GLADYSHEVSKIY, Ye.I.; KRIPYAKEVICH, P.I.; TESLYUK, M.Yu.; ZARECHNYUK, O.S.; KUZ'MA, Yu.B.

Crystalline structures of certain intermetallic compounds. Kristallografiia 6 no.2:267-268 Mr-Ap '61. (MIRA 14:9)

1. L'vovskiy gosudarstvennyy universitet im. I.Franko.
(Intermetallic compounds) (Crystal lattices)

GLADYSHEVSKIY, Ye.I.; KRIPYAKEVICH, P.I.; KUZ'MA, Yu.B.; TESLYUK, M.Yu.

New representatives of the structural types $Mg_6Cu_{16}Si_7$ and Th_6Mn_{23}. Kristallografiia 6 no.5:769-770 S-O '61. (MIRA 14:10)

1. L'vovskiy gosudarstvennyy universitet imeni I.Franko.
(X-ray crystallography)

2028
S/078/61/006/003/019
B107/B101

18 1210 2408, 1413, 2808, 2208.

AUTHORS: Gladyshevskiy, Ye. I., Kolobnev, I. F., Zarechnyuk, O. S.

TITLE: Investigation of high-aluminum alloys of the system Al - Cu -Ce

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 3, 1961, 2103 - 2106

TEXT: Two isothermal sections (at 400 and at 500°C) in the high-aluminum part of the system Al - Cu - Ce were investigated. The alloys were prepared from aluminum-000 (99.98% Al), electrolytic copper (99.99% Cu) and cerium (98.6% Ce), and analyzed by V. V. Oshchapovskiy and O. M. Pesichnyk. The specimens were kept at 500°C for five days and at 400°C (± 2°C) for ten days, respectively, and subsequently quenched in toluene. A total of 130 alloys was investigated. On 55 specimens in the range from 0 to 5% by weight of Ce and 0 to 12% by weight of Cu, the lattice constant of the solid solution in Al (ω-phase) was measured with an accuracy of ± 0.... kX (back-reflection camera with thermostat) (Figs. 1 and 2). Polished sections were prepared of all alloys, and the microhardness was determined with an instrument of the ПМТ-3 (PMT-3) type at 50 g load. Fig. 3 shows the isothermal section at 500°C in the aluminum corner of the system. For the isothermal section at 400°C, alloys with a higher cerium content (up to 65% by weight) and

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APPROVED FOR RELEASE: Tuesday, September 17, 2002 CIA-RDP86-00513R0005

copper content (up to 60% by weight) were also investigated (Fig. 4). Three ternary compounds were studied more closely: T_1 lies close to Al_8Cu_4Ce; the narrow range of its homogeneity corresponds to 19.2% by weight of Ce, 42.5% by weight of Cu and 38.3% by weight of Al. The microhardness amounts to 386 ± 10 kg/mm^2. The compound is in equilibrium with the ω-phase, Al_2Cu, T_2, T_3 and other compounds not closely investigated. The T_2 compound corresponds to Al_4CuCe, its homogeneity range lies at 43.7 to 47.2% by weight of Ce, 19.0 to 23.9% by weight of Cu and 3[illegible] to 37.0% by weight of Al. The microhardness amounts to 317 ± 10 kg/mm^2. T_2 is in equilibrium with the ω-phase, Al_4Ce, Al_2Ce, T_1, T_3 and other phases not closely investigated. The T_3 compound is in equilibrium with T_1 and T_2. The composition lies close to T_1: 25.6% by weight of Ce, 44.2% by weight of Cu and 30.2% by weight of Al. There are 5 figures and 4 references: 3 Soviet and 1 non-Soviet. The reference to English-language publication reads as follows: M. Hansen, K. Anderko. Constitution of binary alloys, 1958.

Card 2/6

26264
S/078/61/006/009/003/010
B107/B101

Investigation of high-aluminum alloys ...

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. Iv. Franko (L'vov State University imeni Iv. Franko)

SUBMITTED: July 26, 1960

Fig. 1: Lattice constant of the solid solution of copper and cerium in aluminum with 1% by weight of Ce.
Fig. 2: Lattice constant of the solid solution of copper and cerium in aluminum. Legend: a) For alloys with 5% by weight of Ce; b) for alloys with 5% by weight of Cu.
Fig. 3: Isothermal section through the Al-corner of the Al - Cu - Ce system at 500°C (% by weight). Legend: 1) Monophase alloys; 2) diphase alloys; 3) triphase alloys.
Fig. 4: Composition of the alloys produced and results of the phase analysis in the Al - Cu - Ce system at 400°C (% by weight). Legend: 1) Monophase alloys; 2) diphase alloys; 3) triphase alloys.

