USSR

UDC 621.315.592:546.28

CHETYRKINA, N.A., KARACHENTSEVA, Z.V., MITROFANOV, V.V., DEDEGKAYEV, T.T., BELOV, N.A., ERLIKH, R.N., VASYUTINA, Z.V.

"Carbon Insertion In Epitaxial Layers Of Silicon And Effect Of Growth Conditions On Their Formation"

Elektron.tekhnika. Nauch.-tekhn.sb. Poluprovodn.pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1971, Issue 1(58), pp 47-50 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B79)

Translation: A study is made of the defectiveness of epitaxial layers of Si connected with a high carbon content. It is shown that in the initial state epitaxial layers grown by hydrogen reduction of tetrachlorated silicon have a microuniformity characteristic of the presence of finely-divided insertions of the second phase. In the process of heat treatment at 1150° C in an oxygen atmosphere, a decrease takes place of the density of microdefects and an increase of separation of the second phase containing carbon and oxygen. The results are presented of tests of preparation of epitaxial layers with a reduced carbon content. 6 ref. Summary.

1/1

USSR

UDC 666.113.621'431'47'41'33'32'28

KOSTANYAN, K. A., SARINGYULYAN, R. S., KHERUNTSYAN, V. I., BELOV, N. I., OGANEZOVA, R. S., and UL'YANOV, V. V.

"Glass"

USSR Author's Certificate No 366157, Filed 29 Jan 71, Published 16 Jan 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar (a) 73, Claim No 1620354/29-33)

Translation: A glass including SiO_2, CaO, ZnO, Na_2O, Al_2O_3, BaO and K_2O, distinguished by the fact that in order to decrease the spectral absorption in the ultraviolet region it contains the above components in the following quantities, weight %: SiO_2 67-76, CaO 1.5-1.2, ZnO 1-4, Na_2O 7-15, Al_2O_3 0.5-5, BaO 0.5-5, K_2O 2-12 and furthermore SnO 0.2-2.0.

1/1

USSR

UDC 548.31

POLYANSKAYA, T. M., BORISOV, S. V., BELOV, N. V., Institute of Inorganic Chemistry, Siberian Department, Academy of Sciences of the USSR

"The Key Role of Analysis of Intercation Distances in Oxygen Compounds With Heavy Cations (High Atomic Numbers)"

Moscow, Kristallografiya, Vol 18, No 6, Nov/Dec 73, pp 1141-1156

Abstract: This is a survey and critical analysis of experimental data on the intercationic distances E-E in the structures of oxygen compounds -- tungstates and molybdites -- with the participation of cations of groups I-V of the periodic table, as well as an analysis of distances E-R and R-R ($E=W^{6+}$, Mo^{6+}, and R represents rare-earth elements and Y) in a number of rare-earth compounds. The paper demonstrates the use of "tabular" intercationic distances for determining the anion part in structures with heavy and multiply charged cations.

1/1

USSR

UDC: 548.735.46

KUZ'MIN, E. A., BOCHKOVA, R. I., SAF'YANOV, Yu. N., GOLOVACHEV, V. P., and BELOV, N. V.

"Systematic Analysis of the Paterson Function on the Basis of Crystal Symmetry"

Moscow, Kristallografiya, vol 18, No 4, 1973, pp 681-688

Abstract: This paper, bearing the subtitle "Principles of Rhombus Degeneration in the Vector Systems of Lower Syngony Crystals," is the fifth installment of a series bearing the general title given above. The function of the present installment is to consider cases of the degeneration of rhombi for variants of a particular cut, in Fedorov groups of crystals having lower syngonies with three and a family of symmetry elements. The degeneration of rhombi in Fedorov groups with a single symmetry element was examined in an earlier paper (E. A. Kuz'min, et al, Sb. Patersonovskiye metody rasshifrovki struktur -- Collection of Works on Paterson Methods of Structure Interpretation -- "Shtiintsa," Kishinev, 1972). The results obtained in that article are here extended to groups with several such elements. The authors thank V. V. Ilyukhin for his participation in the discussion of the results.

1/1

USSR

UDC: 548.5 (2)

TSEYTLIN, M. N., PLAKHOV, G. F., LOBACHEV, A. N., POPOLITOV, V. I., SIMONOV, M. A., and BELOV, N. V.

"Investigating Crystallization in the Hydrothermal System of GeO_2-Sb_2O_3-HF-H_2O"

Moscow, Kristallografiya, vol 18, No 4, 1973, pp 836-839

Abstract: An investigation is conducted into the crystallization conditions in the GeO_2-Sb_2O_3-HF-H_2O system by the hydrothermal method. The purpose of this investigation is two-fold: first, to fill in the gaps of knowledge concerning the interaction chemistry of germanium dioxide and antimony trioxide in the presence of a solution at high temperatures and pressures; second, to obtain all possible single crystals with no analogs in nature because of their potential value as objects of study with regard to structure and physical characteristics. The experiments were conducted with a charge consisting of GeO_2 and Sb_2O_3 copper lined autoclaves with periodic action. The results of the examination of the crystallization in the system are given individually for each temperature jump in the range of 400-550° C, the jumps being made in 20-45° intervals. Photographs of the crystals are shown,

1/2

USSR

UDC: 548.5

(2)

TSEYTLIN, M. N., et al, Kristallografiya, vol 18, No 4, 1973, pp 836-839

and a table of interplanar distances for $Sb_2Ge_2O_7$ crystals is given.

2/2

Crystals & Semiconductors

USSR UDC: 548.735.46

BIYUSHKIN, V. N., BELOV, N. V., Institute of Crystallography, Academy of Sciences of the USSR, Mordov State University

"Structure-Localizing Cross Sections of the Doubled Patterson Function of the Second Kind"

Moscow, Kristallografiya, Vol 18, No 3, May/Jun 73, pp 492-496

Abstract: The introduction of two independent symmetry transformations to set the vector parameters of the doubled Patterson function defines the cross section which contains the representations of the structure in a fixed atom and in other atoms arranged in an analogous manner relative to the given elements of symmetry or pairs which are similar to them. The fixation of two elements considerably restricts the admissible regions for the reflecting atoms as compared with cross sections of the first kind.

USSR

UDC: 548.735.46

KUZ'MIN, E. A., GOLOVACHEV, V. P., and BELOV, N. V.

"System Analysis of the Patterson Function on the Basis of Crystal Symmetry"

Moscow, Kristallografiya, vol 17, No 3, 1972, pp 477-483

Abstract: This paper, subtitled "Using Peak Rhombs for Determining Structural Fragments," is the second part of a work the initial section of which was published in the same journal noted above (3, 3, 1958, p 269). The subject of the series is the analysis of the Patterson function based on fundamental and vector systems of segments, through which a fragment of the structure of 2k atoms, where k is the coordinate of the atoms, is obtained. The use of peak rhombs, as described in this paper, is a more graphic way of representing bond peaks. It is noted that the conclusions of this paper are applicable to arbitrary symmetries, although the detailed analysis it presents is for Fedorov groups of lower syngony. The paper describes the method for localizing the peak rhombs, through which the coordinates of pairs of nonequivalent atoms with ordinary n-significance can be determined, and discusses fundamental and satellite peak rhombs. The authors are associated with the Gorkiy Physicotechnical Research Institute.

1/1

USSR UDC: 548.33

GRANADCHIKOVA, B. G., SMIRNOVA, N. L., BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"Polymorphic Transitions in the System of Structural Types of Elements"

Moscow, Kristallografiya, Vol 17, No 1, Jan/Feb 72, pp 117-130

Abstract: The authors consider family relationships between structural types on the basis of polymorphic transitions of simple substances -- elements. The α-Fe-Cu-Mg triangle lies at the base of the structural system of elements. Transitions from alpha iron to the other two structural types and from the copper type to the magnesium structural type are considered. In spite of gaps due to lack of experimental data, the general scheme fits the picture of the origin of structural types and the relations between them. Five illustrations, bibliography of twelve titles.

1/1

USSR

UDC: 548.736.4

BELOKONEVA, Ye. L., IVANOV, Yu. A., SIMONOV, M. A., BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"Crystal Structure of Cadmium Orthogermanate $Cd_2[GeO_4]$"

Moscow, Kristallografiya, Vol 17, No 1, Jan/Feb 72, pp 217-219

Abstract: The authors determine the crystal structure of synthetic germanate of cadmium. From the lattice parameters and interplane distances, it is established that the compound is an analog of γ-Ca_2SiO_4. The assumed formula of Cd_2GeO_4 was later confirmed by chemical analysis. The interatomic distances for cadmium orthogermanate are calculated and the coordinates of the basis atoms are compared for calcium orthosilicate and cadmium orthogermanate. The results are tabulated. It is found that an olivine-like band is repeated in the cadmium orthogermanate crystal structure. Each oxygen atom is simultaneously the vertex of 3 Cd-octahedra and one Ge-tetrahedron, and 3 of the 6 edges of the tetrahedron are shared by Cd-octahedra. One figure, four tables, bibliography of two titles.
1/1

USSR

UDC 548.735.46

ILYUKHIN, V. V., BELOV, N. V., Institute of Crystallography, Academy of Sciences USSR

"Probability Approach to Estimating the Appearance of Key Peaks on a Patterson Function Background (A New Approach to the Patterson Function)"

Moscow, Kristallografiya, No. 6, Nov/Dec 71, pp 1134-1139

Abstract: A probability approach to the Patterson function is developed which gives a fairly reasonable estimate of the probability of distinguishing key Patterson vectors on the general background of the picture of interatomic interactions depending on the simplest characteristics of atoms mutually combining in the structure. It is shown that one can determine, on the basis of the height of a peak appearing in the Patterson synthesis, with what probability this peak corresponds to a certain given interatomic interaction. By assigning a probability or confidence limit for the localization of an interatomic vector, it is then possible to estimate its amplitude corresponding to this probability. This new probability approach to the Patterson function of distinguishing the

USSR

ILYUKHIN, V. V., BELOV, N. V., Kristallografiya, No. 6, Nov/Dec 71, pp 1134-1139

signal at the noise level is said to solve concisely the problem of detecting different vectors on a Patterson background and to make their use more valid as keys in interpreting a crystal structure. Structures of the following crystals are analyzed as examples: Lomantite, Na_2ZrSiO_5, and Y_2SiO_5.

2/2

USSR

UDC 548.736.6

PETRUNINA, A. A., ILYUKHIN, V. V., and BELOV, N. V., Academician, Institute of Crystalography of the USSR Academy of Sciences, Moscow

"Crystal Structure of Tinaxite=$NaK_2Ca_2TiSi_7O_{19}(OH)$"

Moscow, Doklady Akademii Nauk SSSR, Kristallografiya, Vol 198, No 3, 1971, pp 575-578

Abstract: The authors study the crystal structure of a new natural silicate of titanium, sodium, potassium, and calcium. A table is given for the base atoms of tinaxite along with the following graphs: 1) The xz-projection of tinaxite structure. An infinite wall with respect to two measurements consisting of three types of octahedrons: Na, Ti, and a double number of Ca. The wall splits into pilasters (each consisting of two columns), one of pure Ca-octahedrons and the other of alternating pairs of Na- and Ti-octahedrons. 2) An idealized tinaxite silicon-oxygen radical band of parallel and converged chains: wollastonite and vlasovite. 3) A tinaxite band in a natural state with a re-entrant angle between the two components. 4) An xy-projection of the structure of tinaxite. The translationally identical walls are shown with the end planes of the columns: pilasters of double

USSR

PETRUNINA, A. A., et al., Doklady Akademii Nauk SSSR, Kristallografiya, Vol 198, No 3, 1971, pp 575-578

Ca-columns and pilasters with alternating Na- and Ti-pairs. Silicon-oxygen bands can be seen in the left cell, while large K cation fillers are seen in the right. The authors thank A. A. Voronkov and Yu. A. Pyatenko for allowing them the use of their experimental material and thus making possible the decoding of this complex and unusual silicate. They also thank B. A. Maksimov for his assistance. Original article: one table, four figures, and six bibliographic entries.

