VOLODINA, G.F.; RUMANOVA, I.M.; BELOV, N.V., akademik

Crystalline structure of cenosite $Ca_2(Y, TR)_2[Si_4O_{12}]CO_3.N_2O$.
Dokl.AN SSSR 149 no.1:173-175 Mr '63. (MIRA 16:2)

1. Institut kristallografii AN SSSR.
(Cenosite) (X-ray crystallography)

GUAN' YA-SYAN' [Kuan Ya-hsien]; SIMONOV, V.I.; BELOV, N.V., akademik

Crystalline structure of "bafertisit" $BaFe_2TiO[Si_2O_7](OH)_2$.
Dokl. AN SSSR 149 no.6:1416-1419 Ap '63. (MIRA 16:7)

1. Institut kristallografii AN SSSR.
(Silicates) (Minerals)

KHEIROV, M.B.; MAMEDOV, Kh.S.; BELOV, N.V., akademik

Crystalline structure of rinkite $Na(Ca, Ce)_2(Ti, Ce)O[Si_2O_7]F$.
Dokl. AN SSSR 150 no.1:162-164 My '63. (MIRA 16:6).
(Rinkite)

GAMIDOV, R.S.; GOLOVACHEV, V.P.; MAMEDOV, Kh.S.; BELOV, N.V., akademik

Crystalline structure of hopeite $Zn_3[PO_4]_2 \cdot 4H_2O$.
Dokl. AN SSSR 150 no.2:381-384 My '63. (MIRA 16:5)
(Hopeite)

NERONOVA, N.N.; BELOV, N.V., akademik

Crystalline structure of elpidite $Na_2Zr[Si_6O_{15}]\cdot 3H_2O$. Dimorphism of dimetasilicate radicals $[Si_6O_{15}]$. Dokl. AN SSSR 150 no.3: 642-645 My '63. (MIRA 16:6)

(Elpidite crystals)
(Radicals(Chemistry))

SOLOV'YEVA, L.P.; BELOV, N.V., akademik

Crystalline structure of hodgkinsonite $Zn_2Mn[SiO_4](OH)_2$.
Dokl. AN SSSR 152 no.2:327-330 S '63. (MIRA 16:11)

KURBANOV, Kh.M.; RUMANOVA, I.M.; BELOV, N.V., akademik

Crystalline structure of probertite $CaNa[B_5O_7(OH)_4]\cdot 3H_2O$. Dokl. AN SSSR 152 no.5:1100-1103 O '63. (MIRA 16:12)

SOLOV'YEVA, L.P.; BELOV, N.V., akademik

Crystalline structure of hodgkinsonite. Dokl. AN SSSR 153 no.4:835-836 D '63. (MIRA 17:1)

SMIRNOVA, N.L.; KUNIN, M.B.; BELOV, N.V.

Fedorov group (D^4_6h) as a generic indicant of the family of crystal structures. Zhur. strukt. khim. 5 no.5:719-729 S-O '64 (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

L 55004-65 EWG(j)/EWP(e)/EWT(m)/EPF(c)/EWP(t)/EPF(n)-2/EWG(m)/EPR/T/EWP(t)/EWP(b)/
EWA(c) Pr-4/Ps-4/Pu-4 IJP(c) JD/JW/JG/GS/AT/WH
ACCESSION NR: AT5007722 S/0000/63/000/000/0009/0021

53
84+1

AUTHOR: Belov, N. V.

TITLE: A crystallo-chemical approach to some peculiarities in the behavior of oxides at high temperatures

SOURCE: AN SSSR. Institut khimii silikatov. Silikaty i okisly v khimii vysokikh temperatur (Silicates and oxides in high-temperature chemistry). Moscow. 1963. 9-21

TOPIC TAGS: hot oxide behavior, phenomenological analysis, lattice enthalpy, magma crystallization sequence, phase conversion mechanism

ABSTRACT: The report discusses the behavior of various oxides (CaO, MgO, SiO_2, Al_2O_3, TiO_2) at high temperatures. Phenomenological and crystal lattice enthalpy approaches are used to illustrate the sequence of cooling and crystallization of magma. Details of the crystal structure are analyzed for their significance to energy requirements in solid to liquid phase conversions. The report deals specifically with the coordinational to molecular significance of the neutral SiO_2 corner

has: 6 figures and 7 formulas.

Card 1/2

L 55004-65
ACCESSION NR: AT5007722

ASSOCIATION: None

SUBMITTED: 0000063 ENCL: 00 SUB CODE: IC, SS

NO REF SOV: 007 OTHER: 004

Card 2/2

BELOV, N. V.

"New crystallochemical data which can be used in vitreous state theory."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar. 64.

Moscow Inst Crystallography.

BELOV, N.V., inzh.; NOYEV, V.N., inzh.; OBRAZTSOVA, N.V., inzh., red.; YALYSHEV, Z.S., inzh., red.; KOPEYKINA, L.V., red.

[Methods of industrial thermochemical testing of barrel boilers] Metodika ekspluatatsionnykh teplokhimicheskikh ispytanii barabannykh kotlov. Moskva, Izd-vo "Energiia," 1964. 126 p. (MIRA 17:6)

1. ORGRES, trust, Moscow.

BOKIY, Georgiy Borisovich; PORAY-KOSHITS, Mikhail Aleksandrovich; BELOV, N.V., akademik, red.; DOLIVO-DOBROVOL'SKAYA, Ye.M., red.

[X-ray structural analysis] Rentgenostrukturnyi analiz. Moskva, Izd-vo Mosk. univ. Vol.1. Izd.2. 1964. 488 p. (MIRA 17:12)

BELOV, N.V.; NERONOVA, N.N.; KUNTSEVICH, T.S.

Drawings showing crystal structures in Shubnikov antisymmetry groups. Kristallografiia 9 no.2:147-154 Mr-Ap'64. (MIRA 17:5)

1. Institut kristallografii AN SSSR.

BELOV, N.V.

Nomenclature of Bravais lattices. Kristallografiia 9 no.3:396-397 My-Je '64. (MIRA 17:6)

KIOSSE, G.A.; GOLOVASTIKOV, N.I.; BELOV, N.V.

X-ray diffraction examination of active (d-) and racemic (d, l-) Sb-tartrates. Kristallografiia 9 no.3:402-403 My-Je '64. (MIRA 17:6)

1. Institut kristallografii AN SSSR.

SOLOV'YEVA, L.P.; BELOV, N.V.

Refined crystalline structure of bertrandite $Be_4[Si_2O_7](OH)_2$.
Kristallografiia 9 no.4:551-553 Jl-Ag '64.
(MIRA 17:11)

1. Institut kristallografii AN SSSR.

MAMEDOV, Kh.S.; BELOV, N.V.

Structural analogy (isostructural nature) between diorthosilicates and orthoborates. Geokhimiia no.11:1087-1096 N '64.
(MIRA 18:8)

MUSTAFAYEV, N. M.; ILYUKHIN, V. V.; BELOV, N. V., akademik

Crystal structure of roselite $Ca_2Co[AsO_4]_2.2H_2O$. Dokl. AN SSSR 155 no. 2:353-356 Mr '64. (MIRA 17:5)

KIOSSE, G.A.; GOLOVASTIKOV, N.I.; BELOV, N.V., akademik

Crystalline structure of the mixed d,l-NH_4Sb tartrate of d,l-$(NH_4)_2[Sb_2(C_4H_4O_6)_2].4H_2O$. Dokl. AN SSSR 155 no. 3: 545-548 Mr '64. (MIRA 17:5)

1. Institut kristallografii AN SSSR.

BORISOV, S.V.; BRUSENTSEV, F.A.; KLEVTSOVA, R.F.; BELOV, N.V., akademik

Crystal structure of creedite $Ca_3Al_2(F,OH)_{10}SO_4 \cdot 2H_2O$. Dokl. AN SSSR 155 no. 5:1082-1084 Ap '64. (MIRA 17:5)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.

