

ZVIAGIL'SKAYA, R.A.; KARAPETYAN, N.V.

Characteristics of the cytochromic composition of intact cells and
mitochondria of the yeast *Endomyces magnusii*. Dokl. AN SSSR 163 no.2:
497-499 J1 '65. (MIRA 18:7)

1. Institut biokhimi im. A.N.Bakha AN SSSR. Submitted October 5, 1964.

ZVYAGIL'SKAYA, R.A.

Study of the electron transfer chain in mitochondria
from *Endomyces magnusii*. *Biokhimiia* 29 no.5:812-819
Jl-Ag '64. (MIRA 18:11)

1. Institut biokhimi imeni Bakha AN SSSR, Moskva.

USSR/Chemistry - Physical chemistry

Card 112 Part 147-1935

Authors : G. I. Gerasimov, M. A. Kuznetsov, V. I. and Z. I. Radtsig, I. N.

Title : Adsorption of hydrogen on active carbons

Periodical : Zhur. fiz. khim. 30/1, 220-222, Jan 1956

Abstract : Investigation was made to determine the relation between adsorption and the concentration of Se in an alloy as well as the reverse. Experimental data regarding the effect of adsorption on the rate of desorption of active carbons at an adsorption temperature of 20°C are given. A sharp increase in the rate of desorption was observed immediately after an

Institution : Acad. Sci., USSR, Inst. of Metallurgy, Moscow

Submitted : April 30, 1955

Card 2/2 Pub. 147 - 29/35

Periodical : Zhur. fiz. khim. 30/1, 220-222, Jan 1956

Abstract : an increase in temperature. It was found that Se is well adsorbed by activated carbons (up to 1 g per 1 g of the adsorbent). The part of the Se bound with the carbon is practically irreversible as result of a chemical reaction or formation of a solid Se solution in the carbon. Three references: 1 USA, 1 French and 1 Germ. (1895-1933). Tables; graph; drawing.

BIRYUZOVA, V.I.; ZVYAGIL'SKAYA, R.A.; MALATYAN, M.N.; VOLKOVA, T.M.

Electron microscopic and cytochemical study of mitochondria
from yeast cells. Mikrobiologiya 33 no.3:442-446 My-Je '64.
(MIRA 18:12)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii
AN SSSR i Institut biokhimii imeni A.N.Bakha AN SSSR. Submitted
June 27, 1963.

VASIL'YEV, Yu.M.; ZVYAGEL'SKIY, A.A.; PODGORBUNSKIY, S.L.

Chelkar saline massif in the northern part of the Caspian Sea region.
Dokl. AN SSSR 121 no.6:1065-1069 A '58. (MIRA 11:10)

1. Moskovskiy neftyanoy institut im. I.M. Gubkina. Predstavleno akademikom S.I. Mironovym.
(Chelkar region--Mines and mineral resources)

007120-121-6-25745

AUTHOR:

Vasil'yev, Yu. M., Zayagel'skiy, A. G., Sadgorounskiy, S. I.

TITLE:

The Cheikar Saline Massif in the Northern Caspian Region
(Cheikarskiy solyanoy massiv v Severnom Prikaspii)

PERIODICAL:

Doklady Akademii Nauk S.S.S.R., 1958, Vol 121, Nr 6, pp 1065-1067
(USSR)

ABSTRACT:

Among the great salt massifs of the Caspian depression only the massif mentioned in the title has remained uninvestigated. In 1952 it was gravimetrically discovered. Only since 1952 systematic investigations of the Cheikar massif have been carried out: thus informations for the identification of its geological structure were gained on large scale. The mentioned massif lies 85 km south-east of the city of Ural'sk. In the surface relief the mountain of Sassy, south of the Cheikar sea corresponds to it. At this place also the greatest gravimetric minimum of the entire Caspian region (Prikaspii) was found. First of all the extraordinary size of the massif is recognized: a surface of more than 4 000 km². Thus this massif is 80 - 100 times bigger than a normal salt dome as it is typical for this region. The core of the massif consists of a thick

Card 1/1

1959-201 21-B-57/25

The Ushkay Saline Massif in the Northern Caspian Region

salt-bearing mass which has Kurgur age. The salt is pale-blue, yellowish or light-gray. It is either massive or medium and coarsely crystalline, respectively. At some places the salt is impure with sand and loam. The main mass consists of halite, in some places, however, it has intermediate strata of anhydrite. Frequently intermediate strata and lenses of pink and orange spotted sylvinite occur. On its arch the saline core is covered by a stone cap (kamennyy shlyapak) which is 100 - 200 m thick and consists of white light-gray gypsum, blueish anhydrite and dark-gray loam. Lime and dolomite lenses occur rarely. The whole mass is considerably kneaded and on some places changed to breccia. Figure 1 gives a survey on the orotectonic of the massif. From investigations and comparison of the cross sections basic features of the tectonic development of the massif in the Mesozoic may be derived. The most characteristic features are repeated manifestations of rising tectonic movements of great intensity and long duration. Since the Middle Jurassic abrasion destruction has acted on the and Triassic mass on the arch of the massif. In some places this encroachment destroyed even parts of the massif. There is

The Chekar Saline Massif in the Northern Caspian Region

NOV/20-12-6-13/48

1 figure.

ASSOCIATION: Moskovskiy neftyanoy Institut im. I. M. Gubkina (Moscow In-
stitute of **Petroleum** named I. M. Gubkin)

PRESENTED: April 26, 1958, by S. I. Mironov, Member, Academy of Sciences,
USSR

SUBMITTED: April 21, 1958

Card 3/3

ROTEL'NIROVA, A.V.; ZVIAGIL'SKAYA, R.A.

Effect of inhibitors on oxidative phosphorylation in the mitochondria
of *Endomyces magnusii* yeast. Mikrobiologiya 33 no. 2:207-
209 Mr-Apr '64. (MIRA 17:12)

1. Institut biokhimi imeni A.N. Bakha AN SSSR.

ZVYAGEL'SKIY, M.

Radio at the Czechoslovakian exhibition. Radio no. 12:13-14 D '55.
(Moscow--Radio--Exhibitions) (MIRA 9:4)

"A study of oxidative phosphorylation and ATPase Activity of mitochondria from yeast Endomyces Magnusii."

report submitted for 6th Intl Biochemistry Cong, New York City, 26 Jul-1 Aug 64.

ZVY
APPROVED FOR RELEASE Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4
CIA-RDP86-00513R002065720005-4"

"The Problem of $\text{BeO} \cdot 3\text{Al}_2\text{O}_3$ Compounds," Dok. AN, 68, No. 2,
1949.

Cordierite. Pottery

Mechanics of producing cordierite and its stability. Dokl. AN SSSR, 81, no. 5, 1951.
Khimiko-tekhnologicheskii Institut im. D. I. Mendeleeva. Red. 26 March 1951

SO: Monthly List of Russian Accessions, Library of Congress, May ² 1953, Uncl.

ZVYAGIL'SKIY, A.A.

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31581

Author : Zvyagil'skiy A.A., Avetikov V.G.

Title : Ways of Improving the Quality and Increasing
Reusability of Sagggers at Insulator-Porcelain
Plants

Orig Pub: Sb.: Kapseli i karkasnyye ognepornyye detali,
primenyayemye v keram. prom-sti. M., Prom-
stroyizdat, 1956, 81-99

Abstract: Results are reported of studies of the effects,
on properties of sagggers, of the following factors: -
composition of the binder portion of the mix; grain-
size composition of chamotte; preliminary moistening

Card 1/3

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31581

of chamotte; working the paste twice and aging it thereafter; addition of talc, alumina and carborundum, in amounts of 3-20%, to the chamotte paste. For the usual chamotte paste for saggars the following optimal composition is recommended (in % by weight): clayey portion (Latnenskaya + Chasov-Yarskaya Clay + kaolin) 45, chamotte 55, including 17-20 of 5-2.5 mm grain, 25-29 of 2.5-0.5 mm and 7-10 of less than 0.5 mm. Reusability of saggars containing 15-30% alumina, when articles are fired at 1400°, is about 8 times, on addition of 8-10% Shabrovskiy talc, it is of about 10 times, but the temperature at which the articles are fired in the furnace must not exceed 1320°.

Card 2/3

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31581

Most effective is incorporation into the paste of
20% SiC, having a grain size of less than 1 mm;
reusability of such sagger is of about 20 times.

Card 3/3

ZVYAGIL'SKIY, A.A.

Translation from: Referativnyy zhurnal, Elektrotehnika, 1957, Nr6, p.13 (USSR)

AUTHOR: Voronkov, G.N., Zvyagil'skiy, A.A., and Krétova, N.F.

TITLE: High-Voltage Porcelain of Better Electromechanical Properties from Boron-Containing Raw Material (Vysokovol'tnyy farfor s povyshennymi elektromekhanicheskimi svoystvami na osnove borosoderzhashchego syr'ya)

PERIODICAL: Tr. Gos. issled. elektrokeram. in-ta, 1956, Nrl, pp.5-16

ABSTRACT: As it was necessary to improve the mechanical and electrical characteristics of porcelain a new type of porcelain was developed in GIEKI on the basis of a boron-containing (asharit) ore, alumina, clay materials and a small amount of alkali-earth compounds. No quartz or feldspar was introduced. The use of ascharite ore ($2MgO \cdot B_2O_3 \cdot H_2O$) as a fusing agent, instead of $CaCO_3$ or $BaCO_3$, and also the introduction of commercial Al_2O_3 with an increased content of kaolin insured the close-packed structure of porcelain, in which the crystals of mullite formed a felt-like lattice and were uniformly distributed in the vitreous phase. There is a negligible amount of free sections of glass in the ascharite porcelain, but there are finely grained clusters of α -alumina. As the ascharite porcelain has a lower coefficient of linear expansion (3.9×10^{-6}) than the ordinary feldspar porcelain (6×10^{-6}), two new glazes (white and brown) were developed having less alkali oxide content. Due to

Card 1/2

112-6-11867

Translation from: Referativnyy zhurnal, Elektrotehnika, 1957, Nr6, p.13 (USSR)

the more uniform structure and other factors the ascharite porcelain has almost double mechanical strength as compared to the feldspar porcelain. Nonalkaline vitreous phase insures higher values of volume electrical resistivity and electric strength, and lower values of the dielectric loss angle. Preparatory procedures and the manufacture of insulators can follow regular methods of the electrical porcelain manufacture. The only additional operation is the introduction of sinter into the mass of ascharite porcelain. Optimum firing temperature 1310 -1330°C. Ascharite and feldspar insulators can be fired jointly, but the sintering interval of the ascharite units is shorter than that of the ordinary electrical porcelain (30-40° against 60-80°C). Thermographic and chemical investigations of the ascharite ore have shown that for electrical porcelain purposes it should have at least 22% B₂O₃ and 23% MgO. The density of ascharite ore should be at least 2.67 g/cm³, the firing loss should not be over 18%. Bibliography: 6 titles.

N.V.N.

Card 2/2

INVENTOR: Avetikov, V. G.; Boldyreva, G. V.; Zvyagil'skiy, A. A.; Nedel'ko, E. Ye.

ORG: none

58
B

TITLE: Ceramic material. Class 21, No. 184303 ¹⁵

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 44

TOPIC TAGS: ceramic material, aluminum oxide base material, boron sesquioxide
~~containing material~~, refractory, ~~ceramic material~~, low dielectric loss material

ABSTRACT: This Author Certificate introduces an Al_2O_3 -base ceramic material ¹⁵ used in electronic and radioelectronic devices. The material contains 97-98% Al_2O_3 , 1.7-2.2% B_2O_3 , and 0.6-0.8% MgO and has low dielectric losses and high mechanical strength at high temperatures. [MS]

SUB CODE: 09/ SUBM DATE: 22Mar65/ ATD PRESS: 5070

BUDNIKOV, P.P.; ZVYAGIL'SKIY, A.A.

Sintering of beryllium oxide. Ogneupory 26 no.11:525-530 '61.
(MIRA 17:2)

ZVYAGIL'SKIY, A.A., kand.tekhn.nauk; BOKUNYAYEVA, V.I.

Investigating feldspathic raw materials from the Urals. Trudy GIEKI
no.4:3-17 '60. (MIRA 15:1)

(Ural Mountains--Feldspar)

ZVYAGIL'SKIY, A.A., kand.tekhn.nauk; TIMOKHOVA, M.I., inzh.

Investigating certain processes of hydrostatic pressing in rubber
molds. Trudy GIEKI no.4:106-120 '60. (MIRA 15:1)
(Ceramics) (Electric insulators and insulation)

29396
S/131/61/000/011/001/002
B105/B101

15.2230

AUTHORS: Budnikov, P. P., and Zvyagil'skiy, A. A.

TITLE: Sintering of beryllium oxide

PERIODICAL: Ogneupory, no. 11, 1961, 525 - 530

TEXT: The authors investigate the effect of mineralogical and physico-chemical factors on the tendency to cake of beryllium oxide for the manufacture of dense ceramic products. Beryllium hydroxide with a content of 98.7 % BeO, and MgO and CaO admixtures served as initial material. The experiments were conducted at temperatures between 900 and 1700°C in intervals of 200 and 100°C. Shrinkage, water absorption, specific gravity, weight by volume, porosity, refractive index, dimensions of crystal grains, total specific surface, degree of chemical activity during dissolving in acid and alkali, adsorption properties, and dynamics of losses in weight as a function of calcination temperature, were investigated. The effect of admixtures of hydroxides and slightly glowd BeO on the ceramic properties, and the effect of plasticizers (7 - 10 % paraffin wax, 7.5 % starch solution, 5 % BeCl₂ solution) were studied. Optimum tendency to cake is

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29396
S/131/61/000/011/001/002
B105/B101

Sintering of beryllium oxide

obtained by: (1) preceding glowing of beryllium hydroxide at 1350 - 1500°C; (2) production of BeO with maximum specific gravity; (3) preceding grinding of the calcined BeO up to an average grain size of below 2 - 3 μ with structural defects of the grains; (4) use of 20 - 30 % material in hydrate- and low-temperature calcined form, respectively; (5) use of plasticizers to insure homogeneity; (6) high specific molding pressure; (7) prolonged exposure at final firing temperatures for recrystallization. Elevated firing temperature of beryllium oxide results in internal rebuilding, change of physicochemical properties, shape and dimensions of crystals, consolidation and solidification, sintering and recrystallization. There are 5 figures, 6 tables, and 8 references: 6 Soviet-bloc and 2 non-Soviet-bloc. The three references to English-language publications read as follows: E. Ryschkewitsch. Microstructure of Sintered Beryllia. Trans Brit. Cer. Soc., 1960, v. 59, no. 8; R. E. Lang and H. Z. Schofield. Beryllia, Reactor Handbook v. 4. Materials, USA, Geneva, 1955; F. H. Norton. Journ. Amer. Cer. Soc., 1947, v. 30, p. 242. X

PEVZNER, R.L.; ZVYAGIL'SKIY, A.A.; FINKEL'SHTEYN, S.I.

Efficient technology in making pressed electric insulators.
Stek. i ker. 18 no.2:19-24 F '61. (MIRA 14.3)
(Electric insulators and insulation)

15(2)

AUTHORS:

Budnikov, P. P., Zvyagil'skiy, A. A.

SOV/72-59-7-2/19

TITLE:

dobavok

The Influence of the Additions of BeO and Commercial Alumina on the Main Properties of the Electrical Engineering Procelain (Vliyaniye BeO i tekhnicheskogo glinozema na osnovnyye svoystva elektrotekhnicheskogo farfora)

PERIODICAL:

Steklo i keramika, 1959, Nr 7, pp 3 - 7 (USSR)

ABSTRACT:

The purpose of this paper was the completion of the studies carried through formerly by P. P. Budnikov (Footnote 1). The initial mass contained 32% feldspar, 24% quartz, and 44% clayey materials. As additions BeO, commercial alumina and asharite ore were used. The samples were dried at a temperature of 110°C in the thermostat and burned at a temperature of 1220 till 1450° in reverberatory furnaces. In table 1 the water absorption and the weight by volume of the porcelain samples with addition of BeO are given burned at different temperatures. In figure 1 the linear shrinkage at different burning temperatures is given. In table 2 and figure 2 the water absorption and the weight by volume of the samples with addition of commercial alumina are given. These values correspond to the investigation results of the Chair of Ceramics and Refractories of the MKhTI imeni Mendeleev as may be seen from the investigation of D.N. Poluboyarinov

Card 1/3

**The Influence of the Additions of BeO and Commercial Alumina, SOT/72-59-7-2/19
on the Main Properties of the Electrical Engineering Porcelain**

(Footnote 2). In table 3 the average values of the bending strength of samples are given which were burned at optimum temperatures. The addition of small amounts of BeO and commercial alumina effects a lowering of the modulus of extension (Fig. 3) corresponding to investigations of P. P. Budnikov, S. G. Trekhvyatskiy and A. M. Cherepanov (Footnote 3). Furthermore the authors give the change of the electro-physical properties of the porcelain bodies in dependence of the composition and amount of the additions (Table 4) by mentioning the study of S. I. Skanavi (Footnote 4). The dielectric losses are lowered by the addition of small amounts of Be₂O₂ as it results from the investigations of G. N. Voronkov, A. A. Zvyagil'akiy, N. F. Kretova (Footnote 5). Conclusions. An addition of small amounts of BeO (0.5 till 1%) lowers both the sintering temperature for 40 till 60 degrees and the coefficient of thermal expansion and increases the heat stability and the electrophysical characteristics of the electric porcelain. An addition of small amounts of B₂O₃ (up to 1. %) into the highly aluminous porcelain bodies causes a strong mineralizing effect and

Card 2/3

**The Influence of the Additions of BeO and Commercial Alumina SOV/72-59-7-2/19
on the Main Properties of the Electrical Engineering Porcelain**

allows to obtain electric porcelain of high values and to improve strongly its insulating properties. There are 3 figures, 4 tables, and 5 Soviet references.

