

о.о. (yay) 1.1.
BELYAYEV, I.I., professor; BUDRIN, R.N., professor; YURASOVA, T.S., vrach;
KOSLOVA, T.V., vrach; POPOV, V.S., vrach

Hygienic problems in the formation and utilization of Gorkii
Reservoir. Gig. i san. 22 no.4:61-64 Ap '57. (MLRA 10:9)

1. Iz Gor'kovskogo meditsinskogo instituta imeni S.M.Kirova.
(WATER SUPPLY,
creation & utilization of watershed (Rus))

BELYAYEV, I.I., prof.

Training of public health physicians under new conditions. Gig.
i san. 23 no.11:50-52 N '58. (MIRA 12:8)

1. Iz Gor'kovskogo meditsinskogo instituta imeni S.M. Kirova.
(MEDICINE--STUDY AND TEACHING)

BELYAYEV, I. I., BLOKH, S. S., GUS'KOVA, V. N.

"Hygienic evaluation of new methods of purifying
drinking water."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists
and Infectionists, 1959.

.BELYAYEV, I.I.
EXCERPTA MEDICA Sec 17 Vol 5/11 Public Health Nov 59

3695. A WATER CLARIFICATION METHOD WITH SUSPENDED SEDIMENTS
(Russian text) - Belyaev I. I. - GIG. I SAN. 1959, 4 (7-11) Tables 2
Illus. 1

An efficient study of water clarification with suspended sediments made in 1957 at one of the water filtration plants in Gorky, proved to render a sufficiently high degree of purification. The best results were obtained during the period from April to October. A decrease in the amount of sediment in the incoming water and a fall in its temperature had an unfavourable effect on the degree of water purification. Sedimentation tanks with suspended filtering material may be used successfully at waterworks provided with a two-stage water treatment system.

BELIYAYEV, I.I., prof.

Problems solved and unsolved. Gig.i san. 25 no.7:108-109 J1
'60. (MIRA 14:5)
(GORKIY PROVINCE--PUBLIC HEALTH SOCIETIES)

BELYAYEV, I.I., prof.

Hygienic aspects in preventing pathological conditions of the circulatory organs. Gig. i san. 26 no.4:71-76 Ap '61. (MIRA 15:5)

1. Iz Gor'kovskogo meditsinskogo instituta.
(CARDIOVASCULAR SYSTEM--DISEASES)

BELYAYEV, I.I., prof.; ZOLOTOV, P.A., dotsent

Concerning a review. Gig. i san. 26 no.8:96-98 Ag '61.

(MIRA 15:4)

(PUBLIC HEALTH)

BELYAYEV, I.I., prof.

Water purification through 2-layer (anthracite-quartz) filters.
Gig. san. 26 no.8:100-102 Ag '61. (MIRA 15:4)

1. Iz Gor'kovskogo meditsinskogo instituta imeni S.M.Kirova.
(WATER--PURIFICATION) (FILTERS AND FILTRATION)

BELYAYEV, I.I., prof.

A.N.Sysin in Nizhniy Novgorod. Gig. 1 san. 26 no.11:45-49 N '61.
(MIRA 14:11)

1. Iz Gor'kovskogo meditsinskogo instituta imeni S.M.Kirova.
(SYSIN, ALEKSEI NIKOLAEVICH, 1879-)

BELYAYEV, I.I., prof.; BLOKH, S.S., kand. med. nauk; GABOVICH, R.D.,
prof.; GORBOV, V.A., dots.; ZHABOTINSKIY, V.M., prof.;
ZASLAVSKAYA, R.M., kand. med. nauk; KIBAL'CHICH, I.A., kand.
med. nauk; KROTKOV, F.G., prof.; MOGILEVSKIY, Ya.A., kand. med.
nauk[deceased]; TRAKHTMAN, N.N., dots.; CHERKINSKIY, S.N., prof.;
GOROMOSOV, M.S., doktor med. nauk, red.; RYAZANOV, V.A., prof.,
red.; BUSHUYEVA, K.A., dots., red.; SELESKIRIDI, I.G., dots.,
red.; OSTROVERKHOV, G.Ye., prof., glav. red.; PETROVA, N.K.,
tekh. red.

[Manual on communal hygiene]Rukovodstvo po kommunal'noi gigiene.
Moskva, Medgiz. Vol.2. 1962. 763 p. (MIRA 15:12)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for
Krotkov). 2. Chlen-korrespondent Akademii meditsinskikh nauk
SSSR (for Cherkinskiy, Ryazanov).
(SOIL DISINFECTION) (WATER SUPPLY)

~~BELYAYEV, Ivan Kliment'yevich; PROTOPOPOV, N.N., dotsent, nauchnyy red.;~~
~~USELKOVA, L.A., red.; SUBBOTINA, G.M., tekhn.red.~~

[Socialist industrialization of Western Siberia] Sotsialisti-
cheskaia industrializatsiia Zapadnoi Sibiri. Red.N.N.Protopopov.
Novosibirsk, Novosibirskoe knizhnoe izd-vo, 1958. 252 p.
(MIRA 12:9)

(Siberia, Western--Industries)

BELYAYEV, I. I.

"Clinical Hematological Indicators in Leukoses and Sarcomatosis of Chickens."
Dokl. Akad. Nauk SSSR, Ser. Vet. Sci., Moscow, Veterinary Academy, 1954. (EZhBiol, No 4, Feb 55)

SO: Sum. No; 631, 26 Aug 55 - Survey of Scientific and Technical Dissertations
Defended at USSR Higher Educational Institutions (14)

USSR/Blood and Hematopoietic Organs

S-2

Abs Jour : Ref Zhur - Biol., No 5, 1958, No 21714

Author : Bolyayov, I.M.

Inst : Not Given

Title : Morphology of Hen Bone Marrow

Orig Pub : Tr. Mosk. vot. akad., 1955, 13, 138-142

Abstract : A study was made of the bone marrow of the metatarsal bone in 87 clinically healthy hens. Differential count was arrived at by counting 1000 cells. A following morphology of bone marrow cells was established. Myeloblasts (0.8-2.9%) are large cells with a rounded nucleus with a delicate lacelike structure. Protoplasm is agranular. Promyelocytes (5.8-8.5%) have a more compact nucleus of irregular shape. The protoplasm which surrounds the nucleus as a broad rim contains unevenly distributed granules. Myelocytes contain large, round, oval or rodlike nuclei. According the characteristics of the protoplasm and the granules which are found in great numbers in it, the myelocytes may be divided into basophilic (1.9-2.6%)

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USSR/Blood and Hematopoietic Organs

S-2

Abs Jour : Ref Zhur - Biol., No 5, 1958, No 21714

with a pale violet protoplasm and dark violet granules, eosinophilic (2.8-3.6%) with the pale blue protoplasm containing small pink granules, and the pseudoeosinophilic ones (20-26%) whose blue or pink protoplasm contains rodlike red granules. The cells of the erythroid series are represented by proerythroblasts (4-6.2%) with homogeneous nuclei and 2-3 hardly noticeable small nucleoli, erythroblasts (14-18%) whose nuclei are more compact and contain no nucleoli and whose protoplasm is basophilic, and normoblasts (16.3-20%) with weakly oxiphilic protoplasm and compact nuclei with radially situated chromatin. Megakaryocytes (0.5-1.2%) are large cells with a large loose nucleus and azurophilic granulation in the cytoplasm. The Turk cells (0.5-1.2%) have different sizes and shapes; the protoplasm is distinctly basophilic and a small nucleus lies eccentrically. The Ferrata cells (0-0.3%) are large, frequently polygonal cells whose round, irregularly shaped and loose is eccentrically located and contains 2-3 nucleoli. Protoplasm is well pronounced and contains slightly

Card : 2/3

USSR/Blood and Hematopoietic Organs

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Abs Jour : Ref Zhur - Biol., No 5, 1958, No 21714

noticeable azurophilic granulation or is weakly pronounced and granules are distinct. Reticulo-endothelial cells (0-0.3%) are rounded, of various size, with large loose nucleus and a narrow rim of cytoplasm (to times with small or large azurophilic granules). Mitoses are seldom found in the puncture (specimen).

Card : 3/3

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ALEKSEYEV, N.A.; BELYAYEV, I.M.; KRAPIVIN, V.F.; MALINOVSKIY, I.I.

[Planning and calculating construction and repair work on local roads]
Planirovanie i uchet stroitel'nykh i remontnykh rabot na mestnykh
dorogakh. Moskva, Avtotransizdat, 1953. 250 p. (MLRA 7:5)
(Road construction) (Roads--Maintenance and repair)

KAPSON, Aron Borukhovich; BELYAYEV, I.M., redaktor; MAL'KOVA, N.V.,
tekhnicheskiy redaktor

[Planning operations at the road machinery station] Planirovanie
raboty v mashinodorozhnoi stantsii. Moskva, Nauchno-tekhn. izd-vo
avtotransp. lit-ry, 1956. 79 p. (MLRA 10:1)
(Road machinery)

BELYAYEV, I.M., doktor sel'skokhozyaystvennykh nauk

Great possibilities for increasing the yield of headed grain crops. Zashch. rast. ot vred. i bol. 7 no.1:22-24 '62. (MIRA 15:6)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva nechernozemnoy polosy.

(Grain)

(Agricultural chemicals)

CA

PROCESSES AND PROPERTIES INDEX

Chemical control of the fruit fly. I. M. Belyaev. *Bull. Plant Protection (U. S. S. R.)* 1940, No. 4, 43-52. Fruit flies were killed in 5-10 min. by 1% molasses soln. contg. 0.5% of Na_2SiF_6 . Spraying with 0.5% Na_2SiF_6 and 0.5% Na_2HAsO_4 destroyed 45 and 85%, resp., of the flies after 1 hr. CaH_2AsO_4 is equal to Na_2SiF_6 in its toxic properties. Spraying with 2% BaCl_2 destroyed only 20% of the flies after 2-3 hrs., while NaF (0.5% soln.) destroyed 72% in the same period. After 24 hrs. the percentages of dead flies were 65 and 90, resp. Spraying with 0.5% Na_2SiF_6 destroyed 40-70 and 65-90% of the flies after 3 and 24 hrs., resp. Spraying grain with 1% starch molasses, glucose or refined molasses destroyed 80-88% of the flies. Addn. of aromatic substances (essential oils, terpinol, amyl acetate) to 0.01% molasses solns. increased the death rate by 20-30%. During the thickening period of spring grain it is recommended to spray the plants twice with 1% refined molasses and 0.5% Na_2SiF_6 . Spraying decreases the no. of the affected stems and increases the crops by 5-20%. W. R. Henn

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1. BELYAYEV, I. M.
2. USSR (600)
4. Agricultural Chemistry
7. Over-all chemical method for controlling grain crop pests, diseases and weeds, Sel. i sem., 19, No. 11, 1952.

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

BELYAYEV, I. M.

BW ①

B. T. R.
V. 3 No. 3
Mar. 1954
Agriculture

2846* Control of Grain Crop Pests in the Non-Black Earth Strip. (Russian.) I. M. Belyaev. *Dostizhenia Nauki i Peredovogo Opyta v Sel'skom Khoz'istve*, 1953, no. 11, Nov., p. 43-46.
Applications of hexachlorane for insect control and herbicides for weed control are described. Tables.