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S/021/62/000/004/010/012
D299/D502

AUTHORS: Hladyshevs'kyy, Ye.I., Markiv, V.Ya., and Kurz'ma, Yu.B.

TITLE: New ternary compounds with $Mg_6Cu_{16}Si_7$-type structure

PERIODICAL: Akademiya nauk URSR. Dopovidi, no. 4, 1962, 481-483

TEXT: A number of ternary systems of transition metals with Si and Ge, as well as the systems Li-Mn-Si and Li-Cu-Si, were investigated by the method of X-ray structural analysis. The existence of 16 new ternary compounds with $Mg_6Cu_{16}Si_7$ structure, was established. The alloys were prepared by melting pure metals in crucibles of aluminum oxide, in a Tammann furnace (hydrogen- or argon atmosphere). The X-ray structural analysis was carried out in Debye- and Preston chambers. The $Mg_6Cu_{16}Si_7$ type structure (the space group $Fm3m-O_h^5$) belongs to a class of structures with large coordination-number. The lattice constant of the alloy $Sc_6Mn_{16}Si_7$ (of face-centered cubic structure) was found to be 11.46 Å. The symmetry of the lattice, the

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S/021/62/000/004/010/012
D299/D302

New ternary compounds with ...

composition of the alloy, and the lattice constant, are characteristic of structures of $Mg_6Cu_{16}Si_7$-type. This shows that a ternary compound of such structure is formed in the system Sc-Ni-Si. Isostructural ternary compounds were also found in the systems R-Ni-Ge (R = Sc, Ti, Zr, Nb, Hf, Ta), R-Co-Si (R = Ti, Zr, Nb, Hf, Ta), R-Co-Ge (R = Zr, Nb, Hf, Ta), with the composition $R_6X'_{16}X''_7$ (where X' = Ni, Co; X'' = Si, Ge). The composition and the lattice constants of the compounds are listed in a table. Investigation of these compounds is still continuing. In view of the composition of the compounds, it can be assumed that the atoms of the R-component (R = Sc, Ti, Zr, Nb, Hf, Ta) occupy the position of Mg in structures of $Mg_6Cu_{16}Si_7$-type, (coordination number 7). If the atomic radius of the R-component is larger than 1.64 Å, no compounds of $Mg_6Cu_{16}Si_7$-structure, are formed. In the systems R-Ni-Si (R = Y, La, Ce), R-Ni-Ge (R = V, Cr, Y, Mo, La, W, Re), Sc-Co-Si, Sc-Co-Ge, Ti-Co-Ge, Li-Ni-Si and Li-Cu-Si, no ternary compounds of $Mg_6Cu_{16}Si_7$-type were found. There are 1 table and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc.

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New ternary compounds with ... S/031/62/000/004/010/012
D299/D302

ASSOCIATION: L'vivs'kyy derzhavnyy universytet (L'viv State University)

PRESENTED: by Academician I.S. Frantsevych, AS UkrSSR

SUBMITTED: August 12, 1961

Card 3/3

S/192/62/003/002/001/001
D267/D301

AUTHOR: Kuz'ma, Yu.B., Teslyuk, M.Yu., and Gladyshevskiy, Ye.I.

TITLE: The Laves three-component phases in the system Mn - Ni - Ge

PERIODICAL: Zhurnal strukturnoy khimii, v. 3, no. 2, 1962, 196 - 198

TEXT: In view of crystal-chemical likeness between Si and Ge the authors assumed that, when the Mn content amounts to 33.3 at.%, the system Mn - Ni - Ge contains ternary compounds possessing the Laves phase structure, just as this was found for the system Mn - Ni - Si; to verify this assumption they studied six ternary alloys containing 25, 22.5, 20, 16.7, 15 and 12 at.% of Ge, obtained by direct fusion of very pure metals in 'korundiz' crucibles in the hydrogen atmosphere, using the Tammann furnace. After annealing and hardening, the alloys were subjected to X-ray analysis (powder method). The

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The Laves three-component phases ... S/192/62/003/002/001/001

S/078/62/007/005/011/014
B101/B110

19 9206

AUTHORS: Savitskiy, Ye. M., Baron, V. V., Yefimov, Yu. V., Gladyshevskiy, Ye. I.