SOV/112-58-1-107

Translation from: Referativnyy zhurnal, Elektrotehnika, 1958, Nr 1, p 11 (USSR)

AUTHOR: Zvyagil'skiy, A. A.

TITLE: Ways to Improve Refractory-Clay Containers for Calcination of Electrical Porcelain (Puti povysheniya kachestva kapsel'nogo ognepripasa dlya obzhiga elektrotekhnicheskogo farfora)

PERIODICAL: Inform.-tekhn. sb. M-vo elektrotekhn. prom-sti SSSR, 1956, Nr 3 (87), pp 23-28

ABSTRACT: Refractory containers for calcinating electrical porcelain are prepared from an unseasoned mass; the refractory-clay mass is treated once or twice in screw-type or blade-type mixers; the containers are often molded manually. They are calcined at 900-1000° C. With such processing, the turnover of containers in insulator calcination is 2.5-3 times, requiring insulator plants to produce 1.5-2.0 tons or more refractory-clay mass per ton of porcelain. It has been found that clay-grog masses typical of most insulator plants have low mechanical strength and differ little in their thermal endurance. The

Card 1/3

SOV/112-58-1-107

Ways to Improve Refractory-Clay Containers for Calcination

refractory masses containing kaolin have higher bending strength and compression strength compared to masses containing only Chasov-Yar or Latin clay without kaolin. The type of clay bond does not influence shrinkage, volumetric weight, or material porosity. As grog content increases at the expense of clay components, the thermal endurance of refractory masses increases but their mechanical strength decreases and their porosity increases. Increasing grog-grain dimensions (over 5 mm) drastically decreases the mechanical strength and thermal endurance of the refractory product. The best composition of a mold-type refractory mass is: 45% clay bond and 55% grog with grains 5-2.5 mm. Preliminary humidification of grog and triple working of steam-treated mass (within 16 hours) drastically increases the thermal endurance and mechanical strength of the samples. Cast-type refractory masses secure a greater thermal endurance and mechanical strength compared to mold-type masses. The following measures are recommended for improving existing processes at insulator plants: a layer-by-layer placement of clay materials

Card 2/3

SOV/112-58-1-107

Ways to Improve Refractory-Clay Containers for Calcination of Electrical

and grog, and a uniformly distributed steam treatment of the mass, as well as uniform drying of molded containers (turning them over after 15-16% humidity is reached) or use of conveyer-type dryers and calcination at a temperature of 1250-1300° C, or higher.

N. V. N.

AVAILABLE: Library of Congress

1. Containers--Production
2. Clays--Properties
3. Refractory materials--Performance
4. Refractory materials--Properties
5. Insulators (Electric)--Processing

ACC NR: AM6000298

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PART THREE

Methods for Strength and Vibration Tests on Hydrofoil Craft

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Appendix I. The results of strength and vibration tests performed on the "Vikhr" ocean-going hydrofoil -- 189

SUB CODE: 13, 14/ SUBM DATE: 03Jul65/ ORIG REF: 048/ OTH REF: 010

ZVYAGIL'SKIY, L. Ya. insh.

**Combined milling cutter and drill for drilling and milling openings in
engine-cylinder sleeves. Energiomashinostroenie 4 no.9:43 S '58. (HIRA 11:11)
(Tools)**

ZVYAGIL'SKIY, Leonid Yakovlevich; YAKOVLEV, Radomir Gerontevich;
SEMELENKO, P.A., inzh., red.; KUBNEVA, M.M., tekhn.red.

[Pneumatic chucks for lathes; colletless pneumatic chucks for
turret lathes; colletless chucks with automatic feed for
turret lathes] Pnevmaticheskie patrony k tokarnym stankam;
Bestsangovyi pnevmaticheskii patron k revol'vernyim stankam;
Bestsangovyi patron s avtomaticheskoi podachei materiala k
revol'vernyim stankam. Leningrad, 1959. 14 p. (Leningradskii
dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom.
Seria: Mekhanicheskaya obrabotka metallov, vyp.9).

(Lathes)

(MIRA 13:3)

PHASE I BOOK EXPLOITATION SOV/3803

Zvyagil'skiy, Leonid Yakovlevich, and Radomir Gerontevich Yakovlev

Pnevmaticheskiye patrony k tokarnym stankam. Bestsangovyy pnevmaticheskiy patron k revol'vernyym stankam. Bestsangovyy patron s avtomaticheskoy podachey materiala k revol'vernyym stankam (Pneumatic Chucks for Lathes. Pneumatic Chuck Without Collet for Turret Lathes. Chuck Without Collet With Automatic Feed of Work for Turret Lathes) Leningrad, 1959. 17 p. 6,500 copies printed. (Series: Obmen peredovym opytom. Seriya: Mekhanicheskaya obrabotka metallov, vyp. 9)

Sponsoring Agencies: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR; Leningradskiy dom nauchno-tekhnicheskoy propagandy.

Ed.: P.A. Semenenko, Engineer; Tech. Ed.: M.M. Kubneva.

PURPOSE: This booklet is intended for tool designers, production engineers, and students of machine and tool design.

Card 1/2

Pneumatic Chucks (Cont.)

SOV/3803

COVERAGE: A description is given of new designs of pneumatic chucking devices without collet. These new pneumatic chucks are the self-locking type, easy to mount on existing lathes, and said to be superior to the three-jaw pneumatic chucks now used. The text contains numerous detailed drawings of the new chucking devices accompanied by a description of operating characteristics. Schematic diagrams of the pneumatic circuits for the actuation of the chucking devices are also presented. No personalities are mentioned. There are 4 Soviet references.

TABLE OF CONTENTS: None given.

AVAILABLE: Library of Congress

Card 2/2

VK/jb
6-17-60

YAKOVLEV, Boris Yevgen'yevich; ZVIAGEL'SKIY, M.M., red.; AKKERMAN, D.A.,
red.; ROGOVSKAYA, Ye.R., red.; KRYUCHKOVA, V.N., tekhn.red.

[Czech-Russian radio engineering dictionary] Cheshsko-russkii
radiotekhnicheskii slovar'. Pod red. M.M. Zviagel'skogo.
Moskva, Glav.red.inostr.nauchno-tekhn.slovari Fizmatgiz, 1960.
364 p. (MIRA 74:4)

(Radio--Dictionaries)

(Czech language--Dictionaries--Russian language)

. ZVYAGIN, A., podpolkovnik

Change the purchasing procedure for building materials. Tyl i snab.
Sov. Voor. Sil. 21 no.8:90 Ag '61. (MIRA 14:12)
(Military posts--Repairing) (Building materials--Prices)

ACC NR: ARG034734 (N) SOURCE CODE: UR/0124/66/000/008/V052/V052 1/0

AUTHOR: Zvyagin, A. D.

TITLE: Procedure of testing the strength and vibration of hydrofoil boats 14

SOURCE: Ref. zh. Mekhanika, Abs. 8V424

REF SOURCE: Tr. Gor'kovsk. politekhn. in-ta, v. 21, no. 1, 1965, 26-35

TOPIC TAGS: hydrofoil, structure stability, vibration, static test, vibration test, marine vibration test, strength test

ABSTRACT: General problems have been discussed for the organization and performing of strength and vibration tests of hydrofoil boats, including the equipment to be used and standard test program. Methods are recommended for stress-loading hulls and individual structures. Examples of tests conducted are given, and the data obtained are presented for static and marine tests with general and local vibrations. G. S. Migirenko. [Translation of abstract]

SUB CODE: 13/

Card 1/1 *lmc*

ZVYAGIN, Aleksandr Dmitriyevich; SHABAROV, Vladimir Vasil'yevich;
KRUPITSKIY, E.Z., inzh., retsenzent; CHUVIKOVSKIY, G.S., inzh.
retsenzent; BOCHKOV, B.F., kand. tekhn. nauk, nauchm. red.;
VLASOVA, Z.V., red.

[Testing the strength and vibrations of ships on underwater
wings] Ispytaniia prochnosti i vibratsii sudov na podvod-
nykh kryl'iaxh. Leningrad, Sudostroenie, 1965. 211 p.

(MIRA 18:11)

S/0181/64/006/004/1013/1017

ACCESSION NR: AP4028422

AUTHORS: Yeremenko, V. V.; Zvyagin, A. I.

TITLE: Light absorption by cobalt fluoride crystals above and below the Neel temperature

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1013-1017

TOPIC TAGS: light absorption, cobalt fluoride, Neel temperature, antiferromagnetic state, electron phonon interaction, Van Vleck mechanism, absorption band

ABSTRACT: The authors considered the effect of temperature in the interval 20-400K on the absorption band in single crystals of CoF_2 in the near infrared region (wavelength of ~ 1.4 microns), above and below the point of antiferromagnetic ordering (Neel temperature of about 38K). The parameters of the absorption band do not change anomalously during transition of the material at the Neel temperature. To find an explanation for this, the limits of the absorption band were defined, and possible mechanisms for the formation of the band were considered. It is concluded that the principal causes are the great force of electron-phonon interaction and the Van Vleck mechanism of allowed transition. As for the temperature dependence of the absorption maximum in the frequency scale, it is found that when the optical

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ACCESSION NR: AP4028422

transition of the ionic spin moment does not change, the absorption band may shift in the frequency scale (because of exchange interaction) only when there is a marked change in the exchange integral during transition to the excited state. "In conclusion, we take this opportunity to thank Professor B. I. Verkin, corresponding member of the AN UkrSSR, for his constant interest in the work, and we thank V. G. Yurko for participating in the measurements." Orig. art. has: 4 figures and 2 formulas.

ASSOCIATION: Fiziko-tekhniicheskiy institut nizkikh temperatur AN UkrSSR, Kharkov (Physicotechnical Institute of Low Temperatures, AN UkrSSR)

SUBMITTED: 16Sep63

ENCL: 00

SUB CODE: OP, SS

NO REF SOV: 005

OTHER: 013

Card

2/2

ACC NR: AP5025393 SOURCE CODE: UR/0181/65/007/010/3102/3104

AUTHOR: Zvyagin, A. I.; Yeremenko, V. V.; Kut'ko, V. I.

ORG: Physicotechnical Institute of Low Temperatures AN UkrSSR, Kharkov (Fiziko-tekhnicheskii institut AN UkrSSR)

TITLE: Infrared absorption spectra of antiferromagnetic crystals in the $\text{CoF}_2(1-x)\text{-MnF}_2_x$ system

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 3102-3104

TOPIC TAGS: cobalt compound, manganese compound, fluoride, solid solution, single crystal, crystal theory, antiferromagnetic material, IR spectrum, absorption spectrum

ABSTRACT: The authors study the infrared absorption spectra of single crystal specimens containing 100, 90, 10 and 5% CoF_2 in systems where cobaltous and manganese fluorides form solid solutions. The spectral measurements were made in the 15-300°K range. The IR spectra of single crystal specimens of mixed composition are very similar to those of pure CoF_2 . The absorption intensity in the 100-200 cm^{-1} range decreases with a reduction in cobalt concentration without any noticeable deviation from Beer law, and may be compensated by an appropriate increase in the thickness of the specimen. The differences between the spectra of mixed specimens and those of pure cobaltous fluoride were a broadening of the bands in mixed specimens apparently

ACC NR: AP5025393

1
due to some irregularity in composition, and a considerable shift in the spectrum toward the low frequency region. When the crystals were cooled below the Néel point, an anomalous reduction was observed in the width of the Co^{2+} bands in both pure and mixed specimens, as well as a sharp shift in the frequency of these bands. However, the shift in pure CoF_2 is toward the longer waves, while the bands are shifted toward the shorter wave region in crystals with a high MnF_2 content. A theoretical explanation is given for this phenomenon based on the difference in the ground state exchange energies for the two types of crystals. In conclusion, we take this occasion to express our gratitude to N. N. Mikhaylov and S. V. Paltov who graciously furnished the single crystal specimens for the present study. Orig. art. has: 2 figures.

SUB CODE: 20,07/

SUBM DATE: 19Apr65/

ORIG REF: 008/

OTH REF: 006

HW
Card 2/2

70-3-15/20

AUTHOR: Iveronova, V.I., Zvyagin, A.P. and Katsnelson, A.A.

TITLE: The distortion of the crystal lattice in solid solutions.
(Iskazheniya kristallicheskoj reshetki v tverdykh rastvorakh)

PERIODICAL: "Kristallografiya" (Crystallography), 1957,
Vol.2, No.3, pp. 414 - 418 (U.S.S.R.)

ABSTRACT: The values of the mean square static displacement of atoms were calculated by means of the elastic model of solid solution. A comparison of the results of calculations with the experimentally measured values of U_{st}^2 are given. The values of U_{st} determined experimentally agree in order of magnitude with the calculated values; however, the theoretically required proportionality in the difference of atomic radii is not observed. An analysis of the probable causes of this divergence is given. The most essential must be the comparison of the values of the mean square displacements with the short-range order, determined according to the intensity of the background of the X-ray pattern.

Card 1/2

The dependence of the value of the mean square static displacements was studied in Cu-Sn, Fe-Co, Ni-Cr, Ni-Ti and Fe-C alloys. For low concentrations all the curves show a

70-3-15/20

The distortion of the crystal lattice in solid solution.
(Cont.)

linear dependence of α on concentration, which agrees with the calculations carried out on the ground of the elastic model. A saturation of the value of the mean square static displacements is observed at high concentrations; for Ni-Fe alloys the outline $\alpha = f(c)$ was obtained, which does not coincide with the theory. It was shown that in this case the values of U_{st}^2 , determined from X-ray patterns, with Mo and Cu radiation do not show mutual agreement. The picture observed is explained by the influence of primary extinction.

A curve of the dependence of the Debye temperature upon concentrations was deduced for Ni-Fe alloys. Using Cu, Au and Ni₃Fe alloys, the dependence of the Debye temperature upon the long-range order was shown. The Debye temperature of the ordered solid solution was found to be lower than that of the disordered one. There are 4 figures and 18 references, 13 of which are Slavic.

ASSOCIATION: Moscow State University im. M.V. Lomonosov.
(Moskovskiy Gosudarstvennyy Universitet im.
M.V. Lomonosova)

SUBMITTED: March 8, 1957.

AVAILABLE: Library of Congress

Card 2/2

KIRICHENKO, Vasilii Stepanovich, inzh.; FEYGEL'SON, B.Yu., kand.tekhn.
nauk, retsenzent; SUDAKIN, Ya.A., red.inzh.; pri uchastii:
PORVATOV, N.A., inzh.; KRASAVIN, D.P., inzh.; KOROBYNIKOV, M.M.,
inzh.; ROGOZHKIN, P.I., inzh.; YEVDOKOMOV, F.N., inzh.; STUPIN,
A.N., inzh.; ZVYAGIN, A.V., inzh.; SIROTIN, A.M., red.izd-va,
inzh., EL'KIND, V.D., tekhn.red.

[Water-cooled chill molds] Vodookhlazhdaemye kekili. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1958. 95 p. (MIRA 11:12)
(Molding (Founding))

ZVYAGIN, A.V.; CHERNIKOV, A.M.

Chill casting of large cast iron parts. Stroi. 1 der. mashinostr. 4
no.1:34-36 Ja '59. (MIRA 12:1)
(Molding (Founding))

ZVYAGIN, B.B.; MISHCHENKO, K.S.

