation)

ALYAMOVSKIY, I.G.

GOLOVKIN, N.A., doktor tekhnicheskikh nauk; CHIZHOV, G.B., doktor tekhnicheskikh
nauk; AREF'YEVA, M.M.; ALYAMOVSKIY, I.G.; SHAGAN, O.S.

Natural losses of meat during long storage. Trudy LTIKHP 10:22-32 '56.
(MIRA 10:6)

1. Leningradskiy tekhnologicheskiy institut kholodil'noy promyshlen-
nosti.
(Mutton--Storage)

GOLOVKIN, N.A., doktor tekhnicheskikh nauk; SHAGAN, O.S., inzhener; ALYAMOVSKIY, I.G., inzhener.

Effect of the speed of air on the time required for cooling meat.
Trudy LTIKHP 11:134-140 '56.   (MIRA 10:6)

1. Kafedra kholodil'noy tekhnologii.
                        (Meat--Preservation)

Alyamovskiy, I. G.

USSR /Chemical Technology. Chemical Products   I-32
    and Their Application

    Food industry

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 33056

Author   : Golovkin N. A., Shagan O.S., Alyamovskiy I.G.

Inst   : Leningrad Technological Institute of the Refrig-
            eration Industry

Title   : Natural Losses on Cooling of Meat

Orig Pub: Tr. Leningr. tekhnol. in-ta kholodil'n. prom-sti,
            1956, 11, 141-148

Abstract: Drying of meat was studied under different condi-
            tions of cooling. The computation method that
            was utilized made it possible to confirm, on the
            basis of a limited number of weighings, the exper-

Card 1/2

USSR /Chemical Technology. Chemical Products   I-32
     and Their Application

     Food industry

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 33056

          imental data on drying secured over the entire
          period of cooling. As a result of this work a
          relationship has been found to exist between
          duration of cooling of the sides, velocity of
          air flow and haunch-thickness of the sides. The
          optimal air flow velocity during cooling of sides
          has been determined. Advantages of a two-stage
          cooling over a single-stage cooling have been
          demonstrated.

Card 2/2

GOLOVKIN, N., professor; CHIZHOV, G., professor; AREF'YEVA, M.; ALYAMOVSKIY, I.;
SHAGAN, O.

Natural losses in frozen mutton in lengthy storage. Khol.tekh.33 no.2:
25-30 Ap-Je '56.   (Meat, Frozen)   (MIRA 9:9)

ALYAMOVSKIY, I. G.

Golovkin, N. A., Alyamovskiy, I. G., Pershina, Mrs. L. I. and Shagan, O. S. (Leningrad Technological Institute of the Refrigerating Industry): "The Mechanics and Chemistry of Muscular Tissue in the Refrigeration of Meat and Fish"/English - 7 pages/

report presented at the International Inst. of Refrigeration (IIR), Annual Meetings of Commissions 3,4, and 5, Moscow, 3-6 Sep 1958.

ALyamovskiy, N. I. (G)

ALYAMOVSKIY, I.G.

Temperature field of food products during cooling. Inzh.-fiz.zhur.
no.1:108-112 Ja '60.   (MIRA 13:4)

1. Tekhnologicheskiy institut kholodil'noy promyshlennosti,
Leningrad.
                (Food--Cooling)

ALYAMOVSKIY, I. G.

"A Temperature Field of a Limited Body in a Form of a Parallelipipedon With a Continuous Heat Source."

REport submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

ALYAMOVSKIY, I. G.

"The temperature field of two bodies with a heat source in one of them."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Leningrad Technological Inst of Refrigeration Industry.

UR/

ACC NR: AM6018986   Monograph

Alyamovskiy, Il'ya Vladimirovich

Electron beams and guns (Elektronnyye puchki i elektronnyye pushki)
Moscow, Izd-vo "Sovetskoye radio," 1966. 456 p. illus., biblio.,
index., tables. 5500 copies printed.

TOPIC TAGS: electron flow, electron beam, electron gun, ion beam
focusing, charged particle shielding, electromagnetic shielding,
electron beam focusing, electron beam shaping, klystron, magnetron

PURPOSE AND COVERAGE: This book is intended for engineers and scien-
tists concerned with the development and application of modern
electronic devices such as travelling wave and backward wave
klystrons, etc. It may also be used by students in schools of
higher education. The basic problems of shaping and focusing
intense electron flows are covered. Flows in uniform, periodical,
and reversible magnetic fields, in the   transient region of a
heterogeneous magnetic field, and in collector regions are dis-
cussed. Electron guns for shaping axially symmetric ribbon and
tubular flows and guns with high perveance and large convergence are
also presented. Electrostatic and gas focusing are described. Dia-
grams and calculation examples of the most important systems with
longitudinal magnetic fields are given.

Card 1/10   UDC: 621.3.032.269.1

ACC NR: AM6018986

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ACC NR: AM6018986

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Card   7/10

ACC NR: AM6018986

Card 9/10

9,3130

AUTHOR: Alyamovskiy, I.V.

TITLE: Ribbon Electron Beam in Periodic Magnetic Field with Arbitrary Degree of Cathode Screening

ABSTRACT: Focusing of plane or ribbon electron beams in a rectangular interaction space by periodic magnetic fields has not yet been considered in the literature. This problem is considered in the present paper. The method is based on the assumption that the electron-beam profile is defined by the trajectory of an extreme electron of the beam. The results of Ref 2 and the initial assumptions of that paper are assumed in the present paper. A Mathieu equation is obtained permitting the beam-stability conditions to be determined. Three components of the beam-profile curve are found. The first component corresponds to a certain equilibrium half-thickness, with respect to which periodic pulsations with amplitude R_p take place, corresponding to the second component. The third component corresponds to an

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69923

S/109/60/005/05/013/021
E140/E435

Ribbon Electron Beam in Periodic Magnetic Field with Arbitrary
Degree of Cathode Screening

additional periodic perturbation of the beam contour.
The equilibrium half-thickness of the ribbon beam in
a periodic magnetic field, in contrast to the beam in a
homogeneous magnetic field, is independent of the cathode
dimensions and screening and is defined only by the
current and potential of the beam and the magnetic field
amplitude. The pulsation amplitude R_p is independent
of beam current and is defined primarily by the initial
transverse velocity of the electron beam, the magnetic
field amplitude and the ratio of initial half-thickness
to equilibrium half-thickness. It may be reduced to zero
by choice of initial conditions. The third component is
independent' of initial conditions. It cannot be
eliminated by the system configuration and parameters.
However, with complete cathode screening and suitable
initial conditions, the stable ribbon electron beam with
weak contour ripple may be obtained. On the contrary,
Card 2/3   with insufficient cathode screening there will be a

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S/109/60/005/05/013/021
E140/E435

Ribbon Electron Beam in Periodic Magnetic Field with Arbitrary
Degree of Cathode Screening

sharply expressed periodic beam structure and it will
not be possible to obtain effective beam focusing.
There are 2 figures and 2 references, 1 of which is
Soviet and 1 German.

SUBMITTED: May 6, 1959

Card 3/3

44191

S/109/62/007/012/008/021
D266/D308

AUTHOR: Alyamovskiy, I. V.

