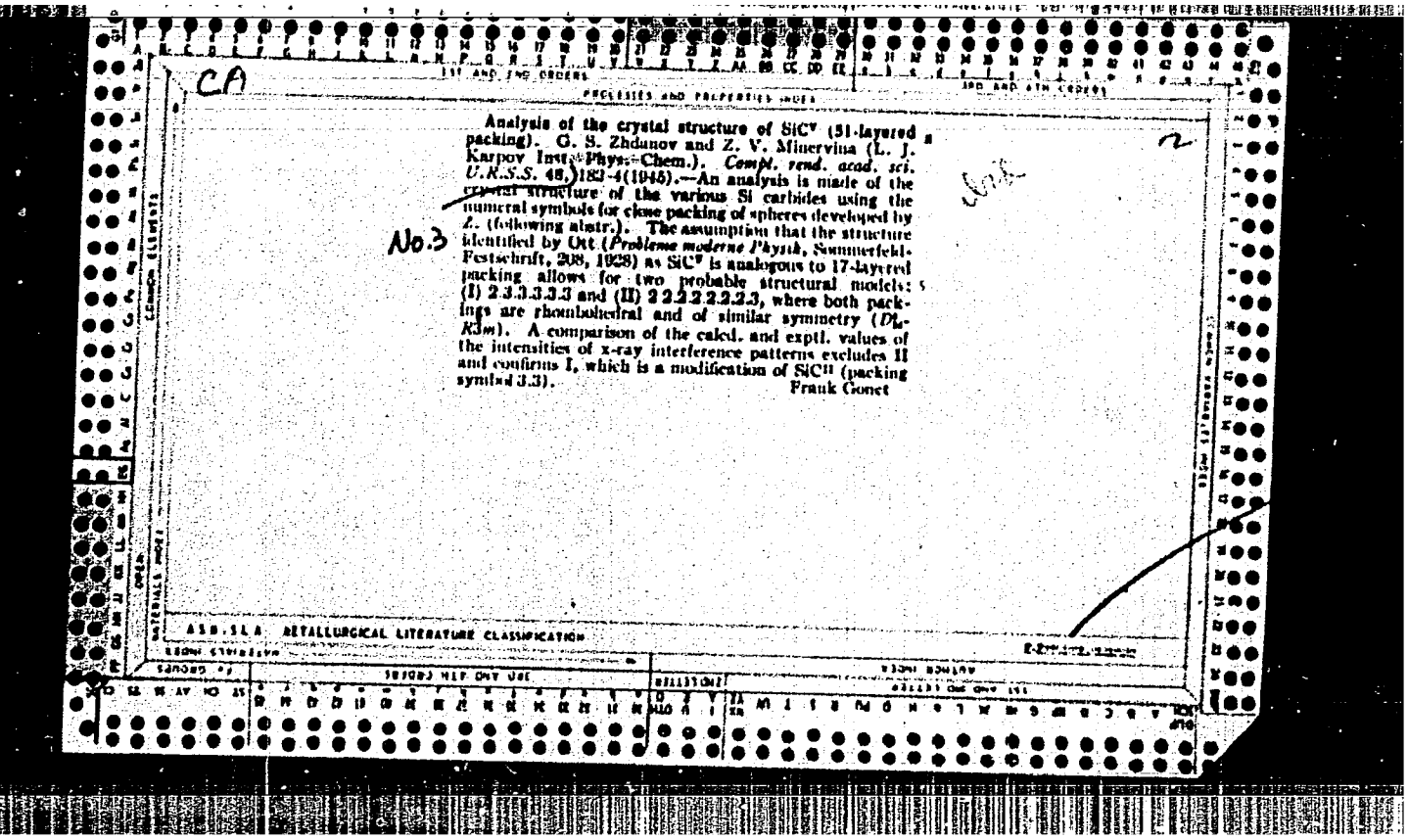


CA

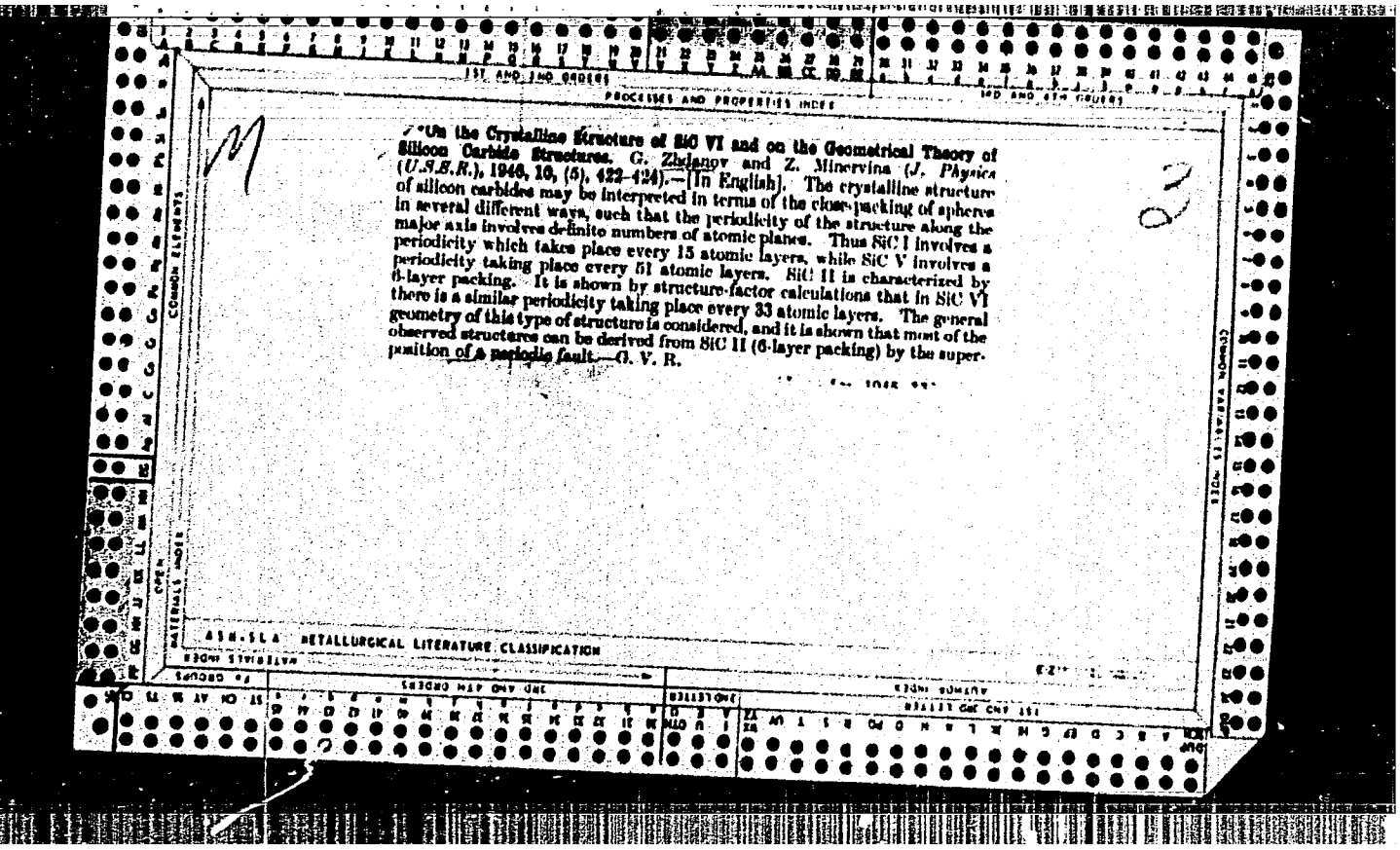
Analysis of the crystal structure of SiC^{V} (51-layered packing). G. S. Zhdanov and Z. V. Minervina (L. Y. Karpov Inst. Phys.-Chem.). *Compt. rend. acad. sci. U.R.S.S.* 48, 183-4(1945).—An analysis is made of the crystal structure of the various Si carbides using the numeral symbols for close packing of spheres developed by L. (following abstr.). The assumption that the structure identified by Ott (*Probleme moderne Physik*, Sommerfeld-Festschrift, 208, 1928) as SiC^{V} is analogous to 17-layered packing allows for two probable structural models: (I) 2.3.3.3.3.3 and (II) 2.2.2.2.2.2.3, where both packings are rhombohedral and of similar symmetry (D_{3d}^{5}-$R\bar{3}m$). A comparison of the calcd. and exptl. values of the intensities of x-ray interference patterns excludes II and confirms I, which is a modification of SiC^{II} (packing symbol 3.3).

Frank Gonet

No.3

2

A.S.T.M.A. METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

"On the Crystalline Structure of SiC VI and on the Geometrical Theory of Silicon Carbide Structures. G. Zhdanov and Z. Minervina (*J. Physics (U.S.S.R.)*, 1946, 10, (5), 422–424).—[In English]. The crystalline structure of silicon carbides may be interpreted in terms of the close-packing of spheres in several different ways, such that the periodicity of the structure along the major axis involves definite numbers of atomic planes. Thus SiC I involves a periodicity which takes place every 15 atomic layers, while SiC V involves a periodicity taking place every 51 atomic layers. SiC II is characterized by 6-layer packing. It is shown by structure-factor calculations that in SiC VI there is a similar periodicity taking place every 33 atomic layers. The general geometry of this type of structure is considered, and it is shown that most of the observed structures can be derived from SiC II (6-layer packing) by the superposition of a periodic fault.—G. V. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZHDANOV, G. S.

PA 13T59

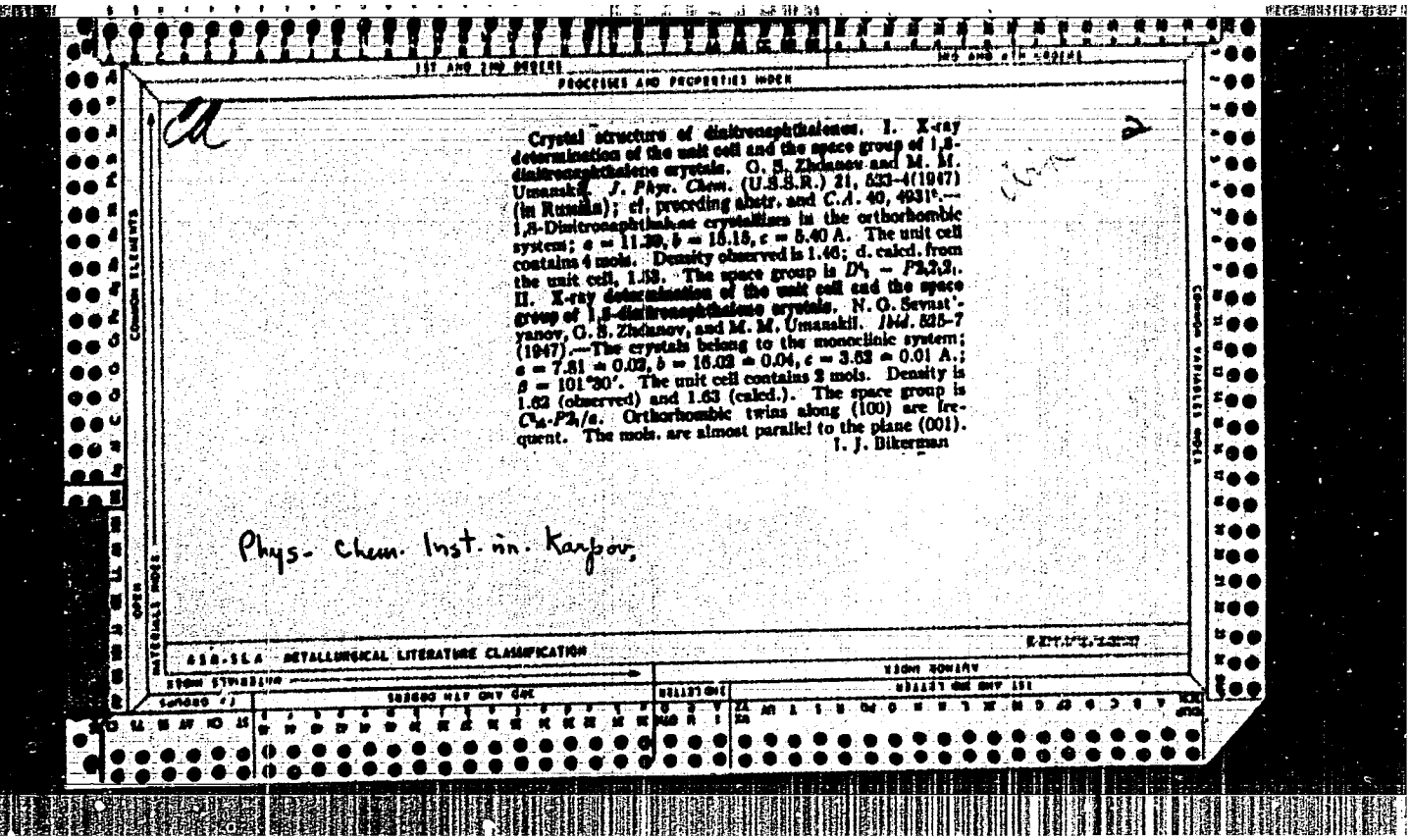
USSR/Silicon Carbides Jan 1947
Crystals - Structure

"The Crystalline Structure of SiC VI and the Geometrical Theory of the Structure of Silicon Carbide," G. S. Zhdanov and Z. V. Minervina, 4 pp

"Zhur. Eksp i Teor. Fiz.", Vol XVII, No 1

Determination of the structure of SiC VI, and discussion of the relation between the various structures of silicon carbide and the fundamental 6-layer hexagonal type.

13T59



PROCESSES AND PROPERTIES INDEX

Crystal structure of dinitronaphthalenes. I. X-ray determination of the unit cell and the space group of 1,8-dinitronaphthalene crystals. O. S. Zhdanov and M. M. Umanskii. *J. Phys. Chem.* (U.S.S.R.) 21, 523-4(1947) (in Russian); cf. preceding abstr. and *C.A.* 40, 4931⁶.—1,8-Dinitronaphthalene crystallizes in the orthorhombic system; $a = 11.30$, $b = 16.15$, $c = 5.40$ A. The unit cell contains 4 mols. Density observed is 1.46; d. calcd. from the unit cell, 1.53. The space group is $D^4_2 - P2_12_12_1$. II. X-ray determination of the unit cell and the space group of 1,5-dinitronaphthalene crystals. N. O. Sevast'yanov, O. S. Zhdanov, and M. M. Umanskii. *Ibid.* 525-7 (1947).—The crystals belong to the monoclinic system; $a = 7.81 \pm 0.02$, $b = 16.02 \pm 0.04$, $c = 3.62 \pm 0.01$ A.; $\beta = 101°30'$. The unit cell contains 2 mols. Density is 1.62 (observed) and 1.63 (calcd.). The space group is C^5_{2h}-$P2_1/a$. Orthorhombic twins along (100) are frequent. The mols. are almost parallel to the plane (001).
I. J. Bikerman

Phys- Chem. Inst. im. Karpov.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZHDANOV, G. S.

USSR/Chemistry - Cyanides
Chemistry - Crystal structure

Apr 1947

"The Crystal Structure of Cyanides: IV, X-Ray Determination of the Elementary Cell and Space Group of Crystals of $K_4Ru(CN)_6 \cdot 3H_2O$ and $K_4Fe(CN)_6 \cdot 3H_2O$ (Monoclinic Type)," V. A. Pospelov, G. S. Zhdanov, 7 pp

"Zhur Fiz Khim" Vol XXI, No 4

Technical discussion, illustrated with diagrams, tables, and three microphotographs, leading to the conclusion, among others, that the pseudo-tetragonal quality of the nucleus is the necessary condition for polytypy, actually observed in potassium ferricyanide.

PA 14T95

USSR/Chemistry - Naphthalene, 1,5-Dinitro- May 1947
Chemistry - Crystal Structure

"The Crystal Structure of Dinitronaphthalenes--II: X-Ray Determination of the Unit Cell and the Space Group of a Crystal of 1,5-Dinitronaphthalene," N. G. Sevastyanov, G. S. Zhdanov and M. M. Umanskiy, Laboratory Dept, Physical-Chemistry Institute, Karpov, Moscow, 3 pp

"Zhur Fiz Khim" Vol XXI, No 5

Crystals were obtained by crystallization out of an acetone solution according to methods of V. G. Vasil'yeva. Concluded that 1,5-dinitronaphthalene crystals belong to the monoclinic system. The point group of the symmetry under X-ray

USSR/Chemistry - Naphthalene, 1,5-Dinitro- May 1947
Chemistry - Crystal Structure (Contd)

observation showed C_{2h} - 2 m (center of the symmetry included). Published 26 Nov 1946.

1E105

ZHDANOV, G. S.

ZHDANOV, G. S. PA 18T106

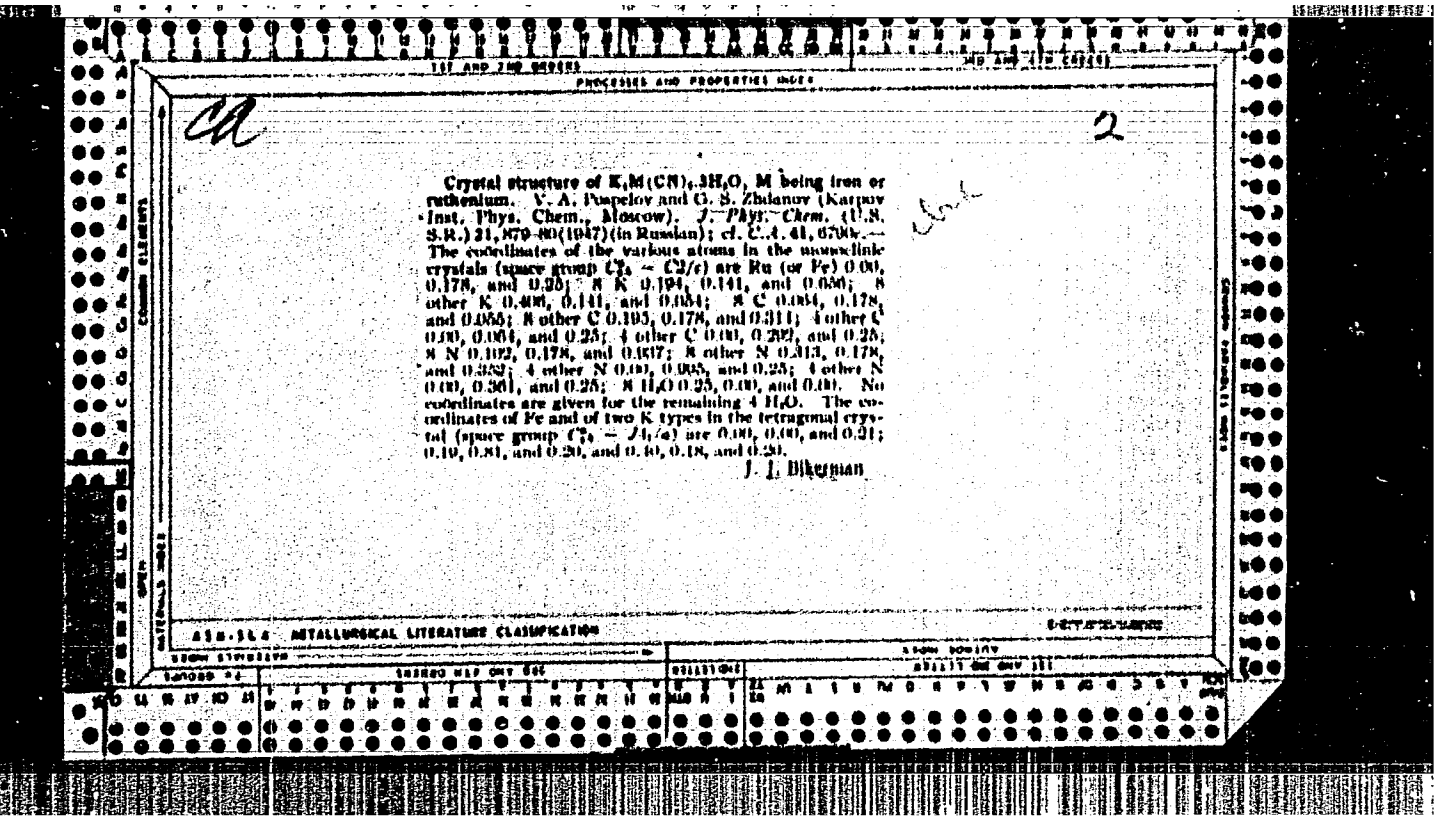
USSR/Chemistry - Cyanides May 1947
Chemistry - Crystal Structure

"The Crystal Structure of Cyanides--V: Determination of the Unit Cell and the Space Group of a Crystal of $K_4Fe(CN)_6.3H_2O$ (Tetragonal Type)," G. S. Zhdanov, V. A. Pospelov, X-Ray Laboratory, Physical Chemistry Institute, imeni Karpov, Moscow, 1 p

"Zhur Fiz Khim" Vol XXI, No 5

Brief description of results reached by the Lave Method using 100 crystals of potassium ferrocyanide. One page of photographs. Among conclusions is statement that potassium ferrocyanide salt sometimes precipitates in crystals of tetragonal form (polytypic form). Published 15 Nov 1946 18T106

C. A., Vol. 42, No. 23, p. 8172, 1947



Crystal structure of $K_4M(CN)_6 \cdot 3H_2O$, M being iron or ruthenium. V. A. Pupelov and G. S. Zhdanov (Karpov Inst. Phys. Chem., Moscow). *J. Phys. Chem.* (U.S.S.R.) 21, 979-80 (1947) (in Russian); cf. C.A. 41, 6708i.— The coördinates of the various atoms in the monoclinic crystals (space group $C_{2h}^5 - C2/c$) are Ru (or Fe) 0 0 0, 0 0.178 0.25; 8 K 0.194, 0.141, and 0.050; 8 other K 0.406, 0.141, and 0.054; 8 C 0.054, 0.178, and 0.055; 8 other C 0.105, 0.178, and 0.311; 4 other C 0 0.180, 0.064, and 0.25; 4 other C 0 0.80, 0.202, and 0.25; 8 N 0.102, 0.178, and 0.437; 8 other N 0.313, 0.178, and 0.329; 4 other N 0 0.80, 0.085, and 0.25; 4 other N 0 0.80, 0.301, and 0.25; 8 H_2O 0.25, 0.00, and 0.00. No coördinates are given for the remaining 4 H_2O. The coördinates of Fe and of two K types in the tetragonal crystal (space group $C_{4h}^6 - I4_1/a$) are 0 0.00, 0.00, and 0.25; 0.19, 0.81, and 0.20, and 0.80, 0.18, and 0.20.