Electron diffraction refinement of the muscovite structure. Kristallografiia 5 no.4:600-604 JI-Ag '60. (MIRA 13:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut.
(Muscovite--Spectra)

W. Eitel

Electronographic determination of the structure of montmorillonite. *B. Zussman and G. Plinkov* (Acad. Sci. U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 68, 65-7 (1949).—The electron-diffraction pattern ofaskanite (montmorillonite) is cited, and yields the following monoclinic elementary cell dimensions: $a_0 = 5.17 \pm 0.02 \text{ \AA}$; $b_0 = 8.91 \pm 0.03 \text{ \AA}$; $c_0 = 0.95 \pm 0.08 \text{ \AA}$; $\beta = 99^\circ 54' \pm 30'$. The space group is $C2h$, the symmetry of the pyrophyllite layers $C2h$. The high vacuum in which the electron diffraction is done eliminates the excess water content of ordinary montmorillonite to such a degree that the compn. is practically $Al_2(Si_4O_{10})(OH)_2$ with characteristic replacements of Al^{3+} ions by Fe, Mg, and of Si^{4+} by Al^{3+} . The agreement of the results with the detn. of the structure by x-ray diffraction is complete. The pseudohexagonal character of the structure is particularly seen in the position of the reflections (111) and (021) on the first, of (201) and (131) on the second, of (22) and (041) on the third, of (331) and (061) on the fifth ellipse curve of the diffraction diagram. W. Eitel

W. Eitel 2/27/57

Soils Inst. in Dokuchaev,
Inst Geol. Sci., AS USSR

Nature of the Askani clays and their mother rocks. B. B. Zvyagin, R. L. Lapilus, and V. P. Petrov (Akad. Nauk S.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 68, 377-381 (1979). The important montmorillonite clays of Askani are formed by decomposition of biotite andesite-trachyte tuffs. Two types of montmorillonites are distinguished: the scaly-earthly clay ("askanglin"), and the colloidal "askangel." The first does not form stable suspensions in water; askangel, on the other hand, forms very stable suspensions of a high thixotropy, and plasticity, but of low base-exchange capacity, in contrast to askanglin, which has a high capacity. The andesite-trachytes contain cavities with cristobalite, a mordenite-like fibrous zeolite, and K amorphous. The rock is glassy, with andesine phenocrysts, sandstone, and biotite. D. leucite is the typical chlorite mineral formed by the auto-metamorphic reactions in the glass. The electron microscopic examination showed the spindle-shaped crystallites of this chlorite mineral, with the elementary cell dimensions $a_0 = 5.22$; $b_0 = 9.04$; $c_0 = 15.1$ A.; $\beta = 99^\circ 30'$. They are compared to the previous structural data given by Pauling and Mc-Murphy. From the genetic viewpoint, the formation of askangel in deeper horizons, immediately above the mother rocks, and of askanglin in the higher horizons is related to

the particularly fine-sealy character of the first in the electron micrographs. It is, however, crystalline in its electron diffraction, but with widened and somewhat indistinct lines. The cell dimensions are $a_0 = 5.17$; $b_0 = 8.91$; $c_0 = 9.95$ A.; $\beta = 99^\circ 57'$, which are in good agreement with that of montmorillonite. The particles of askanglin have a much coarser-cryst. type, with indicated pseudo-hexagonal shapes, and much more distinct diffraction lines, on a strong amorphous background. All indications are given that in the askanglin more amorphous material is present than in askangel. The transition from askangel to askanglin is apparently combined with a thorough disturbance of the regularity of the structure, and the formation of amorphous material, but simultaneously with a coarser-sealy texture. The a_0 and b_0 dimensions are the same in both types. Askangel is the metasomatic product of mineralization of the glass in the mother rock, under definite phys.-chem. conditions, while askanglin represents a transition phase formed in surface-near horizons (kaolin type). W. Eitel

ZVYAGIN, B. B.

548,736.6

A 577

3544. Electronographic determination of the unit cells of pyrophyllite and talc and the structural relationship between these minerals and montmorillonite. B. B. ZVYAGIN AND Z. G. PRASIN. *Dokl. Akad. Nauk, S.S.S.R.*, 68 (No. 3) 504-8 (1949) in Russian. Using electronographic techniques [see Zvyagin and Pinsker, *ibid.*, 68 (No. 1) (1949)], two monoclinic layer-structure minerals were examined. 9 different types of pyrophyllite layers (Si₃O₁₀) can occur and may be stacked in various ways. The unit cell of talc has $a = 5.27 \pm 0.02$, $b = 9.13 \pm 0.02$, $c = 9.47 \pm 0.07$ Å, $\beta = 100^\circ 40' \pm 50'$, but it was impossible to resolve reflections which would indicate how the layers are arranged. In pyrophyllite, with $a = 5.13 \pm 0.02$, $b = 8.88 \pm 0.02$, $c = 18.54 \pm 0.10$ Å, and $\beta = 100^\circ 37' \pm 45'$, the two layers are of symmetry C₂ and their planes of symmetry are at 120° to each other. The bisector of this angle is the a axis and successive layers are displaced by a/3. The space group is C₂h = C2/m. Montmorillonite (space group C₂h = C2/m) has the same layers with the same displacement but with their planes of symmetry coinciding. A. L. MACKAY

CONCORD ELEMENTS

MATERIALS INDEX

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ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

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L 3356-66 EWT(1)/EWT(m)/T/EWP(t)/RWP(b) IJP(c) JD/W/GG
ACCESSION NR: AP5013474 UR/0185/63/010/005/0525/0530

AUTHOR: Zvyahin, A. I. (Zvyagin, A. I.); Yerdzenko, V. V.

TITLE: Infra-red absorption spectra of crystals of antiferromagnetic cobalt compounds

SOURCE: Ukrayins'kyi fizychnyy zhurnal, v. 10, no. 5, 1965, 525-530

TOPIC TAGS: IR absorption, antiferromagnetic materials, cobalt compound

ABSTRACT: The absorption of light was studied in the near infra-red region over a wide temperature range (from ~ 10 to 400°K) in a number of cobalt compounds (CoF_2 , CoO , CoCO_3 , CoCl) and crystalline ZnS with a small addition ($\sim 1\%$) of Co , all of which become antiferromagnetic at some definite temperature T_N . Samples were in the form of thin (0.03-0.05 mm) slices. Special care was taken to maintain the CoCl_2 free from water. In all the above compounds an absorption band was observed in the range $\nu_{\text{max}} \approx 7000 \text{ cm}^{-1}$ which was relatively wide (half width $\delta \approx 2000 \text{ cm}^{-1}$) and intense ($k_{\text{max}} \approx 10^3 \text{ cm}^{-1}$), associated with the transition between energy levels resulting from a splitting of the ground level of Co^{++} ($^4F_{7/2}$) by internal electric fields. The infra red band corresponds to the transition $F_4 + F_3$, which is forbid-

L 3356-66

ACCESSION NR: AP5013474

den in the electric dipole approximation, and it is assumed that this transition is made possible by the interaction of the electrons with the optical phonons. By comparing the experimental values of the total intensity of the transition with the theoretical calculations of A. D. Liehr and C. J. Ballhausen, *Phys. Rev.*, 106, 1161 (1957), an estimate was made of the frequency ω_0 of phonons effective in the mechanism of the $\Gamma_4 + \Gamma_5$ transition. The estimated values obtained were $\omega_0 \approx 400 \text{ cm}^{-1}$ for CoO , CoF_2 , CoCO_3 and $\omega_0 \approx 240 \text{ cm}^{-1}$ for CoCl_2 . Absorption measurements were made in the far infra-red region ($400-1400 \text{ cm}^{-1}$) to verify the assumption of electron-optical phonon interaction. They showed an increase in absorption, at frequencies in good agreement with the above estimates of ω_0 evidently connected with the excitation of the crystal lattice oscillations. Also the ω_0 for CoCl_2 is in good agreement with the intervals ($\Delta\nu = 235 \pm 5 \text{ cm}^{-1}$) observed in the optical spectra of MnCl crystals. The variation of the maximum of the absorption band with temperature was studied. Within the resolution of the spectrometer ($\approx 100 \text{ cm}^{-1}$) the position of the maximum was found to vary linearly with temperature even in the vicinity of T_N . Graphs show the variation of the half width of the absorption band with temperature. Again no sudden changes in the vicinity of T_N were observed. It is assumed that the high energy of the optical phonons (which allow the transition $\Gamma_4 + \Gamma_5$) as compared with the value of the exchange energy, masks the effect of the

Card 2/3

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L 3356-66
ACCESSION NR: AP5013474

antiferromagnetic ordering on the band parameters. Orig. art. has: 3 fig., 2 tables.

ASSOCIATION: Fizyko-tekhnichnyy instytut nyz'kikh temperatur AN URSS, Kharkiv
(Physico-Technical Institute of Low Temperature Research, AN URSS)

SUBMITTED: 29Jun64

ENCL: 00

SUB CODE: SS, OP

NO REF SOV: 004

OTHER: 009

Card 3/3 DP

L 1584-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/HW/CO

ACCESSION NR: AP5015440 UR/0185/65/010/006/0636/0644 57
45 B

AUTHORS: Zvyahin, A. I. (Zvyagin, A. I.); Yeremanko, V. V. 24 55 21. 9/65

TITLE: Investigations of infrared absorption spectra of crystals of antiferromagnetic cobalt compounds. II. Absorption in CoC and CoF₂ caused by the spin-orbit splitting of the lowest level

SOURCE: Ukrayinsk'yy fizychnyy zhurnal, v. 10, no. 6, 1965, 636-644

TOPIC TAGS: ir spectrum, absorption spectrum, cobalt compound, anti-ferromagnetic material 27

ABSTRACT: This is a continuation of earlier work by the authors (FIT v. 5, 1013, 1964; Ukr. fizychn. zh. v. 10, no. 5, 1965). With the aim of ascertaining the effect of the transition to a magneto-ordered compound on the optical spectrum of antiferromagnets, the authors investigated (in polarized light) over a range of 10 -- 400K the behavior of absorption bands due to transitions between components of spin-orbit splitting of the lowest level of the term ⁴F_{9/2} of the Co⁺⁺

L 1584-66

ACCESSION NR: AP5015440

ion of the antiferromagnetic compounds CoO and CoF_2 in the frequency region $600 - 2000 \text{ cm}^{-1}$. An IKS-14 spectrometer was used. The CoO , CoF_2 , and $\text{ZnS} + \text{Co}^{++}$ samples were polished platelets $0.03 - 0.05$, $0.3 - 0.5$, $0.4 - 10 \text{ mm}$ thick with an area $3 \times 5 \text{ mm}$. The larger number of absorption bands in the CoF_2 spectrum than expected from a consideration of the spin-orbit splitting of the ${}^4F_{9/2}$ term in a D_{2h} field at temperatures above the Neel point can be understood by assuming removal of translational degeneracy. The strong frequency shift of a number of band maxima (up to 30 cm^{-1}) on magnetic ordering to the long-wavelength side is related to the fact that the Zeeman splitting of the ground state of the Co^{++} ion in the exchange field is smaller than that of the excited states. The anomalous intensity decrease observed by Newman and Zhrenko (Phys. Rev. v. 115, 1147, 1959) of the 1235 cm^{-1} band with unpolarized light on transition through the Neel point was not observed in polarized light. The sharp change in the temperature dependence of the half-width of the bands

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L 1584-66

ACCESSION NR: AP5015440

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at the Neel point is apparently connected with a difference in the dominant mechanism responsible for the shape of the bands: above the Neel point interaction with phonons is dominant, while below it interaction with spin waves predominates. 'The authors thank Corresponding Member of the Ukrainian Academy of Sciences, E. I. Vyertin⁴⁴⁵ and Professor Borovik-Romanov⁴⁴⁵ for interest in the work, and V. H. Yurko⁴⁴⁵ for assistance in carrying out the experiment.' Orig. art. has: 2 formulas, 1 table, and 6 figures

ASSOCIATION: Fiziko-tekhnichnyy instytut nyz'kykh temperatur AN URSR, Kharkiv [Fiziko-tehnicheskiiy institut nizkikh temperatur AN UkrSSR, Khar'kov] (Physicotechnical Institute for Low Temperatures, AN UkrSSR)

445

SUBMITTED: 29Jun64

ENCL: 00

SUB CODE: SS, OP

NR REF SOV: 006

OTHER: 009

Card 3/3 AP

**Electronographic study of minerals of the montmorillonite group. Doklady
Akad. Nauk S.S.S.R. 86, 149-52 '52. (MLRA 5:9)
(GA 47 no.21:11087 '53)**

ZVYAG

APPROVED FOR RELEASE: Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4
CIA-RDP86-00513R002065720005-4

USSR/Mineralogy

Card 1/1

Authors : Zvyagin, B. B. and Nefedov, E. I.

Title : About cookeite

Periodical : Dokl. AN SSSR 95, 6, 1305 - 1308, 21 Apr 54

Abstract : The article says that cookeite has been found in the N. W. of the USSR, and describes cookeite characteristics observed through microscopic, physical (optical, thermal, electronographic), and chemical analyses. There are 2 tables compiled from the technical analysis of cookeite.

Institution : All Union Research Scientific Geological Inst. Leningrad

Submitted : 22 Feb 1954

Card 17

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4

Author : Zvyagin, B. B.
Title : Certain characteristics of diffraction charts of lamellar silicates
Periodical : Dokl. AN SSSR, 97, Ed. 2, 251 - 253, July 1954
Abstract : Thesis on the structure of lamellar silicates consisting of layers, which in each concrete case represent a definite combination of two-dimensional tetrahedron lattices populated with Si, Al atoms and two-dimensional octahedron lattices populated with Al, Mg, Fe atoms. Data are given on the atoms oriented in the centers and summits of the polyhedrons. The atoms of various layers oriented on proper levels have identical z'-coordinates. The atoms on each level are arranged either hexagonally-centrally or hexagonally-noncentrally. One reference.
Institution : All-Union Scien-Research Geological Institute
Presented by : Academician N. V. Eslov, March 23, 1954

APPROVED FOR RELEASE: Thursday, December 2, 2004
[Translator]; ZVIAGIN, B.B. (Translator); FRANK-KAMNETSKAYA, T.A.,
redaktor; TSUKERMAN, A.M., redaktor; GRIBOVA, M.P.
tekhnicheskii redaktor.

[X-ray identification and crystal structures of clay minerals;
collection of articles. Translated from the English] Rentgenovskie
metody opredeleniia i kristallicheskoe stroenie mineralov glin;
sbornik statei. Peravod s angliiskogo B.B.Zviagina i T.A.Frank-
Kamenetskoi. Pod red. i s predisl. V.A.Frank-Kamenetskogo. Moskva,
izd-vo inostrannoi lit-ry, 1955. 402 p.
(Clay) (X-rays) (MLRA 8:11)

**Some diffraction properties of clayey minerals represented in
electronograms of oblique textures. Trudy Inst.krist.no.11:85-93
155. (MIRA 9:6)**

**I.Vessoyuznyy nauchno-issledovatel'skiy geologicheskij institut.
(Diffraction)**

FRANK-KAMENETSKAYA, T.A. [translator]; RAZHEGAYEVA, G.I. [translator];
redaktor; YAKOVENKO, M.Ye., redaktor; DUMBRN, I.Ya., tekhnichaskiy
redaktor

[Clay mineralogy. Translated from the English] Mineralogiia glin.
Perevod angliiskogo B.B.Zviagina i dr. Pod red. i s predisl. V.A.
Frank-Kamenetskogo. Moskva, Izd-vo inostrannoi lit-ry, 1956.
454 p.
(Clay)
(MLRA 9:10)

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 1, 15-57-1-420
p 66 (USSR)
AUTHOR: Zvyagin, B. B.

TITLE: The Identification of Clay Minerals by the Electrono-
graph (Opredeleniye glinistykh mineralov metodom
elektronografii)

PERIODICAL: Vopr. mineralogii osadoch. obrazovaniy. Books 3-4,
L'vov, L'vovsk. un-t, 1956, pp 654-667.

ABSTRACT: In its present stage of development, the electronograph,
as a method of structural analysis in identifying clay
minerals, permits the solution of the following
problems: 1) the identification of clay minerals
forming clay deposits and the clay fraction of other
rocks (minerals of the kaolinite, montmorillonite,
hydromica, beidellite-monothermite, and chlorite
groups); 2) the qualitative identification of these
minerals in natural mixtures if they are distinguished
by the parameters a, n, and b; 3) the recognition

The Identification of Clay Minerals by the Electronograph (Cont.)

within each group of the degree of perfection of the structure, reflecting the conditions of formation of the minerals; and 4) the separation of formations consisting of intergrowths of different components of two-layer and three-layer structures (beidellite-monothermite).