TITLE: Investigation of the system vanadium - molybdenum - silicon

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 5, 1962, 1117-1120

TEXT: The ternary phase diagram of the system V - Mo - Si was plotted by means of x-ray analysis, microstructural analysis, and microhardness measurement (Fig.9). Results: (1) No new ternary compounds are formed with a structure deviating from that of binary V and Mo silicides. (2) Between the isostructural compounds V_3Si and Mo_3Si, as well as V_5Si_3 and Mo_5Si_3, continuous series of solid solutions are formed in which the Si content varies by 1 to 2%. The range of the homogeneous ternary solid solution $(V,Mo)_5Si_3$ extends above 1500°C toward higher Si contents. (3) The ternary eutectic $(V,Mo)_5Si_3$ - $(Mo,V)Si_2$ - $(V,Mo)Si_2$

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Investigation of the system...

forms at 1600°C. At 800°C, the solubility of V in $MoSi_2$ is below 1 at%. (4) The phase $(V,Mo)_5Si_3$ melts congruently, the phase $(V,Mo)_3Si$ forms by peritectic reaction. (5) The unlimited solubility of Mo in V is much reduced by introduction of Si. With about 2 at% Si in V-Mo alloys rich in V, a solid solution on the basis of $(V,Mo)_3Si$ is observed as second phase. (6) Alloying with Si improves greatly the stability of V to oxidation, but reduces considerably its plasticity. With 0% Si, the plasticity on compression δ = 30%; with 20 at% Mo + Si, $\delta \sim 6\%$. There are 9 figures and 1 table.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy imeni A. A. Baykov); L'vovskiy gosudarstvennyy universitet (L'vov State University)

SUBMITTED: June 12, 1961

Fig. 9. Isothermal section of the system V-Mo-Si at 800°C.
Legend: Am.% = at%.

Investigation of the system...

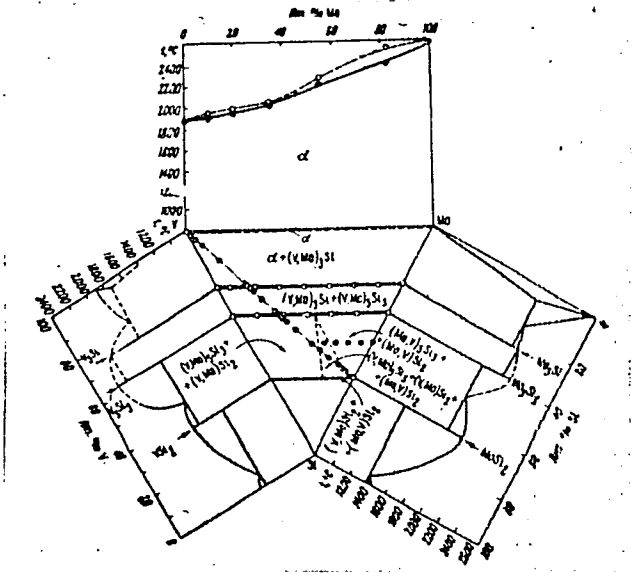

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Fig. 9

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

AUTHOR: Gladyshevskiy, Ye. I., Kripyakevich, P. I.

TITLE: Intermetallic compounds with a β-uranium type (sigma-phase) structure

SOURCE: Vysokotemperaturnyye metallokeramicheskiye materialy. Inst. metalloker. i spets. spl. AN Ukr.SSR, Kiev, Izd-vo AN Ukr.SSR, 1962, 148 - 150)

TEXT: There are 31 systems of intermetallic compounds with a β-uranium type structure, the so called sigma-phase. The components of these systems are on the one hand elements of sub-groups 4 - 6 of the periodic system, and on the other hand sub-groups 7 - 10. A similar distribution of components is also shown by type α-Mn and Cr_3Si compounds. Considering the similar structure of Cr_3Si and sigma phases, it can be expected that the latter will also be formed by elements of sub-groups 11 - 15. This hypothesis was confirmed by the authors who discovered a compound with a sigma phase structure in ternary system Cr-Ni-Si. None of its binary systems contains a sigma phase, but system Cr-Ni shows a tendency for the formation of such phases, and in system Cr-Si a Cr_3Si type