BELYAEV, I.M.

Vrediteli zernovykh kul'tur nechernozemnoi polosy (Grain crop pests in the nonchernozem belt). Moskva, Sel'khozgiz, 1954. 126 p. (V pomoshch'agronomu na proizvodstve)

SO: Monthly List of Russian Accessions, Vol 7, No 9, Dec 1954

DELHI, 1-1-1

72* (The "Mercuran" Preparation As a Control of Diseases and Pests of Cereal Crops) Preparat merkuran dlia bolezhe i vrediteliam i boleznam zernovykh kul'tur. I. M. Gerasimov. Zashchita, v. 2, no. 7 Sept. 1959, p. 111-112.
Gerasimov and his colleagues powder mercury, called "Mercuran", is extremely effective in recent experiments. (See Table 1, page 111).

BELYAYEV, I. M.

USSR/General and Special Zoology. Insects. Injurious
Insects and Ticks. Pests of Cereal Crops

P

Abs Jour : Ref Zhur - Bioli, No 11, 1958, No 49588

Author : Belyayev I.M.
Inst : Institute of Agriculture of the Non-Chernozem Belt
Title : Protection of Corn from Pests in the Non-Chernozem Belt.

Orig Pub : Zashchita rast. ot vredit. i bolezney, 1957, No 2, 29-31

Abstract : To control wireworms, the institute of Agriculture of the Non-Chernozem Belt recommends the planting of corn at optimal periods on well-cultivated and fertilized plots and treatment of seeds with Mercuran (0.2 and 0.3 kg/c.), or first with Granozan (0.1 kg/c.) and then with 12% hexachlorocyclohexane (HCCH) dust (1 and 2 kg/c) according to the degree of infection with wireworms upto 5 and 20 specimens per 1 m². Agrotechnical

Card : 1/2

USSR / General and Special Zoology. Insects. Harmful Insects and Arachnids. Pests of Grain Crops. P

Abs Jour: Ref Zhur-Biol., No 14, 1958, 64011.

Author : Belyayev, I. M.

Inst : ~~Scientific Research~~ Agricultural Institute of the Central Regions of the Non-chnozen Belt.

Title : The Effectiveness of Dusting and Spraying of Grain Crops Plantings in the Control of the Swedish Fly and Ribbon-footed Cornfly.

Orig Pub: Byul. nauchno-tekh. inform. n.i. in-ta znaned. tsentr. rayonov nachornozemn. polosy, 1957, 2, 32-34.

Abstract: Dusting of spring wheat once or twice with a 12% BHC (12-15 kg/ha) decreased the damage by the Swedish fly (SF) from 53% to 20%, by the ribbon-footed cornfly from 26-50% to 4-13% and

Card 1/3

33

USSR / General and Special Zoology. Insects. Harmful P
Insects and Arachnids. Pests of Grain Crops.

Abs Jour: Ref Zhur-Biol., No 14, 1958, 64011.

Abstract: increased the crop by 20%, while the dusting of corn in the phase of the second leaf (30 kg/ha) decreased the damage by the SF from 37 to 11%. Dusting of spring and winter wheat, barley, oats and rye in the phase of the second leaf and again in the phase of the third and fourth leaves with a preparation, containing 2% of BHC and 2% para-dichlorobenzene (PDB), 30 kg/ha, decreased the damage by the SF from 18-25 to 5-8%, by the ribbon-footed cornfly twice and increased the amount of ears and the crop by 22-25%. The damage to corn by the SF was: when dusting in the phase of the second leaf by the preparation of BHC and PDB, 20%; when the seeds were treated with mercuran, 9%; in the control 57%. When spring wheat was

Card 2/3

USSR / General and Special Zoology. Insects. Harmful P
Insects and Arachnids. Pests of Grain Crops.

Abs Jour: Ref Zhur-Biol., No 14, 1958, 64011.

Abstract: sprayed by a 2.4% (depending on the amount iso-
mers) suspension of BHC with a 0.3% solution of
2.4 DU (300 litres/ha), the damage to stems by
the SF decreased from 19-45 to 6-12%, while spray-
ing with a 0.3% chlorothane or chlorophenol emul-
sion decreased the SF numbers and the damage by
the ribbon-footed cornfly 2/3 times. -- A. P.
Adrianov.

Card 3/3

34

BELYAYEV, I. M.: Doc Agric Sci (diss) -- "Principles of a system of measures
against the main pests of grain crops in the non-chernozem band". Moscow, 1959.
36 pp (Moscow Order of Lenin Agric Acad im K. A. Timiryazev), 110 copies (KL, No 6,
1959, 137)

BELYAYEV, Il'ya Mikhaylovich

[Pests of grain crops in non-Chernozem areas] Vrediteli zernovykh
kul'tur nechernozemnoi polosy. Izd.2., dop. Moskva, Gos.izd-vo,
1959. 173 p. (MIRA 13:6)
(Grain--Diseases and pests)

BELYAYEV, I. M.

Basic measures against grain pests in the non-Chernozem zone.
Zashch. rast. ot vred. 1 bol. 5 no.6:22-24. Je '60.
(MIRA 16:1)

1. Zaveduyushchiy laboratoriyey zashchity rasteniy Nauchno-
issledovatel'skogo instituta sel'skogo khozyaystva Nechernozemnoy
polosy, Nemchinovka, Moskovskoy obl.

(Grain—Diseases and pests)

BESSARABOV, B.F., kand. veterin. nauk; BELYAYEV, I.M., kand. veterin. nauk

Method of phase-contrast microscopy in studying the formed
elements of blood. Veterinariia 38 no.11:77-79 N '61.

(MIRA 18:1)

1. Moskovskaya veterinarnaya akademiya.

BELYAYEV, I.M., doktor sel'skokhoz.nauk

Protecting corn fields. Zashch. rast. ot vred. i bol. 8 no.5:
31-32 My '63. (MIRA 16:9)
(Corn (Maize)--Diseases and pests)

BELYAYEV, I.M., doktor sel'skokhoz. nauk

Basic measures for controlling pests of headed grain. Zashch.
rast. ot vred. i bol. 7 no.9:32-34 S '62. (MIRA 16:8)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva
tsentral'nykh rayonov nechernozemnoy zony.
(Grain—Diseases and pests)
(Insects, Injurious and beneficial--Control)

BELYAYEV, I.M.; MUSHNIKOVA, K.S.; MILOVIDOVA, N.D., red.; STREL'TSOVA,
N.P., red.; KANTOROVICH, A.P., tekhn. red.

[Pests and diseases of grain crops] Vrediteli i bolezni zernovykh kul'tur. Izd.2. n.p. Sel'khozizdat, 1963. 34 p.
(MIRA 16:10)

(Grain--Diseases and pests)

FILATOV, Pavel Vasil'yevich, doktor veter. nauk; SUDAKOV, Nikolay Aleksandrovich, doktor veter. nauk; BELYAYEV, Ivan Mikhaylovich, kand. veter. nauk; ZELEPUKIN, V.S., red.

[Practical exercises in clinical diagnosis by X-raying]
Prakticheskie zaniatiia po klinicheskoi diagnostike s rentgenologii. Moskva, Izd-vo "Kolos," 1964. 199 p.
(MIRA 17:5)

BELYAYEV, I. M., BISSARABOV, Z. F., (Candidates of Veterinary Sciences, Moscow Veterinary Academy).

"Method of Phase Contrast Microscopy in Making a Study of Formed Blood Elements."
Veterinariya vol. 33., no. 11., November 1961., p. 77

0547

S/564/61/003/000/023/029
D207/D304

15.24110

AUTHOR: Belyayev, I. N.

TITLE: Preparing barium titanate monocrystals under near-isothermal conditions

SOURCE: Akademiya nauk SSSR. Institut kristallografii. Rost kristallov, v. 3, 1961, 447-450

TEXT: The author describes the preparation of $BaTiO_3$ monocrystals by allowing $BaCO_3$ and TiO_2 —which were not in immediate contact—to diffuse across a molten salt. After diffusion, the two components reacted, yielding $BaTiO_3$, which grew in monocrystalline form. The molten salt was a mixture of 40 mol.% K_2CO_3 + 60 mol.% Na_2CO_3 placed in a large (180 mm high, 70 mm diameter) Armco iron crucible. Molten TiO_2 was at the bottom of this crucible. $BaCO_3$ powder was placed in another (small)

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S/564/61/003/000/023/029
D207/D304

Preparing barium...

Armco iron crucible which was suspended at the top of the large crucible and submerged in the molten $K_2CO_3 - Na_2CO_3$ mixture. The large crucible was hermetically sealed and placed in a TГ-1 (TG-1) furnace which was kept at a constant temperature (800, 850 or $900 \pm 10^\circ C$) for 3 - 7 days. The best results were obtained after 7 days at $900^\circ C$: $BaTiO_3$ mono-

crystals produced in this way were up to 10 x 2 mm in size, light yellow in color, and with a Curie temperature of 110 - $115^\circ C$. Most of the monocrystals were of monodomain type. Their appearance and properties were described by I. N. Belyayev, N. S. Novosil'tsev, A. L. Khodakov and Ye. G. Fesenko (Ref. 4; Zhur. eksp. teor. fiz., 23, 211, 1952). There are 1 figure, 1 table and 13 references: 7 Soviet-bloc and 6 non-Soviet-bloc. The references to the English-language publications read as follows: I. R. Remeika, J. Amer. Chem. Soc., 76, 3, 940, 1954; M. G. Harwood, H. A. Klassen, Nature, 165, no. 4185, 73, 1950.

Card 2/2

BELYAYEV, I.

CS-0101

Source is report of E. A. Frieman and M. B. Gottlieb, on their visit to Moscow for the 2nd All-Union Gaseous Electronics Conference and a tour of the Institute for Atomic Energy, Moscow, October 2-12, 1958.

The following are on the staff of the Institute for Atomic Energy, working on Controlled Thermonuclear Reactions:

BELYAYEV, I. -- (I.N. Golovin Group).

SO: Project Matterhorn, AEC Contract, Princeton University, undated, Unclassified.

BELYAYEV, I.N.; AVER'YANOVA, L.N.; BELYAYEVA, I.I.

X-ray and dilatometric studies of the systems $PbZrO_5 - PbWO_4(MoO_4)$.
Izv. AN SSSR. Neorg. mat. 1 no.3:392-394 Mr '65. (MIRA 13:6)

1. Rostovskiy gosudarstvennyy universitet.

BELYAYEV, I.N.; MEDVEDEVA, L.I.; FESENKO, Ye.G.; KURPIYANOV, M.F.

Preparation and X-ray structural study of molybdates of
 A_2BMoO_6 -type complex composition. Izv. AN SSSR. Neorg.
mat. 1 no.6:924-927 Je '65. (MIRA 18:8)

1. Rostovskiy gosudarstvennyy universitet.

L 2287-66 EWP(e)/EWT(m)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/JG
ACCESSION NR: AP5022273

UR/0363/65/001/007/1184/1188
541.123.2

602
60
B

AUTHOR: Belyayev, I. N.; Aver'yanova, L. N.; Belyayeva, I. I.