J. I. Dikerman

ZHDANOV, G.S.; POSPELOV, V.A.

Polytypes of crystals of potassium ferrocyanide. Trudy Inst. Krist., Akad. Nauk S.S.S.R. 4, 175-8 '48.
(CA 47 no.13:6213 '53)

SHUGAM, Ye. A.; ZHDANOV, G. S.

Röntgenographic investigation of crystal structure of $NaAu(CN)_2$.
Inst. Krist., Akad. Nauk S.S.S.R. 4, 179-84 '48.
(CA 47 no.13:6212 '53)

ZHDANOV, G. S.

USSR/Physics May 48
Crystals
Silicon Carbide

"Discussion of N. V. Belov's Book 'The Structure of Ionic Crystals and Metallic Phases'" 2 pp.

Vest. Ak. Nauk SSSR, No. 5

Subject book, which was awarded the Ye. S. Fedorov prize for 1947, considers all structures from the standpoint of the densest spherical packing of atoms (ions) in the crystal lattice. Professors G. S. Zhdanov and Z. G. Pinsker noted that the theory had helped them, respectively, in determining the complex 51-layer structue of a silicon carbide modification and in determining variable laminated structures' in the CdI_2 - $CdBr_2$ system.

53/49T86

ZHDANOV, G. S.

USSR/Chemistry - Crystal Structire,
of Dinitronaphthalenes
Chemistry - Naphthalenes, 1, 5-Dinitro,
Crystal Structure of

"Crystalline Strucuture of Dinitronaphthalenes: III, Determination of the Structure of 1,5-Dinitronaphthalene ($C_{10}H_6N_2O_4$) Crystals," N. G. Sevast'yanov, G. S. Zhdanov, M. M. Umankiy, Physicochem Inst imeni L. Ya. Karpov, Roentgen Lab., Moscow, 10¼ pp

"Zhur Fiz Khimii" No 10

Treats subject under following: (1) determination of orientation of molecures by geometrical analysis methodi;r(2) determination of disposition of molecules by graphs of structural amplitude, (3) more accurate definition of structure by studying distribution of electron density, and (4) results of investigation. Submitted 19 March 48.

PA 21/49T7

ZHADANOV, G. S.

PA 4/49T17

USSR/Chemistry - Carborundum Feb 48
Chemistry - Analysis, X-Ray

"X-Ray Phase Analysis of Carborundum (Preparations of Silicon Carbide)," G. S. Zhdanov, Z. V. Minervina, A. A. Nevzorova, Physicochem Inst imeni Karpov, 6 pp

"Zavod Lab" Vol XIV, No 2

Applies X-ray analysis to determine structure of separate modifications of silicon carbide-SiC-I, SiC-II, SiC-III, and β-SiC. Results are checked by calculation. Employs phase analysis to investigate phase composition of commercial carborundum by visual estimation of intensities.

4/49T17

USSR/Chemistry - Carborundum (Contd) Feb 48

Accuracy being 10-20%. Specimens investigated were mixtures of II and III; the β-modification was also present in some cases. SiC-I was not found in any specimen.

4/49T17

ZHDANOV, G.S.

N. G. Sevast'ianov, G.S. Zhdanov, and M. M. Umanskii, "The crystal structure of dinitronaphthalenes. III. The determination of the structure of the crystal of 1,5-dinitronaphthalene ($C_{10}H_6N_2O_4$). Pp. 1153-63.

Configuration of molecules in the unit cell of a 1,5-dinitronaphthalene crystal was established by geometrical analysis, by construction of graphs of the structural amplitude and by comparing these with the experimental intensities of interferences which have been found by investigating the distribution of the electron density (by the Fourier-synthesis method).

The Karpov Physico-Chemical Inst.
X-ray Laboratory, Moscow
March 19, 1948

SO: Journal of Physical Chemistry (USSR) 22, No. 10, 1948

ZHDANOV, G.S.

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

ZHDANOV, G. S.

"X-Rays" (Rentgenovy luchi), Gostekhizdat, 1949, 32 pp.

Shuzam, E. A., Umanskii, M. M. and Zhdanov, G. S., The crystal structure of di-nitro-naphtalenes. IV. Determination of the crystal structure of 2, 6 -dinitronaphtalene. p. 3.

For organic structures in which the molecule is the elementary particle of the structure of the crystal, the determination of the structure consists of the following 3 stages:

1. The determination of the size, form and type of the unit cell, the space group of symmetry, the number of molecules in the space of the unit cell.

2. The determination of the position of the centers of the molecules and the orientation of the molecules in the space of the unit cell.

3. The determination of the structure of the molecule itself. The molecule of 2, 6 -dinitronaphtalene has a center of symmetry; a small number of molecules in the nucleus ($z = 2$).

The Karpov
Physico-chemical Institute
Roentgen Lab.
Moscow
April 21, 1948

SO: Journal of Physical Chemistry (USSR) 23, No. 1 (1949)

ZHDANOV, G. S.

Phys Chem

6

X-ray study of ammonium thiocyanate. Zr. V. Kondrat'eva and G. S. Zhdanov (Karpov Inst. Phys. Chem., Moscow). Zhur. Fiz. Khim. 23, 1493-1501(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 coördinates of the atoms are: S 0.992, 0, 0.195; N 0.165, 0.714, 0.061; C 0.066, 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 1.25 A., resp.
J. J. Bikerman

4/30/51

PA 2/50T34

USSR/Chemistry - Aryl Compounds Sep 49
X-Ray, Analysis

"Roentgenographic Studies of the Structure of Several Tetra-Aryl Compounds of Silicon, Tin, and Lead," G. S. Zhdanov, I. G. Ismailzade, Sci Res Physicochem Inst imeni L. Ya. Karpov, 4 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 1

Determines syngony, Laue class, elementary lattice, and spatial group for the compounds: $Sn(C_6H_5)_4$, $Sn(C_6H_4OCH_3)_4$, $Sn(C_6H_5OCH_3)_4$, $Sn(C_6H_4OC_2H_5)_4$, $Si(C_6H_5)_4$, and $Pb(C_6H_5)_4$. All compounds studied were synthesized and were [illegible] by senior scientific collaborators [illegible]

2/50T34

USSR/Chemistry - Aryl Compounds Sep 49
X-Ray, Analysis (Contd)

Synthesis and Structure of Metal-Org Compounds directed by Prof K. A. Kocheshkov. Submitted by Acad [illegible] 6 Jul 49.

2/50T34

ZHDANOV, G. S.

ZHDANOV, G. S.

"X-Rays," (book) listed in Elektrichestvo, No. 5, 1950, pp. 95-96 as among the new books on electricity, electrical engineering, and electric power.

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, 1330–44(1950); cf. *C.A.* 44, 2818c.—Crystals of $M_2Co(NCS)_4.nH_2O$ (where M = K, NH_4) belong to the rhombic system. The space group is $D_2^1 - P2_12_12_1$. 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 2 N atoms (3.62 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.* 1348–9.—Crystals of $Ba(SCN)_2.2H_2O$ (I) are monoclinic with a unit cell of dimensions $a = 15.98$, $b = 4.25$, $c = 13.26$ A., $\beta = 104°20'$ (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., 0.1249, ± 0.0002, 0.3400 ± 0.0003, and 0.3332, ± 0.0002; 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 radii of S and N are different, these atoms are nonequiv. in the SCN group. This result was already found with NH4SCN (formation of H bonds NH... N) (cf. *C.A.* 43, 3484a) and with $K_2Co(NCS)_4$ (formation of Co-N bonds).

Michel Boudart

CA

2

G. S. ZHDANOV

Isomorphism in the series $X_3Sb(p\text{-}C_6H_4CH_3)_3X$ (X = F, Cl, Br, I). G. S. Zhdanov and Z. V. Nasonova. *Doklady Akad. Nauk S.S.S.R.* 72, 1055-7(1950). The crystallographic data of the series are the following:

	Elementary cell dimensions	Z Dens.	Space group	F. P.
$Sb(p\text{-}C_6H_4CH_3)_3F_2$	$a_0 = 20.8$; $b_0 = 10.4$; $c_0 = 22.1$; $\beta = 113°$	12; 1.47-1.48	$C_{2h}^5 = C_{2/c}^2$ or $C_s^4 = C_c^2$	118°
$Sb(p\text{-}C_6H_4CH_3)_3Cl_2$	12.718 A.	4; 1.44-1.44	$D_{4h}^{10} = P4_12_12$	157°
$Sb(p\text{-}C_6H_4CH_3)_3Br_2$	12.817 A.	4; 1.70-1.80	$D_{4h}^{10} = P4_12_12$	161°
$Sb(p\text{-}C_6H_4CH_3)_3I_2$	triclinic (from Laue diagrams); easily decompd.			

The symmetry of the mols. is C_3, without the H-atoms D_3, i.e. subgroups of the observed symmetries in the Cl- and Br complexes. In the fluoride, the 12 Sb-atoms occupy in C_{2h}^5 the positions 4c + 8f, or in C_s^4 the general positions 4a + 4a + 4a; between both cases the actual examn. cannot distinguish. For the complexes $X_3Sb(CH_3)_3$ (X = Cl, Br, I) with hexagonal groups D_{4h}^{10} and the symmetry of the mol. = S_6, a true isomorphism, but not a morphotropy relation was observed (cf. Wells, *C.A.* 38, 8235⁵). W. Eitel

CA

3

Special case of direct x-ray structure analysis. V. V. Sanadze and G. S. Zhdanov. *Doklady Akad. Nauk S.S.S.R.* 73, 111–12(1950).—A method is discussed which was particularly useful in the detn. of the structure of the double thiocyanate of K and Hg, with 22 parameters and RX_4 complex coördinations. The method is based on the application of "pseudo-symmetry centers" which are occupied by the heavy cations. Every pseudo-center has the property that the max. of the vectorial model are in sym. positions to these centers, and exactly correspond to max. of the at. configuration. A suitable selection of a min. no. of such pseudo-centers makes a gradually improved approximation to the real at. coördinates possible. W. R.

ZHDANOV, G. S.

PA 187T94

USSR/Physics - X-ray Analysis Mar/Apr 51

"X-ray Analysis of Catalyzers on the Basis of Aluminum Hydroxide," G. S. Zhdanov, Z. P. Razmanova, Chem Inst imeni L. Ya. Karpov

Tr Ak Nauk SSSR, Ser Fiz," Vol XV, No 2, pp 202-208

Subject work is outgrowth of research by authors and K. P. Kotov and G. D. Lyubarskiy (cf. "Problems of Kinetics and Catalysis," 1948). Tests performed allow one to establish effect of aging period on phase and dispersion ability of aluminum hydroxide. Found that sp activity drops at phase transition alpha-Al_2O_3 and that phase changes at temp 800-900°C

187T94

USSR/Physics - X-ray Analysis (Contd) Mar/Apr 51

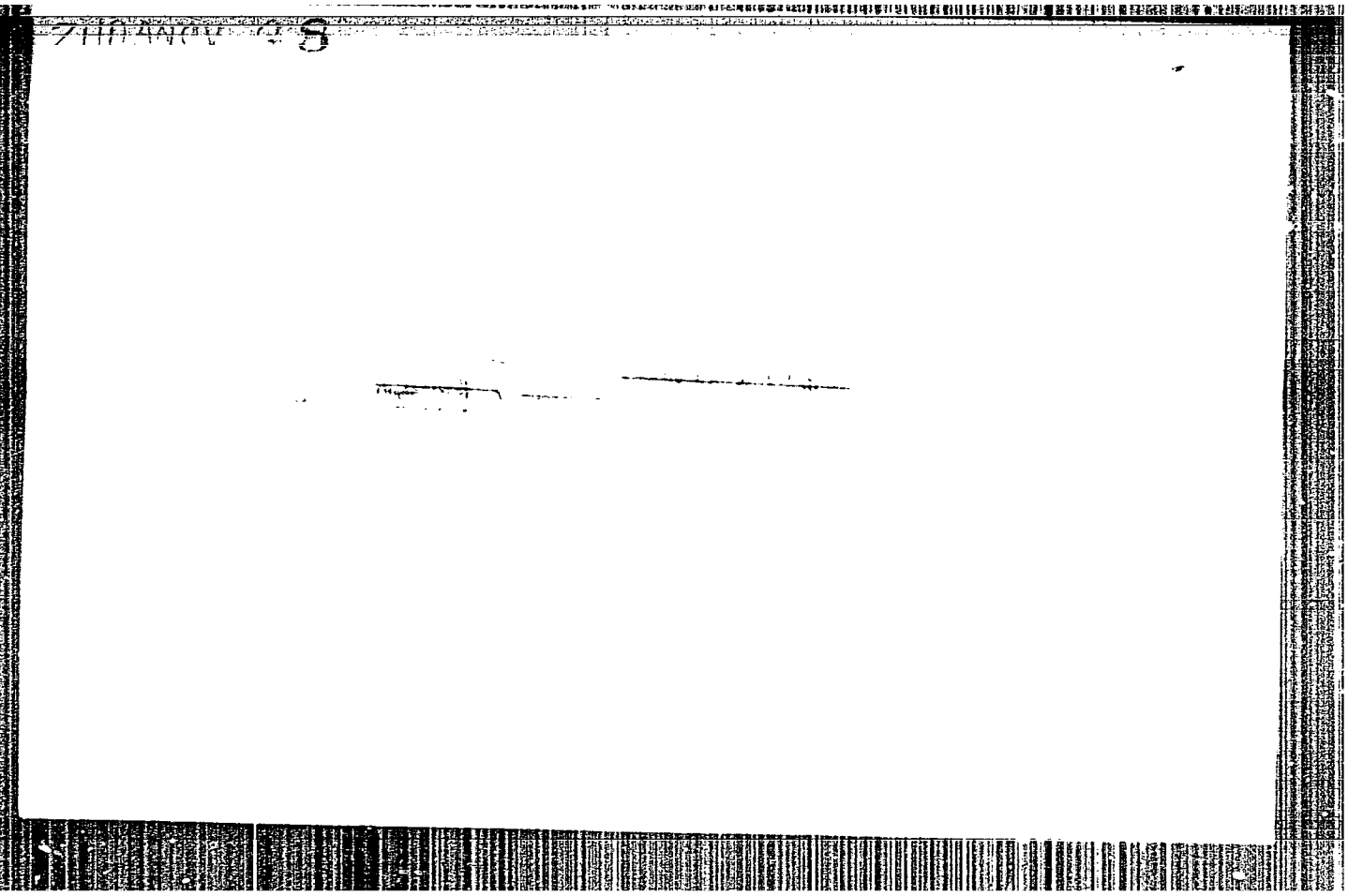
do not affect sp activity. Authors were assisted by G. K. Boreskov. Submitted at the 3d All-Union Conference on Use of X-rays in Study of Materials held 19 - 24 Jun 50 in Leningrad.