2/2

USSR UDC 548.1

BELOV, N. V., and KUNTSEVICH, T. S., Gor'kiy Physicotechnical Research Institute

"Maximal Symmetry Point Groups in R3 and R4"

Moscow, Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 1022-1023

Abstract: The article considers the question whether both "tops" (cubic and hexagonal) of a three-dimensional crystal world converge in a four-dimensional crystal space; i.e., whether the maximal point groups O_h and D_{6h} are subgroups of some four-dimensional symmetry point group. The answer is obtained by considering four maximal symmetry point groups in R4 and comparing them with maximal groups in R3 (in the symbols of A. C. HURLEY). It is found that if the group O_h is a subgroup of the first four-dimensional group (of order 1152), the group D_{6h} will be a subgroup of the next two four-dimensional maximal groups (of order 288 and order 96). Hence it follows that the two three-dimensional crystallographic "tops" O_h and D_{6h} have no common origin in a space of four dimensions.

1/1

USSR UDC 548.736.6

GANIYEV, R. M., ILYUKHIN, V. V., and BELOV, N. V.

"Crystal Structure of Ca Hydrosilicate -- Phase Y = $C_6S_3H \equiv Ca_6[Si_2O_7][SiO_4](OH)_2$"

Moscow, Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 893-898

Abstract: In the triclinic cell $a = 6.85$, $b = 6.95$, $c = 12.90$ Å, $\alpha = 90^045'$, $\beta = 97^020'$, $\gamma = 98^015'$, $Z = 2(C_6S_3H = 6CaO \cdot 3SiO_2 \cdot H_2O)$. The structure was deciphered by the multiple peak method. The main building block is a portlandite-like trellis wall of Ca polyhedrons separating the cell in a 2:1 ratio. There are paired Ca ribbons in the wider separating walls, individual columns in the narrow walls running in the direction of the a axis. Identical ribbons are bound by diortho groups $[Si_2O_7]$, columns by single orthotetrahedrons $[SiO_4]$. Thus, the formula of phase Y of the composition C_6S_3H $6CaO \cdot 3SiO_2 \cdot H_2O = Ca_6Si_3O_{12} \cdot H_2O$ evolves into $Ca_6[Si_2O_7][SiO_4](OH)_2$.

1/1

USSR UDC 548.735.46

KUZ'MIN, E. A., GOLOVACHEV, V. P., and BELOV, N. V., Gor'kiy Physicotechnical Research Institute

"Systematic Analysis of Patterson Function on the Basis of Crystal Symmetry. I. Vector Systems of Sections"

Moscow, Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 875-881

Abstract: An earlier article by the authors extended the peak triple theorem to cover twofold symmetry elements. The representations of this article are generalized in the present article for the case of arbitrary symmetry. A systematic analysis procedure which makes the fullest use of Patterson function properties for symmetric crystals is the simultaneous consideration of the peaks of two connectives and the peaks of their interaction, as a result of which it is possible to combine Patterson peaks into pairs of rhombuses for each symmetry operation. Each symmetry element of the space group is characterized by "its own" rhombus of peaks, which occupies a characteristic position in the vector system. The centers of the rhombuses retain the plane and

USSR

KUZ'MIN, E. A., et al., Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 875-881

linear concentrations inherent in the given Fedorov group. This makes it possible to use the rhombuses of peaks for a clearer determination of the space group of a crystal from its Patterson function.

2/2

USSR

UDC 548.736.6

RASTSVETAYEVA, R. K., SIMONOV, V. I., and ACADEMICIAN BELOV, N. V., Institute of Crystallography, USSR Academy of Sciences, Moscow

"Crystal Structure of Lomonosovite $Na_5Ti_2[Si_2O_7][PO_4]O_2$"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 1, 1 Mar 71, pp 81-84

Abstract: Lomonosovite was discovered in 1936 by V. I. Gerasimov. Although considerable research has been devoted to the properties of this mineral, the results have remained largely unsatisfactory. The present research resulted in only slightly changed parameters for the triclinic unit cell of lomonosovite: a = 5.44, b = 7.163, c = 14.83 Å, $\alpha = 99^\circ$, $\beta = 105^\circ$, and $\gamma = 90^\circ$. The authors describe the structure of lomonosovite in detail and illustrate schematically in two figures the projection of the lomonosovite structure on the zz and yz planes in Pauling polyhedra. They describe the leaching out of lomonosovite and the problems involved therein. The basic structure of lomonosovite places it in the same series as several other minerals, but it differs from these minerals with respect to filling of the space between the walls. 2 figures, 1 table, bibliography of 17 titles.

1/1

USSR

UDC 548.735.46

GOLYSHEV, V. M., SIMONOV, V. I., and BELOV, N. V., Institute of Crystallography, USSR Academy of Sciences

"Symmetry of Functions Separating the Structure From the Patterson Distribution"

Moscow, Kristallografiya, Vol 16, No 4, Jul-Aug 71, pp 703-707

Abstract: The authors have compiled tables of symmetry groups of functions separating the second rank as a function of symmetry of functions of interatomic vectors and type of displacement vector. They show that the separation function, which is constructed by using vectors of a fixed elementary atom of the structure up to all other atoms associated with it by the elements of the group symmetry, possesses a symmetry that is no less than the symmetry of the Fedorov crystal group. Table 1 lists the symmetry of separation functions of the second rank: triclinic, monoclinic, and rhombic symmetry groups of the Patterson function. Tables 2 and 3 give the same functions of second rank, respectively, for tetragonal and hexagonal symmetry groups. Table 4 lists the cubic symmetry groups for the Patterson function of the same rank of separation functions. The article contains 4 tables and a bibliography of 6 titles.

1/1

USSR UDC 548.736.6

RUMANOVA, I. M., GANDYMOV, O., BELOV, N. V.

"The Crystalline Structure of Veatchite and Its Relationship to the Structure of p-Veatchite"

Moscow, Kristallografiya, Vol. 16, No. 2, 1971, pp 286-291.

Abstract: Veatchite (A-veatchite) and p-veatchite are two natrual strontium borates with identical chemical composition $4SrO \cdot 11B_2O_3 \cdot 7H_2O$ and similar physical properties: they differ in the sizes of unit cells and spatial groups. The structures of both minerals consist of identical borax layers $Sr_2[B_5O_8(OH)]_2 \cdot B(OH)_3 \cdot H_2O$, with each unit cell (both in p-veatchite and in veatchite) intersecting two such layers, coupled with hydrogen bonds. The differences in the structures result from different mutual placement of the layers: if we assume the first layers of p-veatchite and veatchite to correspond, the second layer of veatchite will be a mirror reflection of the second layer of p-veatchite in the plane perpendicular to the c axis (plane of location of hydrogen bonds).

1/1

USSR UDC 548.736.6

PUSHCHAROVSKIY, D. Yu, BAATARYN, T., POBEDIMSKAYA, Ye. A., and BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"The Crystal Structure of the Zn-Analog Milarite"

Moscow, Kristallografiya, Vol 16, No 4, Jul-Aug 71, pp 721-724

Abstract: The authors determine the structure of synthetic Zn-milarite $K(Mn,Fe)_2(Zn,Mn)_3Si_{12}O_{30}$, which serves as another example of the close crystallochemical similarity between Zn and Be. They examine the possibility of the equilibrium $Mn^{2+} + Fe^{3+} \rightleftarrows Mn^{3+} + Fe^{2+}$ and on this basis solve the question as to the Fe distribution. Figure 1 shows the axonometric projection of Zn-milarite crystals; Figure 2 is a line diagram of powder patterns of Zn- and Be-milarites. The authors' findings are graphically illustrated in four tables: Table 1 gives the results of a chemical analysis of Zn-milarite made at the Institute of Geology and Geophysics of the Siberian Branch of the USSR Academy of Sciences; Table 2 compares the powder patterns of Zn- and Be-milarites; Table 3 lists the coordinates of the elementary atoms in the structure of Zn-milarite; and Table 4 gives the interatomic spacings in the structure of Zn-milarite. The article contains 2 figures, 4 tables, and a bibliography of 6 titles.

1/1

USSR UDC: 548.736.6

FILIPENKO, O. S., LITVIN, B. N., POBEDIMSKAYA, Ye. A., and BELOV, N. V.

"Hydrothermal Synthesis and X-Ray of Barium Silicates"

Moscow, Kristallografiya, Vol. 15, No. 4, 1970, pp 863-865

Abstract: As opposed to similar calcium systems, which have been thoroughly researched, only one paper has been devoted to the BaO-SiO_2-H_2O system in the last 30 years. This brief communication describes experimentation performed to synthesize barium silicates for the purpose of obtaining crystals good enough for x-ray analysis. The synthesis was conducted in autoclaves with a temperature gradient of 20-30° C. The original chemical reagents were barium hydroxide and x-ray amorphous silica; the aqueous solution of $Ba(OH)_2$ had the double function of a silica solution and a supply of barium. A table is given of 17 attempts to obtain the proper composition for crystallization. The results of the x-ray analysis of the various crystal phases are given, and there is a second table of the morphological and x-ray analysis details. The authors express their gratitude to T. I. Ivanova for her assistance with the measurements.

1/1

USSR

KHARITONOV, Yu. A.; KUZ'MIN, E. A.; BELOV, N. V. (Institute of Crystallography, USSR Academy of Sciences; Gor'kiy Physics-Engineering Research Institute)

"Determination of the Crystalline Structure of Sodium Bichromate $Na_2Cr_2O_7 \cdot 2H_2O$"

Moscow, Kristallografiya; September-October, 1970; pp 942-8

ABSTRACT: The authors determined the monoclinic cell and the space group of aqueous sodium bichromate: a = 6.21; b = 10.90; c = 12.94 Å; $\beta = 95°$.

Heavy atoms of chromium were found from an analysis of the three-dimensional Patterson function. Light atoms of sodium and oxygen were localized in a series of three-dimensional syntheses of the electron density. The structure is characterized by 77 independent position parameters. A crystallochemical description of the structure consisting of chains of sodium octahedrons connected in the framework by diortho groups of Cr_2O_7 is given.

1/1

1/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SYNTHESIS AND SOME PROPERTIES OF CA NA SILICATE SINGLE CRYSTALS -U-

AUTHOR-(05)-GANIYEV, R.M., KUZNETSOV, V.A., LIDER, V.V., ILYUKHIN, V.V., BELOV, N.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 398-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SILICATE, CALCIUM COMPOUND, SODIUM COMPOUND, CHEMICAL SYNTHESIS, SINGLE CRYSTAL, PHASE ANALYSIS, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0606 STEP NO--UR/0363/70/006/002/0398/0399

CIRC ACCESSION NO--AP0105589

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105589

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONDITIONS FOR THE FORMATION OF CA NA SILICATE PHASES IN THE CAO MINUS SIO SUB2 MINUS NAOH SYSTEM WERE STUDIED. THE PHASES 4CAO.5SIO SUB2 .2NA SUB2 O AND NA SUB2 CASI SUB3 O SUB8 WERE PRESENT IN THIS SYSTEM, AS DETD. BY ELECTRON MICROPROBE ANAL. THE LATTICE PARAMETERS AND INTERPLANAR SPACINGS OBTAINED FOR THESE PHASES AGREE WELL WITH PREVIOUSLY REPORTED DATA. THE PHASE 4CAO.5SIO SUB2 .2NA SUB2 O PPTS. OUT IN THE FORM OF COARSE (1-3 MM) AND WELL FORMED SINGLE CRYSTALS OF PRISMATIC HABIT; IT HAS A D. OF 2.872 G-CM PRIME3. ITS OPTICAL CONSTS. WERE ALSO DETD. DTA DATA SHOW THE PRESENCE OF AN ENDOTHERMIC EFFECT AT 980DEGREES, WHICH IS NOT ACCOMPANIED BY THE PPTN. OF GASEOUS PRODUCTS OR WT. LOSSES. THIS INDICATES THAT THE 4CAO.5SIO.2NA SUB2 O PHASE DOES NOT CONTAIN STRUCTURAL WATER AND THAT IT EXHIBITS A POLYMORPHIC TRANSITION AT SIMILAR TO 980DEGREES.