NIKITIN, A.V.; ILYUKHIN, V.V.; LITVIN, B.N.; MEL'NIKOV, O.K.; BELOV, N.V., akademik

Crystal structure of synthetic sodium titanosilicate $Na_2(TiO)[SiO_4]$. Dokl. AN SSSR 157 no.6:1355-1357 Ag '64. (MIRA 17:9)

BORISOV, S.V.; KLEVTSOVA, R.F.; BELOV, N.V., akademik

Crystalline texture of "uklonskovite" $NaMg[SO_4](OH)\cdot 2H_2O$.
Dokl. AN SSSR 158 no.1:116-118 S-O '64 (MIRA 17:8)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.

BELOV, N.V.

No. 14. Outline of structural mineralogy. Min sbor. no.17:3-34 '63. (MIRA 17:11)

1. Institut kristallografii AN SSSR, Moskva.

BIYUSHKIN, V.N.; BELOV, N.V.

Cross sections of doubled Paterson functions. Kristallografiia 9 no.6:771-777 N-D '64. (MIRA 18:2)

1. Institut kristallografii AN SSSR i Institut fiziki AN Moldavskoy SSR.

ABRASHEV, K.K.; ILYUKHIN, V.V.; BELOV, N.V.

Crystalline structure of barilite $BaBe_2Si_2O_7$. Use of difference syntheses for the exposure of light atoms in the presence of sufficiently heavy atoms. Kristallografiia 9 no.6:816-827 N-D '64. (MIRA 18:2)

1. Institut kristallografii AN SSSR.

MUSTAFAYEV, N.M.; ILYUKHIN, V.V.; BELOV, N.V., akademik

Crystalline structure of K-fluoroberyllate $K_2BaF_4(Ba_2SiO)$. Dokl. AN SSSR 159 no.6:1287-1289 D '64 (MIRA 18:1)

ZAGAL'SKAYA, Yu.G.; BELOV, N.V.

14 Bravais lattices as generators of 230 Fedorov symmetry groups. Zhur. strukt. khim. 5 no.6:878-887 N-D '64. (MIRA 18:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

NERONOVA, N.N.; BELOV, N.V.

Crystalline structure of elpidite $Na_2Zr[Si_6O_{15}]3H_2O$.
Kristallografiia 9 no.6:828-834 N-D '64.
(MIRA 18:2)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.

MEKHTIYEV, K.M.; GAMIDOV, R.S.; MAMEDOV, Kh.S.; BELOV, N.V., akademik

Crystalline structure of the Bi-molybdate $Bi_2[MoO_4]_3$. Dokl. AN SSSR 162 no.3:563-564 My '65. (MIRA 18:5)

1. Institut khimii AN AzerbSSR.

BELOV, N.V.

Outlines of structural mineralogy. Part 15. Min.sbor. 18 no.1:5-15 '64. (MIRA 18:5)

1. Institut kristallografii AN SSSR, Moskva.

BELOV, N.V.

Outlines of structural geology. Part 15. Min.sbor. 18 no.2:123-125 '64. (MIRA 18:5)

1. Institut kristallografii AN SSSR, Moskva.

BELOV, N.V.

Outlines of structural mineralogy. Part 15. Min. sbor. 18 no.4:371-376 '64. (MIRA 18:7)

1. Institut kristallografii AN SSSR, Moskva.

BELOV, N.V.

Mineralogy at the 6th International Congress of Crystallographers.
Zap. Vses. min. ob-va 93 no.3:249-259 '64.
(MIRA 18:3)

BELOV, N.V., akademik

Theorem of the void of the basal parallelepiped of a crystal lattice. Zhur. strukt. khim. 6 no.2:179-181 Mr-Ap '65.

(MIRA 18:7)

MUSTAFAYEV, N.M.; ILYUKHIN, V.V.; BELOV, N.V., akademik

Crystalline structure of rubidium orthofluoberyllate γ-Rb_2BeF_4. Dokl. AN SSSR 162 no.5:1053-1056 Je '65. (MIRA 18:7)

1. Institut kristallografii AN SSSR.

LI DE-YUY [Li Te-yu]; SIMONOV, V.I.; BELOV, N.V., akademik

Crystalline structure of rinkite $Na(Na, Ca)_2(Ca, Ce)_4$ (Ti, Nb) $[Si_2O_7]_2$ $(O, F)_2F_2$. Dokl. AN SSSR 162 no.6:1288-1291 Je '65.
(MIRA 18:7)

1. Institut kristallografii AN SSSR.

GUSEYNOV, G.G.; ILYUKHIN, V.V.; BELOV, N.V., akademik

Crystalline structure of Na-orthofluoroberyllate β-Na_2BeF_4. Dokl. AN SSSR 163 no.1:94-96 Jl '65. (MIRA 18:7)

1. Institut kristallografii AN SSSR.

KURKUTOVA, Ye.N.; RUMANOVA, I.M.; BELOV, N.V., akademik

Crystalline structure of inderborite
$CaMgB_6O_{11} \cdot 11H_2O = CaMg[B_3O_3(OH)_5]_2 \cdot 6H_2O$.

Dokl. AN SSSR 164 no.1:90-93 S '65. (MIRA 18:9)

1. Institut kristallografii AN SSSR.

SIMONOV, M.A.; BELOV, N.V., akademik

Crystal structure of the Na, Zn, Cd- metasilicate $Na_4ZnCd[Si_2O_6]_2$. Dokl. AN SSSR 164 no.2:406-409 S '65. (MIRA 18:9)

1. Moskovskiy gosudarstvennyy universitet.

KOSTOV, Ivan, prof.; BELOV, N.V., akademik[translator];
MAYKOVA, Ye.I., red.

[Crystallography. Translated from the Bulgarian] Kristallografiia. Moskva, Mir, 1965. 528 p. (MIRA 18:12)

ACC NR: AP6017471 SOURCE CODE: UR/0020/65/162/006/1288/1291

AUTHOR: Li, D.-I.; Simonov, V. I.; Belov, N.V.(Academician) 34 B

ORG: Institute of Crystallography, AN SSSR(Institut kristallografii AN SSSR)

TITLE: Crystal structure of rinkite Na(Na, Ca) sub 2 (Ca, Ce) sub 4 (Ti, Nb) Si sub 2 O sub 7 sub 2 (O, F)sub 2 F sub 2

SOURCE: AN SSSR. Doklady, v. 162, no. 6, 1965, 1288-1291

TOPIC TAGS: crystallography, crystal structure, mineral

ABSTRACT: Different structures have been proposed for rinkite which may be due to the use of slightly different samples of the mineral. The crystallographic measurements reported were carried out on amber-colored Greenland rinkite. The true symmetry of rinkite was found to be monoclinic, but with a unique psuedorhombic nature. The coordinates of the basic atoms of rinkite are tabulated, and its polyhedral structure is projected in the xy plane. Features of the crystallographic structure are discussed in detail and compared with those of other minerals. The authors thank M.D. Dorfman for providing the rinkite samples, and for his interest in the work on the rinkite structure. Further thanks is rendered to Ye. I. Semenov for providing the new chemical analysis of Greenland rinkite. Orig. art. has: 1 table, 2 figures.

Card 1/1 SUB CODE: 08, 20 / SUBM DATE: 05Mar65 / ORIG REF 010 / OTH REF 002

CHICHAGOV, A.P.; ILYUKHIN, V.V.; BELOV, N.V., akademik

Crystal structure of cadmium tungstate $CdWO_4$. Dokl. AN SSSR 166 no.1:87-89 Ja '66. (MIRA 19:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova i Institut kristallografii AN SSSR.