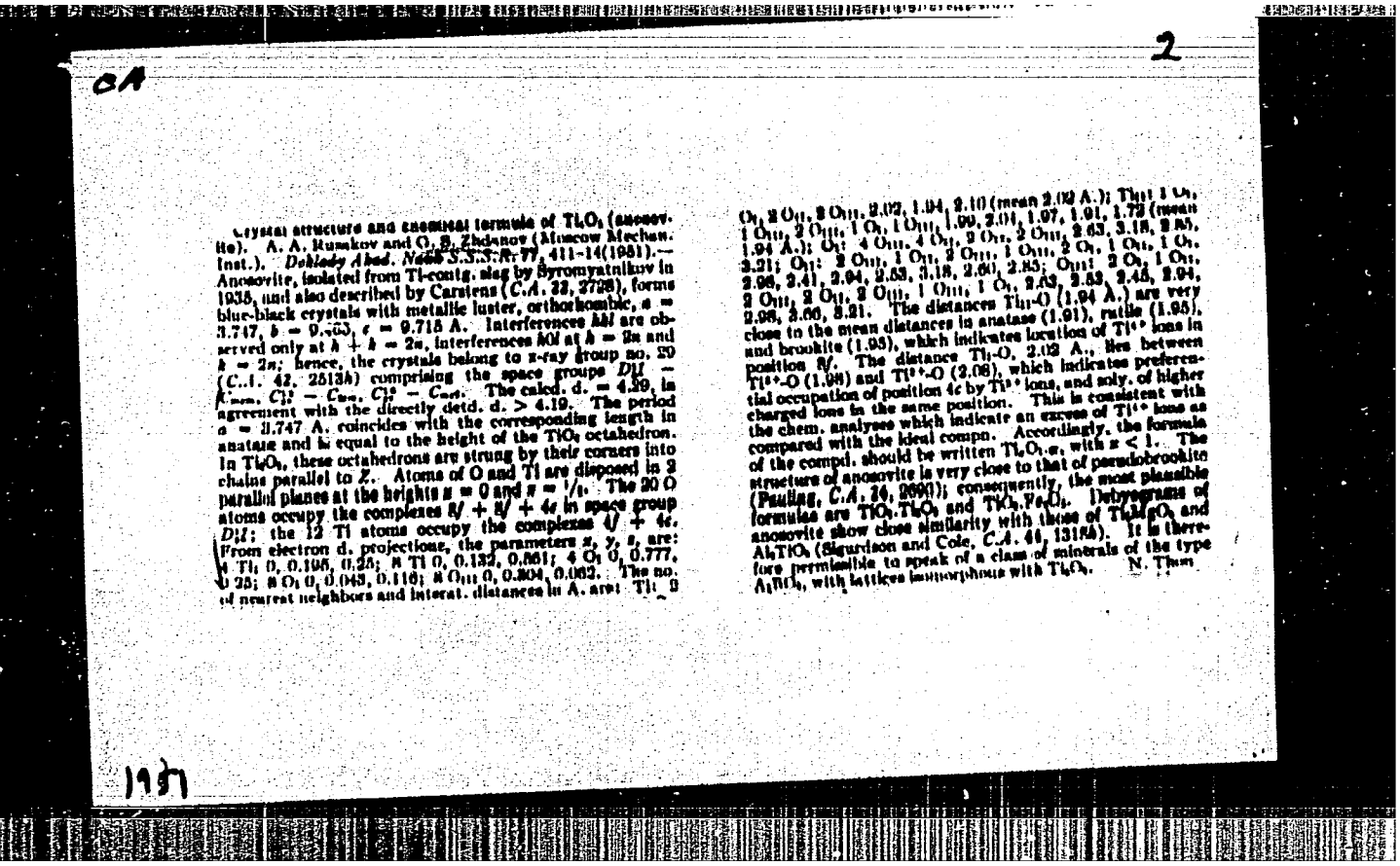
187T94

CA 2

Crystal structure of KO_3. O. S. Zhdanov and Z. V. Zvonkova (Karpov Inst., Moscow). *Zhur. Fiz. Khim.* 35, 100–1(1961).—An x-ray powder diagram of a mixt. of KO_3 (92.3%) and KOH (5.5%) shows a great resemblance to a diagram of KN_3. The size of the unit cell (a = 6.094, c = 7.056 A.) is the same in both cases (within 0.01 A.) and 17 out of 20 recorded lines practically coincide. Complete similarity between the structures of KO_3 and KN_3 is lacking because of the absence on the diagram of KO_3 of the 121 line. This suggests that the O_3^- ion is not linear. On heating above 0°, the lines of KO_3 disappear and the lines of KO_2 are observed. Michel Boudart

IM





CA

2

Crystal structure and chemical formula of Ti_3O_5 (anosovite). A. A. Rusakov and O. S. Zhdanov (Moscow Mechan. Inst.). *Doklady Akad. Nauk S.S.S.R.* 77, 411-14(1951).—Anosovite, isolated from Ti-contg. slag by Syromyatnikov in 1935, and also described by Carstens (*C.A.* 33, 2728), forms blue-black crystals with metallic luster, orthorhombic, a = 3.747, b = 9.80, c = 9.715 A. Interferences hkl are observed only at $h + k = 2n$, interferences $h0l$ at $h = 2n$ and $l = 2n$; hence, the crystals belong to x-ray group no. 29 (*C.I.* 42, 2513h) comprising the space groups $D_{2h}^{11} - Amam$, $C_{2v}^{12} - Cmm$, $C_{2v}^{13} - Cmm$. The calcd. d. = 4.29, in agreement with the directly detd. d. > 4.19. The period a = 3.747 A. coincides with the corresponding length in anatase and is equal to the height of the TiO_6 octahedron. In Ti_3O_5, these octahedrons are strung by their corners into chains parallel to Z. Atoms of O and Ti are disposed in 2 parallel planes at the heights z = 0 and z = 1/2. The 20 O atoms occupy the complexes $8f + 8f + 4e$ in space group D_{2h}^{11}; the 12 Ti atoms occupy the complexes $4f + 4e$. From electron d. projections, the parameters x, y, z, are: 4 Ti: 0, 0.195, 0.25; 8 Ti 0, 0.132, 0.861; 4 O_I 0, 0.777, 0.25; 8 O_I 0, 0.045, 0.116; 8 O_{II} 0, 0.304, 0.062. The no. of nearest neighbors and interat. distances in A. are: Ti: 2 O_I, 2 O_{II}, 2 O_{II}, 2.02, 1.94, 2.10 (mean 2.02 A.); Ti$_{II}$ 1 O_I, 1 O_{II}, 2 O_{II}, 1 O_I, 1 O_{II}, 1.99, 2.01, 1.97, 1.91, 1.72 (mean 1.94 A.); O_I: 4 O_{II}, 4 O_I, 2 O_I, 2 O_{II}, 2.63, 3.18, 2.85, 3.21; O_{II}: 2 O_{II}, 1 O_{II}, 2 O_{II}, 1 O_{II}, 2 O_I, 1 O_{II}, 1 O_I, 2.06, 2.41, 2.94, 2.53, 3.18, 2.61, 2.85; O_{II}: 2 O_I, 1 O_{II}, 2 O_{II}, 2 O_{II}, 2 O_{II}, 1 O_{II}, 1 O_I, 2.03, 2.53, 2.45, 2.94, 2.98, 2.66, 3.21. The distances Ti$_{II}$-O (1.94 A.) are very close to the mean distances in anatase (1.91), rutile (1.95), and brookite (1.93), which indicates location of Ti^{+3} ions in position 8f. The distance Ti$_I$-O, 2.02 A., lies between Ti^{+3}-O (1.98) and Ti^{+4}-O (2.08), which indicates preferential occupation of position 4e by Ti^{+3} ions, and soly. of higher charged ions in the same position. This is consistent with the chem. analyses which indicate an excess of Ti^{+3} ions as compared with the ideal compn. Accordingly, the formula of the compd. should be written Ti_nO_{n-x}, with $x < 1$. The structure of anosovite is very close to that of pseudobrookite (Pauling, *C.A.* 24, 2990); consequently, the most plausible formulas are $TiO_2.Ti_2O_3$ and $TiO_2.Fe_2O_3$. Dehydrograms of anosovite show close similarity with those of $Ti_2Fe_2O_5$ and Al_2TiO_5 (Sigurdson and Cole, *C.A.* 46, 1318h). It is therefore permissible to speak of a class of minerals of the type A_2BO_5, with lattices isomorphous with Ti_3O_5. N. Thon

1951

ZHDANOV, G.S.

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.

215T57

ZHDANOV, G. S.

USSR/Chemistry - Mercury Compounds Apr 52

"Crystal Structure of Thiocyanates. IV. X-Ray Investigation of the Crystal Structure of $Hg(SCN)_2$ .ASCN [A = K; NH_4]," G. S. Zhdanov, V. V. Sanadze, Phys Chem Inst imeni L. Ya. Karpov

"Zhur Fiz Khim" Vol XXVI, No 4, pp 469-478

Detd in a detailed investigation the crystal-chem and crystal-phys data for this class of compds. Found that potassium-mercury thiocyanates and ammonium-mercury thiocyanates must be regarded as double salts on the basis of X-ray data.

217T21

ZHDANOV, G. S.

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

ZHDANOV, G. S.

USSR/Chemistry - Benzene and Naphthalene Derivatives Sep 52

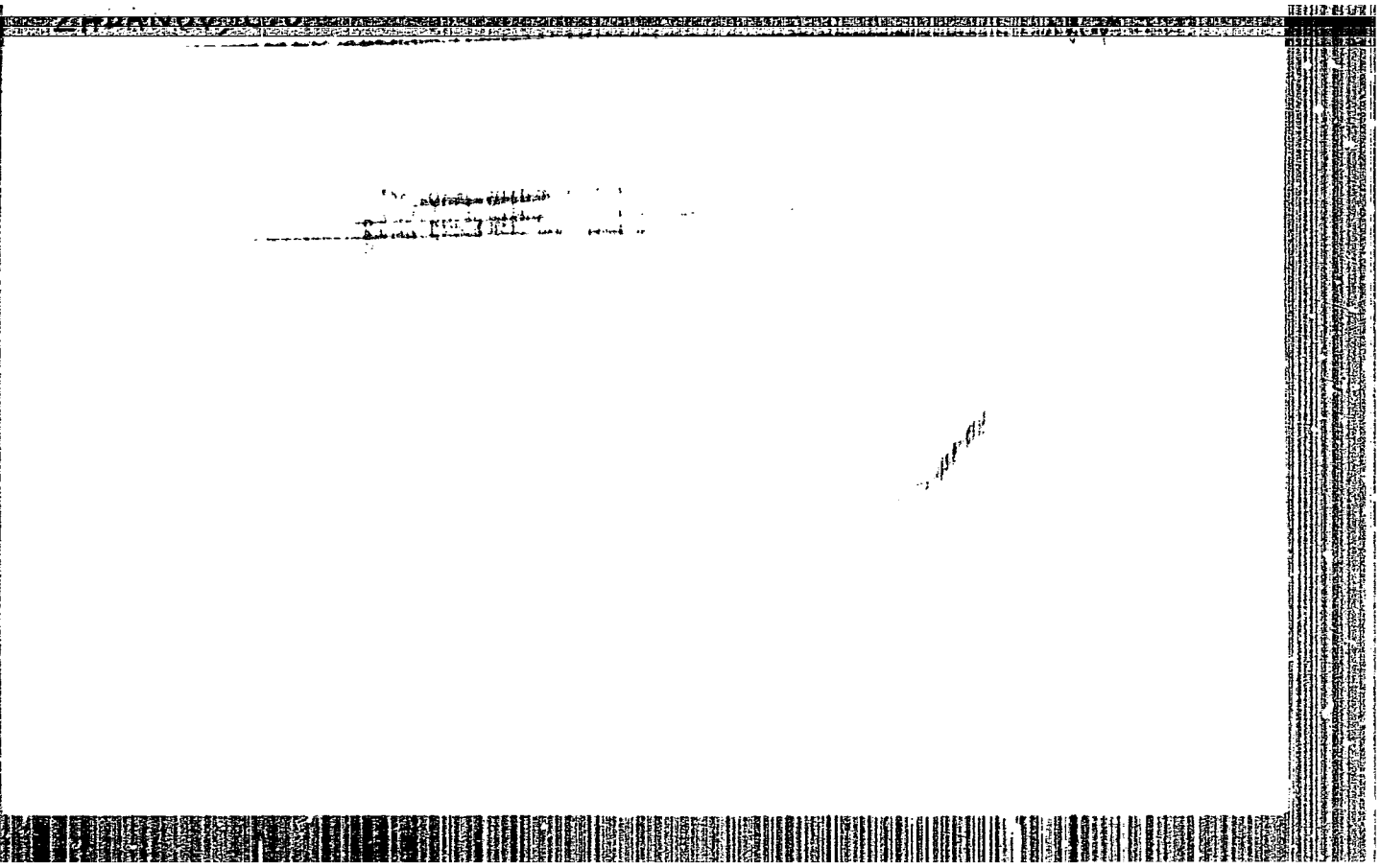
"X-Ray Investigation of the Crystals of Certain Nitro and Halogen Derivatives of Benzene and Naphthalene," G. A. Gol'der, G. S. Zhdanov, M. M. Umanskiy, and V. P. Glushkova, Phys-Chem Inst im L. Ya. Karpov, Moscow

Zhur Fiz Khim, Vol 26, No 9, pp 1259-1265

Obtained crystals and detd elementary cells and spatial groups of the following compds: 1,8-dichloronaphthalene; 2,6-dichloro-1-nitrobenzene; 2,4,6-tribromo-1-nitrobenzene; benzophenone; and 1,3,6,8-tetranitronaphthalene (I). Checked elementary cells and spatial groups of the crystals of 1,3,5-trinitrobenzene and 2,4,6-trinitrotoluene (II). In the crystals of (I) and (II), certain interference abnormalities were detected, indicating the presence of periodic two-dimensional disturbances in the regular distribution of atomic planes.

263T16

26-T16



USSR/Chemistry - Organometallic Compounds Nov 52

"Crystal Structure of Organometallic Compounds: II. X-ray Research on the Crystal Structure of Tetraphenyl Compounds of Silicon, Tin, and Lead," I. G. Ismailzade and G. S. Zhdanov, Physicochem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol 26, No 11, 1619-1630

The structures of the crystals of $Si(C_6H_5)_4$ and $Sn(C_6H_5)_4$ and $Pb(C_6H_5)_4$ were interpreted by three separate methods: by an analysis of the intensity of reflexes of the hk0 type, by geometric analysis and by the construction of a two-dimensional series of electronic density. It was established that with an increase in the at no of the atom of metal, the value of Φ slightly decreases, whereas the value of ψ increases. The authors claim to have shown the incorrectness of W. H. George's suggestion that for all tetraphenyl crystals the angle of $\Phi = 45°$, and also the inaccuracy of the conclusion of G. Giocomello which suggests $\Phi = 0°$ for the crystal of $Pb(C_6H_5)_4$ instead of $\Phi = 50°30'$. With the aid of an electronic density series of light atoms, the authors showed the effect of heavy metal atoms on localization. They demonstrated that the deforming effect of the heavy metal

(2)

242T10

PA 242T10

ZHDANOV, G. S.

atom grows with an increase in its at no. On the projections of electronic density, the apparent deformity of the phenyl links is explained by the authors as a superimposition of wave breaks. They show that in the crystal, $Si(C_6H_5)_4$, because of the repulsion of H atoms, the normal inter-face distance of $(C_6H_5) - (C_6H_5)$ for crystals of aromatic compounds is markedly increased.

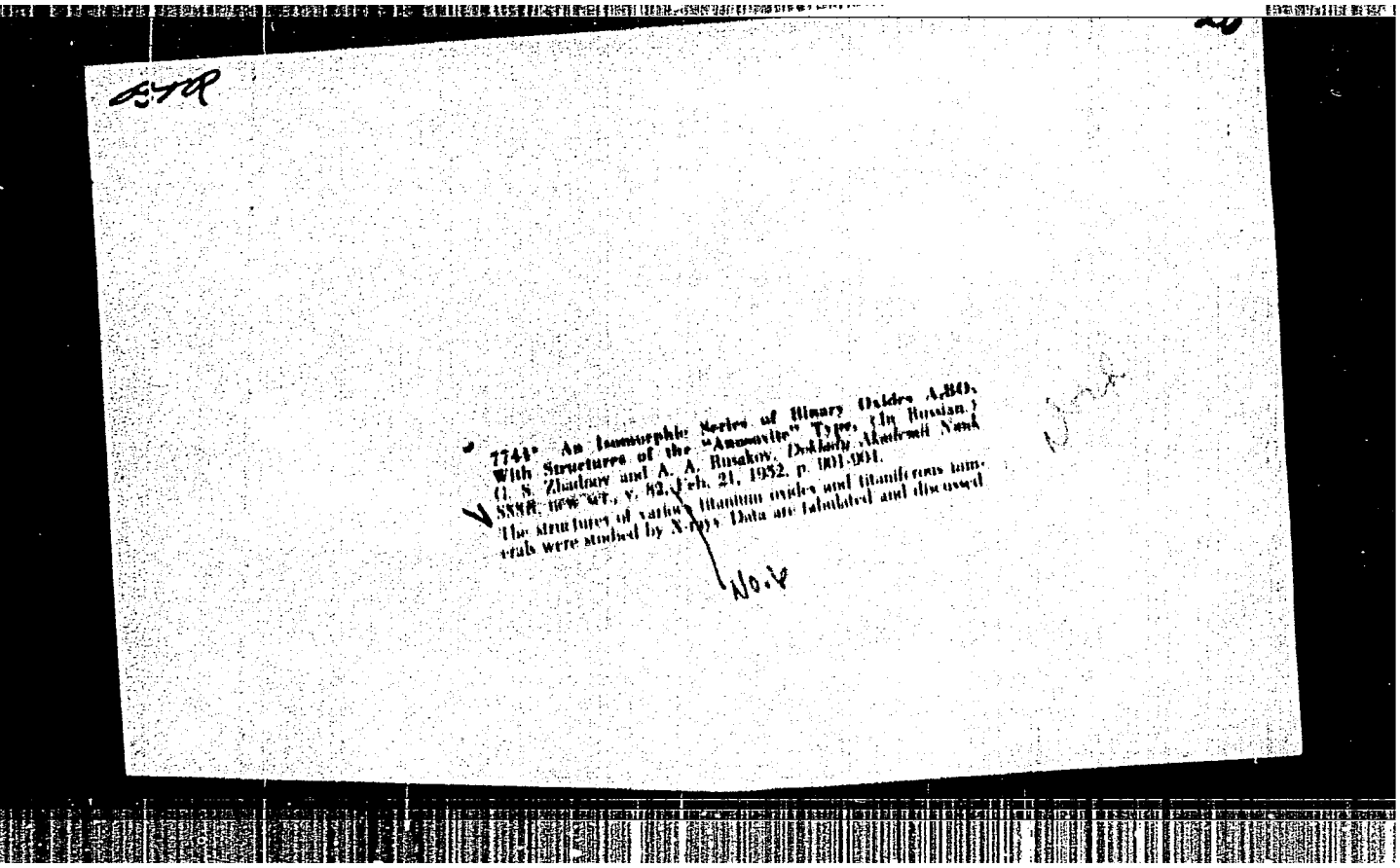
(3)

1423T10

CA

2

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_3 has a face-centered cubic lattice of the NaCl type, $a = 5.44$ A., with the O_3^- ion having a spherical symmetry. The interat. distance within the O_3^- 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_3^- ion is lost; at −70°, α-NaO_3 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_3, there is also a transition from the low-temp. α into the high-temp. β modification; the latter is isomorphous with β-NaO_3, and has $a =$ 6.05 A. at 150° and 6.12 A. at 300°. In NaO_3, the spherical radius of the O_3^- ion changes from 1.77 A. at 20° to 1.72 A. at −60°; in β-KO_3, the radius of O_3^- is 1.70 A. at 150°. The contraction of the spherical radius of the O_3^- ion, identical in KO_3 and in NaO_3, corresponds to a compression of the larger half-axis of the ellipsoidal O_3^- ion by 0.35 A. The range of stability of the β modifications of KO_3 and NaO_3 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 $\beta \rightleftharpoons \alpha$-$NaO_3$ is accompanied by a lowering of the magnetic susceptibility analogous to that observed in antiferromagnetics. The value of $a = 5.480 \pm 0.005$ A. reported for β-NaO_3 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^2 and O_h^1 (pyrite structure) are wrong. The only correct space group for β-NaO_3 is O_h^5. The alleged 4 possible structure models of β-NaO_3 with some preferential statistical distribution of O_3^- 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_3^- ion. That spherical symmetry can arise as a result of a free rotation of these ions in the lattice. N. Thon



7744. An Isomorphic Series of Binary Oxides AB$_2$O$_5$ With Structures of the "Ammonvite" Type. (In Russian.) G. S. Zhdanov and A. A. Rusakov. Doklady Akademii Nauk SSSR, new ser., v. 82, Feb. 21, 1952. p. 901-904.

