TERENT'YEV, A.P.; RUKHADZE, Ye.G.; VOZZHENNIKOV, V.M.; ZVONKOVA, Z.V.;
OBOLADZE, N.S.; MOCHALINA, I.G.

Conductance and activation energy of chelate compounds of dithiocarbamates and thioamides, derivatives of pyridine. Dokl. AN SSSR 147 no.5:1094-1097 D '62. (MIRA 16:2)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova i Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. 2. Chlen-korrespondent AN SSSR (for Terent'yev).
(Chelates) (Carbamic acid) (Amides)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Z.V. Zvonkova and G. S. Zhdanov, The crystal structure of Ag_7NO_{11}. Pp. 1284-9

The authors have made an independent investigation of the structure of the Ag_7NO_{11} crystal. There are tables of a Debye crystallogram, structural amplitudes, function of the electron density.

The Karpov Physical Chemical Inst.
X-Ray Laboratory, Moscow
April 21, 1948

SO: Journal of Physical Chemistry (USSR) 22, No. 11, 1948

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

6

Phys Chem

X-ray study of ammonium thiocyanate. Z. V. Zvonkova and G. S. Zhdanov (Karpov Inst. Phys. Chem., Moscow). *Zhur. Fiz. Khim.* 23, 1495–1501(1949).—The unit cell of NH_4SCN contains 4 mols. and is monoclinic; $a = 4.3$, $b = 7.2$, $c = 13.0$ A., $\beta = 97°40'$; space group $C_{2h}^5 - P2_1/C$. The coordinates of the atoms are: S 0.902, 0, 0.195; N 0.165, 0.714, 0.061; C 0.086, 0.840, 0.120; and N of NH_4 0.442, 0.333, 0.111. In SCN the S-C and C-N distances are 1.59 and 1.35 A., resp.

I. J. Bikerman

8/30/54

CA

Crystal structure of thiocyanates. II. Crystal structure of $K_2Co(NCS)_4.4H_2O$. G. S. Zhdanov and Z. V. Zvonkova (Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 24, 1339-44(1950); cf. *C.A.* 46, 2818e.—Crystals of $M_2Co(NCS)_4.nH_2O$ (where M = K, NH_4) belong to the rhombic system. The space group is $D_2^4 - P2_12_12_1$. The dimensions of the unit cell of $K_2Co(NCS)_4.4H_2O$ (I) are *a* = 11, *b* = 5.41, *c* = 12.98 A. The no. of mols. per unit cell is *z* = 2. The pycnometric and x-ray ds. are 1.91 and 1.87, resp. Weissenberg photographs (Cu radiation) are taken and the exptl. *F*(*h0l*) and *F*(*0kl*) given. The structure is detd. by the method of the F^2(*h0l*) and F^2(*0kl*) series with the help of the homorphous NH_4 salt. Tetrahedrons of $Co(NCS)_4^{--}$ ions form a *b.c.c.* lattice. The corners of these tetrahedrons are surrounded by the K^+ octahedrons. The structure of I is of the antirutile type A_2B. The orientation of the tetrahedrons is detd. by the distance $S_I - S_{II}$, of the order of an intermol. distance (3.45 A.). The tetrahedrons are weakly bound together by means of the electrostatic interaction between S and K. Each K is surrounded by 4 S atoms (3.67, 3.59, 3.60, 3.76 A.) and 4 N atoms (2.62 and 3.87 A.). The H_2O mols. are in the octahedral holes of the cubic lattice. The Co-N distance is 2.15 A., as expected for a bond with high ionicity. **III. X-ray study of $Ba(SCN)_2.2H_2O$ crystals.** Z. V. Zvonkova and G. S. Zhdanov (Karpov Phys.-Chem. Inst., Moscow). *Ibid.* 1345-9.—Crystals of $Ba(SCN)_2.2H_2O$ (I) are monoclinic with a unit cell of dimensions *a* = 15.98, *b* = 4.26, *c* = 13.26 A., β = 104°30' (space group *C* 2/*m*) and pycnometric and x-ray ds. 2.19 and 2.21, resp. There are 4 mols. per unit cell. The at. parameters are detd. by means of F^2 and *F* series obtained from Weissenberg photographs taken with Cu and Mo radiation; the parameters of Ba, S_I, and S_{II} are, resp., $0.1840_6 \pm 0.0002_6$, 0.3400 ± 0.0003, and $0.3332_6 \pm 0.0002_6$; the precision of these data is discussed. The structure of I is detd. by the arrangement in plane double layers of the linear SCN^- groups. Each Ba^{++} is surrounded by 4 N, 2 S, and 2 O. The min. effective ionic radii of S and N are, resp., 2.01 and 1.47 A. Since the radius and electronegativity of S and N are different, these atoms are nonequiv. in the SCN group. This result was already found with NH_4SCN (formation of H bonds NH...N) (cf. *C.A.* 43, 2484a) and with $K_2Co(NCS)_4$ (formation of Co-N bonds).

Michel Boudart

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.; KOLNINOV, O.V.

Dependence of interatomic distances in crystalline structures on the ligand field. Zhur. fiz. khim. 37 no.12:2778-2780 D '63. (MIRA 17:1)

1. Fiziko-khimicheskiy institut imeni Karpova.

G. G. Vorontsova. *Doklady Akad. Nauk S.S.S.R.* 102 … is polymor-
phic with monoclinic, orthorhombic, and cubic modifica-

ZVONKOVA

USSR/Chemistry - Ozonides Jan 51

"Crystalline Structure of Potassium Ozonide," G. B. Zhdanov, Z. V. Zvonkova, X-Ray Lab, Physicochem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol XXV, No 1, pp 100, 101

Examd cryst structure of KO_3 in prepn of 92.3% KO_3 and 5.5% KOH by Debye-Sherrer method. Deduced cryst structure very similar to that of KN_3 from similarity of values of d (interplane distance) and I (intensity). KO_3 when heated to 90°C decompd into KO_2.

180T19

LC

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

USSR/Nuclear Physics - Electron Density Mar 52

"Distribution of Electron Density in Complex Compounds in the Crystalline State," G. S. Zhdanov, Z. V. Zvonkova, Phys Chem Inst imeni Karpov

"Zhur Eksper i Teoret Fiz" Vol XXII, No 3, pp 356-359

Analyzes effect of diffraction, produced during harmonic synthesis of electron density in complex metal compds. Clarifies its role in the X-ray structure detns of the numbers of electrons in atoms. Received 19 Apr 51.

21ST57

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z. V.

USSR/Chemistry - Mercury Compounds Apr 52

"Crystal Structure of Thiocyanates. V. Crystal Structure of Mercury Halogenothiocyanates," Z. V. Zvonkova, G. S. Zhdanov, Phys Chem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol XXVI, No 4, pp 586-591

Detd the structure of mols HgClSCN and HgBrSCN and established crystal-chem relationships in the class of compds HgXSCH (where X = Cl,Br).

217T32

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

[illegible] nature of the thiocyanates [illegible] Crystalline [illegible] of the complex ~~thiocyanates~~ thiocyanates of zinc, cadmium and mercury [illegible] L. Ya. Katlov [illegible] Zhur. Fiz. Khim. 26, 1798-1803 [illegible] 15 [illegible] the nature of [illegible] The structure of the complex [illegible] Crystals of $K_2Zn(NCS)_4$ [illegible] dimensions of [illegible]

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Crystallography

Crystal structure of thiocyanates. Part 7. Crystal structure of complex platinum tetrathiocyanate. Zhur. fiz. khim. 26, no. 12, 1952.

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

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

CA

Crystal structures of the higher oxides of metals of the first group of the periodic system. G. S. Zhdanov and Z. V. Zvonkova. *Doklady Akad. Nauk S.S.S.R.* 82, 743-6 (1952).—By x-ray patterns at 20°, β-NaO_2 has a face-centered cubic lattice of the NaCl type, $a = 5.44$ A., with the O_2^- ion having a spherical symmetry. The interat. distance within the O_2^- ion is 1.31 ± 0.03 A.; the distance calcd. for a O:::O bond is 1.24 A. At lower temps., the spherical symmetry of the O_2^- ion is lost; at −70°, α-NaO_2 gives addnl. lines with mixed indexes, not corresponding to the NaCl-type lattice. These lines can be fitted into a cubic lattice with $a = 5.30$ A. With KO_2, there is also a transition from the low-temp. α into the high-temp. β modification; the latter is isomorphous with β-NaO_2, and has $a =$ 6.05 A. at 150° and 6.12 A. at 300°. In NaO_2, the spherical radius of the O_2^- ion changes from 1.77 A. at 20° to 1.72 A. at −60°; in β-KO_2, the radius of O_2^- is 1.70 A. at 150°. The contraction of the spherical radius of the O_2^- ion, identical in KO_2 and in NaO_2, corresponds to a compression of the larger half-axis of the ellipsoidal O_2^- ion by 0.23 A. The range of stability of the β modifications of KO_2 and NaO_2 is evidently detd. by thermal compression of the lattice, and the phase transition occurs when the min. spherical radius is reached on account of steric hindrances. The phase transition β→α-NaO_2 is accompanied by a lowering of the magnetic susceptibility analogous to that observed in antiferromagnetics. The value of $a = 5.490 \pm 0.005$ A. reported for β-NaO_2 by Templeton and Dauben (*C.A.* 44, 7117c) is probably initiated by impurities. For the same reason, the O—O distance of 1.33 ± 0.06 A. is too high, and the proposed space groups T_h^6 and O_h^6 (pyrite structure) are wrong. The only correct space group for β-NaO_2 is O_h^5. The alleged 4 possible structure models of β-NaO_2 with some preferential statistical distribution of O_2^- ions along the solid diagonal of the cube is unsubstantiated. The construction of linear vector models leads to very good agreement with the model of spherical symmetry of the O_2^- ion. That spherical symmetry can arise as a result of a free rotation of these ions in the lattice. N. Thon

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA S. V.

USSR/Chemistry - Superoxides

Feb 52

"The Crystal Structure of the Higher Oxides of Group I Metals from the Periodic Table," G. S. Zhdanov and S. V. Zvonkova

"DAN SSSR" Vol 87, No 5, pp 743-746

Sodium and potassium superoxides, (beta-NaO_2 and beta-KO_2) were studied by means of X-ray diffraction. A brief review of USSR work (by I. N. Kagarnovskiy etyal.) on the structures of SrO_2, BaO_2, CaO_2, alpha-KO_2, beta-NaO_2 and KO_3 is given in the introduction. Higher silver oxides are also discussed. Presented by Academician A. N. Frumkin 13 Dec 51

238T5

② 4

Crystallochemistry of metal thiocyanates. G. S. Zhdanov and Z. V. Zvonkova. *Doklady Mezhdunarod. Kongr. Teoret. i Priklad. Khim., XIII Kongr., Stockholm* 1953, 136-74(in French, 175-215); cf. *C.A.* 48, 432*f*.—A discussion of the structures of: (1) the thiocyanate group; (2) ionic crystals of metal thiocyanates such as $Ba(SCN)_2$ and HgSCNCl; (3) tetracoördinated metal thiocyanate complexes such as $HgCo(SCN)_4$ and $K_2A(SCN)_4$ (where A may be Co, Zn, Cd, Hg, Pt or Ni); (4) hexacoördinated metal thiocyanates of Pb, Pt, Cr, Ni, Mn, and Rh; (5) H-bonded thiocyanates. 29 refs. Philip S. Baker

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Chem Abs v48
1-25-54
General & Physical
Chemistry

Physics

② 3

Crystallochemistry of thiocyanates of metals. G. S. Zhdanov and Z. V. Zvonkova. *Uspekhi Khim.* 22, 3-35 (1953).—Review with detailed summary of structures of various metal thiocyanates. 30 references. G. M. K.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Hydraulic filling of the Mingechaur dam without a trestle. Gidr.stroi.
22 no.4:9-11 Ap '53.
(Mingechaur hydroelectric power station) (Dams) (MLRA 6:5)

ZHDANOV, G. S.; ZVONKOVA, Z. V.; GLUSHKOVA, V. P.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Crystallography

Crystal structure of thiocyanates. Part 9. X-ray investigations of crystals of complex hexathiocyanates of chromium, nickel and platinum. Zhur. fiz. khim. 27, no. 1, 1953.

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

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

1. ZHDANOV, G. S.; TCSELKO, K. I.; ZVONKOVA, Z. V.

2. USSR (600)

4. Radiography

7. Radiographic determination of the chemical formula of sodium salts of the nickel thiocynate complex. Dokl. AN SSSR 88, No. 4, 1953.

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

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOV, Z.V.

"Developments of Crystalls-chemical representations regarding the nature of the inter-molecular relationship and inter-molecular spaces based on roentseno-structrual analysis," by Z.V. Zvonkov. pp. 71-78.

SO: <u>Works of the Inst of Crystallography</u>, Issue #10, (Reports submitted at the 3rd International Congress of Crystallography; published by the Acad Sci USSR, Moscow, 1954)

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

USSR/ Physics - Crystallography

Card	:	1/1
Authors	:	Tobelko, L. I., Zvonkova, Z. V., and Zhdanov, G. S.
Title	:	The structure of realgar and about the atomic radius of arsenic.
Periodical	:	Dokl. AN SSSR, Ed. 4, 749 - 752, June 1954
Abstract	:	Explains the peculiarities, i. e., molecular structure and instability under light, of mineral realgar by the fact of its having large intermolecular distances which leads to a loose coupling of the As-As atoms and their substitution by more stable ones, i. e., As-S. This was proved by the method of statistical equalities. Fifteen references. Table, graph.
Institution	:	The L. Ya. Karpov Scientific-Research Physico-Chemical Institute
Presented by	:	Academician N. V. Belov, March 2, 1954

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZHDANOV, G.S.; ZVONKOVA, Z.V.

X-ray structural analysis of $K_2Cd(SCN)_4.2H_2O$ crystals. Trudy Inst. krist. no.9:221-228 '54. (MLRA 7:11)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Potassium cadmium thiocyanate) (Crystallochemistry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z. V.

USSR/Chemistry

Card 1/1

Author : Zvonkova, Z. V.

Title : Crystalline structure of $Fe_3Br_8 \cdot 16H_2O$

Periodical : Zhur. Fiz. Khim, 28, Ed. 3, 453-458, March 1954

Abstract : Crystals of $Fe_3Br_8 \cdot 16H_2O$ belong to the monoclinic syngony. Determined were : the elementary nucleus $a = 8.74$; $b = 7.26$; $c = 22.94$ Å, spatial group $C^5_{2h} - P2_1/C$, number of weight particles in the nucleus $z = 2$ and the x-ray density $\phi x = 2.50$. X-ray investigation of the $Fe_3Br_8 \cdot 16H_2O$ crystals established an entirely new type of atomic structure. A new chemical and structural formula for the compound $[Fe^{II}\ Fe_2^{III}][Br8(H_2O)\ 16]$ was set up. Eight references. Tables, graphs.

Institution : The L. Ya. Karpov Physico-Chemical Institute, Moscow, USSR

Submitted : June 5, 1953

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z. V.

USSR/Chemistry

Card 1/1

Authors : Zhdanov, G. S., and Zvonkova, Z. V.

Title : Problem of crystallochemical investigation of Ag_7NO_{11} compounds

Periodical : Zhur. Fiz. Khim, 28, Ed. 3, 564-565, March 1954

Abstract : One of the methodical problems of a majority of structural investigations of complex compounds is not only to find the positions of light atoms in the presence of heavy ones, but the sequent stage of the x-ray analysis namely, the derivation of accurate interatomic spaces. The authors point out the methodical inaccuracies in the Bokiy-Smirnov (1953) work which led to an entirely baseless and incorrect ions O_2^2 in the Ag_7NO_{11} structure Institution and to writing a formula for this compound in the form of $Ag\,Ag_6\,O_4\,(O_2)_2NO_3$. Five references. Table.

Institution : The L. Ya. Karpov Physico-Chemical Institute, Moscow, USSR.

Submitted : September 17, 1953

ZVONKOVA,Z.V.; SAMODUROVA,V.V.; VORONTSOVA,L.G.

New data on the crystallochemistry of complex mercury halide compounds. Dokl. AN SSSR 102 no.6:1115-1118 Je'55. (MLRA 8:10)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya.Karpova. Predstavleno akademikom N.V.Belovym
(Crystallochemistry) (Mercury haloids)

USSR/ Physical Chemistry - Crystals

B-5

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10974

Author : Zhdanov G.S., Zvonkova Z.V., Vorontsova L.G.
Title : X-Ray Investigation of the Structure of Methylene-Blue Dyestuff

Orig Pub : Kristallografiya, 1956, 1, No 1, 61-65

Abstract : An investigation was made of the crystalline structure of Methylene Blue dye $(C_{16}H_{18}N_3S)^+Cl^- \cdot nH_2O$, which crystallizes in long dark-blue needles having a metallic luster. Ascertained were the lattice parameters: a 9.86_6, b 31.86_9, c 7.07_4 A, 97°11'. From F^2-dernes data and by means of isomorphous replacenent of Cl atom by a Br atom, projection of electron density on (001) plane was plotted. As a result, a fundamental model of structure, in (001) projection, has been derived, which was confirmed by geometric analysis. Nearest S-Cl distande, equal to 2.8 A in projection, exceeds considerably lenght of covalent bond, which provides a confirmation of an ionic model of structure. It was ascertained that the nearest to the halogen atom of the complex ion is the S atom and not the methyl groups as was previously reported (Taylor W.H., Z. Kristallogr., 1935, A91, 450-460). This is explained by concentration of positive charge at S atom. Taylor's

Card 1/2

USSR/ Physical Chemistry - Crystals

B-5

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10974

assumption concernig isostructural nature of Methylene Blue iodide and hydrochloride was not confirmed.

