"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

CA

Ternary system of fused nitrates of calcium, potassium, and sodium. [illegible] I. Protsenko and A. G. Bergman (V. M. Molotov [illegible] Univ., Rostov). *Zhur. Obshchei Khim.* (J. Gen. Chem.) [illegible] 1365-75(1950); *J. Gen. Chem. U.S.S.R.* 20, 1431-[illegible] translation).—The 3 binary systems, as well as the ternary system, were investigated. The system $NaNO_3$-KNO_3 forms solid solns. over the entire concn. range, with m.p. changing from 337° for KNO_3 to a min. of 22[illegible] for [illegible]% (all compns. in equiv. %) $NaNO_3$, and up to 30[illegible] for KNO_3. The system $Ca(NO_3)_2$-$NaNO_3$ has a simple eutectic [illegible]22°, 54.1% $NaNO_3$; $Ca(NO_3)_2$ m. 561°. The system $Ca(NO_3)_2$-KNO_3 has a eutectic at 140°, 49% KNO_3, and a [illegible]d. $4KNO_3.Ca(NO_3)_2$ which decomps. at 171° into liq[illegible]tg. 35.5% KNO_3 and into pure KNO_3. The ternary diagram has 4 regions where the crystg. phase and percentage of total area are, resp.: $NaNO_3$ 42.5, $Ca(NO_3)_2$ 28.1, KNO_3 26.6, and $4KNO_3.Ca(NO_3)_2$ 2.8. The line bounding the $Ca(NO_3)_2$ region is almost exactly straight, extending from 51% $Ca(NO_3)_2$ on the KNO_3-$Ca(NO_3)_2$ side to 45.9% $Ca(NO_3)_2$ on the $NaNO_3$-$Ca(NO_3)_2$ side. The line bounding the KNO_3 region is concave towards the KNO_3 corner, and that bounding the $4KNO_3.Ca(NO_3)_2$ region is concave towards the KNO_3-$Ca(NO_3)_2$ side. Besides the binary eutectics and transition points mentioned, there are two 3-phase points in the ternary diagram: a ternary transition point at 100°, contg. 49.2% KNO_3 and 32.8% $Ca(NO_3)_2$, where the solid phases are KNO_3, $NaNO_3$, and $4KNO_3.Ca(NO_3)_2$; and a ternary eutectic at 133°, contg. 39.4% KNO_3 and 48.8% $Ca(NO_3)_2$, where the solid phases are $Ca(NO_3)_2$, $NaNO_3$, and $4KNO_3.Ca(NO_3)_2$.

Arikl J. Miller

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

USSR/Chemistry - Nitrates Aug 51

"The Interaction of Nitrates and Nitrites of Metals of the First and Second Groups of D. I. Mendeleyev's Periodic System in Melts. II. Investigation of the Ternary System Composed of Strontium, Potassium, and Sodium Nitrates in Melts," P. I. Protsenko, A. G. Bergman, Chair of Gen and Inorg Chem, Rostov-on-the Don State U

"Zhur Obshch Khim" Vol XXI, No 8, pp 1380-1387

Constructed phase diagrams for binary systems $SrNO_3$-$NaNO_3$ and $SrNO_3$-KNO_3 and ternary system $SrNO_3$-$NaNO_3$-KNO_3 on the basis of thermochem and other data. Found mp and compn for eutectic in case of all 3

188T8

USSR/Chemistry - Nitrates (Cont'd) Aug 51

systems. Line of cocrystn divides phase diagram of ternary system into range of $SrNO_3$ crystn and range of solid solns of KNO_3 and $NaNO_3$ (with higher mp) acts as stabilizer of solid solns.

188T8

PROTSENKO, P. I.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

USSR/Chemistry - Nitrates Sep 51

"Interaction of Nitrates and Nitrites of Metals of the First and Second Groups of D. I. Mendeleyev's Periodic System in Melts. III. Investigation of the Ternary System of Barium, Potassium, and Sodium Nitrates in Melts," P. I. Protsenko, A. G. Bergman, Chair of Gen and Inorg Chem, Rostov-on-the-Don State U

"Zhur Obshch Khim" Vol XXI, No 9, pp 1580-1587

From observed data constructed phase diagrams for ternary system $Ba(NO_3)_2$-$(KNO_3)_2$-$(NaNO_3)_2$ and component binary systems. Found eutectic points and

191T36

USSR/Chemistry - Nitrates (Contd) Sep 51

compositions for Ba-K and Ba-Na binary systems, min for ternary system (latter had no eutectic), and areas of crystn in ternary system.

191T36

PROTSENKO, P. I.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P. I.

"Interaction of nitrates of nitrites of metals of the first and second groups of D. I. Mendeleev's periodic system in fusions. V. Investigation of the ternary system consisting of nitrates of lithium, of potassium, and of cadmium in fusion." (p. 1313)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1952, Vol. 22, No. 8

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P. I.

(5) Chem - Des.

Reactions of nitrates and nitrites of metals of the first and second groups of Mendeleev's periodic system in the molten state. IV. The ternary system of the nitrates of lithium, sodium, and cadmium in melts. *P. I. Protsenko* (V. M. Molotov State Univ., Rostov-on-Don). *J. Gen. Chem. U.S.S.R.* 22, 1351-5(1952)(Engl. translation); *Zhur. Obshchei Khim.* 22, 1307-12(1952); cf. *C.A.* 48, 1788*i*.—The ternary system $Cd(NO_3)_2$, $NaNO_3$, and $LiNO_3$ was studied by the visual polythermal method. One invariant point was found at the compn. $LiNO_3$ 14.5, $Cd(NO_3)_2$ 56, and $NaNO_3$ 29.5 mole %, with a m.p. of 110°. Three fields of crystn. were found, $Cd(NO_3)_2$ covering 18.38% of the total area of the triangle, $NaNO_3$ 39.12%, $LiNO_3$ 42.5%. The field of formation of a low-melting glass from the nitrates is detd. Two binary systems were studied: $Cd(NO_3)_2$-$NaNO_3$ with a simple eutectic at 36 mole % $NaNO_3$, and a m.p. of 135°; $Cd(NO_3)_2$-$LiNO_3$ with a simple eutectic at 46.75 mole % $LiNO_3$ and a m.p. of 190°. **V. The ternary system of the nitrates of lithium, potassium, and cadmium in melts.** *J. Gen. Chem. U.S.S.R.* 22, 1357-61(1952)(Engl. translation); *Zhur. Obshchei Khim.* 22, 1313-18(1952).—The ternary system $Cd(NO_3)_2$-$(KNO_3)_2$-$(LiNO_3)_2$ was studied by the visual polythermic method, and two invariant points were found. One has the compn. 32 mole % KNO_3, 17 mole % $LiNO_3$ and 51 mole % $Cd(NO_3)_2$ with a m.p. of 134°. The 2nd has the compn. 55 mole % KNO_3, 24.75 mole % $LiNO_3$, and 20.25 mole % $Cd(NO_3)_2$ with a m.p. of 111°. A study was made of the binary system of $Cd(NO_3)_2$-KNO_3, and the congruent compd. $Cd(NO_3)_2.2KNO_3$ was found with a m.p. of 199.5°. The 1st eutectic corresponds to the compn. 38 mole % $(KNO_3)_2$ and 62 mole % $Cd(NO_3)_2$ and a temp. of 168°; the 2nd has the compn. 60 mole % $(KNO_3)_2$, 40 mole % $Cd(NO_3)_2$, and a temp. of 175°. KNO_3 differs from $LiNO_3$ and $NaNO_3$ in forming with $Cd(NO_3)_2$ the complex $Cd(NO_3)_2.2KNO_3$. The introduction of Cd^{++} and K^+ ions into salt melts promotes the formation of nitrate glasses of the simplest chem. compn. Bernard Rubin