Card 2/2

O. V. K.

B-5

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14492
Author : B. B. Zvyagin
Inst :
Title : An Electron Diffraction Study of Hydromicas
Orig Pub: Kristallografiya, 1956, 1, No 2, 214-217

Abstract: An electron diffraction determination was conducted of the elementary nuclei of 56 samples of hydromicas. Various hydromicas differ from one another, according to their phys-chem. and genetic properties, in the degree of their structural perfection, dimensions of their elementary nuclei and the distribution of the reflexes' intensities. The nuclei, depending on their chem. composition and the period of the alternation of their three-storied silicate layers into one or two layers are characterized by the values: a 5.16-5.29, b 8.90-9.20, c 10.1-10.3 kX, θ 99.5°-101.5° (in the transition to one layer) or with c 20.0-20.6 kX,

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14492

B-5

Abstract: β 93.5^o-96^o (in the transition to two layers). Five groups of samples were isolated, differing from one another by the distribution of the reflexes' intensities.

~~SECRET, S.S.~~

Electronographic method for determining clay minerals. Vop.mn.
osad.obr. 3/4:654-667 '56. (MLRA 9:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut,
Leningrad.
(Clay) (Electronography)

YU.I.; SHAKHOVA, R.A.; IVANOVA, I.I.; TATARINOV, P.M., prof.; red.;
GYSLAR, A.N., prof.red.; DOMINIKOVSKIY, V.N., kand.geologo-
mineralogicheskikh nauk, red.; KNIPOVICH, Yu.N., kand. geologo-
mineralogicheskikh nauk; SMUROV, A.A., kand. geologo-mineralogiche-
skikh nauk; FRANK-KAMNETSKIY, V.A., kand. geologo-mineralogiche-
skikh nauk; BABIMSEV, N.I., red.izd-va; KRYNOCHKINA, K.V., tekhn.red.

[A methods manual on the petrographic and mineralogical study of clays]
Metodicheskoe rukovodstvo po petrografo-mineralogicheskomu izucheniiu
glin; trudy Instituta. Sost. kolektivom avtorov pod rukovodstvom M.F.
Vikulovoi. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geol. i
okhrane nedr, 1957. 447 p. (MIRA 11:2)

1. Leningrad. Vsesoyuznyy geologicheskii institut. 2. Chlen-
korrespondent AN SSSR (for Tatarinov)
(Clay)

Reflection method used in electron diffraction examination of powdered celadonite. Kristallografiia 2 no.1:181-183 '57.

(MIRA 10:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut.
(Electron diffraction examination) (Celadonite)

AUTHOR: Zvyagin, B.B.

TITLE: Determination of the structure of seladonite by means of electron diffraction. (Elektronograficheskoye opredeleniye struktury seladonita)

PERIODICAL: "Kristallografiya" (Crystallography), 1957, Vol. 2, No.3, pp. 393 - 399 (U.S.S.R.)

ABSTRACT: The possibilities of electron diffraction are utilised for the complete determination of the structure of seladonite $K_{0.8}(M_{0.7}Fe_{1.4})[Al_{0.4}Si_{3.6}O_{10}](OH)_2$. The unit cell is $a = 5.20$, $b = 9.00$, $c = 10.25$ kX, $\beta = 100.1^\circ$. The atomic co-ordinates and interatomic distances were determined by means of Fourier syntheses. The mean ratio of the linear dimensions of the octahedrons and tetrahedrons, $k \approx 1.11$. A number of distortions were revealed of the ideal arrangements and of the regular forms of the polyhedrons and of the central locations of the cations in these.

Acknowledgments are made to Vaynshteyn, B.K., Doctor of Physical and Mathematical Sciences, for his valuable advice and to Iazarenko, E.K., Malkova, K.M. and Shashkina, V.P. for making available specimens and their chemical data. There are 7 figures and 12 references, 8 of which are Slavic.

Card 1/2

ZVIAGIN, B. S.

APPROVED FOR RELEASE: Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4"

New Possibilities in Structural Research of Clay Minerals by Electron Diffraction Methods."

paper distributed at the International Clay Mineralogy Congress in Brussels, Belgium, 1 - 5 Jul 58.

Comment: B-3,116,859.

SOV/70-3-6-8/25

AUTHORS: Popov, N.M. and Zvyagin, B.B.

TITLE: Application of a 400 kV Electronograph to the Study of Single Crystals (Primeneniye 400-kV elektronografa dlya issledovaniya monokristallov)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 6, pp 706-708/ (USSR) + 4 plates

ABSTRACT: The principal difficulty in the electron diffraction examination of clay minerals is that so many reflections overlap. Even in texture pictures there is much overlapping while powder photographs are very difficult to interpret unambiguously. Diffraction from single crystals of dimensions about 1μ in chance orientations is one solution to the problem. However, if high-energy electrons are used, a crystal big enough to be manipulated can be examined. A new Soviet 400 kV electron microscope (described by N.M. Popov in Izv. Ak. Nauk SSSR, Ser. Fiz., 1958) has been applied for this purpose. The accelerating voltage is measured to 0.5% by an electrostatic voltmeter. The i.p. voltage is stabilised with a synchronous motor-generator. A resistance/capacity filter reduces voltage fluctuations to less than 0.005%. Four-stage focussing produces a concentrated electron beam. The relativistic

Card1/3

SOV/70-3-6-8/25

Application of a 400 kV Electronograph to the Study of Single Crystals

speed of the electron is up to 600 keV. A universal stage permits the movement of the specimen up to 75° in all directions. 6 objects can be examined serially in the same holder without breaking the vacuum. Both transmission and reflection techniques can be used. A semi-automatic camera keeps the X-ray background on the plates to a minimum. Specimens up to 3μ thick can be examined.

Specimens of kaolinite and dickite were used for testing the diffraction performance. A spot pattern from single crystals of kaolite and dickite are reproduced. Indexing the spots is therefore extremely easy. The minimum value of d recorded is about 0.4 KX. The technique of very high-voltage diffraction is thought to be extremely valuable for such dispersed systems.

Card 2/3

Application of a 400 kV Electronograph to the Study of Single Crystals SOV/70-3-6-8/25

ASSOCIATION: Vsesoyuznyy geologicheskii institut
(All-Union Geological Institute)

SUBMITTED: February 28, 1958

Card 3/3

BY NAME OF FRANK-KAMENATSKIY, V.A.

Conference on X-ray examination of clay minerals held in Lvov,
December 1957. Zap. Vses. min. ob-va 87 no.2:245 '58.

(MIRA 11:9)

1. Deystvitel'nyy chlen Vsesoyuznogo mineralogicheskogo obshchestva
(for Frank-Kamenatskiy).
(Clay--Analysis) (X rays--Industrial application)

Use of a 400 kv. electron diffraction unit for the investigation
of single crystals. Kristallografiia 3 no.6:706-708 '58.
(MIRA 12:2)

1. Vsesoyuznyy geologicheskii institut.
(Electron diffraction apparatus)

AUTHORS: Popov, N. M., Zvyagin, B. B.

SOV/48-23-6-1/28

TITLE: Investigation of Minerals by Means of the Method of Microdiffraction in an Electronic Microscope-Electronograph With an Accelerating Voltage of 400 kV (Izucheniye mineralov metodom mikrodiffraktsii v elektronom mikroskope-elektronografe s uskoryayushchim napryazheniyem 400 kV)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 6, pp 670 - 672 (USSR)

ABSTRACT: The method of microdiffraction is a considerable advantage both for electron-microscopy and for electronography, and in the introduction the possibility of imaging any micropart of a preparation and the quantitative structural analysis are discussed. The analogy between the here discussed method and the use of polarized light in optical microscopes is briefly discussed, after which the usual structural analysis, by means of which the relative intensity of reflections is determined, and the dark-ground image is discussed. Finally, the microscope-electronograph constructed by N. M. Popov is discussed, which has an accelerating voltage of 400kV; the diameter of the electron beam is 0.05 μ . This exceedingly small diameter makes it possible to investigate minerals composed of very small particles and to

Investigation of Minerals by Means of the Method of SOV/48-23-6-1/28
Microdiffraction in an Electronic Microscope-Electronograph With an
Accelerating Voltage of 400 kV

watch the structural transitions on the particle boundaries.
In the last part of the paper the 12 figures shown are discussed.
Of these, 8 are X-ray pictures, and the remaining four are
dark-ground images. Investigations are carried out of kaolin,
gallusite, montmorillonite, serpentine minerals, antigorite,
chrysotile, and sepiolite. There are 12 figures and 3 references,
1 of which is Soviet.

YAKOV, Boris Borisovich

"The Contribution of Electron Diffraction to the Crystal
Chemistry of Clay Minerals"

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

~~SECRET~~. The Electron Diffraction Refinement of the Structure of Muscovite."
paper submitted for 5th Gen. Assembly, Symposium on Lattice Defects, Intl. Union
of Crystallography, Cambridge U.K. Aug 1960.

24.7100

78097
SOV/70-5-1-6/30

AUTHOR:

Zvyagin, B. B.

TITLE:

Determination of Kaolinite Structure by the Electron
Diffraction Method

PERIODICAL:

Kristallografiya, 1960, Vol 5, Nr 1, pp 40-50 (USSR)

ABSTRACT:

The structure of kaolinite has remained unclear despite continuous studies for over 25 years. The difficulty is related to the occurrence of this mineral in several modifications, such as monoclinic with the unit translation c through 1, 3, and perhaps 6 sheets of tetrahedra and triclinic through 1 sheet. The direct determination of the kaolinite structure became possible by employing the electron diffraction method. The diffraction patterns from oriented kaolinite flakes were obtained by device EM-4 and the patterns from single crystals by Popov's device (theses at the Fedorov Session on Crystallography held in Leningrad, 1959. Publishing House

Card 1/7

Determination of Kaolinite Structure by
the Electron Diffraction Method

78097
SOV/70-5-1-6/30

AS USSR, 1959). The diffraction patterns from polycrystalline specimens of the most common triclinic kaolinite resemble those from a monoclinic crystal because of the orientation of flakes with ab parallel planes. The author analyzes several equations that permit one to distinguish the triclinic pattern and to index the diffractions. Thus, the lattice constants for triclinic kaolinite could be determined as $a = 5.13 \text{ \AA}$; $b = 8.89 \text{ \AA}$; $c = 7.25 \text{ \AA}$; $\alpha = 91^\circ 40'$; $\beta = 104^\circ 40'$; $\gamma = 90^\circ$. Having obtained the two-dimensional intensity projections and calculated structure factors, a preliminary model was made, which proved to be far off the real structure because of numerous defects in the latter. Consequently, the infinite sheets of SiO_4 tetrahedra and their links with the adjacent octahedral sheets were established comparing the experimental intensities with those calculated on the

Determining the structure by
the Electron Diffraction Method

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4

78097
SOV/70-5-1-6/30

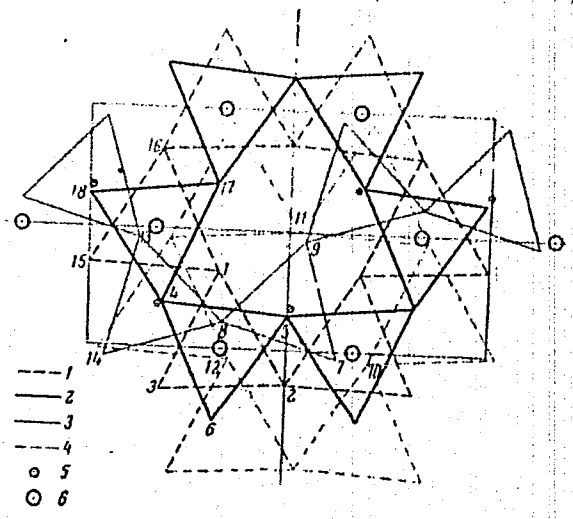
basis of ideal models. The new preliminary model, based on these data, had polar sheets, no center of symmetry, and no mirrors. The refinement of the model by a repeated calculation of the scattering density functions disclosed that both octahedra and tetrahedra sheets exhibit much better order than the kaolinite structure as a whole. The latter consists of two-sheet layers of which the upper sheet (Fig. 6) is composed of SiO_4 tetrahedra, and the lower of (Al) octahedra, slightly flattened because of the reduced length of the edges common with neighbors. Al atoms are displaced from the octahedron centers toward the OH bases. Similarly, Si atoms are displaced from the tetrahedron centers toward the bases. The tetrahedra sheets are shifted relative to those of octahedra by $1/3$ b. The accuracy of atomic coordinates is ± 0.02 A for Si and Al and ± 0.03 A for O.

Card 3/7

Determination of the Crystal Structure by
the Electron Diffraction Method

APPROVED FOR RELEASE: Thursday, September 26, 2002
CIA-RDP86-00513R002065720005-4

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SOV/70-5-1-6/30



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Fig. 6. Caption on Card 5/

Determination of Kaolinite Structure by
 the Electron Diffraction Method

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Fig. 6. Schematic representation of kaolinite structure in orthogonal xyO projection. (1) Basal faces of octahedra; (2) upper faces of octahedra; (3) bases of tetrahedra; (4) basal faces in the next lower sheet; (5) Si; (6) Al.

Table 2. Atomic Coordinates in the structure of kaolinite

ATOM	x	y	z	ATOM	x	y	z	ATOM	x	y	z
O ₁ (II)	-0,223	0,175	-0,128	O ₃	-0,304	0,004	0,157	Al ₁	-0,500	0,171	0,002
O ₂ (II)	-0,696	-0,003	-0,136	O ₄ (II)	-0,763	0,188	0,155	Al ₂	0,000	0,333	0,000
O ₃ (II)	-0,723	0,321	-0,128	O ₇	-0,385	-0,105	0,455	Si ₁	-0,195	0,002	0,384
O ₄	-0,263	0,322	0,155	O ₈	-0,209	0,177	0,475	Si ₂	-0,195	0,339	0,386
				O ₉	0,112	-0,041	0,454				

Determination of Kaolinite Structure by
 the Electron Diffraction Method

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 SOV/70-5-1-6/30

Table 3. Interatomic distances in the structure of kaolinite

Атом	x	y	z	Атом	x	y	z	Атом	x	y	z
O ₁ -O ₂	2,88	Al ₁ -O ₁	1,88	O ₅ -O ₁	2,71	Al ₂ -O ₁₃	1,92	O ₈ -O ₇	2,66	O ₈ -Si ₁	1,68
O ₁ -O ₃	2,88	Al ₁ -O ₃	1,94	O ₅ -O ₂	2,75	Al ₂ -O ₁₀	1,88	O ₈ -O ₄	2,63	O ₈ -Si ₁	1,58
O ₄ -O ₃	2,84	Al ₁ -O ₃	1,86	O ₈ -O ₅	2,66	O ₄ -Al ₂	1,96	O ₁₃ -O ₁	2,58	Si ₂ -O ₈	1,64
O ₅ -O ₄	2,84	O ₄ -Al ₁	1,92	O ₈ -O ₅	2,64	O ₁₇ -Al ₂	1,96	O ₁₄ -O ₁	2,65	O ₈ -Si ₂	1,63
O ₅ -O ₂	2,52	O ₅ -Al ₁	2,00	O ₇ -O ₈	2,50	O ₁₈ -Al ₂	2,02	O ₁₈ -O ₂	3,04	O ₁₃ -Si ₂	1,54
O ₄ -O ₁	2,42	O ₅ -Al ₁	1,93	O ₉ -O ₇	2,62	Si ₁ -O ₅	1,58	O ₁₁ -O ₁	2,90	O ₁₄ -Si ₂	1,60
O ₄ -O ₃	2,68	Al ₂ -O ₁	1,87	O ₉ -O ₈	2,58	O ₇ -Si ₁	1,56	O ₁₂ -O ₃	2,92		

The structural data of the author quantitatively differ from the figures given for dickite (U.S. reference 1). Qualitatively, they are identical. N. V. Belov and B. K. Vaynshteyn are acknowledged for advice in the construction of models and in the interpretation of data, respectively. There are 6

Determination of Kaolinite Structure by
the Electron Diffraction Method

78097

SOV/70-5-1-6/30

figures; 3 tables; and 13 references, 9 Soviet,
2 U.S., 1 German, 1 Danish. The U.S. references
are: G. W. Brindley, M. Nakahira, Mines Mag., 31,
240, 781, 1958; G. W. Brindley, K. Robinson, Mines
Mag., 27, 242, 1946.