TITLE: X-ray phase study of the systems "PbSnO₃" - PbWO₄, "PbSnO₃" - PbMoO₄, PbHfO₃ - PbWO₄, and PbHfO₃ - PbMoO₄.

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 7, 1965, 1184-1188.

TOPIC TAGS: ¹⁷lead compound, ¹⁷tin compound, ¹⁷tungsten compound, ¹⁷molybdenum compound, hafnium compound, ferroelectric material

ABSTRACT: ¹⁷The paper continues a study of the nature of solid-state reactions in systems involving ferroelectrics and antiferroelectrics. The pressed and sintered samples were analyzed by X-ray powder techniques. It was found that in the "PbSnO₃" - PbWO₄ system (where "PbSnO₃" is a mixture of 50 mole % PbO and 50 mole % SnO₂), the compound 3PbSnO₃·PbWO₄ is formed at 700-900C. At 900C, the compound begins to decompose into the original components. In the PbHfO₃ - PbWO₄ system, if the pressing preceding the sintering is carried out under a pressure of no less than 100 kg/cm² and the firing temperature is 800-1000C, the compound

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ACCESSION NR: AP5022273

2
2PbHfO₃·PbWO₄ is formed. The compounds observed have pyrochlore-type crystal lattices, and the unit cells are expressed by the formulas Pb₂(Sn_{1.5}W_{0.5})O_{6.5} and Pb₂(Hf_{1.33}W_{0.66})O_{6.6} with constant λ equal to 10.52 and 10.66 Å, respectively. In the "PbSnO₃" - PbMoO₄ system at 600-900C and compacting pressure (preceding the firing) of 50 kg/cm² and in the PbHfO₃ - PbMoO₄ system at 800C and a compacting pressure of 100 kg/cm², no chemical reactions are observed. Orig. art. has: 1 figure and 3 tables.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-on-Don State University)

SUBMITTED: 24Mar65

ENCL: 00

SUB CODE: IC, GC

NO REF SOV: 009

OTHER: 003

Card 2/2 *df*

BELIAYEV, I.N.; LE T'YUK

System (a)G1. is (a)G1. H.O at 2500. Zhur. neorg. khim. 10
no. 5:1229-1232 My '65.⁶ (BIRA 1886)

(27 APR 1948) (10 AND 51M CODES)

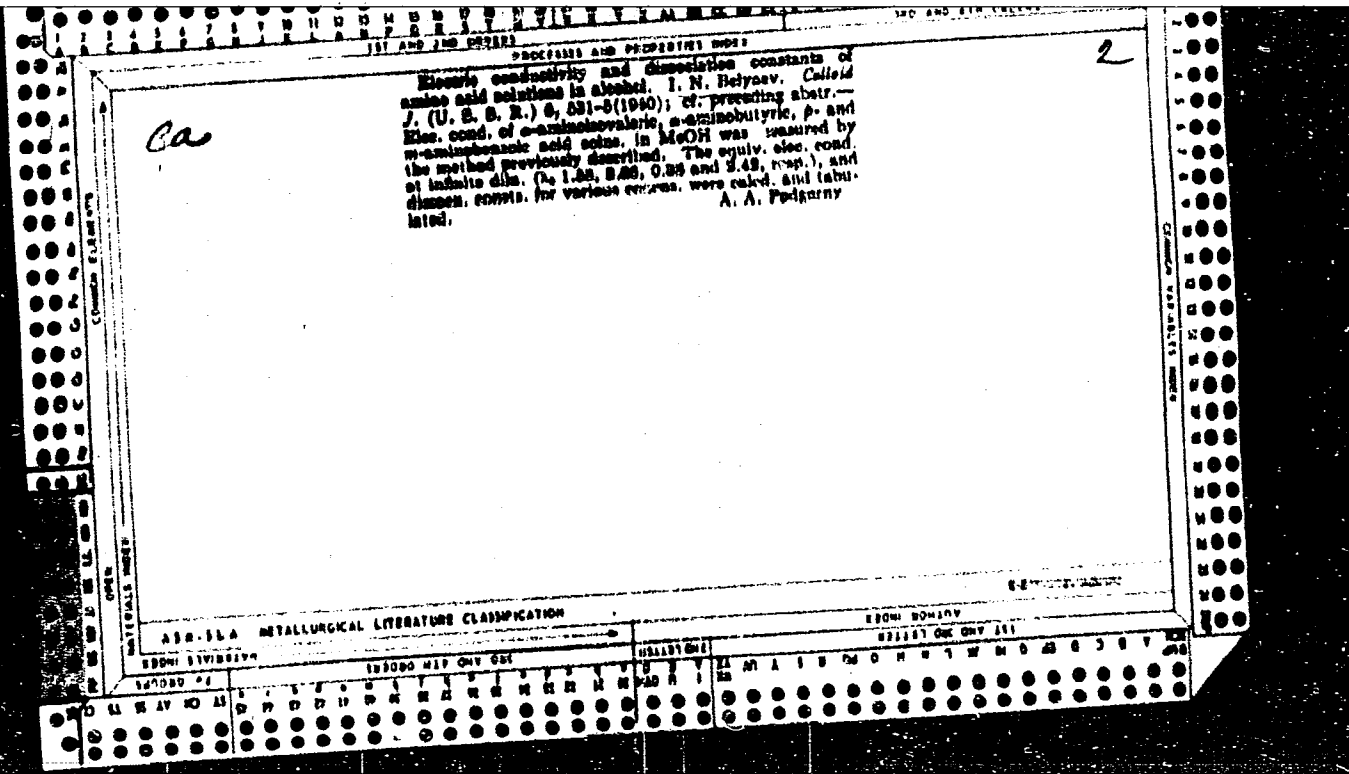
101
102

ca
 Electric conductivity of aqueous solutions of amino acids. J. N. Belyaev. *Colloid J.* (U. S. S. R.) 6, 471-84 (1944).—The elec. cond. of amino acids in aq. soln. was measured by the methods of Jones and Joseph (cf. C. A. 22, 1868), Lango (cf. C. A. 26, 4650^a), Shestovsky (cf. C. A. 26, 2181) and Sumochenko (cf. C. A. 27, 3323) and by that of Wagner modified by Nolepeta. The elec. cond. of the following aq. solns. of amino acids was measured: α -alanine, glycine, phenylalanine, α -aminobutyric acid, α -aminovaleric acid, tyrosine, m - and p -aminobenzoic acids and Na salts of glycine and α -alanine. The elec. cond. of m - and p -aminobenzoic acids was approx. 100-1000 times as high as that of α -amino acids, which was explained by transformation of α -amino acids in aq. soln. almost completely into dipole form. For aq. approx. K_1 for α -amino acids and K_2 for aminobenzoic acids it is recommended that the elec. cond. of the acids themselves be measured without measuring that of their salts. The data are tabulated and plotted. A. A. Podgorny

ASS-36A METALLURGICAL LITERATURE CLASSIFICATION
E-271076-56977

FROM SYNOBIV
FROM ROMIIV

11 M A Y M O D S
11 N O V M O Y G E
11 S E P T E M
11 J U N I O N O V



BELYREV, I. N.

PROCESSES AND PROPERTIES

BC

Temperature coefficient of the electric conductivity of solutions of *m*- and *p*-aminobenzoic acids. I. N. Belyrev (Kolloid. Zhurn., 1960, 8, 729-733).—For 0.005*m*-NH₄C₆H₄CO₂H $\kappa \times 10^3$ is 76 and 228 at 10.3° and 96.0°, for 0.01*m*, it is 78 and 236 at 10.0° and 95.8°, and for 0.015*m*, it is 79 and 239 at 9.0° and 90.4°. For the *p*-acid it is: 0.005*m*, 61 and 163 at 13.1° and 97.6°; 0.010*m*, 69 and 207 at 9.0° and 91.8°; 0.015*m*, 80 and 246 at 12.0° and 96.0°. κ rises with temp. linearly up to ~60°. The smaller temp. coeff. of the *m*-acid is probably due to its containing more of the dipolar form than does the *p*-acid. J. J. H.

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DD DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UQ UR US UT UV UW UX UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VQ VR VS VT VU VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WU WV WW WX WY WZ XA XB XC XD XE XF XG XH XI XJ XK XL XM XN XO XP XQ XR XS XT XU XV XW XX XY XZ YA YB YC YD YE YF YG YH YI YJ YK YL YM YN YO YQ YR YS YT YU YV YW YX YY YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ

26

Manufacture of ultramarine from Latvaya clay. I. N. Delvany and A. I. Glushkov. *J. Applied Chem.* (U.S.S.R.) 16, 173 (1943) (English summary). The authors show that satisfactory manuf. of ultramarine is possible from Latvaya clay and tripolites of Voronezh province. Analyses of typical deposits are given. G. M. K.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

METALLURGICAL LITERATURE CLASSIFICATION

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METALLURGICAL LITERATURE CLASSIFICATION

CA

Electrical conductivity of fused systems of halides of mercury and ammonium. I. N. Belyaev and K. B. Mironov (V. M. Molotov State Univ., Rostov on Don). *Doklady Akad. Nauk S.S.S.R.* 73, 1217-20 (1950).—The systems $HgCl_2-NH_4Cl$, $HgBr_2-NH_4Br$, and Hgl_2-NH_4I were studied by detl. elec. cond. and m.p. over concn. ranges from 0 to 73-76 mole % NH_4 halide (at higher concns. the melts froth excessively). Compd. formation, which in m.p. curves is assocd. with a max. or with a transition point for incongruently melting compds., is evident also by a min. in elec. cond. vs. concn. curves and also in curves of temp. coeff. of elec. cond. vs. concn. Thus, in the system $HgCl_2-NH_4Cl$, the m.p.-concn. curve shows the compd. $HgCl_2 \cdot NH_4Cl$ melting congruently at 218° , with adjacent eutectics at 198° , 39.5 mole % NH_4Cl , and 193° , 61 mole % NH_4Cl ; and there are 4 incongruently melting compds. with the following values for ratio of $HgCl_2$ to NH_4Cl , mole percent NH_4Cl on liquidus curve, and temp., resp.: 9:2, 18.5, 243; 3:1, 23.5, 235; 2:1, 33.5, 214; and 1:2, 66.5, 243. The temp. coeff. of elec. cond. was detl. by measuring cond. at

230 and 300° . The system Hgl_2-NH_4I was studied similarly, with cond. measurements at 200 , 250 , 300 , and 350° . The liquidus curve shows a eutectic at 140° , 48 mole % NH_4I , and 4 incongruently melting compds. with the following values for ratio of Hgl_2 to NH_4I , mole % NH_4I on liquidus curve, and temp., resp.: 3:1, 23, 222; 3:2, 40, 155; 1:2, 60, 201; and 1:4, 67, 206. In the system Hgl_2-NH_4I , elec. cond. was again detl. at temps. of 200 , 250 , 300 , and 350° . This system shows a eutectic at 113° , 46 mole % NH_4I ; a transition point at 120° , 42 mole % NH_4I , involving a polymorphic transformation of Hgl_2 ; and two transition points, corresponding to the compds. $Hgl_2 \cdot 2NH_4I$, 50 mole % NH_4I , 210° ; and $Hgl_2 \cdot 4NH_4I$, 63 mole % NH_4I , 234° . The max. and min. in the elec. cond. and temp.-coeff. curves are very sharp in the system $HgCl_2-NH_4Cl$, and become progressively less pronounced in the series Cl-Br-I. Arild J. Miller