The structures of various titanium oxides and titaniferous minerals were studied by X-rays. Data are tabulated and discussed

USSR/Physics - Crystallography, Twinning 11 Apr 52

"The Theory of Growth Twins in Metals, Alloys, and Laminar Crystals," G. S. Zhdanov, Phys Chem Inst imeni L. Ya. Karpov

"Dok Ak Nauk SSSR" Vol LXXXIII, No 5, pp 685-688

Twins or poly-twinning formations appear for the most part in tempered copper and in crystal brass. Tempering twins (in brass) are clearly seen in the microphotographs shown in G. A. Kashchenko's book "Cenovy Metallovedeniya" (Fundamentals of Metal Science), Moscow/Leningrad, 1950. Crystn twins (germanium) are observable in other metals and alloys

218T83

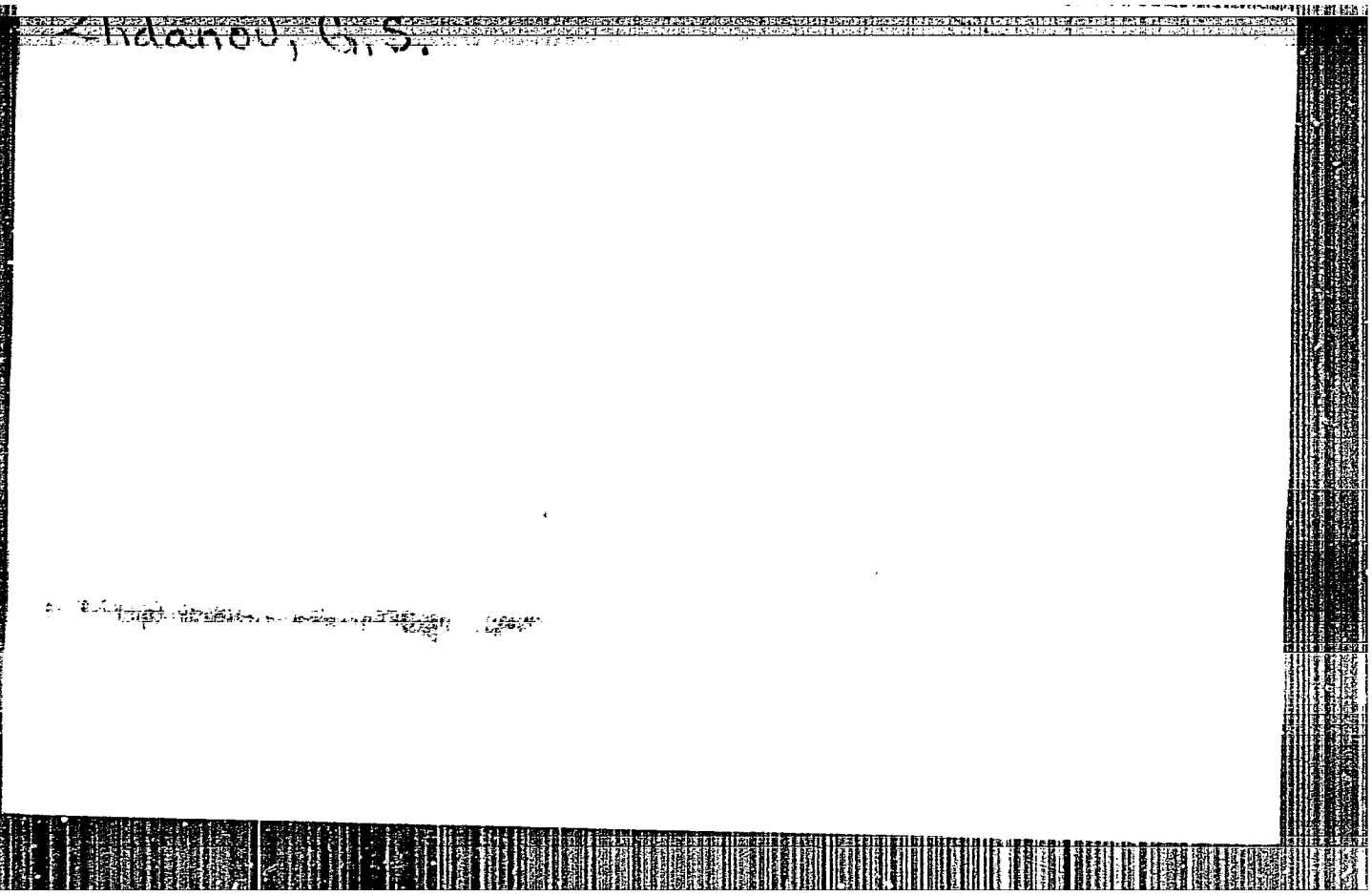
USSR/Physics - Crystallography, Twinning (Contd) 11 Apr 52

with face-centered lattice (dense cu packing). But A. A. Bochvar noted that tempering twins are not observed in dense hexagonal packing (magnesium, zinc, etc.). Discusses origin of growth twin for various types of packing and lattices; discusses statistical theory of crystal growth. Submitted by Acad A. A. Bochvar 25 Feb 52.

(CA 47 no. 21: 10942 '53)

218T83

ZHDANOV, G. S.



ZHDANOV G. S.

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

ZHDANOV, G. S.

"Kristallokhimiya Rodanidov Metallov," by G. S. Zhdanov and Z. V. Zvonkova, Inst. Phs. Chem. im. Karpov, Moscow, USSR

SO: Abstracts of Papers, XIII International Congress of Pure and Applied Chemistry, Stockholm, July 29-Aug 4, 1953; Uppsala, Aug 5 to 7, 1953, p. 169

ZHDANOV, G. S.

"La Cristallochimie des thiocyanates metalliques," by G. S. Zhdanov and Z. V. Zvonkova.

A paper presented at the 13th Intl. Congress of Pure and Applied Chemistry, Stockholm, 29 Jul - 4 Aug 53.

ZHDANOV, G. S.; Glushkova, V. P.; Talalayeva, T. V.; Razmanova, Z. P. and Kocheshkov, K. A.

Synthesis and X-Ray Study of the Crystals of Organo-Antimony Compounds of Types Ar_3Sb and Ar_3SbX_2, page 992.

Sbornik statey po obshchey khimii (Collection of Papers on General Chemistry), Vol II, Moscow-Leningrad, 1953, pages 1680-1686.

Physico-Chemical Inst imeni L. Ya. Karpov

ZHDANOV, G.S., redaktor.

[X-ray research methods and their application in chemical industries; materials of the conference on the application of X-ray research methods in chemical industries] Rentgenovskie metody issledovaniia i ikh primenenie v khimicheskoi promyshlennosti; materialy soveshchaniia po primeneniiu rentgenovskikh metodov issledovaniia v khimicheskoi promyshlennosti. M, Goskhimizdat, 1953. (MIRA 8:3)
(X-rays--Industrial applications)

ZHDANOV, G. S.

Crystallochemistry of metal thiocyanates. G. S. Zhdanov and Z. V. Zvonkova. *Doklady Mezhdunarod. Konger. Teoret. i Prikład. Khim., XIII Kongr., Stockholm* 1953, 135-74(In French, 175-215); cf. *C.A.* 48, 422*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. 20 refs. Philip S. Baker

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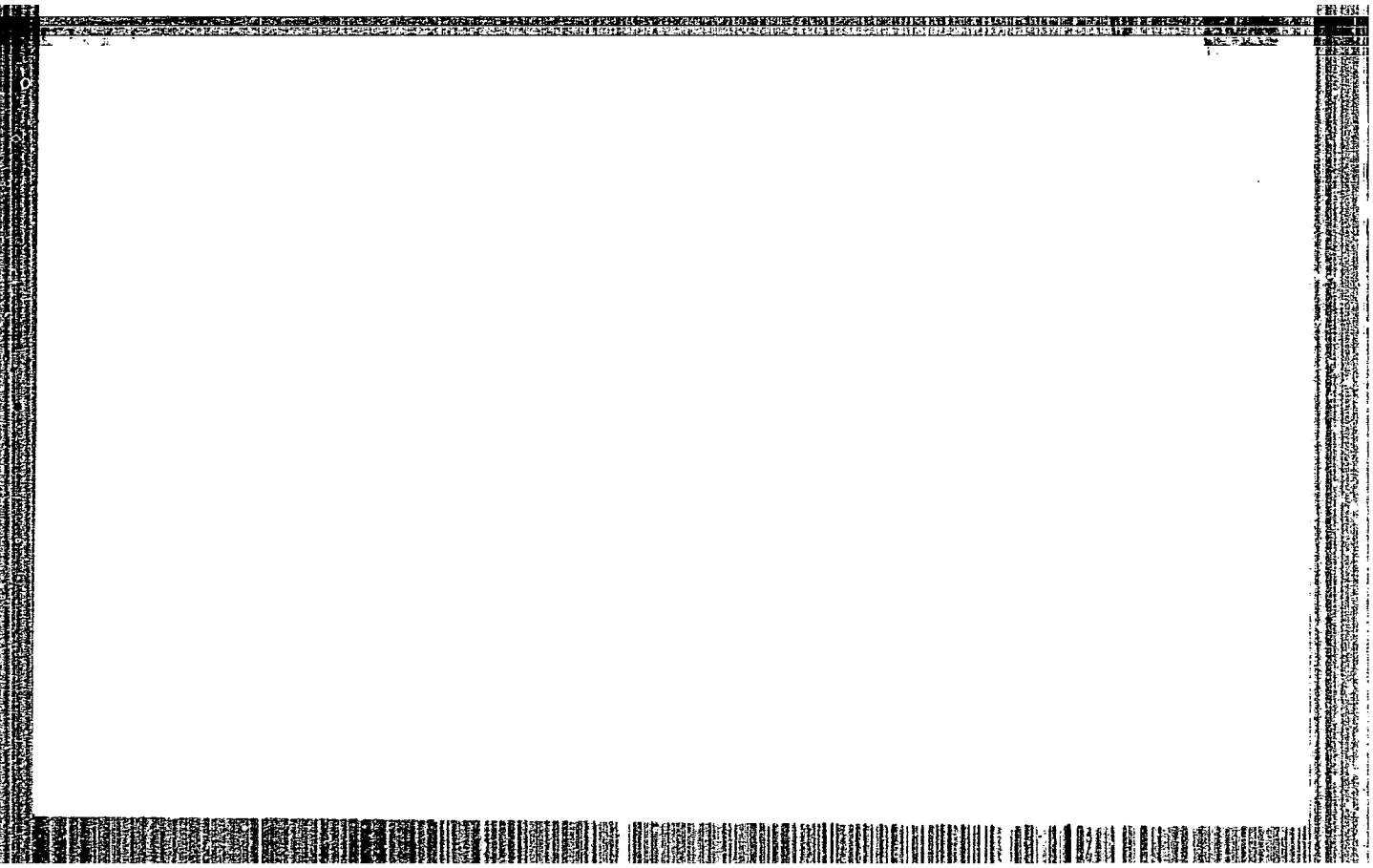

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ZHANOV, G. S.

USSR/Physics - Radiography

"Radiographic Methods and Their Application inthe Chemical Industry," G.S. Zhdanov, Physicochem Inst Karpov

Iz Ak Nauk SSSR, Ser Fiz, Vol 17, No 2, pp 156-162

Describes various applications of radiography, in particular investigation of atomic cryst structure, dispersion degree of crystals, and phase compn of chem products. Received 2 Mar 53.

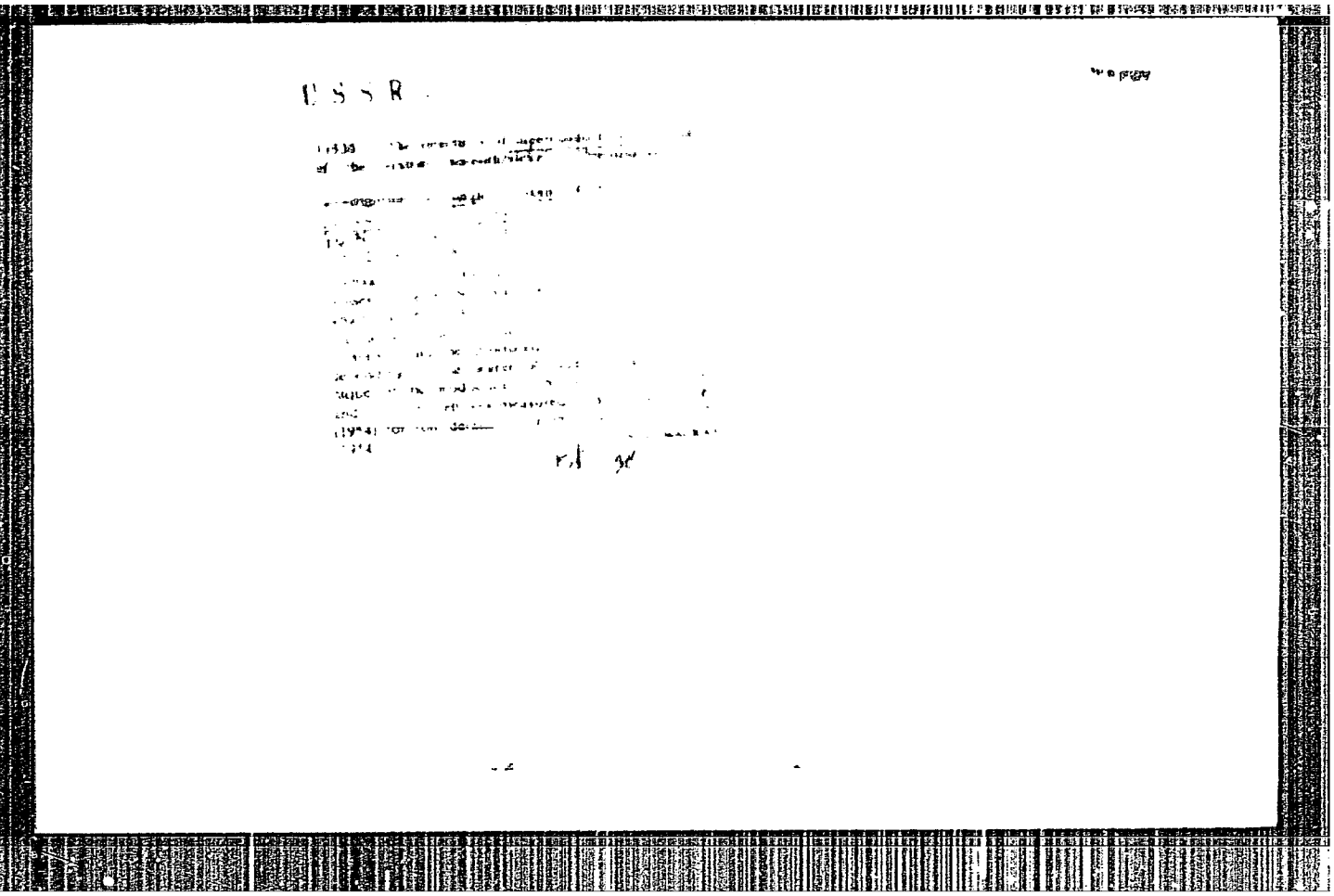
262T89

ZHDANOV, G. S.

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

Physics

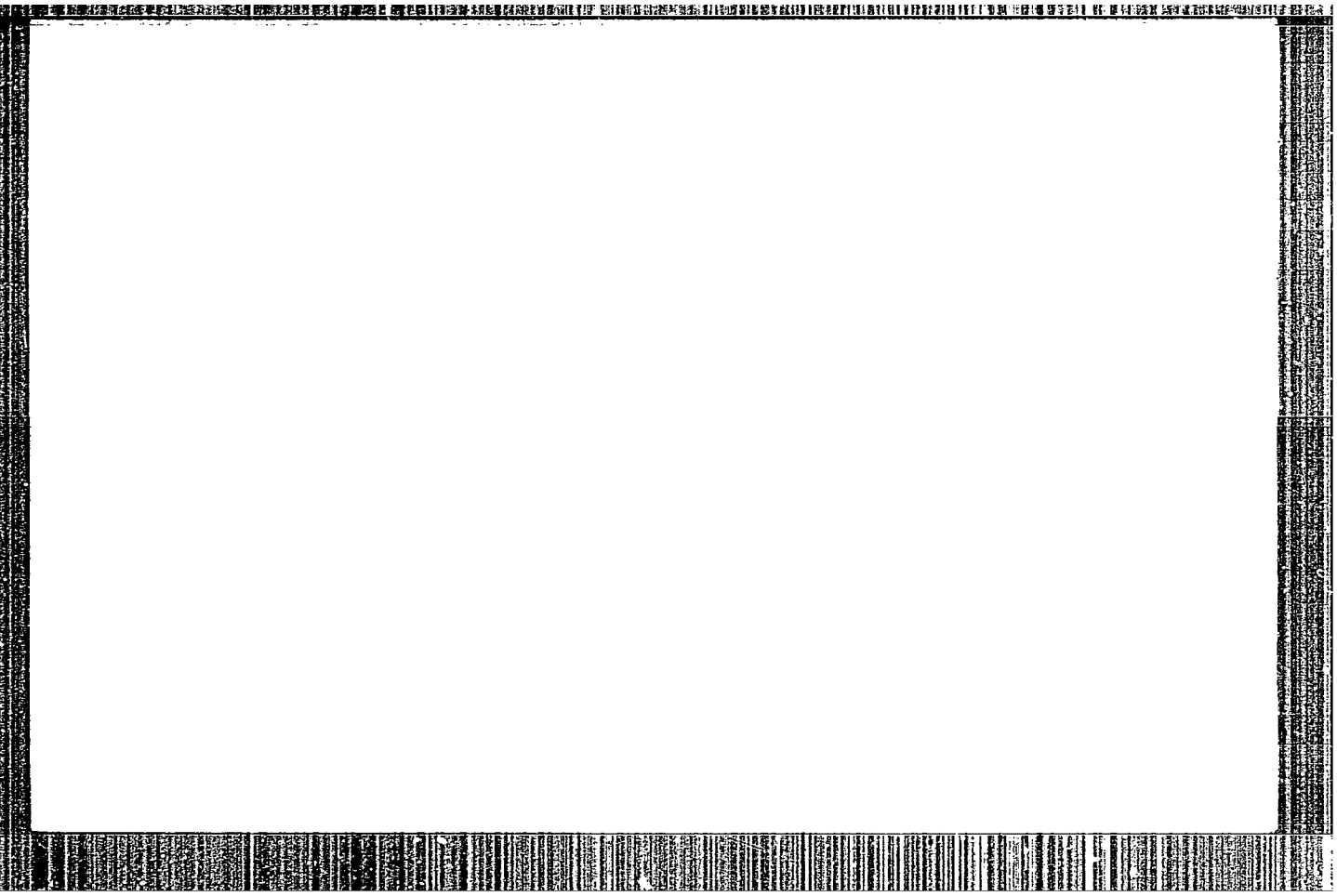
Crystallochemistry of thiocyanates of metals. G. S. Zhdanov and Z. V. Zvonkova. *Uspekhi Khim.* 27, 3–36 (1958).—Review with detailed summary of structures of various metal thiocyanates. 30 references. G. M. K.



ZHDANOV, G. S., ZHDANOV, N. N., and ALEKSEYEVSKIY, N. E.

"The Structures of Superconductors. II. The Low-Temperature Decomposition of the Metallic Compound Au_2Bi," Journal of Experimental and Theoretical Physics, 1953, Vol. 25, No. 1, (7), pp 123-126. (Moscow Mechanical Institute)

"Microscopic and X-ray powder investigations established that the superconductor Au_2Bi decomposes at low temperatures; this explains why a small displacement of the temperature of transition to the superconducting state is observed in specimens which have undergone hydrostatic compression."