UNCLASSIFIED

USSR UDC 548.736.5

KHARAKH, YE. A., CHICHAGOV, A. V., and BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"Crystal Structure of $NaSmGeO_4$"

Moscow, Kristallografiya, Vol 15, No 5, Sep-Oct 70, pp 1064-1065

Abstract: $NaSmGeO_4$ is obtained in the Na_2O-Sm_2O_3-GeO_2-H_2O system by the method of hydrothermal crystallization at a 40 percent concentration of NaOH, T = 450° C, and P = 1000 atm. The parameters of the rhombic primitive unit cell are $a = 5.27 \pm 0.02$, $b = 11.70 \pm 0.03$, $c = 6.50 \pm 0.02$ Å. Fedorov group $Pbn2_1$. Structurally $NaSmGeO_4$ resembles olivine-like (monticellite-like) $NaYSiO_4$ (coordination number Sm = 6, octahedron) rather than its nearest silicate analog $NaSmSiO_4$ (coordination number Sm = 6 + 2 = 8, trigonal prism with two "glued-on" semioctahedra).

1/1

USSR UDC 548.736.6

AVETISYAN, YE. I., CHICHAGOV, A. V., and BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"Crystal Structure of NaGd Orthosilicate"

Moscow, Kristallografiya, Vol 15, No 5, Sep-Oct 70, pp 1066-1067

Abstract: NaGd orthosilicate is obtained from the Na_2O-Gd_2O_3-SiO_2-H_2O system by the method of hydrothermal crystallization at a 40 percent concentration of NaOH, T = 450° C, P = 1000 atm. Tetragonal body-centered cell parameters: a = 11.63, c = 5.41 Å. Corresponding to the diffraction symbol 4 / mI - / are three Fedorov groups; viz., I4 / m, I4, and $I\bar{4}$ (no piezo effect). The cell dimensions, type, and symmetry confirm the authors' previous conclusion that NaGd silicate is isostructural with $NaSmSiO_4$.

The purpose of the present study was to refine the coordinates of the atoms and to elucidate the position of H_2O molecules in

USSR

AVETISYAN, YE. I., et al., Kristallografiya, Vol 15, No 5, Sep-Oct 70, pp 1066-1067

the structures of synthetic sodium-rare earth silicates of the B type. The article lists the coordinates of the basis atoms and atomic spacings in the structure of $NaGdSiO_4$. The formula for tetragonal B-type silicates should include one-fourth of an H_2O molecule; viz., $NaTRSiO_4 \cdot 0.25H_2O$. The article cites a special analysis by M. A. SHISHKOVSKAYA (Moscow State University) on the H_2O content of NaGd silicate.

2/2

PHYSICS
Crystals & Semiconductors

USSR

UDC 548.736.6

PONOMAREV, V. I., KHEYKER, D. M., and BELOV, N. V., Moscow State University imeni M. V. Lomonosov, Institute of Crystallography of the Academy of Sciences USSR

"Crystal Structure of $4CaO \cdot 3Al_2O_3$ -- Aluminate Analog of Sodalite"

Moscow, Kristallografiya, Vol 15, No 5, Sep-Oct 70, pp 918-921

Abstract: Single crystals of cubic $4CaO \cdot 3Al_2O_3$, obtained by dehydration of rhombic $4CaO \cdot 3Al_2O_3 \cdot 3H_2O$ crystals, were subjected to x-ray analysis in a DRON-1 diffractometer. Fedorov group $I\bar{4}3m$, $Z = 2$, $a = 8.86 \pm 0.01$ Å. The structure was found to be $4CaO \cdot 3Al_2O_3 = 2[Ca_4(Al_2O_4)_3O]$, which is an ideal, purely aluminate analog of sodalite. Formally the isostructural isomorphism can be represented by the following scheme:

1/2

USSR

PONOMAREV, V. I., et al., Kristallografiya, Vol 15, No 5, Sep-Oct 70, pp 918-921

$8Na^{+1} + 6Si^{+4} + 2Cl^{-1} \rightarrow 8Ca^{+2} + 6Al^{+3} + 20^{-2}$. The decipherment of the structure of $4CaO \cdot 3Al_2O_3$ confirms the existence of a new compound in the $CaO-Al_2O_3$ system.

2/2

USSR

UDC 548.736

KUZ'MIN, E. A., ILYUKHIN, V. V., and BELOV, N. V., Academician, Gor'kiy State University imeni N. I. Lobachevskiy, Institute of Crystallography of the Academy of Sciences USSR, Moscow

"Certain Regularities in the Position of Maxima in Separation Functions in the Presence of Multiple Peaks in the Vector System (General Case, Fedorov P1 Group)"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 5, 11 Feb 71, pp 1080-1083

Abstract: It is shown that the classical Wrinch-Buerger method of identifying point vector systems and finding the base system should be considered as only the first part of a general algorithm for identifying vector systems. The algorithm developed by Wrinch and Buerger assumed the absence of overlapping and multiple peaks in the vector system. This is written analytically in the form

$$(\mathbf{r}_n - \mathbf{r}_m) - (\mathbf{r}_q - \mathbf{r}_p) \neq 0,$$
$$\mathbf{r}_{mn} \neq \mathbf{r}_{pq}.$$

The inequalities (1) and (1') are a particular case of the more general condition

USSR

KUZ'MIN, E. A., et al., Doklady Akademii Nauk SSSR, Vol 196, No 5, 11 Feb 71, pp 1080-1083

$$(r_j - r_i) - \{(r_n - r_m) - (r_q - r_p)\} \neq 0, \quad (2)$$

$$r_{ij} \neq r_{mn} - r_{pq}. \quad (2')$$

This condition is necessary and sufficient for separation of the base system from the vector system according to the algorithm. Success in identification of the vector system is then guaranteed and no extraneous points arise in the separation functions if vectors satisfying conditions (1) and (2) are selected as shift vectors. The condition of only one common point (at the ends) of two segments $i_1 = i_2 = i$ leads to a triangle, the separation of which is written in the form of a system of two equations

$$r_{ij_1} = r_{mn} - r_{p_1q_1},$$

$$r_{ij_2} = r_{mn} - r_{p_2q_2}.$$

This system gives a condition for the separation of points mn upon shifts by the vectors r_{ij_1} and r_{ij_2}. This system of equations is generalized for the case of polygons of any rank.

2/2

USSR

UDC 548.736.6

TREUSHNIKOV, E. N., ILYUKHIN, V. V., and BELOV, N. V., Academician, Institute of Crystallography, Academy of Sciences USSR, Moscow

"The Crystalline Structure of Na, Zr-Oxyorthosilicate $Na_2ZrSiO_5 = Na_2O \cdot ZrSiO_4$"

Moscow, Doklady Akademii Nauk SSSR, Vol. 190, No. 2, 1970, pp 334-337

Abstract: A structural investigation was made of single crystals of Na_2ZrSiO_5 obtained from V. G. Chukhlantsev of Ural'sk Polytechnical Institute imeni S. M. Kirov. Interest in sodium-zirconium silicates was prompted by the increased demands on heat resistant enamels, ceramics, and adsorbents. X-ray analysis showed the parameters of a monoclinic cell to be: a = 13.92, b = 5.46, c = = 13.70 Å; β = 120°. The coordinates of the basal atoms and the interatomic distances calculated on the basis of these coordinates are presented in a table. Both independent Zr atoms were localized in an almost perfect oxygen octahedron. The deviations of the six ZrO distances from the sum of the ion radii did not exceed 10%. The basic structural features of Na_2ZrSiO_5 are the chain-columns of Zr-octahedra extending along the short b-axis and connected with one another by the common vertices $[ZrO_5]_\infty$. In a complete cell there are

USSR

TREUSHNIKOV, E. N., et al, Doklady Akademii nauk SSSR, Vol. 190, No. 2, 1970, pp 334-337

four Zr-columns which separate into two crystallographically independent pairs, one along the 2_1 axis with $x = 0$ and the other along the 2_1 axis with $x = \frac{1}{2}$. The different orientation of the planes in which the Zr-octahedra of alternating height are in the two types of columns is another feature of the structure.

B

USSR

UDC 548.736.6

GANIYEV, R. M., ILYUKHIN, V. V., and BELOV, N. V., Academician, Institute of Crystallography of the Academy of Sciences USSR, Moscow

"Crystalline Structure of the Cement Phase $Y = Ca_6[Si_2O_7][SiO_4](OH)_2$"

Moscow, Doklady Akademii Nauk SSSR, Vol. 190, No. 4, 1 Feb 70, pp 831-834

Abstract: The *Y*-phase is one of the most stable products of the hydration of Ca-silicates and arises in the hydrothermal treatment of mixtures of β-C_2S, γ-C_2S, and $C_2SH(A)$ silicates and of more elementary mixtures such as $CaO + SiO_2$, CaO + quartz, $Ca(OH)_2 + SiO_2$, $CaCO_3$ + quartz, etc. The *Y*-phase is stable over a broad range of temperatures up to 800° and pressures up to 2000 at. X-ray structural analysis showed that a triclinic cell has the following parameters: $a = 66.85$, $b = 6.95$, $c = 12.90$ Å; $\alpha = 90°45' \pm 15'$; $\beta = 97°20' \pm 20'$; $\gamma = 98°15' \pm 15'$; $Z = 2Ca_6Si_3O_{12}\cdot H_2O$. Structural diagrams of the *Y*-phase are given and explained. It is noted that the *Y*-phase represents a starting Ca-silicate and along with epidote, zoisite, and $K_2Mn_2Zn_4[SiO_4]_2[Si_2O_7]$ is one of the few silicates in which ortho- and diorthosilicate groups exist in the structure.

1/1

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200320016-5"

B

USSR

KLEVTSOVA, R. F.; BELOV, N. V. (Institute of Inorganic Chemistry, Siberian Department of the USSR Academy of Sciences)

"Variation of a Single Wolframite Motive in $LiYb(WO_4)_2$, $LiFe(WO_4)_2$, and $NaFe(WO_4)_2$ Structures"

Moscow, Kristallografiya; January-February, 1970; pp 43-6

Δ Δ Δ

ABSTRACT: The structure of LiYb wolframate is determined, and structural data obtained is compared with other $LiFe(WO_4)_2$ and $NaFe(WO_4)_2$ binary wolframates studied earlier. The relation in the structures of binary wolframates and $FeWO_4$ wolframite is analyzed.

The article includes three tables. Table 1 gives the coordinates of the basal atoms in the structure of $LiYb(WO_4)_2$; Table 2 gives the basic interatomic distances in the structure of $LiYb(WO_4)_2$; Table 3 lists the parameters of the monoclinic cells and Fedorov symmetry groups.

There are 7 bibliographic references.