L 14471-66 EWT(m)/ETC(F)/EWG(m)/T/EWP(t)/EWP(b) IJP(c) RDW/JD

ACC NR: AP5027841 (A) SOURCE CODE: UR/0020/65/165/001/0088/0090

AUTHOR: Kuz'min, E.A.; Belov, N.V. (Academician)

ORG: Gor'kiy State University im. N.I. Lobachevskiy (Gor'kovskiy gosudarstvennyy universitet); Institute of Crystallography, Academy of Sciences SSSR (Institut kristallografii Akademii nauk SSSR)

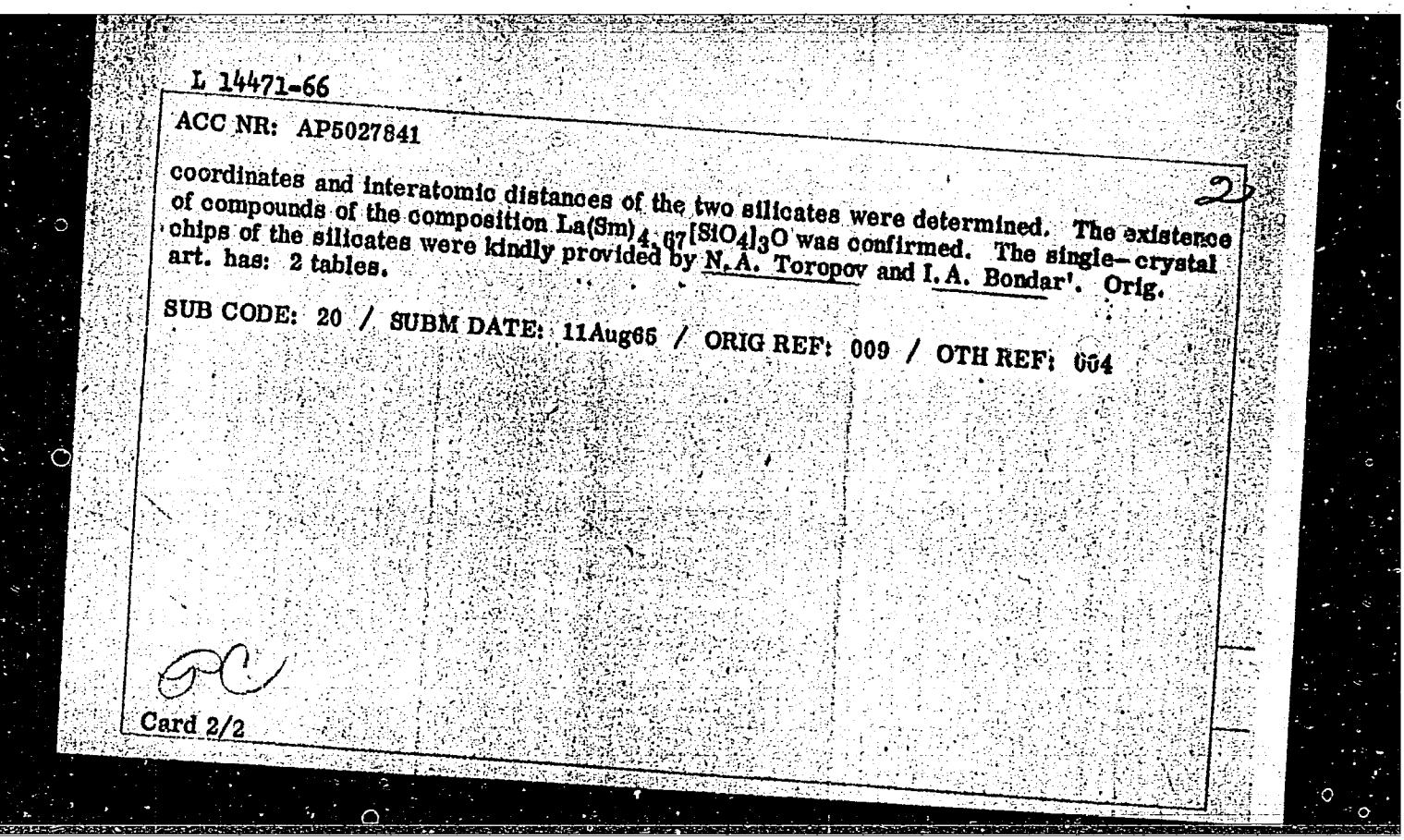
TITLE: Crystal structure of the simplest La and Sm silicates

SOURCE: AN SSSR. Doklady, v. 165, no. 1, 1965, 88-90

TOPIC TAGS: samarium compound, lanthanum compound, silicate, crystal structure analysis

ABSTRACT: Single-crystal crystal chips of the compounds $La_2O_3 \cdot SiO_2$, $La_2O_3 \cdot 2SiO_2$, $Sm_2O_3 \cdot SiO_2$, and $Sm_2O_3 \cdot 2SiO_2$, synthesized at the Institute of Silicate Chemistry, AN SSSR Leningrad (Institut khimii silikatov), were structurally analyzed by x-ray diffraction. The unit cells of the hypothetical compounds $La_2O_3 \cdot SiO_2$ and $La_2O_3 \cdot 2SiO_2$ were found to be completely identical, indicating that these compounds are identical; the same applied to the Sm silicates. Powder patterns of the La and Sm silicates were strikingly similar to those of britholite, a structural analog of apatite. The atomic

Card 1/2 UDC: 548.7



L 14471-66

ACC NR: AP5027841

coordinates and interatomic distances of the two silicates were determined. The existence of compounds of the composition $La(Sm)_{4.67}[SiO_4]_3O$ was confirmed. The single-crystal chips of the silicates were kindly provided by N. A. Toropov and I. A. Bondar'. Orig. art. has: 2 tables.

SUB CODE: 20 / SUBM DATE: 11Aug65 / ORIG REF: 009 / OTH REF: 004

Card 2/2

EWT(m)/T/EWP(t) IJP(c) JD/JG

ACC NR: AP6015827 SOURCE CODE: UR/0020/65/163/001/0094/0096

AUTHOR: Guseynov, G. G.; Plyukhin, V. V.; Belov, N. V. (Academician)

ORG: Institute of Crystallography, AN SSSR (Institut kristallografii AN SSSR)

TITLE: Crystal structure of Na-orthofluoroberyllate gamma-Na sub 2 BeF sub 4

SOURCE: AN SSSR. Doklady, v. 163, no. 1, 1965, 94-96

TOPIC TAGS: crystal structure, beryllium compound

ABSTRACT: The institute has recently determined the structure of K_2BeF_4 and Rb_2BeF_4 and has shown that both can serve as structural models for the orthosilicate Ba_2SiO_4 (the K compound highly similar, the Rb compound somewhat distorted). The olivine-like motif is well expresses in these compounds, but with important differences - distortions being related to the size of the K, Rb, and Ba cations as compared with Mg. There are three modifications of Ca_2SiO_4: larnite (γ-Ca_2SiO_4), in particular, duplicates the olivine structure exactly.

According to a table given of ion radii of "parallel" atoms, γ-Na_2BeF_4 should be a perfect structural model of Ca-orthosilicate. Of the three modifications (γ, δ, $\varkappa$) of Na_2BeF_2, the γ-phase was the most promising model to relate to larnite.

