mixture was determined by a special method. The weighed alloy containing beryllium carbide was dissolved in nitric acid. The nitric oxides were absorbed by silica gel; potassium dichromate and concentrated sulfuric acid were added to the solution. The methane formed by hydrolysis of carbide was determined by combustion. The results of a chemical analysis of Be_2Cu-CuBe (2%) are given in Table 1. A saturated beryllium-carbide solution in a liquid copper-beryllium melt is formed within 1.5 - 2 hr. In all experiments conducted at 1709°C, the content of free beryllium was 2.00% by weight, as had been calculated. This indicates the absence of a reaction between carbide and melt. At 1709°C, a considerable increase in the carbide content is observed. This may be explained by the fact, that at this temperature, sudden dissociation of carbide starts: $Be_2C_{solid} \rightleftharpoons 2Be_{liq} + C_{graphite}$. In the range 1287 - 1626°C, the solubility data obtained were expressed by the Schroeder equation: $\log N_{Be_2C} = 1.337 - 5312/T$, where N_{Be_2C} is the molar part of beryllium carbide in the melt. Results are given in Table 2. In this way, also the solution heat of

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beryllium carbide in a liquid copper-beryllium mixture containing 2% of beryllium may be calculated as follows: ΔH_T (1560 - 1899°K) = 24.3±0.5 kcal/mole. There are 1 figure, 2 tables, and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc. The two references to English-language publications read as follows: Ref. 4: N. I. Grant, O. Preston. J. Metals, 9, 349 (1957); Ref. 5: A. B. Kaufman, P. Gordon, D. W. Lillie, Trans. ASM, 40, 785 (1950).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova Khimicheskiy fakul'tet (Moscow State University imeni M. V. Lomonosov, Chemical Division)

SUBMITTED: March 6, 1961

Card 3/5

26283
S/078/61/006/009/002/010
B107/B101

5 4800 1273 1228 1297

AUTHORS: Nesterova, Ya.M., Pashinkin, A.S., Novoselova, A.V.

TITLE: Determination of the saturated-vapor pressure of solid tin selenide and tin telluride.

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 9, 1961, 2014-2018

TEXT: The lattice constants and saturated-vapor pressure of SnSe and SnTe were determined. This is of interest for finding out whether it is possible, by distillation, to remove the tin impurity from selenium and tellurium, which serve for rectifiers or alloys for thermoelectric cooling. The present study is a continuation of publications on the saturated-vapor pressures of selenides and tellurides of the second- and fourth group elements. (Last publication: I.V. Korneyeva, V.V. Sokolov, A.V. Novoselova. Zh. neorg. khimii, 5,241 (1960)). The compounds were prepared from the elements; the composition was checked analytically. Radiographs were made by the РКД-57 (RKD-57) camera and nickel radiation . SnTe crystallizes cubically in accordance with the NaCl type, with a = 6.310 ± 0.005 kX;

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this value agrees well with publication data (Ref. 8, see below). The lattice constants of the rhombical SnSe cell are : a = 4.46 ± 0.01; b = 4.17 ± 0.01; c = 11.46 ± 0.01 kX (Table 2). The values about agree with previous data (Ref. 12, see below); as shown by the intensity of the lines, the compound has the same structure as GeS (Ref. 23, see below). After distillation in vacuum (10^{-4}mm Hg, SnSe at 650-700°C and SnTe at 640-680°C), chemical composition and lattice constants are unchanged. The pressure of the saturated vapor was determined according to Knudsen's method. Two quartz-effusion chambers with openings of different sizes were used. Calibration measurements were conducted with KCl. Measurement results are listed in Table 3. The maximum error amounts to 20%. The following dependence was obtained for SnSe in the range of from 569 to 647°C: $\log p = -9186.6/T + 8.696$; (p in mm Hg); $\Delta H^0_{891^\circ K} = 42.0 \pm 11$ kcal per mole. The following equation was obtained for SnTe in the range of from 575 to 731°C; $\log p = -9817.3/T + 9.009$, (p in mm Hg); $\Delta H^0_{926^\circ K} = 44.9 \pm 4.3$ kcal/mole. The authors thank Yu.P. Simanov and L.M. Kovba for help with the X-ray investigation.