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compound is being formed. The discovered sigma phase composition is $Cr_{13}Ni_{4.5}Si_3$; its constants are: a = 8.769, c = 4.561 kX, c/a = 0.52. A second compound was revealed in Nb alloys with Al, obtained at the Institute of Metallurgy AS USSR by Ye. M. Savitskiy and V. V. Baron. A radiographical analysis shows that the Nb_2Al compound belongs to the sigma phase type. Its constants are: a = 9.95; c = 5.15 kX; c/a = 0.52. This is the first sigma phase containing Al. The distribution of atoms in its structure corresponds to a complete order (the Nb atoms are in locations with coordination number 15 and 14 and Al-atoms with coordination number 12). Crystallochemically the compounds approach the Nb_3Al (Cr_2Si type) compounds and sigma phases in systems Nb-Re and Nb-Pt. Moreover, the authors have discovered a number of ternary systems whose radiographs resemble those of sigma phases but are not identical with them.

S/226/62/000/003/005/012
E073/E363

Author: Gladyshevskiy, Ye.I.

Title: The crystal structures between two transition metals and silicon of the compounds and the phase equilibria in their ternary systems

Periodical: Poroshkovaya metallurgiya, no.4, 1962, 46-47

Abstract: Thirty nine ternary intermetallic compounds were discovered during this investigation of phase equilibria in a number of ternary systems. The latter may be divided into two groups: the first contains systems in which ternary intermetallic compounds with closely related crystal lattices are formed. These systems contain either iron, nickel or cobalt. The other systems belong to the second group and form continuous solid solutions but no ternary intermetallic compounds. Some physical properties of the above compounds are given. There are 3 tables.

Association: L'vovskiy gosudarstvennyy universitet im. I. Ya. Franko (The Lvov Government

Card 1/2

S/2.0/62/000/004/006/012
1003/1203

The crystal structures...

University [illegible]

Submitted: January 15, 19[illegible]

Card 2/2

S/132/62/003/004/002/002
I042/I242

AUTHORS: Gladyshevskiy, E.I., Kripyakevich, P.I., and Kuz'ma, Yu.B.

TITLE: Crystal structures of ternary compounds with low silicon content in the systems Cr - Ni - Si and Cr - Co - Si

PERIODICAL: Zhurnal strukturnoy khimii, v. 3, no.4, 1962, 414-423

TEXT: This investigation is a follow up of a previous work by the authors where ternary compounds were obtained in similar systems with Mn in place of Cr. It is also intended to clarify the conditions of formation of phases with the β-U structure. The 148 alloys in the two systems, containing no more than 25 mole % Si, were heated in vacuum at 800°C for 150 hrs or at 1100°C for 30 hrs. They were then studied with the aid of a Debye and Preston X-ray powder cameras and an MIM-6 (MIM-6) microscope. In the Cr - Ni - Si system at 800°C a new phase was found with the approximate formula $Cr_6Ni_{2.8}Si_{1.2}$ and a powder pattern consistent with the β-U

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S/192/62/003/004/002/002
I042/I242

Crystal structures of ternary compounds...

structure of $Cr_{4.25}Fe_{4.25}Si_{1.5}$. None of the compounds studied had the Laves (i.e., $MgZn_2$, $MgCu_2$, or $MgNi_2$) structure. At 1100°C the the compound $Cr_{6.5}Ni_{2.5}Si$ was observed, with space group P4/mnm and lattice constants a = 8.769, c = 4.561 kX, c/a = 0.520. The structure was found by comparing the observed intensities with those of several possible atomic distributions. Another compound with the formula $Cr_3Ni_5Si_2$ and the β-Mn structure or the Au_4Al superstructure was observed at 800°C. It has the space group $P2_13$ and a = 6.108 kX. In the Cr - Co - Si system two ternary compounds were found at 800°C. One, $Cr_5Co_5Si_2$, has the β-Mn structure or a Ti_5Re_{24} superstructure, space group I43d, a = 8.687 kX. The other is $Cr_{3.5}Co_{4.0}Si_{2.5}$ with a structure related to that of β-U. Again no Laves phases were encountered. There are 9 tables.

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S/192/62/003/004/002/002
I042/I342

Crystal structures of ternary compounds...