Card 1/2

ACC NR: AP6015827

Comparisons are made between γ-Ca_2SiO_4 and γ-Na_2BeF_4 structures with the aid of Patterson diagrams. The structural parameters of γ-Na_2BeF_4 are described in detail. Orig. art. has: 3 figures and 2 tables. [JPRS]

SUB CODE: 20 / SUBM DATE: 03Apr65 / ORIG REF: 009 / OTH REF: 003

Beryllium Compound

27

Card 2/2 FW

ACC NR: AP6019169 IJP(c) JD

SOURCE CODE: UR/0020/65/162/005/1053/1056

AUTHOR: Mustafayev, N. M.; Ilyukhin, V. V.; Belov, N. V. (Academician)

ORG: Institute of Crystallography, AN SSSR (Institut kristallografii AN SSSR)

TITLE: Crystal structure of rubidium orthofluoroberyllate (gamma-Rb sub 2 BeF sub 4)

SOURCE: AN SSSR. Doklady, v. 162, no. 5, 1965, 1053-1056

TOPIC TAGS: rubidium compound, crystal structure

ABSTRACT: Of the three polymorphic modifications of Rb_2BeF_4, the most stable, up to 528°, is the gamma form; the beta form is stable between 528°-692°; and finally, the alpha, from 692° to the melting point. The gamma form is easily obtained from an aqueous solution or from heating equivalent quantities of $2MeF + BeF_2$ (as done by Mukherjee in 1944). Measurements were made of three almost isometric crystal pieces. The rhombohedral cell parameters were found to agree with previously published data. The existence of a mirror plane was found to be improbable, as was a center of symmetry. Application of the heavy atom method made it possible to establish all F atoms (z = 9). Comparisons are made between gamma-Rb_2BeFe_4 and other M_2BX_4-type structures, and the similarities and differences of their polyhedral structures are discussed. Orig. art. has: 3 figures and 1 table. [JPRS]

SUB CODE: 20 / SUBM DATE: 05Mar65 / ORIG REF: 006 / OTH REF: 006

Card 1/1 dc

L 07904-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6024674 (A, N) SOURCE CODE: UR/0070/66/011/004/0686/0689

AUTHOR: Chichagov, A. V.; Dom'yanóts, L. N.; Ilyukhin, V. V.; Belov, N. V. 39 B

ORG: Institute of Crystallography AN SSSR (Institut kristallografii AN SSSR); Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Synthesis and crystal structure of cadmium molybdate

SOURCE: Kristallografiya, v. 11, no. 4, 1966, 686-689 27 27

TOPIC TAGS: cadmium compound, molybdate, crystallization, exchange reaction, stoichiometry, crystal lattice structure

ABSTRACT: The single crystals of $CdMoO_4$ were the product of hydrothermal crystallization in the systems $CdO-MoO_3-MCl-H_2O$ (M = Li, Na, K). The synthesis was in an autoclave with working chamber volume 45 -- 50 cm^3, at pressure 1,000 -- 1,500 atm for 3 -- 5 days. During the hydrothermal synthesis, in addition to the dissolution of the components, their transport, and crystallization of the cadmium molybdate in the cold zone of the autoclave, an exchange reaction between $CdMoO_4$ and LiCl was observed in the liquid phase at LiCl concentrations larger than 20%, with formation of a mixed Li-, Cd-molybdate of constant but non-stoichiometric composition. The

Card 1/2 UDC: 548.736.4

L 07904-67

ACC NR: AP6024674

single crystals were colorless, with dimensions up to 5 mm, with tetragonal lattice having parameters a = 5.17, c = 11.19 Å (Z = 4), space group $C_{4h}^6 = I4_1/a$. Diagrams of the structure and tables of the coordinates of the atoms and of the interatomic distances are presented. The properties are compared with those of other molybdates. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 28Jan66/ ORIG REF: 003/ OTH REF: 004

Card 2/2 gd

ACC NR: AP7009591 SOURCE CODE: UR/0020/66/170/005/1070/1072

AUTHOR: Shchedrin, B. M.; Belov, N. V. (Academician); Zhidkov, N. P.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Material point method in the structural analysis of crystals

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1070-1072

TOPIC TAGS: crystal structure analysis, x ray diffraction analysis

SUB CODE: 20

ABSTRACT: A method of "the material point" was developed for the structural analysis of crystals. In this method the totality of parameters to be defined by coordinates of an absolute minimum is assumed to correspond to coordinates of some material point that remains on a surface described by a selected function in an n-dimensional space. Under the action of a conditional gravity force, the material point is displaced and tends to get into regions of minimum potential energy. Mathematical expressions based on these concepts have been derived for calculations to be carried out in structural analysis. By applying the method described, authors the determined the crystal structure of Ni-nitrodiethylenediamine chloride /$NiCn_2NO_2/Cl$ on the basis of X-ray diffraction data. Orig. art: has: 6 formulas. [JPRS: 40,050]

Card 1/1

UDC: 548

0930 1.1.29

AUTHOR: Belov, N. Ya. , Director of the Central Laboratory of the Kirov Plant

32-10-19/32

TITLE: Comments

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp 1219 - 1220 (USSR)

ABSTRACT: In his report delivered on the occasion of the 40th anniversary of the October revolution the director of the laboratory of the once-time biggest arms-factory of Russia (Putilovskiy Zavod) gave a historical review of the activity of the laboratory which was under his charge and at which already in 1904, such well-known Russian scientists, as Belyayev, Lipin , Gudtsov, and others worked. At present, the physical methods of analysis are applied by preference in the work-laboratory. Since 1939, ultrasonics-defectoscopy according to S. Ya. Sokolov has also been introduced in this laboratory. A collective of metallophysicsts of these works under the direction of Zimnev, P. I. , P. F. Vasilevskiy, and L. S. Lavrent'yev introduced a perfected powder-magnetoscopy for the examination of ferromagnetic materials. With the assistance of the collaborators of the national institute of optics luminescence defectoscopy was also introduced here for the investigation of

Card 1/2

Comments

nonferromagnetic materials. Since the production of various special alloys with certain properties was introduced a mass control of the finished products in view of magnetic permeability was introduced. At present, there is also a division for radioactive isotopes attached to the work-laboratory by means of which satisfactory results were already achieved by obtaining tungsten from the scrap of open-hearth-furnaces by applying tungsten-isotopes (W^{185}) in which case the extraction of tungsten increased by 80 %. It is contemplated that the same process should be introduced for the purpose of winning titanium within the near future.

ASSOCIATION: Tsentral'naya laboratoriya Kirovskogo zavoda (Central Laboratory of the Kirov Plant)

AVAILABLE: Library of Congress

1. Science-USSR-Progress

Card 2/2

25(0)

AUTHOR: Belov, N. Ya., Chief of the Central Laboratory of the Kirov Machine Building Plant

SOV/32-25-1-2/51

TITLE: Articles and Suggestions of the Directors of the Central Factory Laboratories in Connection With the Theses Laid Down by Party Member N. S. Khrushchev at the XXI Congress of the CPSU "Control Figures of the Development of the National Economy of the USSR in the Years 1959-1965" (Stat'i i predlozheniya rukovoditeley Tsentral'nykh zavodskikh laboratoriy v svyazi s tezisami doklada tovarishcha N. S. Khrushcheva na XXI s"yezde KPSS "Kontrol'nyye tsifry razvitiya narodnogo khozyaystva SSSR na 1959-1965 gg.")