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Determination of the saturated...

There are 1 figure, 3 tables, and 29 references: 15 Soviet and 14 non-Soviet. The four most important references to English-language publications read as follows: Ref. 8: K. Hashimoto, K. Hirakawa. J. Phys. Soc. Japan, 11, 716 (1956); Ref. 12: A. Okazaki, I. Ueda. J. Phys. Soc. Japan, 11, 470 (1956); Ref. 23: W. H. Zachariasen. Phys. Rev., 40, 923 (1932); Ref. 24: D. R. Stull, G. C. Sinke, Thermodynamic Properties of the Elements. Amer. Chem. Soc., Washington, 1956, pp 180, 201, 209.

SUBMITTED: July 27, 1960

Card 3/5

26287
S/078/61/006/009/008/010
B127/B101

5.2420

AUTHORS: Hu Ch'ih-tsu, Novoselova, A. V.

TITLE: Thermal analysis of the KF - LaF_3 - K_2BeF_4 system

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 9, 1961, 2148 - 2157

TEXT: The authors studied the above-mentioned system in order to clarify the interaction of the individual components. The KF - BeF_2 system had already been investigated by M. P. Borzenkova et al. (Zh. neorgan. khimii, 1, 2071 (1956) who found the following compounds: K_3BeF_5, K_2BeF_4, $KBeF_3$, and KBe_2F_5. The KF - LaF_3 system had been investigated by Ye. P. Dergunov (Dokl. AN SSSR, 60, 1185 (1948)), and an incongruently melting $KLaF_4$ with a transition temperature at 770°C and 33 mole % of LaF_3 was observed. The eutectic lies at 620°C and 21 mole % of LaF_3. The BeF_2-LaF_3 system had to be studied by the authors. The differential thermal analysis

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was conducted by Kurnakov's pyrometer and with the use of platinum - platinum-rhodium thermocouples. The results of analysis of the BeF_2-LaF_3 system showed that below 1000°C LaF_3 does not dissolve in BeF_2. The specimen could not be heated more strongly since otherwise BeF_2 would have vaporized. The authors also studied the KF - K_2BeF_4 system, and found that the liquidus intersects the peritectic horizontal line in the point corresponding to K_3BeF_5. The transition point of this compound is 735±5°C, and the eutectic point is found at 705±5°C and 81 mole % of KF. Also the KF - LaF_3 system was investigated and the eutectic determined at 630±5°C and 20 mole % LaF_3. The results obtained for the system KF - LaF_3 - K_2BeF_4 may be seen from the melting-point diagrams. The area of the liquidus curve consists of five fields, three of which correspond to the components LaF_3, KF, and K_2BeF_4, and the other two to the incongruently melting compounds $KLaF_4$ and K_3BeF_5.

Card 2/9

SITDYKOVA, N.S.; TUROVA, N.Ya.; SEMENENKO, K.N.; NOVOSELOVA, A.V.

Compounds of beryllium chlorides with dialkyl sulfides. Zhur. neorg.khim. 6 no.11:2512-2516 '61. (MIRA 14:10)
(Beryllium chloride) (Sulfide)

BOSIK, I.I.; NOVOSELOVA, A.V.; SIMANOV, Yu.P.

Study of the system Li_2SO_4 - $BeSO_4$. Zhur.neorg.khim. 6 no.11:2563-2567 '61. (MIRA 14:10)

(Kithium sulfate) (Beryllium sulfate)

30181
S/078/61/006/012/007/011
B124/B110

52200

AUTHORS: Zlomanov, V. P., Tananayeva, O. I., Novoselova, A. V.

TITLE: Study of the interaction between lead selenide and oxygen

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 12, 1961, 2753-2757

TEXT: Continuing an earlier study performed by the authors (Ref. 3: Dokl. AN SSSR 129, 809 (1959)), the composition of the oxidation products prepared by reacting lead selenide with oxygen at temperatures ranging from 500 up to 900°C was established, and the electrical conductivity of the respective products measured. Lead selenide was oxidized in alundum crucibles in the furnace ТГ-2 (TG-2) the temperature of which was controlled with the potentiometer ЭПД-12 (EPD-12). Products obtained were examined by chemical and x-ray techniques. From the results of the two methods, it is obvious that at 500 to 600°C lead selenite forms, while at 600 to 800°C the phase A appears which has not yet been described in literature, in addition to the selenite; this phase is the only reaction product on heating in the air for 2 hours, at 800°C. Evidence is given for the fact that the oxyselenite $2PbO \cdot PbSeO_3$ is concerned here which is based