ASSOCIATION: Lvovskiy gosudarstvennyy universitet im. Iv. Franko
(Lvov State University im. Iv. Franko)

SUBMITTED: June 26, 1961

Card 3/3

SAVITSKIY, Ye.M.; BARON, V.V.; YEFIMOV, Yu.V.; GLADYSHEVSKIY, Ye.I.

System vanadium - molybdenum - silicon. Zhur.neorg.khim. 7 no.5:1117-1125 My '62. (MIRA 15:7)

1. Institut metallurgii imeni A.A.Baykova i L'vovskiy gosudarstvenny, universitet.
(Vanadium-molybdenum-silicon alloys)

SAVITSKIY, Ye.M., TYLKINA, M.A.; TSYGANOVA, I.A.; GLADYSHEVSKIY, Ye.I.; MULYAVA, M.P.

Phase diagram of the hafnium - rhenium system. Zhur.neorg.khim. 7 no.7: 1608-1610 Jl '62. (MIRA 16:3)

1. Institut metallurgii imeni A.A.Baykova i L'vovskiy gosudarstvennyy universitet imeni I.Franko.
(Hafnium-rhenium alloys)

GLADYSHEVSKIY, Ye. I.; KRIPYAKEVICH, P. I.

"Some regularities of the crystal chemistry of the rare-earth intermetallic compounds."

report submitted for 6th Gen Assembly, Intl Union of Crystallography, Rome, 7 Sep 63.

Lab of Inorganic Chemistry, L'vov I. Franko State Univ.

S/021/62/000/010/007/008
D251/D307

AUTHORS: Markiv, V.Ya., Hladyshevs'kyy, Ye.I., and Kuz'ma, Yu.B.

TITLE: New ternary compounds with a structure of the type $MnCu_2Al$

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 10, 1962, 1329 - 1331

TEXT: The authors discuss ternary systems A-B-C, where A and B are transition metals and C are elements of the IIIB, IVB and VB groups of the periodic table. The aim of the present work is to investigate analogous systems in which C is gallium. Compounds of this type are found, where A = Ti, V and B = Fe, Co, Ni. The structure of the compounds resembles that of $MnCu_2Al$, and the lattice constants are given in tabular form. The space group is $Fm_3m - O_h^5$. It is shown that in the systems Ta(Nb, Mo) - Fe(Co, Ni) - Ga, and Sc(Zr) - Ni - Ga, similar compounds do not exist. The results are obtained using x-ray methods on alloys of metals of purity not less than 99.9 %, fused in an atmosphere of inert gas at 600°C. There are 5 tables.
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S/021/62/000/010/007/008
D251/D307

New ternary compounds with a ...

ASSOCIATION: L'vivs'kyy derzhavnyy universytet (L'viv State University)

PRESENTED: by I.M. Frantsevych, Academician

SUBMITTED: January 15, 1962

Card 2/2

L 19908-63 EWP(q)/EWT(m)/EWP(B)/BDS AFFTC/ASD JD/JG

S/0226/63/000/001/0040/0048

ACCESSION NR: AP3005811

AUTHORS: Kuz'ma, Yu. B. ; Lakh, V. I. ; Yarkiv, V. Ya; Stadnyk, B. I. ; Glady*shevskiy, Ye. I.

63
62

TITLE: X-ray diffraction analysis of [illegible] W-Re-C system

SOURCE: Poroshkovaya metallurgiya, no. 1, 1963, 40-48

TOPIC TAGS: W-Re-C, x-ray diffraction

ABSTRACT: Thirty-four alloys of the W-Re-C system containing 1-40 atomic % of C were investigated by x-ray diffraction. The effect of C content on the composition and properties of W-Re thermocouples was studied. Alloy samples weighing 30 g were prepared from the following powdered materials: tungsten carbide (6.09 at. % of C), tungsten - 99.98%, rhenium - 99.8%, and carbon (lampblack) 99.9%. The phase equilibriums of cast alloys and of the alloys annealed at 2000, 1500, 1000 and 800C were determined. It was established that Re and alpha-W_2C form a continuous series of solid solutions. Two new compounds were found: a ternary compound W_3Re_2C with a cubic lattice akin to that of beta-Mn (space group $P4_132-O^7$, a = 6.859 ± 0.002 Å); and a ternary carbide (WRe)C formed at temperatures above 2500C with a cubic face-centered lattice of the type NaCl (space group $Fm3m - O_h^5$, a = 4.063 ± 0.001 Å).