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 1, pp 5-7 (USSR)

ABSTRACT: The Kirovskiy (Putilovskiy) zavod (Kirov(Putilov) Plant) is a machine building and metallurgical plant; the tasks of the factory laboratory are therefore very extensive. It is intended to carry on the factory laboratory tradition founded by N. T. Gudtsov. Recently, a process of dispersion hardening of alloys was worked out by A. N. Zhironkin, I. D. Pichakhchi, A. I. Kanavina, and others. The new trade-marks DT, LKZ and

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Articles and Suggestions of the Directors of the Central Factory Laboratories in Connection With the Theses Laid Down by Party Member N. S. Khrushchev at the XXI Congress of the CPSS "Control Figures of the Development of National Economy of the USSR in the Years 1959-1965"

KhNTF are manufactured in the above mentioned factory. 45 million tractor tracks of G13 steel are cast yearly (2 millions thereof in the above mentioned factory). Unfortunately, this steel is not durable, but the factory mechanics are not in a position to work on harder steel. A plant is being planned for the continuous casting of rod iron (of a diameter of 350 mm) and iron processing tests in vacuum are being carried on. Thanks to factory engineer P. M. Platonov's contribution, cast linings are manufactured in the USSR. The following engineers are working at the above mentioned factory: V. L. Anokhin, Ye. M. Zimneva, Yu. V. Yel'tsin, A. M. Nakhimov, A. I. Gabertsetveli, L. D. Khinskiy, A. N. Zhironkin, and many others. The chief of the Steel Laboratory, V. M. Zamoruyev recently defended his doctor's dissertation. A laboratory is to be set up in each department of the factory, following the example of the zaved im. Likhacheva (Factory imeni Likhachev). This year it has been set up in the rolling mill and previously already in the turbine and thermical department.

SOV/32-25-1-2/51

Articles and Suggestions of the Directors of the Central Factory Laboratories in Connection With the Theses Laid Down by Party Member N. S. Khrushchev at the XXI Congress of the CPSS "Control Figures of the Development of National Economy of the USSR in the Years 1959-1965"

ASSOCIATION: Tsentral'naya zavodskaya laboratoriya Kirovskogo mashinostroitel'nogo zavoda (Central Factory Laboratory of the Kirov Machine Building Plant)

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SOV/118-59-9-11/20

30(1)

AUTHOR: Belov N.Ye., Engineer

TITLE: Containers for Transportation of Wooden Articles

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, 1959, Nr. 9, pp 49 (USSR)

ABSTRACT: The Tel'manskiy Lumber Industry Economy of the Trust "Tatles" successfully uses cheap lattice-work containers for carrying, keeping and transporting small-size wooden articles. Containers are made of a low-quality wood; their sizes are 2.1x1.3x2.1 m; capacity - about 5 m^3 (Fig 1). The loading and unloading with the aid of such containers is performed by automobile cranes, electric cranes of a 3-5 ton loading capacity, or by excavators E-505 which are provided with a special loading frame protecting the containers against possible damage during the loading. A truck can take 2 containers at a time (Fig. 2); a rail-road narrow gauge flatcar - 4 containers, and the broad gauge flatcar - 8 to 12 of them. For inter-plant transportation it is very convenient to use the auto-loaders 4000M (Fig. 3).

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Containers for Transportation of Wooden Articles

Application of such containers increases almost 2.5 times the efficiency of loading and unloading; moreover, it eliminates the necessity of supplementary packing of wooden goods. In the course of March-April 1959, the Tel'manovskiy Lumber Industry Economy delivered to the consumer-plants over 40 flatcars loaded with such containers, representing 3/4 of its entire production of wooden articles.
There are 3 photographs.

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S/109/62/007/010/009/012
D266/D308

AUTHORS: Vlasov, A.D., and Belov, N.Ye.

TITLE: Quality factor of the amplifier stages and of the output circuit of a wide band klystron

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 10, 1962, 1787 - 1794

TEXT: The purpose of the paper is to discuss the design of a multicavity klystron resulting in an optimum gain-bandwidth factor. The optimization is carried out for two parameters Φ and Ψ, where the former is concerned with the amplifying stages and the latter solely with the output circuit. The definitions are as follows

$$\Phi = \frac{1}{Q} k \quad \text{and} \quad \Psi = \frac{1}{Q} \eta,$$

where 1/Q - 3 db bandwidth, k - gain of a single stage, η - electronic efficiency. Assuming staggering tuning but otherwise identical stages, 1/Q and k represent averaged values. The calculations are performed for an annular beam of electrons (outer radius a, and

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Quality factor of the amplifier ...

inner radius b) moving in a tunnel. The resonators are of the usual reentrant type, where R/Q is approximated by the following formula

$$\frac{R}{Q} = C_2\left(\frac{2l}{d}\right)^{\varepsilon_2} \qquad (8)$$

where 2l - width of the interaction gap, d - inner diameter of the drift tube, C_2, ε_2 - constants, taken in one particular case as $C_2 \simeq 110$ and $\varepsilon_2 \simeq 0.3$. Similar approximation is used for the plasma frequency reduction factor which is written in the form

$$F = C_1\rho^{\varepsilon_1} \qquad (7)$$

where C_1, ε_1 - constants and ρ is the normalized mean radius, defined as

$$\rho = \frac{\omega}{v} \cdot \frac{a+b}{2} \sqrt{1-\beta^2},$$

where ω - angular frequency, v - beam velocity, $\beta = v/c$, c - velocity of light. The gap coupling coefficient is taken as

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Qualtiy factor of the amplifier ...

$$M = \frac{I_0(\rho)}{I_0(\xi\rho)} J_0(\alpha) \qquad (9)$$

where I_0, J_0 - Bessel functions, $\xi = a/b$, $\alpha = \frac{\omega l}{v}$. Φ and Ψ are then expressed with the aid of the above parameters and means for maximizing them are investigated. There is a transit angle which optimizes both Φ and Ψ but generally only one of them can be optimized and a compromise must be sought. The optimum value of the perveance is often not realizable and then perveance must be chosen on practical considerations and the value of transit angle optimized later. No complete design is described, but the author claims that the application of the method is straightforward. There are 2 figures.

SUBMITTED: June 27, 1961

Card 3/3

VLASOV, A.D.; BELOV, N.Ye.

Quality of amplifier stages and output circuit of a wide-band klystron. Radiotekh. i elektron. 7 no.10:1787-1794 0'62. (MIRA 15:10)

(Klystrons)

BELOV, N.Ye.

Calculation of microwave devices with tubular beams. Izv. vys. ucheb. zav.; radiotekh. 7 no.2:246-248 Mr-Ap '64.
(MIRA 17:8)

L 9950-65 EWT(1)/EWG(k)/EPA(sp)-2/EWA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2 Pz-6/
Pc-4/Pab-24/Pi-4 IJP(c)/SSD/ASETR/AFWL/ESD(t)/RAEM(t) AT

ACCESSION NR: AP4045489 S/0109/64/009/009/1663/1674

AUTHOR: Belov, N. Ye.

TITLE: Waves in high-density electron beams with a finite focusing field

SOURCE: Radiotekhnika i elektronika, v. 9, no. 9, 1964, 1663-1674

TOPIC TAGS: cyclotron frequency, SHF tube, drift tube, space charge

ABSTRACT: A method is offered for determining space-charge and cyclotron waves in a tubular beam under conditions of a finite focusing magnetic field and an arbitrary ratio of the plasma frequency to the working frequency. The excitation of a high-density tubular beam is analyzed under the assumption that these quantities are different for different waves: (a) the functions determining the dependence of beam waves on the radius and (b) the plasma-frequency and cyclotron-frequency reduction factors. A numerical example is supplied to illustrate the method. Orig. art. has: 2 figures, 39 formulas, and 5 tables.

ASSOCIATION: none

SUBMITTED: 21Jun63

SUB CODE: EC NO REF SOV: 004 ENCL: 00 OTHER: 004

Card 1/1

BELOV, N.Ye.

Waves in high-density electron beams with a finite focusing field. Radiotekh. i elektron. 9 no.9:1663-1674 S '64.

(MIRA 17:10)

MAMYKIN, Petr Sergeyevich, doktor tekhn. nauk; LEVCHENKO, Petr Vasil'yevich, kand. tekhn. nauk; STRELOV, Konstantin Konstantinovich, kand. tekhn. nauk; MITKALINNYY, V.I., retsenzent; MIKHAL'SKIY, A.A., retsenzent; BELOV, O.V., red.; SYRCHINA, M.M., red. izd-va; MAL'KOVA, N.T., tekhn. red.