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on the consistent densities established by pycnometric and x-ray measurements as well as on the identical powder diagrams of oxyselenite synthetically prepared and of the sample. Oxyselenite has a tetragonal body-centered lattice with the parameters a = 3.91 ± 0.01 kX; c = 5.37 ± 0.01 kX. Oxyselenite melts incongruently; the liquid phase appears first at 705 ± 10°C and the bulk of the oxyselenite melts at 740 ± 10°C. $4PbO \cdot PbSeO_3$ forms in the air at 900°C after 2 hours and was also prepared by the oxidation of lead selenide in the air at 1000°C for 1 hour. The parameters of the rhombic body-centered lattice of $4PbO \cdot PbSeO_3$ are: a = 3.90 ± 0.01 kX; b = 3.71 ± 0.01 kX; c = 5.67 ± 0.01 kX. This compound is identical to the phase B described in earlier papers (Ref. 3: see above; Ref. 11: Zh. neorgan. khimii 6, 2261 (1960)) which melts congruently at 780°C. The conductivity of lead selenide oxidized at temperatures above 600°C was measured with a small-size ohmmeter (МОМ-3 (MOM-3)) and was $2 \cdot 10^{-8}$ to $2 \cdot 10^{-10}$ ohm^{-1}cm^{-1}. V. I. Mikheyev (Ref. 9: Rentgenometricheskiy opredelitel' mineralov (X-ray analyzer for minerals), Gosgeoltekhizdat, 1957, p. 95) is mentioned. Thanks are given to L. M. Kovba for the performance of the x-ray examinations. There are 1 figure, 4 tables, and

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16 references: 12 Soviet and 4 non-Soviet. The three references to English-language publications read as follows: F. N. Pollard, P. Hanson, W. I. Gedry, Ann. Chem. Acta 20, 26 (1959); D. H. Roberts, J. Electron. and Control 5, 256 (1958); H. Pagel, I. Miers, Ind. Eng. Chem. Anal. Ed. 10, 334 (1938).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 12, 1960

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Card 3/3

NOVOSELOVA, A. V.; PASINKIN, A. S.[Pashinkin, A. S.]; POPOVKIN, B. A.

Preparation of the highly pure selenium and tellurium. Analele chimie 16 no.3:98-107 Jl-S '61.

(Selenium) (Tellurium)

NOVOSELOVA, A.V.

Some problems involved in the chemistry of semiconductors. Vest. Mosk. Un.Ser.2:Khim. 16 no.5:60-68 S-O '61. (MIRA 14:9)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.
(Semiconductors)

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25482
S/020/61/139/001/014/018
B103/B226

AUTHORS: Popovkin, B. A. and Novoselova, A. V., Corresponding Member AS USSR

TITLE: Study of the system lead selenite - lead oxide

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 1, 1961, 117 - 119

TEXT: The authors studied the system $PbSeO_3$ - PbO by thermal and X-ray phase analyses with a view to precisely defining composition and limits of existence of lead oxyselenites. The fact has been proved earlier (B. A. Popovkin et al. Ref. 1: DAN, 129, No. 4, 809 (1959)), that only lead selenite is produced by the interaction between lead selenide and oxygen at 500-600°C. The authors prepared mixtures of analytical-grade products ЧДА (ch, d, a) consisting of yellow lead oxide and lead selenite, the latter of which has been produced of analytical-grade selenious acid and lead nitrate. For conducting the thermal analysis, carefully pulverized and mixed samples were prepared by annealing in evacuated quartz ampoules. Equilibrium mixtures with less than 70 mole % PbO required a 20-hr annealing at 560-570°C,