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Zvonkova, Z.V.

B-5

USSR/Physical Chemistry - Crystals.

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 212

Author : Z.V. Zvonkova.

Inst : -

Title : Crystallochemical Study of Nature of Donor-Acceptor Bond in Complex Boron Compounds.

Orig Pub : Kristallografiya, 1956, 1, No 1, 73-80

Abstract : An x-ray-structural study of the compound of F_3B with NC_5H_5 was carried out. The parameters of the monoclinic lattice are: a = 17.71, b = 5.89, c = 14.34 A, β = 118°42', Z = 8, f. f. $P2_1/c$; ρ (meas.) = 1.48. At the structure deciphering, the method of statistical equations was used for the determination of the signs of structural amplitudes, as well as the method of three-dimensional sections and projection of electronic density. Photographing was carried out by the x-ray goniometric method. The interatomic distances are :

Card 1/2

USSR/Physical Chemistry - Crystals.

B-5

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 212

B-F - 1.41. B-N - 1.53, F-F - 2.30, N-C - 1.36, C-C - 1.39 A; the valence angles are: FBF - 109.5°; NBF - 108.5°; $C_{(1)}NC_{(2)}$ - 117.5°; $NC_{(1)}C_{(3)}$ - 123°; $C_{(1)}C_{(3)}C_{(5)}$ - 119°; $C_{(3)}C_{(5)}C_{(4)}$ - 118.5°. The exactitude of the determination of interatomic distances was 0.01 to 0.02 A. The deformation of the valence angles in the pyridine molecule agrees with radiospectroscopical data. The planes of the pyridine rings are perpendicular to the plane (0,1,0). A considerable reduction of the internolecular radius of the hydrogen atom ($r_H = 0.80$ A) was established in the structure by the distances H-H between molecules from neighboring cells. The crystallochemical theory of the donor-acceptor bond is discussed.

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Category: USSR / Physical Chemistry - Crystals B-5

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29675

Author : Zhdanov G. S., Zvonkova Z. V., Rannev N. V.
Inst : not given
Title : X-Ray Diffraction Study of Diethyl-Dithiocarbamate of Lead

Orig Pub: Kristallografiya, 1956, 1, No 5, 514-519

Abstract: Monocrystals of $[(C_2H_5)_2NCS_2]_2$ Pb were obtained in the form of colorless hexagonal prisms. X-ray determinations were made of the parameters of monoclinic lattice: a 9.55, b 11.75, c 14.72 A, β 96°, Z = 4, F. gr. $P2_1/c$. By means of F series pyramidal configuration of Pb-S bonds (tetragonal pyramid) was ascertained. From projection of electron density (100) and (010) the coordinates of Pb, S atoms were obtained. Interatomic distances in the pyramidal complex: Pb-S 2.7-2.8, S-S 3.3-3.5, Pb-Pb 4.25 A. Pb-S bonds are of predominantly covalent nature. Structural data are compared with change in dipole moments in the series of dithiocarbamates of Zn, Ni, Pb, Bi.

Card : 1/1

ZVONKOVA, Z.V.

Using direct methods of X-ray structural analysis for crystallochemical examinations. Kristallografiia 1 no.6: 631-633 '56. (MLRA 10:5)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova.
(X-ray crystallography)
(Crystallochemistry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8

[illegible]

ZVONKOVA, V.

Kaspov Institute for Physical Chemistry, Moscow-

"The development of Crystal Chemical Theory of the Structure of Complex Compounds" (SEction 6-20) a paper submitted at the General Assembly and International Congress of Crystallography, 10-19 Jul 57, Montreal, canada.

C-3,800,189

70-3-14/20

AUTHOR: Zvonkova, Z.V.

TITLE: Development of the crystal-chemical theory of structural compounds. (Kristallokhimicheskiye issledovaniya stroyeniya nekotorykh kompleksnykh soyedineniy)

PERIODICAL: "Kristallografiya" (Crystallography), 1957, Vol.2, No.3, pp. 408 - 413 (U.S.S.R.)

ABSTRACT: Crystal-chemical research on the inter-molecular inter-action shows some interesting and significant features of the nature of the hydrogen bond. The new values obtained for inter-molecular radii of the hydrogen atom in the structure $[ClTlC_6H_5]^+Cl^-$ ($r_H = 0.74$ Å) and in the structure $F_3B - NC_5H_5$ ($r_H = 0.80$ Å) are smaller than the generally accepted value $r_H = 1.17 - 1.20$ Å. The inter-molecular distance H ... F (1.93 Å) is shorter than the sum of the inter-molecular radii of hydrogen and fluorine (2.52 Å). A strong hydrogen bond N - H ... S has been found in the structure of captax. Strong hydrogen bonds are due to electrostatic attraction and can be obtained in two cases: 1) along the line of polar covalent σ-bond and 2) for groups of double-bond character, for example $S = C<$, by the inter-action of

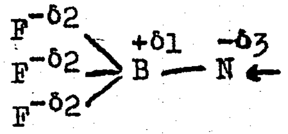
Card 1/3

70-3-14/20

Development of the crystal-chemical theory of structural compounds. (Cont.)

p_π -electron cloud of the sulphur atom and of the hydrogen atom of the $N^{-\delta 2}-H^{+\delta 1}$ bond.

Crystal-chemical analysis of chemical bond nature in the complex compounds is of greatest importance. Inter-atomic distances depend on the degree of s- and p- character of the atoms in the chemical bonds. Crystal-chemical analysis ($TlCl_3 \cdot 4H_2O$, $[ClTlC_6H_5]^+Cl^-$, TlJ_3) indicates sp^2 and sp hybrid orbitals or lone-pair electrons s^2 of the thallium. Determination of the inter-atomic distances in the structure $F_3B - NC_5H_5$ made it possible to reveal the nature of the donor-acceptor boron-nitrogen bond. This co-ordinate link is assumed to be polar:



with an overlap of a vacant orbital of the boron and a filled orbital of the nitrogen which contains an asymmetrical lone pair of electrons.

Card 2/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Development of the crystal-chemical theory of structural compounds. (Cont.)

The crystal-chemical investigations show that in the complex compounds of metals (Hg, Tl, Pb) of incomplete s - p orbitals the degree of use of p-character of a metal atom in metal-halogen bonds increases in the succession Cl, Br, I. Therefore, in the $p\text{-}BrC_6H_4B(OH)_2$ structure the degree of use of p-character of the carbon atom increases in $Br\text{-}C\langle$ bond as compared to the $Cl\text{-}C\langle$ bond. In the complex compounds the degree of use of p-character of a metal atom in the metal-sulphur bond is greater than in the metal-bromine bond. In the $B_3S_3Br_3$ structure, therefore, valence angles are $S - B - S < 120^\circ$ and $B - S - B > 120^\circ$. There are 1 figure and 1 table and 18 references, of which 10 are Slavic.

ASSOCIATION: Physico-Chemical Institut im. L.Ya. Karpov. (Fiziko-khimicheskiy Institut im. L.Ya. Karpova)

SUBMITTED: February 20, 1957.

AVAILABLE: Library of Congress

ZVONKOVA, Z.V.

Crystallochemical studies of the nature of donor-acceptor bonds in complex compounds. Zhur. neorg. khim. 2 10:2334-2345 O '57.
(MIRA 11:3)

1. Fiziko-khimicheskiy institut im. L. Ya. Karpova.
(Crystallochemistry) (Chemical bonds) (Complex compounds)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

[redacted]

The nature of the chemical bonds in thiocyanate complexes of metals [with summary in English]. Zhur.fiz.khim. 31 no.9:2074-2077 S '57. (MIRA 11:1)

1.Fiziko-khimicheskiy institut im. L.Ya. Karpova, Moskva.
(Chemical bonds) (Complex compounds) (Thiocyanates)

SOV/70-3-5-4/24

AUTHORS: Zvonkova, Z.V. and Tashpulatov, Yu.

TITLE: A New Determination of the Crystal Structure of Thiourea (Novoye opredeleniye kristallicheskogo stroyeniya tiomocheviny)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 553-558 (USSR)

ABSTRACT: The structure of thiourea was first determined in 1928 and 1931, so that a re-investigation to measure the bond lengths by modern methods was called for. The crystals are orthorhombic with space group Pnma = D_{2h}^{16}, a = 7.66, b = 8.54, c = 5.52 A, Z = 4, $d_{calc.}$ = 1.39 and $d_{obs.}$ = 1.405 g/cm^3. The co-ordinates of the S and N atoms were determined from Patterson projections. The xyO and Oyz Fourier projections were then calculated (23 and 29 independent reflections, respectively). 210 general reflections were obtained with a Weissenberg camera designed by M.M. Umanskiy. A section (x, 1/4, z) was then calculated. The co-ordinates finally obtained differ appreciably from those found earlier (SB II, 805, 882) and are S, (0.999, 0.250, 0.886); C, (0.099, 0.250, 0.145);

Card1/3

A New Determination of the Crystal Structure of Thiourea

N, (0.134, 0.116, 0.234). From these data, the bond lengths are S-C = 1.61 ± 0.01 A and C-N = 1.28 ± 0.01 A and the angles are N-C-N 129° ± 1°, and S-C-N 116° ± 1°. The shortest intra-molecular distances are S-N 2.46 and N-N 2.30 and the shortest inter-molecular S-N 3.36 and N-N 3.84 A. These are about 0.05 A less than obtained earlier. There are weak H-bonds associated with the interaction of the H-atoms with the P_{pi}-electrons of the electron cloud. The characteristic molecular symmetry in isolation is mm but in the crystal is only m. The distortions found in the earlier determination were not confirmed and the molecule appears almost planar, the displacement of the N atom being 0.01 A. The bond angles and lengths are related to those in captax.
There are 7 figures and 13 references, 7 of which are Soviet and 3, English, 2 German and 1 Scandinavian.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

SOV/70-3-5-4/24

A New Determination of the Crystal Structure of Thiourea

ASSOCIATION: Fiziko-khimicheskiy institut , im. L. Ya. Karpova
(Physico-chemical Institute im. L. Ya. Karpov)

SUBMITTED: January 28, 1958

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

SOV/70-3-5-5/24

AUTHORS: Zvonkova, Z.V. and Glushkova, V.P.

TITLE: The Crystal Structure of p-bromphenylboric Acid (Kristallicheskoye stroyeniye p-bromfenilbornoy kisloty)

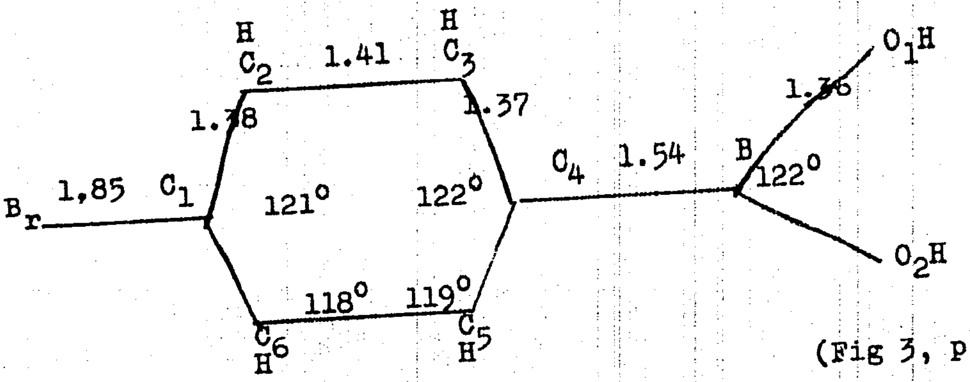
PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 559-563 (USSR)

ABSTRACT: 40 crystals of p-$BrC_6H_4B(OH)_2$ from various solvents were examined by X-ray diffraction. There appeared to be no piezoelectric effect. The cell was found to be hexagonal with a = 28.73 and c = 9.74 A and space group C6/mcc = C_{6h}^2 with Z = 36 and $d_{calc.}$ = 1.72, $d_{obs.}$ = 1.67 g/cm^3. There are 576 atoms in the unit cell. The Patterson functions $F^2(hk0)$ and $F^2(hkl)$ were constructed which showed only peaks corresponding to Br-Br vectors. The Br atoms were found to lie in mirror planes with z = 0 and z = 1/2. It was assumed that the atoms Br, C_1, C_4 and B lie triply in the positions 12(e). The atoms C_2, C_3, C_5, C_6, O_1, O_2 and H ocupy the general positions 24(m). The

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

co-ordinates of the three independent Br atoms were found from F^2 series. Weissenberg photographs were taken for 7 layers about the c axis and these were connected by a -axis photographs. In all, 588 independent reflections were collected. The sections at xy0 and x, y, 0.123 were calculated. The heights of the three Br peaks were 85, 91 and 82 and of the C atoms were 16-20. The Br peaks were thought to be slightly lowered by their antisymmetric arrangement. The final co-ordinates are entered in Table 2, p 560. When a temperature factor of $B=4$ was applied, a final reliability factor of $R=24\%$ was obtained. The angles relating the plane of the molecule to the 010 plane are $\varnothing_1 = 41^{\circ}$, $\varnothing_2 = 52^{\circ}$ and $\varnothing_3 = 50^{\circ}$. The bond lengths and angles are:

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"



(Fig 3, p 561).

The Br-C bond length is 1.85 A comparing with the values of 1.85 and 1.87 reported in other compounds. The maximum value of the deviation of individual molecular dimensions from the mean over the three molecules is 0.03 A. The C_1-C_2 (and C_1-C_6) bonds are shortened to 1.38 and the C_3-C_4 (and C_4-C_5) to 1.37. The C_2-C_3 (C_5-C_6) bonds are

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

SOV/70-3-5-5/24

The Crystal Structure of p-bromphenylboric Acid

lengthened to 1.41. Similar observations have been made in benzoic acid. In captax (2-mercaptobenzthiazol) deformation was also measured. These results show the changes in the interatomic distances due to the differing participation of the s and p electrons in the bonds. An estimate of the intermolecular radius of C can be obtained (1.67 A) which is near to the values in graphite (1.675) and in captax (1.685). The introduction of the acceptor group $B(OH)_2$ decreases the radius from the value of 1.80 found in benzene to this value. The benzene nucleus has become finer and the pi-electron cloud is decreased. Acknowledgments are made to Z.P. Linina, A.N. Khvatkina and A.N. Abramova.

Card 4/5

SOV/70-3-5-5/24

The Crystal Structure of p-bromphenylboric Acid

There are 6 figures, 2 tables and 10 references, 6 of which are Soviet, 3 English and 1 Scandinavian

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova
(Physico-chemical Institute im. L. Ya. Karpov)

SUBMITTED: July 1, 1957

Card 5/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

SOV/70-3-5-6/24

AUTHOR: Zvonkova, Z.V.

TITLE: The Structure of Crystals of Tribromborosulphene
(Kristallicheskoye stroyeniye tribromborsul'fola)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 564-569 (USSR)

ABSTRACT: Crystals of $Br_3B_3S_3$, prepared as described in Z. Naturforsch., 1957, Vol 8B, p 408, with m.p. $132-135^{\circ}$, were chosen for the study of s-p bonds between B and S atoms. Crystals of this compound were monoclinic with $a = 13.99$, $b = 4.12$ and $c = 17.84$, $\beta = 116^{\circ}$, space group $P2_1/c = C^5_{2h}$, $Z = 4$, $d_{calc.} = 2.64$ and $d_{obs.} = 2.60$. The xOz Patterson projection gave the Br positions and a Fourier projection on the same plane was calculated. To refine the positions, two difference Fourier projections, $(F_{exp.} - F_{Br})$ and $(F_{exp.} - F_{Br} - F_S)$, were calculated. The y co-ordinates were found from the Fourier projection on Oyz. A generalised projection using 182 F(h01), 196 F(h11) and 151 F(h21) reflections was used for verification. The

peak heights are extremely sensitive, in this synthesis, to the y co-ordinates of the atoms. The final reliability factor obtained was 21%. The corresponding co-ordinates are Br_1 (0.037, 0.255, 0.096); Br_2 (0.563, 0.031, 0.362); Br_3 (0.212, 0.469, 0.515); S_1 (0.294, 0.145, 0.244); S_2 (0.369, 0.253, 0.420); S_3 (0.148, 0.362, 0.308); B_1(0.153, 0.255, 0.208); B_2 (0.420, 0.138, 0.342); B_3 (0.240, 0.364, 0.419). The distances in the molecule are: Br-Br 6.83; B-Br 1.93; B-S 1.85. The accuracy is about 0.01Å. The angles are S-B-S 102°, B-S-B 138°, and S-B-Br 129°. The intra-molecular distance Br-S of 3.42 is less than the sum of the inter-molecular radii of Br and S by 0.38 A and the mean S-S distance of 2.88 is less than the sum of the inter-molecular radii of two S atoms by 0.82 A.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

SOV/70-3-5-6/24

The Structure of Crystals of Tribromborosulphene

Acknowledgments are made to V.P. Glushkova, A.N. Khvatkina and Z.P. Linina.
There are 8 figures, 3 tables and 9 references, 5 of which are Soviet, 3 English and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova
(Physico-Chemical Institute im. L. Ya. Karpov)

SUBMITTED: October 29, 1957

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

5(4)

AUTHORS: Tashpulatov, Yu., Zvonkova, Z. V. SOV/76-32-12-6/32

TITLE: Crystallo-Chemical Investigationson Compounds With Carbonyl or Thionic Groups (O kristallokhimicheskikh issledovaniyakh soyedineniy s karbonil'nymi i tionovymi gruppami)

PERIODICAL: Zhurnal fizicheskoy khimii, Vol 32, Nr 12, 1958 pp 2690 - 2693 (USSR)

ABSTRACT: In the case of 25 compounds with C=O- and amido- or imido groups the C-O- and C-N distances were measured and represented by a curve. The C-N distance decreases as the C=O distance increases. Thionic groups have been studied only to a limited extent. Measurements of atomic distances have been carried out only for Captax (mercapto-benzo thiazole), dithio oxamide, and ethylene thiourea. It was found that the increase in the S=C distance is paralleled by an increase in the C-N distance. Thus, the function of the free electron pair in the nitrogen atom is basically different in the formation of compounds with carbonyl or thionic groups. Further investigation on materials with C-N and C=S bindings will be carried out. There are 2 figures and 30

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Crystallo-Chemical Investigations on Compounds With Carbonyl or Thionic Groups SOV/76-32-12-6/32

references, 4 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (Physico-Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: March 2, 1957

Card 2/2

ZVONKOVA, Zlata Vasil'yevna

"The Nature of the Mutual Influence of Atoms - Crystal Chemical Investigation"

a report presented at Symposium of the International Union of Crystallography Leningrad, 21-27 May 1959

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8

ZVO[illegible]

PHASE I BOOK EXPLOITATION SOV/4386

Moscow. Fiziko-khimicheskiy institut

Problemy fizicheskoy khimii; trudy, vyp. 2 (Problems in Physical Chemistry; Transactions of the Institute, no. 2). Moscow, Goskhimizdat, 1959. 202 p. 1,000 copies printed.