1/1

Acc. Nr: AT0040575 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code: UR0020

B

83707w Crystal structure of sodium silicate zirconate, Na_2ZrSiO_5. Treushnikov, E. N.; Ilyukhin, V. V.; Belov, N. V. (Inst. Kristallogr., Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970, 190(2), 334–7 [Crystallogr] (Russ). Monoclinic single crystals of Na_2ZrSiO_5 have a = 13.92, b = 5.46, c = 13.70 Å; β = 120°; Z = 8, space group $P2_1/c$. The structure was solved by the Patterson and Fourier techniques and refined by the method of least squares to R = 0.131 for the 1500 nonzero reflections. The 2 independent Zr atoms are both in octahedral surroundings with Zr–O distances of 1.99–2.17 Å. The Zr octahedra are joined at the vertices to form chains in the y direction. The chains are joined together by fairly regular SiO_4 tetrahedra to form sheets in the xy plane. Three of the 4 independent Na atoms have somewhat distorted octahedral surroundings; the 4th is surrounded by 7 O atoms in the shape of a capped trigonal prism.
Mary Frances Richardson

LD

4

REEL/FRAME
19750096

18

B

USSR

BELOV, N. V.; DROBYSHEV, L. A.; et al (Moscow State University)

"Praseodymium Molybdate $Pr_2(MoO_4)_3$"

Moscow, Kristallografiya; May-June, 1970; pp 461-5

ABSTRACT: An X-ray and thermographic study of praseodymium molybdate has led to the discovery of a hitherto unknown LD-modification $Pr(MoO_4)_3$. The formation of an N-modification with heat treatment above 1060°C was established and the formation of an N-modification in the interval 732-990°C was confirmed. High-temperature roentgenography and thermography of the N-modification showed six phase transitions, two of which are accompanied by significant changes. Preliminary X-ray diffraction studies of single crystals of the N-modification $Pr_2(MoO_4)_3$ were made.

The article includes two figures and three tables. There are 8 references.

1/1

Acc. Nr: A70048314 Abstracting Service: CHEMICAL ABST. 5170 Ref. Code: 11R 0020

94169y Crystal structure of $Na_2(TiO)[GeO_4]$. Verkhovskii, V. Ya.; Kuz'min, E. A.; Ilyukhin, V. V.; Belov, N. V. (Inst. Kristallogr., Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970, 190(1), 91–3 [Crystallogr] (Russ). $Na_2(TiO)[GeO_4]$ crystals belong to the D_{4h}^7–P4/*nmm* symmetry group and have lattice parameters $a = 6.67$ and $b = 5.16$ Å; $Z = 2$. Ge is tetrahedrally spaced, having 4 Ge–O bonds equal to 1.74 Å, Na is octahedrally spaced, having 4 Na–O equal to 2.32 and 2 Na–O equal to 2.67 Å, and Ti is polyhedrally spaced having 4 Ti–O equal to 2.0, 1 Ti–O equal to 1.72, and 1 Ti–O = 3.44Å. Ti is 5-coordinated. Presumably, in the investigated compd. and its analogs, Ti behaves as a semication–semianion, and, along with tetrahedral GeO_4, it forms the 3-dimensional structure of the crystals.

HMJR

I B

1/1

REEL/FRAME
19800016

18

1/2 024 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--CRYSTAL STRUCTURE OF SYNTHETIC SODIUM YTTRIUM ORTHOGERMANATE NAY(GEO SUB4) -U-

AUTHOR-(04)-KUZMIN, E.A., MAKSIMOV, B.A., ILYUKHIN, V.V., BELOV, N.V.

B

COUNTRY OF INFO--USSR

SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 159-61

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--CRYSTAL STRUCTURE, X RAY DIFFRACTION ANALYSIS, CRYSTAL LATTICE PARAMETER, SODIUM COMPOUND, YTTRIUM COMPOUND, GERMANIUM COMPOUND, OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0783 STEP NO--UR/0192/70/011/001/0159/0161

CIRC ACCESSION NO--AP0104229

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104229

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRUCTURE OF NAYGEO SUB4, ISOMORPHOUS WITH NAYSIO SUB4, WAS DETD. BY SINGLE CRYSTAL X RAY METHODS. THE ORTHORHOMBIC LATTICE PARAMETERS ARE A 5.32, B 11.49, AND C 6.49 ANGSTROM; THE SPACE GROUP IS PBN2 SUB1; AND Z EQUALS 4. THE Y ATOM IS SURROUNDED BY 6 O ATOMS AT THE CORNERS OF AN OCTAHEDRON; Y-O DISTANCES ARE 2.25-2.44 ANGSTROM. THE NA COORDINATION POLYHEDRON CONTAINS 6 O ATOMS AT DISTANCES OF 2.24-2.65 ANGSTROM. GE IS TETRAHEDRALLY COORDINATED (GE-O EQUALS 1.66-1.81 ANGSTROM). MARY FRANCES RICHARDSON

UNCLASSIFIED

B

UDC 548.736.5

USSR

BYLICHKINA, T. I., SOLEVA, L. I., POBEDIMSKAYA, YE. A., PORAY-KOSHITS, N. A. and BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"Crystal Structures of Ba-Molybdate and Ba-Tungstate"

Moscow, Kristallografiya, Vol. 15, No. 1, Jan/Feb 70, pp 165-167

Abstract: Well faceted tetragonal crystals of $BaWO_4$ and $BaMoO_4$ were measured on the GD-1 optical goniometer. Clear crystals of $BaWO_4$ and $BaMoO_4$ of diamond brightness were obtained by the hydrothermal method at the Institute of Crystallography by L. N. Dem'yanotes. The lattice parameters of the crystals were found to be the following: for $BaWO_4$, a = 5.614±0.003 Å, c = 12.719±0.003 Å and $c:a$ = 2.26; for $BaMoO_4$, a = 5.62±0.03 Å, c = 12.82±0.03 Å and $c:a$ = 2.28. The coordinates of $BaWO_4$ and $BaMoO_4$ atoms are also given in a table. The interatomic distances of Ca-, Ba-, Sr-, and Cd-polyhedra were calculated. It was observed that the crystal structure of both crystals is of the Scheelite type.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--VARIATIONS ON A SINGLE WOLFRAMITE MOTIF IN LIYB (WO SUB4) SUB2, LIFE(WO SUB4) SUB2, AND NAFE(WO SUB4) SUB2 STRUCTURES -U-

AUTHOR--KLEVTSOVA, R.F., BELOV, N.V.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(1) 43-6

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, CHEMISTRY

TOPIC TAGS--TUNGSTEN, METAL ORE, CRYSTAL, MINERAL, TUNGSTATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0019 STEP NO--UR/0070/70/015/001/0043/0046

CIRC ACCESSION NO--AP0102119

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102119

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LIYB(WO SUB4) SUB2 CRYSTALLIZES IN THE P2-C SPACE GROUP WITH A 9.89, B 5.77 AND C 4.98 ANGSTROM, BETA 93.5DEGREES, Z EQUALS 2 AND R 0.112. CRYSTALS OF THE TITLE COMPDS. HAVE UNIT CELL DIMENSIONS VERY SIMILAR TO THE CRYSTALS OF FEWO SUB4 WITH A WHICH IS 4.73 ANGSTROM IN FEWO SUB4. THIS DOUBLE INCREASE OF THE UNIT CELL VOL. FOR THE DOUBLE SALTS CORRESPONDS TO TWICE AS MANY ZIG ZAG ARRANGED CHAINS OF WO SUB4 OCTAHEDRONS PARALLEL TO THE C AXIS IN THE UNIT CELL.

UNCLASSIFIED

USSR B UDC: 546.33'42'284

GANIYEV, R. M., KUZNETSOV, V. A., LIDER, V. V., ILYUKHIN, V. V., and BELOV, N. V., Institute of Crystallography, Academy of Sciences, USSR

"Synthesis and Certain Properties of Calcium-Sodium Silicate Single Crystals"

Moscow, Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 398-399

Abstract: The formation of calcium-sodium silicate phases is discussed, and a table illustrating their formation in the $CaO--SiO_2--NaOH$ system is given. Analysis of the first phase, using the 1KhA-3-type diffraction microanalyzer, gave the following results: CaO, 34.8%; SiO_2, 46%; Na_2O, 22%. Spectral analysis confirmed the given composition. The formula of the first phase may be written as $4CaO \cdot 5SiO_2 \cdot 2Na_2O$. The second phase of the composition $Na_2CaSi_3O_8$ was mentioned in earlier research and the given lattice parameters as well as the set of the interplanar spacings agree with the data of this study. Phase $4CaO \cdot 5SiO_2 \cdot 2Na_2O$ precipitates in the form of large, well formed single crystals of prismatic habit. The specimen features one sufficiently clearly pronounced and readily reproducible endothermic effect in the 980°C region; this effect is not attended by evolution of gaseous products and weight loss. It is suggested that the phase $4CaO \cdot 5SiO_2 \cdot 2Na_2O$ has no structural water and has a polymorphous transition in the 980°C region.

1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--CRYSTAL STRUCTURES OF BARIUM MOLYBDATE AND BARIUM TUNGSTATE -U-

AUTHOR--BYLICHKINA, T.I., SOLEVA, L.I., POBEDIMSKAYA, YE.A., PORAYKOSHITS, N.A., BELOV, N.V.

COUNTRY OF INFO--USSR

B

SOURCE--KRISTALLOGRAFIYA 1970, 15(1) 165-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CRYSTAL STRUCTURE, BARIUM COMPOUND, TUNGSTATE, X RAY DIFFRACTION, MOLYBDATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0017 STEP NO--UR/0070/70/015/001/0165/0167

CIRC ACCESSION NO--AP0102117

UNCLASSIFIED

2/2 . 015 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102117

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE CRYSTALS WERE SYNTHESIZED HYDROTHERMALLY. RESULTS OF THE GONIOMETRIC MEASUREMENTS AND UNIT CELL PARAMETERS COORDINATES OF THE ATOMS, AND INTERAT. DISTANCES OBTAINED FROM X RAY DIFFRACTION DIAGRAMS ARE GIVEN FOR BAWO SUB4, BAMOO SUB4, CAWO SUB4, SRWO SUB4, SRMOO SUB4, AND CDMOO SUB4. THE LATTICE PARAMETERS FOR THE TITLE CRYSTALS ARE A EQUALS 5.614 PLUS OR MINUS 0.003 AND C EQUALS 12.719 PLUS OR EQUAL 0.003 ANGSTROM FOR BAWO SUB4 AND A EQUALS 5.62 PLUS OR MINUS 0.03 AND C EQUALS 12.82 PLUS OR MINUS 0.03 ANGSTROM FOR BAMOO SUB4. THE INTERAT. DISTANCES IN THE BAWO SUB4 POLYHEDRON ARE CLOSE TO THOSE IN SRWO SUB4, AND THE INTERAT. DISTANCES IN BAMOO SUB4 ARE CLOSE TO THOSE IN SRMOO SUB4 AND CDMOO SUB4.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--PRASEODYMIUM MOLYBDATE PR SUB2, MOO SUB4, SUB3 -U-

AUTHOR-(02)-BELOV, N.V., DROBYSHEV, L.A.