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those with a higher PbO content - 40 hr at 630-650°C. TheПК-52 (PK-52) pyrometer with platinum-platinum rhodium thermocouples by N. S. Kurnakov served for the differential thermal analysis. Al_2O_3 was taken as a standard. Weighed portions of 0.8 g were heated in platinum crucibles. Average heating rate was 10-12°C/min (in individual cases 5-6°C/min); heating curves were recorded. X-ray diagrams were recorded by the powder method. Fe-K radiation in РКД(RKD) cameras, or, at high temperatures, the "УНИКАМ"(Unikam) camera served for the purpose. Capillaries of "Pyrex" glass contained the substance. The intensity of the lines was visually evaluated according to a 5-stage scale. Fig. 1 shows the phase diagram of the $PbSeO_3$ - PbO system; Fig. 2 the results of X-ray phase analysis. The melting points of $PbSeO_3$ at 680°C and of PbO at 885°C were determined. The presence of oxyselenites: A) 2 $PbO \cdot PbSeO_3$, and B) 4 $PbO \cdot PbSeO_3$ was proved in the system (in accordance with Ref. 1). A) melts with decomposing at 755°C: $2PbO \cdot PbSeO_3 \rightleftarrows$ melt + $4PbO \cdot PbSeO_3$, and with lead selenite forms a eutectic at 605°C and 33.3 mole % PbO. B) melts congruently at 805°C and with PbO forms a eutectic

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(800°C, 83.3 mole % PbO). In addition to effects unambiguously belonging to decomposition or to melting of the phases mentioned, others were recorded in thermal analysis that cannot clearly be interpreted: between 45 and 63 mole % PbO when heating with 5-6°C/min, endothermic effects (625, 650, and 710°C) became visible. When heating with 10-12°C/min, these effects did not appear on the curves or were only indicated by small breaks. With slow heating, the temperatures of the final melting of mixtures with 55 and 60 mole % PbO decrease from 750 and 755°C to 730°C. The eutectic effect (605°C) in each case appears independently of the heating rate. According to the authors' assumption, these unclear effects can be exerted by the formation and conversions of the unstable oxyselenite $PbSeO_3 \cdot PbO$. Mixtures with 5 to 20 mole % PbO showed a reversible endothermic effect at 625°C being absent in the thermograms of pure lead selenite. The Debye powder pattern of the sample with 95 mole % $PbSeO_3$ and 5 % PbO annealed at 640°C, showed some lines neither belonging to $PbSeO_3$ nor to $2\ PbO \cdot PbSeO_3$. The authors assume that this effect is related to the reversible polymorphous

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conversion of lead selenite which is stablized by $2PbO \cdot PbSeO_3$. Furthermore, this effect may be due to melting the eutectic of the $PbSeO_3 \cdot PbO$ compound with lead selenite assumed by the authors. The effects 275 ± 10° and 370 ± 10°C which are not always reproducible appear in mixtures with 25-75 mole %. They are independent of both the formation and decomposition of new crystalline phases; they possibly belong, however, to second-order conversions of $2PbO \cdot PbSeO_3$. The structure of the oxyselenites mentioned is identical with that of the crystalline phases being proved earlier (Ref.1) in the oxidation products of lead selenide. A) crystallizes in the tetragonal lattice with the parameters of the body-centered cell a = 3.92 kX, c = 5.37 kX; B) crystallizes in rhombic lattices with the parameters of the body-centered cell a = 3.92 kX, b = 3.73 kX, and c = 5.72 kX. There are 2 figures and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. The two references to English-language publications read as follows: F. N. Pollard et al. (Ref. 4: Ann. Chem. Acta, 20, 26 (1959)); H. Lipson, A. Wilson, Ref. 7: J. Sci. Inst. 18, 144 (1955)).

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Study of the system lead selenite...

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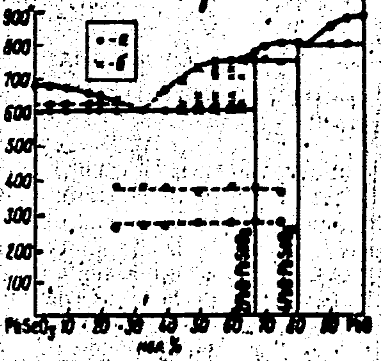
ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 6, 1961

Legend to Fig. 1: System $PbSeO_3$ - PbO. (a) heating rate 10-12°C/min, (б) - the same 5-6°C/min. Abscissae - mole %.

Fig. 1.