TITLE: Effect of a magnetic field on the refracting proper-
ties of an anode lens in systems forming electron beams

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 12, 1962,
2037-2042

TEXT: The lens is assumed to be between the planes z_1 and z_2 where
$\Delta z = z_1 - z_2 \cong 2r_a$ or $2x_a$, r_a - anode radius. Space charge is ne-
glected and the magnetic field is assumed linearly varying in the
region of interest. The mathematical analysis is based on Pierce's
paraxial equations. Integration of the differential equation gives
for a thin lens:

$$r'_1 - r'_2 = -\varepsilon_1 - M_1 (1 - N_{c1})$$

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Effect of a magnetic ...

where

$$\mathcal{E}_1 = \frac{r_a}{4U_a} (U_1' - U_2') \tag{3}$$

$$M_1 = \frac{\eta B_1^2 r_a \Delta z}{24 U_a} \left[\frac{1 - (B_2/B_1)^3}{1 - (B_2/B_1)} \right] \tag{4}$$

$$N_{c1} = 3 \left(\frac{r_c}{r_a} \right)^4 \left(\frac{B_c}{B_1} \right)^2 \left[\frac{1 - B_2/B_1)}{1 - (B_2/B_1)^3} \right] \tag{5}$$

Card 2/3

ALYAMOVSKIY, M.I., kandidat tekhnicheskikh nauk; PROKOF'YEV, K.A., kandidat tekhnicheskikh nauk.

Approximate method of determining the amplitude of natural vibrations in condenser tubes under the effect of aerodynamic forces. Sudostroenie 22 no.7:7-12 Jl '56.   (MLRA 9:10)

(Vibration)

SURVILLO, V.L.; ALYAMOVSKIY, M.I., redaktor; SELIVANOV, K.I., redaktor;
    FRUMKIN, P.S., tekhnicheskiy redaktor.

[Deck mechanisms] Palubnye mekhanizmy. [Leningrad] Gos. izd-vo
sudostroit. lit-ry, 1951. 256 p.   (MIRA 8:2)
        (Ships--Equipment and supplies)

PODOBUYEV, Yuriy Sergeyevich; SELEZNEV, Konstantin Pavlovich;
     LOMAKIN, A.A.,professor, retsenzent; ALYAMOVSKIY, M.I.,
     inzhener, redaktor; VASIL'YEVA, V.P. redaktor izdatel'stva;
     POL'SKAYA, R.G.,tekhnicheskiy redaktor

     [Theory and design of axial and centrifugal compressors] Teoriia i
     raschet osevykh i tsentrobezhnykh kompressorov. Moskva, Gos.
     nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 389 p.
                                        (MLRA 10:5)

          (Compressors)

ALYAMOVSKIY, M.I., inzh.

    Jet discharge pipe without reaction at anchorage. Sudostroenie 29
    no.11:30-31 N '63.   (MIRA 16:12)

BIRYUK, Vladimir Sergeyevich; ABRAMOVICH, S.F., doktor tekhn.
nauk, prof., retsenzent; SUGLIN, A.I., kand. tekhn.
nauk, retsenzent; ALYAKOVSKIY, N.I., nauchn. red.

[Smoke abatement in seagoing ships] Bor'ba s zadymleniem
morskikh sudov. Leningrad, Sudostroenie, 1964. 169 p.
(MIRA 18:2)

ALYAMOVSKIY, Mikhail Ivanovich, PROMYSLOV, Aleksandr Aleksandrovich;
VASIL'YEV, V.K., doktor tekhn. nauk, prof., retsenzent;
AGAFONOV, V.A., kand. tekhn. nauk, retsenzent; KUTATELADZE,
S.S., nauchnyy red.; VLASOVA, Z.V., red.; KRYAKOVA, D.M.,
tekhn. red.

[Marine condenser plants]Sudovye kondensatsionnye ustanovki. Le-
ningrad, Sudpromgiz, 1962. 401 p.   (MIRA 15:9)
(Condensers (Steam))   (Marine engineering)

ALYAHO"SKIY, Nikanor Ivanovich   C/ 1963   1964

LIMING

DECEASED

SOV/78-3-11-2/23

AUTHORS: Alyamovskiy, S. I., Shveykin, G. P., Gel'd, P. V.

TITLE: On Low Niobium Oxides (O nizshikh okislakh niobiya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 11, pp 2437-2444 (USSR)

ABSTRACT: Experiments were carried out on the possibility of the existence of low niobium oxides. Most pure niobium and oxides produced from it by means of an annealing of the metal at 800-900°C served as initial materials. The following preparations were used: Nb_2O_5, $Nb_2O_{4,9}$, NbO_2, Nb_2O_3, Nb_3O_4, NbO, Nb_2O.
The X-ray structure investigations of the phases of the system Nb-O produced by the reduction of Nb_2O_5-Nb-mixtures at a ratio of Nb : Nb_2O_5 = 3 : 1 were carried out at 1200°, 1580°, and 1650°C. The results showed that the following phases exist at the temperatures investigated: Nb_2O_5, NbO_2, NbO, and Nb. The phase NbO with the lattice constant a = 4430 X.U. is not produced in the system Nb-O. It was found that a phase with

Card 1/2   complex body-centered cubic lattice with the lattice constant

On Low Niobium Oxides

SCV/78-3-11-2/23

$a = 4201,3$ X.U. exists at the equilibrium between the metal and the oxides. The low oxides Nb_2O, Nb_4O, Nb_3O_7, Nb_3O_5, Nb_2O_3, and Nb_3O_4 do not exist in the case of an interaction between niobium oxide and niobium, and in the presence of carbon. There are 2 figures, 1 table, and 24 references, 5 of which are Soviet.

SUBMITTED: October 24, 1957

Card 2/2

ALYAMOVSKIY, S. II

GEL'D, P.V.; ALYAMOVSKII, S.I.; MATVEENKO, I.P.

Utochnenie oblasti primenimosti printsipa posledovatelynosti
prevrashcheniy akad.A.A.Baikova.

Report submitted for the 5th Physical Chemical Conference on
Steel Production.

MOSCOW - 30 Jun 58

ALyAmoUsKiy, S.I.

MATVEYENKO, I.I., GEL'D, P.V.,
MATVEYENKO, I.I., GEL'D,P.V.; ALYAMOVSKIY, S.I.

Kinetika vosstanovleriya pyatiokisi vanadiya
vodorodom.

report submitted for the 5th Physical Chemical Conference on
Steel Production.

Moscow _ 30 Jun 56

MATVEYENKO, I.I., inzh.; GEL'D, P.V., prof.; ALYAMOVSKIY, S.I., inzh.

Reduction kinetics of vanadium pentoxide by hydrogen..
Izv. vys. ucheb. zav.; chern. met. 2 no.4:13-21 Ap '59.

(MIRA 12:8)

1.Ural'skiy politekhnicheskiy institut i Ural'skiy filial Akademii
nauk SSSR.
          (Vanadium—Metallurgy) (Oxidation-reduction reaction)

05878

SOV/78-4-11-31/50

5(2)

AUTHORS: Pal'guyev, S. F., Alyamovskiy, S. I., Volchenkova, Z. S.