ASSOCIATION: All-Union Geological Institute (Vsesoyuznyy
geologicheskii institut)

SUBMITTED: July 7, 1959

APPROVED FOR RELEASE: Thursday, September 26, 2002
APPROVED FOR RELEASE: Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4
CIA-RDP86-00513R002065720005-4"

"Structural modifications of the layer silicates and possibilities
of their determination by means of electron and X-ray diffraction."

Report submitted for the International Clay Conference, Stockholm,
Sweden, 12-16 Aug 63.

ZVYAGIN, B.B.

Theory of the polymorphism of chlorites. Kristallofiziia 8
no.1:32-38 Ja-F'63

(MIRA 17:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut.

LOLOVA, M.F.; ZYAGIN, B.B.

Effect of the conditions governing the formation of clay rocks on the development and alteration of the structural characteristics of clay minerals. Sov. geol. 8 no. 5: 24-37 My '65. (MIRA 18:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut.

BY: [REDACTED], D.K.; ZVYAGIN, B.B.

Mapping of a crystal lattice in reciprocal symmetry space.
Kristallografiia 8 no.2:147-157 Mr-Apr '63. (MIRA 17:8)

1. Institut kristallografi AN SSSR. i Vsesoyuznyy nauchno-
issledovatel'skiy geologichaskiy institut.

ZVYAGIN, B.B.; MISHCHENKO, K.S.; SHITOV, V.A.

Electron diffraction data on the structures of sepiolite and palygorskite. Kristallografiia 8 no.2:201-206 Mr.-Ap '63.

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut. (MIRA 17:8)

ZVIAGIL'SKAYA, R.A.; KARAPETYAN, N.V.

Characteristics of the cytochromic composition of intact cells and
mitochondria of the yeast *Endomyces magnusii*. Dokl. AN SSSR 163 no.2:
497-499 J1 '65. (MIRA 18:7)

1. Institut biokhimi im. A.N.Bakha AN SSSR. Submitted October 5, 1964.

ZVYAGIL'SKAYA, R.A.

Study of the electron transfer chain in mitochondria
from *Endomyces magnusii*. *Biokhimiia* 29 no.5:812-819
Jl-Ag '64. (MIRA 18:11)

1. Institut biokhimi imeni Bakha AN SSSR, Moskva.

USSR/Chemistry - Physical chemistry

Card 112 Part 147-1935

Authors : G. I. Gerasimov, M. A. Kuznetsov, V. I. and Z. I. Adzhizade, I. N.

Title : Adsorption of hydrogen on active carbons

Periodical : Zhur. fiz. khim. 30/1, 220-222, Jan 1956

Abstract : Investigation was made to determine the relation between adsorption and desorption of hydrogen on active carbons as a function of the concentration of Se in an alloy as well as the reverse reaction. Experimental data regarding the effect of Se on the adsorption of hydrogen on active carbons at an equilibrium temperature of 20°C are presented. A sharp increase in the rate of desorption was observed immediately after an

Institution : Acad. of Sci., USSR, Inst. of Metallurgy, Moscow

Submitted : April 30, 1955

Card 2/2 Pub. 147 - 29/35

Periodical : Zhur. fiz. khim. 30/1, 220-222, Jan 1956

Abstract : an increase in temperature. It was found that Se is well adsorbed by activated carbons (up to 1 g per 1 g of the adsorbent). The part of the Se bound with the carbon is practically irreversible as result of a chemical reaction or formation of a solid Se solution in the carbon. Three references: 1 USA, 1 French and 1 Germ. (1895-1933). Tables; graph; drawing.

BIRYUZOVA, V.I.; ZVYAGIL'SKAYA, R.A.; MALATYAN, M.N.; VOLKOVA, T.M.

Electron microscopic and cytochemical study of mitochondria
from yeast cells. Mikrobiologiya 33 no.3:442-446 My-Je '64.
(MIRA 18:12)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii
AN SSSR i Institut biokhimii imeni A.N.Bakha AN SSSR. Submitted
June 27, 1963.

VASIL'YEV, Yu.M.; ZVYAGEL'SKIY, A.A.; PODGORBUNSKIY, S.L.

Chelkar saline massif in the northern part of the Caspian Sea region.
Dokl. AN SSSR 121 no.6:1065-1069 A '58. (MIRA 11:10)

1. Moskovskiy neftyanoy institut im. I.M. Gubkina. Predstavleno akademikom S.I. Mironovym.
(Chelkar region--Mines and mineral resources)

007120-121-6-25745

AUTHOR:

Vasil'yev, Yu. M., Zayagel'skiy, A. G., Sadgorounskiy, S. I.

TITLE:

The Cheikar Saline Massif in the Northern Caspian Region
(Cheikarskiy solyanoy massiv v Severnom Prikasp'ii)

PERIODICAL:

Doklady Akademii Nauk S.S.S.R., 1958, Vol 121, Nr 6, pp 1065-1067
(USSR)

ABSTRACT:

Among the great salt massifs of the Caspian depression only the massif mentioned in the title has remained uninvestigated. In 1952 it was gravimetrically discovered. Only since 1952 systematic investigations of the Cheikar massif have been carried out: thus informations for the identification of its geological structure were gained on large scale. The mentioned massif lies 85 km south-east of the city of Ural'sk. In the surface relief the mountain of Sassy, south of the Cheikar sea corresponds to it. At this place also the greatest gravimetric minimum of the entire Caspian region (Prirkaspiy) was found. First of all the extraordinary size of the massif is recognized: a surface of more than 4 000 km². Thus this massif is 80 - 100 times bigger than a normal salt dome as it is typical for this region. The core of the massif consists of a thick

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1959-201 21-B-57/25

The Ushkay Saline Massif in the Northern Caspian Region

salt-bearing mass which has Kurgur age. The salt is pale-blue, yellowish or light-gray. It is either massive or medium and coarsely crystalline, respectively. At some places the salt is impure with sand and loam. The main mass consists of halite, in some places, however, it has intermediate strata of anhydrite. Frequently intermediate strata and lenses of pink and orange spotted sylvinite occur. On its arch the saline core is covered by a stone cap (kamennyy shlyapak) which is 100 - 200 m thick and consists of white light-gray gypsum, blueish anhydrite and dark-gray loam. Lime and dolomite lenses occur rarely. The whole mass is considerably kneaded and on some places changed to breccia. Figure 1 gives a survey on the orotectonic of the massif. From investigations and comparison of the cross sections basic features of the tectonic development of the massif in the Meso-Cenozoic may be derived. The most characteristic features are repeated manifestations of rising tectonic movements of great intensity and long duration. Since the Middle Jurassic abrasion destroyed the entire volcanic and Triassic mass on the arch of the massif. In some places this encroachment destroyed even parts of the arch. There is

The Chekar Saline Massif in the Northern Caspian Region

NOV/20-12-6-13/48

1 figure.

ASSOCIATION: Moskovskiy neftyanoy Institut im. I. M. Gubkina (Moscow In-
stitute of **Petroleum** named I. M. Gubkin)

PRESENTED: April 26, 1958, by S. I. Mironov, Member, Academy of Sciences,
USSR

SUBMITTED: April 21, 1958

Card 3/3

ROTEL'NIROVA, A.V.; ZVIAGIL'SKAYA, R.A.

Effect of inhibitors on oxidative phosphorylation in the mitochondria
of *Endomyces magnusii* yeast. Mikrobiologiya 33 no. 2:207-
209 Mr-Apr '64. (MIRA 17:12)

1. Institut biokhimi imeni A.N. Bakha AN SSSR.

Ca

Russ. 61,073, March 31, 1941. Nitrochloracetic acid hydrolyzed with alkalis in the presence of weak oxidizing agents such as O₂ or KNO₃ to minimize the formation of resins and to increase the yield.

3

PERIODICALS
SERIALS
MONOGRAPHS
CONFERENCE PROCEEDINGS
UNPUBLISHED MANUSCRIPTS
OTHER LITERATURE

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

GROUP	CLASSIFICATION	DESCRIPTION	DATE
1	10	10	10
2	20	20	20
3	30	30	30
4	40	40	40
5	50	50	50
6	60	60	60
7	70	70	70
8	80	80	80
9	90	90	90
10	100	100	100
11	110	110	110
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98	980	980	980
99	990	990	990
100	1000	1000	1000

ZVYAGEL'SKIY, M.

Radio at the Czechoslovakian exhibition. Radio no. 12:13-14 D '55.
(Moscow--Radio--Exhibitions) (MIRA 9:4)

"A study of oxidative phosphorylation and ATPase Activity of mitochondria from yeast Endomyces Magnusii."

report submitted for 6th Intl Biochemistry Cong, New York City, 26 Jul-1 Aug 64.

ZVY
APPROVED FOR RELEASE: Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4
CIA-RDP86-00513R002065720005-4"

"The Problem of $\text{BeO} \cdot 3\text{Al}_2\text{O}_3$ Compounds," Dok. AN, 68, No. 2,
1949.

Cordierite. Pottery

Mechanics of producing cordierite and its stability. Dokl. AN SSSR, 81, no. 5, 1951.
Khimiko-tekhnologicheskii Institut im. D. I. Mendeleeva. Red. 26 March 1951

SO: Monthly List of Russian Accessions, Library of Congress, May ² 1953, Uncl.

ZVYAGIL'SKIY, A.A.

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31581

Author : Zvyagil'skiy A.A., Avetikov V.G.

Title : Ways of Improving the Quality and Increasing
Reusability of Sagggers at Insulator-Porcelain
Plants

Orig Pub: Sb.: Kapseli i karkasnyye ognepornyye detali,
primenyayemye v keram. prom-sti. M., Prom-
stroyizdat, 1956, 81-99

Abstract: Results are reported of studies of the effects,
on properties of sagggers, of the following factors: -
composition of the binder portion of the mix; grain-
size composition of chamotte; preliminary moistening

Card 1/3

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31581

of chamotte; working the paste twice and aging it thereafter; addition of talc, alumina and carborundum, in amounts of 3-20%, to the chamotte paste. For the usual chamotte paste for saggars the following optimal composition is recommended (in % by weight): clayey portion (Latnenskaya + Chasov-Yarskaya Clay + kaolin) 45, chamotte 55, including 17-20 of 5-2.5 mm grain, 25-29 of 2.5-0.5 mm and 7-10 of less than 0.5 mm. Reusability of saggars containing 15-30% alumina, when articles are fired at 1400°, is about 8 times, on addition of 8-10% Shabrovskiy talc, it is of about 10 times, but the temperature at which the articles are fired in the furnace must not exceed 1320°.

Card 2/3

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31581

Most effective is incorporation into the paste of
20% SiC, having a grain size of less than 1 mm;
reusability of such saggars is of about 20 times.

Card 3/3

ZVYAGIL'SKIY, A.A.

Translation from: Referativnyy zhurnal, Elektrotehnika, 1957, Nr6, p.13 (USSR)

AUTHOR: Voronkov, G.N., Zvyagil'skiy, A.A., and Krétova, N.F.

TITLE: High-Voltage Porcelain of Better Electromechanical Properties from Boron-Containing Raw Material (Vysokovol'tnyy farfor s povyshennymi elektromekhanicheskimi svoystvami na osnove borosoderzhashchego syr'ya)

PERIODICAL: Tr. Gos. issled. elektrokeram. in-ta, 1956, Nrl, pp.5-16

ABSTRACT: As it was necessary to improve the mechanical and electrical characteristics of porcelain a new type of porcelain was developed in GIEKI on the basis of a boron-containing (asharit) ore, alumina, clay materials and a small amount of alkali-earth compounds. No quartz or feldspar was introduced. The use of ascharite ore ($2MgO \cdot B_2O_3 \cdot H_2O$) as a fusing agent, instead of $CaCO_3$ or $BaCO_3$, and also the introduction of commercial Al_2O_3 with an increased content of kaolin insured the close-packed structure of porcelain, in which the crystals of mullite formed a felt-like lattice and were uniformly distributed in the vitreous phase. There is a negligible amount of free sections of glass in the ascharite porcelain, but there are finely grained clusters of α -alumina. As the ascharite porcelain has a lower coefficient of linear expansion (3.9×10^{-6}) than the ordinary feldspar porcelain (6×10^{-6}), two new glazes (white and brown) were developed having less alkali oxide content. Due to

Card 1/2

112-6-11867

Translation from: Referativnyy zhurnal, Elektrotehnika, 1957, Nr6, p.13 (USSR)

the more uniform structure and other factors the ascharite porcelain has almost double mechanical strength as compared to the feldspar porcelain. Nonalkaline vitreous phase insures higher values of volume electrical resistivity and electric strength, and lower values of the dielectric loss angle. Preparatory procedures and the manufacture of insulators can follow regular methods of the electrical porcelain manufacture. The only additional operation is the introduction of sinter into the mass of ascharite porcelain. Optimum firing temperature 1310 -1330°C. Ascharite and feldspar insulators can be fired jointly, but the sintering interval of the ascharite units is shorter than that of the ordinary electrical porcelain (30-40° against 60-80°C). Thermographic and chemical investigations of the ascharite ore have shown that for electrical porcelain purposes it should have at least 22% B₂O₃ and 23% MgO. The density of ascharite ore should be at least 2.67 g/cm³, the firing loss should not be over 18%. Bibliography: 6 titles.

N.V.N.

Card 2/2

INVENTOR: Avetikov, V. G.; Boldyreva, G. V.; Zvyagil'skiy, A. A.; Nedel'ko, E. Ye.

ORG: none

58
B

TITLE: Ceramic material. Class 21, No. 184303 ¹⁵

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 44

TOPIC TAGS: ceramic material, aluminum oxide base material, boron sesquioxide
~~containing material~~, refractory, ~~ceramic material~~, low dielectric loss material

ABSTRACT: This Author Certificate introduces an Al_2O_3 -base ceramic material ¹⁵ used in electronic and radioelectronic devices. The material contains 97-98% Al_2O_3 , 1.7-2.2% B_2O_3 , and 0.6-0.8% MgO and has low dielectric losses and high mechanical strength at high temperatures. [MS]

SUB CODE: 09/ SUBM DATE: 22Mar65/ ATD PRESS: 5070

BUDNIKOV, P.P.; ZVYAGIL'SKIY, A.A.

Sintering of beryllium oxide. Ogneupory 26, no. 11: 525-530 '61.
(MIRA 17:2)

ZVYAGIL'SKIY, A.A., kand.tekhn.nauk; BOKUNYAYEVA, V.I.

Investigating feldspathic raw materials from the Urals. Trudy GIEKI
no.4:3-17 '60. (MIRA 15:1)

(Ural Mountains--Feldspar)

ZVYAGIL'SKIY, A.A., kand.tekhn.nauk; TIMOKHOVA, M.I., inzh.

Investigating certain processes of hydrostatic pressing in rubber
molds. Trudy GIEKI no.4:106-120 '60. (MIRA 15:1)
(Ceramics) (Electric insulators and insulation)

29396
S/131/61/000/011/001/002
B105/B101

15.2230

AUTHORS: Budnikov, P. P., and Zvyagil'skiy, A. A.
TITLE: Sintering of beryllium oxide
PERIODICAL: Ogneupory, no. 11, 1961, 525 - 530

TEXT: The authors investigate the effect of mineralogical and physico-chemical factors on the tendency to cake of beryllium oxide for the manufacture of dense ceramic products. Beryllium hydroxide with a content of 98.7 % BeO, and MgO and CaO admixtures served as initial material. The experiments were conducted at temperatures between 900 and 1700°C in intervals of 200 and 100°C. Shrinkage, water absorption, specific gravity, weight by volume, porosity, refractive index, dimensions of crystal grains, total specific surface, degree of chemical activity during dissolving in acid and alkali, adsorption properties, and dynamics of losses in weight as a function of calcination temperature, were investigated. The effect of admixtures of hydroxides and slightly glowd BeO on the ceramic properties, and the effect of plasticizers (7 - 10 % paraffin wax, 7.5 % starch solution, 5 % BeCl₂ solution) were studied. Optimum tendency to cake is

Card 1/2

29396
S/131/61/000/011/001/002
B105/B101

Sintering of beryllium oxide

obtained by: (1) preceding glowing of beryllium hydroxide at 1350 - 1500°C; (2) production of BeO with maximum specific gravity; (3) preceding grinding of the calcined BeO up to an average grain size of below 2 - 3 μ with structural defects of the grains; (4) use of 20 - 30 % material in hydrate- and low-temperature calcined form, respectively; (5) use of plasticizers to insure homogeneity; (6) high specific molding pressure; (7) prolonged exposure at final firing temperatures for recrystallization. Elevated firing temperature of beryllium oxide results in internal rebuilding, change of physicochemical properties, shape and dimensions of crystals, consolidation and solidification, sintering and recrystallization. There are 5 figures, 6 tables, and 8 references: 6 Soviet-bloc and 2 non-Soviet-bloc. The three references to English-language publications read as follows: E. Ryschkewitsch. Microstructure of Sintered Beryllia. Trans Brit. Cer. Soc., 1960, v. 59, no. 8; R. E. Lang and H. Z. Schofield. Beryllia, Reactor Handbook v. 4. Materials, USA, Geneva, 1955; F. H. Norton. Journ. Amer. Cer. Soc., 1947, v. 30, p. 242. X

PEVZNER, R.L.; ZVYAGIL'SKIY, A.A.; FINKEL'SHTEYN, S.I.