Editorial Board: Ya. M. Varshavskiy, Doctor of Chemical Sciences; G. S. Zhdanov, Doctor of Chemical Sciences; V. A. Kargin, Academician; Ya. M. Kolotyrkin, Doctor of Chemical Sciences (Resp. Ed.); S. S. Medvedev, Academician; S. Ya. Pshenzhetskiy, Doctor of Chemical Sciences; V. M. Cherednichenko, Candidate of Chemical Sciences; V. S. Chesalova (Editorial Secretary), Candidate of Chemical Sciences; Ed.: I. A. Myasnikov; Tech. Ed.: Ye. G. Shpak.

PURPOSE: This collection of articles is intended for physical chemists.

COVERAGE: The collection is the second issue of the Transactions of the Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov. It contains 17 articles which review

Card 1/5

AVAILABLE: Library of Congress

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

Crystallochemical data on the nature of interactions between atoms. Probl.fiz.khim. no.2:97-106 '59. (MIRA 13:7)

1. Rentgenovskaya laboratoriya Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta imeni L.Ya. Karpova.
(Chemical bonds)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

24.7000

75985
SOV/70-4-5-7/36

AUTHOR: Zvonkova, Z. V.

TITLE: Structural Characteristics of Atomic Electronegativity

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 5, pp 668-672 (USSR)

ABSTRACT: On the basis of a literature survey and the known experimental data on interatomic distances in various compounds, the author seeks to evaluate more precisely the quantitative relation of atomic electronegativity to interatomic distances. The existing theories on the subject are modified by introduction of the concept, that a valence bond at different electronegativities of the atoms becomes shorter than the sum of the atomic radii principally because of the changed degree of the atomic nucleus shielding and of the changed atomic radii. The concept is substantiated by a table and Fig. 1, which illustrates for each row of the periodic system a linear dependence of the difference, Δ d, between the calculated sums of the atomic radii and the experimentally determined lengths of the covalent bonds

Card 1/5

on the difference of electronegativities, Δx. The equation $\Delta d = \beta \Delta x$, where β is a constant for each row, makes it possible to determine d for any member of a row having experimental d for its single member, and to determine Δx in particular bonds of a complex compound. Experiments proved the validity of the equation. Fig. 2 shows Δd as function of ΔD, i.e., of the difference between the experimental bond energy and that of a covalent bond. The curve shows a gain of energy as the result of redistribution of the electron density between the atoms of unlike electronegativity. The structures with missing electrons in the bonds (semiconductors, photoelectrics) exhibit a quite different relationship between Δd and Δx (Fig. 3). The actual bonds become longer than the sum of the atomic radii; the maximum increase in interatomic distances corresponds to the maximum band width of the forbidden zone, ΔE ev. Generally, Δd depends on two factors, Δx and the ratio $\frac{\text{atomic effective charge}}{\text{atomic radius}}$. There

Structural Characteristics of Atomic Electronegativity

75985
SOV/70-4-5-7/36

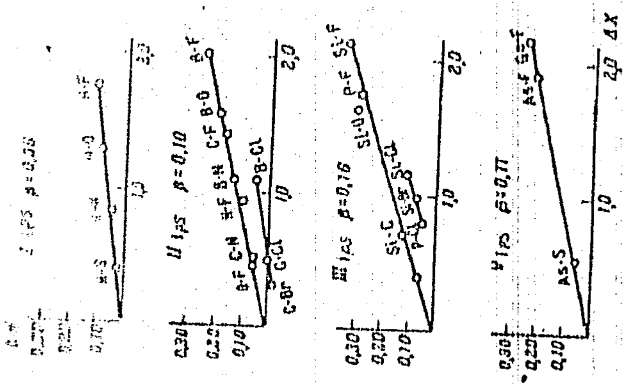


Fig. 1.

lps = law of the periodic system

Structural Characteristics of Atomic Electronegativity

75985
SOV/70-4-5-7/36

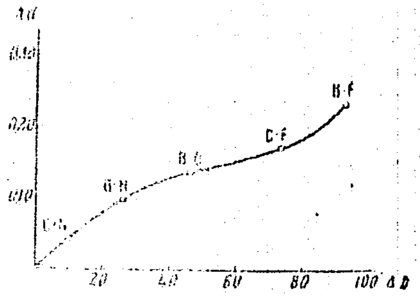


Fig. 2.

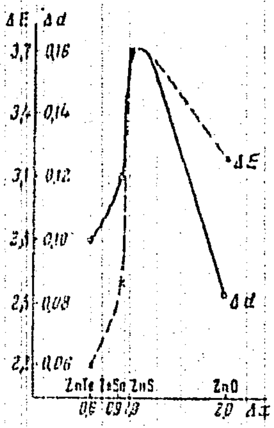


Fig. 3.

Structural Characteristics of Atomic Electronegativity

75985
SOV/70-4-5-7/36

are 2 tables; 3 figures; and 23 references, 14 U.S., 6 Soviet, 2 U.K., and 1 French. The most recent U.S. references are: W. Gordy, W. J. Thomas, J. Chem. Phys., 24, 439, 1956; H. O. Pritchard, H. A. Skinner, Chem. Rev., 55, 745, 1955; M. L. Huggins, J. Amer. Chem. Soc., 75, 4123, 1953, and 75, 4126, 1953; H. A. Skinner, N. B. Smith, J. Chem. Soc., 6, 4025, 1953.

ASSOCIATION: Physico-Chemical Institute imeni L. Ya. Karpov (Fiziko-khimicheskiy institut imeni L. Ya. Karpova)

SUBMITTED: November 19, 1958

Card 5/5

ZVONKOVA, Z.V.; ASTAKHOVA, L.I.; GLUSHKOVA, V.P.

Atomic sturcture of tetramethylthiourea. Kristallografiia 5 no.4: 547-552 Jl-Ag '60. (MIRA 13:9)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova.
(Urea)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

85994

S/070/60/005/005/018/026/XX
E132/E160

5 4600 1273, 1241, 1153

AUTHORS: Vorontsova, L.G., Zvonkova, Z.V., and Zhdanov, G.S.

TITLE: An X-ray Determination of the Crystal Structure of Diparatolyldisulphide

PERIODICAL: Kristallografiya, 1960, Vol.5, No.5, pp. 698-703

TEXT: The unit cell of crystals of $CH_3.C_6H_4.S\text{--}S.C_6H_4.CH_3$ is monoclinic, space group $P2_1\text{-}C_2^2$, with a = 14.86, b = 5.77, c = 7.69 Å, $\beta = 94°$, Z = 2, $d_{obs.} = 1.24$ and $d_{calc.} = 1.19$. V.A. Koptsik has detected a piezoelectric effect in single crystals. The 010 Patterson projection was calculated to locate the heavier S atoms. The interpretation of the various S-S peaks was better accomplished from the $P(x, \frac{1}{2}, z)$ section calculated with 763 reflexions. The 010 Fourier projection was calculated using the signs from the S atoms and showed 7 carbon atoms resolved and 7 very blurred. The model of the structure thus found (where the choice of S positions might have been made from three possibilities) was confirmed by an a priori electron density projection with signs derived from an application of the method

Card 1/3

85934
S/070/60/005/005/018/026/XX
E132/E160

An X-ray Determination of the Crystal Structure of Diparatolyldisulphide

of statistical inequalities. Seven stages of refinement were then carried out giving the following (x,z) atomic parameters:

S_1 (0.202, 0.141); S_2 (0.273, 0.127); C_3 (0.985, 0.327);
C_5 (0.815, 0.331); C_7 (0.029, 0.158); C_8 (0.329, 0.346);
C_9 (0.373, 0.359); C_{10} (0.413, 0.510); C_{12} (0.456, 0.825);
C_{14} (0.318, 0.478). y S_1-S_2 = 0.307; S_2-C_{12} = 0.240;
S_2-C_{10} = 0.296.

The pairs C_1 and C_2, C_4 and C_6, C_{11} and C_{13} are not resolved in this projection as they are less than 0.7 Å apart. The S_1-S_2 distance was found to be 2.06 ± 0.02 Å from the three-dimensional line synthesis P(0.071, y, 0). The final reliability factor for the F(h0ℓ) layer was R = 0.26. The bond angles at the S atoms are 107°. The planes of the benzene rings are at 94° to each

Card 2/3

85994

S/070/60/005/005/018/026/XX
E132/E160

An X-ray Determination of the Crystal Structure of Diparatolyldisulphide

other. The dipole moment of 2.49D is in agreement with the structure found.

There are 4 figures, 3 tables and 21 references: 4 Soviet, 7 English, 1 Belgian, 5 Scandinavian and 4 international.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physico-Chemical Institute imeni L.Ya. Karpov)

SUBMITTED: February 23, 1960

Card 3/3

ZVONKOVA, Z.V.; KHVATKINA, A.N.

Atomic structure of cyanamide. Kristallografiia 6 no.2:184-189 Mr-Ap '61. (MIRA 14:9)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Spectrum, Atomic) (Cyanamide)

29120
S/020/61/140/005/016/022
B103/B110

15.8540

AUTHORS: Terent'yev, A. P., Corresponding Member AS USSR, Rode, V. V., Rukhadze, Ye. G., Vozzhennikov, V. M., Zvonkova, Z. V., and Badzhadze, L. I.

TITLE: Electrical conductivity of chelate polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 5, 1961, 1093-1095

TEXT: The authors measured the electrical conductivity σ and the activation energy E of several chelate polymers to determine the dependence between their semiconductor properties and their atomic structure. These polymers were mostly synthesized by interaction of equimolecular aqueous solutions of metal acetates and alcoholic solutions of the corresponding tetrafunctional organic compounds. The substances obtained were amorphous, insoluble, and infusible. Their decomposition temperatures were above 250-350°C. More data will be published in the coming issues of the periodical "Vysokomolekulyarnyye soyedineniya". For measuring the electrical conductivity samples in tablet form were used: diameter 5-7 mm,

Card 1/3

2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

29120
S/020/61/140/005/016/022
B103/B110

Electrical conductivity of ...

σ = up to 10^{-13} $ohm^{-1}.cm^{-1}$. It changes with the temperature according to the exponential function $\sigma = \sigma_0 \exp(-E/2kT)$. The results are given in Table 1. Copper-polychelates of structure I had the highest electrical conductivity. Their special electrical properties are in good agreement with the hypothesis on their network structure. The atoms of monovalent copper form linear bonds: S - Cu - S. X-ray studies showed that the distance between the Cu atoms next to each other -Cu-S=C-S-Cu-equals 5.8 Å. Radicals with π bonds of carbon increase the electrical conductivity of copper polymers. Coplanarity of the polymer chains necessary for the conjugation of the π bonds of the $N-C\begin{smallmatrix} \nearrow S \\ \searrow S \end{smallmatrix}$ atoms and phenylene rings, is due to the network structure. In polymers with structure II, σ decreases whereas E increases in the sequence Co, Zn, Ni. The four sulfur atoms are in the same plane as the metal atoms and the $N-C\begin{smallmatrix} \nearrow S \\ \searrow S \end{smallmatrix}$ bonds. The Co-S bonds are tetrahedral. The electrical characteristics of 48 semiconductor

Card 2/6

2

polymers like those of inorganic semiconductors, widely depended on the short range order. There are 1 table and 9 references: 8 Soviet and 1 non-Soviet. The reference to English-language publication reads as follows: B. Long, P. Markey, P. G. Wheatley, Acta crystallogr., 7, 140 (1954).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov). Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: May 31, 1961

X

Table 1. Electrical conductivity of chelate polymers.

Legend: (1) σ_{295} ($ohm^{-1} \cdot cm^{-1}$); (2) same units as (1); (3) in ev; (4) for polychelates: of Ni with R = $-(CH_2)_6-$ and n,n'-$(C_6H_4)_2-$; (5) of zinc; (6) of cobalt; (7) for cadmium polychelates; (8) for all polychelates;

36915
S/020/62/143/005/013/018
B101/B110

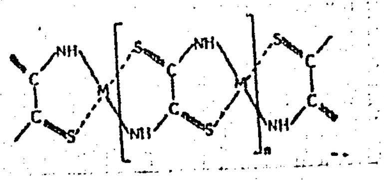
15.8340

AUTHORS: Vozzhennikov, V. M., Zvonkova, Z. V., Rukhadze, Ye. G., Zhdanov, G. S., and Glushkova, V. P.

TITLE: Electrical conductivity and activation energy of some dithio oxamide-, N-substituted dithiocarbamate-, and thiocyanate (Cu, Co, Ni) polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962, 1131-1134

TEXT: The electrical conductivity, σ, and the activation energy, E, of the following polychelates were studied:

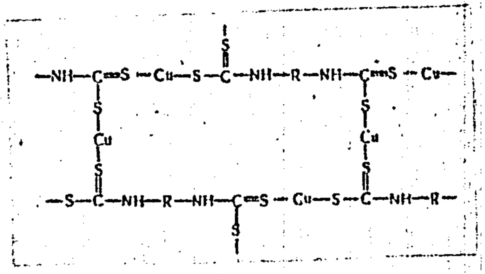


(I),

Card 1/3 4

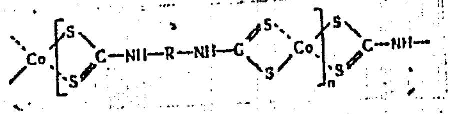
Electrical conductivity and ...

M = Cu, Ni, or Co;



(II),

R = p-C_6H_4-; p,p-$(C_6H_4)_2$-; $(CH_2)_6$; and



(III),

R = p-C_6H_4-; p,p-$(C_6H_4)_2$-; $(CH_2)_6$; $(CH_2)_2$. The following was found:

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Polymer	M, R	T, °K	$\sigma_{290^\circ K}$ $ohm^{-1} \cdot cm^{-1}$	σ_0 $ohm^{-1} \cdot cm^{-1}$	E, ev
I	Cu	290-350	$4 \cdot 10^{-8}$	$1 \cdot 10^{4}$	0.6
"	Ni	290-500	$2 \cdot 10^{-11}$	$7 \cdot 10^{-1}$	0.6
"	Co	400-500	$7 \cdot 10^{-16}$ *	$1 \cdot 10^{-3}$	0.7
II	$p-C_6H_4-$	290-425	$7 \cdot 10^{-11}$	1	0.42; 0.62 } **
"	$p,p-(C_6H_4)_2-$	290-450	$5 \cdot 10^{-13}$	$1 \cdot 10^{-3}$	0.36; 0.60
"	$(CH_2)_6$	310-380	$1 \cdot 10^{-13}$	$2 \cdot 10^{-1}$	0.72
III	$p-C_6H_4-$	370-460	$9 \cdot 10^{-12}$ } ***	$1 \cdot 10^{-3}$	0.58
"	$p,p-(C_6H_4)_2-$	380-460	$3.5 \cdot 10^{-12}$	$3 \cdot 10^{-3}$	0.62
"	$(CH_2)_6$	400-460	$1.7 \cdot 10^{-12}$	$5 \cdot 10^{-3}$	0.76
"	$(CH_2)_2$	400-460	$8 \cdot 10^{-13}$	$1 \cdot 10^{-3}$	0.74

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* extrapolated; ** first figure at $T < 360^{o}K$, second figure at $T > 360^{o}K$; *** $\sigma_{400^{o}K}$. In the compounds II and III the higher σ and the lower E of the phenylene derivatives are explained by the effect of the π bonds which is reduced in the diphenylene group owing to the angle between the ring planes. Logσ is a linear function of 1/T, the straight line has, however, a salient point at $360^{o}K$ for compounds II. The susceptibility of compounds III is 3.5 μB. Compounds with the bridge groups S=C=N- have semiconductor properties. Also CuSCN showed a salient point in the curve logσ versus 1/T: at the beginning, $E_1 = 0.4$ ev, after a 2-hr heating at $400^{o}C$, $E_2 = 0.1$ ev. There are 4 figures and 1 table. The most important English-language reference is: R. M. Hurd, G. De La Mater et al., J. Am. Chem. Soc., 17, 4454 (1960).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

L 41229-66 EWT(m)/EWP(j) RM

ACC NR: AP6023209 SOURCE CODE: UR/0020/66/168/006/1327/1330

AUTHOR: Kolninov, O. V.; Terent'yev, A. P. (Corresponding member AN SSSR); Zvonkova, Z. V.; Rukhadze, Ye. G.