QA

Dielectric properties of different grades of titanium dioxide. I. N. Belyaev, N. S. Novokul'tsev, A. L. Khrushakov, and M. S. Shul'man. *Zhur. Tekh. Fiz.* 21, 647-51(1951). — Samples of TiO_2 of different degrees of purity differ greatly in the rate of decrease of the dielec. const. ϵ with increasing frequency (between 10 and 10^9 hertz) particularly in the range of lower frequencies, but tend to merge at high frequencies ($\epsilon = 90-100$). The frequency dependence was most pronounced in a sample of "titanic acid" (TiO_2 99.47, CaO 0.53, MgO 0.01, Fe_2O_3 0.006, SiO_2 0.00%) sintered at 1250° , whereas a sample (99.00, 0.60, 0.03, 0.04, 0.24), sintered at the same temp., showed almost no dispersion of ϵ , even less than spectroscopically pure TiO_2 ; for the latter, at 50 hertz, $\epsilon = 140$, contrary to previously asserted $\epsilon \sim 85$. Dielec. losses ($\tan \delta$) fall sharply with increasing frequency. The temp. coeff. of ϵ is mostly slightly neg. With increasing temp., the low-frequency divergences between different samples increase. At the liquid-air temp. the differences of ϵ in the low-frequency range tend to diminish. Curves of $\tan \delta$ as a function of the temp. show characteristic relaxation maxima. N. Thon

BELYAYEV, I.N.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
General and Physical Chemistry

Feasibility of the systems $\text{Na}_2\text{CO}_3\text{-K}_2\text{CO}_3\text{-BaTiO}_3$ and $\text{BaCO}_3\text{-BaCl}_2\text{-BaTiO}_3$. I. N. Belyayev and M. L. Sholokhovitch (V. M. Molotov State Univ., Rostov). *Doklady Akad. Nauk S.S.S.R.* 77, 61-2 (1951); cf. *C.A.* 47, 9128e. —

The systems were investigated at temps. up to 1200°. The system $\text{Na}_2\text{CO}_3\text{-K}_2\text{CO}_3\text{-BaTiO}_3$ is a stable section through the more complex system $\text{Na, Ba, K||CO}_3, \text{TiO}_2$. There are 2 regions of crystn.: a small region, 1.37% of the total area, where solid solns. of Na_2CO_3 and K_2CO_3 crystallize out; and the remainder where BaTiO_3 is the stable phase. The boundary between the 2 regions extends from 820° and approx. 1% $\text{BaTiO}_3\text{-99% Na}_2\text{CO}_3$, down to an invariant min. of 700° at 60% $\text{Na}_2\text{CO}_3\text{-40% K}_2\text{CO}_3$; and up to 873° at approx. 2% $\text{BaTiO}_3\text{-98% K}_2\text{CO}_3$. In the system $\text{BaCl}_2\text{-BaCO}_3\text{-BaTiO}_3$ there are 5 regions of crystn. where the stable forms are, resp., $\alpha\text{-BaCl}_2$ (1.481% of the total area), $\beta\text{-BaCl}_2$ (1.01% of area), $\alpha\text{-}$ and $\beta\text{-BaCO}_3$, and BaTiO_3 (areas for latter 3 phases not detd.). A ternary eutectic m. 811° contains 11.25% BaCO_3 , 9.25% BaTiO_3 , and 79.50% BaCl_2 .

Arild J. Miller

3

ME
7-28-54

BELYAYEV, I. N.

184T105

USSR/Physics - Crystallography

11 Jun 51

"New Varieties of Monocrystalline Barium Titanate,"
I. N. Belyayev, N. S. Novosiltsev, A. L. Khodakov,
E. G. Fesenko

"Dok Ak Nauk SSSR" Vol LXXVIII No 5, pp 875-877

Obtained 3 new types of monocryst barium titanate
in the lab from fused $BaCl_2 + BaCO_3 + TiO_2$ within
temp range of 1,200-750°. Dielec properties varied
depending on methods of growing. Submitted by Acad
G. S. Landsberg 4 Apr 51.

184T105

La.
Section 9

Dielectrics

537.226.2

8138. Dielectric properties of lead titanate monocrystals. I. N. BELYAY AND A. L. KHODAKOV. Letter in *Zh. Fizich. Teor. Fiz.*, 22, 376-8 (No. 3, 1952) in Russian.

Relationship of conductivity and temperature of PbTiO₃ monocrystals is same as in semiconductor. Energy of activation is 1.06 eV. High conductivity determines relation of losses and frequency. With increase of frequency $\tan \delta$ falls and only at very high frequencies begins to rise. On heating, losses quickly increase. Although due to high conductivity of crystals it was not possible to investigate temperature relationship of permittivity at and above Curie point yet considerable increase of permittivity with temperature, slow change of permittivity with frequency, also temperature relationship of conductivity classify crystals of PbTiO₃ as ferro-electric.

A. LUKASIEWICZ

USSR/Chemistry - Lead, Titanium, and Vanadium Compounds Mar 52

"Fusibility of Ternary System Lead Oxide - Vanadium Pentoxide - Titanium Dioxide," I. N. Belyayev, A. K. Kesterova, Lab of Chem Phys, Rostov State U

"Zhur Obshch Khim" Vol XXII, No 3, pp 396-403

Diagram of fusibility shows the fields of crystal of PbO , Pb_2TiO_4 , $8 PbO \cdot V_2O_5$, $3 PbO \cdot V_2O_5$, of a compd with the general formula $10 PbO \cdot V_2O_5 \cdot TiO_2$ which was obtained for the 1st time, TiO_2 , and regions of glass formation. Two incongruently melting compds ($2 PbO \cdot TiO_2$ and $PbO \cdot TiO_2$) are formed in

209T38

USSR/Chemistry - Lead, Titanium, and Vanadium Compounds (Contd) Mar 52

the system $PbO-TiO_2$. Stability of the metatitanate increases in presence of V_2O_5 . The regions of the concns of the components recommended for obtaining large crystals of lead metatitanate and titanium dioxide are indicated.

209T38

BELYAYEV, I. N.

BELYAYEV, I.M.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Equilibrium in the reciprocal system of sulfates and molybdates of sodium and lead. I. M. Belyayev (Koslov-on-Don State Univ.). *J. Gen. Chem. U.S.S.R.* 22, 1303-7 (1952) (Engl. translation); *Zhur. Obshchei Khim.* 22, 1318-24 (1952).—The quaternary reciprocal system of the sulfates and molybdates of Na and Pb was investigated by the visual polythermal method. According to the classification of Bergman and Dombrovskaya (cf. *C.A.* 24, 2360) the system is of the irreversible-reciprocal type with the stable diagonal Na₂SO₄-PbMoO₄.
Bernard Rubin

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gpb

BELYAYEV, I. N.

232T15

USSR/Chemistry - Solid Solutions,
Mercury Compounds Sep 52

"Physicochemical Analysis of Systems Consisting of Mercury Halides and Alkali Metals and Ammonium Halides. I. Fusibility of the Systems HgCl₂ - MeCl, " I. N. Belyayev, K. Ye. Mironov, Rostov-on-Don State U imeni V. M. Molotov

"Zhur Obshch Khim" Vol 22, No 9, pp 1484-1489

The following systems were studied using the fusion method: HgCl₂ - LiCl, HgCl₂ - NaCl, HgCl₂-KCl, and HgCl₂ - NH₄Cl. Alkali metal chlorides

232T15

form complexes with increasing facility in the order Li → Na → K → NH₄. The system HgCl₂ - LiCl is of the same type as alk earth chlorides - mercuric chloride. A relationship was established connecting deviations of mol wts obtained cryoscopically from true mol wts with ionic radii of alkali metals with a 1:1 combination in the system NH₄Cl - HgCl₂, 3 polymorphic transformations were found to take place in the temp range 203-213°.

232T15

I. N. BELYAYEV

232T16

USSR/Chemistry - Solid Solutions, Mercury Compounds Sep 52

"Physicochemical Analysis of Systems Consisting of Mercury Halides and Alkali Metals and Ammonium Halides. II. Possibility of Bromide and Iodide Systems," I. N. Belyayev, K. Ye. Mironov, Chair of Gen Chem, Rostov-on-Don State U imeni V. M. Molotov

"Zhur Obshch Khim" Vol 22, No 9, pp 1490-1497

The systems $HgBr_2-NaBr$, HgI_2-NaI , HgI_2-KI , and HgI_2-NH_4I were studied using a visual-polythermal method. The systems $HgBr_2-KBr$, and $HgBr_2-NH_4Br$ were studied with the aid of both visual-polythermal and thermal methods, whereupon heating and cooling curves were plotted. In the system $HgBr_2-NaBr$, 2 compds are formed whose compn is not known. In the system $HgBr_2-KBr$, 4 compds are formed: $KBr \cdot 7HgBr_2$, $KBr \cdot 2HgBr_2$, $KBr \cdot HgBr_2$, $2KBr \cdot HgBr_2$. In the system $HgBr_2-NH_4Br$, 5 compds are formed: $NH_4Br \cdot 7HgBr_2$, $2NH_4Br \cdot 9HgBr_2$, $2NH_4Br \cdot 3HgBr_2$, $2NH_4Br \cdot HgBr_2$, $4NH_4Br \cdot HgBr_2$. In the system HgI_2-NaI , one compd is formed of the probable compn $NaI \cdot HgI_2$. In the system HgI_2-NH_4I , 2 compds are formed: $2NH_4I \cdot HgI_2$ and $4NH_4I \cdot HgI_2$. The ability to form complexes and their stability increases in the order I - Br - Cl. In chloride and bromide systems the ability to form complexes increases sharply with increasing ionic radius of alkali metal, but not for iodine systems.

(3)

232T16

BELIAEV, I. N.

"Double decomposition in a reciprocal system consisting of sulfates and tungstates of sodium and lead." (p. 1746)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1952, Vol. 22, No.10

BELYAYEV, I. N.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

4
② *cf.*
Physicochemical analysis of systems of mercuric halides
and alkali metal or ammonium halides. III. Electric
conductivity of systems of fused mercuric halide and am-
monium halide. I. N. Belyayev and K. P. Mironov. *J.*
Gen. Chem. (U.S.S.R.) 22, 1775-81 (1952) (Engl. transla-
tion).—See C.A. 47, 2026i. H. L. H.

DELYATEY, I. N.