TITLE: Investigation of the Phase Components of the System CeO_2-ZrO_2

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11,
pp 2571 - 2576 (USSR)

ABSTRACT: This is a report on the structure and the ceramic properties
of the system CeO_2-ZrO_2. The samples were prepared from mix-
tures of pure oxides. The spectroscopically determined content
of impurities in the initial substances is given in table 1.
The powders were pressed, a binding agent (natural rubber
in benzene) being used for samples with more than 80% ZrO_2. The
samples were then sintered and X-ray investigated with copper
K_α-radiation (powder camera of type RKD and inverting camera
of type KROS). Besides, the density, color and linear shrinking
(Fig 2) in sintering were determined. Table 2 gives the che-
mical composition, the phase composition, the lattice constants,
and the color of the samples. A solid solution with cubic
lattice develops between 0 and 50 mol% ZrO_2, a monoclinic
phase exists between 0 and 10 mol% CeO_2, a tetragonal phase
at 70 mol% ZrO_2. Figure 1 shows that the lattice period changes

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86487

S/078/60/005/008/020/031/XX
B023/B066

5.1190

2209, 1208, 1274

AUTHORS: Gel'd, P. V., Alyamovskiy, S. I., Matveyenko, I. I.

TITLE: Intermediates of V_2O_5 Reduction With Hydrogen

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 8,
             pp. 1678-1687

TEXT: The authors deal with the question how the transformation process
of V_2O_5 to V_2O_3 proceeds, which intermediate phases are formed therein,
how large their quantity is, and in how far the conversion of some higher
oxides to lower ones is complicated. In the first experimental series, the
composition of the samples was investigated. Fragments of V_2O_5 briquettes
(2-3 mm) were subjected to a partial reduction in hydrogen at 400-600°C.
The second series was carried out with preparations of different degrees
of reduction. In the third series, samples were investigated which had
been prepared in layers and partially reduced with H_2. The X-ray structural
analysis of the products of a partial reduction of V_2O_5 with hydrogen was

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Intermediates of V_2O_5 Reduction With Hydrogen

86487
S/078/60/005/008/020/031/XX
B023/B066

made in $PK\mathcal{A}_1$(RKD) or βPC (VRS) cameras by means of chromium radiation.
When investigating the intermediate products of the reduction of vanadium
pentoxide by hydrogen, which had been obtained at 200-1200°C, the authors
detected V_6O_{13}, V_2O_4, and V_2O_3, while $VO_{1.75}$, $VO_{1.80}$, $VO_{1.84}$, and $VO_{1.86}$
could not be found. Though phases of $VO_{1.67}$ and $VO_{1.87}$ were present, they
could not be clearly identified, since they occur only in minute quantities
By the reduction of V_2O_5 with hydrogen, monophase oxide preparations as
intermediates of V_2O_5 and V_2O_3 could not be obtained. The theorem of
A. A. Baykov (Ref. 9) on the sequence of conversions applies to relatively
slow interactions proceeding in systems of different composition and
different structure. If the process occurs rapidly in systems containing
phases of similar composition and structure, some of these phase components
are possibly not formed. Table 2 shows the phase composition of products
of a partial reduction of V_2O_5 by hydrogen. Table 3 illustrates the phase
composition of products of vanadium pentoxide with hydrogen. Mention is
made of papers by V. I. Arkharov, B. S. Borisov, T. V. Dolgal' (Ref. 32),

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Intermediates of V_2O_5 Reduction With Hydrogen   S/078/60/005/008/020/031/XX
B023/B066

G. A. Meyerson and A. N. Zelikman (Ref. 51), M. A. Gurevich and B.T. Ormont
(Ref. 28). There are 1 figure, 4 tables, and 54 references: 25 Soviet, 10
US, 2 British, 7 Danish, 3 French, 5 German, 1 Japanese, 1 Swedish, and 1
Swiss.

SUBMITTED: March 5, 1959

Card 3/3

S/126/60/009/02/032/033

E111/E335

$\mathcal{S.2100(A)}$

AUTHORS: Gel'd, P.V., Alyamovskiy, S.I. and Matveyenko. I.I.

TITLE: The Structural Characteristics of Vanadium Oxide

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 2, pp 315 - 317 (USSR)

ABSTRACT: Investigations were carried out on samples of varying composition ($VO_{0.75}$ to $VO_{1.74}$), prepared by vacuum sintering of briquettes of metallic vanadium and vanadium trioxide. The samples were heated at $1\ 400\ °C$ for 60 to 76 hours. X-ray analysis was carried out and the results are given in the table. Samples $VO_{0.75}$ and $VO_{1.3}$ were two-phased. A relation between the lattice parameter and composition was observed only in the interval $VO_{0.85}$ to $VO_{1.25}$. Special interest is caused by the possible existence of a ζ phase. This would be expected to have an NaCl structure. From experimental and theoretical densities, it is shown that the concentration of vacancies in the region of homogeneous vanadium oxide

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68637

S/126/60/009/02/032/033
E111/E335

The Structural Characteristics of Vanadium Oxide

was 12 to 22% in the vanadium sub-lattice. The
concentration relation of the thermal emf shows a change
of sign at the composition corresponding to
stoichiometric VO , as would be expected.
There are 1 table and 3 references, 3 of which are Soviet
and 1 English.

ASSOCIATION: Institut khimi UFAN SSSR (Institute of Chemistry,
UFAN SSSR)

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

SUBMITTED: December 26, 1959

Card 2/2

ALYAMOVSKIY, S.I.; GEL'D, P.V.; SHVEYKIN, G.P.

Niobium carbides. Trudy Ural. politekh. inst. no.92:125-134 '59.
(MIRA 13:12)
(Niobium carbide)

MATVEYENKO, I.I.; GEL'D, P.V.; ALYAMOVSKIY, S.I.

Kinetics of the reduction of vanadium pentoxide and tetroxide
by carbon. Izv. Sib. otd. AN SSSR no. 11:77-88 '60. (MIRA 14:1)

1. Ural'skiy filial AN SSSR.
        (Vanadium oxides)   (Carbon)
                    (Reduction, Chemical)

32615
S/137/61/000/011/071/123
A060/A101

15 2240

AUTHORS: Alyamovskiy, S.I., Gel'd, P.V., Matveyevko, I.I.

TITLE: On the phase components of the Nb-Si system

TEXT: Alloys of silicides of niobium were prepared by sintering briquetted mixtures of powdered Nb (99.6%) and Si (99.98%) in a vacuum furnace at 1,200-1,600°C and were studied by the methods of microscopic and X-ray structure analyses. The phases of the silicides have marked regions of homogeneity: for $\alpha =$ $= Nb_5Si_3$ - from $NbSi_{0.58}$ to $NbSi_{0.56}$; for $NbSi_2$ - from $NbSi_{1.85}$ to $NbSi_{2.2}$. Here the lattice parameters α of Nb_5Si_3 and $NbSi_2$ remain practically constant. In the Nb-Si system there exist solid substitution solutions both for $NbSi_2$ and $\alpha = Nb_5Si_3$. At 1,000-1,100°C, while annealing alloys containing Nb_4Si, there occurs a decomposition $Nb_4Si \longrightarrow Nb + Nb_5Si_3$. There are 8 references.