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

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

The reaction of the nitrates and nitrites of the metals from the first and second groups of the periodic system. VI. The ternary system rubidium nitrate-potassium nitrate-cadmium nitrate. P. I. Protsenko and N. P. Pozovskaya (Rostov State Univ.). Zhur. Obshchei Khim. 23, 1246-9 (1953); cf. C.A. 48, 4954b.—$RbNO_3$ reacts with $Cd(NO_3)_2$ in fusions to form $Cd(NO_3)_2.2RbNO_3$, m. 184°, less stable to heat than is $Cd(NO_3)_2.2KNO_3$. The liquidus surface of the system $RbNO_3$–$Cd(NO_3)_2$–KNO_3 shows that the above compds. are formed in the field of crystn. within the ternary system. From the nature of this field it is proposed that these compds. are isomorphic. J. Rovtar Leach

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P. I.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
General and Physical Chemistry

8

(3)

The reactions between nitrates and nitrites of metals of the first and second group of the periodic system in the molten state. VII. Investigation of the ternary system of lithium, potassium, and thallium nitrates. P. I. Protsenko and I. K. Shelomov (State Univ., Rostov on Don). *Zhur. Obshchei Khim.* 23, 1433-7(1953); cf. *C.A.* 48, 1788*i*.—Relations within the ternary system were investigated by observing the behavior and by measuring the m.p. of various mixts. The binary system of Tl and Li nitrates has one eutectic at 132° analyzing 70.5% $TlNO_3$ and 29.5% $LiNO_3$. The ternary system consists of systems having one common lowest melting eutectic at 94° which analyzes KNO_3 34, $LiNO_3$ 33, and $TlNO_3$ 33%. $TlNO_3$ behaves similarly to nitrate of Li and K and does not react in melts. It forms, however, eutectics in binary and ternary systems.

M. O. Holowaty

11-5-54

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

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

The interaction of nitrates and nitrites of metals of the first and second groups of the periodic system in the molten state. VIII. The ternary system of nitrates of silver, potassium, and cadmium. P. I. Protsenko (Rostov-on-Don State Univ.). *Zhur. Obshchei Khim.* 23, 1613-17 (1953); cf. *C.A.* 48, 1788*i*, 4299*i*.—The ternary system of nitrates of Cd, K, and Ag is considered unusually complex, because the binaries form compds.: $Cd(NO_3)_2.2KNO_3$ (I), $Cd(NO_3)_2.2AgNO_3$ (II), and $KNO_3.AgNO_3$ (III). There are 6 crystn. areas for the nitrates of Cd, K, Ag, I, II, and III with 23.36, 22.24, 28.07, 20.29, 4.5, and 1.6% of the total area, resp. There are 2 eutectics: with 23, 50.2, and 26.8% (nitrates of K, Cd, and Ag) at 115°, and 41.5, 10.5, and 48% at 121°; 2 inflections with 28.5, 39.5, and 32% at 128° and 48, 10, and 42% at 127°. I. Bencowitz

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

USSR/Chemistry

Card 1/1 Pub. 151 - 3/38

Authors : Popovskaya, N. I., and Protsenko, P. I.

Title : Reaction of nitrates of metals belonging to the first group of the D. I. Mendeleyev periodical system with cadmium nitrates in fusions. Part I.- Electrical conductivity of binary systems.

Periodical : Zhur. ob. khim. 24/2, 207-211, Feb 1954

Abstract : Experimental data on the specific electrical conductivity and numerical values of absolute and relative thermal coefficients are presented for two binary $LiNO_3$-$Cd(NO_3)_2$ and $NaNO_3$-$Cd(NO_3)_2$ systems the structural diagrams of which were obtained by a visual-polythermal method. The absence of a chemical affinity in the fusions between $Cd(NO_3)_2$ and $LiNO_3$ and $NaNO_3$ was established on the basis of the structural diagrams. It was established that the electrical conductivity increases from the less conductive in fusion $Cd(NO_3)_2$ toward the more conductive lithium and sodium nitrates. Nine references: 8-USSR and 1-German (1920-1952). Tables; graphs.

Institution : The V. M. Molotov State University, Rostov/Don

Submitted : September 15, 1953

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; POPOVSKAYA, N.P.

Interaction in melts of nitrates and nitrites of metals from the first and second groups of D.I.Mendeleev's periodic system. Part 13. Electrical conductivity of binary systems: cesium nitrate-cadmium nitrate, thallium nitrate-cadmium nitrate, and potassium nitrate-rubidium nitrate. Zhur.ob.khim.24 no.12:2119-2126 D '54. (MLRA 8:3)

1. Rostovskiy gosudarstvennyy universitet.
(Nitrates) (Electric conductivity)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 147 - 16/27

Authors : Protsenko, P.I., and Popovskaya, N.P.

Title : Electrical conductivity of binary systems

Periodical : Zhur. fiz. khim. 28/2, 299-304, Feb 1954

Abstract : The specific electrical conductivity was measured for the following binary systems: $Cd(NO_3)_2$ - KNO_3, $Cd(NO_3)_2$ - $RbNO_3$ and $Cd(NO_3)_2$ - $AgNO_3$ and the absolute and relative thermal coefficients were calculated. The results obtained led to the assumption that all chemical compounds of the binary salt type when reaching the melting point or higher decompose into component molecules and dissociate into ions. The chemism of these binary compounds is discussed. Eight USSR references (1931-1954). Tables; diagrams.

Institution : The V.M. Molotov State University, Rostov

Submitted : April 25, 1953

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

7 Chem

USSR.

Reactions of nitrates and nitrites of metals of the first and second groups of the D. I. Mendeleev periodic system in fusions. XVI. Investigation of a ternary system of nitrates of cesium, thallium, and cadmium. P. I. Protsenko and V. V. Rubleva (State Univ., Rostov-on-Don). *Zhur. Obshchei Khim.* 25, 238–43(1955); *J. Gen. Chem. U.S.S.R.* 25, 221–5(1955)(Engl. translation); cf. *C.A.* 48, 4953*h*.—Reactions of salts were studied by detns. of m.p. on 2- and 3-component mixts. in varying proportions. $TlNO_3$ and $CsNO_3$ react with $Cd(NO_3)_2$ in fusions to form $Cd(NO_3)_2 \cdot 2TlNO_3$ (m. 105°) and $Cd(NO_3)_2 \cdot 2CsNO_3$ (178°). $CsNO_3$ and $TlNO_3$ give a continuous series of solid solns. The ternary system has two invariant points of compn.: 31 mol.% $TlNO_3$–17.2% $CsNO_3$–51.8% $Cd(NO_3)_2$, m.p. 108°; and 35.5% $TlNO_3$–16.1% $CsNO_3$–48.4% $Cd(NO_3)_2$, m.p. 84°. This system has 4 phases of crystn.; that of $Cd(NO_3)_2$, whose area is 22.32% of that of the ternary diagram of crystn.; an isomorphic mixt. of $CsNO_3$ and $TlNO_3$, 66.68%; $Cd(NO_3)_2 \cdot 2CsNO_3$, 7.35%; and $Cd(NO_3)_2 \cdot 2TlNO_3$, 1.65%. Mixts. exhibit vitreousness and supercooling. XVII.