ORG: Physicochemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut); Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Study of the photoemf and electron spectra of certain dithiocarbamate compounds of transition metals

SOURCE: AN SSSR. Doklady, v. 168, no. 6, 1966, 1327-1330

TOPIC TAGS: chelate compound, transition metal compound, electron spectrum, photoconductivity, photo emf

ABSTRACT: Curves of the spectral distribution of photoemf were recorded in the range of 42,000-12,000 cm^{-1} for the four chelates $Cu[(C_2H_5)_2NCS_2]_2$, $Cu[(CH_2)_6NCS_2]_2$, $Ni[(C_2H_5)_2NCS_2]_2$ and $Co[(C_2H_5)_2NCS_2]_3$. The electron absorption spectra were measured with an SP-700 recording spectrophotometer. Four types of new bands were found: (1) d-d, due to transitions between split levels of the central metal atom, (2) bands of charge transfer between atoms of the ligand and metal (π-d transitions), (3) bands of charge transfer between atoms of ligand and metal in σ orbitals, and (4) bands corresponding to transitions within the NCS_2 ligand ($n \to \pi^*$, $\pi \to \pi^*$, $n \to \sigma^*$). Comparison of the photoemf spectra and absorption spectra showed that the principal ligand - metal

Card 1/2 UDC: 541.133+543.42.062

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L 41220-66

ACC NR: AP6023209

interaction occurs via the σ bonds. The data obtained shed some light on the mechanism of photoconductivity in chelate compounds with transition metals: in the first stage, there is a transition of electrons from the ligands to the antibonding orbital σ^*, localized at the metal atom (for example, $d_{x^2-y^2}$ for Cu); in the second stage, the charge carriers are transferred to the neighboring molecule by the tunnel mechanism without any activation energy. All compounds studied were found to have hole photoconductivity. The important role of the central metal atom in the mechanism of photoconductivity is also discussed. Orig. art. has: 3 figures.

SUB CODE: 07,20/ SUBM DATE: 06Dec65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 mLP

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

33232

S/089/62/012/002/003/013
B102/B138

26.2244

AUTHORS: Zvonov, N. V., Mis'kevich, A. I., Rogozhkin, I. V., Tereshchenko, V. I., Turkov, Zh. I., Utkin, V. P.

TITLE: Fast neutron energy spectrum and thermal neutron flux distribution in the experimental hole of a BBP (VVR) reactor

PERIODICAL: Atomnaya energiya, v. 12, no. 2, 1962, 116 - 122

TEXT: Threshold reactions, leading to formation of gamma-active nuclei, were used to study neutron spectra. A scintillation counter with NaI(Tl) crystal, ФЭУ-13 (FEU-13) photomultiplier and a 100-channel pulse-height analyzer was used to record gamma-radiation. Al, Fe, Si, Ti, Ni, Co, Mg, Zn, and Cu were used as indicator elements for (n,p) reactions, Al for (n,α) reactions and In, Hg, Pb, Ag, and Ba for inelastic (n,n') reactions in which longlife (≥ 1-2 min) metastable levels are formed. Low threshold energy is typical of this kind of reaction. For $In^{115}(n,n')$ it is 335 kev. The usual threshold indicator technique was used. The spectral distribution of neutrons was determined from the equations

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$A_i = \int_{E^i_{thr}}^{\infty} \Phi(E)\sigma^i_{act}(E)dE$, i = 1,2...n; i is the indicator index, n the number of indicators, $\Phi(E)$ flux of neutrons of given energy, $\sigma_{act}(E)$ activation cross section, E_{thr} threshold energy. If the real cross section $\sigma^i_{act}(E)$ is substituted by an ideal one, at a certain threshold E^i_{eff} there will be a jump from zero to σ^i_o and $A_i = \sigma^i_o \int_{E^i_{eff}}^{\infty} \Phi(E)dE$ is obtained. σ^i_o and E^i_{eff} may be chosen arbitrarily if only the upper equations are fulfilled. σ^i_o was taken as the mean of $\sigma^i_{act}(E)$ and E^i_{eff} was determined from these equations. The effective thresholds E_{eff}, effective cross sections σ_o and integral neutron fluxes for $E > E_{eff}$, 100 kw and a channel width of 130 mm were calculated numerically. The thermal neutron flux distributions were measured vertically and radially by means of a plate (4·5 mm) and a

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33232

Fast neutron energy spectrum... S/089/62/012/002/003/013
B102/B138

disc (19 mm). The neutron flux in the center of the channel was measured at the level of the middle of the core with a Cu foil of 0.1415 g/cm^2. With an empty channel width of 130 mm and 100 kw the flux was $4.5 \cdot 10^{11}$ $n/cm^2 \cdot sec$. Comparison with other results shows that the same dependence of thermal neutron flux on core distance obtains for both water and concrete. There are 5 figures, 1 table, and 18 references: 3 Soviet and 15 non-Soviet. The four most recent references to English-language publications read as follows: W. Meinke. Nucleonics, 17, No. 9, 86, 1959; P. Kruger. Nucleonics, 17, No. 6, 116, 1959; R. Bullock, R. Moore. Phys. Rev. 119, No. 2, 721, 1960; R. Rochlin. Nucleonics, 17, No. 1, 54, 1959.

SUBMITTED: April 25, 1961

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

S/143/62/000/010/003/004
D238/D308

AUTHORS: Krushedol'skiy, G.I., Candidate of Technical Sciences and Zvonov, V.A., Engineer

TITLE: The effect of combustion-chamber scavenging on the temperature of Д70 (D70) engine components

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, no. 10, 1962, 80-85

TEXT: The supercharge pressure on modern four-stroke diesels reaches values of 2.5 to 3.0 kg/cm^2, resulting in heavier thermal loadings on the engine. One countermeasure consists in scavenging the combustion chamber. The available data applies mainly to aviation engines with low supercharge pressures. Laboratory tests were carried out on an experimental single-cylinder section of the new D70 diesel traction engine having the following specifications: cylinder diameter 240 mm, piston stroke 270 mm, cylinder power 187 h.p., number of revs 1,000 rpm, inlet air pressure 2.45 kg/cm^2 and compression ratio 13. The cylinder and cylinder head were water

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cooled. The tests were carried out with an uncooled aluminum piston. Temperatures were measured by chromel-alumel thermocouples. For the purpose of the tests, the effective power of the section was maintained at 187 h.p. while varying the scavenging. It was found that scavenging has a substantial effect on the temperature of the exhaust valve, producing at the same time a reduction in the temperature of the outer section of the cylinder and the bottom of the cylinder head. For the D70 engine, from the standpoint of the effect of scavenging on the temperature conditions of the components, the optimum angle of valve overlap is 70 to 90° (the air leakage factor being thus 5 to 10%). Combustion-chamber scavenging also lowers the gas temperature before the turbine, thus enhancing reliability of the turbine components. There are 5 figures and 1 table. ✓

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina (Khar'kov Polytechnic Institute im. V.I. Lenin)

SUBMITTED: October 23, 1961

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONOV, V.A., aspirant

Experimental investigation of the performance of a four-cycle diesel engine with high gas-turbine supercharging and scavenging. Izv.vys.ucheb.zav.; mashinostr. no.4:180-188 '62. (MIRA 15:7)

1. Khar'kovskiy politekhnicheskiy institut.
(Diesel engines—Testing)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

GORYAINOVA, T.; ZVONOV, Ye.

From samples to mass production. Sov.torg. 35 no.2:9-11 F '62.
(MIRA 15:1)

(Household appliances)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

S/110/62/000/004/001/002
1004/1204

AUTHOR: Boldina, Ye. A. Engineer, Zvorono, Ya. P., Engineer, Pesotskiy, A. A., Engineer, Simo, I. N., Engineer and Sorokina, A. P., Engineer

TITLE: A device for electromagnetic string of an 80-ton electric arc furnace

PERIODICAL: Vestnik elektropromyshlennosti, no. 4, 1962, 43-49

TEXT: Electomagnetic stirring of molten metal is achieved by means of a rotating magnetic field created by a flat, two-pole stator located below the furnace. To attain deep penetration of the magnetic field into the metal the frequency of the current should be the order of tenths of a cps. The proximity of the hot (up to 250°C) furnace bottom and the substantial linear loading of the stator create a difficult cooling problem. Air cooling and water cooling systems were constructed and their main technical and economical features compared in a table. Water cooling of the stator by passing water directly through the hollow conductors of the windings proved to be the most effective and economical cooling method, considerably saving the silicon insulating material and saving 30% of copper as compared with the air cooling system. A complete electric diagram of the stator circuit is given. Sinusoidal form of the current feeding the stator was secured by means of a negative voltage feedback network. Distribution of the magnetic field above the stator was studied by means of a Hall probe. Distribution curves are shown on a graph. Velocity of the molten metal under actual operation conditions was estimated visually and it reached 0.35 m/sec. there are 5 figures, and 2 tables.

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSEV, Yu.M.; KLYUKOVKIN, K.D.

Ribbing pipes for heat exchangers. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no. 12: 12-13 D '65 (MIRA 19:1)

ZVON[illegible]V, A[illegible]ICH

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Namyv Mingechaurskoy Plotiny
(The Alluvium of the Mingechaur Dam)
Moskva, Gosenergoizdat, 1956.
70, (2) P. Illus., Diagrs., Tables.
(Iz Opyta Stroitelstva Elektrostantsiy)
"Literatura": P. 72.

AVS

ZVONTSOV, A.; GALAYCHUK, A.

What is the path of a newcomer to industry. Prof. tekh. obr. 22 no. 12:26-27 D '65 (MIRA 19:1)

1. Nachal'nik otdela podgotovki kadrov zavoda "Tochelektropribor" g. Kiyeva (for Zvontsov). 2. Nachal'nik uchebno-proizvodstvennogo tsekha zavoda "Tochelektropribor" g. Kiyeva (for Galaychuk).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

AID P - 3371

Subject	:	USSR/Hydr Eng
Card 1/1		Pub. 35 - 2/16
Author	:	Zvontsov, A. A., Eng.
Title	:	Using hydraulic mechanisms to obtain earth for the Mingechaur Hydro Power Plant construction
Periodical	:	Gidr. stroi., 6, 6-9, Je 1955
Abstract	:	A detailed description of earth work, granulometric data of gravel and sand, pipeline operation, and the sorting processes are presented. Tables and one diagram.
Institution	:	None
Submitted	:	No date

ZVONTSOV, Avdey Avdeyevich, inzhener; VOLNIN, B.A., redaktor; VORONIN, K.P., tekhnicheskiy redaktor

[Alluvium of the Mingechaur Dam] Namyv Mingechaurskoi plotiny. Moskva, Gos. energ. izd-vo, 1956. 70 p. (MLRA 9:12)
(Mingechaur Reservoir)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, A.A., inzhener.

Distribution of soil during the filling of the Mingechaur dam. Gidt.stroi. 23 no.2:6-10 '54. (MLRA 7:4)

(Mingechaur--Dams) (Dams--Mingechaur)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, V.S., Cand Geol-Min Sci --(diss) "Geology, structure, and genetic peculiarities of the polymetallic deposits of the Aleksandrovsk ore field (~~[illegible]~~ Northeastern Central Kazakhstan)." Alma-Ata, 1959. 20 pp (Acad of Sci KazSSR. Inst of Geol Sci), 150 copies (KL,31-59, 114)

ZARAVNYAYEVA, V.K.; ZVONTSOV, V.S.

Porphyrite formation of the Upper Cambrian, Tremadoc
(Tortkuduk series). Trudy Inst. geol. nauk AN Kazakh.
SSR 13:76-120 '65. (MIRA 19:1)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, V.S.

Dikes in the Aleksandrovskiy ore deposit. Izv. AN Kazakh. SSR. Ser. geol. no.2:67-77 '58. (MIRA 12:5)
(Kazakhstan--Rocks, Igneous)

KAPLAN, S.Z.; ZVONTSOVA, A.S.

Derivatives of morpholine. Part 2: Interaction of morpholine with 3,3-bis(chloromethyl) oxacyclobutane and 2,2-bis(chloromethyl)trimethylene glycol. Zhur.ob.khim. 33 no.10:3412-3414 O '63. (MIRA 16:11)

KAPLAN, S.Z.; GRAD, N.M.; ZVONTSOVA, A.S.

N-alkylated and N-arylalkylated morpholine derivatives. Zhur.ob.
khim. 28 no.12:3285-3289 D '58. (MIRA 12:2)
(Morpholine)

AUTHORS: Kaplan, S. Z., Grad, N. M., Zvontsova, A. S SOV/79-28-12-28/41

TITLE: N-Alkylated and N-Aralkylated Morpholine Derivatives (N-Alkilirovannyye i N-aralkilirovannyye proizvodnyye morfolina)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 12, pp 3285-3289 (USSR)

ABSTRACT: In this paper the N-substituted derivatives of morpholine were synthesized by the reaction of morpholine with the corresponding alkyl and aralkyl halides to investigate their effect on lubricating oils. The reports on this reaction are incomplete and the yields are not mentioned at all. For this reason, the best conditions were selected for the synthesis of butyl morpholine and its derivatives. Under the conditions described in the experimental part the following derivatives of morpholine were synthesized: Ethyl-(II), propyl-(III), n.-butyl-(IV), n.-hexyl-(V), sec-n.-octyl--(VI), n.-octadecyl-(VII), benzyl-(VIII), α-naphthyl methyl morpholine (IX), and 9,10-bis-(morpholinomethyl)-anthracene (X). Compounds (VI) and (X) are new (Scheme). Some physico-chemical constants unknown before were determined for the morpholine derivatives synthesized. Data and yields are given in table 1; they offer a picture of the modification processes of boiling-points, densities, refractive indices and viscosities in the homologous

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series of N-alkylated and N-aralkylated morpholine derivatives. In some derivatives these factors were determined potentiometrically (Table 2). The comparison of the constants obtained makes the idea possible that with lengthening the aliphatic radical, which displaces the hydrogen at the nitrogen of the morpholine nucleus, the boiling-points of the derivatives increase, the densities decrease, the refractive indices and viscosity values increase. The introduction of the aromatic nuclei increases boiling-points, densities, refractive indices and viscosities (The higher the number of nuclei, the higher the values of the constants).- There are 2 tables and 26 references, 10 of which are Soviet.

SUBMITTED: November 11, 1957

ZAKHAROVA, N.A.; KHROMOV-BORISOV, N.V.; KAPLAN, S.Z.; ZVONTSOVA, A.S.

Morpholine derivatives. Part 3: Esters and oxides of the morpholine series containing a quaternary carbon atom.
Zhur. org. khim. 1 no.8:1489-1494 Ag '65. (MIRA 18:11)

1. Institut eksperimental'noy meditsiny AMN SSSR, Leningrad.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, V.S.

Geological and structural characteristics of the Aleksandrovka
ore field (Central Kazakhstan). Vest. AN Kazakh. SSR 14 no.5:55-61
My '58. (MIRA 11:7)
(Kazakhstan--Ore deposits)

ABDULKABIROVA, M.A.; ALEKSANDROVA, M.I.; AFONICHEV, N.A.; BANDALETOV, S.M.; BESPALOV, V.F.; BOGDANOV, A.A.; BOROVIKOV, L.I.; BORSUK, B.I.; BORUKAYEV, R.A.; BUVALKIN, A.K.; BYKOVA, M.S.; DVORTSOVA, K.I.; DEMBO, T.M.; ZHUKOV, M.A.; ZVONTSOV, V.S.; IVSHIN, N.K.; KOPYATKEVICH, R.A.; KOSTENKO, N.N.; KUMPAN, A.S.; KURDYUKOV, K.V.; LAVROV, V.V.; LYAPICHEV, G.F.; MAZURKEVICH, M.V.; MIKHAYLOV, A.Ye.; MIKHAYLOV, N.P.; MYCHNIK, M.B.; NIDLENKO, Ye.N.; NIKITIN, I.F.; NIKIFOROVA, K.V.; NIKOLAYEV, N.I.; PUPYSHEV, N.A.; RASKATOV, G.I.; RENGARTEN, P.A.; SAVICHEVA, A.Ye.; SALIN, B.A.; SEVRYUGIN, N.A.; SEMENOV, A.I.; CHERNYAKHOVSKIY, A.G.; CHUYKOVA, V.G.; SHLYGIN, Ye.D.; SHUL'GA, V.M.; EL'GER, E.S.; YAGOVKIN, V.I.; NALIVKIN, D.V., akademik, red.; PERMINOV, S.V., red.; MAKRUSHIN, V.A., tekhn.red.

[Geological structure of central and southern Kazakhstan] Geologicheskoe stroenie TSentral'nogo i IUzhnogo Kazakhstana. Leningrad, Otdel nauchno-tekn.informatsii, 1961. 496 p. (Leningrad. Vsesoiuznyi geologicheskii institut.Materialy, no.41)
(MIRA 14:7)

(Kazakhstan--Geology)

KAPLAN, S.Z.; GALASHINA, A.P.; Prinimali uchastiye: CHUPRIK, N.I.; ZVONTSOVA,A.S.