Z. Rogashevskaya

[Abstracter's note: Complete translation]

Card 1/1

S/137/62/000/004/002/201
A006/A101

AUTHORS: Gel'd, P. V., Alyamovskiy, S. I., Matveyenko, I. I.

TITLE: Determining the application range of the principle of consecutive
               transformations, set up by Academician A. A. Baykov

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 6 - 7, abstract
               4A26 (V sb. "Fiz-khim. osnovy proiz-va stali", Moscow, AN SSSR,
               1961, 157 - 167)

TEXT: The substances employed were prepared from two V_2O_5 batches con-
taining about 0.0007% heavy metal oxides and $< 0.1\%$ SiO_2. A thorough investiga-
tion of intermediate products of V_2O_5 reduction with hydrogen, obtained at 200 -
1,200°C, revealed the presence of V_6O_{13}, V_2O_4 and V_2O_3. In none of the samples
whose reduction degree varied from 0 to 38.6%, the presence of $VO_{1.75}$, $VO_{1.80}$,
$VO_{1.84}$ and $VO_{1.86}$ was revealed. Phases $VO_{1.67}$(or $VO_{1.87}$) are present, if any, in
small amounts so that they cannot be reliably identified. It was established
that by V_2O_5 reduction with hydrogen, single-phase oxide preparations with compo-
sitions ranges between V_2O_5 and V_2O_3 can not be obtained. The authors state that

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GEL'D, P.V.; ALYAMOVSKIY, S.I.; MATVEYENKO, I.I.

$\beta\text{-}\delta$ and ζ- phases of the vanadium - oxygen system.   Zhur.strukt.-
khim. 2 no.3:301-307 My-Je '61.   (MIRA 15:1)

1. Institut khimii Ural'skogo filiala AN SSSR, Sverdlovsk.
                                    (Vanadium oxide)

24939

S/192/61/002/004/002/004
D217/D306

IS.2240

AUTHORS: Alyamovskiy, S.I., Gel'd, P.V. and Matveyenko, I.I.

TITLE: Cubic vanadium carbide phases

PERIODICAL: Zhurnal strukturnoy khimii, v. 2, no. 4, 1961, 445 - 448

TEXT: The object of this investigation was to verify the re-
sults of work by earlier authors (Ref. 1: M.A. Gurevich, B.S.
Ormont, Ah. neorgan. khimii, 2, 1566, 2581, 1957; 3, 403, 1958)
and (Ref. 2: N. Schönberg, Acta Chem. Scand., 8, 624, 1954) and
to obtain more precise information. Carbide specimens of var-
ious compositions were synthesized by sintering briquetted pow-
der mixtures of vanadium hydride and spectroscopically pure
graphite in a high frequency induction vacuum furnace at 1600 -
1750°. The vanadium hydride was prepared by reducing vanadium
oxide with carbon or calcium. The powder was hydrated for 2

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S/192/61/002/004/002/004
D217/D306

Cubic vanadium...

hours at a hydrogen pressure of 1 atm., at 850°. The lattice
parameter of the original metal was 3.020 kX, which indicated
a low oxygen content ($<$ 0.04 at.%); this was also confirmed
by the high strength of the material. Sintering of the car-
bides was carried out for 40 - 70 hours with 2 - 3 intermediate
re-briquetting operations. The compounds were cooled in the
furnace for approximately 30 minutes. X-ray control was carried
out after each operation. The attainment of equilibrium in the
system was judged by the constancy of the lattice parameters
and by the sharpness of the lines obtained in the X-ray pictures.
The X-ray investigation was carried out in a Cr K_α irradiation
in a Debye Camera of 143.3 mm diameter. The experimental error
in the determination of lattice periods did not exceed 0.001 kX.
The density of the compounds was measured in vacuum by the pic-
nometric method, using kerosene and decalin as the liquid re-
agents. The errors in the density determinations were approx-
imately 0.7%. The analysis of the carbides for vanadium content
was carried out by a volumetric method, and the total and free

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Cubic vanadium...

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D217/D306

carbon were determined gravimetrically. The accuracy of the determination of x in the formula VC_x was approximately 0.02. The oxygen content of the specimens was less than the corresponding oxi-carbide $VC_x = O_{0.02}$. Altogether 17 specimens, containing between 10.93 and 25.73 weight % carbon ($VC_{0.52} - VC_{1.47}$) were synthesized. The results of the X-ray investigation are shown. In the neighborhood of the compositions $VC_{0.79} - 0.80$ a drastic change in the lattice parameter (approximately by 0.013 kX) occurs. From this it can be deduced that one cubic vanadium phase (δ) is stable in the range $VC_{0.63} - VC_{0.79}$, and another (ϵ) is stable in the range $VC_{0.79} - VC_{0.92}$. It was found that cubic vanadium carbides are characterized by defects in the carbon sub-lattice. It is also assumed that the high carbon phases as well as the vanadium sub-lattice are very slightly defective. There are 1 figure, 2 tables and 11 references: 5 Soviet-bloc and 6 non-Soviet-bloc. The reference to the English-language publication reads as follows: A.R. Ubbelohde, Proc. Roy. Soc., B826, 295 (1937).

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Cubic vanadium...

24939

S/192/61/002/004/002/004
D217/D306

ASSOCIATION: Institute khimii ural'skogo filiala AN SSSR,
Sverdlovsk (Insitute of Chemistry of the Ural
Branch, AS USSR, Sverdlovsk)

SUBMITTED: August 2, 1960

Card 4/4

S/200/62/000/005/003/005
I003/I242

AUTHORS: Gel'd, P.V., Matveyenko, I.I., and Alyamovskiy, S.I.

TITLE: Intermediate products in the process of reduction
                of vanadium oxides by carbon

PERIODICAL: Akademiya nauk SSSR. Sibirskoye otdeleniye.
                Izvestiya, no.5, 1962, 59-69

TEXT: The kinetics of the reduction of vanadium oxides
by carbon have received little attention. Highly pure vanadium
has good mechanical and corrosion resistance properties and there
are good prospects for the industrial application of vanadium
carbides and oxycarbides. The kinetics of the reduction of V_2O_3
was investigated between 1100 and 1600°C. The reduction is not

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S/200/62/000/005/003/005
I003/I242

Intermediate products in the process of...

a single reaction because, while its initial stage depends on the rate of gasification of carbon, on the absorption or chemical processes and on crystallographic changes taking place in the reduced oxides, the final stage depends on the velocity of diffusion of atoms of O,C, and V through the lattices of oxides and particularly oxycarbides. The first product consists of an intermediate oxycarbide δ - phase which can be transformed either into an ξ - phase or into an intermediate γ -phase, depending on the composition of the charge, on the nature of the reducing agent, and on the temperature. The reduction of higher oxides V_2O_5 and VO_2 by carbon below 800°C leads to the formation of the V_6O_{13}-, VO_2-, V_3O_5-, and V_2O_3- phases. No intermediate $VO_{1.87}$, $VO_{1.86}$, $VO_{1.84}$, $VO_{1.80}$ and $VO_{1.75}$ phases have been found. There is 1 figure and 4 tables.

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S/200/62/000/005/003/005
I003/I242

Intermediate products in the process of...