Investigation of a ternary system of nitrates of rubidium, cesium, and calcium. P. I. Protsenko and Z. I. Belova. *Zhur. Obshchei Khim.* 25, 244–9; *J. Gen. Chem. U.S.S.R.* 25, 227–31(1955)(Engl. translation).—M.p. data on 2- and 3-component mixts. of these salts in varying proportions are given. The existence of the compds. $Ca(NO_3)_2 \cdot RbNO_3$ and $Ca(NO_3)_2 \cdot CsNO_3$ in fusions was confirmed. When data are shown in a ternary diagram of crystn., a zone appears that represents an isomorphic mixt. of these compds. It is shown that if 2 isomorphic components A and B react chemically with another component C to form compds. AC and BC, these latter will also be isomorphic.

Malcolm M. Anderson

BI

1

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO,P.I.; BELOVA,Z.I.

Interaction in melts of nitrates and nitrites of metals from the first and second groups of D.I.Mendeleev's periodic system. Part 17. Study of the ternary system of rubidium, cesium, and calcium nitrates. Zhur.ob.khim. 25 no.2:244-249 F '55. (MLRA 8:6)

1. Rostovskiy-na-Donu Gosudarstvenny universitet.
(Nitrates) (Metals)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

Protsenko, P. I.

Reaction of nitrates and nitrites of metals of the first and second groups of D. I. Mendeleev's periodic system in the molten state. XVIII. Investigation of the triple system of nitrates of lithium, rubidium, and silver. P. I. Protsenko and L. M. Kinarenko (State Univ., Rostov-on-Don). *Zhur. Obshchei Khim.* 25, 444-51(1955); *J. Gen. Chem. U.S.S.R.* 25, 417-21(1955)(Engl. translation); cf. *C.A.* 49, 11381h.—The triple system Li, Rb, and Ag nitrates is related to complex systems having 4 nonvariant points, 3 of which appear as triple eutectics and the fourth is a transition point. The formation and melting without decompn. of $LiNO_3.RbNO_3$ and $RbNO_3.AgNO_3$, and melting with decompn. of $2RbNO_3.AgNO_3$ were established. Chem. reaction of nitrates of Li and Ag with $RbNO_3$ in triple-system melts is not weakened but strengthened under the influence of reciprocal additive polarizing action of Li and Ag ions on the Rb ion. V. N. Bednarski

Chem

2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

Protsenko P.I.

Laboratory method of preparation of nitrous anhydride. P. I. Protsenko and V. B. Stradomskii (State Univ., Rostov-on-Don). *Zhur. Obshchei Khim.* 25, 1013-8(1955).—Pure N_2O_3 is prepd. by addit. of concd. H_2SO_4 to pure $NaNO_2$ (preferably mixed with glass beads) in a large test tube connected through a ground-glass joint to a dropping funnel and a vertical glass column filled with P_2O_5 and glass wool. The dried gaseous product obtained after displacing all of the air is condensed in a coil condenser cooled with Dry Ice. With a 10-mm. test tube 2-2.5 ml. deep-blue N_2O_3 can be produced in 5 min. G. M. Kosolapoff

1

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO; P. I.

7473 AEC-tr-2484

ELECTRIC CONDUCTIVITY OF THE BINARY $LiNO_3$-$RbNO_3$ AND $AgNO_3$-$RbNO_3$ SYSTEMS IN FUSIONS. P. I. Protsenko. Translated from Izvest. Sektora Fiz. Khim. Anal. Inst. Obshchei Neorg. Khim. Akad. Nauk S.S.S.R. 26, 173-9(1955). 13p.

The following binary systems were investigated by the method of electric conductivity: lithium nitrate-rubidium nitrate, and silver nitrate-rubidium nitrate, within the temperature interval of 180 to 320°. The congruently melting chemical compounds $RbNO_3 \cdot AgNO_3$ and $RbNO_3 \cdot LiNO_3$ and the incongruently melting compound $2RbNO_3 \cdot AgNO_3$ which form in these systems are not reflected on the isotherms of the specific electric conductivity and are not confirmed by the curves of the absolute and relative temperature coefficients. It was established that the isotherms of the

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

Rostov State Univ im V.M. Molotov

PROTSENKO, P.I.

POPOVSKAYA, N.P.; PROTSENKO, P.I.

Specific weights and molecular volumes of binary systems: nitrates of potassium — cadmium, and of silver — cadmium. Zhur.fiz.khim. 29 no.2:225-230 F '55. (MIRA 8:7)

1. Gosudarstvennyy universitet imeni V.M. Molotova, Rostov na Donu.
(Systems (Chemistry)) (Nitrates)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

PROTSENKO, P.I.; MALAKHOVA, A.Ya.

Fusibility in the ternary system of potassium and barium nitrates and nitrites. Zhur.neorg.khim. 2 no.9:2145-2153 S '57. (MIRA 10:12)

1.Rostovskiy-na-Donu gosudarstvennyy universitet.
(Fusion) (Barium nitrate) (Barium nitrite)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BELOVA, Z.I.

Binary systems of nitrates of metals from the first and second group with calcium nitrate. Zhur. neorg. khim. 2 no.11:2617-2620 N '57. (MIRA 11:3)

1.Rostovskiy gosudarstvennyy universitet.
(Systems (Chemistry)) (Nitrates)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; MEDVEDEV, B.S.

System Na, Ca//NO_2, NO_3. Zhur. neorg. khim. 8 no.12:2737-2740 D '63. (MIRA 17:2)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

SHISHOLINA, R.P.; PROTSENKO, P.I.

System Li, Na//NO_2, NO_3. Zhur. neorg. khim. 8 no.12:2741-2743 D '63.

System consisting of the nitrites and nitrates of lithium and potassium. Ibid.:2744-2747 (MIRA 17:9)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 25371-65 EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(t)/EWP(b) Pr-4/Ps-4/Pu-4 IJP(c) JD/JG

ACCESSION NR: AP5006250 S/0149/64/000/005/0034/0038

37
35
B

AUTHOR: Protsenko, A. V.; Protsenko, P. I.

TITLE: Some physical and chemical properties of melted samples of the system $LiNO_2$ -$LiNO_3$

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 5, 1964, 34-38

TOPIC TAGS: lithium compound, nitrate, physical chemistry property, chemical compound, electric conductivity

Abstract: Physical and chemical methods are used to study the density, viscosity, and electrical conductivity of molten lithium nitrate and nitrite (thermometry, specific gravities, densities, electrical conductivities, and viscosities). Equipment and methods used have been described in earlier papers. The overall diagram of state of the $LiNO_2$ -$LiNO_3$ system was obtained and it was found that its components did not react chemically; rather they formed a continuous series of solid solutions with a minimum at 186°, decomposing at 145°. The dimorphic transformation of lithium nitrite was fixed at 93°. The measured density and calculated molar volumes of the melts indicate that the isotherms for these parameters are additive and parallel.