U S S R

The dielectric properties and optical anomalies of single crystals of BaTiO₃. I. N. Del'yatey, S. G. Novikova, V. P. Mironov, and A. P. Khodakov. Zhur. fiz. tverd. tela, 24, 211 (1982). Zhur. fiz. tverd. tela, 24, 211 (1982). Zhur. fiz. tverd. tela, 24, 211 (1982). Crystals I, II, and III were prepared by decomposition of BaCO₃ and Na₂CO₃ in air. Crystals I and III deposited from solutions of BaTiO₃ in acetic acid. The Curie point of I was near that of the polycrystalline material. The domain structure of I was weak and disappeared on heating. Crystals remained single domains after cooling significantly below the Curie point. This stability is probably due to their acicular shape. $\tan \delta$ was inappreciably and showed no dispersion from 100 kc/sec. to 200 Mc/sec. In batches II and III ϵ' fell by 35% over this frequency range and $\tan \delta$ was somewhat larger. Some crystals of II and III had 15° thermal hysteresis in the appearance and disappearance of domain structure. For II in a constant field ϵ' was 350 and ϵ'' 5500. Crystals from different parts of the same crucible did not always have identical properties. K. I. C.

BELYAYEV, I. N.

USSR/Chemistry, Piezoelectrics - Barium Titanate Aug 52

Titanate

"The Fusibility of the System BaCl₂-BaCO₃. BaTiO₃," I. N. Belyayev, M. I. Sholokhovitch

"Zhur Pril Knim" Vol 25, No 8, pp 818-825

PA 22876

Established, through a visual-polythermal investigation of the fusibility of the triple system, BaCl₂-BaCO₃-BaTiO₃, that in the explored thermal interval the area of the liquidus corresponds to the crystn of 5 different phases: αBaCl₂, occupying 0.1% of the area of the system; βBaCl₂,

22876

occupying 1.48% of the area of the system; of the areas of crystn α and β modifications of BaCO₃ and BaTiO₃. The fields of crystn of βBaCl₂, βBaCO₃ and BaTiO₃ converge in a triple eutectic point of the system, corresponding to 79.50% of βBaCl₃, 9.25% of BaTiO₃, and 11.25% of βBaCO₃.

22876

USSR/Physics - Crystals, Temperature Variations 11 Apr 52

"Temperature Variations in Single BaTiO₃ Crystals," I. N. Belyayev, N. S. Novosil'tsev, Ye. G. Fesenko, A. L. Khodakov, Phys-Math Inst, Roctov-on-Don State U imeni Molotov

"Dok Ak Nauk SSSR" Vol LXXXIII, No 5, pp 675, 676

In a previous work (Ibid. Vol LXXVIII, 875, 1951), described certain varieties of BaTiO₃ monocystals possessing cubic and rhombohedral symmetry at room temps. In current article, investigates 3 sets of BaTiO₃ monocystals: 2 (I and II) grown from a

21 Apr 52

USSR/Physics - Crystals, Temperature Variations (Contd) 11 Apr 52

soln, and one (III) obtained during exchange reaction. States that chem and spectral analysis indicate insignificant amt of admixts in the crystals so that it is difficult to explain displacement in Curie point by the presence of impurities. Submitted by Acad D. V. Skobel'tsyn 16 Feb 52.

21 Apr 52

BELYAYEV, I. N.

BEL'YAEV, I.N.; NESTEROVA, A.K.

The diagonal-adiagonal transition-type irreversibly reciprocal
ternary system of potassium and lead sulfates and tungstates.
Doklady Akad. Nauk S.S.S.R. 86, 949-52 '52. (MLRA 5:11)
(CA 47 no.13:6237 '53)

1. Gosudarstvennyy universitet imeni V.M. Molotova, Rostov/on Don.

Reciprocal system of sodium and barium chlorides and carbonates. I. N. Belvaev and M. L. Sholokhovich (Moscow State Univ., Rostov). *Sbornik Nauchnykh Trudov MGU* 1953, No. 1, 134-43 (1953); cf. *Chem. Abstr.* 48: 128. The system Na, Ba, CO₂, Cl was defined for the first time. The binaries were studied, and the surface of the quaternary deduced from 12 internal planes and 2 diagonal and 1 adagonal planes. In the binary Na₂CO₃-BaCl₂ there is a eutectic at 685° with 57% BaCO₃ (all comps. in mol. %), and 2 polymorphic transformations in the BaCO₃ branch at 811 and 963°. In the NaCl-BaCl₂ binary there is a eutectic at 648° with 51.5% BaCl₂. In the NaCl-BaCO₃ there are eutectics at 814 and 734° with 24 and 47% BaCO₃ and a compd. 2BaCl₂·BaCO₃ with a m.p. at 827°. This compd. was obtained repeatedly in an atm. of CO₂, though in the earlier report (*loc. cit.*) it was not noted. The diagonal cross section NaCl-BaCO₃ (I) has a eutectic at 696° with 44% BaCO₃ and a polymorphic transformation at 811° γ-β BaCO₃ (68%). The diagonal cross section Na₂CO₃-BaCl₂ is unstable and passes through the crystn. fields of BaCO₃, NaCl, and 2BaCl₂·BaCO₃, the branches intersecting at 566, 633, and 684° with 21.5, 71, and 51% BaCl₂. The diagonal I divides the reciprocal system into 2 independent ternaries: NaCl-BaCO₃-Na₂CO₃ (a) and NaCl-BaCl₂-BaCO₃ (b). In a the melt solidifies in a single eutectic at 552° with the 3 components. The ternary b is further subdivided by the adional NaCl-

2BaCl₂·BaCO₃ into the ternaries BaCl₂-NaCl-2BaCl₂-BaCO₃ with a eutectic at 818° (NaCl, BaCl₂, and 2BaCl₂·BaCO₃), and BaCO₃-NaCl-2BaCl₂·BaCO₃ with a eutectic at 623° with all 3 components. The liquidus surface consists of 3 crystalline fields: Na₂CO₃, BaCO₃, and a restricted area BaCO₃, 42.91% Na₂CO₃, 25.41% NaCl, 5.41% BaCl₂, and 25.41% 2BaCl₂·BaCO₃. This reciprocal system is an example of a diagonal to an adagonal orientation.

Electroconductivity of molten salt systems. Systems
 $\text{ThCl}_2\text{-CaCl}_2$, $\text{Hg}_2\text{-KI}$, $\text{KNO}_3\text{-K}_2\text{Cr}_2\text{O}_7$. I. N. Hosh
 (1957) *Moscow Univ. Chem. Ser., Inorg. Chem. Div.*
 23, 176-82
 (1957) — By the method of sp. electrocond. in the system
 $\text{ThCl}_2\text{-CaCl}_2$ the existence of sp. electrocond. was detd.
 This compl. is stable in melt at lower temp. The system
 $\text{Hg}_2\text{-KI}$ had a eutectic point at 102° . It formed a compl.
 $\text{2Hg}_2\text{I}_2$ which melted inconcomitently. The system ex-
 isted in 2 polymorphic forms with a transformation point
 at 158° . The cond. isotherms of the system $\text{KNO}_3\text{-}$
 $\text{K}_2\text{Cr}_2\text{O}_7$ had no singular points which would indicate forma-
 tion of compl. M. Hosh

BEVYAYEV, I. N.

Complex formation and exchange decomposition in the reciprocal system of the pyrophosphates and molybdates of sodium and potassium. I. N. Bevyayev and M. L. Sholokhovich (V. M. Molotov State Univ., Rostov). *Zhur. Obshch. Khim.* 23, 1255-73 (1953).—A chem. compd. m. 890°, having a 1:1 compn. is formed in the binary system $\text{Na}_2\text{P}_2\text{O}_7$ -(Na_2MoO_4). The crystn. surface of the reciprocal system K, Na & MoO_4 , P_2O_7 consists of the fields for the solid solns. $\text{Na}_2(\text{K})\text{P}_2\text{O}_7$ and $\text{Na}_2(\text{K})\text{MoO}_4$ which decomp. into their components within the system, and the field of the compd. (Na_2MoO_4), $\text{Na}_2\text{P}_2\text{O}_7$. The system has 2 ternary eutectics and a ternary transition point.

J. Rovtar Leach

The preparation of barium titanate from barium carbonate and titanium dioxide. I. N. Bolovoy, State Univ. Moscow, Dokl. Akad. Nauk, 1959, 122, 1075. *Chem. Abstr.* 54, 10759. 9757. Mixtures of BaCO_3 and TiO_2 in the molar ratio of 1:1, 2:1, and 3:1 mol. ratios were ground in the mortar, dried at 100° to const. wt., heated at temps. up to 1150° in air in desiccators, and weighed. The loss in wt. was used as a measure of the degree of decomposition. The molar ratios of 1:1 and 2:1 mol. ratios, however, were heated after 1 hr. at 1150-1150°, with the former mixture at 1150° and with the latter at 1150°. With most of the ratios observed, started at 5.50° and was complete after 1 hr. at 1150°. X-rayograms of 1:1 mixt. 1 hr. at 1150° showed microscopic crystals of BaTiO_3 with a tetragonal lattice; the same method did not show any BaTiO_3 in any of other mol. ratios.

DELYN(E) L.W.

Chem

Chem Abs 448
1-25-54
Glass, Clay Products

Effect of barium titanate on the dielectric properties of metaphosphate and metaborate lead glasses. I. N. Belyaev, A. I. Khodkov, and M. L. Shubnikov (USSR State Univ.). *Zhur. Fiz. Khim.* 27, 1167-68 (1953). — Pb(PO₃)₂, m. 616° and gives a eutectic with BaTiO₃ at 613° and 1 mole % BaTiO₃; there is little formation of PbTiO₃ and Ba(PO₃)₂ in the melt. Pb(BO₃)₂, m. 686°; eutectic with BaTiO₃ at 623° and 4% BaTiO₃; BaTiO₃ in the melt is almost completely transformed into PbTiO₃. Accordingly, the dielec. const. ϵ of Pb(PO₃)₂ is raised from 15.6 to 23.4 by 5% BaTiO₃, while 25% BaTiO₃ raise ϵ of Pb(BO₃)₂ from 17.7 to 22.2 only. The ϵ of window glass is raised from 4.8 to 5.75 by 3 wt. % BaTiO₃. The temp. coeff. of ϵ (i.e., $\Delta\epsilon/\epsilon \Delta t$) is $5.1-5.3 \times 10^{-4}$ for Pb(PO₃)₂ and its mixts. with BaTiO₃, 2.8×10^{-4} for Pb(BO₃)₂, and 0.6×10^{-4} for Pb(BO₃)₂ + 25% BaTiO₃. The loss angle δ is small ($\tan \delta = 0.005$) and independent of temp. between 30° and 150° for Pb(BO₃)₂, while $\tan \delta$ of window glass increases from 0.05 at 30° to 0.1 at 150°. The elec. cond. κ of Pb(PO₃)₂ and Pb(BO₃)₂ is raised by BaTiO₃. The apparent energy of activation calcd. from κ is 38, 49, and 64 kcal./mole for Pb(PO₃)₂, Pb(PO₃)₂ + 5% BaTiO₃, and Pb(BO₃)₂ + 15% BaTiO₃, resp.

J. J. Bikerman

7-19-54

BELYAYEV, I. N.