ASSOCIATION: Ural'skii filial AN SSSR, Sverdlovsk (The Ural
branch of the AS USSR, Sverdlovsk)

SUBMITTED: June 24, 1961

3/3

S/078/62/C07/004/007/016
B110/B101

15.2240

AUTHORS: Alyamovskiy, S. I., Gel'd, P. V., Matveyenko, I. I.

TITLE: Concentration ranges of the stability of niobium silicides at 1250°C

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 4, 1962, 836-843

TEXT: The alloys of the Nb-Si system were investigated. Sodium thermic niobium (99.7% Nb) and purified Si (99.98% Si) (size of particles $\sim 90\mu$) was briquetted at 6-7 ton/cm^2. High volatilization of Si and concentration of Nb was observed during the silicide synthesis in the vacuum furnace at 1300-1500°C. The briquetted charge was therefore degassed at 800°C in a vacuum furnace and subsequently sintered for 3-4 hrs at 1150°C under spectroscopically pure He. The product was ground, briquetted, and further sintered in a sealed, evacuated quartz ampulla for ~ 5 hrs at 1250°C. It was then cooled in the furnace during 10 min to 200°C. 27 samples between NbSi$_{0.15}$ and NbSi$_{2.30}$, as well as Nb$_5$Si$_3$C$_x$ and Nb$_5$Si$_3$O$_x$ were studied under the metallographic МИМ-7 (MIM-7) т МИМ-8М (MIM-8M) microscope and by X-ray diffraction. In samples with $< 14\%$ Si, (1) the solid solution of Si

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Concentration ranges of the ...

in Nb and (2) α-Nb$_5$Si$_3$ were ascertained. No No$_4$Si was found. The lattice constants of the phase components from NbSi$_{0.15}$ to NbSi$_{0.55}$ were identical. The alloys with the stoichiometric composition of Nb$_5$Si$_3$ and NbSi$_2$ were monophase. NbSi$_2$ was hexagonal (a = 4.785 kX, c = 6.58 kX), α-Nb$_5$Si$_3$ was tetragonal (a = 11.84 kX, c = 6.54 kX). NbSi$_{0.50}$-NbSi$_{0.80}$ the alloys NbSi$_{0.50}$ and NbSi$_{0.55}$ were found to contain two phases: (1) α-Nb$_5$Si$_3$ and (2) slightly solid solution of Si in Nb. NbSi$_{0.60}$, NbSi$_{0.62}$, NbSi$_{0.64}$ and NbSi$_{0.66}$ are monophase. The identity periods of all lattices practically coincide. By adding ~2% carbon black or NbO (related to ~3% O$_2$) to Nb-Si mixtures γ-Nb$_5$Si$_3$ and the phase component Nb-Si-C(O) were obtained. The latter points toward isomorphous behavior of C and O on interaction with α-Nb$_5$Si$_3$. In the range NbSi$_{1.70}$-NbSi$_{2.30}$ a diphase state consisting of α-Nb$_5$Si$_3$ and NbSi$_2$ was detected for NbSi$_{1.70}$ and NbSi$_{1.80}$; the following

Card 2/3

AUTHORS: Shveykin, G. P., Gel'd, P. V., Alyamovskiy, S. I.

TITLE: Conditions for the formation of niobium oxycarbides

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 8, no. 3, 1963, 689-696

TEXT: The phase composition of the intermediates formed during the reaction between niobium oxides and carbides at different temperatures and pressures was studied by x-ray diffraction analysis. To produce specimens, mixtures of oxides and carbide were briquetted (at 2.5 - 3 tons/cm^2) and sintered at 1400-1900°C in vacuo ($\sim 10^{-3}$ mm Hg) or in pure argon (~ 1 atm) for 10-225 min. The specimens made from the lowest oxides and carbide sintered in vacuo contained no oxycarbide. In the specimens produced in argon, however, an oxycarbide phase was formed due to high partial carbon oxide pressure near the reaction zone. Carbon atoms enter the niobium monoxide lattice to a limited extent or not at all. The formation of niobium oxycarbides is due to penetration of oxygen into the carbide lattice. In the Nb - C - O system, oxycarbides

Card 1/2

VOLKOVA, N.M. (Sverdlovsk); ALYAMOVSKIY, S.I. (Sverdlovsk); GEL'D, P.V.
(Sverdlovsk)

Concentration stability limits of vanadium carbide at 1800° C.
Izv. AN SSSR. Met. i gor. delo no.5:134-140 S-O '63.
(MIRA 16:11)

SHVEYKIN, G.P.; GEL'D, P.V.; ALYAMOVSKIY, S.I.

Conditions for the formation of niobium oxycarbides. Zhur.neorg.khim.
8 no.3:689-696 Mr '63.

(Niobium carbides)   (MIRA 16:4)

L 18166-63   EWP(q)/EWT(m)/BDS   AFFTC/ASD   JD
S/0078/63/008/008/2000/2001

ACCESSION NR: AP3004358

AUTHORS: Alyamovskiy, S. I.; Shveykin, G. P.; Gel'd, P. V.

TITLE: Oxidation of niobium and its lower carbide

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 8, 1963, 2000-2001

TOPIC TAGS: niobium, niobium carbide

ABSTRACT: The intermediate products of niobium oxidation were analyzed in order to clarify the possibility of the existence of niobium oxycarbides. X-ray analysis of the hexagonal carbide Nb_2C shows that the index lines 101, 110, 112 as well as some others are washed out. A further oxidation of this sample for a period of four hours resulted in the formation of a new phase. X-ray of this new phase shows that it is similar to the X-ray of Nb_2C, but that it has additional lines which are located close to the high-interference lines corresponding to a lower carbide. By using V. I. Mikheyev's (Rentgenometricheskiy opredelitel' mineralov, Moskva, Gosgeologizdat, 1957) homolog method, it was possible to obtain an X-ray of the new phase and determine its elemental structure. The periods of the rhombic structure of the new phase were as follows: $a = 5.37_1$ kx, $b = 4.95_6$ kx, $c = 3.12_9$ kx. The comparison of the above values with the hexagonal

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L 18166-63
ACCESSION NR: AP3004358

values led to the conclusion that its composition can be described with the formula $NbC_{\sim 0.4}$. The spectral composition of Nb_2C and $NbC_{\sim 0.4}$ is practically the same. Apparently this shift of the hexagonal structure takes place with the addition of oxygen and nitrogen. Oxygen alone does not effect this shift. An analogous phase is formed on the basis of lower carbide V_2C having a structure similar to Nb_2C. Orig. art. has: no graphics.

ASSOCIATION: none

SUBMITTED: 26Feb63

SUB CODE: CH

DATE ACQ: 21Aug63

NO REF SOV: 002

ENCL: 00

OTHER: 003

Card   2/2

ACCESSION NR: AP4015113   S/0136/64/000/002/0082/0083

AUTHORS: Gaydukov, G.V.; Shveykin, G.P.; Alyamovskiy, S.I.