Oxidizability of thichened oils and the effect on it of the derivatives of morpholine. Zhur.prikl.khim. 35 no.11:2526-2533 N '62.

(MIRA 15:12)

(Lubrication and lubricants) (Oxidation) (Morpholine)

TERENT'YEV, A.P.; RUKHADZE, Ye.G.; VOZZHENNIKOV, V.M.; ZVONKOVA, Z.V.;
OBOLADZE, N.S.; MOCHALINA, I.G.

Conductance and activation energy of chelate compounds of dithiocarbamates and thioamides, derivatives of pyridine. Dokl. AN SSSR 147 no.5:1094-1097 D '62. (MIRA 16:2)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova i Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. 2. Chlen-korrespondent AN SSSR (for Terent'yev).
(Chelates) (Carbamic acid) (Amides)

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Z.V. Zvonkova and G. S. Zhdanov, The crystal structure of Ag_7NO_{11}. Pp. 1284-9

The authors have made an independent investigation of the structure of the Ag_7NO_{11} crystal. There are tables of a Debye crystallogram, structural amplitudes, function of the electron density.

The Karpov Physical Chemical Inst.
X-Ray Laboratory, Moscow
April 21, 1948

SO: Journal of Physical Chemistry (USSR) 22, No. 11, 1948

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

6

Phys Chem

X-ray study of ammonium thiocyanate. Z. V. Zvonkova and G. S. Zhdanov (Karpov Inst. Phys. Chem., Moscow). *Zhur. Fiz. Khim.* 23, 1495-1501 (1949).—The unit cell of NH_4SCN contains 4 mols. and is monoclinic; $a = 4.3$, $b = 7.2$, $c = 13.0$ A., $\beta = 97°40'$; space group $C_{2h}^5 - P2_1/C$. The coordinates of the atoms are: S 0.902, 0, 0.195; N 0.165, 0.714, 0.061; C 0.086, 0.840, 0.120; and N of NH_4 0.442, 0.333, 0.111. In SCN the S-C and C-N distances are 1.59 and 1.35 A., resp.

J. J. Bikerman

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

CA

Crystal structure of thiocyanates. II. Crystal structure of $K_2Co(NCS)_4.4H_2O$. G. S. Zhdanov and Z. V. Zvonkova (Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 24, 1339-44(1950); cf. *C.A.* 46, 2818e.—Crystals of $M_2Co(NCS)_4.nH_2O$ (where M = K, NH_4) belong to the rhombic system. The space group is $D_2^4 - P2_12_12_1$. The dimensions of the unit cell of $K_2Co(NCS)_4.4H_2O$ (I) are a = 11, b = 5.41, c = 12.98 A. The no. of mols. per unit cell is z = 2. The pycnometric and x-ray ds. are 1.91 and 1.87, resp. Weissenberg photographs (Cu radiation) are taken and the exptl. $F(h0l)$ and $F(0kl)$ given. The structure is detd. by the method of the $F^2(h0l)$ and $F^2(0kl)$ series with the help of the isomorphous NH_4 salt. Tetrahedrons of $Co(NCS)_4^{--}$ ions form a *b.c.c.* lattice. The corners of these tetrahedrons are surrounded by the K^+ octahedrons. The structure of I is of the antirutile type A_2B. The orientation of the tetrahedrons is detd. by the distance $S_I - S_{II}$, of the order of an intermol. distance (3.45 A.). The tetrahedrons are weakly bound together by means of the electrostatic interaction between S and K. Each K is surrounded by 4 S atoms (3.67, 3.59, 3.60, 3.76 A.) and 4 N atoms (2.62 and 3.87 A.). The H_2O mols. are in the octahedral holes of the cubic lattice. The Co-N distance is 2.15 A., as expected for a bond with high ionicity. **III. X-ray study of $Ba(SCN)_2.2H_2O$ crystals.** Z. V. Zvonkova and G. S. Zhdanov (Karpov Phys.-Chem. Inst., Moscow). *Ibid.* 1346-9.—Crystals of $Ba(SCN)_2.2H_2O$ (I) are monoclinic with a unit cell of dimensions a = 15.98, b = 4.26, c = 13.26 A., β = 104°30' (space group $C2/m$) and pycnometric and x-ray ds. 2.19 and 2.21, resp. There are 4 mols. per unit cell. The at. parameters are detd. by means of F^2 and F series obtained from Weissenberg photographs taken with Cu and Mo radiation; the parameters of Ba, S_I, and S_{II} are, resp., $0.1840_6 \pm 0.0002_6$, 0.3400 ± 0.0003, and $0.3332_6 \pm 0.0002_4$; the precision of these data is discussed. The structure of I is detd. by the arrangement in plane double layers of the linear SCN^- groups. Each Ba^{++} is surrounded by 4 N, 2 S, and 2 O. The min. effective ionic radii of S and N are, resp., 2.01 and 1.47 A. Since the radius and electronegativity of S and N are different, these atoms are nonequiv. in the SCN group. This result was already found with NH_4SCN (formation of H bonds NH... N) (cf. *C.A.* 43, 2484a) and with $K_2Co(NCS)_4$ (formation of Co-N bonds).

Michel Boudart

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8

[illegible]

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.; KOLNINOV, O.V.

Dependence of interatomic distances in crystalline structures on the ligand field. Zhur. fiz. khim. 37 no.12:2778-2780 D '63. (MIRA 17:1)

1. Fiziko-khimicheskiy institut imeni Karpova.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8

G. G. Vorontsova. *Doklady Akad. Nauk S.S.S.R.* 102 [illegible] phic with monoclinic, orthorhombic, and cubic modifica-

ZVONKOVA, Z. V.

USSR/Chemistry - Ozonides Jan 51

"Crystalline Structure of Potassium Ozonide," G. B. Zhdanov, Z. V. Zvonkova, X-Ray Lab, Physicochem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol XXV, No 1, pp 100, 101

Examd cryst structure of KO_3 in prepn of 92.3% KO_3 and 5.5% KOH by Debye-Sherrer method. Deduced cryst structure very similar to that of KN_3 from similarity of values of d (interplane distance) and I (intensity). KO_3 when heated to 90°C decompd into KO_2.

180T19

LC

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

USSR/Nuclear Physics - Electron Density Mar 52

"Distribution of Electron Density in Complex Compounds in the Crystalline State," G. S. Zhdanov, Z. V. Zvonkova, Phys Chem Inst imeni Karpov

"Zhur Eksper i Teoret Fiz" Vol XXII, No 3, pp 356-359

Analyzes effect of diffraction, produced during harmonic synthesis of electron density in complex metal compds. Clarifies its role in the X-ray structure detns of the numbers of electrons in atoms. Received 19 Apr 51.

219T57

ZVONKOVA, Z. V.

USSR/Chemistry - Mercury Compounds Apr 52

"Crystal Structure of Thiocyanates. V. Crystal Structure of Mercury Halogenothiocyanates," Z. V. Zvonkova, G. S. Zhdanov, Phys Chem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol XXVI, No 4, pp 586-591

Detd the structure of mols $\mathrm{HgClSCN}$ and $\mathrm{HgBrSCN}$ and established crystal-chem relationships in the class of compds HgXSCH (where X = Cl,Br).

217T32

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

[illegible] nature of the thiocyanates [illegible] Crystalline [illegible] of the complex thiocyanates of zinc, cadmium [illegible] L. Ya. Latosy [illegible] 26, 1798-1803 [illegible] the nature of [illegible] The structure of the complex [illegible] Crystals of $K_2Zn(NCS)_4$ [illegible] dimensions of [illegible]

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Crystallography

Crystal structure of thiocyanates. Part 7. Crystal structure of complex platinum tetrathiocyanate. Zhur. fiz. khim. 26, no. 12, 1952.

9. <u>Monthly List of Russian Accessions</u>, Library of Congress, May 1953. Unclassified.

CA

Crystal structures of the higher oxides of metals of the first group of the periodic system. G. S. Zhdanov and Z. V. Zvonkova. *Doklady Akad. Nauk S.S.S.R.* 82, 743-6 (1952).—By x-ray patterns at 20°, β-NaO_2 has a face-centered cubic lattice of the NaCl type, *a* = 5.44 A., with the O_2^- ion having a spherical symmetry. The interat. distance within the O_2^- ion is 1.31 ± 0.03 A.; the distance calcd. for a O::O bond is 1.24 A. At lower temps., the spherical symmetry of the O_2^- ion is lost; at −70°, α-NaO_2 gives addnl. lines with mixed indexes, not corresponding to the NaCl-type lattice. These lines can be fitted into a cubic lattice with *a* = 5.30 A. With KO_2, there is also a transition from the low-temp. α into the high-temp. β modification; the latter is isomorphous with β-NaO_2, and has *a* = 6.05 A. at 150° and 6.12 A. at 300°. In NaO_2, the spherical radius of the O_2^- ion changes from 1.77 A. at 20° to 1.73 A. at −60°; in β-KO_2, the radius of O_2^- is 1.70 A. at 150°. The contraction of the spherical radius of the O_2^- ion, identical in KO_2 and in NaO_2, corresponds to a compression of the larger half-axis of the ellipsoidal O_2^- ion by 0.23 A. The range of stability of the β modifications of KO_2 and NaO_2 is evidently detd. by thermal compression of the lattice, and the phase transition occurs when the min. spherical radius is reached on account of steric hindrances. The phase transition β→α-NaO_2 is accompanied by a lowering of the magnetic susceptibility analogous to that observed in antiferromagnetics. The value of *a* = 5.490 ± 0.005 A. reported for β-NaO_2 by Templeton and Dauben (*C.A.* 44, 7117*c*) is probably initiated by impurities. For the same reason, the O—O distance of 1.33 ± 0.06 A. is too high, and the proposed space groups T_h^6 and O_h^6 (pyrite structure) are wrong. The only correct space group for β-NaO_2 is O_h^5. The alleged 4 possible structure models of β-NaO_2 with some preferential statistical distribution of O_2^- ions along the solid diagonal of the cube is unsubstantiated. The construction of linear vector models leads to very good agreement with the model of spherical symmetry of the O_2^- ion. That spherical symmetry can arise as a result of free rotation of these ions in the lattice. N. Thon

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ZVONKOVA S. V.

Feb 52

USSR/Chemistry - Superoxides

"The Crystal Structure of the Higher Oxides of Group I Metals from the Periodic Table," G. S. Zhdanov and S. V. Zvonkova

"DAN SSSR" Vol 87, No 5, pp 743-746

Sodium and potassium superoxides, (beta-NaO_2 and beta-KO_2) were studied by means of X-ray diffraction. A brief review of USSR work (by I. N. Kagarnovskiy etyal.) on the structures of SrO_2, BaO_2, CaO_2, alpha-KO_2, beta-NaO_2 and KO_3 is given in the introduction. Higher silver oxides are also discussed. Presented by Academician A. N. Frumkin 13 Dec 51

238T5

② 4

Crystallochemistry of metal thiocyanates. G. S. Zhdanov and Z. V. Zvonkova. *Doklady Mezhdunarod. Kongr. Teoret. i Priklad. Khim., XIII Kongr., Stockholm* 1953, 135-74(in French, 175-215); cf. *C.A.* 48, 432*f*.—A discussion of the structures of: (1) the thiocyanate group; (2) ionic crystals of metal thiocyanates such as $Ba(SCN)_2$ and HgSCNCl; (3) tetracoördinated metal thiocyanate complexes such as $HgCo(SCN)_4$ and $K_2A(SCN)_4$ (where A may be Co, Zn, Cd, Hg, Pt or Ni); (4) hexacoördinated metal thiocyanates of Pb, Pt, Cr, Ni, Mn, and Rh; (5) H-bonded thiocyanates. 29 refs. Philip S. Baker

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Physics

Chem Abs v 48
1-25-54
General & Physical
Chemistry

② 3

Crystallochemistry of thiocyanates of metals. G. S. Zhdanov and Z. V. Zvonkova. *Uspekhi Khim.* 22, 3-35 (1953).—Review with detailed summary of structures of various metal thiocyanates. 30 references. G. M. K.

Hydraulic filling of the Mingechaur dam without a trestle. Gidr.stroi. 22 no.4:9-11 Ap '53. (MLRA 6:5)
(Mingechaur hydroelectric power station) (Dams)

ZHDANOV, G. S.; ZVONKOVA, Z. V.; GLUSHKOVA, V. P.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Crystallography

Crystal structure of thiocyanates. Part 9. X-ray investigations of crystals of complex hexathiocyanates of chromium, nickel and platinum. Zhur. fiz. khim. 27, no. 1, 1953.

9. <u>Monthly</u> <u>List</u> <u>of</u> <u>Russian</u> <u>Accessions</u>, Library of Congress, May 1953, Unclassified.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

1. ZHDANOV, G. S.; TCBELKO, K. I.; ZVONKOVA, Z. V.

2. USSR (600)

4. Radiography

7. Radiographic determination of the chemical formula of sodium salts of the nickel thiocynate complex. Dokl. AN SSSR 88, No. 4, 1953.

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

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOV, Z. V.

"Developments of Crystalls-chemical representations regarding the nature of the inter-molecular relationship and inter-molecular spaces based on roentseno-structrual analysis," by Z.V. Zvonkov. pp. 71-78.

SO: Works of the Inst of Crystallography, Issue #10, (Reports submitted at the 3rd International Congress of Crystallography; published by the Acad Sci USSR, Moscow, 1954)

ZVONKOVA, Z. V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

USSR/ Physics - Crystallography

Card : 1/1

Authors : Tobelko, L. I., Zvonkova, Z. V., and Zhdanov, G. S.

Title : The structure of realgar and about the atomic radius of arsenic.

Periodical : Dokl. AN SSSR, Ed. 4, 749 - 752, June 1954

Abstract : Explains the peculiarities, i. e., molecular structure and instability under light, of mineral realgar by the fact of its having large intermolecular distances which leads to a loose coupling of the As-As atoms and their substitution by more stable ones, i. e., As-S. This was proved by the method of statistical equalities. Fifteen references. Table, graph.

Institution : The L. Ya. Karpov Scientific-Research Physico-Chemical Institute

Presented by: Academician N. V. Belov, March 2, 1954

ZHDANOV, G.S.; ZVONKOVA, Z.V.

X-ray structural analysis of $K_2Cd(SCN)_4.2H_2O$ crystals. Trudy Inst. krist. no.9:221-228 '54. (MLRA 7:11)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Potassium cadmium thiocyanate) (Crystallochemistry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z. V.

USSR/Chemistry

Card 1/1

Author : Zvonkova, Z. V.

Title : Crystalline structure of $Fe_3Br_8 \cdot 16H_2O$

Periodical : Zhur. Fiz. Khim, 28, Ed. 3, 453-458, March 1954

Abstract : Crystals of $Fe_3Br_8 \cdot 16H_2O$ belong to the monoclinic syngony. Determined were : the elementary nucleus $a = 8.74$; $b = 7.26$; $c = 22.94$ Å, spatial group $C^5_{2h} - P2_1/C$, number of weight particles in the nucleus $z = 2$ and the x-ray density $\rho x = 2.50$. X-ray investigation of the $Fe_3Br_8 \cdot 16H_2O$ crystals established an entirely new type of atomic structure. A new chemical and structural formula for the compound $[Fe^{II} Fe_2{}^{III}] [Br8(H_2O) 16]$ was set up. Eight references. Tables, graphs.

Institution : The L. Ya. Karpov Physico-Chemical Institute, Moscow, USSR

Submitted : June 5, 1953

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z. V.

USSR/Chemistry

Card 1/1

Authors	:	Zhdanov, G. S., and Zvonkova, Z. V.
Title	:	Problem of crystallochemical investigation of Ag_7NO_{11} compounds
Periodical	:	Zhur. Fiz. Khim, 28, Ed. 3, 564-565, March 1954
Abstract	:	One of the methodical problems of a majority of structural investigations of complex compounds is not only to find the positions of light atoms in the presence of heavy ones, but the sequent stage of the x-ray analysis namely, the derivation of accurate interatomic spaces. The authors point out the methodical inaccuracies in the Bokiy-Smirnov (1953) work which led to an entirely baseless and incorrect ions O_2^{2} in the Ag_7NO_{11} structure Institution and to writing a formula for this compound in the form of $Ag\ Ag_6\ O_4\ (O_2)_2NO_3$. Five references. Table.
Institution	:	The L. Ya. Karpov Physico-Chemical Institute, Moscow, USSR.
Submitted	:	September 17, 1953

ZVONKOVA,Z.V.; SAMODUROVA,V.V.; VORONTSOVA,L.G.

New data on the crystallochemistry of complex mercury halide compounds. Dokl. AN SSSR 102 no.6:1115-1118 Je'55. (MLRA 8:10)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya.Karpova. Predstavleno akademikom N.V.Belovym
(Crystallochemistry) (Mercury haloids)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

USSR/ Physical Chemistry - Crystals

B-5

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10974

Author : Zhdanov G.S., Zvonkova Z.V., Vorontsova L.G.
Title : X-Ray Investigation of the Structure of Methylene-Blue Dyestuff

Orig Pub : Kristallografiya, 1956, 1, No 1, 61-65

Abstract : An investigation was made of the crystalline structure of Methylene Blue dye $(C_{16}H_{18}N_3S)^{+}Cl^{-}\cdot nH_2O$, which crystallizes in long dark-blue needles having a metallic luster. Ascertained were the lattice parameters: a 9.86_6, b 31.86_9, c 7.07_4 A, 97°11'. From F^2-dernes data and by means of isomorphous replacenent of Cl atom by a Br atom, projection of electron density on (001) plane was plotted. As a result, a fundamental model of structure, in (001) projection, has been derived, which was confirmed by geometric analysis. Nearest S-Cl distande, equal to 2.8 A in projection, exceeds considerably lenght of covalent bond, which provides a confirmation of an ionic model of structure. It was ascertained that the nearest to the halogen atom of the complex ion is the S atom and not the methyl groups as was previously reported (Taylor W.H., Z. Kristallogr., 1935, A91, 450-460). This is explained by concentration of positive charge at S atom. Taylor's

USSR/ Physical Chemistry - Crystals

B-5

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10974

assumption concernig isostructural nature of Methylene Blue iodide and hydrochloride was not confirmed.