62

Conductivity of the diagonal cross-section of fused ternary reciprocal systems. I. N. Belyaev, A. G. Bergman, and L. I. Nomikos (State Univ. Rostov-on-Don). *Doklady Akad. Nauk S.S.S.R.* 91, 1103-5(1959).—Sp. cond. of the stable system $AgCl-Tl_2SO_4$ and the unstable system $TlCl-Ag_2SO_4$ in the liquid phase in the system $Tl, Ag || Cl, SO_4$ and the unstable section $Tl-Br-Ag_2SO_4$ in the system $Tl, Ag || Br, SO_4$ were measured by a previously described method (*C.A.* 47, 2023). Isothermal curves of the cond. for the stable section $AgCl-Tl_2SO_4$ drop from the more conducting $AgCl$ to the less conducting Tl_2SO_4 . Three isotherms are similar to the isotherms of the sp. cond. for the common systems with the eutectic point on the liquidus curves. The isotherms for the unstable section have sharp min. corresponding to the formation of Tl_2SO_4 and $Ag_2SO_4 \cdot Tl_2SO_4$. The min. cond. which corresponds to the formation of Tl_2SO_4 is less than the min. cond. of $Ag_2SO_4 \cdot Tl_2SO_4$. In the fused state of the three-component systems the equilibrium is displaced to the stable pair of salts or to the less dissociated components similar to idrial binary systems. In the mixt. of fused salts in which exchange reaction or complex formation take place the components are incompletely dissociated. M. C.

(2)

051 YIT YAY, LUY

Complex forming and double decomposition in the triple
 mutual system of the sulfates and metal-oxides of potassium
 and lead // N. Yankelevich and A. K. ...
 Zhurnal Prikladnoi Khimii, Tashkent, 1956, No. 6, 3-18 (1964); Referat Zhur. Akad. Nauk SSSR, 1956, No. 6, 3-18 (1964).
 On the basis of investigations of the liquidus, isothermal cross-
 sections, and profiles of the system K₂PbSO₄-MnO₂, and
 also on the double system formed, the melting diagram is
 given. The crystal surface of the system has 8 planes
 corresponding to 8 solid phases: α and β-K₂MnO₄, K₂SO₄,
 K₂MnO₄·PbMnO₄, PbMnO₄, K₂SO₄·2PbSO₄, γ, and δ
 PbSO₄. The most stable plane is from the pole of K₂SO₄,
 2PbSO₄ toward PbMnO₄. In relation to it, 2 other planes,
 K₂SO₄-PbMnO₄ and K₂MnO₄-PbMnO₄-K₂SO₄, appear as secondary.
 The studied system is mutually irreversible-adiabatic.
 N. Yankelevich

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15-111-65
 N The interaction of lead titanate with salts in melts. I. N. Belikov, M. L. Shokhrakh, and G. V. Sarkova (V. M. Molodtsov State Univ., Krasnodar-Don), *Zh. Obshch. Khim.* 34, 211-231 (1961). Binary phase diagrams of $PbTiO_3$ (I) with 19 salts of univalent metals were drawn at temps. up to 1100° by using the congruence of crystals. Each binary is a section of a ternary system with I as a component. Eleven systems are stable without intermetallics and form eutectics. Each of these is listed with the eutectic composition, eutectic temp. (mol. % I and eutectic comp.): Na_2CO_3 , 9.13%; K_2CO_3 , 8.9%; K_2O , 0.79%; Na_2SO_4 , 1.5%; $NaNO_3$, 1.5%; K_2SO_4 , 1.5%; Na_2SiO_3 , 0.2%; Na_2O , 0.1%; Na_2O_2 , 0.1%; $Na_2S_2O_8$, 0.5%; K_2SO_4 , 22.5%; Na_2CO_3 , 1%; Na_2O , 1%; $(K_2O)_2$, 1%; Na_2O , 0.2%; Na_2O , 0.2%. These systems can be used to ppt. monocrystals of I from the fused medium. I is found in melts of the fluorides and silicates. The systems K_2SO_4 -I and (Na_2CO_3) -I showed evidence of complex formation. Two systems were not stable (e.g., Na_2CO_3 + $(PbTiO_3)_2 \rightarrow 2 Na_2TiO_3$ + $Pb_2P_2O_7$) and showed minima (not true eutectics) at which two crystals intersected. These were: $Na_2P_2O_7$, min. at 975° I, 0.22% and $K_2P_2O_7$, min. at 10.37° I, 0.2%. Stratification of the melt occurred in Na_2O -I, Na_2CO_3 -I, and Na_2SO_4 -I. Two liquid phases were formed. These must correspond to stable diagonal sections whose end points lie on a three-component system. The intervals of stratification were 2 to 20% I for Na_2O -I, 1.5 to 5.5% I for Na_2CO_3 -I, 1.25 to 2.75% I for Na_2SO_4 -I. The phase diagram was also drawn for the systems: Na_2MoO_4 - PbO and Na_2WO_4 - PbO . For Na_2MoO_4 - PbO , the eutectic point was 665° at 0.2% PbO with the system transforming from two liquids to solid plus liquid at 760° from 0.75 to 99.75 mol. % PbO . For Na_2WO_4 - PbO , the eutectic point was 651° at 0.1% PbO with the system transforming from two liquids to solid plus liquid at 778° from 0.5 to 99.75 mol. % PbO . It is concluded that the unstable systems of I with Na_2O , Na_2CO_3 , and Na_2SO_4 react to decompose I into PbO and TiO_2 . The PbO thus formed is responsible for the stratification. I is distinguished chiefly from $BaTiO_3$ by a greater soly. in

MILYAYEV, I. N.

Exchange decomposition in the reciprocal systems of sodium and silver sulfate and molybdate. I. N. Milyayev and A. K. Doroshenko (V. M. Molotov State Univ., Rostov-on-Don). *Zhur. Obshchei Khim.* 24, 427-32 (1951).

The reciprocal system Na, Ag||SO₄, MoO₄ was investigated by the visual polythermal method. The binaries Na₂MoO₄-Ag₂MoO₄ and Ag₂SO₄-Ag₂MoO₄ were detd. for the first time; the 1st consists of a series of solid solns., (Na, Ag)MoO₄, with a min. at 546° and 21 mol. % Na₂MoO₄; the 2nd shows a eutectic at 497° with 33 mol. % Ag₂SO₄. The binaries Ag₂SO₄-Na₂SO₄ and Na₂MoO₄-Na₂SO₄ were redetd.; both consist of continuous solid solns., the 2nd with a min. at 673° and 25% Na₂SO₄. The diagonal cross sections Ag₂MoO₄-Na₂SO₄ and Ag₂SO₄-Na₂MoO₄ have 2 intersecting branches; in the 1st it represents a eutectic, 647°, and 5.5% Na₂SO₄; in the 2nd the intersection is in the Na₂SO₄ field with which Ag₂SO₄ forms solid solns.; it cannot be a eutectic. The m. vs. of 15 addnl. mixts. provided sufficient data to trace out the entire system, and an orthographic projection of the isothermals on the 25° plane is given. From the classification of Bergman and Dambrovskaya (*C.A.* 24, 2366) this system should be irreversible but the slight curvature of the diagonal Ag₂MoO₄-Na₂SO₄ and the curvatures of the isotherms in the (Na, Ag)SO₄ field suggest partial reversibility of the reaction Ag₂SO₄ + Na₂MoO₄ = Ag₂MoO₄ + Na₂SO₄. The analysis of the relative stabilities of this and other known similar systems, Na, Pb||SO₄, MoO₄ and Na, Pb||SO₄, WO₄, led to the generalized conclusion that in reciprocal systems the equil. is displaced toward salt-pairs contg. 1 cation with an 18 + 2 (Tl, Pb) or 18 (Ag) outer electron shell and 1 anion contg. an element with an incomplete d-electron shell (Mo, W).

I. Bencowitz

BELYAYEV, I-N.

5

Reaction of barium titanate with fluorides and pyrophosphates of sodium and potassium. M. L. Shelokhovich and I. N. Belyaev. J. Gen. Chem. U.S.S.R. 24, 1113-16(1954) (Engl. translation).—See C.A. 49, 2924c. B. M. R.

CH (7) H W

Reaction of barium titanate with fluorides and pyrophosphates of sodium and potassium. M. L. Sholokhovskii and I. N. Belyuev (State Univ., Rostov-on-Don), *Zh. Obshchei Khim.* 23, 1118-22 (1954); cf. *C.A.* 48, 1636c. The ternary systems $(BaTiO_3)-(K_2P_2O_7)-K_2P_2O_7$ (I) and $(BaTiO_3)-(NaF)-Na_2P_2O_7$ (II), which are diagonal sections of the triangular prisms representing the systems $K_2Na_2BaTiO_3$, P_2O_5 , P_2O_7 , were dealt up to 1100° by the analytical polythermal method. $Na_2P_2O_7$, NaF , $BaTiO_3$, and $K_2P_2O_7$ - $BaTiO_3$ are simple systems with eutectics at 731, 952, and 814°; $Na_2P_2O_7$ - $(BaTiO_3)$ and $K_2P_2O_7$ - $(BaTiO_3)$ are unstable; beyond the eutectics (at 803 and 692° of each) microscopic observations failed to detect $BaTiO_3$ crystals in the solid phase. $K_2P_2O_7$ - $K_2P_2O_7$ differs from $Na_2P_2O_7$ - $Na_2P_2O_7$ in that besides the eutectic at 712° it forms an incongruent compl. $3KP_2O_7$, m. 812°. I and II are unstable systems. In I there are 4 fields of crystals and 2 quaternary univariant points at 776 and 714° with 4% and 3.5% $Na_2P_2O_7$, 8 and 3.5% $BaTiO_3$, and 41 and 32.5% NaF . In II there are 5 fields of crystals and 3 univariant points at 780, 768, and 695° with 19, 24, and 54% $K_2P_2O_7$; 70.5, 73.5, and 45% KF ; and 10.5, 2.5, and 1.0% $BaTiO_3$. For the growth of monocrystals of $BaTiO_3$ from melts up to 1100° a mixt. of $Na_2P_2O_7 + Na_2P_2O_7$ with not more than 50% $Na_2P_2O_7$ is suggested. I. Benowitz

BELYAYEV, I.N.

USSR :

Conjugate liquid layers in ternary reciprocal systems.
 I. N. Belyayev (V. M. Molotov State Univ., Rostov).
 Doklady Akad. Nauk S.S.S.R. 95, 535-S(1954).—The
 generalized assumption that conjugate solns. of reciprocal
 systems with partial or complete immiscibility consist of the
 components of the stable-pair salts of the stable diagonal is
 true only in the case of simple systems such as $AX + BY \rightleftharpoons$
 $AY + BX$ (X and Y are halogens, O, S, etc.) the compds.
 of which on decomn. form only the elements. It is not
 necessarily true in complex systems such as Na, PbO||P,
 TiO₂ (I) (2 simple and 2 complex compds.) or Na, Pb||TiO₂,
 MoO₃(WO₃) (II) (4 complex compds.). The stable diagonals
 NaF-PbTiO₂ of I and Na₂Mo(W)O₄-PbTiO₂ of II are
 binodal systems with small areas of conjugate liquid solns.
 and these solns. do not contain PbTiO₂ (PbTiO₂ breaks up to
 form PbO and TiO at lower temps. in the presence of NaF
 or Na₂Mo(W)O₄). The presence of the conjugate liquid
 layers in these diagonal systems is ascribed to the penetra-
 tion of the conjugate liquid phases formed extensively in the
 systems which form the sides of the triangular prism (3 oxides
 and 3 fluorides) of I and of the tetrahedron of II. In I on the
 diagonal NaF-PbO of the side system PbO-NaF-PbF₂-
 Na₂O, the binodal area extends over practically the entire
 branch of NaF crystal. Similarly, the binodal area of Na₂-
 Mo(W)O₄-PbO and Na₂Mo(W)O₄-TiCl₄ which are diagonal
 systems of the side systems of (II), extend, practically over
 the entire crystal. branch of Na₂Mo(W)O₄. I. Benecowitz

BELYAYEV, I.N.