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L 19908-63

ACCESSION NR: AP3005811

Preliminary data concerning the existence of a rhombic low-temperature version of W_2C were obtained. Orig. art. has: 4 tables and 5 figures.

ASSOCIATION: L'vovskiy ordena Lenina gosuniversitet im. I. Ya. Franko (L'vov State University)

SUBMITTED: 21May62 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: ML NO REF SOV: 006 OTHER: 009

Card 2/2

L 18650-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG/JXT(IJP)
ACCESSION NR: AP3004864 S/0021/63/000/007/0886/0888 69 68

AUTHOR: Glady*shevs'ky*y, Ye. I.

TITLE: Crystal structures of silicon-rich silicides of rare-earth elements of the yttrium group 27 29

SOURCE: AN UkrSSR. Dopovidi, no. 7, 1963, 886-888

TOPIC TAGS: silicon-rich rare-earth silicide, rare-earth silicide, terbium silicide, holmium silicide, erbium silicide, thulium silicide, lutetium silicide, dysprosium silicide, ytterbium silicide, crystal structure, lattice constant, cell volume

ABSTRACT: The crystal structures of Si-rich alloys containing 33.3, 40.0, and 50.0 at% R, where R is Tb, Dy, Ho, Er, Tm, Yb, or Lu, have been studied. The alloys, vacuum melted from components 94.9 to 99.99% pure, were brittle, gray in color, and had a metallic luster. Microscopic examination showed alloys containing 40.0 at% rare-earth elements to be the nearest to homogeneous alloys. X-ray diffraction pattern examination established the existence of Tb-Si, Ho-Si, Er-Si, Tm-Si, and Lu-Si compounds with a hexagonal

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L 18650-63
ACCESSION NR: AP3004864

structure of the $AlBi_2$ type and confirmed the existence of Dy-Si and Yb-Si compounds with a similar structure. All the compounds most probably have defective structures (designated RSi_{2-n}) with an Si content close to 60 at%. The lattice constants of RSi_{2-n} compounds vary: a, from 3.745 to 3.847 Å and c, from 4.050 to 4.146 Å for $LuSi_{2-n}$ and $TbSi_{2-n}$, respectively. Accordingly the elementary cell volume decreases monotonically from 53.1 to 49.2 $Å^3$ as the atomic number of the rare-earth metal increases; an exception — a Yb cell volume slightly larger than that of Tm (50.5 and 50.2, respectively) — is associated with the tendency of Yb to form compounds in which it is a bivalent element. In alloys containing 33.3% R, most of the RSi_{2-n} compounds are in equilibrium with Si. The $Dy-Si_{2-n}$ and $Ho-Si_{2-n}$ compounds are in equilibrium with the more Si-rich compounds of the α-$GdSi_{2-n}$ type (a = 4.03 Å, b = 3.92 Å, c = 13.29 Å). The article was presented by Academician I. M. Frantsevy*ch of the Academy of Sciences URSR. Orig. art. has: 2 tables.

ASSOCIATION: L'vivsky*y derzhavny*y universy*tet (Lvov State University)

SUBMITTED: 02Jul62 DATE ACQ: 20Aug63 ENCL: 00

SUB CODE: MA NO REF SOV: 001 OTHER: 009

Card 2/2

ACCESSION NR: AT4035160 S/0000/63/000/000/0067/0070

AUTHOR: Glady*shevskiy, Ye. I.; Kripyakevich, P. I.; Cherkashin, Ye. Ye.; Zarechnyuk, O. S.; Zalutskiy, I. I.; Yevdokimenko, V. I.

TITLE: Crystalline structure of intermetallic compounds of rare-earth elements

SOURCE: AN SSSR. Institut geokhimii i analiticheskoy khimii. Redkozemel'ny*ye elementy* (Rare-earth elements). Moscow, Izd-vo AN SSSR, 1963, 67-70

TOPIC TAGS: rare earth, transition element, geochemistry, binary alloy, ternary alloy, intermetallic compound, alloy crystal structure, zinc, aluminum, germanium

ABSTRACT: The existence of compounds of the rare-earth elements with metals, their composition and the type of crystalline structure were investigated, with particular attention to the similarities and differences between the various rare-earth elements, as well as between these elements and their neighbors in the periodic table. The systems of La, Ce, Pr, Nd, Dy, Er, Gd, Tu and Y with magnesium were investigated first. It was found that there are no complete analogies in these systems, but that the system Y/Mg is closer to Er/Mg than to the La/Ce system. In the systems of rare-earth elements with zinc, aluminum and germanium, new compounds were found, the structural parameters of which are given. It is interesting that the system Y/Al differs from the system Er/Al and is similar to the system with