[Kilns and driers of refractory plants]Pechi i sushila ogneupornykh zavodov. [By]P.S.Mamykin i dr. Sverdlovsk, Metallurgizdat, 1963. 471 p. (MIRA 16:2)
(Refractories industry--Equipment and supplies) (Kilns)

BELOV, O.V.; SELIVANOV, I.A.; MAZURCHUK, E.N.; KRYLOVA, L.Ye.

Aerodynamic protection of reverberatory furnace roofs. TSvet. met. 38 no.2:24 F '65. (MIRA 18:3)

BELOV, P., general-polkovnik

Patriots on new China. Voen.znan. 35 no.4:9-10 Ap '59.
(MIRA 12:7)

(China)

Belov, P.A.

BELOV, P.A.

Some shortcomings in zoology teaching. Biol. v shkole no.1:32-34 Ja-F '58. (MIRA 11:1)

1. Vladimirskiy oblastnoy otdel narodnogo obrazovaniya.
(Vladimir Province--Zoology--Study and teaching)

28(2), 3(7) SOV/107-59-10-9/51

AUTHOR: Belov, P., Candidate of Physical and Mathematical Sciences

TITLE: The "Pogoda" Computer for Weather Forecasts

PERIODICAL: Radio, 1959, Nr 10, pp 14 - 16 (USSR)

ABSTRACT: The author explains the theoretical premises of using electronic computers for weather forecasts. The "BESM", "Strela" and "Ural" computers may be used for this purpose. Recently, specialized computers were introduced and the "Pogoda" is one of them. The data are fed into the "Pogoda" on perforated tape in a binary code. Two tapes are punched and compared for correctness on a KSU device (kontrol'no-schityvayushcheye ustroystvo - control and computing device). The "Pogoda" will perform 100-200 operations per second. During the winter of 1959,

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SOV/107-59-10-9/51

The "Pogoda" Computer for Weather Forecasts

the "Pogoda" was used for 24-hour prognoses of the air pressure changes. There is 1 photograph.

Card 2/2

BELOV, P., geroy Sovetskogo Soyuza, gvardii general-polkovnik.

Improve the patriotic activities of the mass defense society.
Voen.znan. 31 no.9:6-7 S '55. (MLRA 9:2)

1.Predsedatel' TSentral'nogo komiteta Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu SSSR.
(Military education)

107-57-1-3/60

AUTHOR: Belov, P. A., Hero of the Soviet Union, Colonel General, Chairman of the Central Committee of DOSAAF USSR

TITLE: We Should Be Initiators of Everything Modern (Byt' zastrel'shchikom vsego novogo)

PERIODICAL: Radio, 1957, Nr 1, pp 2-3 (USSR)

ABSTRACT: DOSAAF Society celebrates its 30th anniversary in January 1957. In this connection, the author reviews some of the DOSAAF achievements and formulates a few tasks. The society numbers tens of thousands of experienced radio specialists. Corresponding members of the AS USSR A. Mints, and V. Sifprov, Professor Z. Model', designers I. Nevyazhskiy, Ye. Genishta, and V. Mel'nikov were all formerly amateurs. I. Zavedeyev in the North Arctic Ocean and A. Rekach in the Mirnyy settlement, both DOSAAF champions, worked respectively at the arctic and antarctic poles. Many radio amateurs have designed instruments for the national economy: S. Sheremetinskiy designed a metal locator, Yu. Manoyev a humidity meter, I. Akulinichev a vector-electrocardioscope, etc. DOSAAF organizations and radio clubs should encourage radio amateurs to invent instruments and devices useful to Soviet industry. Radio amateurism should become a mass movement in 1957; diversified activities and more initiative are urged. Field day and "fox chase" contests are recommended. Thousands of radio amateurs should go on the air with their VHF radio stations in 1957. Women radio amateurs who set very high records, such as G. Patko, A. Volkova, Z. Kubikh,

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We Should Be Initiators of Everything Modern

M. Bassina, are known both in the Soviet Union and abroad. Radio specialists and engineers should be urged to devote their free time, without pay, to help develop radio amateurism. S. Morozov, and Yu. Rutkovskiy (Poltava), S. Kosyak (Kaliningrad), S. Sotnikov (Moscow), A. Demin (Kivertsy, L'vov Railroad), and Ye. Predko (Stanislav) regularly receive long-distance TV programs; their experience should be studied, used, and extended. Soviet industry and armed forces need more and more radio operators and radio repairmen. The central committee of the DOSAAF, USSR, decided to double in 2 years the present number of technical specialists. In accordance with this decision, local DOSAAF organizations are training automobile and motorcycle drivers, radio specialists, and other technicians. A great many trained radio specialists capable of operating radar and TV sets are needed.

ASSOCIATION: TsK DOSAAF SSSR

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Belov, P.A.

BELOV, P.A., general-polkovnik.

Important task for radio amateurs. Radio no.10:6 O '57.
(MIRA 10:10)

1. Predsedatel' TSentral'nogo Komiteta Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu SSSR.
(Artificial satellites)

85-58-1-2/28

AUTHOR: Belov, P. A., Chairman USSR DOSAAF Central Committee, Hero of the Soviet Union, Colonel General

TITLE: On the Eve of the DOSAAF All-Union Convention (Navstrechu Vsesoyuznomu s'yezdu DOSAAF)

PERIODICAL: Kryl'ya rodiny, 1958, Nr 1, pp 1-3 (USSR)

ABSTRACT: In connection with DOSAAF activities, the author mentions the Khrushchev speech of November 25, 1957, the resolution of the Plenum of the Central Committee of the Soviet Union "On Improvement of Party-Political Work in the Soviet Army and Navy", and the correction of the Zhukov "line". DOSAAF is now one of the largest mass organizations in the country, having increased its membership more than 2 1/2 times in the past 5 years. The number of DOSAAF aviation groups at the

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primary level increased several times during 1957. Soviet parachutists have been particularly successful, and are now invading the stratosphere, both singly and in groups. The Plenum of the DOSAAF Central Committee has recommended radical improvements be made in all forms of aviation sports for Soviet young people, with the help of the trade unions and of Komsomol units. Bureaucracy and inertia are said to exist in the administration of DOSAAF Central Committee aviation and technical training. The primary organizations must receive more effective leadership and more adequate equipment. The following DOSAAF organizations are praised for their initiative and effective work: the Khar'kov DOSAAF Oblast Committee under its chairman Ryashchenko, and the Moscow Municipal and the Kalinin Oblast Committees. The Kolomna DOSAAF aeroclub is assisting in opening a DOSAAF glider club in the town of Zhukovskiy [Moscow Oblast]; an aviation sports club will shortly be organized in Cheremkhovo, Irkutskaya Oblast' (chairman Yerikov). Other cities in Irkutskaya Oblast' showing similar activity include Angarsk, Kachug and Usol'ye. DOSAAF organizations are active in Magnitogorsk, Kurgan, Vologda, Leningrad, Kursk, Krasnoyarsk, Yegor'yevsk, Makhachkala, Riga, L'vov, Kaunas,

On the Eve of the DOSAAF All-Union Convention 85-58-1-2/28

Ioshkar-Oly, and Maykop. The DOSAAF Republic Committee of Bellorusskaya SSR (chief Bezdenezhnyy), on the other hand is critized for its failure to organize and train adequate numbers of flying teams. The author stresses the importance of the calibre of instructors and considers their ability to be decisive in ensuring successful training. Applicants at the Saransk and Kaluga instructor training schools include men and women who are admitted on the basis of their records in sports. Personalities mentioned include: Yu. Peklin and N. Pryakhina, Masters of Sports; G. Lyubushkin, Moscow model airplane builder; helicopter pilots V. Yermakov (Gomel' aeroclub), A. Lutsenko and F. Belushkin (TsAK SSSR), A. Teplykh (Tsentral'naya planernovertoletnaya shkola) Central Glider-Helicopter School.