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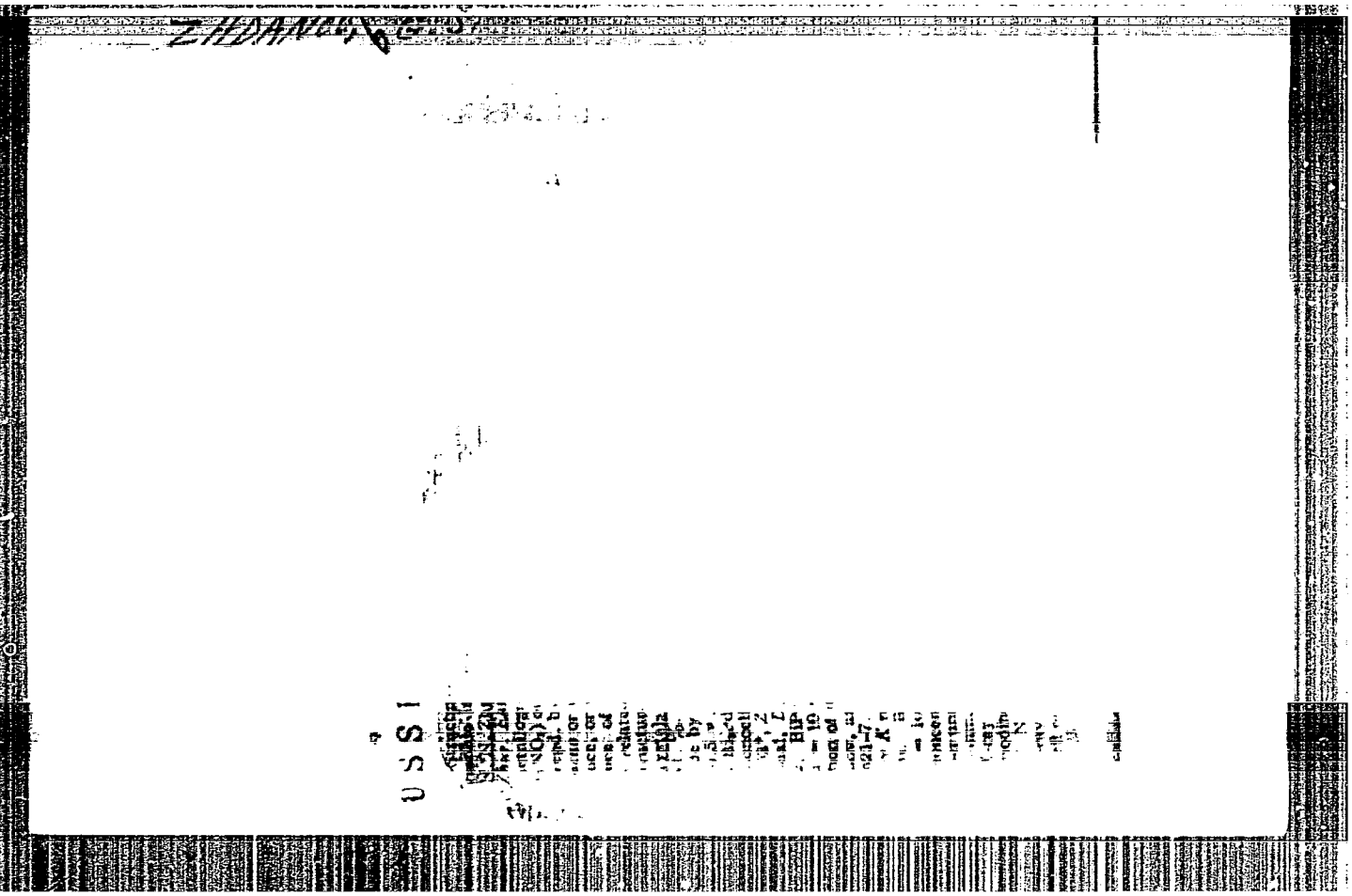

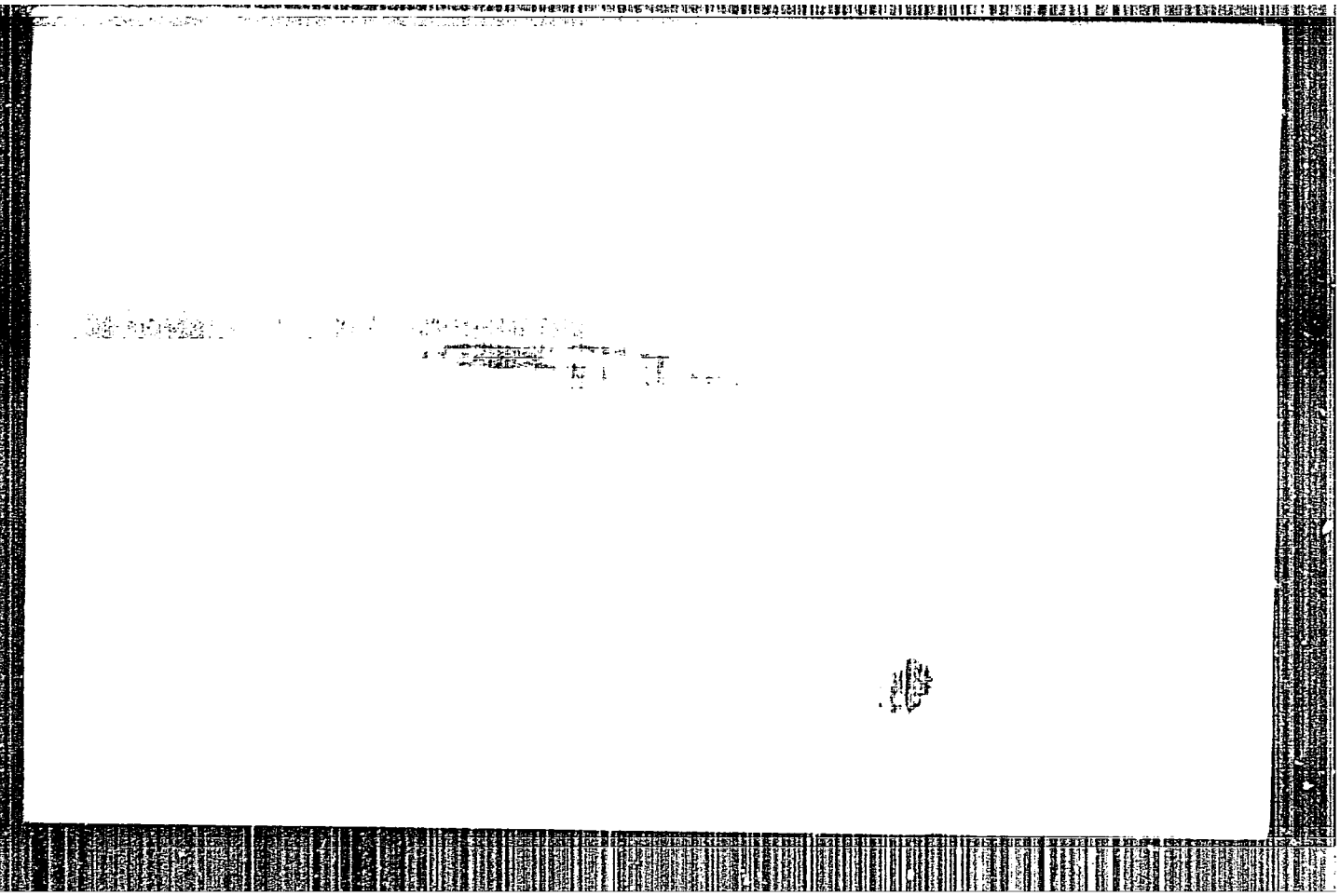

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appears to be the first non-centrosymmetric structure which has been observed to possess superconducting properties

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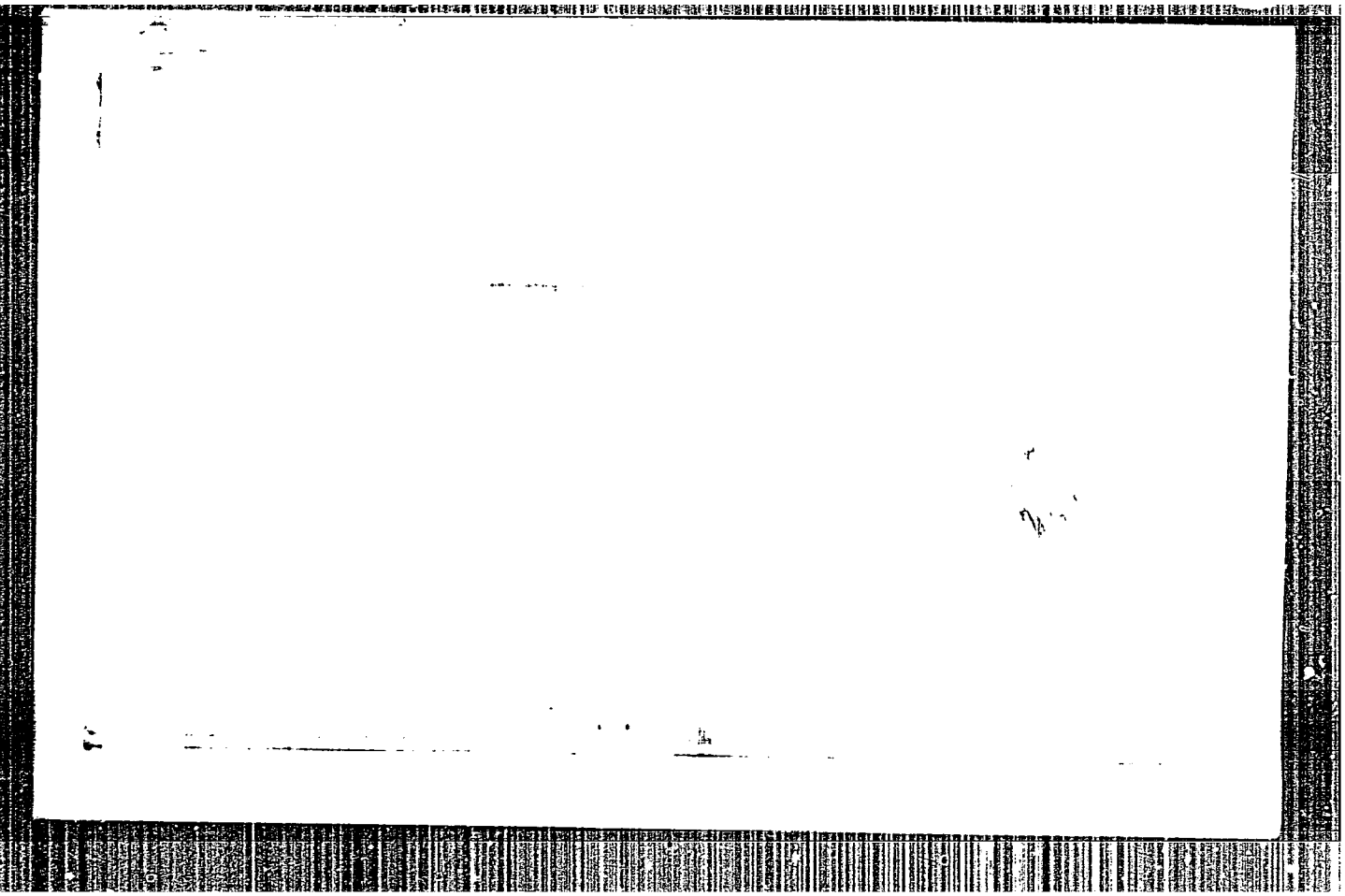
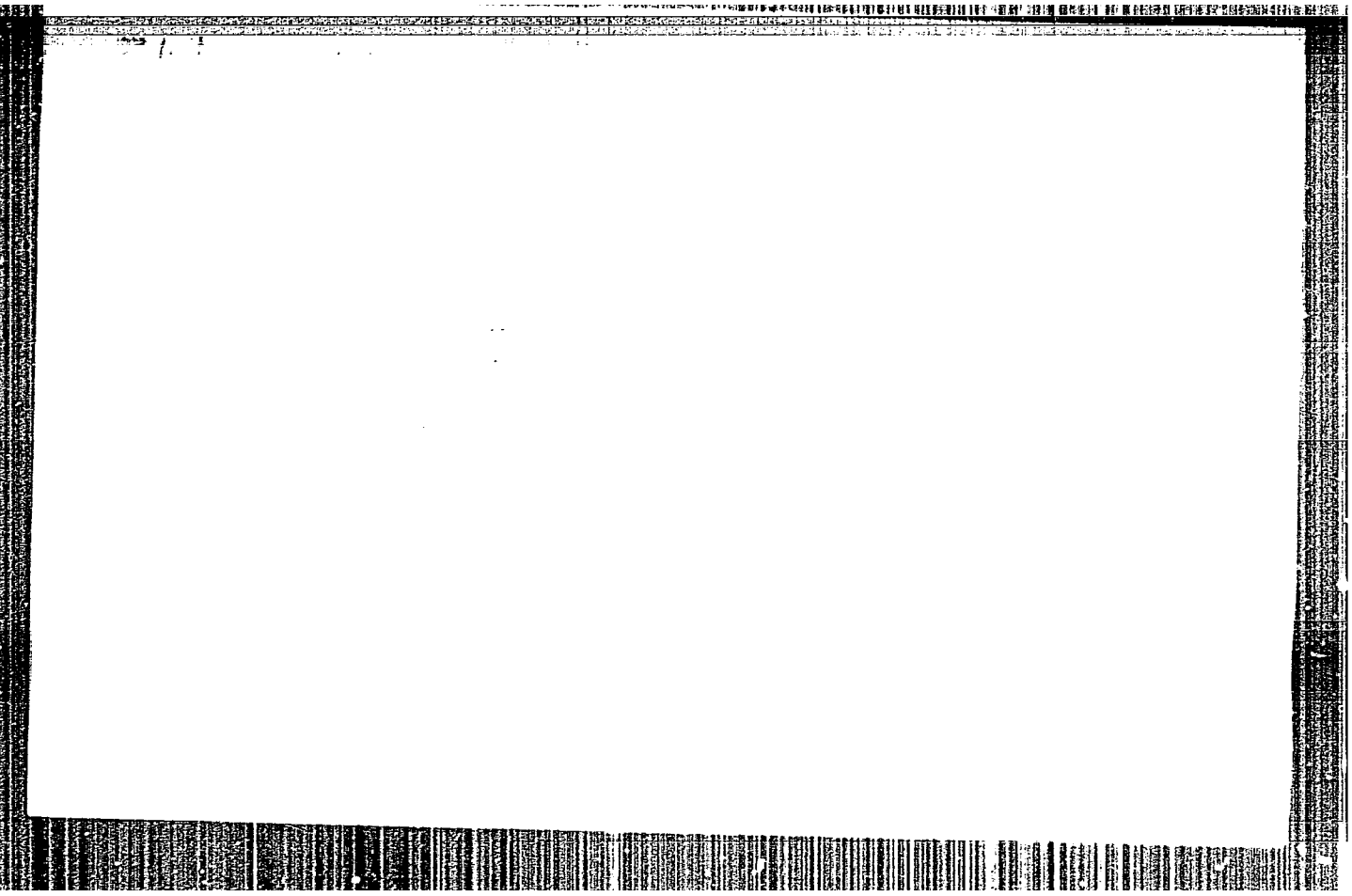


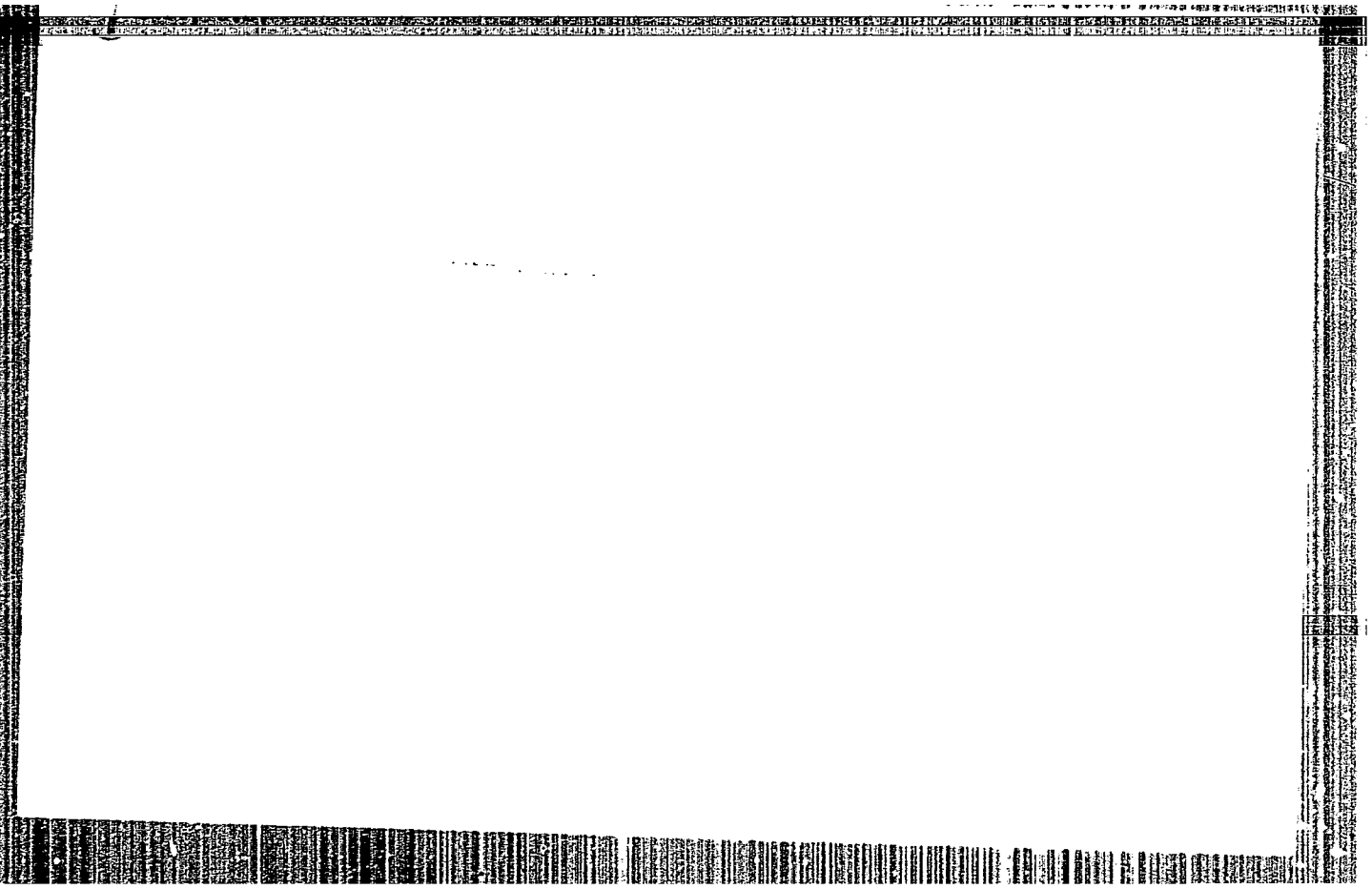
ZHDANOV, G. S., ZVONKOVA, Z. V., GLUSHKOVA, V. F.

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.





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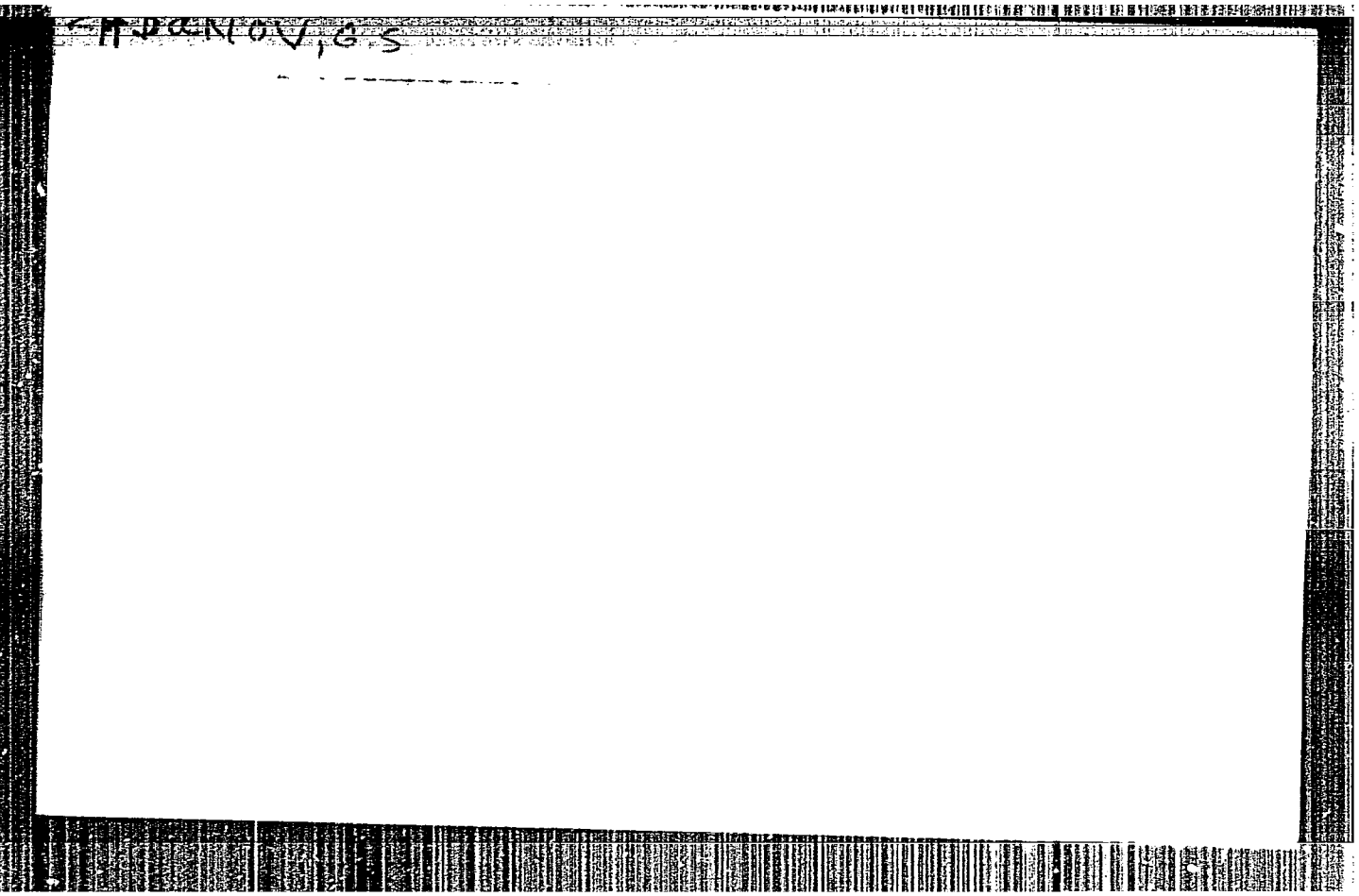
ZHDANOV, G. S.