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ACCESSION NR: AT4035160

La, Ce, Pr and Nd. Compounds of La and Ce with Ge have rhombic modifications in addition to the tetragonal one. Systems with cobalt and iron were also investigated and their parameters are given In the La/Fe system no compounds are formed. A weakening tendency to form compounds with a decreasing order number of rare-earth elements is also found in many systems with manganese. Finally, the ternary systems cerium-transition metal (or copper)-aluminum and cerium-aluminum-silicon were investigated and their lattice constants are given. Orig.art.has: no graphics.

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

SUBMITTED: 31Oct63	DATE ACQ: 30Apr64	ENCL: 00
SUB CODE: IC, ES	NO REF SOV: 000	OTHER: 001

Card 2/2

GLADYSHEVSKIY, Ye.I.; MARKIV, V.Ya.; KUZ'MA, Yu.B.; CHERKASHIN, Ye.Ye.

Crystal structure of certain ternary intermetallic titanium compounds.
Titan i ego splavy no.10:71-73 '63. (MIRA 17:1)

ACCESSION NR: AP4017725 S/0294/63/001/003/0449/0455

AUTHORS: Fedorov, T. F.; Glady*shevskiy, Ye. I.

TITLE: Interaction of transition metals of groups 4, 5, and 6 of the periodic system with carbon

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 3, 1963, 449-455

TOPIC TAGS: carbide, transition metal, titanium zirconium, hafnium vanadium, niobium, tantalum, chromium, molybdenum, tungsten, group 4 metal, group 5 metal, group 6 metal, atomic radius, binary system, ternary system, quaternary system, carbide structure, solid solution, crystal structure, thermodynamic properties

ABSTRACT: Binary, ternary, and quaternary systems whose components are Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, and W with carbon are considered on the basis of published data and research carried out by the authors. Tables listing the various structures of carbides of these

ACCESSION NR: AP4017725

metals and solid solutions of carbides of these metals (both continuous and limited) are presented. Phase equilibrium states of ternary systems of the metals of these groups and carbon are also given. All the data show that the phase equilibriums in the systems of transition metals of groups 4--6 and carbon, with three and more components, are due to the crystal structures and thermodynamic properties of the carbides produced in the metal-carbon binary systems, and also to interactions of the transition metals with one another (primarily their mutual solubility). The ratio of the dimensions of the atoms plays a major role in the properties of the systems. In view of the similar chemical properties of the transition metals of groups 4--6, carbon-containing ternary systems and systems with more components have low probability, with the exception of systems in which one of the components is vanadium or chromium, whose atomic radii are the smallest. Orig. art. has: 2 figures and 3 tables.

ACCESSION NR: AP4017725

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Metallurgy Institute); L'vovskiy universitet im. Iv. Franko (L'vov University)

SUBMITTED: 17May63 DATE ACQ: 23Mar64 ENCL: 00

SUB CODE: ML, PH NR REF SOV: 010 OTHER: 024

Card 3/3

KUZ'MA, Yu.B.; LAKH, V.I.; MARKIV, V.Ya.; STADNYK, B.I.; GLALYSHEVSKIY, Ye.I.

X-ray investigation of the system tungsten - rhenium - carbon.
Porosh. met. 3 no.4:40-48 Jl-Ag '63. (MIRA 16:10)

1. L'vovskiy ordena Lenina gosudarstvennyy universitet im. I.Ya. Franko.
(Tungsten-rhenium alloys--Metallography)
(Phase rule and equilibrium)

GLADYSHEVSKIY, Ye.I.; KUZ'MA, Yu.B.; KRIPYAKEVICH, P.I.

Crystal structures of the compounds Mn_3Ni_2Si, V_3Ni_2Si, Nb_3Ni_2Si, and of Cr and Ta compounds related to them. Zhur.strukt.khim. 4 no.3:372-379 My-Je '63. (MIRA 16:6)

1. L'vovskiy gosudarstvennyy universitet imeni Iv. Franko.
(Nickel-silicon alloys) (Crystallography)

GLADYSHEVSKIY, Ye.I.; EMES-MISENKO, Ye.I.