B

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KRISTALLOGRAFIYA; MAY-JUNE, 1970, PP 461-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--SINGLE CRYSTAL, X RAY ANALYSIS, THERMAL ANALYSIS, MOLECULAR STRUCTURE, PRASEODYMIUM COMPOUND, MOLYBDATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605003/C12 STEP NO--UR/0070/70/000/000/0461/0465

CIRC ACCESSION NO--AP0139522

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--11DEC70
CIRC ACCESSION NO--AP0139522
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN X RAY AND THERMOGRAPHIC STUDY OF PRASEODYMIUM MOLYBDATE HAS LED TO THE DISCOVERY OF A HITHERTO UNKNOWN LD-MODIFICATION PR(MOO SUB4) SUB3. THE FORMATION OF AN N-MODIFICATION WITH HEAT TREATMENT ABOVE 1060 DEGREES C WAS ESTABLISHED AND THE FORMATION OF AN N-MODIFICATION IN THE INTERVAL 732-990 DEGREES C WAS CONFIRMED. HIGH TEMPERATURE ROENTGENOGRAPHY AND THERMOGRAPHY OF THE N-MODIFICATION SHOWED SIX PHASE TRANSITIONS, TWO OF WHICH ARE ACCOMPANIED BY SIGNIFICANT CHANGES. PRELIMINARY X RAY DIFFRACTION STUDIES OF SINGLE CRYSTALS OF THE N-MODIFICATION PR SUB2 (MOO SUB4) SUB3 WERE MADE. FACILITY: MOSCOW STATE UNIVERSITY.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--FOUR DIMENSIONAL BRAVAIS LATTICES -U-

AUTHOR-(02)-KUNTSEVICH, T.S., BELOV, N.V.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 215-29

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL LATTICE STRUCTURE, CRYSTAL LATTICE ENERGY, CRYSTAL SYMMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1291 STEP NO--UR/0070/70/015/002/0215/0229

CIRC ACCESSION NO--AP0124942

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0124942

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOUR DIMENSIONAL BRAVAIS LATTICES ARE DISCUSSED FROM THE VIEWPOINT OF LIMITATIONS IMPOSED BY THE MACROSYMMETRY ELEMENTS UPON THE METRIC PROPERTIES OF THE LATTICE. FOUR NEW 4 DIMENSIONAL BRAVAIS LATTICES WERE FOUND, AND 2 WERE EXCLUDED FROM THE EXISTING LIST. FACILITY: GOR'K. ISSLED. FIZ.-TEKH. INST., GORKI, USSR.

UNCLASSIFIED

USSR

UDC 548.736

GOLOVACHEV, V. P., DROZDOV, Yu. N., KUZ'MIN, E. A., and BELOV, N. V., Academician, Gor'kiy Physicotechnical Institute at Gor'kiy State University imeni N. I. Lobachevskiy

"Crystalline Structure of Fenaksite $FeNaK[Si_4O_{10}]$ ($KNaFe[Si_4O_{10}]$)"

Moscow, Doklady Akademii Nauk SSSR, Vol. 194, No. 4, 1 Oct 70, pp 818-820

Abstract: A structural study was made of the Khibinskiy mineral fenaksite- K, Na, Fe-silicate- discovered in 1959 by M. D. Dorfman. The initial model of fenaksite structure was obtained from an analysis of the three-dimensional Patterson function. Seven peaks of the Patterson function were used and it was possible to distinguish a basic system containing 11 peaks, but they could not be identified on the basis of the Patterson function. The final values for all 51 position parameters are given in the Table:

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200320016-5"

USSR

GOLOVACHEV, V. P., et al, Doklady Akademii Nauk SSSR, Vol 194, No 4, 1 Oct 70, pp 818-820

Atoms	x/a	y/b	z/c	Atoms	x/a	y/b	z/c
K	0,140	0,809	0,010	O_3	0,632	0,424	0,167
Na	0,525	0,270	0,410	O_4	0,431	0,838	0,286
Fe	0,049	0,299	0,407	O_5	0,791	0,798	0,270
Si_1	0,669	0,913	0,213	O_6	0,790	0,139	0,280
Si_2	0,220	0,631	0,270	O_7	0,033	0,629	0,405
Si_3	0,380	0,304	0,131	O_8	0,175	0,589	0,418
Si_4	0,893	0,632	0,273	O_9	0,760	0,655	0,436
O_1	0,630	0,856	0,041	O_{10}	0,251	0,102	0,237
O_2	0,294	0,457	0,133				

Figures are given showing the crystalline structure of fenaksite in polyhedra; the basic architectural component of the structure was a tubular silicon-oxygen radical $[Si_8O_{20}]_\infty$ of a new type. Similar tubular radicals were observed in narsarsukite in 1960 and in kanasite in 1969.

2/2

USSR

B

UDC 549.76

GOLOBACHEV, V. P., KUZ'MIN, E. A., KHARITONOV, Yu. A., and BELOV, N. V., Academician, Gor'kiy Research Physicotechnical Institute at Gor'kiy State University imeni N. I. Lobachevskiy, Institute of Crystallography of the Academy of Sciences USSR, Moscow

"Crystalline Structure of Potassium Tetrachromate $K_2Cr_4O_{13}$"

Moscow, Doklady Akademii Nauk SSSR, Vol. 192, No. 6, 21 Jun 70, pp 1272-1274

Abstract: $K_2Cr_4O_{13}$ crystals were grown from an aqueous solution, and two samples 0.1 × 0.2 × 0.2 mm^3 and 0.2 × 0.2 × 0.4 mm^3 covered with a protective celluloid film gave a good diffraction pattern. The parameters of an elementary cell were: a = 8.71, b = 7.75, and c = 9.37 Å; β = 93°. The coordinates of the basal atoms, 55 independent position parameters, are given in a table. The temperature correction for all atoms was 1.3 $Å^{-2}$.

1/2

USSR

GOLOBACHEV, V. P., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1272-1274

$K_2Cr_4O_{13}$. Coordinates of Basal Atoms

Атом	x/a	y/b	z/c	Атом	x/a	y/b	z/c
Cr_1	0,441	0,439	0,335	O_5	0,959	0,562	0,332
Cr_2	0,434	0,105	0,102	O_6	0,263	0,568	0,323
Cr_3	0,759	0,930	0,829	O_7	0,070	0,244	0,268
Cr_4	0,095	0,429	0,383	O_8	0,119	0,633	0,050
K_1	0,796	0,405	0,104	O_9	0,447	0,349	0,166
K_2	0,079	0,892	0,246	O_{10}	0,448	0,311	0,466
O_1	0,906	0,064	0,802	O_{11}	0,425	0,970	0,238
O_2	0,588	0,069	0,001	O_{12}	0,750	0,128	0,309
O_3	0,282	0,103	0,997	O_{13}	0,767	0,779	0,093
O_4	0,578	0,563	0,345				

Six bridge distances were identified among the Cr-O distances:

$$Cr_4 - O_6 = 1{,}91, \quad Cr_1 - O_6 = 1{,}83, \quad Cr_1 - O_9 = 1{,}75,$$
$$Cr_2 - O_9 = 1{,}96, \quad Cr_2 - O_2 = 1{,}70, \quad Cr_3 - O_2 = 1{,}84 \text{ Å}.$$

USSR B UDC 548.734

KUZ'MIN, E. A., GOLOVACHEV, V. P., Academician BELOV, N. V.
(Gorkiy Physico Technical Institute, Gorkiy State University imeni N. I. Lobachevskiy; Institute of Crystallography, Academy Sciences USSR, Moscow)

"Details of Patterson's Syntheses Directly Related to Elements of Structural Crystal Symmetry"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 192, No 1, pp 86-89

Abstract: Patterson crystallographic function peaks are of two kinds: bond peaks that determine the distance between symmetrically equivalent atoms and interaction peaks that determine the vector between differently bound atoms. A triple-peak theorem permits analysis of many structures, especially the structural elements of the second order.

A geometric procedure is developed to show the elementary system of triple peaks as a set of n segments, where n is the number of the symmetry group. The first segment connects two differently-bonded

1/2

USSR

KUZ'MIN, E. A., et al, Doklady Akademii Nauk SSSR, Vol 192, No 1, pp 86-89

atoms, and succeeding segments extend to all of the symmetry elements of this group. The vector system becomes a set of represent tions of all points of the system of the initial segment. Such a vector system is shown graphically for the space groups P1̄, P2, Pm, and others. The resulting figures are rhombuses.

The representation of Patterson peaks in vector form was found extremely useful in analyzing the structure of sodium bichromate.

The authors thank S. V. Borisov and V. V. Ilyukhin for valuable discussions concerning certain assumptions and the results obtained. Orig. art. has 2 figs. and 5 refs.

2/2

USSR B UDC 548.736.6

CHIN', KHAN, SIMONOV, M. A., BELOV, N. V.

"Crystal Lattices of Willemite $Zn_2[SiO_4]$ and Its Germanium Analog $Zn_2[GeO_4]$

Moscow, Kristallografiya, Vol 15, No 3, 1970, pp 457-460

Abstract: This article contains a discussion of results from tests run on crystals of synthetic willemite and its Ge-analog $Zn_2[GeO_4]$. The parameters of the crystals are tabulated, and the various analyses run to determine them are described. The parameters of the elementary cells were as follows: Si-willemite $a_{hex} = 13.93$, $c_{hex} = 9.31$Å, $a_{rh} = 8.63$Å, $\alpha = 107.52$, Ge-willemite $a_{hex} = 14.27$, $c_{hex} = 9.56$Å, $a_{rh} = 8.84$Å, $\alpha = 107°42'$. Fedorov group $R\bar{3}$. The lattices were resolved by the "heavy atom" with subsequent more precise definition of the coordinates of the atoms with respect to three-dimensional sets of reflections by the least squares method to $R_{hkl} = 14.3$ percent with 250 independent nonzero reflections hk0-hk6 for willemite and $R_{hkl} = 13.3$ percent with 226 reflections hk0, hk3, hk6, hk9 for its Ge-analog. The metachains $[Zn_4O_{12}]$ twist around the axes 3_1 (3_2), and they are incrusted with Si(Ge)-orthotetrahedrons. 1/2

USSR

CHIN', KHAN, et al, Kristallografiya, Vol 15, No 3, 1970, pp 457-460

Each O atom is in the center of an almost equilateral trian le Zn-Zn-Si(Ge), and each cation is in the tetrahedral enclosure f O atoms. The interatomic distances calculated by the terminal coordi ates are as follows: Si-O = 1.58-1.68; Ge-O = 1.74-1.78; Zn-O = 1.89-2.02 Å. They agree with those already encountered. Willemite and its Ge-analog fill up the isostructural series: $Li_2/BeF_4/-Li_2/WO_4/-Li_2/MoO_4/-Be_2/SiO_4/-Zn_2/SiO_4/$ $(Zn, Mn)_2/SiO_4/-Zn_2/GeO_4/$. If the crystal chemical role of Si and Zn is equalized, the lattice can be considered skeletal, made of tetrahedrons with the formula $(Zn, Si)_3O_4$. If it is classified with respect to the silicon oxide radical, then $Zn_2/SiO_4/$, jointly with phenakite $Be_2/SiO_4/$, form a special group of hexagonal orthosilicates which differ greatly from the rhombic orthosilicates of the olivine group.

2/2

USSR

B

UDC 548.736.6

CHERNOV, A. N., MAKSIMOV, B. A., ILYUKHIN, V. V., Academician BELOV, N. V.

"Crystalline Structure of a Monoclinic Modification of K,Zr Di-orthosilicate = $K_2ZrSi_2O_7$"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 6, 1970, pp 1293-1296

Abstract: Crystals of this type were obtained in the examination of the K_2O-ZrO_2-SiO_2 system by V. G. Chukhlantsev and Yu. M. Polezhayev of the Ural Polytechnical Institute imeni S. M. Kirov. In a cell of the crystal having the periods a = 9.54 and b = 14.26 (with an even pseudo-period of b' = b/2) c = 5.60Å, γ = 116°31', Z = 4 units. The Fedorov group C_{2h}^5 = $P2_1/b$ is determined by quenching. Analysis of the three-dimensional Paterson function P(uvw) detected heavy atoms of Zr and medium atoms of Si and K, the coordinates of the last two being taken as the starting points in the synthesis of the electron density $\rho(x,y,z)$. Two tables are supplied in the article, the first giving final values of the basic atom coordinates, the second giving the interatomic distances computed from the data of the first. Also presented are two sketches of the $K_2ZrSi_2O_7$

1/2

USSR

CHERNOV, A. N., et al, Doklady Akademii Nauk SSSR, Vol 193, No 6, 1970, pp 1293-1296

structure in the xy and yz projections and a sketch of the $Na_2ZrSi_2O_7$ structure in the xy projection. The authors note that it is worthwhile to make a comparison of the two structures of $K_2ZrSi_2O_7$ and $Na_2ZrSi_2O_7$ with that of $Na_3Sc/Si_2O_7/$, where the 4-valent Zr is replaced by the almost identical ion radius of the 3-valent scandium.