Chemical Abstracts
May 25, 1954
General and Physical
Chemistry

Roentgenographic establishment of formation of solid solutions in boron carbide. G. S. Zhdanov, N. N. Zhuravlev, and L. S. Zevin (Ministry of Culture, Mech. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 92, 101-8(1953); cf. *ibid.* 32, 432(1941); *C.A.* 38, 5707⁹.—The results of x-ray analysis of boron carbide are summarized as supporting the unit structure $B_{12}C_3$, i.e. equiv. to B_4C. The already established variations of the dimensions of the unit cell can be explained by formation of solid solns. of displacement, rather than of the intrusion, type. Most likely is the displacement of part of C atoms in 18 positions by B atoms. The latter, possessing sp-electrons, can assume linear valence configuration analogous to that of C and an increase of B content in a unit cell in solid soln. would call for increase in unit-cell size. The smallest change occurs in specimens of the carbide that have the least amt. of B in soln. The limiting formula of solid soln. with the greatest content of B is $B_{4.1}C$, but the formation of solid solns. throughout the interval may not necessarily take place. Introduction of O into similar structures is excluded, since O forms angular, rather than linear, valence structures at the expense of its p^2 electrons.

G. M. Kondratieff



7038. On the necessity of metal-oxygen bond lengths in some metal oxides and on the "molecular" structure of ZnO [illegible]

ZHADANOV, G. S.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Zhadanov, G. S.	Structural study of crystals by X-rays (series of articles)	Ministry of the Chemical Industry; Physicochemical Institute imeni Karpov

SO: W-30604, 7 July 1954

ZHDANOV, G. S.

USSR/ Physics - Crystallography

Card : 1/1

Authors : Tobelko, L. I., [illegible]

Title : [illegible]

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

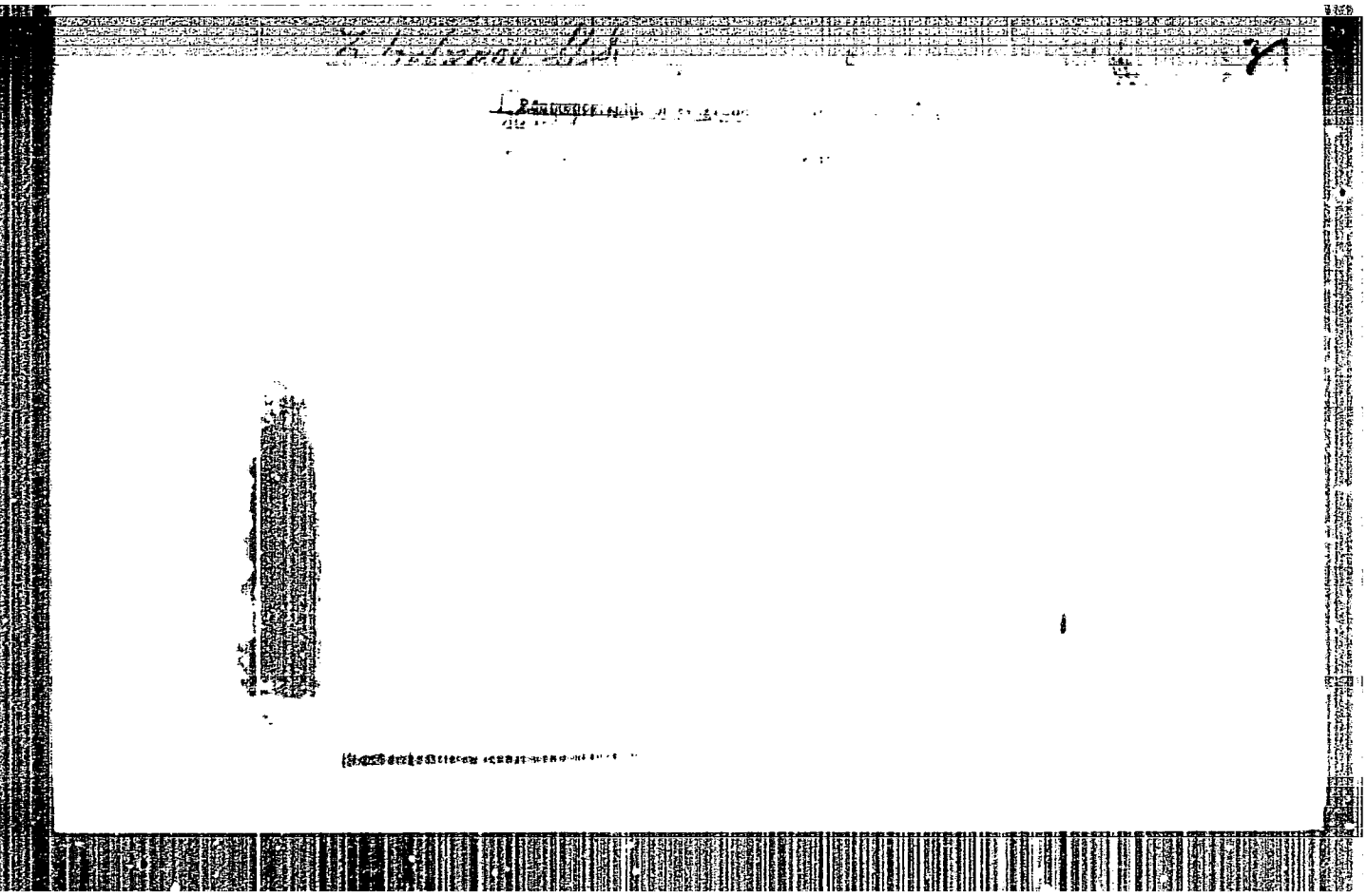
Abstract : Explains the peculiarities, i. e., molecular structure and instability under light, of mineral realgar by the fact of its having [illegible]

[illegible]

Presented by : Academician [illegible]

ZHDANOV, G.S.

N.V. Belov's contributions to the development of structural crystallography. Trudy Inst.kriat. no.9:3-19 '54.(MLRA 7:11)
(Crystallography) (Belov, N.V.)

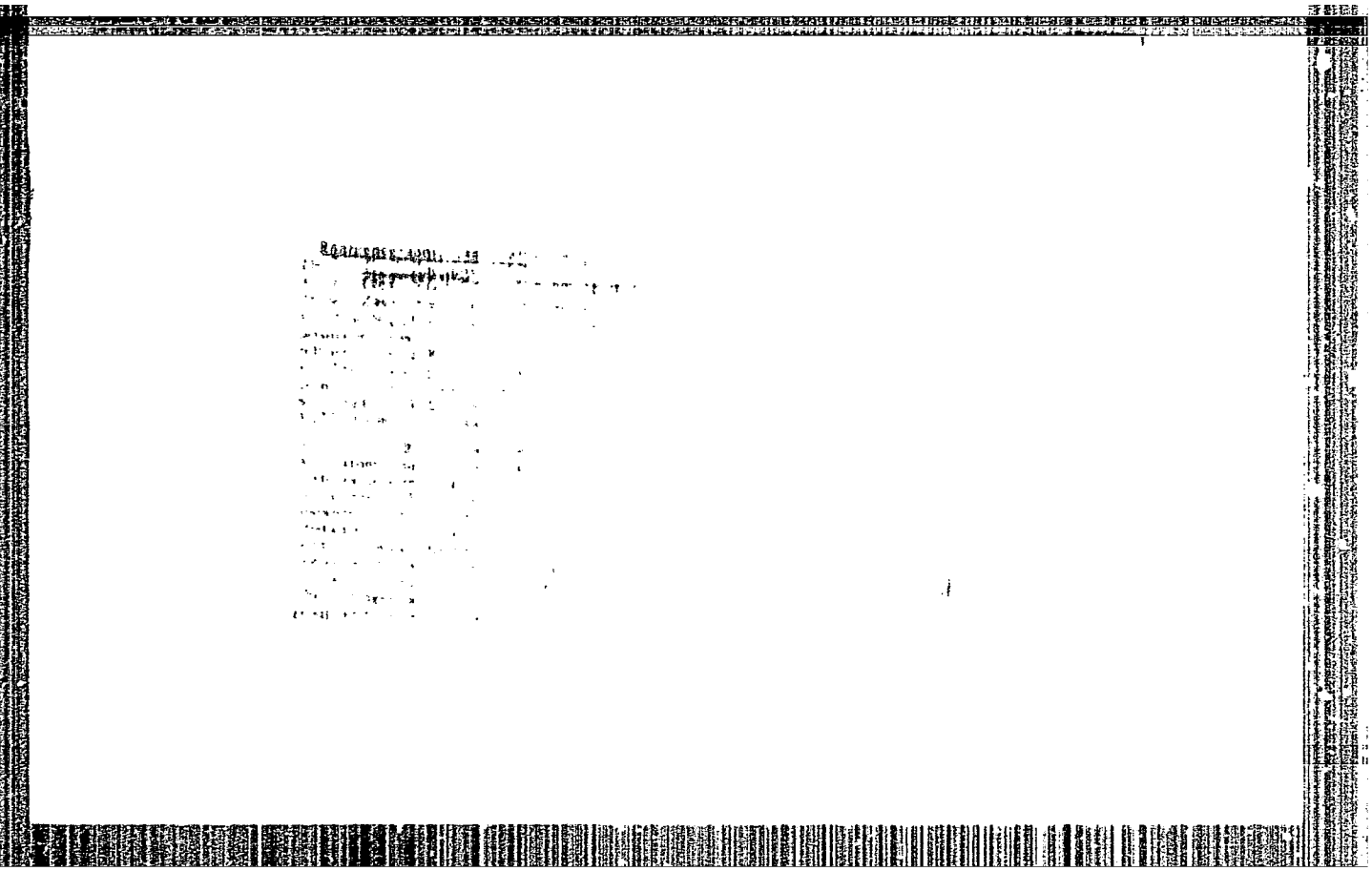


ZHDANOV, G. S. and Glagoleva, V. P.

"Crystal Chemistry of AB Transitional Metals With Elements of IV, V, and VI Subgroup B"
Tr. In-ta Kristallogr. AN SSSR, No 9, 1954, 211-220

Discusses the phenomena of isomorphism and morphotropy of AB compounds of transititon metals with A elements of the IV, V, and VI B-subgroups of Mendeleyev's table. According to structural data on this type of compound, it was established that the transition from an AB compound to an A'B compound is not accompanied by structural changes (isomorphism). On transition of AB to AB', both isomorphic and morphotropic conversions are possible. Established two morphotropic conversions in the AB to AB' conversion: type FeSi--- type MnP --- type NiAs. Within the limits of the same subgroup B, morphotropic conversions occur more frequently with increasing radii of atom B; and within different subgroups B- more frequently with decreasing radii of atom B. (RZhKhim, No 3, 1955)

SO: Sum-No 845, 7 Mar 56



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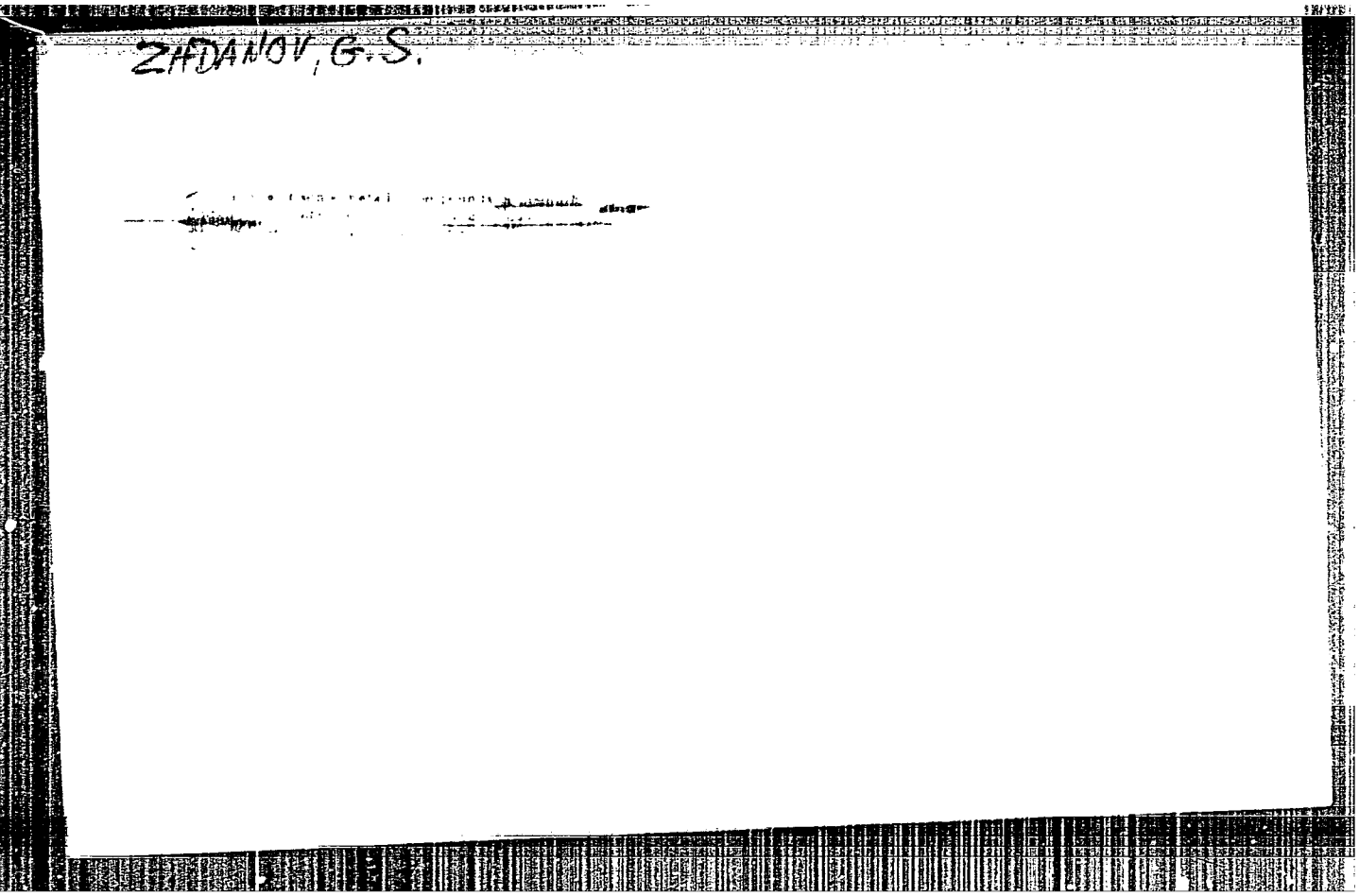
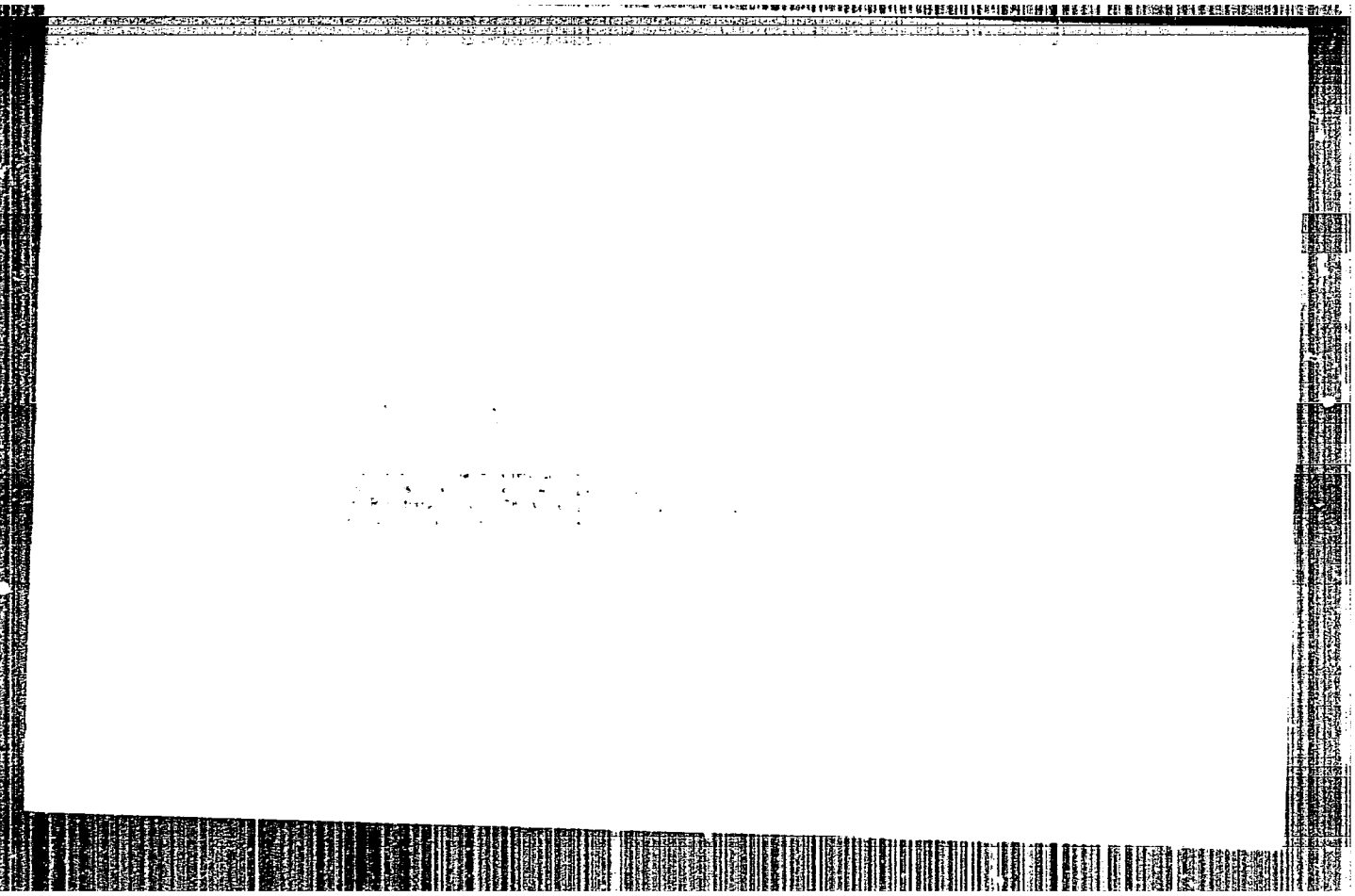
ZHDANOV, G.S.

"Developments of Crystalls-chemical representations regarding the nature of the inter-molecular relationship and inter-molecular spaces based on roentseno- structural analysis." by G.S. Zhdanov. 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.)





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ZHDANOV, G. S.

"Atomic structure of some metallic compounds of Bismuth." by G.S. Zhdanov, pp. 231-248.

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)

USSR/Physics - Superconductors

Card 1/1 : Pub. 146-12/18

Author : Glagoleva, V. P., and Zhdanov, G. S.

Title : Structure of superconductors. VII
Roentgenographic determination of the structure of Bi_3Ni

Periodical : Zhur. eksp. i teor. fiz., 26, 337-344, Mar 1954

Abstract : The authors determine the crystalline structure of the superconducting compound Bi_3Ni. They establish that Bi_3Ni possesses a rhombic nucleus and belongs to the spatial group D_{2h}^{16}-Pnma, z=4. They make more precise the periods of the lattice and determine the coordinates of the atoms and the interatomic distances, and they describe also the coordination polyhedron in the structure of Bi_3Ni. Four references, all in this journal, by the same authors and by N. N. Zhuravlev, Yu. N. Venevtsev, N. V. Belov, D. M. Kheyker, L. S. Zevin, 1947-1953.

Institution : Moscow Mechanical Institute (Moskovskiy mekhanicheskiy institut)

Submitted : July 10, 1953

ZHDANOV, G.S.