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Zvonkova, Z.V.

B-5

USSR/Physical Chemistry - Crystals.

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 212

Author : Z.V. Zvonkova.
Inst : -
Title : Crystallochemical Study of Nature of Donor-Acceptor Bond in Complex Boron Compounds.

Orig Pub : Kristallografiya, 1956, 1, No 1, 73-80

Abstract : An x-ray-structural study of the compound of F_3B with NC_5H_5 was carried out. The parameters of the monoclinic lattice are: $a = 17.71$, $b = 5.89$, $c = 14.34$ A, $\beta = 118^{\circ}42'$, $Z = 8$, f. f. $P2_1/c$; ρ (meas.) = 1.48. At the structure deciphering, the method of statistical equations was used for the determination of the signs of structural amplitudes, as well as the method of three-dimensional sections and projection of electronic density. Photographing was carried out by the x-ray goniometric method. The interatomic distances are :

Card 1/2

USSR/Physical Chemistry - Crystals.

B-5

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 212

B-F - 1.41. B-N - 1.53, F-F - 2.30, N-C - 1.36, C-C - 1.39 A; the valence angles are: FBF - 109.5°; NBF - 108.5°; $C_{(1)}NC_{(2)}$ - 117.5°; $NC_{(1)}C_{(3)}$ - 123°; $C_{(1)}C_{(3)}C_{(5)}$ - 119°; $C_{(3)}C_{(5)}C_{(4)}$ - 118.5°. The exactitude of the determination of interatomic distances was 0.01 to 0.02 A. The deformation of the valence angles in the pyridine molecule agrees with radiospectroscopical data. The planes of the pyridine rings are perpendicular to the plane (0,1,0). A considerable reduction of the internolecular radius of the hydrogen atom ($r_H = 0.80$ A) was established in the structure by the distances H-H between molecules from neighboring cells. The crystallochemical theory of the donor-acceptor bond is discussed.

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Category: USSR / Physical Chemistry - Crystals B-5

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29675

Author : Zhdanov G. S., Zvonkova Z. V., Rannev N. V.
Inst : not given
Title : X-Ray Diffraction Study of Diethyl-Dithiocarbamate of Lead

Orig Pub: Kristallografiya, 1956, 1, No 5, 514-519

Abstract: Monocrystals of $[(C_2H_5)_2NCS_2]$ Pb were obtained in the form of colorless hexagonal prisms. X-ray determinations were made of the parameters of monoclinic lattice: a 9.55, b 11.75, c 14.72 A, β 96°, Z = 4, F. gr. $P2_1/c$. By means of F series pyramidal configuration of Pb-S bonds (tetragonal pyramid) was ascertained. From projection of electron density (100) and (010) the coordinates of Pb, S atoms were obtained. Interatomic distances in the pyramidal complex: Pb-S 2.7-2.8, S-S 3.3-3.5, Pb-Pb 4.25 A. Pb-S bonds are of predominantly covalent nature. Structural data are compared with change in dipole moments in the series of dithiocarbamates of Zn, Ni, Pb, Bi.

Card : 1/1

ZVONKOVA

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

Using direct methods of X-ray structural analysis for crystallochemical examinations. Kristallografiia 1 no.6: 631-633 '56. (MLRA 10:5)

1. Fisiko-khimicheskiy institut im. L.Ya. Karpova.
(X-ray crystallography)
(Crystallochemistry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8

[illegible]

ZVONKOVA, V.

Kaspov Institute for Physical Chemistry, Moscow-

"The development of Crystal Chemical Theory of the Structure of Complex Compounds" (SEction 6-20) a paper submitted at the General Assembly and International Congress of Crystallography, 10-19 Jul 57, Montreal, canada.

C-3,800,189

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

70-3-14/20

AUTHOR: Zvonkova, Z.V.

TITLE: Development of the crystal-chemical theory of structural compounds. (Kristallokhimicheskiye issledovaniya stroyeniya nekotorykh kompleksnykh soyedineniy)

PERIODICAL: "Kristallografiya" (Crystallography), 1957, Vol.2, No.3, pp. 408 - 413 (U.S.S.R.)

ABSTRACT: Crystal-chemical research on the inter-molecular inter-action shows some interesting and significant features of the nature of the hydrogen bond. The new values obtained for inter-molecular radii of the hydrogen atom in the structure $[ClTlC_6H_5]^+Cl^-$ ($r_H = 0.74$ Å) and in the structure $F_3B - NC_5H_5$ ($r_H = 0.80$ Å) are smaller than the generally accepted value $r_H = 1.17 \div 1.20$ Å. The inter-molecular distance H ... F (1.93 Å) is shorter than the sum of the inter-molecular radii of hydrogen and fluorine (2.52 Å). A strong hydrogen bond N - H ... S has been found in the structure of captax. Strong hydrogen bonds are due to electrostatic attraction and can be obtained in two cases: 1) along the line of polar covalent σ-bond and 2) for groups of double-bond character, for example $S = C<$, by the inter-action of

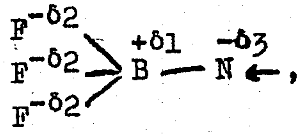
Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Development of the crystal-chemical theory of structural compounds. (Cont.)

p_π -electron cloud of the sulphur atom and of the hydrogen atom of the $N^{-\delta 2}-H^{+\delta 1}$ bond.

Crystal-chemical analysis of chemical bond nature in the complex compounds is of greatest importance. Inter-atomic distances depend on the degree of s- and p- character of the atoms in the chemical bonds. Crystal-chemical analysis ($TlCl_3 \cdot 4H_2O$, $[ClTlC_6H_5]^{+}Cl^{-}$, TlJ_3) indicates sp^2 and sp hybrid orbitals or lone-pair electrons s^2 of the thallium. Determination of the inter-atomic distances in the structure $F_3B - NC_5H_5$ made it possible to reveal the nature of the donor-acceptor boron-nitrogen bond. This co-ordinate link is assumed to be polar:



with an overlap of a vacant orbital of the boron and a filled orbital of the nitrogen which contains an asymmetrical lone pair of electrons.

Card 2/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Development of the crystal-chemical theory of structural compounds. (Cont.)

The crystal-chemical investigations show that in the complex compounds of metals (Hg, Tl, Pb) of incomplete s - p orbitals the degree of use of p-character of a metal atom in metal-halogen bonds increases in the succession Cl, Br, I. Therefore, in the p-$BrC_6H_4B(OH)_2$ structure the degree of use of p-character of the carbon atom increases in Br-C$<$ bond as compared to the Cl-C$<$ bond. In the complex compounds the degree of use of p-character of a metal atom in the metal-sulphur bond is greater than in the metal-bromine bond. In the $B_3S_3Br_3$ structure, therefore, valence angles are $S - B - S < 120^{\circ}$ and $B - S - B > 120^{\circ}$. There are 1 figure and 1 table and 18 references, of which 10 are Slavic.

ASSOCIATION: Physico-Chemical Institut im. L.Ya. Karpov.
(Fiziko-khimicheskiy Institut im. L.Ya. Karpova)

SUBMITTED: February 20, 1957.

AVAILABLE: Library of Congress

Card 3/3

ZVONKOVA, Z.V.

Crystallochemical studies of the nature of donor-acceptor bonds in complex compounds. Zhur. neorg. khim. 2 10:2334-2345 O '57. (MIRA 11:3)

1. Fiziko-khimicheskiy institut im. L. Ya. Karpova.
(Crystallochemistry) (Chemical bonds) (Complex compounds)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

[redacted]

The nature of the chemical bonds in thiocyanate complexes of metals [with summary in English]. Zhur.fiz.khim. 31 no.9:2074-2077 S '57. (MIRA 11:1)

1.Fiziko-khimicheskiy institut im. L.Ya. Karpova, Moskva.
(Chemical bonds) (Complex compounds) (Thiocyanates)

SOV/70-3-5-4/24

AUTHORS: Zvonkova, Z.V. and Tashpulatov, Yu.

TITLE: A New Determination of the Crystal Structure of Thiourea (Novoye opredeleniye kristallicheskogo stroyeniya tiomocheviny)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 553-558 (USSR)

ABSTRACT: The structure of thiourea was first determined in 1928 and 1931, so that a re-investigation to measure the bond lengths by modern methods was called for. The crystals are orthorhombic with space group $Pnma = D_{2h}^{16}$, a = 7.66, b = 8.54, c = 5.52 A, Z = 4, $d_{calc.} = 1.39$ and $d_{obs.} = 1.405$ g/cm^3. The co-ordinates of the S and N atoms were determined from Patterson projections. The xy0 and 0yz Fourier projections were then calculated (23 and 29 independent reflections, respectively). 210 general reflections were obtained with a Weissenberg camera designed by M.M. Umanskiy. A section (x, 1/4, z) was then calculated. The co-ordinates finally obtained differ appreciably from those found earlier (SB II, 805, 882) and are S, (0.999, 0.250, 0.886); C, (0.099, 0.250, 0.145);

N, (0.134, 0.116, 0.234). From these data, the bond lengths are S-C = 1.61 + 0.01 A and C-N = 1.28 + 0.01 A and the angles are N-C-N 129° + 1°, and S-C-N 116° ± 1°. The shortest intra-molecular distances are S-N 2.46 and N-N 2.30 and the shortest inter-molecular S-N 3.36 and N-N 3.84 A. These are about 0.05 A less than obtained earlier. There are weak H-bonds associated with the interaction of the H-atoms with the P_{pi}-electrons of the electron cloud. The characteristic molecular symmetry in isolation is mm but in the crystal is only m. The distortions found in the earlier determination were not confirmed and the molecule appears almost planar, the displacement of the N atom being 0.01 A. The bond angles and lengths are related to those in captax.
There are 7 figures and 13 references, 7 of which are Soviet and 3, English, 2 German and 1 Scandinavian.

SOV/70-3-5-4/24

A New Determination of the Crystal Structure of Thiourea

ASSOCIATION: Fiziko-khimicheskiy institut , im. L. Ya. Karpova
(Physico-chemical Institute im. L. Ya. Karpov)

SUBMITTED: January 28, 1958

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

SOV/70-3-5-5/24

AUTHORS: Zvonkova, Z.V. and Glushkova, V.P.

TITLE: The Crystal Structure of p-bromphenylboric Acid (Kristallicheskoye stroyeniye p-bromfenilbornoy kisloty)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 559-563 (USSR)

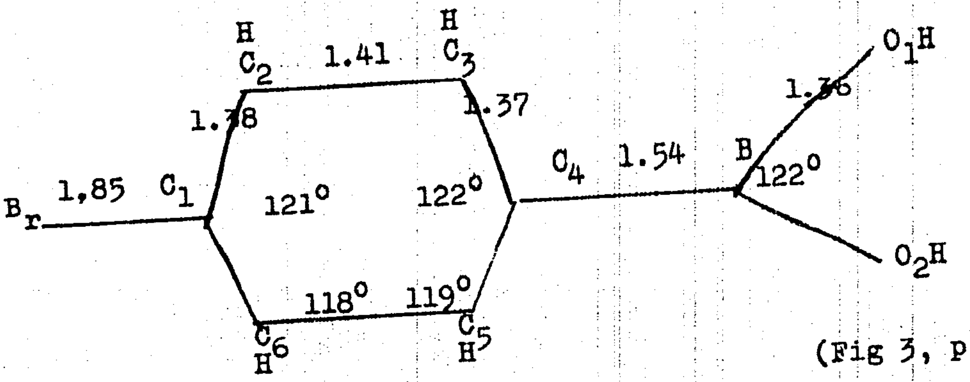
ABSTRACT: 40 crystals of p-$BrC_6H_4B(OH)_2$ from various solvents were examined by X-ray diffraction. There appeared to be no piezoelectric effect. The cell was found to be hexagonal with $a = 28.73$ and $c = 9.74$ A and space group C6/mcc = C^2_{6h} with $Z = 36$ and $d_{calc.} = 1.72$, $d_{obs.} = 1.67$ g/cm^3. There are 576 atoms in the unit cell. The Patterson functions $F^2(hk0)$ and $F^2(hkl)$ were constructed which showed only peaks corresponding to Br-Br vectors. The Br atoms were found to lie in mirror planes with $z = 0$ and $z = 1/2$. It was assumed that the atoms Br, C_1, C_4 and B lie triply in the positions 12(e). The atoms C_2, C_3, C_5, C_6, O_1, O_2 and H ocupy the general positions 24(m). The

The Crystal Structure of p-bromphenylboric Acid

co-ordinates of the three independent Br atoms were found from F^2 series. Weissenberg photographs were taken for 7 layers about the c axis and these were connected by a -axis photographs. In all, 588 independent reflections were collected. The sections at xy0 and x, y, 0.123 were calculated. The heights of the three Br peaks were 85, 91 and 82 and of the C atoms were 16-20. The Br peaks were thought to be slightly lowered by their antisymmetric arrangement. The final co-ordinates are entered in Table 2, p 560. When a temperature factor of B=4 was applied, a final reliability factor of R=24% was obtained. The angles relating the plane of the molecule to the 010 plane are $\varnothing_1 = 41^\circ$, $\varnothing_2 = 52^\circ$ and $\varnothing_3 = 50^\circ$. The bond lengths and angles are:

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

The Crystal Structure of p-bromphenylboric Acid



(Fig 3, p 561).

The Br-C bond length is 1.85 A comparing with the values of 1.85 and 1.87 reported in other compounds. The maximum value of the deviation of individual molecular dimensions from the mean over the three molecules is 0.03 A. The C_1-C_2 (and C_1-C_6) bonds are shortened to 1.38 and the C_3-C_4 (and C_4-C_5) to 1.37. The C_2-C_3 (C_5-C_6) bonds are

SOV/70-3-5-5/24

The Crystal Structure of p-bromphenylboric Acid

lengthened to 1.41. Similar observations have been made in benzoic acid. In captax (2-mercaptobenzthiazol) deformation was also measured. These results show the changes in the interatomic distances due to the differing participation of the s and p electrons in the bonds. An estimate of the intermolecular radius of C can be obtained (1.67 A) which is near to the values in graphite (1.675) and in captax (1.685). The introduction of the acceptor group $B(OH)_2$ decreases the radius from the value of 1.80 found in benzene to this value. The benzene nucleus has become finer and the pi-electron cloud is decreased. Acknowledgments are made to Z.P. Linina, A.N. Khvatkina and A.N. Abramova.

There are 6 figures, 2 tables and 10 references, 6 of which are Soviet, 3 English and 1 Scandinavian

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physico-chemical Institute im. L. Ya. Karpov)

SUBMITTED: July 1, 1957

SOV/70-3-5-6/24

AUTHOR: Zvonkova, Z.V.

TITLE: The Structure of Crystals of Tribromborosulphene (Kristallicheskoye stroyeniye tribromborsul'fola)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 564-569 (USSR)

ABSTRACT: Crystals of $Br_3B_3S_3$, prepared as described in Z. Naturforsch., 1957, Vol 8B, p 408, with m.p. 132-135°, were chosen for the study of s-p bonds between B and S atoms. Crystals of this compound were monoclinic with a = 13.99, b = 4.12 and c = 17.84, $\beta = 116^\circ$, space group $P2_1/c = C_{2h}^5$, Z = 4, $d_{calc.} = 2.64$ and $d_{obs.} = 2.60$. The xOz Patterson projection gave the Br positions and a Fourier projection on the same plane was calculated. To refine the positions, two difference Fourier projections, $(F_{exp.} - F_{Br})$ and $(F_{exp.} - F_{Br} - F_S)$, were calculated. The y co-ordinates were found from the Fourier projection on Oyz. A generalised projection using 182 F(h01), 196 F(h11) and 151 F(h21) reflections was used for verification. The

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peak heights are extremely sensitive, in this synthesis, to the y co-ordinates of the atoms. The final reliability factor obtained was 21%. The corresponding co-ordinates are Br_1 (0.037, 0.255, 0.096); Br_2 (0.563, 0.031, 0.362); Br_3 (0.212, 0.469, 0.515); S_1 (0.294, 0.145, 0.244); S_2 (0.369, 0.253, 0.420); S_3 (0.148, 0.362, 0.308); B_1(0.153, 0.255, 0.208); B_2 (0.420, 0.138, 0.342); B_3 (0.240, 0.364, 0.419). The distances in the molecule are: Br-Br 6.83; B-Br 1.93; B-S 1.85. The accuracy is about 0.01Å. The angles are S-B-S 102°, B-S-B 138°, and S-B-Br 129°. The intra-molecular distance Br-S of 3.42 is less than the sum of the inter-molecular radii of Br and S by 0.38 A and the mean S-S distance of 2.88 is less than the sum of the inter-molecular radii of two S atoms by 0.82 A.