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25857
S/020/61/139/004/017/025
B103/B206

5.2420

AUTHORS: Novoselova, A. V., Corresponding Member AS USSR, Korenev, Yu. M., and Simanov, Yu. P.

TITLE: Investigation of the system KF-ZrF_4

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 4, 1961, 892-894

TEXT: The authors investigated the system KF-ZrF_4 by: 1) differential thermal analysis and 2) X-ray phase analysis. Publications on the melting-point diagram of this system are very scanty. The authors produced KF by dehydration of $KF \cdot 2H_2O$; ZrF_4 was prepared from $(NH_4)_3ZrF_7$ by distilling off NH_4F in a CO_2 current. $(NH_4)_3ZrF_7$ was synthetized by methods of G. A. Yagodin and V. I. Tarasov (Ref. 9: ZhNKh, 5, vyp. 9, 1987 (1960)). Melts with less than 33.3% ZrF_4 were prepared from KF and K_2ZrF_6, and those with more than 33.3% ZrF_4 by fusing calculated amounts of K_2ZrF_6 and $(NH_4)_3ZrF_7$ in a CO_2 current. 1): The authors used the pyrometer by N. S. Kurnakov

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S/020/61/139/004/017/025
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Investigation of the system $KF-ZrF_4$

with a platinum - platinum - rhodium thermocouple. Al_2O_3 served as a standard. In order to reduce losses of ZrF_4, the melts (0.5 g each) were entered into the furnace which had previously been heated to a temperature slightly higher than the melting point of the melt (930-940°C). The current was switched off after some minutes, and the cooling curve was recorded. This was the procedure with melts containing more than 33.3% ZrF_4. For other melts, both cooling and heating curves were recorded. 2): Crushed alloys were glued to Pyrex by means of zapon lacquer. Roentgenograms of KF and of alloys containing much KF were taken in sealed Pyrex capillaries. The authors used cameras of the type РКД-57 (RKD-57) with Fe radiation; for K_2ZrF_6 at 260 and 340°C, a "Unicam" amera with a БСВЛТ (BSVLT) tube and a copper anode was used. Fig. 1 shows the phase diagram of the system $KF-ZrF_4$. The authors established that the ZrF_4 synthetized by them is a monoclinic modification. Its heating curve shows

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B103/B206

Investigation of the system $KF-ZrF_4$

endothermic effects at 612 and 685°C which correspond to transformations in the solid state. The effect at 612°C was missing with repeated heating. From 880°C onward the differential curve shows a strong deviation, since ZrF_4 is highly volatile. At 903 ± 5°C there is an endothermic effect which corresponds to the melting of ZrF_4. If ZrF_4 in a platinum crucible is put into a previously heated furnace, its cooling curve shows a solidification effect at 903 ± 5°C. With further cooling a polymorphous transformation occurs at 685°C. The melting point of KF was found to be 850°C. In the system $KF-ZrF_4$ they ascertained the following fluorine zirconates: 1) K_3ZrF_7, 2) $K_5Zr_2F_{13}$, 3) K_2ZrF_6, 4) $K_3Zr_2F_{11}$, 5) $K_7Zr_6F_{31}$, and 6) $KZrF_5$. 1) and 6) melt congruently at 923 and 455°C, respectively. 2) and 3) are formed by peritectic reactions:

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Investigation of the system $KF\text{-}ZrF_4$

K_3ZrF_7 + melt $(KF, ZrF_4) \overset{848^\circ C}{\rightleftarrows} K_5Zr_2F_{13}$; K_3ZrF_7 + melt $(KF, ZrF_4) \overset{585^\circ C}{\rightleftarrows} K_2ZrF_6$. 4) and 5) only exist in the solid state at 527 and 380°C, respectively. The eutectic point for KF and K_3ZrF_7 lie at 760°C and 13% ZrF_4; for K_3ZrF_7 and $KZrF_5$ at 430°C and 47% ZrF_4; for $KZrF_5$ and ZrF_4 at 440°C and 60% ZrF_4. K_2ZrF_6 showed several modifications. Its transformations are as follows:

$$\begin{tikzcd} & \beta\text{-}K_2ZrF_6 \arrow[dr, "298^\circ C"] & & & \\ \alpha\text{-}K_2ZrF_6 \arrow[ur, "240^\circ C"] & & \gamma\text{-}K_2ZrF_6 \arrow[ll, "130^\circ C"'] \arrow[r, shift left, "445^\circ C"] & \delta\text{-}K_2ZrF_6 \arrow[l, shift left] \arrow[r, shift left, "585^\circ C"] & \text{liqu}+K_3ZrF_7. \arrow[l, shift left] \end{tikzcd}$$