Card 1/3

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 25371-65
ACCESSION NR: AP5006[illegible]50

The specific electrical conductivity and viscosity of the system were measured. Conductivity is anomalously low because the lithium ions set up strong force fields favoring stable associations, effectively lowering ion migration, and hence lowering conductivity. The conductivity isotherms are parallel to the abscissa because the conductivity of the two components is practically identical at the temperatures studied. Viscosity increases in proportion to nitrite content. The activation energy of ion migration and viscous flow were calculated. From the isotherms and from the variation of the activation energies it is concluded that the melts and mixtures of molten lithium nitrite and nitrate consist of simple ions and associated ions having varying degrees of stability and varying composition, depending on the specific ion charges and their quantitative relations. Orig. art. has 1 graph and 1 table.

Card 2/3

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

ACCESSION NR: AP5006250

ASSOCIATION: Kafedra obshchey i neorganicheskoy khimii, Rostovskiy gosudarstvennyy universitet (Department of General and Inorganic Chemistry, Rostov State University)

SUBMITTED: 11Oct63 ENCL: 00 SUB CODE: IC, GC

NO REF SOV: 007 OTHER: 006 JPRS

Card 3/3

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 35030-65 EPF(n)-2/EPA(s)-2/EWA(c)/EWT(m)/EWP(b)/T/EWP(t) Pt-10/Pu-4 IJP(c)
JD/JG

ACCESSION NR: AP5006378 S/0153/64/007/006/0887/0890

37
36
B

AUTHOR: Protsenko, P. I.; Shisholina, R. P.

TITLE: Differential thermal analysis of lithium, rubidium and cesium nitrite-nitrate systems

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 7, no. 6, 1964, 887-890

TOPIC TAGS: lithium nitrite, lithium nitrate, rubidium nitrite, rubidium nitrate, cesium nitrate, cesium nitrite, phase diagram, differential thermal analysis

ABSTRACT: Phase diagrams of $LiNO_2$-$LiNO_3$, $RbNO_2$-$RbNO_3$ and $CsNO_2$-$CsNO_3$ binary systems were investigated in order to determine the thermal stability range of their solid solutions. This study is important for the chemistry of ferroelectrics and for thermal analysis of salt systems. Cooling and heating curves were plotted using a direct thermocouple and a differential thermoelectric pair incorporating platinum and a platinum-rhodium alloy. An FPK-59 temperature measuring system was used. Liquidus and solidus curves were constructed for each 10 mol %. Heating was at a rate of 3 degrees per minute. Phase diagrams of these systems are shown in Figure 1 of the Enclosure. It was established that solid solutions

Card 1/3

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 35030-65

ACCESSION NR: AP5006378

formed by nitrite-nitrate pairs of alkali metals differ greatly in their stability which increases with a decrease in the difference between the lattice energies of the components which comprise these systems. This energy difference decreases steadily from lithium salts to cesium salts. Orig. art. has: 1 table and 1 figure.

ASSOCIATION: Kafedra obshchey i neorganicheskoy khimii, Rostovskiy-na-Donu gosudarstvennyy universitet (Department of General and Inorganic Chemistry, Rostov State University)

SUBMITTED: 19Mar64 ENCL: 01 SUB CODE: TD, MM

NO REF SOV: 007 OTHER: 000

Card 2/3

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 35030-65

ACCESSION NR: AP5006378

ENCLOSURE: 01

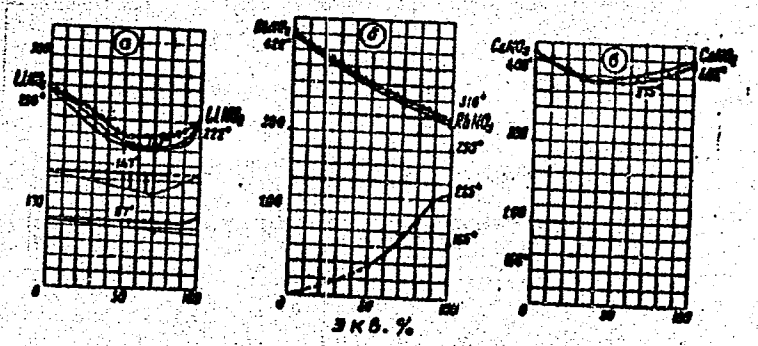

Fig. 1. Phase diagrams of

(a) $LiNO_3$-$LiNO_2$, (b) $RbNO_2$-$RbNO_3$, (c) $CsNO_3$-$CsNO_2$ systems

Card 3/3

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

POPOVSKAYA, N.P.; PROTSENKO, P.I.; YELISEYEVA, A.F.

Electric conductance and density of melts in the binary systems involving sodium nitrate. Zhur. neorg. khim. 9 no.5:1211-1213 My '64. (MIRA 17:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

SHURDUMOV, G.K.; PROTSENKO, P.I.

Properties of solutions in the systems $NaNO_2 - Sr(NO_2)_2 - H_2O$ and $KNO_2 - Sr(NO_2)_2 - H_2O$ at 25°C. Zhur. neorg. khim. 9 no.5:1237-1241 My '64.

(MIRA 17:9)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHURDUMOV, G.K.

Differential thermal analysis of binary systems formed by alkali metal nitrites and strontium. Zhur. neorg. khim. 9 no.7:1692-1695 Jl '64. (MIRA 17:9)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, I.I.; PROTSENKO, A.V.; POPOVSKAYA, N.I.

Electroconductivity of fused alkali metal nitrites. Zhur. neorg. khim. 9 no.8:1951-1954 Ag '64.

(MIRA 17:11)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SH[illegible] LINA, R.P.

Thermal analysis of the binary systems $LiNO_2$ - $NaNO_2$, $LiNO_2$ - KNO_2, $LiNO_2$ - $RbNO_2$, $LiNO_2$ - $CsNO_2$. Ukr. khim. zhur. 30 no.9:912-915 '64.

(MIRA 17:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; MEDVEDEV, B.S.

System Rb, Ca || NO_2, NO_3. Zhur. neorg. khim. 9 no.10:2438-2440 O '64. (MIRA 17:12)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHOKINA, O.N.

Specific gravities and molar volumes of the ternary system consisting of the nitrites of sodium, potassium, barium. Zhur. fiz. khim. 36 no.3:474-479 Mr '62. (MIRA 17:8)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; PROTSENKO, A.V.

Determination of the thermal stability of fused salts. Izv. vys. ucheb. zav.; khim. i khim. tekh. 8 no.1:160-161 '65. (MIRA 18:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, laboratoriya fizико-khimicheskogo analiza.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; PROTSENKO, A.V.; RAZUMOVSKAYA, O.N.

Internal friction of fused alkali metal nitrites. Zhur.neorg.khim. 10 no.4:751-754 Ap '65. (MIRA 18:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

EROTSENKO, P.I.; BORDYUSHKOVA, Ye.A.

Kinetics of the thermal decomposition of alkali metal nitrites. Zhur. neorg. khim. 10 no.5:1215-1219 My '65. (MIRA 18:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; EKIKOVA, N.A.