USSR.

Double decomposition in a reciprocal system of sulfates and tungstates of lithium and lead. I. N. Belyayev (State Univ., Moscow and Leningrad). *Zhur. Obshchei Khim.* 25, 230-4 (1955); *J. Gen. Chem.* (U.S.S.R.) 25, 213-16(1955) (Engl. translation). — Melting (crystn.) points of 2- and 3-component mixts. of these salts in varying proportions were detd. $\text{Li}_2\text{WO}_4\text{-PbWO}_4$ had one eutectic at 708° (10.5 mol. % PbWO_4); $\text{Li}_2\text{SO}_4\text{-PbWO}_4$ at 754° (5.5% PbWO_4). Many binary mixts. were metastable: $\text{LiWO}_3\text{-PbSO}_4$ had eutectics at 690° (12% PbSO_4) and 882° (76%). In ternary mixts.: PbSO_4 added to 20% LiWO_3 -80% Li_2SO_4 (m.p. 605°) gave eutectics at 664° (2.5% PbSO_4) and 808° (56%). With 1:1 $\text{LiWO}_3\text{-Li}_2\text{SO}_4$, they were at 630° (2.5%) and 854° (67%). Other mixts. were studied; data were represented in a ternary diagram of crystn. In mixed sulfates and tungstates of Pb, K, Na, and Li, the irreversibility of double decompn. increased from K to Li. Present data confirm the theory that in double decompn. in a fusion contg. a cation with an outer electron configuration of 18 or 18 + 2 and an anion contg. an element with an incomplete d-electron shell, the equil. shifts toward combination of these ions. M. M. A...

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BELYAYEV, I.V.
USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria,
Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7151.

Author : I.N. Belyayev.

Inst :

Title : Exchange Decomposition in Fuses and Chemical Bond Character.

Orig Pub: Zh. neorgan. khimii, 1956, 1, No 7, 1501-1511.

Abstract: The polarities of halide molecules of metals of the I and II groups of D.I. Mendeleev's system were calculated. Equilibria and the direction of exchange reaction in ternary reciprocal systems of such salts depending on the relationship among the molecule polarities were discussed. The discovered dependences are illustrated by real systems borrowed from bibliographical sources.

SECRET
BELYAEV, I. N.

The reaction of lithium titanate with other salts in melts
 I. N. Belyaev and N. P. Sigida (State Univ., Kirov) (1950). The re-
 sults of the study of the reaction of lithium titanate with other Li salts were studied by
 the fusion method. The results showed that I has no solubility in Li₂CO₃, Li₂SO₄, Li₂MoO₄, Li₂WO₄, and
 Li₂PO₄. Mixtures of I with Li₂SO₄, Li₂PO₄, and Li₂WO₄ contain up to 15% I, do not melt below 1100°, and this system is characterized
 by a eutectic point (0.5% I, m. 980°) and 2 transition points: 2.7% I, m. 1025° and 5.2% I, m. 1053°. I does not melt in K and Na titanates. The I-K₂TiO₆ system has a eutectic point (1.5% I, m. 980°) and 2 transition points: 2.7% I, m. 1025° and 5.2% I, m. 1053°. The I-Na₂TiO₆ system has a eutectic point (1.5% I, m. 980°) and 2 transition points: 2.7% I, m. 1025° and 5.2% I, m. 1053°. The I-Li₂TiO₆ system has a eutectic point (1.5% I, m. 980°) and 2 transition points: 2.7% I, m. 1025° and 5.2% I, m. 1053°.

Category: USSR / Physical Chemistry

Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions.

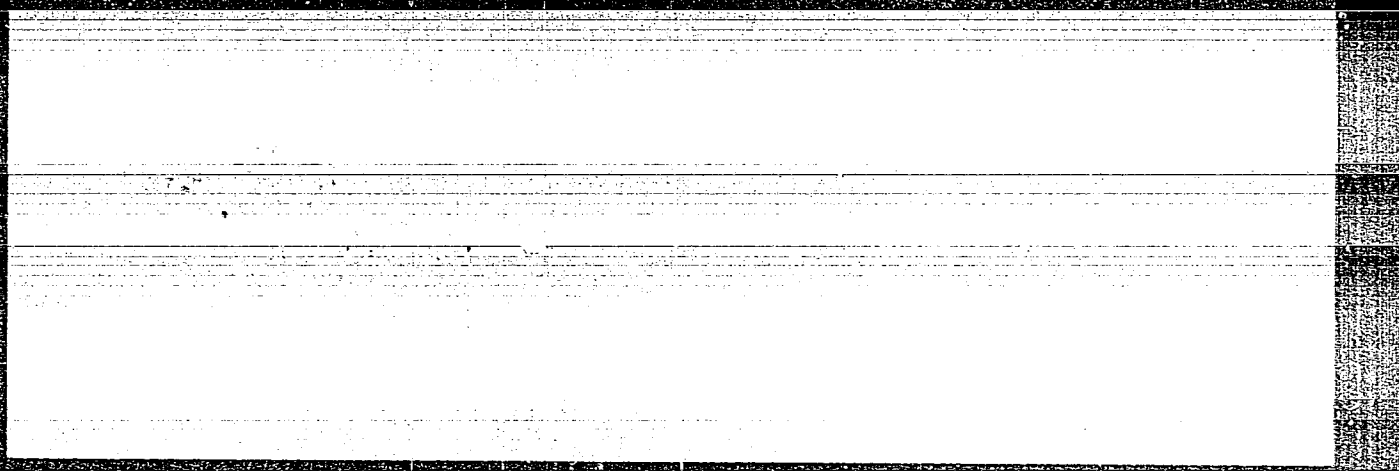
B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29947

fate - molybdate systems of alkali metals, toward combination of cation having an 18- or (18 + 2)-electron shell, with an anion comprising in its composition an element with an incomplete d-electron shell.

Card : 2/2

-66-



BELYAYEV, I.N.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria,
Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7161.

Author : I.N. Belyayev, N.P. Sigida.

Inst :

Title : II. Interaction of Lithium and Sodium Titanates and Fluorides.
III. Interaction of Lithium and Potassium Titanates and Fluorides.

USSR/Physical Chemistry .. Thermodynamics, Thermochemistry, Equilibria,
Physical-Chemical Analysis, Phase Transitions.

B-8

Abs Jour: Referat. Zhurnal Khimii, No 3, 1958, 7161.

system up to 1200°. III and II produce a eutectic at 23.5% of II, melting point 874°; III and V produces a eutectic with 61% of V, melting point 632°. The liquidus surface of the irreversibly reciprocal system Li, Na // F, TiO₃ was studied by the visual-polythermal method. II and III are a stable pair of salts; the incongruent ternary compound 4NaF·5Li₂TiO₃·13Na₂TiO₃ is produced; its crystallization area (CA occupies 4.5% of the total CA of the system. The CA of IV is 1.3%. The CA of II is extraordinarily large 78.9%). The studied system is similar to systems, in which BaTiO₃ takes part, and differs essentially from the analogous silicate system.

III. II and K₂TiO₃ (VI) produce a eutectic, melting point 750°, with 11.5% of II. The eutectic of VI and K₂F₂ (VII) contains 59% of VI, melting point 752°. The eutectic of VII and V con-

Card : 2/3

-33-

AUTHORS:

Белыаев, И. Н.
Belyayev, I. N., Sigida, N. P.

78-2-24/43

TITLE:

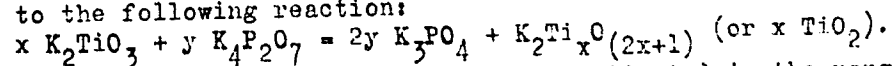
IV. The Interaction of Titanates and Phosphates of Potassium in the Crystallization from the Melts (IV. Vzaimodeystviye titanatov i fosfatov kaliya pri kristallizatsii iz rasplavov). Investigations of the Ternary System K_2TiO_3 - $K_4P_2O_7$ - TiO_2 and K_2TiO_3 - $K_4P_2O_7$ - K_3PO_4 (Issledovaniye troynnykh sistem K_2TiO_3 - $K_4P_2O_7$ - TiO_2 i K_2TiO_3 - $K_4P_2O_7$ - K_3PO_4).

PERIODICAL:

Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 2, pp. 425-432 (USSR).

ABSTRACT:

The liquidus surface of the systems K_2TiO_3 - $K_4P_2O_7$ - TiO_2 and K_2TiO_3 - $K_4P_2O_7$ - K_3PO_4 was investigated. It was found that the third phase in the liquidus of the system K_2TiO_3 - $K_4P_2O_7$ represents a potassium orthophosphate which is formed according to the following reaction:



The system K_2TiO_3 - $K_4P_2O_7$ was only investigated in the range of 0-7% and of 82,5-100% $K_4P_2O_7$. The domain of 7-82,5% $K_4P_2O_7$ cannot be examined by visual-polythermal methods due to the higher temperatures of the melt. The system K_2TiO_3 - $K_4P_2O_7$ - TiO_2

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IV. The Interaction of Titanates and Phosphates of Potassium 78-2-24/43
in the Crystallization from the Melts. Investigations of the Ternary System
 $K_2TiO_3-K_4P_2O_7-TiO_2$ and $K_2TiO_3-K_4P_2O_7-K_3PO_4$.

forms for compounds, two of which have the same melting point at $844-833^{\circ}C$ and two of which have different melting points at $863^{\circ}C$ and $939^{\circ}C$. Three eutectic points with 4%, 11,5% and 18,5% TiO_2 lie near 822 , 817 and $826^{\circ}C$. The system $K_4P_2O_7-TiO_2$ was investigated as far as 40% TiO_2 . The system $K_2TiO_3-K_4P_2O_7-K_3PO_4$ is characterized by the fact that potassium orthophosphate and potassium titanate develop between the pyrophosphate and potassium titanate. In the systems of the titanates and pyrophosphates of potassium and sodium the following transformations take place: Pyrophosphates are in the presence of metatitanates converted to orthophosphates, the titanates are in the presence of pyrophosphates converted to more acid titanates or titanic oxide. There are 5 figures, 3 tables, and 10 references, 8 of which are Slavic.