Polymorphous transformations of $KZrF_5$ occur at 400 and 424°C, and of $K_3Zr_2F_{11}$ at 313°C. K_3ZrF_7 has only a single modification which crystallizes in a face-centered cubic lattice: a = 8.966 ± 0.003 kX, and forms a solid solution with K_2ZrF_6 (in the range 73 - 75%). There are

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25857
S/020/61/139/004/017/025
B103/B206

Investigation of the system KF-ZrF_4

3 figures and 9 references: 3 Soviet-bloc and 6 non-Soviet-bloc. The most important references to English-language publications read as follows: C. J. Barton & al. J. Phys. Chem., 62, 665 (1958)); R A. Sense et al., ibid. 58, 995 (1954); H. M. Haendler & al., J. Am. Chem. Soc. 74, 2352 (1952).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 18, 1961

Legend to Fig. 1: a) Phase fields; [ж]- liquid. [illegible] . - solid solutions. Abscissa: mole % ZrF_4.

27261
S/020/61/139/005/014/021
B103/B217

24.7700 1160, 1138, 1043

AUTHORS: Ukrainskiy, Yu. M., and Novoselova, A. V., Corresponding Member AS USSR

TITLE: Molybdenum and rhenium diselenides

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 5, 1961, 1136-1137

TEXT: The authors studied $MoSe_2$ and $ReSe_2$ which have the same type of crystalline structure with respect to semiconductor properties. They were synthesized by the authors by sintering powdery Mo or Re (both ~99% pure) with a stoichiometric selenium quantity (99.9% pure) in quartz ampuls sealed in vacuo. Sintering took 100 hr at 700°C. The preparations obtained are gray powders of metallic luster which are perfectly stable in air. The x-ray powder pattern of the specimens was recorded by cameras of the type РКД-57 (RKD-57) with copper radiation. The authors found that $MoSe_2$ had a hexagonal elementary cell with the parameters $a = 3.28_4$ kX; $c = 12.8_8$ kX. Its pycnometric density was 6.90 ± 0.05 g/cm^3. If the elementary cell of $MoSe_2$ like that of MoS_2 is assumed to contain two molecular units, the calculated

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Molybdenum and rhenium diselenides

density of $MoSe_2$ was 7.0 g/cm^3. This agree well with the experimentally determined density. Most lines of the x-ray powder pattern can be indicated by the same hkl indices as those of MoS_2. In either case, equal conditions of non-extinction of reflexes of the type hhl and 001 prevail with even l. For all these reasons, the authors consider molybdenum diselenide and molybdenum disulfide to be isostructural compounds. The Debye powder pattern of $ReSe_2$ shows a set of interplanar distances, which indicates a perfect reaction course between Re and Se. This x-ray pattern contains a much greater number of lines than that of $MoSe_2$, which cannot be explained by the elementary cell of the MoS_2 type. The $ReSe_2$ structure is probably lower symmetrical. Electrical conductivity and thermo-emf of $MoSe_2$ and $ReSe_2$ were measured potentiometrically (for methods see: Yu. M. Ukrainskiy, A. V. Novoselova, Yu. P. Simanov, ZhNKh, 1, 148 (1959)). 12-15 mm high columns, 4 mm in diameter, produced under a pressure of 8 $tons/cm^2$, served as specimens. Conductivity was measured between 20 and 70°C. The specific conductivity of $MoSe_2$ was $1.23\cdot10^{-4}$ $ohm^{-1}\cdot cm^{-1}$ at 22°C, and increased with

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Molybdenum and rhenium diselenides