2/2

USSR

B

UDC 548.0

SAMUS', I. D., and BELOV, N. V., Academician, Kishinev Polytechnic Institute imeni S. Lazo

"Crystalline Structures of Cobaltic Dioximines With Inner-sphere Selenocyanate and Thiocyanate Groups $NH_4[Co(DH)_2(SeCN)_2]\cdot 3H_2O$ and $NH_4[Co(DH)_2(SCN)_2]\cdot 3H_2O$"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 2, 1970, pp 333-336

Abstract: Results of the termination of the atomic structure of cobaltic dioximines with inner-sphere selenocyanate and thiocyanate groups $NH_4[Co(DH)_2(SeCN)_2]\cdot 3H_2O$ and $NH_4[Co(DH)_2(SCN)_2]\cdot 3H_2O$ confirm A. V. ABLOV's supposition that in Co dioximines where the trans-influence of the thiocyanate group is stronger, bonding of the latter group with Co is effected through S. The authors thank A. V. ABLOV for providing the initial substances for their study and for discussing the results.

1/1

USSR

UDC 548.735.46

KUZ'MIN, E. A., GOLOVACHEV, V. P., ILYUKHIN, V. V., BELOV, N. V., Gor'kiy State University, Crystallography Institute of the USSR Academy of Sciences

"Systematic Analysis of the Patterson Function Based on Crystal Symmetry. IV. Interpretation of the Patterson Syntheses of Low-Syngony Crystals"

Moscow, Kristallografiya, Vol 18, No 1, 1973, pp 54-62

Abstract: An algorithm is presented in analytical form for isolation of the rhombuses of the peaks, matching the basic and satellite rhombuses, and also recording the base segment in the basic system for low-syngony crystals. The algorithm makes it possible to check for the presence of all peaks joined into rhombuses and generated by 2k atoms in the Patterson function. The final step is isolation of the singularity which completely defines the origin in the given specific Fedorov group with respect to the initial segment. A necessary condition is the presence of all peaks of the rhombuses. If at least one of the vectors (peaks) is absent, the final point simply is not isolated. In the centered lattices several points are isolated, but they are related by the corresponding translations. If only the Roentgen group is known, the analysis is

1/2

USSR

KUZ'MIN, E. A., et al., Kristallografiya, Vol 18, No 1, 1973, pp 54-62

carried out within the framework of the Fedorov groups entering into it, and during the analysis process the true one is established. Inasmuch as after isolating the rhombuses the position of the initial (base segment) is obtained, the coordinates of the 2k atoms are established. Their position must be used to isolate the entire structure by the M_{2k} rank minimization function.

USSR UDC (621.317.77+621.317.619)(088.8)

AGROSKIN, V. I., BELOV, N. Ya., KHANDOGIN, B. N., KHOVANSKIY, Yu. P.

"A Device for Determining the Time Position of Radio Pulses and Measurement of the Phase of the Carrier Frequency"

USSR Author's Certificate No 265987, filed 10 Nov 67, Published 1 Jul 70 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7A234 P)

Translation: This Author's Certificate introduces a device for determining the time position of radio pulses and measuring the phase of the carrier frequency. The device contains a single-channel superhet receiver with a phase meter and phase detector at the output. Also incorporated in the device is a tracking system for measuring the time position. To ensure the possibility of operation under conditions of jitter, and to improve the reliability of the device, the heterodyne input of the radio receiver is connected to a source of antiphase heterodyne voltages through an operating mode selector and three electronic switches, the controlling inputs of two of the switches being connected to the outputs of the tracking system through a gating pulse commutator, while the controlling input of the third switch is connected to these outputs directly. The receiver output is connected to the phase meter and phase detector through an operating mode selector like that connected in the heterodyne circuit. Resumé.

1/1

1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--INCREASE IN THE EFFICIENCY OF PLANTS FOR PRODUCING ALKYL PHENOLS USING A KU2 CATION EXCHANGER, OPERATING EXPERIENCE -U-
AUTHOR-(03)-BELVO, P.S., LIBINSHTEYN, I.YE., YEGOROV, N.M.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(4), 17-20

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ALKYLPHENOL, CHEMICAL PRODUCT PRODUCTION, LUBRICANT ADDITIVE, ION EXCHANGE RESIN, AUTOMATIC CHEMICAL PROCESS CONTROL/(U)KU2 ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1977 STEP NO--UR/0065/70/015/004/0017/0020

CIRC ACCESSION NO--AP0125566

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125566

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ALKYL PHENOLS WERE USED TO PREP. OIL ADDITIVES. THE PLANT WAS RECONSTRUCTED FOR OPERATING CONTINUOUSLY. THE PROCESS WAS AUTOMATED, INCREASING THE EFFICIENCY BY 2.5 TIMES AND OBTAINING ALKYL PHENOLS OF CONST. QUALITY. A FLOW SHEET IS PRESENTED. FACILITY: MINKHGP, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.394.542

BELOV, P. V., KIRILLOV, N. YE., CHERKUNOV, A. I., Active Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Noiseproofness of Spaced Reception in the Presence of Fading Noise"

Moscow, Radiotekhnika, Vol 27, No 1, 1972, pp 77-79

Abstract: The noiseproofness of spaced reception of a signal under the simultaneous effect of fading concentrated noise and fluctuation noise is analyzed. Experimental and theoretical results are presented showing that the system for reception of a fading signal against a background of fading and fluctuation noise with spacing and in the presence of subsequent coherent addition of the signals of the spacing branches (and also self-tuning shortwave antenna arrays with the same operating principle) is an effective means of improving the noiseproofness of the reception. For standard reception conditions in the shortwave range when the ratio of the mean energies of the signal and noise is 0.1-0.05, a system with $n = 20$ insures an error probability of $P_{error} \sim 10^{-2}$. In contrast to reception of a fading signal against a background of fluctuation noise when an increase in the number of branches N above 3-5 does not lead to further improvement of the noiseproofness and, consequently, is inexpedient,

1/2

USSR

BELOV, P. V., et al., Radiotekhnika, Vol 27, No 1, 1972, pp 77-79

in the investigated case of reception of a signal against a background of fluctuation noise and fading noise, a significant gain in noiseproofness is observed to N = 20. Further increase in the number of branches is expedient.

2/2

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--DOSE DISTRIBUTIONS IN ECCENTRIC ROTATION GAMMA IRRADIATION -U-

AUTHOR-(04)-BELOV, S.A., KAVESHNIKOVA, S.V., SIZOV, P.P., RATNER, T.G.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 5, PP 86-93

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--GAMMA IRRADIATION, RADIOTHERAPY, RADIATION DOSAGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0370 STEP NO--UR/0241/70/015/005/0086/0093

CIRC ACCESSION NO--AP0121058

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121058

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE CONTAINS A METHOD OF CALCULATION OF DOSE FIELDS IN ECCENTRIC ROTATION GAMMA IRRADIATION ON ROTATION GAMMA APPARATUS WITH A 75 CM RADIUS OF ROTATION IN A HOMOGENOUS CYLINDRICAL PHANTOM 30 CM IN DIAMETER. THE REGULARITIES OF ALTERATION OF THE POSITION OF THE MAXIMAL DOSE REGION DEPENDING UPON THE ANGLE OF ROTATION, WIDTH OF STATIC FIELD AND ECCENTRICITY. FACILITY: DOZIMETRICHESKAYA LABORATORIYA MOSKOVSKOY GORODSKOY BOL'NITSY NO2 AND SEKTOR ISTOCHNIKOV IZLUCHENIYA I DOZIMETRII INSTITUTA OBSHCHEY GENETIKI AN SSSR.

UNCLASSIFIED

USSR UDC 621.357.7:669.236(088.8)

BELOV, S. F., GAMOCHKINA, V. A., LAVROV, I. I., SINITSYN, N. M.

"Method of Electrochemical Deposition of Ruthenium"

USSR Author's Certificate No 316752, filed 24 Mar 70, published 22 Dec 71 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L315P)

Translation: A procedure is patented for electrochemical deposition of Ru from an electrolyte based on sulfaminol and the complex salt of ruthenium. The procedure is distinguished by the fact that in order to obtain a uniform fine crystalline film, ammonium nitrosopentachlororuthenate is introduced as the complex Ru salt, and the process takes place at 20-70°, D_c 0.5-10 amps/dm^2. The electrolyte contains the following (in grams/liter): sulfaminol 40-50, ammonium nitrosopentachlororuthenate (on the metal) 0.5-4.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--GASOMETRIC DETERMINATION OF THE COMPOSITION ON ALUMINUM RARE EARTH METAL ALLOYS -U-

AUTHOR-(02)-BELOV, S.F., BELSKAYA, T.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 282-3

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL ANALYSIS, RARE EARTH METAL, ALUMINUM ALLOY, CESIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0611 STEP NO--UR/0153/70/013/002/0282/0283

CIRC ACCESSION NO--AT0137696

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137696

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CE CONTENT OF AL-CE ALLOYS CONTG. 0.5-28.5PERCENT CE IS DETD. WITH AN ERROR OF PLUS OR MINUS 2.2PERCENT RELATIVE TO GRAVIMETRIC ANAL. BY DETG. THE EVOLUTION OF H GASTROMETRICALLY WHEN REACTED 15-20 MIN WITH 20 ML OF 1:2 HCL-0.15-0.20 G SAMPLE OF ALLOY. A SIMPLE VOLUMETRIC APP. AND THE METHOD OF CALCN. ARE DESCRIBED. FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

BELOV, S.I.

Medical Service

J-9605

From the history of military medicine.

131

SO: Military Medical Journal, Nov 1970

UDK 61:91(091)

MATERIAL ON THE HISTORY OF MEDICO-GEOGRAPHIC STUDIES OF BYELORUSSIA BY MILITARY PHYSICIANS

Dozent, Colonel, Med. Ser., S. I. Belov

The territory of Byelorussia had been the scene of intense military operations over a period of many centuries. Its land was repeatedly invaded by hordes of foreign interventionists and the people of Byelorussia — together with the army — were forced to carry on a lengthy armed struggle. In this, the state of health of the military personnel and the organization of medical services in the army were significantly affected by the specifics of the natural, socio-economic and medico-sanitary conditions in Byelorussia. All this encouraged military physicians to study the medico-geographic characteristics of this territory. They described in detail the climatic and sanitary-hygienic factors affecting various areas of Byelorussia and the influence of these factors upon the health both of the military personnel and of the civilian population. They also examine the experience of the medical service in the army both in peacetime and during the war.

After reunification with Russia (1793 - 1795), garrisons of Russian troops were stationed on Byelorussian territory, having been transferred here from the central regions of the country. The stationing of military units in towns and localities with fairly low sanitary conditions, resulted in the outbreak of mass diseases among the soldiers. This forced medical workers to study carefully the conditions of housing, water sources and food supply both for the military personnel and for the civilian population, and to determine the influence of natural and medico-sanitary factors upon the state of health of the soldiers. For this reason, early medico-geographical studies describing inhabited localities in Byelorussia during the first part of the 19th century, were prepared specifically by military physicians.