ASSOCIATION: USSR DOSAAF Central Committee

AVAILABLE: Library of Congress

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BELOV, P.G.

Method for calibrating throttle (contracting) devices based on the application of the theory of similarity. Priborostroenie no.2:22-23 F '60. (MIRA 13:5)
(Flowmeter)

ACC NR: AP6033289 SOURCE CODE: UR/0141/66/009/005/0975/0979

AUTHOR: Goronina, K. A.; Belov, P. K.; Sorokina, E. P.

ORG: Scientific Research Radiophysics Institute at the Gor'kiy University (Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete)

TITLE: Determination of the dielectric constant from the change of polarization of a reflected wave

SOURCE: IVUZ. Radiofizika, v. 9, no. 5, 1966, 975-979

TOPIC TAGS: dielectric constant, electric polarization, electromagnetic wave reflection, [illegible], phase shift, refractive index, dielectric loss

ABSTRACT: The authors show that since a definite relation exists between the complex reflection coefficient and the dielectric constant, and since a connection exists between the dielectric constant and the change in polarization of the wave reflected from the investigated medium, it is possible to determine the dielectric constant by measuring the polarization of the reflected wave. It is also shown that for an experimental determination of the ratio of the principal axes of the polarization ellipse and their orientation it is possible to use a receiver for linearly polarized waves, and that the optimal angle of incidence is the so-called principal angle, at which the phase shift between the polarization components is equal to 90°. The authors then describe a setup for the measurement of the dielectric constant of water in the millimeter band (Fig. 1). The waves were generated by a backward-wave oscil-

Card 1/2 UDC: 621.317.335.3

ACC NR: AP6033289

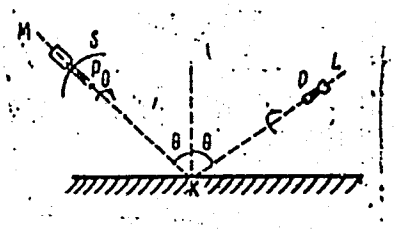

Fig. 1. Block diagram of setup. S - Parabolic mirror, P - rectangular waveguide, O - reflector, Q - receiving horn antenna.

lator and shaped by a parabolic mirror and a rectangular waveguide. The reflected wave is received by a horn antenna and is guided to the receiver by a waveguide operating in the TE_{01} mode. The polarization is measured by rotating the receiving antenna together with the detector. The test procedure is described in detail. The dielectric constant of water was measured at 16C at several wavelengths from 1.2 to 1.6 mm. The values agree well with the theoretical Debye formula for the dielectric constant of water and with measurement results by others. The temperature variation of the refractive index and of the dielectric loss angle were found to deviate from the Debye formula, especially at higher temperatures. Orig. art. has: 3 figures, 4 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 26Jan66/ ORIG REF: 001/ OTH REF: 002

Card 2/2

12(2)

SOV/113-59-7-3/19

AUTHOR: D'yachenko, N. Kh., Doctor of Technical Sciences, Belov, P.M., Candidate of Technical Sciences

TITLE: The Work of the Carburetor Engine During Acceleration

PERIODICAL: Avtomobil'naya promyshlennost', 1959, Nr 7, pp 8-12 (USSR)

ABSTRACT: The authors studied the behavior of gasoline engines during acceleration. They explain the causes of the engine power reduction and the higher fuel consumption during acceleration. Analyzing the function of the spark advance mechanism of an R-23 distributor, they established that a 9-10° deviation of the spark advance from the optimum angle will cause a 5-8% power reduction on engines of type ZIL-120 and M-20. They investigated the influence of butterfly valve position changes on the acceleration intensity. A sudden opening of the throttle for accelerating the engine disturbs

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The Work of the Carburetor Engine During Acceleration

internal processes in the engine, causing a decrease of the available power. A slow, gradual opening of the throttle deteriorates dynamic conditions and increases the fuel consumption during the acceleration period. The engine and the automobile cannot develop a high acceleration and the acceleration process is delayed. Consequently, some intermediate position of the butterfly valve will produce the best results. Experiments with ZIL-120 and M-20 engines confirmed this conclusion. The authors further investigate the character of the air flow with different throttle positions, saying that interruptions of the air flow in the intake system may occur with a sudden opening of the throttle. Finally, they recommend some measures for reducing the losses of power and torque of gasoline engines during acceleration. The design of the air/fuel intake may be improved. The intake

The Work of the Carburetor Engine During Acceleration

system may be heated. Additional fuel may be injected during acceleration. The most radical improvement is the direct fuel injection into the cylinders. Corrections of the spark advance mechanism may be made. There are 8 graphs and 3 Soviet references.

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AKATOV, Yevgeniy Ivanovich; BELOV, Pavel Mitrofanovich; D'YACHENKO, Nikolay Kharitonovich, prof., doktor tekhn.nauk; MUSATOV, Vitaliy Sergeyevich; ZHDANOVSKIY, N.S., doktor tekhn.nauk, retsenzent; DUBUSOVA, G.A., red.izd-va; FRUMKIN, P.S., tekhn.red.

[Performance of a motor-vehicle engine under unsteady conditions] Rabota avtomobil'nogo dvigatelia na neustanovivshemsia reshime. Pod red. N.Kh.D'iachenko. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 247 p. (MIRA 13:4)
(Motor vehicles--Engines)

D'YACHENKO, Nikolay Kharitonovich, doktor tekhn. nauk, prof.; DASHKOV, Sergey Nikitich, doktor tekhn. nauk, prof.; MUSATOV, Vitaliy Sergeyevich, kand.tekhn.nauk; BELOV, Pavel Mitrofanovich, kand. tekhn.nauk,prof.; BUDYKO, Yuriy Ivanovich, kand.tekhn.nauk. Prinimali uchastiye: BURYACHKO, V.R.; GUGIN, A.M.; ZHDANOVSKIY, N.S., doktor tekhn. nauk,prof., retsenzent; YURKEVICH, M.P., inzh., red. izd-va; PETERSON, M.M., tekhn. red.

[High-speed piston internal conbustion engines] Bystrokhodnye porshnevye dvigateli vnutrennego sgoraniia. Moskva, Mashgiz, 1962. 368 p. (MIRA 15:7)
(Gas and oil engines) (Diesel engines)

BELOV, P. N.

"Investigation Into the Contributions Made by Individual Layers of the Atmosphere to the Variation in the Pressure Near the Earth".
Meteorol. i Gidrologiya, No 6, pp 22-25, 1954.

Statistical treatment of the data of radio sounding is conducted on the basis of the following elementary indentity: $dp_o = [dp_o - dp_{z1}] + [dp_{z1} - dp_{z2}] + \ldots + [dp_{zn}]$, where dp is the day-today changes in pressure (dp_o is the change at the earth, and dp_{zj} are the changes at the level z_j, etc.). The quantities in the brackets are treated as the contributions of the individual layers to the variation in the pressure at the earth. In the treatment it is assumed that $z_k - z_{k-1} = 1$ km and $z_n = 10$ km.

The results of 131 pairs of radio-sounding ascents were divided into 4 groups: (1) sinking cyclone or trough, (2) filling cyclone or trough, (3) intensifying anticyclone or crest, and (4) weakening anticyclone or crest. This classification was carried out in accordance with the distribution of pressure at the earth's surface. For each group the mean values of the contributions were calculated and analyzed. It is established that sharpening of the extremum of the ground baric field (group 1 and 3) is ordinarily related to the advection of masses at heights greater than 10 km. Smoothing of the extremum (groups 2 and 4) is related to the advection of masses in the lower 5-km layer. On the average for each of the groups the advection of masses into a layer between 5 and 20 km is comparatively small. (RZhGeol, No 11, 1955)

SO: Sum No 884, 9 Apr 1956

BELOV, P.N., Cand Phys-Math Sci--(diss) "Forecasting atmospheric pressure by means of empiric functions of influence." Mos, 1958. 8 pp (Main Administration of Hydro-Metereological Service under the Council of Ministers USSR. Central Inst of Forecasts), 100 copies (KL,22-58,101)

Belov, P. N.