Efficient technology in making pressed electric insulators.
Stek. i ker. 18 no.2:19-24 F '61. (MIRA 14.3)
(Electric insulators and insulation)

15(2)

AUTHORS:

Budnikov, P. P., Zvyagil'skiy, A. A.

SOV/72-59-7-2/19

TITLE:

dobavok

The Influence of the Additions of BeO and Commercial Alumina on the Main Properties of the Electrical Engineering Procelain (Vliyaniye BeO i tekhnicheskogo glinozema na osnovnyye svoystva elektrotekhnicheskogo farfora)

PERIODICAL:

Steklo i keramika, 1959, Nr 7, pp 3 - 7 (USSR)

ABSTRACT:

The purpose of this paper was the completion of the studies carried through formerly by P. P. Budnikov (Footnote 1). The initial mass contained 32% feldspar, 24% quartz, and 44% clayey materials. As additions BeO, commercial alumina and asharite ore were used. The samples were dried at a temperature of 110°C in the thermostat and burned at a temperature of 1220 till 1450° in reverberatory furnaces. In table 1 the water absorption and the weight by volume of the porcelain samples with addition of BeO are given burned at different temperatures. In figure 1 the linear shrinkage at different burning temperatures is given. In table 2 and figure 2 the water absorption and the weight by volume of the samples with addition of commercial alumina are given. These values correspond to the investigation results of the Chair of Ceramics and Refractories of the MKhTI imeni Mendeleev as may be seen from the investigation of D.N. Poluboyarinov

Card 1/3

**The Influence of the Additions of BeO and Commercial Alumina, SOT/72-59-7-2/19
on the Main Properties of the Electrical Engineering Porcelain**

(Footnote 2). In table 3 the average values of the bending strength of samples are given which were burned at optimum temperatures. The addition of small amounts of BeO and commercial alumina effects a lowering of the modulus of extension (Fig. 3) corresponding to investigations of P. P. Budnikov, S. G. Trekhvyatskiy and A. M. Cherepanov (Footnote 3). Furthermore the authors give the change of the electro-physical properties of the porcelain bodies in dependence of the composition and amount of the additions (Table 4) by mentioning the study of S. I. Skanavi (Footnote 4). The dielectric losses are lowered by the addition of small amounts of Be_2O_3 as it results from the investigations of G. N. Voronkov, A. A. Zvyagil'akiy, N. F. Kretova (Footnote 5). Conclusions. An addition of small amounts of BeO (0.5 till 1%) lowers both the sintering temperature for 40 till 60 degrees and the coefficient of thermal expansion and increases the heat stability and the electrophysical characteristics of the electric porcelain. An addition of small amounts of B_2O_3 (up to 1. %) into the highly aluminous porcelain bodies causes a strong mineralizing effect and

**The Influence of the Additions of BeO and Commercial Alumina SOV/72-59-7-2/19
on the Main Properties of the Electrical Engineering Porcelain**

allows to obtain electric porcelain of high values and to improve strongly its insulating properties. There are 3 figures, 4 tables, and 5 Soviet references.

SOV/112-58-1-107

Translation from: Referativnyy zhurnal, Elektrotehnika, 1958, Nr 1, p 11 (USSR)

AUTHOR: Zvyagil'skiy, A. A.

TITLE: Ways to Improve Refractory-Clay Containers for Calcination of Electrical Porcelain (Puti povysheniya kachestva kapsel'nogo ognepripasa dlya obzhiga elektrotekhnicheskogo farfora)

PERIODICAL: Inform.-tekhn. sb. M-vo elektrotekhn. prom-sti SSSR, 1956, Nr 3 (87), pp 23-28

ABSTRACT: Refractory containers for calcinating electrical porcelain are prepared from an unseasoned mass; the refractory-clay mass is treated once or twice in screw-type or blade-type mixers; the containers are often molded manually. They are calcined at 900-1000° C. With such processing, the turnover of containers in insulator calcination is 2.5-3 times, requiring insulator plants to produce 1.5-2.0 tons or more refractory-clay mass per ton of porcelain. It has been found that clay-grog masses typical of most insulator plants have low mechanical strength and differ little in their thermal endurance. The

SOV/112-58-1-107

Ways to Improve Refractory-Clay Containers for Calcination

refractory masses containing kaolin have higher bending strength and compression strength compared to masses containing only Chasov-Yar or Latin clay without kaolin. The type of clay bond does not influence shrinkage, volumetric weight, or material porosity. As grog content increases at the expense of clay components, the thermal endurance of refractory masses increases but their mechanical strength decreases and their porosity increases. Increasing grog-grain dimensions (over 5 mm) drastically decreases the mechanical strength and thermal endurance of the refractory product. The best composition of a mold-type refractory mass is: 45% clay bond and 55% grog with grains 5-2.5 mm. Preliminary humidification of grog and triple working of steam-treated mass (within 16 hours) drastically increases the thermal endurance and mechanical strength of the samples. Cast-type refractory masses secure a greater thermal endurance and mechanical strength compared to mold-type masses. The following measures are recommended for improving existing processes at insulator plants: a layer-by-layer placement of clay materials

Card 2/3

SOV/112-58-1-107

Ways to Improve Refractory-Clay Containers for Calcination of Electrical

and grog, and a uniformly distributed steam treatment of the mass, as well as uniform drying of molded containers (turning them over after 15-16% humidity is reached) or use of conveyer-type dryers and calcination at a temperature of 1250-1300° C, or higher.

N. V. N.

AVAILABLE: Library of Congress

1. Containers--Production
2. Clays--Properties
3. Refractory materials--Performance
4. Refractory materials--Properties
5. Insulators (Electric)--Processing

ACC NR: AM6000298

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SUB CODE: 13, 14/ SUBM DATE: 03Jul65/ ORIG REF: 048/ OTH REF: 010

ZVYAGIL'SKIY, L. Ya. insh.

**Combined milling cutter and drill for drilling and milling openings in
engine-cylinder sleeves. Energiomashinostroenie 4 no.9:43 S '58. (HIRA 11:11)
(Tools)**

ZVYAGIL'SKIY, Leonid Yakovlevich; YAKOVLEV, Radomir Gerontevich;
SEMELENKO, P.A., inzh., red.; KUBNEVA, M.M., tekhn.red.

[Pneumatic chucks for lathes; colletless pneumatic chucks for
turret lathes; colletless chucks with automatic feed for
turret lathes] Pnevmaticheskie patrony k tokarnym stankam;
Bestsangovyi pnevmaticheskii patron k revol'vernyim stankam;
Bestsangovyi patron s avtomaticheskoi podachei materiala k
revol'vernyim stankam. Leningrad, 1959. 14 p. (Leningradskii
dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom.
Seria: Mekhanicheskaya obrabotka metallov, vyp.9).

(Lathes)

(MIRA 13:3)

PHASE I BOOK EXPLOITATION SOV/3803

Zvyagil'skiy, Leonid Yakovlevich, and Radomir Gerontevich Yakovlev

Pnevmaticheskiye patrony k tokarnym stankam. Bestsangovyy pnevmaticheskiy patron k revol'vernyym stankam. Bestsangovyy patron s avtomaticheskoy podachey materiala k revol'vernyym stankam (Pneumatic Chucks for Lathes. Pneumatic Chuck Without Collet for Turret Lathes. Chuck Without Collet With Automatic Feed of Work for Turret Lathes) Leningrad, 1959. 17 p. 6,500 copies printed. (Series: Obmen peredovym opytom. Seriya: Mekhanicheskaya obrabotka metallov, vyp. 9)

Sponsoring Agencies: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR; Leningradskiy dom nauchno-tekhnicheskoy propagandy.

Ed.: P.A. Semenenko, Engineer; Tech. Ed.: M.M. Kubneva.

PURPOSE: This booklet is intended for tool designers, production engineers, and students of machine and tool design.

Card 1/2

Pneumatic Chucks (Cont.)

SOV/3803

COVERAGE: A description is given of new designs of pneumatic chucking devices without collet. These new pneumatic chucks are the self-locking type, easy to mount on existing lathes, and said to be superior to the three-jaw pneumatic chucks now used. The text contains numerous detailed drawings of the new chucking devices accompanied by a description of operating characteristics. Schematic diagrams of the pneumatic circuits for the actuation of the chucking devices are also presented. No personalities are mentioned. There are 4 Soviet references.

TABLE OF CONTENTS: None given.

AVAILABLE: Library of Congress

Card 2/2

VK/jb
6-17-60

YAKOVLEV, Boris Yevgen'yevich; ZVIAGEL'SKIY, M.M., red.; AKKERMAN, D.A.,
red.; ROGOVSKAYA, Ye.R., red.; KRYUCHKOVA, V.N., tekhn.red.

[Czech-Russian radio engineering dictionary] Cheshsko-russkii
radiotekhnicheskii slovar'. Pod red. M.M.Zviagel'skogo.
Moskva, Glav.red.inostr.nauchno-tekhn.slovari Fizmatgiz, 1960.
364 p. (MIRA 74:4)

(Radio--Dictionaries)

(Czech language--Dictionaries--Russian language)

. ZVYAGIN, A., podpolkovnik

Change the purchasing procedure for building materials. Tyl i snab.
Sov. Voor. Sil. 21 no.8:90 Ag '61. (MIRA 14:12)
(Military posts--Repairing) (Building materials--Prices)

ACC NR: ARG034734 (N) SOURCE CODE: UR/0124/66/000/008/V052/V052 1/0

AUTHOR: Zvyagin, A. D.

TITLE: Procedure of testing the strength and vibration of hydrofoil boats 14

SOURCE: Ref. zh. Mekhanika, Abs. 8V424

REF SOURCE: Tr. Gor'kovsk. politekhn. in-ta, v. 21, no. 1, 1965, 26-35

TOPIC TAGS: hydrofoil, structure stability, vibration, static test, vibration test, marine vibration test, strength test

ABSTRACT: General problems have been discussed for the organization and performing of strength and vibration tests of hydrofoil boats, including the equipment to be used and standard test program. Methods are recommended for stress-loading hulls and individual structures. Examples of tests conducted are given, and the data obtained are presented for static and marine tests with general and local vibrations. G. S. Migirenko. [Translation of abstract]

SUB CODE: 13/

Card 1/1 *lmc*

ZVYAGIN, Aleksandr Dmitriyevich; SHABAROV, Vladimir Vasil'yevich;
KRUPITSKIY, E.Z., inzh., retsenzent; CHUVIKOVSKIY, G.S., inzh.
retsenzent; BOCHKOV, B.F., kand. tekhn. nauk, nauchm. red.;
VLASOVA, Z.V., red.

[Testing the strength and vibrations of ships on underwater
wings] Ispytaniia prochnosti i vibratsii sudov na podvod-
nykh kryl'iax. Leningrad, Sudostroenie, 1965. 211 p.

(MIRA 18:11)

S/0181/64/006/004/1013/1017

ACCESSION NR: AP4028422

AUTHORS: Yeremenko, V. V.; Zvyagin, A. I.

TITLE: Light absorption by cobalt fluoride crystals above and below the Neel temperature

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1013-1017

TOPIC TAGS: light absorption, cobalt fluoride, Neel temperature, antiferromagnetic state, electron phonon interaction, Van Vleck mechanism, absorption band

ABSTRACT: The authors considered the effect of temperature in the interval 20-400K on the absorption band in single crystals of CoF_2 in the near infrared region (wavelength of ~ 1.4 microns), above and below the point of antiferromagnetic ordering (Neel temperature of about 38K). The parameters of the absorption band do not change anomalously during transition of the material at the Neel temperature. To find an explanation for this, the limits of the absorption band were defined, and possible mechanisms for the formation of the band were considered. It is concluded that the principal causes are the great force of electron-phonon interaction and the Van Vleck mechanism of allowed transition. As for the temperature dependence of the absorption maximum in the frequency scale, it is found that when the optical

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ACCESSION NR: AP4028422

transition of the ionic spin moment does not change, the absorption band may shift in the frequency scale (because of exchange interaction) only when there is a marked change in the exchange integral during transition to the excited state. "In conclusion, we take this opportunity to thank Professor B. I. Verkin, corresponding member of the AN UkrSSR, for his constant interest in the work, and we thank V. G. Yurko for participating in the measurements." Orig. art. has: 4 figures and 2 formulas.

ASSOCIATION: Fiziko-tekhniicheskiy institut nizkikh temperatur AN UkrSSR, Kharkov (Physicotechnical Institute of Low Temperatures, AN UkrSSR)

SUBMITTED: 16Sep63

ENCL: 00

SUB CODE: OP, SS

NO REF SOV: 005

OTHER: 013

Card

2/2

ACC NR: AP5025393 SOURCE CODE: UR/0181/65/007/010/3102/3104

AUTHOR: Zvyagin, A. I.; Yeremenko, V. V.; Kut'ko, V. I.

ORG: Physicotechnical Institute of Low Temperatures AN UkrSSR, Kharkov (Fiziko-tekhnicheskii institut AN UkrSSR)

TITLE: Infrared absorption spectra of antiferromagnetic crystals in the $\text{CoF}_2(1-x)\text{-MnF}_2_x$ system

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 3102-3104

TOPIC TAGS: cobalt compound, manganese compound, fluoride, solid solution, single crystal, crystal theory, antiferromagnetic material, IR spectrum, absorption spectrum

ABSTRACT: The authors study the infrared absorption spectra of single crystal specimens containing 100, 90, 10 and 5% CoF_2 in systems where cobaltous and manganese fluorides form solid solutions. The spectral measurements were made in the 15-300°K range. The IR spectra of single crystal specimens of mixed composition are very similar to those of pure CoF_2 . The absorption intensity in the 100-200 cm^{-1} range decreases with a reduction in cobalt concentration without any noticeable deviation from Beer law, and may be compensated by an appropriate increase in the thickness of the specimen. The differences between the spectra of mixed specimens and those of pure cobaltous fluoride were a broadening of the bands in mixed specimens apparently

ACC NR: AP5025393

1
due to some irregularity in composition, and a considerable shift in the spectrum toward the low frequency region. When the crystals were cooled below the Néel point, an anomalous reduction was observed in the width of the Co^{2+} bands in both pure and mixed specimens, as well as a sharp shift in the frequency of these bands. However, the shift in pure CoF_2 is toward the longer waves, while the bands are shifted toward the shorter wave region in crystals with a high MnF_2 content. A theoretical explanation is given for this phenomenon based on the difference in the ground state exchange energies for the two types of crystals. In conclusion, we take this occasion to express our gratitude to N. N. Mikhaylov⁴ and S. V. Paltov⁵ who graciously furnished the single crystal specimens for the present study. Orig. art. has: 2 figures.

SUB CODE: 20,07/

SUBM DATE: 19Apr65/

ORIG REF: 008/

OTH REF: 006

HW
Card 2/2

70-3-15/20

AUTHOR: Iveronova, V.I., Zvyagin, A.P. and Katsnelson, A.A.

TITLE: The distortion of the crystal lattice in solid solutions.
(Iskazheniya kristallicheskoj reshetki v tverdykh rastvorakh)

PERIODICAL: "Kristallografiya" (Crystallography), 1957,
Vol.2, No.3, pp. 414 - 418 (U.S.S.R.)

ABSTRACT: The values of the mean square static displacement of atoms were calculated by means of the elastic model of solid solution. A comparison of the results of calculations with the experimentally measured values of U_{st}^2 are given. The values of U_{st} determined experimentally agree in order of magnitude with the calculated values; however, the theoretically required proportionality in the difference of atomic radii is not observed. An analysis of the probable causes of this divergence is given. The most essential must be the comparison of the values of the mean square displacements with the short-range order, determined according to the intensity of the background of the X-ray pattern.