SOV/70-3-5-6/24

The Structure of Crystals of Tribromborosulphene

Acknowledgments are made to V.P. Glushkova, A.N. Khvatkina and Z.P. Linina.
There are 8 figures, 3 tables and 9 references, 5 of which are Soviet, 3 English and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova
(Physico-chemical Institute im. L. Ya. Karpov)

SUBMITTED: October 29, 1957

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5(4)

AUTHORS: Tashpulatov, Yu., Zvonkova, Z. V. SOV/76-32-12-6/32

TITLE: Crystallo-Chemical Investigationson Compounds With Carbonyl or Thionic Groups (O kristallokhimicheskikh issledovaniyakh soyedineniy s karbonil'nymi i tionovymi gruppami)

PERIODICAL: Zhurnal fizicheskoy khimii, Vol 32, Nr 12, 1958 pp 2690 - 2693 (USSR)

ABSTRACT: In the case of 25 compounds with C=O- and amido- or imido groups the C-O- and C-N distances were measured and represented by a curve. The C-N distance decreases as the C=O distance increases. Thionic groups have been studied only to a limited extent. Measurements of atomic distances have been carried out only for Captax (mercapto-benzo thiazole), dithio oxamide, and ethylene thiourea. It was found that the increase in the S=C distance is paralleled by an increase in the C-N distance. Thus, the function of the free electron pair in the nitrogen atom is basically different in the formation of compounds with carbonyl or thionic groups. Further investigation on materials with C-N and C=S bindings will be carried out. There are 2 figures and 30

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references, 4 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (Physico-Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: March 2, 1957

ZVONKOVA, Zlata Vasil'yevna

"The Nature of the Mutual Influence of Atoms - Crystal Chemical Investigation"

a report presented at Symposium of the International Union of Crystallography Leningrad, 21-27 May 1959

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.

PHASE I BOOK EXPLOITATION SOV/4386

Moscow. Fiziko-khimicheskiy institut

Problemy fizicheskoy khimii; trudy, vyp. 2 (Problems in Physical Chemistry; Transactions of the Institute, no. 2). Moscow, Goskhimizdat, 1959. 202 p. 1,000 copies printed.

Editorial Board: Ya. M. Varshavskiy, Doctor of Chemical Sciences; G. S. Zhdanov, Doctor of Chemical Sciences; V. A. Kargin, Academician; Ya. M. Kolotyrkin, Doctor of Chemical Sciences (Resp. Ed.); S. S. Medvedev, Academician; S. Ya. Pshezhetskiy, Doctor of Chemical Sciences; V. M. Cherednichenko, Candidate of Chemical Sciences; V. S. Chesalova (Editorial Secretary), Candidate of Chemical Sciences; Ed.: I. A. Myasnikov; Tech. Ed.: Ye. G. Shpak.

PURPOSE: This collection of articles is intended for physical chemists.

COVERAGE: The collection is the second issue of the Transactions of the Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov. It contains 17 articles which review

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AVAILABLE: Library of Congress

ZVONKOVA, Z.V.

Crystallochemical data on the nature of interactions between atoms. Probl.fiz.khim. no.2:97-106 '59. (MIRA 13:7)

1. Rentgenovskaya laboratoriya Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta imeni L.Ya. Karpova.
(Chemical bonds)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

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75985
SOV/70-4-5-7/36

AUTHOR: Zvonkova, ~~Z. V.~~

TITLE: Structural Characteristics of Atomic Electronegativity

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 5, pp 668-672 (USSR)

ABSTRACT: On the basis of a literature survey and the known experimental data on interatomic distances in various compounds, the author seeks to evaluate more precisely the quantitative relation of atomic electronegativity to interatomic distances. The existing theories on the subject are modified by introduction of the concept, that a valence bond at different electronegativities of the atoms becomes shorter than the sum of the atomic radii principally because of the changed degree of the atomic nucleus shielding and of the changed atomic radii. The concept is substantiated by a table and Fig. 1, which illustrates for each row of the periodic system a linear dependence of the difference, Δd, between the calculated sums of the atomic radii and the experimentally determined lengths of the covalent bonds

Card 1/5

on the difference of electronegativities, Δx. The equation $\Delta d = \beta \Delta x$, where β is a constant for each row, makes it possible to determine d for any member of a row having experimental d for its single member, and to determine Δx in particular bonds of a complex compound. Experiments proved the validity of the equation. Fig. 2 shows Δd as function of ΔD, i.e., of the difference between the experimental bond energy and that of a covalent bond. The curve shows a gain of energy as the result of redistribution of the electron density between the atoms of unlike electronegativity. The structures with missing electrons in the bonds (semiconductors, photoelectrics) exhibit a quite different relationship between Δd and Δx (Fig. 3). The actual bonds become longer than the sum of the atomic radii; the maximum increase in interatomic distances corresponds to the maximum band width of the forbidden zone, ΔE ev. Generally, Δd depends on two factors, Δx and the ratio $\frac{\text{atomic effective charge}}{\text{atomic radius}}$. There

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Structural Characteristics of Atomic Electronegativity

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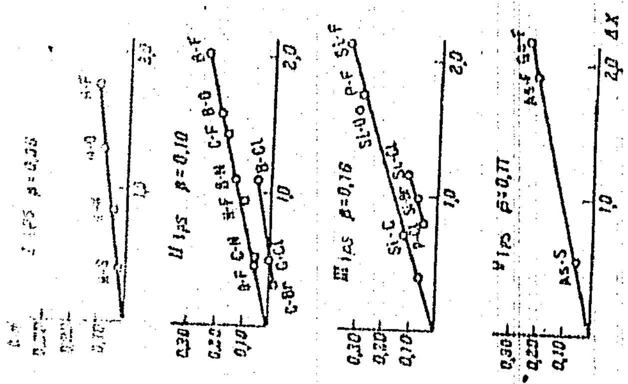

Fig. 1.

lps = law of the periodic system

Structural Characteristics of Atomic Electronegativity

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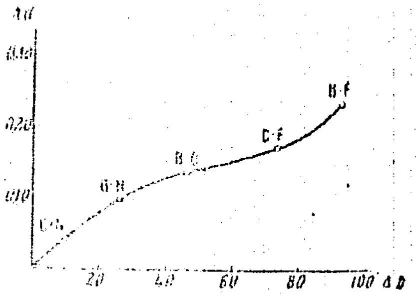

Fig. 2.

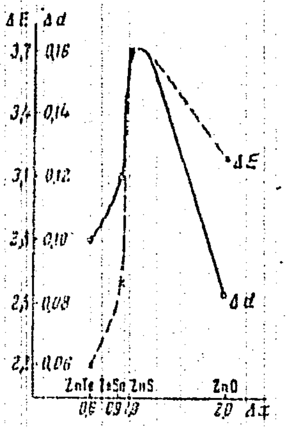

Fig. 3.

are 2 tables; 3 figures; and 23 references, 14 U.S., 6 Soviet, 2 U.K., and 1 French. The most recent U.S. references are: W. Gordy, W. J. Thomas, J. Chem. Phys., 24, 439, 1956; H. O. Pritchard, H. A. Skinner, Chem. Rev., 55, 745, 1955; M. L. Huggins, J. Amer. Chem. Soc., 75, 4123, 1953, and 75, 4126, 1953; H. A. Skinner, N. B. Smith, J. Chem. Soc., 6, 4025, 1953.

ASSOCIATION: Physico-Chemical Institute imeni L. Ya. Karpov (Fiziko-khimicheskiy institut imeni L. Ya. Karpova)

SUBMITTED: November 19, 1958

ZVONKOVA, Z.V.; ASTAKHOVA, L.I.; GLUSHKOVA, V.P.

Atomic sturcture of tetramethylthiourea. Kristallografiia 5 no.4: 547-552 Jl-Ag '60. (MIRA 13:9)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova.
(Urea)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

85994

5 4600 1273, 1241, 1153

S/070/60/005/005/018/026/XX
E132/E160

AUTHORS: Vorontsova, L.G., Zvonkova, Z.V., and Zhdanov, G.S.

TITLE: An X-ray Determination of the Crystal Structure of Diparatolyldisulphide

PERIODICAL: Kristallografiya, 1960, Vol.5, No.5, pp.698-703

TEXT: The unit cell of crystals of $CH_3.C_6H_4.S{-}{-}S.C_6H_4.CH_3$ is monoclinic, space group $P2_1-C_2^2$, with a = 14.86, b = 5.77, c = 7.69 Å, β = 94°, Z = 2, $d_{obs.}$ = 1.24 and $d_{calc.}$ = 1.19. V.A. Koptsik has detected a piezoelectric effect in single crystals. The 010 Patterson projection was calculated to locate the heavier S atoms. The interpretation of the various S-S peaks was better accomplished from the P(x, ½, z) section calculated with 763 reflexions. The 010 Fourier projection was calculated using the signs from the S atoms and showed 7 carbon atoms resolved and 7 very blurred. The model of the structure thus found (where the choice of S positions might have been made from three possibilities) was confirmed by an a priori electron density projection with signs derived from an application of the method

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of statistical inequalities. Seven stages of refinement were then carried out giving the following (x,z) atomic parameters:

S_1	0.202	0.141
S_2	0.273	0.127
C_3	0.985	0.327
C_5	0.815	0.331
C_7	0.029	0.158
C_8	0.329	0.346
C_9	0.373	0.359
C_{10}	0.413	0.510
C_{12}	0.456	0.825
C_{14}	0.318	0.478

y S_1-S_2 = 0.307; S_2-C_{12} = 0.240; S_2-C_{10} = 0.296.

The pairs C_1 and C_2, C_4 and C_6, C_{11} and C_{13} are not resolved in this projection as they are less than 0.7 Å apart. The S_1-S_2 distance was found to be 2.06 ± 0.02 Å from the three-dimensional line synthesis P(0.071, y, 0). The final reliability factor for the $F(h0\ell)$ layer was R = 0.26. The bond angles at the S atoms are 107°. The planes of the benzene rings are at 94° to each

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E132/E160

An X-ray Determination of the Crystal Structure of Diparatolyldisulphide

other. The dipole moment of 2.49D is in agreement with the structure found.

There are 4 figures, 3 tables and 21 references: 4 Soviet, 7 English, 1 Belgian, 5 Scandinavian and 4 international.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physico-Chemical Institute imeni L.Ya. Karpov)

SUBMITTED: February 23, 1960

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONKOVA, Z.V.; KHVATKINA, A.N.

Atomic structure of cyanamide. Kristallografiia 6 no.2:184-189 Mr-Ap '61. (MIRA 14:9)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Spectrum, Atomic) (Cyanamide)

29120
S/020/61/140/005/016/022
B103/B110

15.8540

AUTHORS: Terent'yev, A. P., Corresponding Member AS USSR, Rode, V. V., Rukhadze, Ye. G., Vozzhennikov, V. M., Zvonkova, Z. V., and Badzhadze, L. I.

TITLE: Electrical conductivity of chelate polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 5, 1961, 1093-1095

TEXT: The authors measured the electrical conductivity σ and the activation energy E of several chelate polymers to determine the dependence between their semiconductor properties and their atomic structure. These polymers were mostly synthesized by interaction of equimolecular aqueous solutions of metal acetates and alcoholic solutions of the corresponding tetrafunctional organic compounds. The substances obtained were amorphous, insoluble, and infusible. Their decomposition temperatures were above 250-350°C. More data will be published in the coming issues of the periodical "Vysokomolekulyarnyye soyedineniya". For measuring the electrical conductivity samples in tablet form were used: diameter 5-7 mm,

X

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Electrical conductivity of ...

σ = up to 10^{-13} $\mathrm{ohm^{-1}.cm^{-1}}$. It changes with the temperature according to the exponential function $\sigma = \sigma_0 \exp(-E/2kT)$. The results are given in Table 1. Copper-polychelates of structure I had the highest electrical conductivity. Their special electrical properties are in good agreement with the hypothesis on their network structure. The atoms of monovalent copper form linear bonds: S - Cu - S. X-ray studies showed that the distance between the Cu atoms next to each other $-\mathrm{Cu{-}S{=}\overset{|}{C}{-}S{-}Cu}-$ equals 5.8 Å. Radicals with π bonds of carbon increase the electrical conductivity of copper polymers. Coplanarity of the polymer chains necessary for the conjugation of the π bonds of the $\mathrm{N{-}C}\begin{smallmatrix}\diagup \mathrm{S}\\ \diagdown \mathrm{S}\end{smallmatrix}$ atoms and phenylene rings, is due to the network structure. In polymers with structure II, σ decreases whereas E increases in the sequence Co, Zn, Ni. The four sulfur atoms are in the same plane as the metal atoms and the $\mathrm{N{-}C}\begin{smallmatrix}\diagup \mathrm{S}\\ \diagdown \mathrm{S}\end{smallmatrix}$ bonds. The Co-S bonds are tetrahedral. The electrical characteristics of 48 semiconductor

Card 2/6

2

polymers like those of inorganic semiconductors, widely depended on the short range order. There are 1 table and 9 references: 8 Soviet and 1 non-Soviet. The reference to English-language publication reads as follows: B. Long, P. Markey, P. G. Wheatley, Acta crystallogr., 7, 140 (1954).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov). Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: May 31, 1961

X

Table 1. Electrical conductivity of chelate polymers.

Legend: (1) σ_{295} (ohm^{-1}.cm^{-1}); (2) same units as (1); (3) in ev; (4) for polychelates: of Ni with R = $-(CH_2)_6-$ and n,n'$-(C_6H_4)_2-$; (5) of zinc; (6) of cobalt; (7) for cadmium polychelates; (8) for all polychelates;

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

36915
S/020/62/143/005/013/018
B101/B110

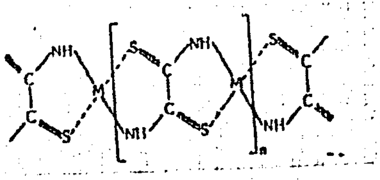
15.8340

AUTHORS: Vozzhennikov, V. M., Zvonkova, Z. V., Rukhadze, Ye. G., Zhdanov, G. S., and Glushkova, V. P.

TITLE: Electrical conductivity and activation energy of some dithio oxamide-, N-substituted dithiocarbamate-, and thiocyanate (Cu, Co, Ni) polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962, 1131-1134

TEXT: The electrical conductivity, σ, and the activation energy, E, of the following polychelates were studied:



(I),

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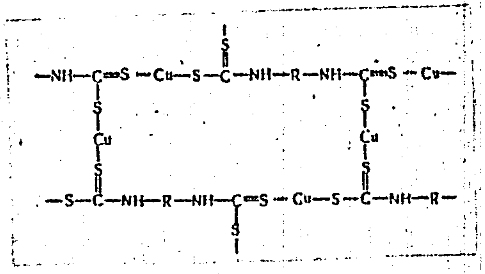
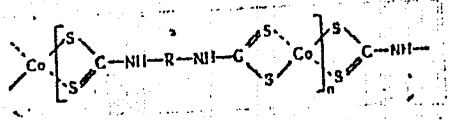
M = Cu, Ni, or Co;



(II),

R = p-C_6H_4-; p,p-$(C_6H_4)_2$-; $(CH_2)_6$; and



(III),

R = p-C_6H_4-; p,p-$(C_6H_4)_2$-; $(CH_2)_6$; $(CH_2)_2$. The following was found:

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Polymer	M, R	T, °K	$\sigma_{290°K}$ $ohm^{-1}\cdot cm^{-1}$	σ_0 $ohm^{-1}\cdot cm^{-1}$	E, ev
I	Cu	290-350	$4\cdot10^{-8}$	$1\cdot10^{4}$	0.6
"	Ni	290-500	$2\cdot10^{-11}$	$7\cdot10^{-1}$	0.6
"	Co	400-500	$7\cdot10^{-16}$ *	$1\cdot10^{-3}$	0.7
II	$p-C_6H_4-$	290-425	$7\cdot10^{-11}$	1	0.42; 0.62 } **
"	$p,p-(C_6H_4)_2-$	290-450	$5\cdot10^{-13}$	$1\cdot10^{-3}$	0.36; 0.60 } **
"	$(CH_2)_6$	310-380	$1\cdot10^{-13}$	$2\cdot10^{-1}$	0.72
III	$p-C_6H_4-$	370-460	$9\cdot10^{-12}$ } ***	$1\cdot10^{-3}$	0.58
"	$p,p-(C_6H_4)_2-$	380-460	$3.5\cdot10^{-12}$ } ***	$3\cdot10^{-3}$	0.62
"	$(CH_2)_6$	400-460	$1.7\cdot10^{-12}$ } ***	$5\cdot10^{-3}$	0.76
"	$(CH_2)_2$	400-460	$8\cdot10^{-13}$ } ***	$1\cdot10^{-3}$	0.74

* extrapolated; ** first figure at $T < 360^\circ$K, second figure at $T > 360^\circ$K; *** $\sigma_{400^\circ K}$. In the compounds II and III the higher σ and the lower E of the phenylene derivatives are explained by the effect of the π bonds which is reduced in the diphenylene group owing to the angle between the ring planes. Logσ is a linear function of 1/T, the straight line has, however, a salient point at 360°K for compounds II. The susceptibility of compounds III is 3.5 μB. Compounds with the bridge groups S=C=N- have semiconductor properties. Also CuSCN showed a salient point in the curve logσ versus 1/T: at the beginning, $E_1 = 0.4$ ev, after a 2-hr heating at 400°C, $E_2 = 0.1$ ev. There are 4 figures and 1 table. The most important English-language reference is: R. M. Hurd, G. De La Mater et al., J. Am. Chem. Soc., 17, 4454 (1960).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

L 4[illegible]

ACC NR: AP6023209 SOURCE CODE: UR/0020/66/168/006/1327/1330

AUTHOR: Kolninov, O. V.; Terent'yev, A. P. (Corresponding member AN SSSR); Zvonkova, Z. V.; Rukhadze, Ye. G.