AUTHOR: Belov, P. N. 50-2-2/22

TITLE: Forecasting of Atmospheric Pressure by Means of Empiric Influence Functions (O prognoz atmosfernogo davleniya s pomoshch'yu empiricheskikh funktsiy vliyaniya).

PERIODICAL: Meteorologiya i Gidrologiya, 1958, Nr 2, pp. 10-16 (USSR)

ABSTRACT: The application of the electronic method of computation for the forecasting of meteorological elements makes possible the solution of various problems which necessitate the preparation of a huge amount of data. This fact can be seen distinctively from the statistic methods of forecasting, e.g. the forecasting of meteorological values by means of empiric influence functions.
Here a method of forecasting of the pressure fields at various atmospheric heights already 24 and 36 hours in advance is suggested based on the application of empiric influence functions. It is assumed that a certain connection exists between the circulation conditions (distribution and shifting of winds and temperatures) on a limited ground surface at a certain initial moment and the subsequent change of pressure. The advantage of the

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application of the empiric influence functions consists in the fact that they make possible the consideration of the influence of seasonal conditions (intensity of cyclone activity, different character of heat influx) and the local conditions (influence of mountains and oceans) without additional computations. The suggested method differs from the corresponding methods by applicating statistic forecasts by taking into consideration the "nonlinear member" and by the selection of the network of the points the values of which are used for the computation of the pressure change.

The practical application of the given scheme aimed at obtaining the empiric influence functions for the forecasting of pressure changes of sea level and the influence of the heights of isobaric surfaces for the winter season (December, January, February) at 20 points of the European part of the USSR.

As an example a diagram of the dependence of the quantities R and σ on the distance between the stations is represented on a plane surface of 700 millibar on fig. 2. (R denotes the

coefficient of the ratio of the geopotential of two stations

$$\sigma = \sqrt{\frac{\sum^{N} (H_1' - H_2')_k^2}{N}}$$

H_1' and H_2' denote the deviation of the geopotential from the standard value at the stations 1 and 2, N denotes the number of determinations). Thus, it can be seen that σ does not increase linearly with the distance as it was found theoretically and that (2) ($R \leqslant 0{,}80$, $\sigma \geqslant 8$) holds good only at a distance of approximately 700 km. The distance of 650-750 km was assumed as the most suited between the stations the data of which are used for forecasting. The problem of the number of stations used for the forecasting at one point is in connection with the problem of the distance of the outmost point from the point for which the forecasting is made. It was confirmed by synoptic experience

that this distance must not be shorter than the path of the cyclone or the anticyclone at the time of the forecasting. It can be seen from the data given on table 2 that the influence of the lower layer between the surfaces of 1000 and 700 millibar is generally greater on the change of pressure at different level than the influence of the layer between 700 and 300 millibar, although the first layer is much smaller than the second. This conclusion agrees with that in work (1) as to the influence on the change of pressure near the ground in the course of 24 hours.
There are 3 figures, 3 tables, and 11 references, 8 of which are Slavic.

AVAILABLE: Library of Congress

Card 4/4

Belov, P.N.

3(7) PHASE I BOOK EXPLOITATION SOV/2592

Moscow. Tsentral'nyy institut prognozov

Voprosy dinamicheskoy meteorologii (Problems in Dynamic Meteorology) Moscow, Gidrometeoizdat, 1959. 69 p. (Series: Its Trudy, vyp. 86) Errata slip inserted. 900 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Ed. (Title page): S. A. Mashkovich; Ed. (Inside book): L. V. Blinnikov; Tech. Ed.: I. M. Zarkh.

PURPOSE: This issue of the Institute's Transactions is intended for specialists working in the field of dynamic and synoptic meteorology.

COVERAGE: This collection of articles treat problems of short-range weather forecasting using the methods of dynamic meteorology. The use of an electronic computing machine "Pogoda" in short-range (36 hours) forecasting of pressure fields at sea level and at 300 mb is described. The programming and coding system are discussed in some detail. The author concludes that the forecasting accuracy of the method he describes is on a par with

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corresponding statistical techniques used in non-Soviet countries. References accompany each article.

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Some results of testing the method of pressure forecast based on the use of empirical influence functions. Trudy TSIP no.106:53-60 '60.
(MIRA 13:12)

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Numerical prediction of the baric field based on a three-level model of the atmosphere. Trudy TSIP no.111:29-38 '61. (MIRA 14:9)
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AUTHOR: Belov, P.N.

TITLE: The use of empirical influence functions in the weather forecasting at a single point

SOURCE: Moscow. Tsentral'nyy institut prognozov. Trudy. no.111. 1961. Voprosy dinamicheskoy meteorologii. 44-49

TEXT: An attempt is made to develop a method for the statistical forecasting of meteorological elements over a period of three days. A consideration of the equation of hydrodynamics leads the present author to the conclusion that the following expression may be of interest in the forecasting of the pressure at sea level, the wind velocity and other meteorological elements:

$$s_k = \sum_{l=1}^{N} a_{lk} \overline{H}_l^{500}(-24) + \sum_{l=1}^{N} b_{lk} \overline{H}_l^{1000}(-24) + \sum_{l=1}^{N} c_{lk} \overline{H}_l^{500}(0) + \sum_{l=1}^{N} d_{lk} \overline{H}_l^{1000}(0), \quad (4)$$

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where $\overline{H}^{500}(0)$ and $\overline{H}^{500}(-24)$ are linear functions of the geopotential H_{500} at the initial instant of time and the instant 24 hours later; a, b, c, d are the influence functions; i are the points at which the functions H are taken and s_k is the forecast element. In order to forecast the weather at Moscow, the points i were chosen so that they uniformly surrounded the point at which the elements were to be forecast (with a slight shift in the western direction) and were at a distance of 750 km from each other. Fifteen points were taken at each level, as suggested by the present author in Ref.1 (Meteorologiya i gidrologiya, no.2, 1958). The functions H were taken to be the smoothed values of H for five surrounding points. In order to obtain the smoothed values of H at each of the above fifteen points, a total number of 55 points per chart were necessary. The network employed is illustrated in Fig.1 (I - initial points, II - points with smoothed values of H, III - forecast point). In order to determine the empirical influence functions it was found necessary to set up and solve several systems of normal equations with sixty unknowns, as

described by the present author in Ref.2 (Trudy TsIPa, no.86, 1959). The accuracy of the equations for the forecasting of the pressure at sea level over 24 and 48 hours is indicated by the corresponding correlation coefficients which are 0.91 and 0.87 respectively. The correlation coefficients for the forecasting of the altitude H_{500} were found to be 0.90 and 0.87 respectively. The cloudiness can be predicted with an equally high degree of accuracy. All the numerical calculations were carried out on an electronic computor. L.T.Matveyev and Ye.N.Blinova are mentioned in the article in connection with their contributions in this field. There are 1 figure, 1 table and 14 references: 10 Soviet-bloc and 4 non-Soviet-bloc. The references to English language publications read as follows:
Ref.11: Cooley, D.S., Tellus, v.10, no.3, 1958;
Ref.12: Malone T.F., Proc. Nat. Acad. Sci. USA, 41, no.11, 1955;
Ref.13: White R.M. and Paison W.C., J. Meteor, v.12, no.5, 1955;
Ref.14: White R.M., Derby R.G., Cooley D.S. and Seaver F.A., J. Meteor, v.14, no.5, 1957.