GRINBERG, A.A. (Leningrad); BABAYEVA, A.V.(Moscow); YATSIMIRSKIY, K.B. (Ivanovo); GOREMYKIN, V.I. (Moscow); BOLIY, G.B. (Moscow); FIALKOV, Ya.A. (Kiyev); YAKSHIN, M.M. (Moscow); KEDROV, B.M. (Moscow); GEL'MAN, A.D. (Moscow); FEDOROV, I.A. (Moscow); MAKSIMYUK, Ye.A. (Leningrad); VOL'KENSHTEYN, M.V. (Leningrad); ZHDANOV, G.S. (Moscow); PTITSYN, B.V. (Leningrad); ABLOV, A.V. (Kishinev); VOLSHTEYN, L.M. (Dnepropetrovsk); TROITSKAYA, A.D. (Kazan'); KLOCHKO, M.A. (Moscow); BABAYEVA, A.V.; TRONEV, V.G. (Moscow); RUBINSHTEYN, A.M.(Moscow) CHERNYAYEV, I.I.; GRINBERG, A.A.; TANANAYEV, I.V.

Explanation of the transeffect. Izv.Sekt.plat.i blag.met. no.28: 56-126 '54. (MLRA 7:9)

(Compounds, Complex) (Platinum)

ZHDANOV, G. S.

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 second stage of the x-ray analysis namely, the derivation of [illegible] spaces. The authors [illegible] a formula for [illegible] references. Table.

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

Submitted : September 17, 1953

ZHDANOV, G. S.

USSR/ Chemistry Solubility

Card : 1/1

Authors : Zhdanov, G. S., Meerson, G. A., Zhuravlev, N. N., and Samsonov, G. V.

Title : Solubility of boron and carbon in boron carbide B_4C (B_4C)

Periodical : Zhur. fiz. khim. 28, Ed. 6, 1076 - 1082, June 1954

Abstract : X-ray investigations were conducted to determine the possibility and solubility limits for B and C in B_4C and to explain the mechanism of the latter with respect to the solubility of components in a covalent chemical compound. The fact that the [illegible] is a displacement of C-atoms in [illegible] positions by B-atoms and [illegible] [illegible] [illegible] [illegible] references: [illegible] USSR, [illegible] and [illegible] [illegible], [illegible] illustrations.

Institution : The M. I. Kalinin Institute of Non-Ferrous Metals and Gold and the Mechanical Institute, Moscow

Submitted : September 19, 1953

ZHDANOV, G. S.

TOBELKO, K.I.; ZVONKOVA, Z.V.; ZHDANOV, G.S.

The structure of realgar and the atomic radius of arsenic. Dokl. AN SSSR 96 no.4:749-752 Je '54. (MLRA 7:6)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya.Karpova. Predstavleno akademikom N.V.Belovym.
(Realgar) (Crystallography) (Arsenic)

ZHDANOV, G. S.

USSR/Physics - Superconductors FD-1827

Card 1/1 Pub 146-12/25

Author : Zhuravlev, N. N., and Zhdanov, G. S.

Title : The structure of superconductors. VIII: Roentgenographic and metallographic investigation of the system bismuth-rhodium

Periodical : Zhur. eksp. i teor. fiz. 28, 228-236, February 1955

Abstract : The authors investigate roentgenographically and metallographically the system Bi-Rh, in which they establish the existence of three compounds: BiRh, Bi_2Rh in two modifications and Bi_4Rh in three modifications. They obtain crystals and determine the elementary nucleus and spatial group of alpha-Bi_4Rh and the elementary nuclei of alpha and beta Bi_2Rh. They thank Prof. N. Ye. Alekseyevskiy and V. P. Glagoleva for advice; and I. I. Lifanov, N. P. Ivanova, Ye. I. Michurina, and N. S. Semeyko for the preparation of the alloys, roentgenograms, and microsections. Seven references.

Institution: Moscow Engineering Physics Institute

Submitted : February 24, 1954

Zhdanov, G. S.

USSR/Physics - Superconductors

FD-1828

Card 1/1 Pub 146-13/25

Author : Alekseyevskiy, N. Ye.; Zhdanov, G. S.; Zhuravlev, N. N.

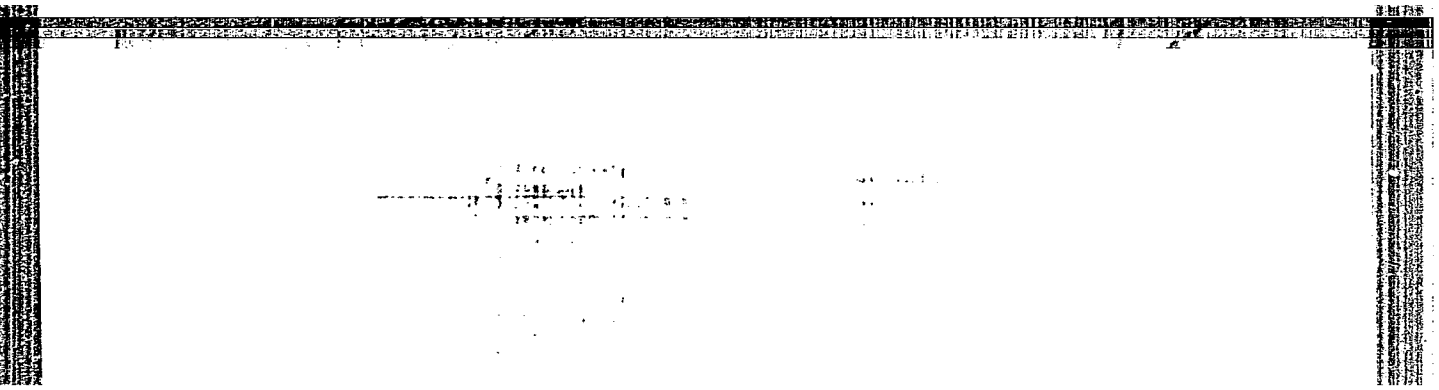
Title : Problem of the superconductivity of the compounds Bi_4Rh and Bi_2Rh

Periodical : Zhur. eksp. i teor. fiz. 28, 237-240, February 1955

Abstract : The authors determine the temperatures of transition in the superconducting state for the crystals of beta and gamma-Bi_4Rh. They explain the unstable behavior of the superconducting alloys of bismuth with rhodium. They thank I. I. Lifanov and N. P. Ivanova for assistance in the experiments. Five references; e.g. Ye. Ya. Rode, Izvestiya In-ta platiny [News of the Institute of Platinum], 7, 1929.

Institution: Institute of Physical Problems; Moscow Engineering Physical Institute

Submitted : February 24, 1954



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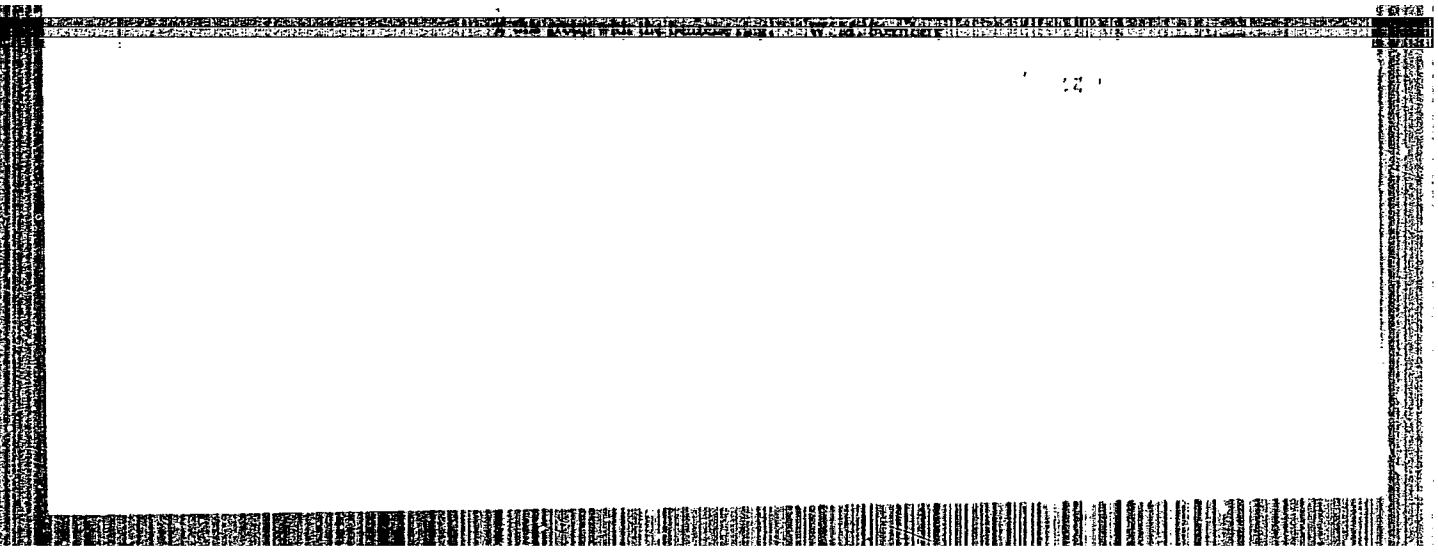

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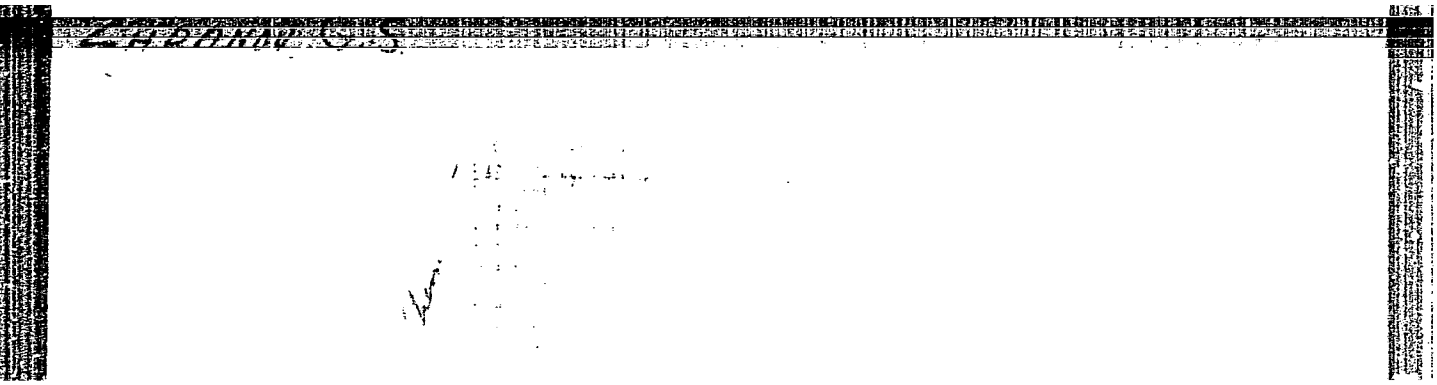

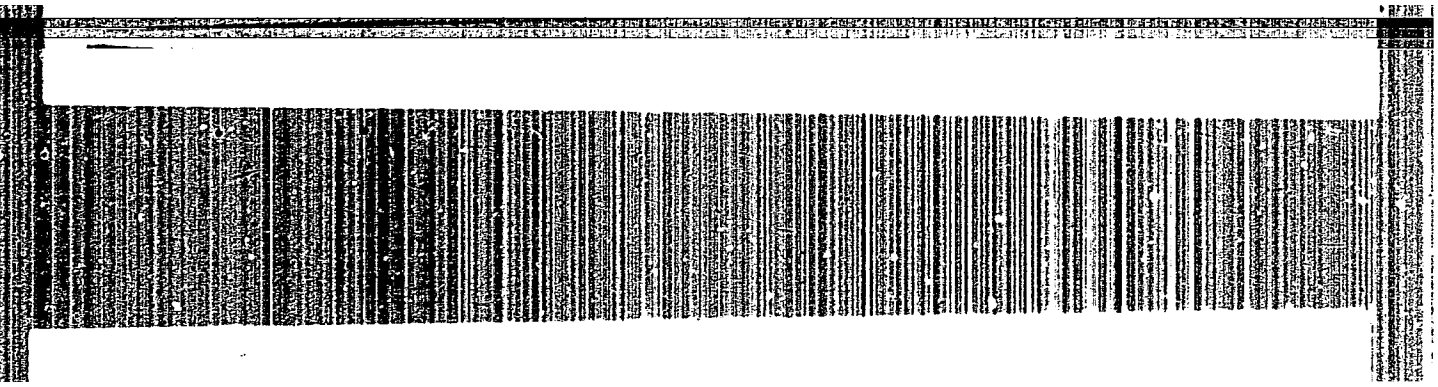

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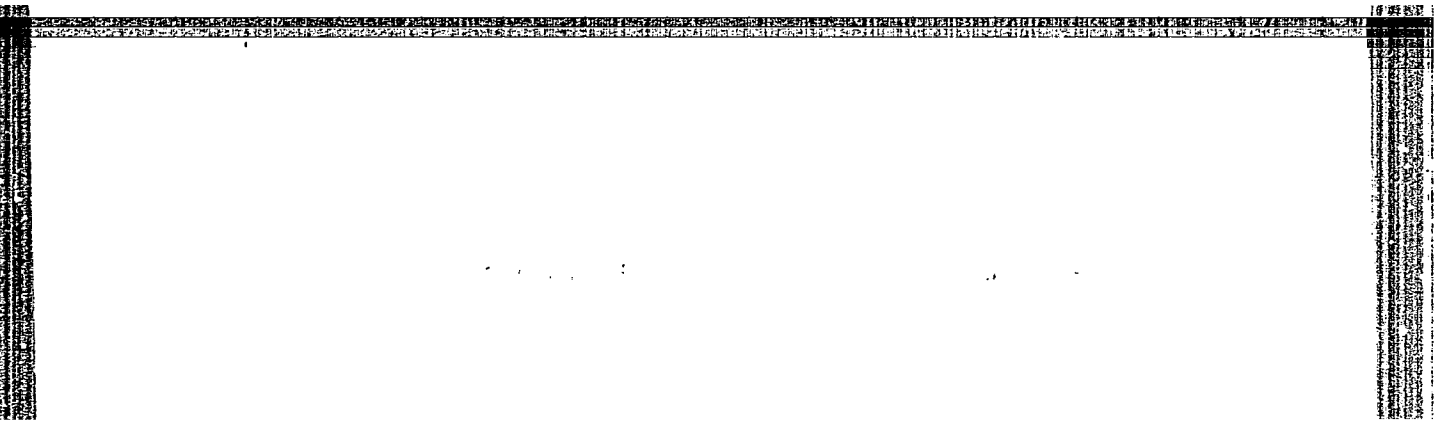

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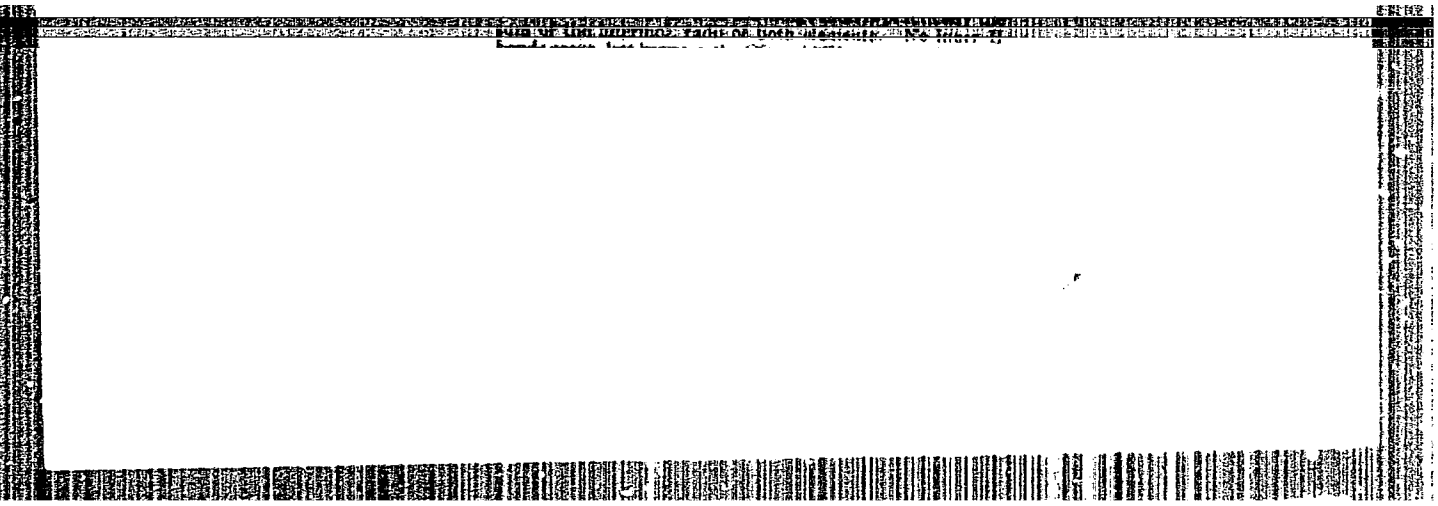

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620005-6"

Zhdanov, G.S.

E-3

USSR / Structural Crystallography.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9241

Author : Zhdanov, G.S., Zvonkova, Z.V., Vorontsova, L.G.

Inst : Physico-Chemical Institute imeni L.Ya. Karpov USSR

Title : X-ray-Structural Investigation of Methylene Blue Dye.

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

Abstract : An investigation is made of the crystalline structure of methylene-blue dye $[C_{16}H_{18}N_3S]^+Cl^-\cdot n\,H_2O$, which crystallizes in the form of long needles of dark blue color with metal irridescence. The lattice parameters were refined and found to be a 9.68$_6$, b 31.86$_9$, c 7.07$_4$A; 97°11'. According to data of the F^2 series and with the aid of the isomorphic substitution of a bromine atom for a chlorine atom, a projection of the electron density on the (001) plane was constructed. This resulted in a principal model of the structure in the (001) projection, confirmed by geometric analysis. The nearest S-Cl distance, which equals 2.8 A in the projection, exceeds considerably the length of the covalent bond, which is a

Card : 1/2

USSR / Structural Crystallography. E-3

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9241

Abstract : confirmation of the ionic model of the structure. It is established that the nearest atom of the complex ion to the halide is the sulphur atom, and not the metal groups, as indicated previously (Taylor, W.H., Z. Kristallogr., 1935 A91, 450 -- 460). This is explained by the concentration of the positive charge on the S atoms. The hypothesis by Taylor concerning the isostructureness of the iodide and ch chloride of metal blue dye has not been confirmed.

Card : 2/2

ZHDANOV, G.S.

E-4

Category : USSR/Solid State Physics - Systems

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3785

Author : Zhuravlev, N.N., Zhdanov, G.S.
Title : Metallographic and X-ray Diffraction Investigation of Alloys of the Germanium-Rhodium System

Orig Pub : Kristallografiya, 1956, 1, No 2, 205-208

Abstract : The existence of four compounds was observed in the Ge-Rh system: Rh_3Ge_4, RhGe, Rh_5Ge_3, and Rh_2Ge. It is assumed that Rh_3Ge_4 and Rh_5Ge_3 are formed by peritectic reactions. The compounds RhGe and Rh_2Ge correspond to the maxima on the meltability diagram. The contours of the meltability diagrams are indicated. The density of compounds of the Ge-Rh system are determined and their microhardness is measured. It is found that the Rh_3Ge_4 compound crystallizes in a tetragonal syngony with periods: a 5.7 ± 0.2, c 10 ± 0.3 A. No solubility of Rh in Ge or of Ge in Rh was observed.

Card : 1/1

ZHDANOV, G.S.

B-5

Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29673

Author : Zhdanov G. S., Umanskiy M. M., Varfolomeyeva L. A., Yezhkova Z.I., Zolina Z. K.

Inst : not given

Title : Roentgenographic Determination of Unit Cells and Spatial Groups of Piezoelectric Crystals: $KLiC_4H_4O_6 \cdot H_2O$, $NH_4LiC_4H_4O_6 \cdot H_2O$, $NaHC_4H_4O_6 \cdot H_2O$ and $(NH_4)_2C_4H_4O_6$.