SUBMITTED: April 13, 1957

AVAILABLE: Library of Congress

Card 2/2

76-2-25/43

AUTHORS: Belyayev, I. N., Sigida, N. P.

TITLE: V. The Interaction of Sodium Titanate and Sodium Silicate in the Crystallization From the Melt (Vzaimodeystviye titanatov i silikatov natriya pri kristallizatsii iz rasplavov) Investigation of the Ternary System Na_2SiO_3 - Na_2TiO_3 - TiO_2 (Issledovaniye troynoy sistemy Na_2SiO_3 - Na_2TiO_3 - TiO_2)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol.3, Nr 2, pp.433-439 (USSR)

ABSTRACT: The surface of the primary crystallization of the ternary system Na_2O - TiO_2 - SiO_2 was investigated. It was shown that in the system Na_2TiO_3 - Na_2SiO_3 the third and fourth phase represent acid sodium-titanate. It became evident that the phases α and β in the systems Na_2TiO_3 - Na_2SiO_3 are titanatosilicates and one and the same compound. Their composition is as follows:

Card 1/2 α - 13 Na_2O • 13 TiO_2 • SiO_2 with a melting point of 982°C.
 β - 13 Na_2O • 13 SiO_2 • TiO_2 with a melting point of 975°C.

V. The Interaction of Sodium Titanate and Sodium Silicate in the Crystallization From the Melt. Investigation of the Ternary System Na_2SiO_3 - Na_2TiO_3 - TiO_2 78-2-25/43

The titanate-silicate of sodium was also determined. The obtained results show that the system Na_2TiO_3 - Na_2SiO_3 in the ternary system Na_2 - TiO_2 - SiO_2 is unstable and cannot be considered to be a binary system. It is shown that the ternary system of the type AX-AY, in which the third phase is no compound of the components, may predominantly be met in systems of silicates and titanates, pyrophosphates and titanates, molybdates and titanates, vanadates and titanates, i.e. in systems whose salts are acid-formers and show a tendency to polymerization. There are 4 figures, 3 tables, and 7 references, 5 of which are Slavic.

SUBMITTED: April 13, 1957

AVAILABLE: Library of Congress

Card 2/2

AUTHORS: Белыаев, И. Н.
 Belyayev, I. N., Sigida, M. P. 78-2-26, 43

TITLE: VI. The Interaction of Titanates and Pyrophosphates of Potassium and Lithium in the Crystallization From the Melt (VI. Vzaimodeystviye titanatov i pirofosfatov kaliya i litiya pri kristallizatsii iz rasplavov)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 2, pp. 440-446 (USSR)

ABSTRACT: The present paper reports on the investigations concerning the systems Li , K/TiO_3 , P_2O_7 . The system Li_2TiO_3 - $\text{K}_4\text{P}_2\text{O}_7$ was investigated as far as 36% Li_2TiO_3 . In this concentration range three phases were determined: phases of the components and potassium orthophosphate. The system K_2TiO_3 - $\text{Li}_4\text{P}_2\text{O}_7$ was investigated from 0 - 24% and 80 - 100% $\text{Li}_4\text{P}_2\text{O}_7$. In this concentration range phases of K_2TiO_3 , potassium orthophosphate, Li_2TiO_3 and lithium titanate were determined beside the phases of the components. In the system with the components K_2TiO_3 , Li_2TiO_3 , $\text{K}_4\text{P}_2\text{O}_7$, $\text{Li}_4\text{P}_2\text{O}_7$ five phases were determined:

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potassium orthophosphate which forms as a result of the influence of the pyrophosphate and titanate of potassium, three phases L, M and N which develop by the influence of the titanate and pyrophosphate of lithium, and lithium-titanate-phosphate without an exactly determined composition. The occurrence of the potassium-orthophosphate phase as well as of the lithium-titanate-phosphate phase shows that this system is unstable and does not possess any eutectic points at the liquidus surface. There are 2 figures, 2 tables, and 6 references, all of which are Slavic.

SUBMITTED: April 29, 1957

AVAILABLE: Library of Congress

Card 2/2

AUTHOR: Belyayev, I. N. SOV/78-3-12-33/36

TITLE: The Cleavage in the Systems AX - BY (Rasslaivaniye v sistemakh AX - BY)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 12, pp 2805-2806 (USSR)

ABSTRACT: The visual-polythermal methods were used to investigate the melts of 41 systems AX - BY in cleavage. 22 systems involving lead oxide, 18 systems including chlorides and bromides of silver, and one system containing cadmium bromide were investigated. The components AX are simple compounds of lead oxide, chlorides and bromides of silver, and cadmium bromide. The components BY are salts of the alkali metals. The anions X and Y differ greatly from one another. The cations of the simple compound A have 18 or 18+2 electrons. There are 1 table and 1 Soviet reference.

SUBMITTED: July 11, 1958

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24(3),24(2)

AUTHOR:

Belyayer, I. N.

SOV/48-22-12-6/33

TITLE:

The Piezoelectric Properties of Crystals of the Perovskite Type and Their Dependence on the Character of the Chemical Bond (Zavisimost' segnetoelektricheskikh svoystv kristallov tipa perovskita ot kharaktera khimicheskoy svyazi)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1436-1440 (USSR)

ABSTRACT:

The presence of mixed ionic-covalent bonds B-O is an essential condition for the formation of a spontaneous polarization of the ABO_3 -type and of other compounds. Only the presence (existence) of covalent bonds B-O (in addition to ionic ones) can - owing to their directivity - lead to the formation of non-equivalent mutually not-compensated bonds and, consequently, to not-compensated dipole moments also. On the basis of the example of $BaTiO_3$, the present investigation showed that non-equivalent not-compensated chemical bonds (spontaneous polarization) form only in lattices with infinite oxygen structure for the very reason that the titan and oxygen ions tend to gain their proper directivity of covalent bonds. It was shown that through

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The Piezoelectric Properties of Crystals of the Perovskite Type and Their Dependence on the Character of the Chemical Bond

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Intensification of covalence of B-O bonds (as compared to Ti-O bonds in BaTiO_3) by replacing Ba- and Ti-ions by others an extension of the temperature range within which the piezoelectric properties exist will occur. A reduction of covalence will, however, narrow this range. The function of the A-ion in ABO_3 and in other compounds is that of controlling the covalence of the B-O bond. The investigated dependence of piezoelectric properties on the character of the chemical bond can be used as a criterion for discovering new piezoelectric and anti-piezoelectric materials. There are 5 figures and 22 references, 12 of which are Soviet.

ASSOCIATION: Rostovskiy-na-Donu gos. universitet
(Rostov-na-Donu State University)

Card 2/2

BELYAYEV, I. N., Doc Chem Sci (diss) -- "The physico-chemical properties of titanates of the alkali and certain divalent metals". Rostov na Donu, 1959. 30 pp (Inst of Gen and Inorganic Chem im N. S. Kurnakov of the Acad Sci USSR), 200 copies (KL, No 22, 1959, 109)

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S/058/60/000/004/003/016
A003/A001

5.4600(A)

24.7800

Translation from: Referativnyy zhurnal. Fizika, 1960, No. 4, p. 204, # 9032

AUTHORS: Khodakov, A.L., Belyayev, I.N.

TITLE: The Dielectric Characteristics of Ceramic Dielectrics of the TiO₂-SnO₂ System

PERIODICAL: Uch. zap. Fiz.-matem. fak. Rostovsk.-n./D un-t, 1959, Vol. 46, No. 7, pp. 83-86

TEXT: ϵ and $\text{tg } \delta$ of ceramic samples of various composition (from 0% SnO₂-100% TiO₂ to 85%-SnO₂-15% TiO₂) were measured within the frequency range of 50-10⁷ cps. ϵ of the sample with the composition 85% SnO₂-15% TiO₂ at the frequency 10⁶ cps decreases more than 4 times compared to ϵ in TiO₂. The temperature coefficient varies from -8.0·10⁻⁴ (100% TiO₂) to +3.5·10⁻⁴ (15% TiO₂), respectively, passing through zero at 30% TiO₂. The considerable relaxation polarization in samples with a low SnO₂ content decreases with its increase and disappears completely at a composition with 25% SnO₂. In these compositions a small $\text{tg } \delta$ is observed at high-frequencies which makes their use promising in

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S/058/60/000/004/003/016
A003/A001

The Dielectric Characteristics of Ceramic Dielectrics of the TiO_2 - SnO_2 System
the field of high-frequency radio-engineering.

A.A. Fetchenkov

Translator's note: This is the full translation of the original Russian
abstract.

Card 2/2

BELYAYEV, I.N.; DOROSHENKO, A.K.

Interaction of potassium and silver sulfates and molybdates
during crystallization from their melts. Uch.zap.RGU no.60:
217-223 '59. (MIRA 14:10)
(Systems (Chemistry)) (Salts)

BELYAYEV, I.N.

Phase separation in liquid inorganic systems. Usp. khim. 29 no.7:
899-912 J1 '60. (MIRA 13:7)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(Systems (Chemistry))

FILIP'YEV, V.S.; SMOLYANINOV, N.P.; PESENKO, Ye.G.; BELYAYEV, I.N.

Preparation of BiFeO_3 and determination of its unit cell.
Kristallografiya 5 no. 6:958-959 N-D '60. (MIRA 13:12)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(Bismuth ferrate)

S/058/62/000/004/098/160
A061/A101

AUTHOR: Belyayev, I. N.

TITLE: Preparation of barium titanate single crystals under nearly isothermal conditions

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 15, abstract 4E132 (V sb. "Rost kristallov. T. 3", Moscow, AN SSSR, 1961, 447-450, Discuss. 501-502)

TEXT: Homogeneous single-domain barium titanate single crystals can be obtained from a mixture of sodium and potassium carbonates under nearly isothermal conditions in hermetically sealed Armco steel crucibles at temperatures between 900 and 1,000°C. ✓

[Abstracter's note: Complete translation]

Card 1/1

BELYAYEV, I.N.

Phase diagrams of systems including molybdates and tungstates of
alkali metals and lead. Zhur.neorg.khim. 6 no.5:1178-1188 My
'61. (MIRA 14:4)

(Systems (Chemistry))

s/078/61/006/002/017/017
B017/B054

AUTHORS: Aver'yanova, L. N., Belyayev, I. N.

TITLE: X-Ray Phase Analysis of the Systems $BaTiO_3 - Pb_3(PO_4)_2$,
 $PbTiO_3 - Ba_3(PO_4)_2$

PERIODICAL: Zhurnal neorganicheskoy khimii, 1961, Vol. 6, No. 2,
pp. 501 - 503

TEXT: The systems $BaTiO_3 - Pb_3(PO_4)_2$ and $PbTiO_3 - Ba_3(PO_4)_2$ were studied by X-ray phase analysis. The investigation was made by the powder method with a YPC-70-K1 (URS-70-K1) apparatus. A table indicates the lattice spacings and the intensity lines of the X-ray pictures of $PbTiO_3$ and of a mixture of 40% of $BaTiO_3$ + 60% of $Pb_3(PO_4)_2$. The line intensities of lead titanate are weakened by addition of barium titanate; they disappear completely in the X-ray pictures of specimens with 5, 9, and 10% of

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