Card 1/2

The dependence of the value of the mean square static displacements was studied in Cu-Sn, Fe-Co, Ni-Cr, Ni-Ti and Fe-C alloys. For low concentrations all the curves show a

70-3-15/20

The distortion of the crystal lattice in solid solution.
(Cont.)

linear dependence of α on concentration, which agrees with the calculations carried out on the ground of the elastic model. A saturation of the value of the mean square static displacements is observed at high concentrations; for Ni-Fe alloys the outline $\alpha = f(c)$ was obtained, which does not coincide with the theory. It was shown that in this case the values of U_{st}^2 , determined from X-ray patterns, with Mo and Cu radiation do not show mutual agreement. The picture observed is explained by the influence of primary extinction.

A curve of the dependence of the Debye temperature upon concentrations was deduced for Ni-Fe alloys. Using Cu, Au and Ni₃Fe alloys, the dependence of the Debye temperature upon the long-range order was shown. The Debye temperature of the ordered solid solution was found to be lower than that of the disordered one. There are 4 figures and 18 references, 13 of which are Slavic.

ASSOCIATION: Moscow State University im. M.V. Lomonosov.
(Moskovskiy Gosudarstvennyy Universitet im.
M.V. Lomonosova)

SUBMITTED: March 8, 1957.

AVAILABLE: Library of Congress

Card 2/2

KIRICHENKO, Vasilii Stepanovich, inzh.; FEYGEL'SON, B.Yu., kand.tekhn.
nauk, retsenzent; SUDAKIN, Ya.A., red.inzh.; pri uchastii:
PORVATOV, N.A., inzh.; KRASAVIN, D.P., inzh.; KOROBYNIKOV, M.M.,
inzh.; ROGOZHKIN, P.I., inzh.; YEVDOKOMOV, F.N., inzh.; STUPIN,
A.N., inzh.; ZVYAGIN, A.V., inzh.; SIROTIN, A.M., red.izd-va,
inzh., EL'KIND, V.D., tekhn.red.

[Water-cooled chill molds] Vodookhlazhdaemye kekili. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1958. 95 p. (MIRA 11:12)
(Molding (Founding))

ZVYAGIN, A.V.; CHERNIKOV, A.M.

Chill casting of large cast iron parts. Stroi. i der. mashinostr. 4
no.1:34-36 Ja '59. (MIRA 12:1)
(Molding (Founding))

ZVYAGIN, B.B.; MISHCHENKO, K.S.

Electron diffraction refinement of the muscovite structure. Kristallografiia 5 no.4:600-604 JI-Ag '60. (MIRA 13:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut.
(Muscovite--Spectra)

W. Eitel

Electronographic determination of the structure of montmorillonite. *B. Zussman and G. Plinkov (Acad. Sci. U.S.S.R.). Doklady Akad. Nauk S.S.S.R. 68, 65-7 (1949).*—The electron-diffraction pattern of montmorillonite is cited, and yields the following monoclinic elementary cell dimensions: $a_0 = 5.17 \pm 0.02 \text{ \AA}$; $b_0 = 8.91 \pm 0.03 \text{ \AA}$; $c_0 = 0.95 \pm 0.08 \text{ \AA}$; $\beta = 99^\circ 54' \pm 30'$. The space group is $C2h$, the symmetry of the pyrophyllite layers $C2h$. The high vacuum in which the electron diffraction is done eliminates the excess water content of ordinary montmorillonite to such a degree that the compn. is practically $Al_2(Si_4O_{10})(OH)_2$ with characteristic replacements of Al^{3+} ions by Fe, Mg, and of Si^{4+} by Al^{3+} . The agreement of the results with the detn. of the structure by x-ray diffraction is complete. The pseudohexagonal character of the structure is particularly seen in the position of the reflections (111) and (021) on the first, of (201) and (131) on the second, of (22) and (041) on the third, of (331) and (061) on the fifth ellipse curve of the diffraction diagram. W. Eitel

W. Eitel 2/27/57

Soils Inst. in Dokuchaev
Inst Geol. Sci., AS USSR

Nature of the Askani clays and their mother rocks. B. B. Zvyagin, R. L. Lapilus, and V. P. Petrov (Akad. Nauk S.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 68, 377-381 (1969). The important montmorillonite clays of Askani are formed by decomposition of biotite andesite-trachyte tuffs. Two types of montmorillonites are distinguished: the scaly-earthly clay ("askanglin"), and the colloidal "askangel." The first does not form stable suspensions in water; askangel, on the other hand, forms very stable suspensions of a high thixotropy, and plasticity, but of low base-exchange capacity, in contrast to askanglin, which has a high capacity. The andesite-trachytes contain cavities with cristobalite, a mordenite-like fibrous zeolite, and K amorphous. The rock is glassy, with andesine phenocrysts, sandstone, and biotite. D. leucite is the typical chlorite mineral formed by the auto-metamorphic reactions in the glass. The electron microscopic examination showed the spindle-shaped crystallites of this chlorite mineral, with the elementary cell dimensions $a_0 = 5.22$; $b_0 = 9.04$; $c_0 = 15.1$ A.; $\beta = 99^\circ 30'$. They are compared to the previous structural data given by Pauling and Murchy. From the genetic viewpoint, the formation of askangel in deeper horizons, immediately above the mother rocks, and of askanglin in the higher horizons is related to

the particularly fine-sealy character of the first in the electron micrographs. It is, however, crystalline in its electron diffraction, but with widened and somewhat indistinct lines. The cell dimensions are $a_0 = 5.17$; $b_0 = 8.91$; $c_0 = 9.95$ A.; $\beta = 99^\circ 57'$, which are in good agreement with that of montmorillonite. The particles of askanglin have a much coarser-cryst. type, with indicated pseudo-hexagonal shapes, and much more distinct diffraction lines, on a strong amorphous background. All indications are given that in the askanglin more amorphous material is present than in askangel. The transition from askangel to askanglin is apparently combined with a thorough disturbance of the regularity of the structure, and the formation of amorphous material, but simultaneously with a coarser-sealy texture. The a_0 and b_0 dimensions are the same in both types. Askanglin is the metasomatic product of mineralization of the glass in the mother rock, under definite phys.-chem. conditions, while askanglin represents a transition phase formed in surface-near horizons (kaolin type). W. Eitel

L 3356-66 EWT(1)/EWT(m)/T/EWP(t)/RWP(b) IJP(c) JD/W/GG
ACCESSION NR: AP5013474 UR/0185/63/010/005/0525/0530

AUTHOR: Zvyahin, A. I. (Zvyagin, A. I.); Yerdzenko, V. V.

TITLE: Infra-red absorption spectra of crystals of antiferromagnetic cobalt compounds

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 5, 1965, 525-530

TOPIC TAGS: IR absorption, antiferromagnetic materials, cobalt compound

ABSTRACT: The absorption of light was studied in the near infra-red region over a wide temperature range (from ~ 10 to 400°K) in a number of cobalt compounds (CoF_2 , CoO , CoCO_3 , CoCl) and crystalline ZnS with a small addition ($\sim 1\%$) of Co , all of which become antiferromagnetic at some definite temperature T_N . Samples were in the form of thin (0.03-0.05 mm) slices. Special care was taken to maintain the CoCl_2 free from water. In all the above compounds an absorption band was observed in the range $\nu_{\text{max}} \approx 7000 \text{ cm}^{-1}$ which was relatively wide (half width $\delta \approx 2000 \text{ cm}^{-1}$) and intense ($k_{\text{max}} \approx 10^3 \text{ cm}^{-1}$), associated with the transition between energy levels resulting from a splitting of the ground level of Co^{++} ($^4F_{7/2}$) by internal electric fields. The infra red band corresponds to the transition $F_4 + F_3$, which is forbid-

L 3356-66

ACCESSION NR: AP5013474

den in the electric dipole approximation, and it is assumed that this transition is made possible by the interaction of the electrons with the optical phonons. By comparing the experimental values of the total intensity of the transition with the theoretical calculations of A. D. Liehr and C. J. Ballhausen, *Phys. Rev.*, 106, 1161 (1957), an estimate was made of the frequency ω_0 of phonons effective in the mechanism of the $\Gamma_4 + \Gamma_5$ transition. The estimated values obtained were $\omega_0 \approx 400 \text{ cm}^{-1}$ for CoO , CoF_2 , CoCO_3 and $\omega_0 \approx 240 \text{ cm}^{-1}$ for CoCl_2 . Absorption measurements were made in the far infra-red region ($400-1400 \text{ cm}^{-1}$) to verify the assumption of electron-optical phonon interaction. They showed an increase in absorption, at frequencies in good agreement with the above estimates of ω_0 evidently connected with the excitation of the crystal lattice oscillations. Also the ω_0 for CoCl_2 is in good agreement with the intervals ($\Delta\nu = 235 \pm 5 \text{ cm}^{-1}$) observed in the optical spectra of MnCl crystals. The variation of the maximum of the absorption band with temperature was studied. Within the resolution of the spectrometer ($\approx 100 \text{ cm}^{-1}$) the position of the maximum was found to vary linearly with temperature even in the vicinity of T_N . Graphs show the variation of the half width of the absorption band with temperature. Again no sudden changes in the vicinity of T_N were observed. It is assumed that the high energy of the optical phonons (which allow the transition $\Gamma_4 + \Gamma_5$) as compared with the value of the exchange energy, masks the effect of the

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L 3356-66
ACCESSION NR: AP5013474

antiferromagnetic ordering on the band parameters. Orig. art. has: 3 fig., 2 tables.

ASSOCIATION: Fizyko-tekhnichnyy instytut nyz'kikh temperatur AN URSS, Kharkiv
(Physico-Technical Institute of Low Temperature Research, AN URSS)

SUBMITTED: 29Jun64

ENCL: 00

SUB CODE: SS, OP

NO REF SOV: 004

OTHER: 009

Card 3/3 DP

L 1584-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/HW/CO

ACCESSION NR: AP5015440 UR/0185/65/010/006/0636/0644 57
45 B

AUTHORS: Zvyahin, A. I. (Zvyagin, A. I.); Yeremanko, V. V. 24 55 21. 9/65

TITLE: Investigations of infrared absorption spectra of crystals of antiferromagnetic cobalt compounds. II. Absorption in CoC and CoF_2 caused by the spin-orbit splitting of the lowest level

SOURCE: Ukrayinsk'yy fizychnyy zhurnal, v. 10, no. 6, 1965, 636-644

TOPIC TAGS: ir spectrum, absorption spectrum, cobalt compound, anti-ferromagnetic material 27

ABSTRACT: This is a continuation of earlier work by the authors (FIT v. 5, 1013, 1964; Ukr. fizychn. zh. v. 10, no. 5, 1965). With the aim of ascertaining the effect of the transition to a magneto-ordered compound on the optical spectrum of antiferromagnets, the authors investigated (in polarized light) over a range of 10 -- 400K the behavior of absorption bands due to transitions between components of spin-orbit splitting of the lowest level of the term $^4F_{9/2}$ of the Co^{++}

L 1584-66

ACCESSION NR: AP5015440

ion of the antiferromagnetic compounds CoO and CoF_2 in the frequency region $600 - 2000 \text{ cm}^{-1}$. An IKS-14 spectrometer was used. The CoO , CoF_2 , and $\text{ZnS} + \text{Co}^{++}$ samples were polished platelets $0.03 - 0.05$, $0.3 - 0.5$, $0.4 - 10 \text{ mm}$ thick with an area $3 \times 5 \text{ mm}$. The larger number of absorption bands in the CoF_2 spectrum than expected from a consideration of the spin-orbit splitting of the ${}^4F_{9/2}$ term in a D_{2h} field at temperatures above the Neel point can be understood by assuming removal of translational degeneracy. The strong frequency shift of a number of band maxima (up to 30 cm^{-1}) on magnetic ordering to the long-wavelength side is related to the fact that the Zeeman splitting of the ground state of the Co^{++} ion in the exchange field is smaller than that of the excited states. The anomalous intensity decrease observed by Newman and Zhrenko (Phys. Rev. v. 115, 1147, 1959) of the 1235 cm^{-1} band with unpolarized light on transition through the Neel point was not observed in polarized light. The sharp change in the temperature dependence of the half-width of the bands

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ACCESSION NR: AP5015440

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at the Neel point is apparently connected with a difference in the dominant mechanism responsible for the shape of the bands: above the Neel point interaction with phonons is dominant, while below it interaction with spin waves predominates. 'The authors thank Corresponding Member of the Ukrainian Academy of Sciences, E. I. Vyertin⁴⁴⁵ and Professor Borovik-Romanov⁴⁴⁵ for interest in the work, and V. H. Yurko⁴⁴⁵ for assistance in carrying out the experiment.' Orig. art. has: 2 formulas, 1 table, and 6 figures

ASSOCIATION: Fiziko-tekhnichnyy instytut nyz'kykh temperatur AN URSR, Kharkiv [Fiziko-tehnicheskyy institut nizkikh temperatur AN UkrSSR, Khar'kov] (Physicotechnical Institute for Low Temperatures, AN UkrSSR)

445

SUBMITTED: 29Jun64

ENCL: 00

SUB CODE: SS, OP

NR REF SOV: 006

OTHER: 009

Card 3/3 AP

**Electronographic study of minerals of the montmorillonite group. Doklady
Akad. Nauk S.S.S.R. 86, 149-52 '52. (MLRA 5:9)
(GA 47 no.21:11087 '53)**

ZVYAG

APPROVED FOR RELEASE Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4
CIA-RDP86-00513R002065720005-4

USSR/Mineralogy

Card 1/1

Authors : Zvyagin, B. B. and Nefedov, E. I.

Title : About cookeite

Periodical : Dokl. AN SSSR 95, 6, 1305 - 1308, 21 Apr 54

Abstract : The article says that cookeite has been found in the N. W. of the USSR, and describes cookeite characteristics observed through microscopic, physical (optical, thermal, electronographic), and chemical analyses. There are 2 tables compiled from the technical analysis of cookeite.

Institution : All Union Research Scientific Geological Inst. Leningrad

Submitted : 22 Feb 1954

Card 17

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4

Author : Zvyagin, B. B.

Title : Certain characteristics of diffraction charts of lamellar silicates

Periodical : Dokl. AN SSSR, 97, Ed. 2, 251 - 253, July 1954

Abstract : Thesis on the structure of lamellar silicates consisting of layers, which in each concrete case represent a definite combination of two-dimensional tetrahedron lattices populated with Si, Al atoms and two-dimensional octahedron lattices populated with Al, Mg, Fe atoms. Data are given on the atoms oriented in the centers and summits of the polyhedrons. The atoms of various layers oriented on proper levels have identical z' -coordinates. The atoms on each level are arranged either hexagonally-centrally or hexagonally-noncentrally. One reference.

Institution : All-Union Scien-Research Geological Institute

Presented by : Academician N. V. Eslov, March 23, 1954

APPROVED FOR RELEASE: Thursday, December 2, 2002
[Translator]; ZVIAGIN, B.B. (Translator); FRANK-KAMNETSKAYA, T.A.,
redaktor; TSUKERMAN, A.M., redaktor; GRIBOVA, M.P.
tekhnicheskii redaktor.

[X-ray identification and crystal structures of clay minerals;
collection of articles. Translated from the English] Rentgenovskie
metody opredeleniia i kristallicheskoe stroenie mineralov glin;
sbornik statei. Peravod s angliiskogo B.B.Zviagina i T.A.Frank-
Kamenetskoi. Pod red. i s predisl. V.A.Frank-Kamenetskogo. Moskva,
izd-vo inostrannoi lit-ry, 1955. 402 p.
(Clay) (X-rays) (MLRA 8:11)

**Some diffraction properties of clayey minerals represented in
electronograms of oblique textures. Trudy Inst.krist.no.11:85-93
155. (MIRA 9:6)**

**I.Vessoyuznyy nauchno-issledovatel'skiy geologicheskij institut.
(Diffraction)**

FRANK-KAMENETSKAYA, T.A. [translator]; RAZHEGAYEVA, G.I. [translator];
redaktor; YAKOVENKO, M.Ye., redaktor; DUMBRN, I.Ya., tekhnichaskiy
redaktor

[Clay mineralogy. Translated from the English] Mineralogiia glin.
Perevod angliiskogo B.B.Zviagina i dr. Pod red. i s predisl. V.A.
Frank-Kamenetskogo. Moskva, Izd-vo inostrannoi lit-ry, 1956.
454 p.
(Clay)
(MLRA 9:10)

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 1, 15-57-1-420
p 66 (USSR)
Zvyagin, B. B.

AUTHOR:

TITLE:

The Identification of Clay Minerals by the Electrono-
graph (Opredeleniye glinistykh mineralov metodom
elektronografii)

PERIODICAL:

Vopr. mineralogii osadoch. obrazovaniy. Books 3-4,
L'vov, L'vovsk. un-t, 1956, pp 654-667.