The experience of the work of the Russian army's medical service during the Patriotic War of 1812 and the beginning of the publication of the Military Medical Journal in 1823, contributed a great deal to the stepping up of medico-geographic research. It was the Military Medical Journal which first published in its pages the first monographs by military physicians containing a medico-topographical description of Brest-Litovsk (N. Ya. Chernobiyev, 1835), the epidemics of Byelostok and Grodno, medico-geographical notes on the Mogilev province, etc. Published systematically were also reports by hospital physicians and medical workers regarding diseases among soldiers stationed on the territory of Byelorussia and Poland, as well as accounts of diseases among military personnel treated in the military hospitals of Brest (Shreyber, 1837), Byelostok (I. R. Kranikhfel'd, 1847), etc. The incidence of diseases among the soldiers was attributed by military physicians to the natural conditions in the area, the weather, and other external factors, as well as to the special conditions under which the troops had to live and work while being engaged in extensive operations of military construction in various areas of Byelorussia.

During the second half of the 19th century, military physicians produced meaningful descriptions of a number of inhabited localities in Byelorussia, where military garrisons were stationed. They cited

USSR UDC 621.762

BELOV, S. V., Candidate of Technical Sciences, Docent, KARTUYESOV, O. G., Engineer, POLYAYEV, V. M., Candidate of Technical Sciences, Docent

"Concerning the Limit of Applicability of the Law of Laminar Filtration in Porous Metals"

Moscow, Izvestiya Vysshkikh Uchhebnykh Zavedeniy -- Mashinostroyeniye, No 2, 1971, pp 79-83

Abstract: The article deals with the question of the upper limit of applicability of the law of laminar filtration in porous metals made of spherical particles (bronze, molybdinum, tungsten, copper, iron) and of arbitrarily shaped particles (nichrome, iron). Comparison of the experimental data with the works of other authors made it possible to established that infraction of the law of laminar filtration depends upon the Reynolds number of the flow in the pores, the state of the particle surface, and the degree of change of the pore cross section with respect to the direction of filtration. An empirical relationship is obtained for taking into account the influence of the pore dimensions upon the critical Reynolds number in porous materials consisting of spherical particles. Data are presented concerning the critical Reynolds numbers of porous materials made of spherical and rounded particles. One figure, 1 table, 15 bibliographic entries.
1/1

USSR B UDC 621.373

BELOV, V. D., BORODYANSKIY, I. L., BUTYL'SKIY, YU. T.

"Synthesizer Decade with a Low Level of Spurious Products"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 3 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 3), Leningrad, 1970, pp 205-209 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D287)

Translation: This article contains the results of an investigation of the possibility of realizing synthesizer decades based on a capacitive mixer and a counting frequency divider made of current switches with a ratio of the output signal to the stray product level on the order of 120 decibels. There are two illustrations, three tables and a five-entry bibliography.

1/1

1/2 008 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--A QUARTZ SELF OSCILLATOR -U-

AUTHOR--BELOV, V.L., TABACHNIKOV, I.YA.

COUNTRY OF INFO--USSR

B

SOURCE--PATENT NO 263685
REFERENCE--MOSCOW, OKTRIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NO 8,
DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PATENT, QUARTZ, TRANSISTORIZED OSCILLATOR, PARAMETRIC RESONANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1095 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0112217

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AA0112217

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS AUTHOR'S CERTIFICATE INTRODUCES A QUARTZ SELF OSCILLATOR BASED ON A TRANSISTOR WITH PARAMETRIC FREQUENCY MULTIPLICATION. THE UNIT CONTAINS AN ACTIVE ELEMENT IN THE FORM OF A TRANSISTOR, A RESONANCE TANK, A QUARTZ RESONATOR CONNECTED IN A FEEDBACK CIRCUIT BETWEEN THE EMITTER AND THE POINT OF COMMON CONNECTION FOR THE TANK CAPACITORS, AND A POWER SUPPLY. THE OSCILLATOR DIFFERS BECAUSE THE CONVERSION COEFFICIENT IS INCREASED AND THE FREQUENCY STABILITY OF THE GENERATED OSCILLATIONS IS IMPROVED BY USING AN ADDITIONAL TANK CIRCUIT TUNED TO A HARMONIC OF THE QUARTZ RESONATOR FREQUENCY. THE RESONATOR IS CONNECTED THROUGH AN ISOLATING CAPACITOR TO PART OF THE INDUCTANCE OF THE MAIN TANK CIRCUIT AND TO THE COLLECTOR OF THE TRANSISTOR.

ZZZZZZZZZZZZ UNCLASSIFIED

USSR UDC: 621.373:421.13(088.8)

BELOV, V. L., TABACHNIKOV, I. Ya.

"A Self-Excited Quartz Crystal Oscillator"

USSR Author's Certificate No 263685, filed 9 Dec 67, published 4 Jun 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D487 P)

Translation: This Author's Certificate introduces a self-excited quartz crystal oscillator based on a transistor with parametric frequency multiplication. The oscillator contains an active element in the form of a transistor, a tank circuit, a quartz resonator connected in a feedback circuit between the emitter and the common tie-point of the tank capacitors, and also a power supply. To increase the conversion coefficient and improve emission frequency stability, the self-oscillator is equipped with an additional tank circuit tuned to a harmonic of the quartz resonator frequency. This auxiliary tank circuit is connected through a decoupling capacitor to part of the inductance of the main tank circuit and to the collector of the transistor. One illustration. V. P.

1/1

Oscillators and Modulators

USSR UDC 621.373.5

BELOV, V. L., TABACHNIKOV, I. Ya.

"A Quartz Self-Oscillator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, 10 Feb 70, p 41, Patent No 263685, Filed 9 Dec 67

Translation: This Author's Certificate introduces a quartz self-oscillator based on a transistor with parametric frequency multiplication. The unit contains an active element in the form of a transistor, a resonance tank, a quartz resonator connected in a feedback circuit between the emitter and the point of common connection for the tank capacitors, and a power supply. The oscillator differs because the conversion coefficient is increased and the frequency stability of the generated oscillations is improved by using an additional tank circuit tuned to a harmonic of the quartz resonator frequency. The resonator is connected through an isolating capacitor to part of the inductance of the main tank circuit and to the collector of the transistor.

1/1

AA0043453

UR 0482

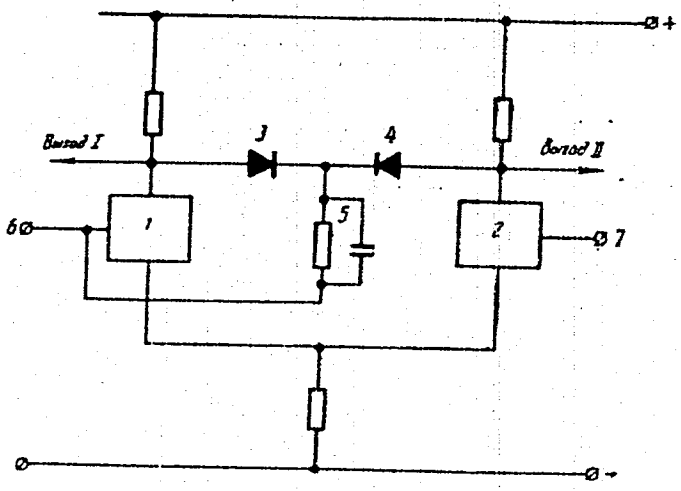
Soviet Inventions Illustrated, Section II Electrical, Derwent,

241109 A VOLTAGE COMPARATOR, for comparing two voltages in analogue-digital conversion in telemetry applications and the like, possesses extra sensitivity and steep-fronted output signal. The device (see diagram) is based on a differential cascade of amplifier elements 1,2 connected to a differentiating circuit of diodes 3,4 and RC network 5. As soon as the input voltage on 6 exceeds that on 7, diode 3 closes and 4 conducts, operating the circuit as an ordinary differential cascade with an emitter-coupled trigger. The result is an avalanche switching action of unit 1 into saturation; the output is a steep-fronted voltage of opposite sign.

29.4.66 as 1073424/18-24. V.A. KOZLOV & V.K.BELOV. (12.8.69) Bul 13/1.4.69. Class 42m3. Int.Cl.G 06f.

19761806

AA0043453



2/2

19761807

USSR UDC 632.95

REVEL'SKIY, I. A., IOONSON, V. A., IL'MOYA, K. A., BELOV, V. M., KARAVAYEVA, V. G., LOOG, E. P., SOVAKOVA, T. M.

"The Sensitivity of a Flame-Photometric Detector to Certain Pesticides as a Function of Temperature"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryaz-neniya imi produktov pitaniya, kormov i vnesn. sredy (Works of the Second All-Union Conference on the Investigation of Pesticide Residues and Preventive Contamination of Food Products, Fodder and Environment), Tallin, 1971, pp 102-107 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N448)

Translation: On a chromatograph of the Melpar Company, a Study was made of the behavior of a single and double-channel flame photometric detector as a function of the temperature of the detector and the thermostat of the columns. The separation of the artificial mixture of pesticides is carried out in a glass column 2 meters long with an inside diameter of 4 mm filled with NR chromosorb with a 3% phase of OV-I. The column was heated for 50 hours in advance at 250°. The evaporator temperature was 250°, the thermostat temperature of the columns and the detector was 75-220°. The flow rates of N2 (the gas-carrier), H_2O_2 and air are 80, 150, 20 and 10 cm^3/min respectively. In checking the sensitivity of the flame photometric detector, a mixture of methyl parathion, parathion, methylthion and ethion in hexane was used. The amount

1/2

USSR

REVEL'SKIY, I. A., et al., Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh. sredy, Tallin, 1971, pp 102-107

of each component was 10^{-9} in a microliter of solution. For a decrease in background current and the noise level it was necessary to operate at low temperatures of the flame-photometric detector (but not less than 80-100° to avoid condensation of moisture), or with additional cooling of the photomultiplier and filter. It is expedient to study the dependence of the background current and noise level for each new column. The phosphorus channel is more sensitive than the sulfur channel to temperature variations of the detector and columns. The background current and noise level for it are ~10 times higher than for the sulfur channel. For the two-channel flame photometric detector, the background current and noise level as functions of the column temperature were somewhat greater than for the single channel, and as functions of the detector temperature, somewhat less. The basic deficiencies of the investigated flame photometric detector are as follows: the filters and photomultipliers are under the effect of the detector housing temperature; as a result of internal reflections of light, variation in the parameters is observed on transition to operation with a two-channel detector. The detector developed at the Special Design Office of the Estonian SSR Academy of Sciences does not have these deficiencies.

2/2

USSR UDC 621.375.127.3(088.8)

BELOV, V. N., KLISTORIN, I. F., PODZIN, A. YE. BUROVTSEV, V. A.

"Two-Stage Emitter Repeater"

USSR Author's Certificate No 301816, filed 20 Oct 1969, published 8 Jun 1971 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D245P)

Translation: A two-stage emitter repeater made of transistors of different types of conductivity with a current-stabilizing transistor in the emitter circuit of the transistor of each cascade is proposed. The proposed repeater is distinguished by the fact that in order to decrease the input capacitance and increase the input impedance the collector of the transistor of the first cascade is connected to the collector of the current-stabilizing transistor of the second cascade connected through the parallel-connected resistor and capacitor (or stabilitron) to the emitter of the transistor of the second cascade.

1/1

USSR

UDC: 621.397(088.8)

BELOV, V. N.

"A Device for Separating the Carrier Frequency From a Modulated Television Signal"

USSR Author's Certificate No 262152, filed 25 Feb 68, published 1 Jun 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11G71 P)

Translation: This Author's Certificate introduces a device for isolating the carrier frequency from a modulated TV signal. The unit contains a gating channel, a narrow-band filter with automatic phase control, a synchronous demodulator and a limiter. As a distinguishing feature of the patent, the operational stability of the device is improved by connecting a blocking oscillator between the limiter and the gating stage input, and connecting a phase shifter at the output of the narrow-band filter with automatic phase control. The connection of a blocking oscillator in the channel of the device ensures synchronous operation for signals with a depth of modulation of more than 100 percent, and the phase shifter, controlled by voltage taken from a low-frequency filter, provides compensation for the phase error of the automatic phase control circuit.