ORG: Physicochemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut); Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Study of the photoemf and electron spectra of certain dithiocarbamate compounds of transition metals

SOURCE: AN SSSR. Doklady, v. 168, no. 6, 1966, 1327-1330

TOPIC TAGS: chelate compound, transition metal compound, electron spectrum, photoconductivity, photo emf

ABSTRACT: Curves of the spectral distribution of photoemf were recorded in the range of 42,000-12,000 cm^{-1} for the four chelates $Cu[(C_2H_5)_2NCS_2]_2$, $Cu[(CH_2)_6NCS_2]_2$, $Ni[(C_2H_5)_2NCS_2]_2$ and $Co[(C_2H_5)_2NCS_2]_3$. The electron absorption spectra were measured with an SP-700 recording spectrophotometer. Four types of new bands were found: (1) d-d, due to transitions between split levels of the central metal atom, (2) bands of charge transfer between atoms of the ligand and metal (π-d transitions), (3) bands of charge transfer between atoms of ligand and metal in σ orbitals, and (4) bands corresponding to transitions within the NCS_2 ligand ($n \to \pi^*$, $\pi \to \pi^*$, $n \to \sigma^*$). Comparison of the photoemf spectra and absorption spectra showed that the principal ligand - metal

Card 1/2 UDC: 541.133+543.42.062

L 41220-66

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ACC NR: AP6023209

interaction occurs via the σ bonds. The data obtained shed some light on the mechanism of photoconductivity in chelate compounds with transition metals: in the first stage, there is a transition of electrons from the ligands to the antibonding orbital σ*, localized at the metal atom (for example, $d_{x^2-y^2}$ for Cu); in the second stage, the charge carriers are transferred to the neighboring molecule by the tunnel mechanism without any activation energy. All compounds studied were found to have hole photoconductivity. The important role of the central metal atom in the mechanism of photoconductivity is also discussed. Orig. art. has: 3 figures.

SUB CODE: 07,20/ SUBM DATE: 06Dec65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 MLP

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

33232

S/089/62/012/002/003/013
B102/B138

26.2244

AUTHORS: Zvonov, N. V., Mis'kevich, A. I., Rogozhkin, I. V., Tereshchenko, V. I., Turkov, Zh. I., Utkin, V. P.

TITLE: Fast neutron energy spectrum and thermal neutron flux distribution in the experimental hole of a ВВР (VVR) reactor

PERIODICAL: Atomnaya energiya, v. 12, no. 2, 1962, 116 - 122

TEXT: Threshold reactions, leading to formation of gamma-active nuclei, were used to study neutron spectra. A scintillation counter with NaI(Tl) crystal, ФЭУ-13 (FEU-13) photomultiplier and a 100-channel pulse-height analyzer was used to record gamma-radiation. Al, Fe, Si, Ti, Ni, Co, Mg, Zn, and Cu were used as indicator elements for (n,p) reactions, Al for (n,α) reactions and In, Hg, Pb, Ag, and Ba for inelastic (n,n') reactions in which longlife ($\geqslant$ 1-2 min) metastable levels are formed. Low threshold energy is typical of this kind of reaction. For In^{115}(n,n') it is 335 kev. The usual threshold indicator technique was used. The spectral distribution of neutrons was determined from the equations

Card 1/3

Fast neutron energy spectrum...

$A_i = \int_{E^i_{thr}}^{\infty} \Phi(E)\sigma^i_{act}(E)dE$, $i = 1,2...n$; i is the indicator index, n the number of indicators, $\Phi(E)$ flux of neutrons of given energy, $\sigma_{act}(E)$ activation cross section, E_{thr} threshold energy. If the real cross section $\sigma^i_{act}(E)$ is substituted by an ideal one, at a certain threshold E^i_{eff} there will be a jump from zero to σ^i_o and $A_i = \sigma^i_o \int_{E^i_{eff}}^{\infty} \Phi(E)dE$ is obtained. σ^i_o and E^i_{eff} may be chosen arbitrarily if only the upper equations are fulfilled. σ^i_o was taken as the mean of $\sigma^i_{act}(E)$ and E^i_{eff} was determined from these equations. The effective thresholds E_{eff}, effective cross sections σ_o and integral neutron fluxes for $E > E_{eff}$, 100 kw and a channel width of 130 mm were calculated numerically. The thermal neutron flux distributions were measured vertically and radially by means of a plate (4·5 mm) and a

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disc (19 mm). The neutron flux in the center of the channel was measured at the level of the middle of the core with a Cu foil of 0.1415 g/cm^2. With an empty channel width of 130 mm and 100 kw the flux was $4.5 \cdot 10^{11}$ n/cm^2·sec. Comparison with other results shows that the same dependence of thermal neutron flux on core distance obtains for both water and concrete. There are 5 figures, 1 table, and 18 references: 3 Soviet and 15 non-Soviet. The four most recent references to English-language publications read as follows: W. Meinke. Nucleonics, 17, No. 9, 86, 1959; P. Kruger. Nucleonics, 17, No. 6, 116, 1959; R. Bullock, R. Moore. Phys. Rev. 119, No. 2, 721, 1960; R. Rochlin. Nucleonics, 17, No. 1, 54, 1959.

SUBMITTED: April 25, 1961

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

S/143/62/000/010/003/004
D238/D308

AUTHORS: Krushedol'skiy, G.I., Candidate of Technical Sciences and Zvonov, V.A., Engineer

TITLE: The effect of combustion-chamber scavenging on the temperature of Д70 (D70) engine components

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, no. 10, 1962, 80-85

TEXT: The supercharge pressure on modern four-stroke diesels reaches values of 2.5 to 3.0 kg/cm^2, resulting in heavier thermal loadings on the engine. One countermeasure consists in scavenging the combustion chamber. The available data applies mainly to aviation engines with low supercharge pressures. Laboratory tests were carried out on an experimental single-cylinder section of the new D70 diesel traction engine having the following specifications: cylinder diameter 240 mm, piston stroke 270 mm, cylinder power 187 h.p., number of revs 1,000 rpm, inlet air pressure 2.45 kg/cm^2 and compression ratio 13. The cylinder and cylinder head were water cooled. The tests were carried out with an uncooled aluminum piston. Temperatures were measured by chromel-alumel thermocouples. For the purpose of the tests, the effective power of the section was maintained at 187 h.p. while varying the scavenging. It was found that scavenging has a substantial effect on the temperature of the exhaust valve, producing at the same time a reduction in the temperature of the outer section of the cylinder and the bottom of the cylinder head. For the D70 engine, from the standpoint of the effect of scavenging on the temperature conditions of the components, the optimum angle of valve overlap is 70 to 90° (the air leakage factor being thus 5 to 10%). Combustion-chamber scavenging also lowers the gas temperature before the turbine, thus enhancing reliability of the turbine components. There are 5 figures and 1 table. ✓

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina (Khar'kov Polytechnic Institute im. V.I. Lenin)

SUBMITTED: October 23, 1961

Card 2/2

ZVONOV, V.A., aspirant

Experimental investigation of the performance of a four-cycle diesel engine with high gas-turbine supercharging and scavenging. Izv.vys.ucheb.zav.; mashinostr. no.4:180-188 '62. (MIRA 15:7)

1. Khar'kovskiy politekhnicheskiy institut.
(Diesel engines—Testing)

GORYAINOVA, T.; ZVONOV, Ye.

From samples to mass production. Sov.torg. 35 no.2:9-11 F '62.
(MIRA 15:1)

(Household appliances)

S/110/62/000/004/001/002
1004/1204

AUTHOR: Boldina, Ye. A. Engineer, Zvorono, Ya. P., Engineer, Pesotskiy, A. A., Engineer, Simo, I. N., Engineer and Sorokina, A. P., Engineer

TITLE: A device for electromagnetic string of an 80-ton electric arc furnace

PERIODICAL: Vestnik elektropromyshlennosti, no. 4, 1962, 43-49

TEXT: Electomagnetic stirring of molten metal is achieved by means of a rotating magnetic field created by a flat, two-pole stator located below the furnace. To attain deep penetration of the magnetic field into the metal the frequency of the current should be the order of tenths of a cps. The proximity of the hot (up to 250°C) furnace bottom and the substantial linear loading of the stator create a difficult cooling problem. Air cooling and water cooling systems were constructed and their main technical and economical features compared in a table. Water cooling of the stator by passing water directly through the hollow conductors of the windings proved to be the most effective and economical cooling method, considerably saving the silicon insulating material and saving 30% of copper as compared with the air cooling system. A complete electric diagram of the stator circuit is given. Sinusoidal form of the current feeding the stator was secured by means of a negative voltage feedback network. Distribution of the magnetic field above the stator was studied by means of a Hall probe. Distribution curves are shown on a graph. Velocity of the molten metal under actual operation conditions was estimated visually and it reached 0.35 m/sec. there are 5 figures, and 2 tables.

Card 1/1

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSEV, Yu.M.; KLYUKOVKIN, K.D.

Ribbing pipes for heat exchangers. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no. 12: 12-13 D '65 (MIRA 19:1)

ZVONTSOV, AVDEY AVDEYEVICH

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

Namyv Mingechaurskoy Plotiny
(The Alluvium of the Mingechaur Dam)
Moskva, Gosenergoizdat, 1956.
70, (2) P. Illus., Diagrs., Tables.
(Iz Opyta Stroitelstva Elektrostantsiy)
"Literatura": P. 72.

AVS

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, A.; GALAYCHUK, A.

What is the path of a newcomer to industry. Prof. tekh. obr. 22 no. 12:26-27 D '65 (MIRA 19:1)

1. Nachal'nik otdela podgotovki kadrov zavoda "Tochelektropribor" g. Kiyeva (for Zvontsov). 2. Nachal'nik uchebno-proizvodstvennogo tsekha zavoda "Tochelektropribor" g. Kiyeva (for Galaychuk).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

AID P - 3371

Subject : USSR/Hydr Eng

Card 1/1 Pub. 35 - 2/16

Author : Zvontsov, A. A., Eng.

Title : Using hydraulic mechanisms to obtain earth for the Mingechaur Hydro Power Plant construction

Periodical : Gidr. stroi., 6, 6-9, Je 1955

Abstract : A detailed description of earth work, granulometric data of gravel and sand, pipeline operation, and the sorting processes are presented. Tables and one diagram.

Institution : None

Submitted : No date

ZVONTSOV, Avdey Avdeyevich, inzhener; VOLNIN, B.A., redaktor; VORONIN, K.P., tekhnicheskiy redaktor

[Alluvium of the Mingechaur Dam] Namyv Mingechaurskoi plotiny. Moskva, Gos. energ. izd-vo, 1956. 70 p. (MLRA 9:12)
(Mingechaur Reservoir)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, A.A., inzhener.

Distribution of soil during the filling of the Mingechaur dam.
Gidt.stroi. 23 no.2:6-10 '54. (MLRA 7:4)
(Mingechaur--Dams) (Dams--Mingechaur)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, V.S., Cand Geol-Min Sci --(diss) "Geology, structure, and genetic peculiarities of the polymetallic deposits of the Aleksandrovsk ore field (Northeastern ~~[illegible]~~ Central Kazakhstan)." Alma-Ata, 1959. 20 pp (Acad of Sci KazSSR. Inst of Geol Sci), 150 copies (KL, 31-59, 114)

-9-

ZARAVNYAYEVA, V.K.; ZVONTSOV, V.S.

Porphyrite formation of the Upper Cambrian, Tremadoc
(Tortkuduk series). Trudy Inst. geol. nauk AN Kazakh.
SSR 13:76-120 '65. (MIRA 19:1)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, V.S.

Dikes in the Aleksandrovskiy ore deposit. Izv. AN Kazakh. SSR. Ser. geol. no.2:67-77 '58. (MIRA 12:5)
(Kazakhstan--Rocks, Igneous)

KAPLAN, S.Z.; ZVONTSOVA, A.S.

Derivatives of morpholine. Part 2: Interaction of morpholine with 3,3-bis(chloromethyl) oxacyclobutane and 2,2-bis(chloromethyl)trimethylene glycol. Zhur.ob.khim. 33 no.10:3412-3414 O '63. (MIRA 16:11)

KAPLAN, S.Z.; GRAD, N.M.; ZVONTSOVA, A.S.

N-alkylated and N-arylalkylated morpholine derivatives. Zhur.ob.
khim. 28 no.12:3285-3289 D '58. (MIRA 12:2)
(Morpholine)

AUTHORS: Kaplan, S. Z., Grad, N. M., Zvontsova, A. S SOV/79-28-12-28/41

TITLE: N-Alkylated and N-Aralkylated Morpholine Derivatives (N-Alkilirovannyye i N-aralkilirovannyye proisvodnyye morfolina)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 12, pp 3285-3289 (USSR)

ABSTRACT: In this paper the N-substituted derivatives of morpholine were synthesized by the reaction of morpholine with the corresponding alkyl and aralkyl halides to investigate their effect on lubricating oils. The reports on this reaction are incomplete and the yields are not mentioned at all. For this reason, the best conditions were selected for the synthesis of butyl morpholine and its derivatives. Under the conditions described in the experimental part the following derivatives of morpholine were synthesized: Ethyl-(II), propyl-(III), n.-butyl-(IV), n.-hexyl-(V), sec-n.-octyl--(VI), n.-octadecyl-(VII), benzyl-(VIII), α-naphthyl methyl morpholine (IX), and 9,10-bis-(morpholinomethyl)-anthracene (X). Compounds (VI) and (X) are new (Scheme). Some physico-chemical constants unknown before were determined for the morpholine derivatives synthesized. Data and yields are given in table 1; they offer a picture of the modification processes of boiling-points, densities, refractive indices and viscosities in the homologous

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series of N-alkylated and N-aralkylated morpholine derivatives. In some derivatives these factors were determined potentiometrically (Table 2). The comparison of the constants obtained makes the idea possible that with lengthening the aliphatic radical, which displaces the hydrogen at the nitrogen of the morpholine nucleus, the boiling-points of the derivatives increase, the densities decrease, the refractive indices and viscosity values increase. The introduction of the aromatic nuclei increases boiling-points, densities, refractive indices and viscosities (The higher the number of nuclei, the higher the values of the constants).- There are 2 tables and 26 references, 10 of which are Soviet.

SUBMITTED: November 11, 1957

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZAKHAROVA, N.A.; KHROMOV-BORISOV, N.V.; KAPLAN, S.Z.; ZVONTSOVA, A.S.

Morpholine derivatives. Part 3: Esters and oxides of the morpholine series containing a quaternary carbon atom.
Zhur. org. khim. 1 no.8:1489-1494 Ag '65. (MIRA 18:11)

1. Institut eksperimental'noy meditsiny AMN SSSR, Leningrad.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

ZVONTSOV, V.S.

Geological and structural characteristics of the Aleksandrovka ore field (Central Kazakhstan). Vest. AN Kazakh. SSR 14 no.5:55-61 My '58. (MIRA 11:7)

(Kazakhstan--Ore deposits)

ABDULKABIROVA, M.A.; ALEKSANDROVA, M.I.; AFONICHEV, N.A.; BANDALETOV, S.M.; BESPALOV, V.F.; BOGDANOV, A.A.; BOROVIKOV, L.I.; BORSUK, B.I.; BORUKAYEV, R.A.; BUVALKIN, A.K.; BYKOVA, M.S.; DVORTSOVA, K.I.; DEMBO, T.M.; ZHUKOV, M.A.; ZVONTSOV, V.S.; IVSHIN, N.K.; KOPYATKEVICH, R.A.; KOSTENKO, N.N.; KUMPAN, A.S.; KURDYUKOV, K.V.; LAVROV, V.V.; LYAPICHEV, G.F.; MAZURKEVICH, M.V.; MIKHAYLOV, A.Ye.; MIKHAYLOV, N.P.; MYCHNIK, M.B.; NIDLENKO, Ye.N.; NIKITIN, I.F.; NIKIFOROVA, K.V.; NIKOLAYEV, N.I.; PUPYSHEV, N.A.; RASKATOV, G.I.; RENGARTEN, P.A.; SAVICHEVA, A.Ye.; SALIN, B.A.; SEVRYUGIN, N.A.; SEMENOV, A.I.; CHERNYAKHOVSKIY, A.G.; CHUYKOVA, V.G.; SHLYGIN, Ye.D.; SHUL'GA, V.M.; EL'GER, E.S.; YAGOVKIN, V.I.; NALIVKIN, D.V., akademik, red.; PERMINOV, S.V., red.; MAKRUSHIN, V.A., tekhn.red.

[Geological structure of central and southern Kazakhstan] Geologicheskoe stroenie TSentral'nogo i IUzhnogo Kazakhstana. Leningrad, Otdel nauchno-tekn.informatsii, 1961. 496 p. (Leningrad. Vsesoiuznyi geologicheskii institut. Materialy, no.41)
(MIRA 14:7)

(Kazakhstan--Geology)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710020-8"

KAPLAN, S.Z.; GALASHINA, A.P.; Prinimali uchastiye: CHUPRIK, N.I.; ZVONTSOVA, A.S.

Oxidizability of thichened oils and the effect on it of the derivatives of morpholine. Zhur.prikl.khim. 35 no.11:2526-2533 N '62.
(MIRA 15:12)

(Lubrication and lubricants) (Oxidation) (Morpholine)