ABSTRACT:

In its present stage of development, the electronograph,
as a method of structural analysis in identifying clay
minerals, permits the solution of the following
problems: 1) the identification of clay minerals
forming clay deposits and the clay fraction of other
rocks (minerals of the kaolinite, montmorillonite,
hydromica, beidellite-monothermite, and chlorite
groups); 2) the qualitative identification of these
minerals in natural mixtures if they are distinguished
by the parameters a, n, and b; 3) the recognition

The Identification of Clay Minerals by the Electronograph (Cont.)

within each group of the degree of perfection of the structure, reflecting the conditions of formation of the minerals; and 4) the separation of formations consisting of intergrowths of different components of two-layer and three-layer structures (beidellite-monothermite).

Card 2/2

O. V. K.

B-5

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14492
Author : B. B. Zvyagin
Inst :
Title : An Electron Diffraction Study of Hydromicas
Orig Pub: Kristallografiya, 1956, 1, No 2, 214-217

Abstract: An electron diffraction determination was conducted of the elementary nuclei of 56 samples of hydromicas. Various hydromicas differ from one another, according to their phys-chem. and genetic properties, in the degree of their structural perfection, dimensions of their elementary nuclei and the distribution of the reflexes' intensities. The nuclei, depending on their chem. composition and the period of the alternation of their three-storied silicate layers into one or two layers are characterized by the values: a 5.16-5.29, b 8.90-9.20, c 10.1-10.3 kX, θ 99.5°-101.5° (in the transition to one layer) or with c 20.0-20.6 kX,

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14492

B-5

Abstract: β 93.5^o-96^o (in the transition to two layers). Five groups of samples were isolated, differing from one another by the distribution of the reflexes' intensities.

~~SECRET, S.S.~~

Electronographic method for determining clay minerals. Vop.mn.
osad.obr. 3/4:654-667 '56. (MLRA 9:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut,
Leningrad.
(Clay) (Electronography)

YU.I.; SHAKHOVA, R.A.; IVANOVA, I.I.; TATARINOV, P.M., prof.; red.;
GYSLAR, A.N., prof.red.; DOMINIKOVSKIY, V.N., kand.geologo-
mineralogicheskikh nauk, red.; KNIPOVICH, Yu.N., kand. geologo-
mineralogicheskikh nauk; SMUROV, A.A., kand. geologo-mineralogiche-
skikh nauk; FRANK-KAMNITSKIY, V.A., kand. geologo-mineralogiche-
skikh nauk; BABIMSEV, N.I., red.izd-va; KRYNOCHKINA, K.V., tekhn.red.

[A methods manual on the petrographic and mineralogical study of clays]
Metodicheskoe rukovodstvo po petrografo-mineralogicheskomu izucheniu
glin; trudy Instituta. Sost. kolektivom avtorov pod rukovodstvom M.F.
Vikulovoi. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geol. i
okhrane nedr, 1957. 447 p. (MIRA 11:2)

1. Leningrad. Vsesoyuznyy geologicheskii institut. 2. Chlen-
korrespondent AN SSSR (for Tatarinov)
(Clay)

Reflection method used in electron diffraction examination of powdered celadonite. Kristallografiia 2 no.1:181-183 '57.

(MIRA 10:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut.
(Electron diffraction examination) (Celadonite)

AUTHOR: Zvyagin, B.B.

TITLE: Determination of the structure of seladonite by means of electron diffraction. (Elektronograficheskoye opredeleniye struktury seladonita)

PERIODICAL: "Kristallografiya" (Crystallography), 1957, Vol. 2, No.3, pp. 393 - 399 (U.S.S.R.)

ABSTRACT: The possibilities of electron diffraction are utilised for the complete determination of the structure of seladonite $K_{0.8}(M_{0.7}Fe_{1.4})[Al_{0.4}Si_{3.6}O_{10}](OH)_2$. The unit cell is $a = 5.20$, $b = 9.00$, $c = 10.25$ kX, $\beta = 100.1^\circ$. The atomic co-ordinates and interatomic distances were determined by means of Fourier syntheses. The mean ratio of the linear dimensions of the octahedrons and tetrahedrons, $k \approx 1.11$. A number of distortions were revealed of the ideal arrangements and of the regular forms of the polyhedrons and of the central locations of the cations in these.

Acknowledgments are made to Vaynshteyn, B.K., Doctor of Physical and Mathematical Sciences, for his valuable advice and to Iazarenko, E.K., Malkova, K.M. and Shashkina, V.P. for making available specimens and their chemical data. There are 7 figures and 12 references, 8 of which are Slavic.

Card 1/2

ZVIAGIN, B. S.

APPROVED FOR RELEASE: Thursday, September 26, 2002

CIA-RDP86-00513R002065720005-4"

New Possibilities in Structural Research of Clay Minerals by Electron Diffraction Methods."

paper distributed at the International Clay Mineralogy Congress in Brussels, Belgium, 1 - 5 Jul 58.

Comment: B-3,116,859.

SOV/70-3-6-8/25

AUTHORS: Popov, N.M. and Zvyagin, B.B.

TITLE: Application of a 400 kV Electronograph to the Study of Single Crystals (Primeneniye 400-kV elektronografa dlya issledovaniya monokristallov)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 6, pp 706-708/ (USSR) + 4 plates

ABSTRACT: The principal difficulty in the electron diffraction examination of clay minerals is that so many reflections overlap. Even in texture pictures there is much overlapping while powder photographs are very difficult to interpret unambiguously. Diffraction from single crystals of dimensions about 1μ in chance orientations is one solution to the problem. However, if high-energy electrons are used, a crystal big enough to be manipulated can be examined. A new Soviet 400 kV electron microscope (described by N.M. Popov in Izv. Ak. Nauk SSSR, Ser. Fiz., 1958) has been applied for this purpose. The accelerating voltage is measured to 0.5% by an electrostatic voltmeter. The i.p. voltage is stabilised with a synchronous motor-generator. A resistance/capacity filter reduces voltage fluctuations to less than 0.005%. Four-stage focussing produces a concentrated electron beam. The relativistic

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SOV/70-3-6-8/25

Application of a 400 kV Electronograph to the Study of Single Crystals

speed of the electron is up to 600 keV. A universal stage permits the movement of the specimen up to 75° in all directions. 6 objects can be examined serially in the same holder without breaking the vacuum. Both transmission and reflection techniques can be used. A semi-automatic camera keeps the X-ray background on the plates to a minimum. Specimens up to 3μ thick can be examined.

Specimens of kaolinite and dickite were used for testing the diffraction performance. A spot pattern from single crystals of kaolite and dickite are reproduced. Indexing the spots is therefore extremely easy. The minimum value of d recorded is about 0.4 KX. The technique of very high-voltage diffraction is thought to be extremely valuable for such dispersed systems.

Card 2/3

Application of a 400 kV Electronograph to the Study of Single Crystals SOV/70-3-6-8/25

ASSOCIATION: Vsesoyuznyy geologicheskii institut
(All-Union Geological Institute)

SUBMITTED: February 28, 1958

Card 3/3

BY NAME OF FRANK-KAMENATSKIY, V.A.

Conference on X-ray examination of clay minerals held in Lvov,
December 1957. Zap. Vses. min. ob-va 87 no.2:245 '58.

(MIRA 11:9)

1. Deystvitel'nyy chlen Vsesoyuznogo mineralogicheskogo obshchestva
(for Frank-Kamenatskiy).
(Clay--Analysis) (X rays--Industrial application)

Use of a 400 kv. electron diffraction unit for the investigation
of single crystals. Kristallografiia 3 no.6:706-708 '58.
(MIRA 12:2)

1. Vsesoyuznyy geologicheskii institut.
(Electron diffraction apparatus)

AUTHORS: Popov, N. M., Zvyagin, B. B.

SOV/48-23-6-1/28

TITLE: Investigation of Minerals by Means of the Method of Microdiffraction in an Electronic Microscope-Electronograph With an Accelerating Voltage of 400 kV (Izucheniye mineralov metodom mikrodiffraktsii v elektronom mikroskope-elektronografe s uskoryayushchim napryazheniyem 400 kV)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 6, pp 670 - 672 (USSR)

ABSTRACT: The method of microdiffraction is a considerable advantage both for electron-microscopy and for electronography, and in the introduction the possibility of imaging any micropart of a preparation and the quantitative structural analysis are discussed. The analogy between the here discussed method and the use of polarized light in optical microscopes is briefly discussed, after which the usual structural analysis, by means of which the relative intensity of reflections is determined, and the dark-ground image is discussed. Finally, the microscope-electronograph constructed by N. M. Popov is discussed, which has an accelerating voltage of 400kV; the diameter of the electron beam is 0.05 μ . This exceedingly small diameter makes it possible to investigate minerals composed of very small particles and to

Investigation of Minerals by Means of the Method of SOV/48-23-6-1/28
Microdiffraction in an Electronic Microscope-Electronograph With an
Accelerating Voltage of 400 kV

watch the structural transitions on the particle boundaries.
In the last part of the paper the 12 figures shown are discussed.
Of these, 8 are X-ray pictures, and the remaining four are
dark-ground images. Investigations are carried out of kaolin,
gallusite, montmorillonite, serpentine minerals, antigorite,
chrysotile, and sepiolite. There are 12 figures and 3 references,
1 of which is Soviet.

YAKOV, Boris Borisovich

"The Contribution of Electron Diffraction to the Crystal
Chemistry of Clay Minerals"

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

~~SECRET~~. The Electron Diffraction Refinement of the Structure of Muscovite."
paper submitted for 5th Gen. Assembly, Symposium on Lattice Defects, Intl. Union
of Crystallography, Cambridge U.K. Aug 1960.

24.7100

78097
SOV/70-5-1-6/30

AUTHOR:

Zvyagin, B. B.

TITLE:

Determination of Kaolinite Structure by the Electron
Diffraction Method

PERIODICAL:

Kristallografiya, 1960, Vol 5, Nr 1, pp 40-50 (USSR)

ABSTRACT:

The structure of kaolinite has remained unclear despite continuous studies for over 25 years. The difficulty is related to the occurrence of this mineral in several modifications, such as monoclinic with the unit translation c through 1, 3, and perhaps 6 sheets of tetrahedra and triclinic through 1 sheet. The direct determination of the kaolinite structure became possible by employing the electron diffraction method. The diffraction patterns from oriented kaolinite flakes were obtained by device EM-4 and the patterns from single crystals by Popov's device (theses at the Fedorov Session on Crystallography held in Leningrad, 1959. Publishing House

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Determination of Kaolinite Structure by
the Electron Diffraction Method

78097
SOV/70-5-1-6/30

AS USSR, 1959). The diffraction patterns from polycrystalline specimens of the most common triclinic kaolinite resemble those from a monoclinic crystal because of the orientation of flakes with ab parallel planes. The author analyzes several equations that permit one to distinguish the triclinic pattern and to index the diffractions. Thus, the lattice constants for triclinic kaolinite could be determined as $a = 5.13 \text{ \AA}$; $b = 8.89 \text{ \AA}$; $c = 7.25 \text{ \AA}$; $\alpha = 91^\circ 40'$; $\beta = 104^\circ 40'$; $\gamma = 90^\circ$. Having obtained the two-dimensional intensity projections and calculated structure factors, a preliminary model was made, which proved to be far off the real structure because of numerous defects in the latter. Consequently, the infinite sheets of SiO_4 tetrahedra and their links with the adjacent octahedral sheets were established comparing the experimental intensities with those calculated on the

Determining the structure by
the Electron Diffraction Method

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720005-4
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78097
SOV/70-5-1-6/30

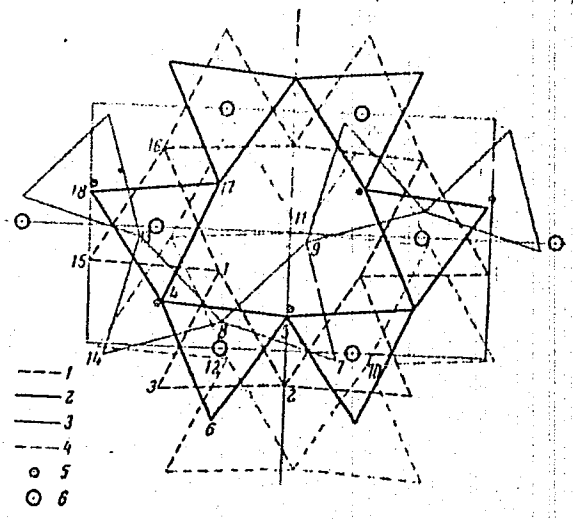
basis of ideal models. The new preliminary model, based on these data, had polar sheets, no center of symmetry, and no mirrors. The refinement of the model by a repeated calculation of the scattering density functions disclosed that both octahedra and tetrahedra sheets exhibit much better order than the kaolinite structure as a whole. The latter consists of two-sheet layers of which the upper sheet (Fig. 6) is composed of SiO_4 tetrahedra, and the lower of (Al) octahedra, slightly flattened because of the reduced length of the edges common with neighbors. Al atoms are displaced from the octahedron centers toward the OH bases. Similarly, Si atoms are displaced from the tetrahedron centers toward the bases. The tetrahedra sheets are shifted relative to those of octahedra by $1/3$ b. The accuracy of atomic coordinates is ± 0.02 A for Si and Al and ± 0.03 A for O.

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Determination of the Crystal Structure by
the Electron Diffraction Method

APPROVED FOR RELEASE: Thursday, September 26, 2002
CIA-RDP86-00513R002065720005-4

78097
SOV/70-5-1-6/30



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Fig. 6. Caption on Card 5/

Determination of Kaolinite Structure by
 the Electron Diffraction Method

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Fig. 6. Schematic representation of kaolinite structure in orthogonal xyO projection. (1) Basal faces of octahedra; (2) upper faces of octahedra; (3) bases of tetrahedra; (4) basal faces in the next lower sheet; (5) Si; (6) Al.

Table 2. Atomic Coordinates in the structure of kaolinite

ATOM	x	y	z	ATOM	x	y	z	ATOM	x	y	z
O ₁ (II)	-0,223	0,175	-0,128	O ₃	-0,304	0,004	0,157	Al ₁	-0,500	0,171	0,002
O ₂ (II)	-0,696	-0,003	-0,136	O ₄ (II)	-0,763	0,188	0,155	Al ₂	0,000	0,333	0,000
O ₃ (II)	-0,723	0,321	-0,128	O ₇	-0,385	-0,105	0,455	Si ₁	-0,195	0,002	0,384
O ₄	-0,263	0,322	0,155	O ₈	-0,209	0,177	0,475	Si ₂	-0,195	0,339	0,386
				O ₉	0,112	-0,041	0,454				

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Table 3. Interatomic distances in the structure of kaolinite

Атом	x	y	z	Атом	x	y	z	Атом	x	y	z
O ₁ -O ₂	2,88	Al ₁ -O ₁	1,88	O ₅ -O ₁	2,71	Al ₂ -O ₁₃	1,92	O ₈ -O ₇	2,66	O ₈ -Si ₁	1,68
O ₁ -O ₃	2,88	Al ₁ -O ₃	1,94	O ₅ -O ₂	2,75	Al ₂ -O ₁₀	1,88	O ₈ -O ₄	2,63	O ₈ -Si ₁	1,58
O ₄ -O ₃	2,84	Al ₁ -O ₃	1,86	O ₈ -O ₅	2,66	O ₄ -Al ₂	1,96	O ₁₃ -O ₁	2,58	Si ₂ -O ₈	1,64
O ₅ -O ₄	2,84	O ₄ -Al ₁	1,92	O ₈ -O ₅	2,64	O ₁₇ -Al ₂	1,96	O ₁₄ -O ₁	2,65	O ₈ -Si ₂	1,63
O ₅ -O ₂	2,52	O ₅ -Al ₁	2,00	O ₇ -O ₈	2,50	O ₁₈ -Al ₂	2,02	O ₁₈ -O ₂	3,04	O ₁₃ -Si ₂	1,54
O ₄ -O ₁	2,42	O ₅ -Al ₁	1,93	O ₉ -O ₇	2,62	Si ₁ -O ₅	1,58	O ₁₁ -O ₁	2,90	O ₁₄ -Si ₂	1,60
O ₄ -O ₃	2,68	Al ₂ -O ₁	1,87	O ₅ -O ₉	2,58	O ₇ -Si ₁	1,56	O ₁₂ -O ₃	2,92		

The structural data of the author quantitatively differ from the figures given for dickite (U.S. reference 1). Qualitatively, they are identical. N. V. Belov and B. K. Vaynshteyn are acknowledged for advice in the construction of models and in the interpretation of data, respectively. There are 6

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