Thermal analysis of binary nitrate systems. Zhur. neorg. khim. 10 no.5:1220-1224 My '65. (MIRA 18:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHURDUMOV, G.K.

Physicochemical properties of the systems $RbNO_2$ - $Sr(NO_2)_2$ - H_2O and $CsNO_2$ - $Sr(NO_2)_2$ - H_2O at 25°C. Zhur. fiz. khim. 39 no.3:613-616 Mr '65. (MIRA 18:7)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

BRYKOVA, N.A.; PROTSENKO, P.I.

Physicochemical properties of solutions of the systems $Ca(NO_2)_2$ - $TlNO_2$ - H_2O and $Sr(NO_2)_2$ - $TlNO_2$ - H_2O. Zhur. fiz. khim. 39 no.3:738-741 Mr '65. (MIRA 18:7)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; RAZUMOVSKAYA, O.N.; IVANOVA, Ye.M.

Some physicochemical properties of solutions of the KNO_2 - $Ba(NO_2)_2$ - H_2O system. Izv.vys.ucheb.zav.; khim.i khim.tekh. 8 no.4:696-701 '65. (MIRA 18:11)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra obshchey i neorganicheskoy khimii.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, I.I., SHUROVNOV, G.K.

Solubility, electroconductivity, viscosity, and density in the systems $RbNO_2 - Sr(NO_2)_2 - H_2O$, $CsNO_2 - Sr(NO_2)_2 - H_2O$ at 25°C. Zhur. neorg. khim. 10 no.2:480-484 F '65. (MIRA 18:11)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Submitted Sept. 2, 1963.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHISHOLINA, R.P.

Conductance of melts of the system Li, Cs || NO_2, NO_3. Elektrokhimiia 1 no.9:1064-1071 S '65. (MIRA 18:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; MEDVEDEV, B.S.

Reciprocal systems of the series M, Ca || NO_2, NO_3. Zhur. neorg.khim. 10 no.8:1906 Ag '65. (MIRA 19:1)

1. Submitted June 25, 1964.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BORDYUSHKOVA, [illegible].A.; VENEROVSKAYA, L.N.

Differential thermographic analysis with recording of the conductance of alkali metal nitrites. Ukr. khim. zhur. 31 no. 11: 1200-1203 '65 (MIRA 19:1)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; MEDVEDEV, B.S.

Certain physicochemical properties of saturated solutions of the system $Ca(NO_2)_2$-$Ca(NO_3)_2$-H_2O at 25°C. Zhur.prikl.khim. 38 no.3:676-680 Mr '65. (MIRA 18:11)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Submitted June 9, 1964.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHISHOLINA, R.P.

Conductance of melts in the system Li, Na || NO_2, NO_3. Ukr. khim. zhur. 31 no.10:1048-1052 '65. (MIRA 19:1)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Submitted March 23, 1964.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; RAZUMOVSKAYA, O.N.

Internal friction of fused univalent metal nitrates. Zhur. prikl. khim. 38 no. 10:2355-2358 O '65. (MIRA 18:12)

1. Rostovskiy gosudarstvennyy universitet. Submitted Sept. 13, 1963.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; MEDVEDEV, B.S.

Some properties of saturated solutions in the system KNO_2 — $Ca(NO_2)_2$ — H_2O at 25° C. Zhur. fiz. khim. 39 no.9:2304-2306 S '65. (MIRA 18:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; GABITOVA, L.L.

System consisting of cesium-thallium nitrites and nitrates. Zhur. neorg. khim. 10 no.9:2124-2126 S '65. (MIRA 18:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; GABITOVA, L.L.

Fusibility of the system Na, Tl // NO_2, NO_3. Ukr. khim. zhur. 31 no.8: 810-813 '65. (MIRA 18:9)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, [illegible], [illegible], Ye.A.

Kinetics and mechanism of the thermal dissociation of calcium, strontium, and barium nitrites. Zhur. fiz. khim. 39 no.8:1978-1981 Ag '65. (MIRA 18:9)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

ANDREYEVA, T.A.; PROTSENKO, P.I.

Systems of nitrites and nitrates of lithium and barium. Zhur. neorg. khim. 9 no.12:2761-2763 D '64.

(MIRA 18:2)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHISHOLINA, R.P.

Differential thermal analysis of the systems $LiNO_2$ - $LiNO_3$, $RbNO_2$ - $RbNO_3$, $CsNO_2$ - $CsNO_3$. Izv.vys.ucheb.zav.; khim.i khim.tekh. 7 no.6:887-890 '64.

(MIRA 18:5)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra obshchey i neorganicheskoy khimii.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BRYKOVA, N.A.; IVANOVA, Ye.M.

System $TlNO_3$ - $CsNO_3$ - H_2O at 25° C. Zhur. neorg. Khim. 10 no.6:1477-1480 Je '65. (MIRA 18:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHOKINA, O.N.; CHEKHUNOVA, N.P.

Electric conductivity and dissociation constants of alkali metal nitrites. Zhur. fiz. khim. 38 no.7:1857-1859 Jl '64. (MIRA 18:3)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BRYKOVA, N.A.

Physicochemical properties of the ternary system $LiNO_2$ - $TlNO_2$ - H_2O. Ukr.khim.zhur. 30 no.5:448-451 '64. (MIRA 18:4)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHISHOLINA, R.P.; IVANOVA, Ye.M.

Reciprocal system consisting of nitrites and nitrates of lithium and cesium. Izv.vys.ucheb.zav.; khim. i khim.tekh. 7 no.2:180-183 '64. (MIRA 18:4)

1. Laboratoriya fiziko-khimicheskogo analiza Rostovskogo-na-Donu gosudarstvennogo universiteta.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; RAZUMOVSKAYA, O.N.

Viscosity of eutectic melts of some ternary nitrate and nitrite systems. Zhur.fiz.khim. 38 no.11:2680-2681 N '64. (MIRA 18:2)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; PROTSENKO, A.V.

Density and molal volumes of alkali nitrite melts. Zhur.fiz.khim. 38 no.11:2688-2689 N '64. (MIRA 18:2)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHISHOLINA, R.P.

Specifi gravity and molar volumes of melts of the system Li, Na NO_2, NO_3. Ukr. khim. zhur. 30 no.12:1292-1296 '64 (MIRA 18:4)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 48588-65 EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EPR/T/EWP(t)/EWP(b) Pr-4/Ps-4/
~~Pt-7/Pu-4 IJP(c) JD/WW/JG~~

ACCESSION NR: AP5009945 UR/0078/65/010/004/0751/0754

AUTHOR: Protsenko, P. I.; Protsenko, A. V.; Razumovskaya, O. N.