Orig Pub: Kristallografiya, 1956, 1, No 3, 271-273

Abstract: Precise measurements of lattice parameters were carried out on monocrystals by means of roentgenograms obtained with a RKU-114 camera, without thermostatic controls, at room temperature; Fedorov groups were determined from kforograms. For $KLiC_4H_4O_6 \cdot H_2O$ (I) a 7.839, b 14.318, c 6.326 kX; β 2.01; Z = 4; F.gr. $P2_12_12$; $NH_4LiC_4H_4O_6 \cdot H_2O$ (II) 7.860, 14.615, 6.414 kX; 1.73; 4; $P2_12_12$; $NaHC_4H_4O_6 \cdot H_2O$ 8.663, 10.580, 7.230 kX; 4; $P2_12_12_1$; $(NH_4)_2C_4H_4O_6$ 7.067, 6.116, 8,790 kX; β 92°25', 1.608; 2; $P2_1$. Crystals of I and II are isomorphous. Lattice parameters of II were determined twice (RZhKhim, 1955, 39570).

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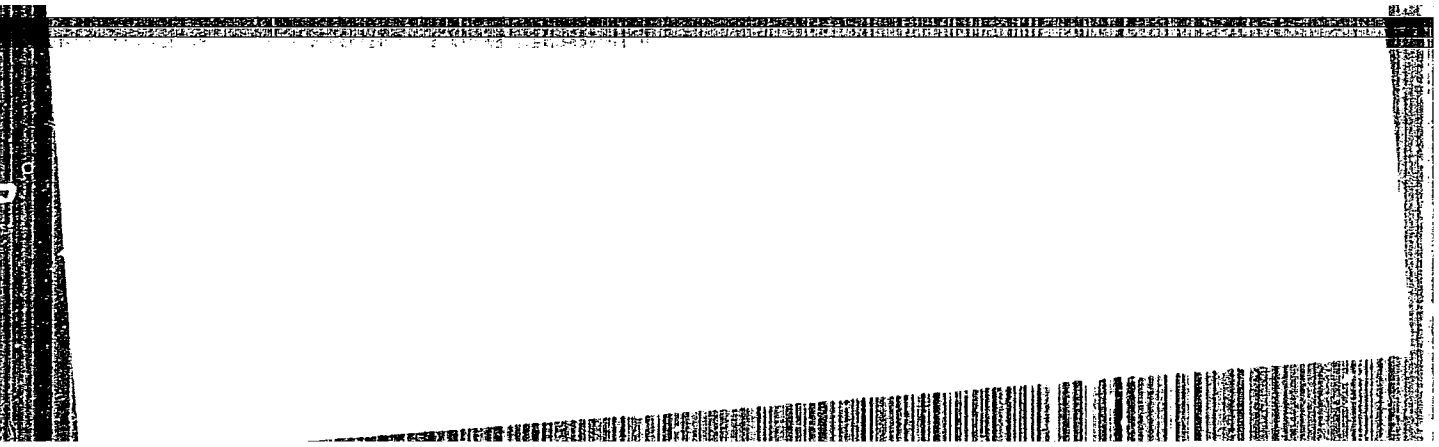
Card : 1/1



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ZHDANOV, G. S.

B-5

Category: USSR / Physical Chemistry - Crystals

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 [(C2H5)2NCS2]2Pb 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. P2₁/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(-4) 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.

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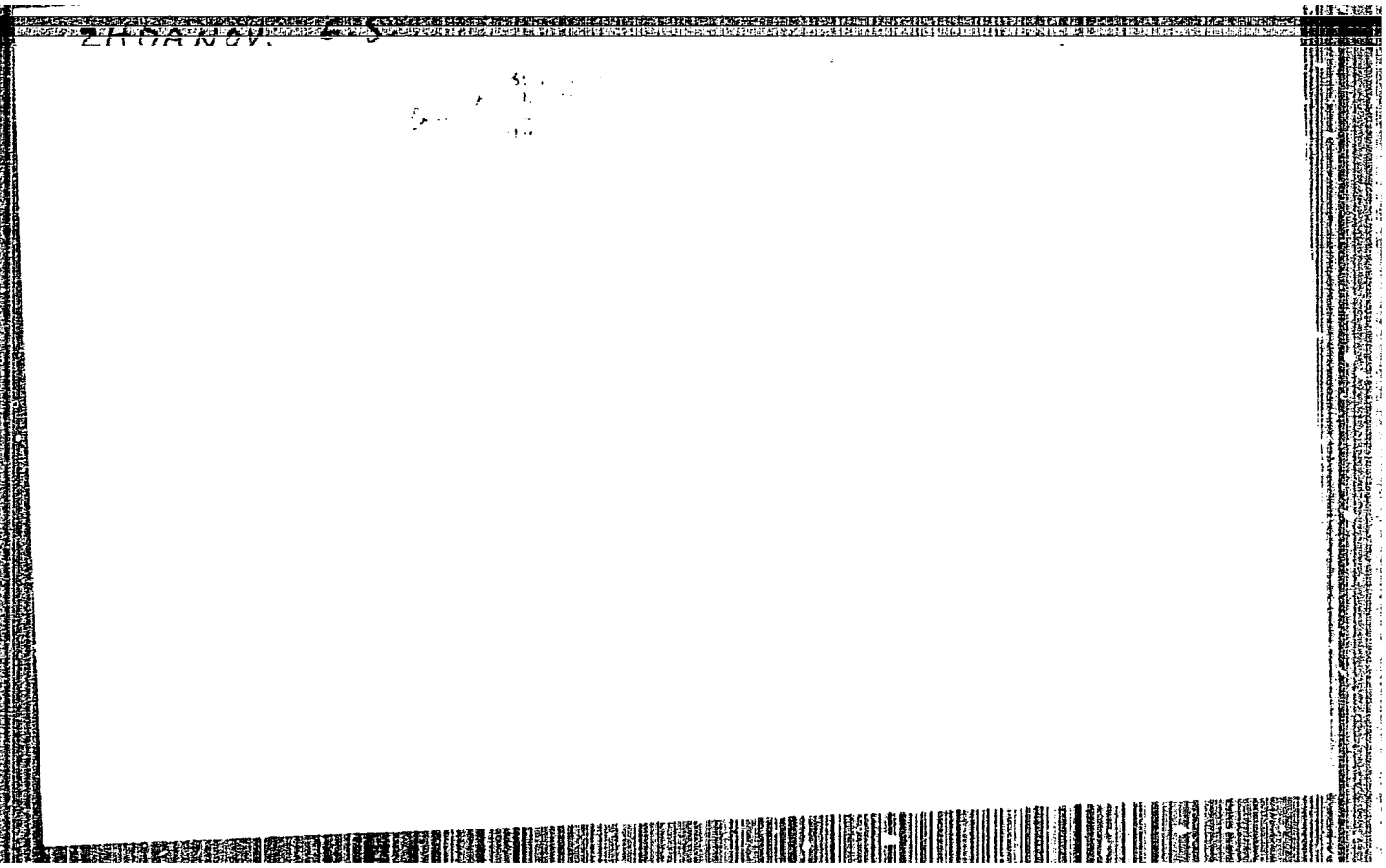
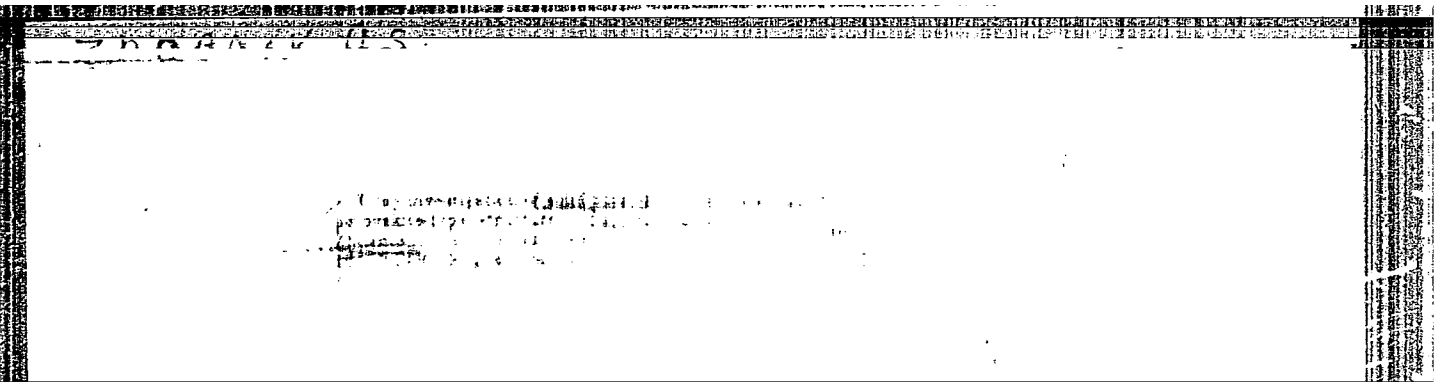
Card : 1/1

ZHDANOV, G.S., SHENDRUK, T.N., VENEVT SEV, YU.N,

"Investigation by the X-Ray Method of the System $PbTiO_3$ - '$PbSnO_3$;'" by Yu. N. Venevtsev, G. S. Zhdanov, and T. N. Shendrik, Physicochemical Institute imeni L. Ya. Karpov, Kristallografiya, Vol 1, No 6, Nov/Dec 56, pp 657-665

An extensive solid solution area of Pb (Ti, Sn) O_3 extending up to 75 mol % of "$PbSnO_3$" (actually Pb_2SnO_4 + SnO_2) has been found to exist in the system $PbTiO_3$ - "$PbSnO_3$". It was established that the constitutional diagram of the solid solution Pb (Ti, Sn) O_3 resembles that of Pb (Ti, Zr) O_3, but differs from that of Ba (Ti, Sn) O_3. The conclusion is drawn that the mechanism of the spontaneous electrical polarization of the seignetto-electric substance $BaTiO_3$ differs from that of $PbTiO_3$, although the two were regarded as completely analogous up to now. This conclusion is based in part on X-ray crystallographic data which show that while in $PbTiO_3$ crystal cells Pb cations are displaced, Ti cations are displaced in $BaTiO_3$ cells.





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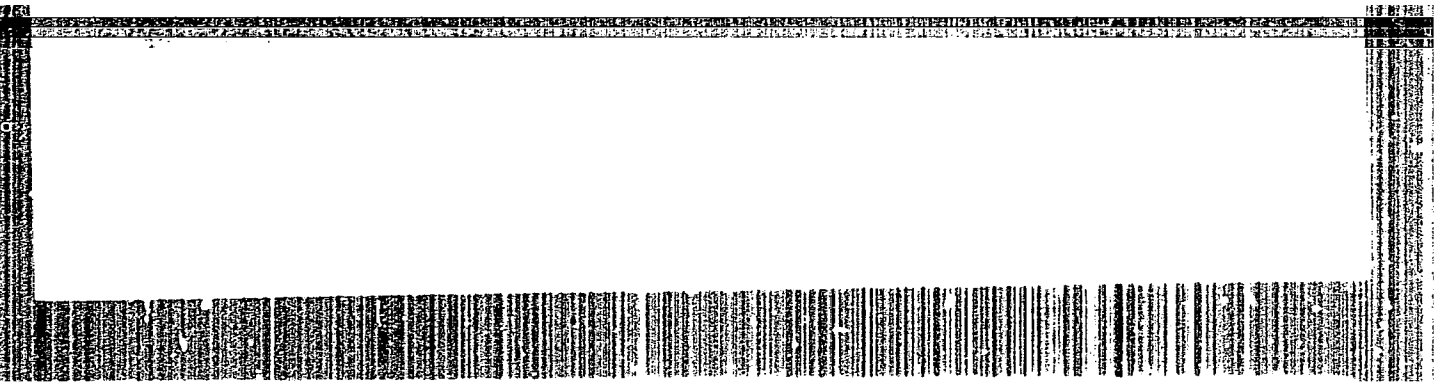

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Zhdanov, G.S.

USSR/ Physical Chemistry - Crystals B-5

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7262

Author : Venevtsev, Yu.N. and Zhdanov, G.S.
Inst : Academy of Sciences USSR
Title : X-ray Structural Analysis of Solid Solutions of Ferroelectrics with Structures of the Perovskite Type

Orig Pub : Izv. AN SSSR, Physical Series, 1956, Vol 20, No 2, 178-184

Abstract : The basic results of the investigation of the systems $PbTiO_3$ (I)-$PbSnO_3$ (II) and $PbZrO_3$ (III)-II are presented. It is established that samples of composition II prepared by sintering PbO and SnO_2 at temperatures of 800-1,500° are not compounds but consist of two phases, Pb_2SnO_4 and SnO_2. The investigation of the I-II system yielded results which differ somewhat from previously published data (RZhKhim, 1956, 21833). Thus at 55 mole percent II a transition is observed from tetragonal syngony to

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USSR/ Physical Chemistry - Crystals B-5

Abs Jour : Referat Zhur- Khimiya, No 3, 1957, 7262

rhombohedral. This relation had not been observed earlier. A phase diagram of the solid solution $Pb(Ti, Sn)O_3$, differing from that for $Ba(Ti, Sn)O_3$, has been constructed. In the system II-III abroad region of solid solution based on III and extending up to 75 mole percent II can be observed. With increasing II content the Curie temperature increases slightly and between the para- and antiferroelectric modifications there appears a ferroelectric modification with rhombohedral symmetry. The region in which this intermediate phase is formed increases in extent with II content. A similarity has been established between the phase diagrams of $Pb(Ti, Sn)O_3$ and $Pb(Zr, Sn)O_3$ and that of $Pb(Ti, Zr)O_3$. A classification of the ferroelectrics and antiferroelectrics ABO_3 with structures of the perovskite type is proposed, based on the ferroelectrically active cation (A or B). $BaTiO_3$ and $KNbO_3$ can be assigned to the group of compounds in which polarization

Card 2/3

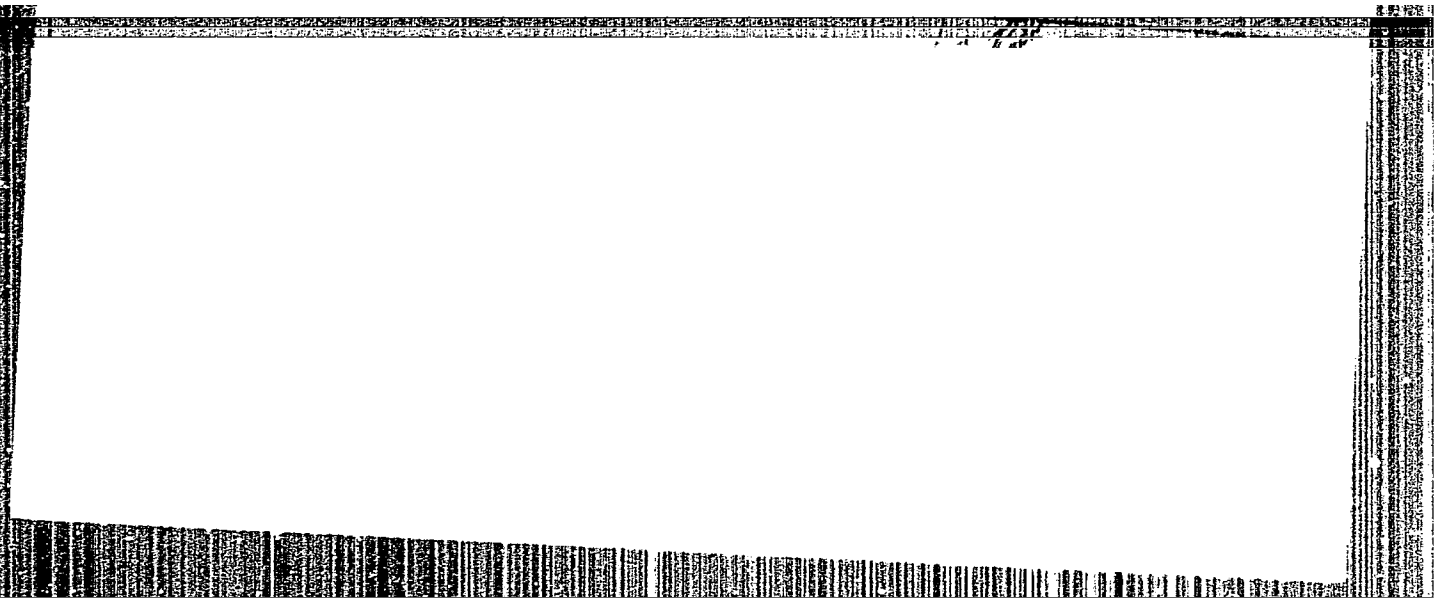
USSR/ Physical Chemistry - Crystals

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620005-6

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7262 B-5

is due to the motion of the cation B. The compounds $KTaO_3$, $PbTiO_3$, $SrTiO_3$, $PbHfO_3$, $PbZrO_3$, $NaNbO_3$, $NaTaO_3$, $CdTiO_3$ can be assigned to the second group, in which polarization is due to the cation A. A conclusion is drawn on the applicability of the ionic model to the geometrical analysis of the possible atomic displacements in the compounds under discussion, using the factor t. For the first group of compounds $t \sim 1$, for the second, $t < 1$. For the ferroelectrics and antiferroelectrics with $t < 1$ and cations A of like valency, it has been established that at otherwise equal conditions the Curie temperature increases the greater the polarization due to the cation A and the smaller the parameters of the unit cell.

Card 3/3



APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620005-6"

ZHDANOV, G.S.

D-5

USSR / Physics of Low Temperatures.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9054

Author : Zhuravlev, N.N., Zhdanov, G.S.
Inst : Physics Faculty, Moscow State University
Title : X-Ray Diffraction Investigation of Compounds in the Bi-Rh and Bi-Pd Systems in Connection With a Study of Superconductivity.

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 6, 708-713

Abstract : An investigation of the Bi-Rh system has shown that this system contains three intermetallic compounds: Bi-Rh (I), Bi_2Rh (II), and Bi_4Rh (III). For isolated crystals of these compounds, data are determined on their crystalline structure, and also certain physical properties, including the temperature T_c of transition to the superconducting state. For I, $T_c = 2.06^{\circ}$ K. It is established that two out of three modifications of II (α and β) do not go into

Card : 1/2

D-5

USSR / Physics of Low Temperatures.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9054

Abstract : the superconducting state at temperatures down to 1.3° K. From among the three modifications of (III), the α modification displays no superconductivity down to 0.1° K. For the β and γ modifications, T_c = 3.2 and 2.7° K. Analogous investigations were made for the Bi-Pd system. Data are given on the crystalline structure and on certain physical properties of the compounds Bi_2Pd (IV) and BiPd(V). Two modifications are established for IV: α (T_c = 1.7° K) and β (T_c = 4.25° K). For (V), T_c = 3.7° K. The low-temperature behavior of Bi in conjunction with Rh and Pd subjected to various heat treatments, is evaluated in connection with the properties of the investigated systems. The polymorphic transformations in these binary compounds on the value of T is emphasized.

Card : 2/2

ZHDANOV, G.S.

B-5

USSR/ Physical Chemistry - Crystals

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10929

Author : Glagoleva V.P., Zhdanov G.S.
Title : Structure of Superconductors. IX. Roentgenographic Determination of the Structure of Alpha-Bi_4Rh

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 2, 248-251

Abstract : For the purpose of determining the atomic pattern, a roentgenographic investigation was made of the structure of low-temperature modification of Bi_4Rh (Part VIII, RZhKhim, 1956, 3217). Recordings were made by the oscillation method with Cu radiation. Total number of independent reflections 235. Position of Bi and Rh atoms determined from cross section of F^2-series and subsequent application of geometrical analysis and method of samples. Verification of selected variants and precise determination of coordinates of Bi atoms were effected by repeated plotting of zonal projection of electronic plane between x=0 and $z=\frac{1}{2}$; those of Rh atoms by calculation of section of electronic density series on straight line (x,1/4,1/8). Position of atoms: Bi at 96(h) with x 0.024, y 0.436, z 0.153; Rh at 24(c). Coordination polyhedrons of Rh atoms are octahedrons; twisted right and left cubes,

Card 1/2