TITLE: Reducing the waste products of niobium-tungsten alloy

SOURCE: Tsvetny*ye metally*, no. 2, 1964, 82-83

TOPIC TAGS: niobium, niobium alloy , arc smelting, shavings, vacuum treatment, sodium fluoride, selective solvent, nitric acid, ferroniobium, permanent electrode, tungsten electrode, lattice spacing, hydration method

ABSTRACT: The waste products remaining after the mechanical pro-
cessing of niobium and its alloys, such as shavings, chips, etc.,
can be reduced by the hydration method followed by sintering. But
the resulting metal is porous and requires further smelting. This
investigation, therefore, deals with the possibility of purifying the
waste products of niobium-tungsten alloys by chemical methods to
producing specified-quality ingots by way of arc smelting and ther-
mal treatment of the alloys in a vacuum. It appears that a pre-

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ACCESSION NR: AP4015113

liminary chemical processing of the waste products makes it possible
to eliminate the oxidized layer of shavings as well as the possible
mechanical impurities. A study of the relationship between the
shavings' dissolving speed and time at a temperature of 60 C re-
vealed that the initial dissolving speed is the fastest for the
shavings containing a large quantity of impurities, but after the
first 5-6 minutes it is reduced to below the dissolving speed of
similar shavings containing a large quantity of the oxide phase.
The physico-chemical properties (hardness, plasticity, microstruc-
ture and lattice spacing) of the alloys made from the shavings pro-
cessed by chemical or vacuum methods were proved to correspond to
the properties of standard alloys. Orig. art. has: 1 table.

ASSOCIATION: None

SUBMITTED: 00

SUB CODE: ML, CH

DATE ACQ: 12Mar64

NO REF SOV: 001

ENCL: 00

OTHER: 000

Card 2/2

IJP(c)   JD/JG   ___(J)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(t)/EWP(b)

ACCESSION NR: AP5____

AUTHOR: A____ _____ Shveykin, G. P.; Geld, P. V.

TITLE: Higher niobium oxides

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 1, 1965, 302-303

TOPIC TAGS: niobium dioxide, niobium pentoxide, higher niobium oxide

ABSTRACT: A study of 11 samples ranging from NbO_2 to Nb_2O_5 in _____ tion was carried out with the aim of finding inter_____ NbO_2-Nb_2O_5 system. An x-ray analysis with _____

L 29520-65

ACCESSION NR: AP5002811

niobium oxides is confirmed by a qualitative spectral analysis. Orig. art. has:
1 figure.

ASSOCIATION: Institut khimii Ural'skogo filiala Akademii nauk SSSR (Chemistry
Institute, Ural Branch, Academy of Sciences SSSR)

SUBMITTED: 23May64   ENCL:

NO REF SOV: OTH:

L 61077-65   EWA(c)/EWP(m)/EWP(b)/T/EWP(t)   IJP(c)   JW/JD/JG

ACCESSION NR: AP5018257

UR/0078/65/010/007/1758/1758
546.881'26

AUTHOR: Volkova, N. M.; Gel'd, P. V.; Alyamovskiy, S. I.

TITLE: Phase transformation of higher vanadium carbide

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, nc. 7, 1965, 1758

TOPIC TAGS: vanadium carbide, carbide phase transformation

ABSTRACT: In a study of the concentration - temperature dependence of the enthalpy of the phase components in the V - C system, the following interesting fact was observed: the monotonic increase in the ΔH of samples of the higher δ carbide (V$_C_{0.88}$) at approximately 1120C was replaced by a fairly large [...], after which ΔH increased in prop[...] [...]perature. At 1120C, the δ carbide [...] a transformat[...] [...]ease in enthalpy amounting [...] about 45 kJ/kg (th[...] [...]mation is thought to be polymorphic in character. This [...] [...]rimetric observations and the reproducibility of the data. [...] diffraction analysis of samples annealed and quenched from various temperatures (from 800 to 1700C) showed no

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L 61077-65   2

ACCESSION NR: AP5018257

differences in the type or parameter of the lattice (a = 4.159 kX), excluding
the possibility of formation of peritectoid or related transformations. The
polymorphic transformation observed should be investigated by direct high-
temperature x-ray analyses. Orig. art. has: 1 figure.

ASSOCIATION: Institut khimii Ural'skogo filiala Akademii nauk SSSR (Institute
of Chemistry, Ural'sk Branch, Academy of Sciences, SSSR)

SUBMITTED: 07Jan65   ENCL: 00   SUB CODE: IC, MM

NO REF SOV: 001   OTHER: 000

Card   2/2

L 10852-66   EWP(e)/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) IJP(c) UR/0080/65/038/010/2174/2181
ACC NR: AP5025652   SOURCE CODE:

AUTHOR: Lyubimov, V. D.; Gel'd, P. V.; Shveykin, G. P.; Alyamovskiy, S. I.

ORG: none

36
B

TITLE: Kinetics of the reduction of lower niobium oxides with carbon

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 10, 1965, 2174-2181

TOPIC TAGS: niobium compound, chemical reduction, carbon

ABSTRACT: Pressed NbO_2 + C and NbO + C powder mixtures were heated at 1200-1600°C, and the kinetics of reduction of NbO_2 and NbO were studied in a vaccum as a function of temperature, compacting pressure and presence of additives (K_2CO_3, Na_2CO_3, $CaCO_3$, TiO_2). The degree of reduction was studied as a function of temperature, time, type of carbon and amount of graphite. The reduction process was found to be complex. Under certain conditions, in addition to the usual two-stage mechanism of direct reduction, intermediate niobium carbides form. Because of its diffusive nature, the decomposition of these carbides is kinetically hindered to a considerable degree. While the initial stages of the interaction the rate-determining factor is the gasification of carbon, during the final stages the rate-determining processes involve diffusion. It is concluded that in order to accelerate the reduction, it is necessary to avoid the formation of niobium oxycarbides, e. g., by maintaining a high vacuum.

UDC: 531.1+542.941+546.882

Card 1/2

L 10852-66

ACC NR: AP5025652

um in the vicinity of the reaction zones, i. e., in the microvolumes of the charge.
Orig. art. has: 6 figures, 1 table.

SUB CODE: 07/   SUBM DATE: 26Sep63/   ORIG REF: 016/   OTH REF: 003

HW

Card 2/2

AUTHORS: Sobolev, N. N., Potapov, A. V., Kitayeva, SOV/48-22-6-23/28
             V. F., Fayzullov, F. S., Alyamovskiy,
             V. N., Antropov, Ye. T., Isayev, I. L.