TITLE: Internal friction in melts of alkali metal nitrites

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 4, 1965, 751-754

TOPIC TAGS: fused salt, alkali metal nitrite, melt viscosity, complex ion, internal friction

ABSTRACT: Internal friction in melts of lithium-, sodium-, calcium-, potassium-, rubidium-, and cesium nitrites was studied within the limits of thermal stability. No general quantitative theory of viscosity of fused salts is developed as yet. Knowledge of viscosity of fused salts is of practical importance in nuclear energetics, thermal working of metals, heat transfer, heat resistant lubrication, etc. The viscosity (η) of melts of alkali metal nitrites was found to be a linear inverse function of temperature. At temperatures approximately five percent above the respective melting points lithium nitrite exhibits the highest viscosity among the melts of alkali metal nitrites. Applicability of the equation $\eta = A \cdot e^{W/RT}$ to

Card 1/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 42583-65

ACCESSION NR: AP5009945

melts of alkali metal nitrites is shown and the activation energies of viscous flow ($\Delta E\eta$) are determined. Within the studied temperature range the values of $\Delta E\eta$ are proportional to the values of activation energy of electrical conductivity (ΔE_{χ}). High values of $\Delta E\eta$ and low ratios of $\Delta E\eta$ to ΔE_{χ} indicate formation of relatively stable complex ions in melts of alkali metal nitrites. Orig. art. has: 3 figures, 2 tables.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvenny'y universitet (Rostov State University)

SUBMITTED: 12Oct63 ENCL: 00 SUB CODE: GC

NO REF SOV: 006 OTHER: 008

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 52059-65 EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EPR/T/EWP(t)/EWP(b)/EWA(c)
Pr-4/Ps-4/Pt-7/Pu-4 IJP(c) JD/JW/JG

ACCESSION NR: AP5012972 UR/0078/65/010/005/1220/1224

53
49
B

AUTHOR: Protsenko, P. I.; Brykova, N. A.

TITLE: Thermal analysis of binary nitrite systems

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 5, 1965, 1220-1224

TOPIC TAGS: lithium nitrite, thallium nitrite, sodium nitrite, potassium nitrite, rubidium nitrite, cesium nitrite, binary phase diagram, polymorphism

ABSTRACT: The behavior of thallium nitrite with nitrites of lithium, sodium, potassium, rubidium, and cesium in the solid state was studied for the first time. The authors refined the compositions of the eutectics and dystectics, established the stability limits of the solid solutions, and identified the polymorphic transformations. Differential thermal analysis was used to study the following binary systems: $LiNO_2 - TlNO_2$; $NaNO_2 - TlNO_2$; $KNO_2 - TlNO_2$; $TbNO_2 - TlNO_2$; $CsNO_2 - TlNO_2$. Complete phase diagrams were constructed (see Figs. 1, 2, 3, 4 and 5 of the Enclosure). The incongruently melting compound $TlNO_2 \cdot 3LiNO_2$ and continuous series of solid solutions in the $RbNO_2 - TlNO_2$ and $CsNO_2 - TlNO_2$ systems were identified for the first time; this may be of importance in the search for new ferro- and antiferroelectrics.

Card 1/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 52059-65
ACCESSION NR: AP5012972

4

The line of dimorphic transformation of thallium nitrite almost coincides with the solidus curve. The minimum solid solution contains 25% cesium nitrite and has a melting point of 162°C. Only the heat effect of fusion at 406°C is observed on the heating curves of cesium nitrite. "The formation of solid solutions by rubidium and cesium nitrite in binary combinations was confirmed by spectral analyses carried out by Yu. A. Kulyupin and L. V. Shesterko at the authors' request." Orig. art. has: 6 figures and 2 tables.

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

SUBMITTED: 28Sep63 ENCL: 03 SUB CODE: IC, TD

NO REF SOV: 005 OTHER: 000

Card 2/5

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, A.V.; PROTSENKO, P.I.

Some physicochemical properties of melts of the system lithium nitrite - lithium nitrate. Izv. vys. ucheb. zav., tsvet. met. 7 no.5:34-38 '64 (MIRA 18:1)

1. Kafedra obshchey i neorganicheskoy khimii Rostovskogo gosudarstvennogo universiteta.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

MEDVEDEV, S.S.; [illegible]

System Li, Ca // NO_2, NO_3. Zhur. neorg. khim. [illegible]
Ag '64.

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 24193-65 EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pt-10/Pu-4 IJP(c) JD/JG

ACCESSION NR: AP4047996 S/0073/64/030/010/1051/1054

AUTHOR: Protsenko, P. I.; Protsenko, A. V.

TITLE: Dissociation potentials of molten alkali metal nitrites

B

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 10, 1964, 1051-1054

TOPIC TAGS: alkali metal nitrite, lithium nitrite, sodium nitrite, rubidium nitrite, cesium nitrite, dissociation potential, potassium nitrite

ABSTRACT: The dissociation potential E of the molten alkali metal nitrites were determined over a wide temperature range using a platinum anode for the Li, Na, Rb and Cs nitrites, a silver anode for KNO_2 and a carbon anode for Li and Na nitrites. E was lower on the carbon than on the platinum anode, probably due to polarization. The dissociation potential increased from Na to Cs nitrite, but less than for the corresponding nitrates. E decreased with increasing temperature according to the equation $E_t = E_{t_0} + \frac{\Delta E}{\Delta t}(t - t_0)$ where $\frac{\Delta E}{\Delta t}$ is the mean temperature coefficient. The following mechanism was proposed for the electrolysis

Card 1/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

L 24193-65

ACCESSION NR: AP4047996

of the nitrites and secondary processes on the electrodes: on the cathode, $Me^{+} + e \rightarrow Me$, and the secondary reactions, $6Me + 2MeNO_2^{-} \rightarrow 4Me_2O + N_2$ and $6Me + N_2 \rightarrow 2Me_3N$; and on the carbon anode, $2NO_2^{-} - e \rightarrow NO_3^{-} + NO$, and the secondary reactions, $C + 2NO \rightarrow CO_2 + N_2$ and $C + CO_2 \rightarrow 2CO$. Analyses of the catholytes and anolytes confirmed these reactions, although other oxygen compounds of carbon might also have been formed. Orig. art. has: 2 figures and 4 equations.

ASSOCIATION: Rostovskiy-na-Dony gosudarstvenny*y universitet (Rostovsk-on-Don State University)

SUBMITTED: 08Jul63 ENCL: 00 SUB CODE: MM, GC

NR REF SOV: 008 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; ANDREYEVA, T.A.

Systems $RbNO_2$ - $Ba(NO_2)_2$-H_2O and $CsNO_2$-$Ba(NO_2)_2$- H_2O at 25°C. Zhur. neorg. khim. 9 no.6:1441-1445 Je '63 (MIRA 17:8)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHISHOLINA, R.S.; PROTSENKO, A.V.

System Li, Rb, $\|NO_2, NO_3$. Zhur. neorg. khim. 9 no.6:1431-1434 Je '63 (MIRA 17:8)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHOKHINA, O.N.

Viscosity of melts in the system $NaNO_2$ - KNO_2. Zhur.neorg.khim. 9 no.1:152-155 Ja '64. (MIRA 17:2)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BRYKOVA, N.A.

System $TlNO_2$ - $Ba(NO_2)_2$ - H_2O at 25 and 50°. Zhur.neorg.khim. 9 no.4:982-985 Ap '64. (MIRA 17:4)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; PROTSENKO, A.V.; TRET'YAKOV, Yu.D.; VENEROVSKAYA, L.N.

Electric conductance of binary molten nitrite-nitrate systems. Dokl. AN SSSR 154 no.5:1171-1174 F'64. (MIRA 17:2)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno akademikom A.N. Frumkinym.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

SHOKINA, O.N.; PROTSENKO, P.I.