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PREPARATION OF SOME ALIPHATIC, ALPHA,OMEGA,DIOLS BY THE DESTRUCTIVE HYDROGENATION OF POLYESTERS, INFLUENCE OF REACTION CONDITIONS ON THE

AUTHOR-(03)-POLYAKOVA, S.G., SHCHEDRINA, M.M., BELOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(5), 1144-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HYDROGENATION, POLYESTER RESIN, CHLORINATED ORGANIC COMPOUND, GLYCOL, ALIPHATIC ALCOHOL, CHEMICAL PRODUCT PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1954 STEP NO--UR/0080/70/043/005/1144/1148

CIRC ACCESSION NO--AP0132215

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132215

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDROGENATION OF H(O(CH SUB2) SUBN CO) SUBX OH (N IS 6, 8, OR 10) OVER CU-CR CATALYST (S. G. POLYAKOVA, 1964) GAVE HO(CH SUB2) SUBN PLUS 1, OH (I) IN SIMILAR TO 80PERCENT YIELDS. SIMILARLY, POLYESTERS OF OMEGA-CHLORO ACIDS WERE ALSO HYDROGENATED TO GLYCOLS. BESIDES I THE REACTION PRODUCTS CONTAINED N-ALCS. AND UNIDENTIFIED COMPDS. THE HYDROGENATIONS WERE CARRIED OUT AT 220-300DEGREES AND 110-210 ATM. THE CONDITIONS WERE OPTIMIZED FOR THE INDIVIDUAL I PRODUCTION. FACILITY: VSES. NAUCH.-ISSLED. INST. SIN. NATUR. DUSHISTYKH VESHCHESTV, VORONTSOVO, USSR.

UNCLASSIFIED

USSR

UDC: 620.197.5:539.163

BOGOYAVLENSKIY, A. F., BELOV, V. T., Kazan' Aviation Institute

"The Ematal Effect and the Nature of Anodic Aluminum Oxide"

Moscow, Zashchita Metallov, Vol 9, No 3, May/Jun 73, pp 343-346

Abstract: A radioactive tracer was used in the form of CrO_3 to study the formation of anodic aluminum oxide. It was found that the introduction of chromate ions is quantitatively dependent on the content of H_3BO_3 in the solution. Borate ions promote introduction of chromate ions into the oxide (sensitizing action) when the H_3BO_3 content is less than 1 g/l. Beyond this borate content the concentration of chromate ions in the oxide decreases gradually. The presence of sulfate ions in the chromate-borate solution also increases the concentration of chromate ions in aluminum oxide until the sulfate concentration reaches 0.14-0.15 g/l, after which the chromate ion concentration in the oxide decreases. The proper concentration of chromate, borate and sulfate ions results in a ratio and distribution of forms of Al_2O_3 which cause structural nonhomogeneity leading to the Ematal effect and localized solubility of the anodic oxide.

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ADSORPTION PROPERTIES OF AN ANODIC OXIDE FILM ON ALUMINUM STUDIED BY THE LABELED ATOM METHOD. 15. INJECTION OF ELECTROLYTE ANIONS INTO

AUTHOR-(03)-BELOV, V.T., BOGOYAVLENSKIY, A.F., KISELEV, I.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 190-3

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--ELECTROLYTE, ALUMINUM OXIDE, ANODIC OXIDATION, ANODIZATION, SULFUR ISOTOPE, TRACER STUDY, OXIDE FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0845 STEP NO--UR/0153/70/013/002/0190/0193

CIRC ACCESSION NO--AT0132935

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132935

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM PRIME36 S TRACER TESTS, SO SUB4 PRIME2 NEGATIVE INTRODUCED INTO AN ANODIC OXIDE FILM DURING FILM FORMATION, BY ANODIZING FOR 20 MIN AT 20DEGREES AND 1 A-DM PRIME2 IN 20PERCENT H SUB2 SO SUB4, IS REMOVED TO A NEGLIGIBLE EXTENT BY CONTACT WITH EITHER DISTD. H SUB2 O OR 0.1M NA SUB2 SO SUB4 AT PH 5.6-5.8 FOR 1-12 HR. BY IMPOSITION OF AN ELEC. CURRENT AT 25 V DURING SEALING OF AN ANODIC FILM WITH PRIME35 S-TAGGED 0.1M NA SUB2 SO SUB4, THE REMOVAL OF SO SUB4 PRIME2 NEGATIVE BY WASHING IS INHIBITED MARKEDLY. THIS IS ATTRIBUTED TO MIGRATION OF SO SUB4 PRIME2 NEGATIVE IONS MORE DEEPLY INTO THE OXIDE FILM. RETENTION OF ANIONS BY AN OXIDE FILM IS CLASSIFIED AS BY ADHESION, BY SORPTION (ENTRAPPED IN CAPILLARIES), OR STRUCTURAL. THE CHARACTERISTICS OF THESE PROCESSES ARE DISCUSSED. FACILITY: KAZAN. AVIATS. INST., KAZAN, USSR.

UNCLASSIFIED

1/2 046 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ADSORPTION PROPERTIES OF AN ANODIC OXIDE FILM ON ALUMINUM STUDIED BY A LABELED ATOM METHOD. 16. ADSORPTION OF INORGANIC ANIONS BY ANODIC

AUTHOR--BELOV, V.T.

T3

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(3), 354-6

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--ADSORPTION, ALUMINUM, ISOTOPE, ALUMINUM OXIDE, SORPTION, MOLYBDENUM, TUNGSTEN COMPOUND, MATHEMATIC ANALYSIS, SULFATE, CHROMATE, ONORGANIC SALT, METAL COATING, CYANIDE, OXIDE FILM/(U)ADIM ALUMINUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0620 STEP NO--UR/0153/70/013/003/0354/0356

CIRC ACCESSION NO--AT0137705

UNCLASSIFIED

2/2 046 PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137705

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SORPTION OF THE ANIONS MOO SUB4 PRIME2 NEGATIVE, WO SUB4 PRIME2 NEGATIVE, HCO SUB3 PRIME NEGATIVE, S SUB2 O SUB3 PRIME2 NEGATIVE, AND SCN PRIME NEGATIVE FROM SOLNS. OF THEIR NA SALTS FOR 24 AND 240 HR BY OXIDE FILMS ON AL (TYPE AD-1M), PRODUCED BY ANODIZING FOR 20 MIN AT 20DEGREES AND 1A-DM PRIME2, IS REPORTED FOR THE ION CONCN. RANGE 0.009-0.1 M BASED ON ANAL. BY A RADIOACTIVE TRACER TECHNIQUE. THE SORPTION FOLLOWS AN EQUATION OF THE FORM: Y EQUALS AX PRIME2 PLUS BX PLUS C, WHERE X IS THE ION CONCN. AND A, B, AND C ARE CONSTS. FROM THIS AND PREVIOUS WORK, THE RELATIVE VALUES OF A ARE AS FOLLOWS: H SUB2 PO SUB4 PRIME NEGATIVE IS GREATER THAN HPO SUB4 PRIME2 NEGATIVE IS GREATER THAN WO SUB4 PRIME2 NEGATIVE IS GREATER THAN SO SUB4 PRIME2 NEGATIVE IS GREATER THAN HCRO SUB4 PRIME2 NEGATIVE IS GREATER THAN HOO SUB4 PRIME2 NEGATIVE IS GREATER THAN HCO SUB3 PRIME NEGATIVE IS GREATER THAN S SUB2 O SUB3 PRIME2 NEGATIVE IS GREATER THAN CRO SUB4 PRIME2 NEGATIVE IS GREATER THAN SCN PRIME NEGATIVE.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200320016-5"

1/2 052 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SCATTERING OF ULTRAVIOLET RADIATION BY ANODIC ALUMINUM OXIDE -U-

AUTHOR-(03)-BOGOYAVLENSKIY, A.F., BELOV, V.T., ISHMURATOVA, A.S.

B

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 286-8

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--UV RADIATION, ALUMINUM OXIDE, ELECTROLYTE, CRYSTAL STRUCTURE, METAL COATING, ALUMINUM, ENERGY SCATTERING, LIGHT SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1509 STEP NO--UR/0153/70/013/002/0286/0288

CIRC ACCESSION NO--AT0130438

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200320016-5"

2/2 052 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AT0130438
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS THE THICKNESS OF AN ANODIC OXIDE FILM ON AL IS INCREASED, THE INTENSITY OF REFLECTED UV LIGHT DECREASES. WITH INCREASING VOLTAGE USED IN THE FORMATION OF THE OXIDE FILM, THERE IS A WELL DEFINED VARIATION IN THE INTENSITY OF THE REFLECTED BEAM THAT IS EXPLAINED BY CHANGES IN THE INTERNAL STRUCTURE OF THE OXIDE FILM. SCATTERING CHARACTERISTICS OF VARIOUS FILMS ARE EXPLAINED BY THE INFLUENCE OF THE ANIONS OF THE ELECTROLYTE ON THE INTERNAL STRUCTURE OF THE OXIDE. FACILITY: KAZAN. AVIATS. INST., KAZAN, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--COMPENSATION OF SELECTIVE EXCITATION IN X RAY SPECTROGRAPHIC ANALYSIS BY A COMBINED ADDITIVE METHOD -U-

AUTHOR-(04)-DUIMAKAYEV, SH.I., BLOKHIN, M.A., BELOV, V.T., TSOPOVA, L.N.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(2), 164-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--X RAY SPECTROSCOPY, SPECTROGRAPHIC ANALYSIS, FLUORESCENCE SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1844 STEP NO--UR/0032/70/036/002/0164/0166

CIRC ACCESSION NO--AP0118808

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118808

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTENSITY DECREASE OF THE ANAL. LINE IN X RAY FLUORESCENCE SPECTROGRAPHY IS CAUSED BY ABSORPTION BY ALL COMPONENTS IN THE SAMPLE. EQUATIONS DESCRIBING THE DEPENDENCE OF THIS ABSORPTION ON CONCN. OF COMPONENTS ARE DERIVED AND DISCUSSED. A METHOD IS PROPOSED IN WHICH THE SAMPLE IS DILD. WITH A MATERIAL HAVING ABSORPTION AS SIMILAR AS POSSIBLE TO THE COMPONENT TO BE DETD. DILN. WITH AN EQUAL AMT. OF 66PERCENT NIO-34PERCENT FE SUB2 O SUB3 MIXT. IS SUED TO DET. 5-20PERCENT CO SUB2 O SUB3 IN THE PRESENCE OF 40-80PERCENT ZNO. THE STD. DEVIATION IS 3.4PERCENT, AND FOR THE METHOD OF SINGLE ADDN. IT IS 13.4PERCENT. FACILITY: ROSTOV. GOS. UNIV., ROSTOV, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--EFFECT OF PLASTIC DEFORMATION DURING THERMOMECHANICAL TREATMENT ON THE STABILITY OF AUSTENITE -U-

AUTHOR--BELOV, V.V., PROKHOROVA, I.I., SHORSHOROV, M.KH.

B

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. OBRAB. MATER. 1970, (1), 99-102

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--PLASTIC DEFORMATION, THERMOMECHANICAL TREATMENT, ALLOY DESIGNATION, LOW ALLOY STEEL, BAINITE, DILATOMETRIC ANALYSIS, MICROSCOPE, HIGH TEMPERATURE EFFECT, ALLOY PHASE TRANSFORMATION, AUSTENITE/(U)IMETVMD VACUUM MICROSCOPE, (U)40KH LOW ALLOY STEEL, (U)25KH2GSNVM LOW ALLOY STEEL, (U)28KH3GSNVMFA LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0645 STEP NO--UR/0472/70/000/001/0099/0102

CIRC ACCESSION NO--AP0105624

UNCLASSIFIED