TITLE: The Spectroscopical Investigation of the State of the Gas
             Behind the Shock-Wave (Spektroskopicheskoye issledovaniye
             sostoyaniya gaza za udarnoy volnoy)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958,
             Vol. 22, Nr 6, pp. 730-736 (USSR)

ABSTRACT: This paper describes a practical method of obtaining a high-
             temperature plasma for research work carried out in laboratories,
             viz. the method of the "shock tube" (Fig 1). The shock tube is
             divided by means of a diaphragm into two chambers (for high-
             and low pressure). As soon as high pressure develops in the
             high-pressure chamber the diaphragm is caused to burst, and at
             the same time a shock wave forms in the second chamber round the
             shock center - i. e. the rarefying wave. Between the fronts of
             the shock wave and the contacting surface a layer of gas of
             high temperature is formed which is here described as "lock"
             (probka). This "lock" moves with the velocity U_2, which is

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The Spectroscopical Investigation of the State   SOV/48-22-6-23/28
of the Gas Behind the Shock-Wave

somewhat lower than that of the shock wave J_s. The temperature

of the "lock" increases with a reduction of the molecular weight
of the gas. If the velocity U_s is known, it is possible, by

basing on the law of conservation of the mass, the impulse and
the energy, as well as on the strength of the ratio of enthalpy,
the degree of ionization, and the state of the gas, to determine
the 6 unknown quantities: P_2, ϱ_2, U_2, H_2, T_2 and α_2 relating to

the state of the monoatomic gas located in the "lock". A
graphical illustration of 3 states of argon and 3 states in air
behind the shock wave is given. The device is described on the
basis of a schematical drawing. The chapter dealing with: The
Method of Relative Intensities describes the use of the
device mentioned for the purpose of obtaining the spectral lines
for Li and Na for measuring the temperature by the method of
relative intensities. Measurements were carried out photographical-
ly and photoelectrically, without as well as with full reabsorption
of spectral lines. The chapter: The Generalized Method of Re-
versing the Spectral Lines is based upon a paper (Ref 7) in which
the said method is explained with respect to its application for

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The Spectroscopical Investigation of the State
of the Gas Behind the Shock-wave

SOV/48-22-6-23/28

the purpose of measuring temperature without observing a moment
of reversal. In this case the optical scheme is used for carrying
out the following measurements: The radiation intensity of the
gas in the spectral line, the intensity of the radiation of a
source employed for the purpose of comparison, and of temperature.
For measuring temperature a device was used which is described by
means of a schematical drawing (Fig 5). Finally, a graphical re-
presentation of the results obtained by measuring the tempera-
tures of nitrogen and the air behind the impulse wave by means of
the photoelectric method of the reversal of spectral lines is
given. There are 6 figures and 7 references, 3 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev, AS USSR)

1. Electron gas—Spectra   2. Electron gas—Radiation   3. Spectros-
copy   4. Shock tubes—Applications   5. Shock waves—Analysis

Card 3/3

AUTHORS: Sobolev, N.N., Potapov, A.V., Kitayeva, B.F., Fayzullov, F.S., Alyamovskiy, V.N., Antropov, Ye.T. and Isayev, I.L.

SOV/51-6-3-3/28

TITLE: Spectroscopic Studies of the State of Gas Behind a Shock Wave. I (Spektroskopicheskoye issledovaniye sostoyaniya gaza za udarnoy volnoy. I)

ABSTRACT: The paper describes attempts to measure the temperature behind a shock wave using relative intensities of two spectral lines. Shock waves were produced in a shock tube (Fig.5), 9.2 cm in diameter and 4.5 m long. The high-pressure chamber I (50 cm long) was filled with hydrogen at pressures of 110-130 atm. The low-pressure chamber II (4 m long) was filled with air or nitrogen at 10 mm Hg. The two chambers were separated by an aluminum diaphragm, bursting of which produced shock waves in the low-pressure chamber. The spectrum of radiation emitted by the region behind a shock wave was recorded either photographically or photoelectrically using a spectrograph ISP-51. In the latter case two photo-

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SOV/51-6-3-3/28

Spectroscopic Studies of the State of Gas Behind a Shock Wave.   I

multipliers (FEU-17 or FEU-22, cf. Fig.6) were used to
register two spectral lines;   the signals from the photo-
multipliers were amplified (cf. circuit in Fig.7), displayed
on an oscillograph OK-17M and photographed.   The shock-
wave velocity was found by measuring the time which it took the
wave to travel between two ionization counters, denoted by
$\Pi_{1,2}$ in Fig.5.   Experiments were carried out at shock-wave
velocities of 3-4 km/sec at which the temperatures behind
shock fronts were expected to be 3500-4500°K.   At these
temperatures neither air nor nitrogen emits atomic lines.
The authors consequently introduced small amounts of Li
and Na in the form of LiCl or NaCl.   The temperatures
behind shock-wave fronts, calculated from the relative
intensities of Li and Na lines, were highly scattered
(Table 2) and the scatter varied from one line pair to
another and from one experiment to another.   This scatter
was due to partial re-absorption, as well as to disturbance
of the thermodynamic state of the gas by the comparatively
Card 2/4 large amounts of salts which had to be used.   Moreover,

Spectroscopic Studies of the State of Gas Behind a Shock Wave.   I

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the salts settled on the cold walls of the shock tube and their emission was consequently concentrated near the walls (Fig.9).   To ensure a uniform distribution of the emitting substances behind a shock-wave front the authors used gaseous dicyanogen in their second series of experiments.   They deduced temperatures from the relative intensities of vibrational bands of cyanogen (dicyanogen dissociates at these temperatures) using the method described by Brinkman (Ref.6) and Smit (Ref.7).   Again no reliable values of the temperature behind wave fronts could be obtained (Tables 3,4) because of the long time necessary to establish equilibrium distribution in vibrational degrees of freedom of cyanogen.   The authors conclude that the method of relative intensities is suitable only for determination of temperatures above 5000°K;   between 1500 and 5000°K the self-reversal method (Ref.6) should be employed.   There are 10 figures, 4 tables and 9

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Spectroscopic Studies of the State of Gas Behind a Shock Wave. I

references, of which 3 are Soviet, 2 English, 1
translation of English into Russian and 3 Dutch.

SUBMITTED: April 3, 1958.

Card 4/4

87611
S/019/60/000/022/077/161
A156/A026

/3.2520

AUTHOR: Alyamovskiy, V.M.

TITLE: A Device for Latitudinal Correction of Azimuth Gyroscopes

PERIODICAL: Byulleten' izobreteniy, 1960, No. 22, pp. 38-39

TEXT: Class 42c, 25. No. 133612 (656536/26 of Feb 27, 1960). This device includes a rectilinear induction motor, and differs from others in that, in order to create a moment proportional to the sine of a geographical latitude, the stator of the motor is mounted on a shaft parallel to the gyroscope precession axis, and is turned with respect to the line of centers at an angle equal to the given latitude, by means of a remote control transmission from a latitude pickup.

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68888

S/051/60/008/02/002/036

E201/E391

Contour of the H_β Hydrogen Line in Argon Behind a Shock Wave

The low-pressure chamber was filled with argon at $\sim$ 0.3 - 3 mm Hg, to which 2-5% hydrogen was added. Velocity of the incident shock wave varied from 3.6 to 4.8 km/sec and the corresponding calculated values of temperature and pressure behind a reflected wave were $\sim$ 12 000 - 13 000 $^\circ$K and 0.5 - 1.5 atm. The H_β-line was recorded photographically (camera with $f = 270$ mm), using a spectrograph ISP-51 with 40 Å/mm dispersion in the H_β-line region. The spectral slit width was 0.8 Å. Time-resolved spectra (resolution of $\sim$ 25 μs) were obtained using a rotating disc ($\sim$ 1 500 rpm) in front of the spectrograph slit. A typical emission spectrum of the plasma behind a reflected shock wave (Figure 2) consists of two clearly separate regions. The first region (up to $\sim$ 100 μs) represents emission after the first reflection of the shock wave from the end of the tube and has a characteristic constant intensity; the second region represents emission after subsequent reflections.