Internal friction of melts in the binary systems $NaNO_1$- $Ba(NO_2)_2$ and KNO_2 - $Ba(NO_2)_2$. Zhur.fiz.khim. 37 no.10:2337-2339 O '63. (MIRA 17:2)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHURDUMOV, G.K.

Fusibility of the reciprocal system Cs, Sr || NO_2, NO_3. Izv.vys.ucheb. zav.;khim.i khim.tekh. 6 no.5:707-711 '63. (MIRA 16:12)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra obshchey i neorganicheskoy khimii.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BRYKOVA, N.A.

Differential thermal analysis of binary systems of nitrites of thallium and alkaline earth metals. Zhur.neorg.khim. 8 no.9: 2163-2167 S '63. (MIRA 16:10)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; ANDREYEVA, T.A.

Electric conductance of melts in the system Cs, Ba\\NO_2, NO_3. Zhur.neorg. khim. 7 no.7:1648-1654 Jl '62. (MIRA 16:3)
(Fused salts—Electric properties)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHURDUMOV, G.K.

Liquidus of the ternary reciprocal system consisting of rubidium and strontium nitrites and nitrates. Zhur.neorg.khim. 7 no.7:1644-1647 Jl '62. (MIRA 16:3)

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

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

POPOVSKAYA, N.P.; PROTSENKO, P.I.

Temperature dependence of the electric conductance of nitrates and their mixtures in melts. Zhur.neorg.khim. 7 no.9:2237-2240 S '62. (MIRA 15:9)

(Nitrates--Electric properties)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

ARGUNOV, S.B.; PROTSENKO, P.I.

Mechanical variable speed drives in the automatic control of metallurgical processes. Izv.vys.ucheb.zav.; tsvet.met. 5 no.3:154-158 '62. (MIRA 15:11)

1. Severokavkazskiy gornometallurgicheskiy institut, zavod Elektrotsink.
(Fluidization) (Automatic control)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; SHOKINA, O.N.

Solubility isotherms of the systems $NaNO_2$ - KNO_2 - H_2O, $NaNO_2$ - $Ba(NO_2)_2$ - H_2O, KNO_2 - $Ba(NO_2)_2$ - H_2O at 25 and 50°C. Zhur.-neorg.khim. 7 no.6:1424-1430 Je '62. (MIRA 15:6)

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

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; BRYKOVA, N.A.

Physicochemical properties of solutions of th system $TlNO_2$ - $RbNO_2$ - H_2O at 25°C. Izv.vys.ucheb.zav.;khim.i khim. tekh. 7 no. 1:3-6 '64. (MIRA 17:5)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, laboratoriya fiziko-khimicheskogo analiza.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

S/196/63/000/001/006/035
E193/E383

AUTHORS: Protsenko, P.I., Khodakov, A.A., Mirskaya, Ye.Z. and Venerovskaya, L.N.

TITLE: Physicochemical parameters of nitrites and nitrates of alkali and alkaline-earth metals with ferroelectric properties

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no. 1, 1963, 17, abstract 1 B55. (In collection: Segnetoelektriki (Ferroelectrics), Rostov-na-Donu, Rostovsk. un-t, 1961, 21-26)

TEXT: In connection with the possible application of ferroelectrics as nonlinear elements in conjunction with electroluminophors, it is desirable to have available ferroelectrics characterized by low ε, this property being necessary to ensure their compatibility with electroluminophors. With this in view, a study was conducted of crystals of those nitrites and nitrates of alkali and alkaline-earth metals that possess ferroelectric properties; the experimental specimens were crystallized out of aqueous solutions or grown by the Bridgman method from their melts. Thermal

Card 1/5

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

analysis of a large number of nitrates and nitrites enabled the authors to obtain more accurate data on their melting points, to establish the existence of polymorphic transformations and to determine the transformation temperatures (these data being reported in the form of a table). It was shown that single crystals of sodium nitrite ($NaNO_2$) in the direction of the θ axis consituted ferroelectrics with $\theta \sim 437$ °K, i.e. 164 °C (see Fig. 1), the magnitude of ε at θ being more than 100 times higher than that at room temperature. The magnitude of spontaneous polarization, determined by pyroelectrical measurements, was found to be about 7 μk/cm. Typical hysteresis loops were observed at 413 °K (140 °C) at 50 c.p.s. High values of coercive fields at room temperature were established. A study of the dependence of ε of $NaNO_2$ on temperature and the intensity of the DC field E showed that ε decreased with increasing E at temperatures lower than θ, being independent of E at θ. Dilatometric measurements showed that the temperature coefficient of linear expansion α of $NaNO_2$ was of the order of 10^{-4} - 4×10^{-5} deg^{-1}, and that the temperature-dependence of α differed from that typical for ferroelectrics. A

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

domain structure was observed which disappeared at temperatures higher than θ and was not restored on cooling below θ. Single crystals of sodium, rubidium, caesium and thallium nitrates had phase-transformations in the temperature range between room temperature and the melting point. The transformation of sodium nitrate from the second phase (with an orthorhombic structure of aragonite) to the first phase (with the calcite structure) took place on heating above 403 °K (130 °C); on cooling below 397 °K (124 °C) the first phase changed into ferroelectric third phase, which remained stable down to 383 °K (110 °C) and then changed to the second phase. The transformation of sodium nitrate to its ferroelectric phase was accompanied by a decrease in ε. Transformation from hexagonal to cubic modification took place at 434 °K (161 °C) in rubidium nitrate, a change from cubic to rhombic modification taking place at 492 °K (219 °C); a phase-transformation in this compound was observed also at 564 °K (291 °C). Rubidium nitrate had no ferroelectric properties in the temperature interval studied. A phase-transformation took place in caesium nitrate at 427 °K (154 °C) but no maxima were observed near the transformation temperature. Two phase-transformations were observed in thallium nitrate (see

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

Fig. 2): $\gamma \rightarrow \beta$ transformation at 348 °K (75 °C) and $\beta \rightarrow \alpha$ transformation at 418 °K (145 °C). The increase in ε observed on heating thallium nitrate was attributed to the increase in conductivity. No ferroelectric properties were observed in barium nitrate, a $(Tl\text{-}Ba)NO_2$ complex and certain other nitrates. There are 5 figures and 3 references.

[Abstracter's note: Complete translation.]

CAPTION to Fig.1:

Temperature-dependence of ε and tan δ of $NaNO_2$ at f = 1 Mc/s

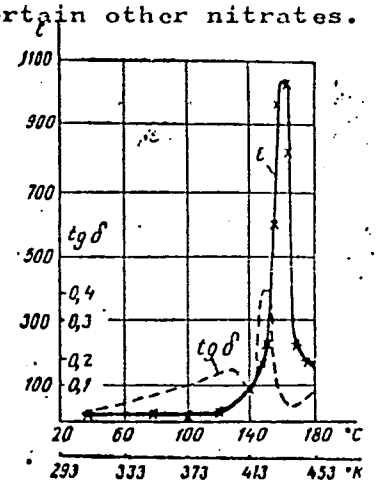

Fig. 1:

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

Vitreous state of nitrates. Uch.zap. RGU 41:155-160 '58. (MIRA 15:1)

(Nitrates) (Vitreous state)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

ANDREYEVA, T.A.; PROTSENKO, P.I.