Crystal structures of silicon-rich silicides of scandium and yttrium. Zhur.strukt.khim. 4 no.6:861-864 N-D '63.
(MIRA 17:4)

1. L'vovskiy gosudarstvennyy universitet imeni Franko.

KRIPYAKEVICH, P.I.; GLADYSHEVSKIY, Ye.I.

Crystalline structures of compounds rich in beryllium in the systems Mo - Be and W - Be. Kristallografiia 8 no.3:449-451 My-Je '63. (MIRA 16:11)

1. L'vovskiy gosudarstvennyy universitet imeni I.Franko.

L 18097-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG
ACCESSION NR: AP3004096 S/0070/63/008/004/0595/0599

AUTHORS: Kripyakevich, P. I.; Gladyshevskiy, Ye. I.; Zarechnyuk, O. S.; Yevdokimenko, V. I.; Zalutskiy, I. I.; Frankevich, D. P.

TITLE: Some patterns in the crystal chemistry of intermetallic compounds of rare-earth metals

SOURCE: Kristallografiya, v. 8, no. 4, 1963, 595-599

TOPIC TAGS: crystal chemistry, rare earth , morphotropic series, isostructural series, lattice, atomic number

ABSTRACT: The authors have used data from the literature as well as their own experimental work to study the intermetallic compounds of rare-earth metals. The aspects studied include isostructure, morphotropy, dependence of lattice constants on atomic number, and the formation of tertiary compounds. In view of inadequate data on isostructural compounds, the exact character of such series cannot be predicted, but it is thought unlikely that complete isostructural series will be found for the rare earths (i.e., series including all the rare earths). The compounds will most probably form a morphotropic series of identical compositions

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or a morphotropic series of varying compositions. In most morphotropic series, beginning with some particular rare earth, a certain structural type gives way to another, as occurs at the boundary between the cerium and yttrium groups. Such series are commonly polymorphous. Successive changes in atomic number lead in some series to changes in both composition and structure. The atomic radius, which does not change consistently with increase in atomic number, is an effective characteristic in determining isostructural and morphotropic series. Compounds of certain structural types that are absent in double systems may show up in tertiary or quaternary systems. An example is the existence of compounds of Th_2Zn_{17} and $ThMn_{12}$ in the system Ce-Mn-Al, although they are absent in the system Ce-Mn. They exist in the related double systems Ce-Fe and Th-Mn. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. I. Franko (L'vov State University)

SUBMITTED: 14Mar63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 014 OTHER: 007

GLADYSHEVSKIY, Ye.I., KRIPYAKEVICH, P.I., FRANKEVICH, D.P.

Crystalline structure of rare earth metal compounds containing beryllium(RBe_{13}). Kristallografiia 8 no.5:732-739 S-O '63. (MIRA 16:10)

1. L'vovskiy gosudarstvennyy universitet im. I.Franko.

GLADYSHEVSKIY, Ye.I.; TELEGUS, V.S.; MARKIV, V.Ya.

Crystalline structure of the compound Ta_5Ga_3. Kristallografiia 8 no.6:921-923 N-D'63. (MIRA 17:2)

1. L'vovskiy gosudarstvennyy universitet imeni Iv. Franko.

L 12598-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3003479 S/0078/63/008/007/1673/1677

AUTHOR: Altunina, L. N.; Glady*shevskiy, Ye. I.; Zarechnyuk, O. S.; Kolobnev, I. F.

TITLE: Physico-chemical analysis of the system Al-Si-Ce in the region of 0-73% by weight of Ce

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 7, 1963, 1673-1677

TOPIC TAGS: Al, Si, Ce, s-ray analysis

ABSTRACT: The joint solubility of silicon and cerium in aluminum is studied. In equilibrium with a solid solution of the aluminum-base alloy, there is besides Si and Al_4Ce, a compound X and a solid solution of aluminum in $CeSi_2$. The approximate composition of compound X is 35 at. % Al, 45 at. % Si, 20 at. % Ce (19 w % Al, 25 w % Ce). X-ray analysis of the solid solution Ce $(Si, Al)_2$ indicated that its structure is related to type Alpha-$ThSi_2$. Maximum content of aluminum in solid solution $Ce(Si,Al)_2$ is 20-22 wt%. Orig. art. has: 6 figures.

Card 1/2 Lvov State Univ.