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68881

S/051/60/008/02/002/036
E201/E391

Contour of the H_β Hydrogen Line in Argon Behind a Shock Wave

The authors analysed the H_β-lines in the first region only; one of the contours obtained in this way is shown in Figure 3 (circles represent the experimental points). The observed H_β contours had considerable half-widths (40-60 Å), central dips due to the absence of the Stark component and a slight asymmetry ($\sim 6\%$). These contours agreed quite well with Holtsmark's theoretical contours (one such theoretical contour is shown as a continuous curve in Figure 3). From the experimental contour and the half-width of the H_β-line the authors deduced

concentration of charged particles in argon behind a reflected-shock wave. The values obtained in this way (they were of the order of 10^{17} cm^{-3}) agreed quite well with the values calculated using Saha's equation, assuming that argon is an ideal gas and that it is in thermal equilibrium, (a table on p 155). Acknowledgment is made to N.N. Sobolev for his advice.

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L 15727-63   EPR/EPA(b)/EPF(o)/EMT(1)/EWP(q)/EWT(m)/BDS   AFFTC/ASD/
ESD-3/AFWL   Ps-4/Pd-4/Pr-4   WW/JD
ACCESSION NR: AR3002666   S/0124/63/000/005/B024/B025

SOURCE: Rzh. Mekhanika, Abs. 5B121

AUTHOR: Alyamovskiy, V.N.; Dronov, A. P.; Kitayeva, V. F.; Sviridov, A. G.;
Sobolev, N. N.
TITLE: Experimental determination of the concentration of charged particles
in argon and krypton behind a shock wave

CITED SOURCE: Sb. Vopr. magnitn. gidrodinamiki i dinamiki plazmy. v. 2. Riga,
AN LatvSSR, 1962, 379-386

TOPIC TAGS: argon, krypton, shock wave, spectroscopy, contour line, electron
temperature

TRANSLATION: Spectroscopic studies of the states of the inert gases argon and
krypton behind shock waves were made. The contour lines of hydrogen in
krypton were studied behind the incident wave; in argon, behind the reflected.
The hydrogen admixture was about 1-5%. The initial pressure was of the order
of 0.2-1 mm of mercury. In the argon behind the reflected wave, the calculated

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ACCESSION NR: AR3002666

temperature was of the order of 12000-13000° K. The concentration of electrons was determined by the method of comparison of the experimental contour lines with the theoretical ones, and the temperature was determined using the assumption of thermodynamic equilibrium. Yu.R.

DATE ACQ: 14Jun63   SUB CODE: PH   ENCL: 00

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ACCESSION NR: AT4041499 .   S/2910/63/003/01-/0079/0092

-AUTHOR: Alyamovskiy, V. N., Kirzhnits, D. A.

TITLE: Collective excited states of heavy atoms

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 3, no. 1-2, 1963, 79-92

TOPIC TAGS: quantum mechanics, excited state, collective excited state, heavy atom, heavy atom excitation, excitation spectrum, electron hole, plasmon, quantum field theory, electron density

ABSTRACT: The energy spectrum of a weakly coupled, multi-particle system contains single-particle levels as well as levels corresponding to the simultaneous excitation of a large number of levels. Single-particle excitation can be treated as the appearance of a particle-hole pair which are not coupled, while a collective excitation state (plasmon) corresponds to the coupled particle-hole creation. The wave function of such a system can be written by superposition of the wave function of the single-particle state. Formulation of the general conditions for the existence of plasmon shows that these are not satisfied

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ACCESSION NR: AT4041499

by a heavy ($z \gg 1$) atom due to the fact that the atom is a bounded and inhomogeneous system. Assuming that plasmon can exist in an atom locally, i.e. where there is a large concentration of particles, the quantum field theory is used to study its characteristics. It is shown that no wave function exists which can be assigned to the plasmon. This means that even if, in the energy sense, plasmon can be treated as an independent quasi-particle, this cannot be done when its internal structure is considered. The region of $\hbar\omega$ in which the plasmon levels can exist is determined and is shown in Fig. 1 of the Enclosure. This assumes a uniform electron density function and the notation used is as follows: $y = k/p_0$ (k = plasmon wave number, $P_0 = 0.78 \hbar Z 2/3/a_0$ is the maximum Fermi momentum, and a_0 = Bohr radius), $\zeta = w/w_L$ ($w_L = 12.1Z$ electron volts). For $Z = 44$, $y_{cr} = 0.3$, $\zeta_{cr} = 1.66$ and for $z = 85$, $y_{cr} = 0.25$, $\zeta_{cr} = 1.71$, which shows that the w-region is relatively narrow. It is also shown that the spectrum of the collective excitation of a realistic atom reduces to a single energy level which corresponds to a single p-state. The energy of this state is 17 Z ev which, for heavy atoms, is of the order of 1 kev. "The authors are indebted to Ye.L. Feynberg for his critique of several problems considered in this work." Orig. art. has: 5 figures and 31 formulas.

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ACCESSION NR: AT4041499

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii Nauk SSSR.(Institute of Physics, Academy of Sciences,SSSR)

SUBMITTED: 00

SUB CODE: GP

NO REF SOV: 005

ENCL: 01

OTHER: 004

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Card   4/4

ALYANSKIY, A. M.

FA 41/49T88

USSR/Mining Methods   Apr 49

"Classification of Mining Systems," Dr G. A.
Tsulukidze, Prof, Active Mem, Acad Sci Georgian
SSR; A. M. Alyanskiy, P. I. Gorodetskiy, Co-
Korobko, Ye. Ya. Makhno, N. N. Polyakov, Leningrad Mining
Inst; V. T. Markelov, P. M. Vol'fson, A. G.
Workers of Chair of Ore Mining; L. I. Baron, V. N.
Barlas, Mining Engineers; I. I. Baron, 7 pp
Semevskiy, Candidates Tech Sci,

"Gor Zhur" No 4   41/49T88

Proposed classification has two main divisions:
mining mildly slanting deposits of small and

LC   Apr 49

USSR/Mining Methods (Contd)

average width, and mining large deposits with
posits of any width and room-pillar.
mildly slanting walls. First division is
divided into: solid, piller, and room-pillar.
Second has two main subdivisions (containing with-
more detailed breakdown): Mining is done of
out collapsing leaning rocks in early stages of
extraction, and mining is done with collapsing
of leaning rocks in early stages of extraction.

41/49T88

LC

ALYAMSKIY, A. M.

[illegible] Committee on Stalin Prizes [of the Council of Ministers USSR] in the fields of
science and inventions announces that the following scientific works, popular scien-
tific books, and textbooks have been submitted for competition for Stalin Prizes for
the years [illegible] and [illegible]. (Sovetskaya Kultura, Moscow, No. [illegible], 2. Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Agoshkov, M. I. Alyamskiy, A. M. Voronin, V. N. Gorodetskiy, P. I. Kaplunov, R. P. Matveyev, N. A. Polyakov, N. N. Tarasov, L. Ya. Seledkov, Yu. V.	"Textbook of Mining" (two books)	Metallurgizdat

ALYANSKIY, A.M., dotsent, kandidat tekhnicheskikh nauk.

Explosive gas emanations in metal mines. Gor.zhur. no.6:21-25 Je '57.
(MLRA 10:8)

1.Leningradskiy gornyy institut.
(Mine gases)