Reciprocal system consisting of nitrites and nitrates of rubidium and barium. Izv.vys.ucheb.zav.; khim.i khim.tekh. 4 no.6:892-896 '61. (MIRA 15:3)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra neorganicheskoy khimii.

(Systems (Chemistry))

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.

The Chemistry Department during the Soviet regime. Uch.zap.RGU no.60:3-12 '59. (MIRA 14:10)
(Rostov-On-Don--Chemistry--Study and teaching)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

MALAKHOVA, A.Ya.; PROTSENKO, P.I.

Nitrate-nitrite exchange in fused salts. Report No.2: Reciprocal system composed of sodium and barium nitrates and nitrites. Uch.zap. RGU no.60:143-150 '59. (MIRA 14:10)
(Salts) (Systems (Chemistry))

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; FEDCHENKO, T.I.

Interaction of lithium, rubidium, and cesium nitrates in melts. Uch.zap.RGU no.60:135-142 '59. (MIRA 14:10)
(Alkali metal nitrates) (Systems (Chemistry))

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; POPOVSKAYA, N.P.

Nature of fused salts. Izv.vys.ucheb.zav.;khim.i khim.tekh. 4 no.3:345-348 '61. (MIRA 14:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. kafedra obshchey i neorganicheskoy khimii.
(Systems(Chemistry))
(Salts)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; ANDREYEVA, T.A.

Reciprocal system consisting of cesium and barium nitrites and nitrates. Zhur.neorg.khim. 6 no.6:1375-1377 Je '61. (MIRA 14:11)

1. Rostovskiy gosudarstvennyy universitet.
(Systems (Chemistry)) (Complex compounds)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; MALAKHOVA, A.Ya.

Density and molar volumes of melts of a reciprocal system consisting of potassium, barium nitrites and nitrates. Zhur. neorg. khim. 6 no.7:1662-1670 Jl '61. (MIRA 14:7)

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

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

PROTSENKO, P.I.; POPOVSKAYA, N.P.; Prinimali uchastiye: Dneprovskaya, G.G.; PROTSENKO, A.V.

Electric conductivity of the melts of some nitrates and their mixtures. Zhur. fiz. khim. 35 no. 4:867-870 Ap '61. (MIRA 14:5)

1. Rostovskiy gosudarstvennyy universitet, Rostov-na-Donu.
(Nitrates—Electric properties)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

22002

S/076/61/035/004/009/018
B106/B201

5.4600(1208,1273,1087)

AUTHORS: Protsenko, P.I., and Popovskaya, N. P.

TITLE: Electrical conductivity of some nitrate melts and their mixtures

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 867 - 870

TEXT: In continuation of previous studies devoted to the systematic investigation of the electrical conductivity, the specific weight, and the molecular volume of nitrate melts and nitrate mixtures, the authors of the present paper determined experimentally the electrical conductance of mixed melts of the two binary systems silver nitrate - cesium nitrate, and silver nitrate - potassium nitrate. The method used for the investigation has been already described earlier (Ref. 3: Zh. obshch. khimii, 24, 2119, 1954; Ref. 4: Zh. fiz. khimii, 29, 225, 1955). The electrical conductance was measured polythermally in the temperature range of 180-340°C. From the resulting polytherms, the isothermal lines were established at intervals of 20°C each. In the binary system silver nitrate - cesium nitrate, two che-

Card 1/7

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

22002

S/076/61/035/004/009/018
B106/B201

Electrical conductivity of some ...

nical compounds appear in the liquidus curve of the phase diagram: $3AgNO_3 \cdot CsNO_3$, which melts regularly, and $AgNO_3 \cdot CsNO_3$, which melts under decomposition. The electrical conductivity of this system has been measured by the authors for the first time. Results are presented in Fig. 1. As may be seen, the two abovementioned compounds do not appear in the isothermal lines of the electrical conductance. The binary system silver nitrate - potassium nitrate has been earlier studied by Ussov (Ref. 8: Z. anorgan. Chem., 38, 419, 1904) and by A. P. Palkin and co-workers (Ref. 9: Reaktsii v otsutstviye rastvoritelya, Voronezh, 1939, 7-14). Compound $AgNO_3 \cdot KNO_3$ appears in the liquidus curve of the phase diagram of this system. The electrical conductivity of the latter has been studied by V. D. Polyakov (Ref. 10: Izv. Sektora fiz.-khim. analiza IONKh AN SSSR, 26, 147, 1955) and H. C. Cowen and H. J. Axon (Ref. 11: Trans. Faraday Soc., 52, 242, 1956). According to data by V. D. Polyakov, the isothermal lines of conductance exhibit two minima, one of which corresponds to compound $AgNO_3 \cdot KNO_3$, and the other to compound $2AgNO_3 \cdot KNO_3$; according to data from Ref. 11, by contrast, the isothermal lines have a monotonous course, with-

Card 2/7

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

out the appearance of a minimum, and display only insignificant negative deviations from additivity determined from the conductances of the components. Careful measurements made by the authors revealed that the isothermal lines actually represented curves with a monotonous course, slightly inclined toward the abscissa, and exhibiting no particular points, breaks, or minima (Fig. 2). These results are in good agreement with the data given in Ref. 11. Whereas the statement has been repeatedly found in the literature that the liquidus curves of phase diagrams and the isothermal lines of the electrical conductance of fused salt baths have an identical course, the authors' investigation yielded results to the contrary. The isothermal lines of the conductance of the two systems concerned have a wholly homogeneous course, without any sign of a chemical reaction between the components. No matter what the form of the liquidus curves of the phase diagrams, the form of the isothermal lines of the electrical conductance in the systems so far studied by the authors (nitrate-, nitrite-, and nitrate-nitrite systems) can be assigned to three types: (1) straight-lined isotherms, deviating little or not at all from additivity; (2) concave isothermal lines with slight negative deviations from additivity; (3) convex isothermal lines with slight negative deviations from

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0

22002
S/076/61/035/004/009/018
B106/B201

Electrical conductivity of some ...

additivity. A common feature in all three types is the absence of particular points, independently of the reactions of the components at the moment of crystallization from the melt. The absence of extreme values can be regarded as an indirect evidence of the ionic structure of nitrate melts and their mixtures, and proves that the chemical compounds forming in crystallization from the melt spontaneously dissociate to ions at temperatures above the liquidus curve. These ions form associates with undefined and changing composition, whose spherical volume is a function of the concentration of the initial components, of the ion charges, the ion radii, and the ratio between the ionic fields of forces. The course of the isothermal lines of conductance is also defined thereby. Measurements of refractive indices, and of molecular refractions, of mixtures of silver and potassium nitrate, carried out by H. Bloom and D. C. Rhodes (Ref. 17: J. Phys. Chem., 60, 791, 793, 1956), yielded similar results. G. G. Dneprovskaya and A. V. Protsenko took part in the experimental work. There are 2 figures and 17 references: 14 Soviet-bloc and 3 non-Soviet-bloc. The two references to English language publications read as follows: H. C. Cowen, H. J. Axon, Trans. Faraday Soc., 52, 242, 1956; H. Bloom, D. C. Rhodes, J. Phys. Chem., 60, 791, 793, 1956.

Card 4/7

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001343330004-0"