S/020/61/139/005/014/021
B103/B217

rising temperature. At 62°C, it was $2.30 \cdot 10^{-4}$ $ohm^{-1} \cdot cm^{-1}$. The conductivity of $ReSe_2$ was $6.75 \cdot 10^{-5}$ $ohm^{-1} \cdot cm^{-1}$ at 24°C, and $10.7 \cdot 10^{-5}$ $ohm^{-1} \cdot cm^{-1}$ at 64°C. The positive temperature coefficient of electrical conductivity and the value of the latter point to the semiconductor properties of $MoSe_2$ and $ReSe_2$. This is confirmed by the high thermo-emf proved by the authors. The thermo-emf was measured by the integral method in the ratio to alumel. The temperature difference between the two ends of the specimen was varied between 25 and 150°C. This changes the thermo-emf of $MoSe_2$ between 610 and 430 μv/deg and that of $ReSe_2$ between 1200 and 800 μv/deg. In either case, the probe (alumel) was negatively charged. Therefore, the authors consider the two diselenides to be p-type semiconductors. They thank Yu. P. Simanov for discussion of the results. There are 1 table and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to English-language publications reads as follows: H. V. A. Briscoe, R. L. Robinson, E. M. Stoddart, J. Chem. Soc., 134, 1439 (1931).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

Card 3/4

S/078/62/007/005/001/014
B101/B110

AUTHOR: Novoselova, A. V.

TITLE: Preparation of high-purity substances

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 5, 1962, 960-962

TEXT: A short survey is given of methods for preparing high-purity substances on the basis of literature published. The following is discussed: (1) Distillation and sublimation, and the separation of impurities if they have the same condensation temperature as the principal substance; (2) zone melting, and the separation of impurities if they have about the same distribution coefficient in solid and liquid phase; the change of electric properties of semiconductors in the case of deviations from the stoichiometric composition, and the importance of investigating the phase diagram near the stoichiometric composition; (3) separation by conversion into another compound in which the impurities have different distribution coefficients; (4) transport reactions caused by a temperature gradient; (5) extraction, adsorption, and ion exchange. The most important problems

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Preparation of high-purity substances

S/078/62/007/005/001/014
B101/B110

for further research are: (a) Study of interaction between pure substances and medium; (b) further development of methods of physicochemical analysis; (c) further development of methods of preparative chemistry for the synthesis of inorganic and organometallic compounds. There are 2 figures.

Card 2/2

S/078/62/007/005/002/014
B101/B110

AUTHORS: Liu Ch'ün-hua, Pashinkin, A. S., Novoselova, A. V.

TITLE: Determination of pressure of saturated vapor of solid germanium selenide and telluride

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 5, 1962, 963-966

TEXT: The pressure was measured of saturated vapor of GeSe and GeTe synthesized from Ge (resistivity 25-30 ohm·cm) and high-purity (99.99%) Se or Te in quartz ampoules at 1000°C. Formation of GeS_2 was prevented by adding about 3% Ge excess. Analysis and x-ray patterns of the synthesized initial and sublimated substances were identical, and agreed with the stoichiometric composition and with published data. The vapor pressure was measured according to Knudsen for GeSe at 414-596°C, for GeTe at 437-606°C, i. e., below the melting point. Linear relations were found for the temperature dependence of the vapor pressure: $(GeSe_{sd}) \log p_{mm\ Hg} = -9384.4/T + 10.728$; $(GeTe_{sd}) \log p_{mm\ Hg} = -10058/T + 11.314$. Sublimation heat for

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Determination of pressure of saturated ...

S/078/62/007/005/002/014
B101/B110

GeSe: $\Delta H^{o}_{778} = 42.9 \pm 3.0$ kcal/mole; for GeTe: $\Delta H^{o}_{794} = 45.8 \pm 3.0$ kcal/mole. The conversion of GeTe into the rhombohedral modification, which is possible below 460°C, has no appreciable effect on the function log p = f(1/T). There are 1 figure and 4 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 12, 1961

Card 2/2

POGODILOVA, Ye.G.; GRIGOR'YEV, A.I.; NOVOSELOVA, A.V.

Interaction of the complex compounds of Beryllium oxyacetate of the type $Be_4O(CH_3COO)_6 \cdot 3R - NH_2$ with alcohols. Zhur.neorg.khim. 7 no.6:1285-1290 Je '62. (MIRA 15:6)

(Beryllium acetate) (Alcohols)

LYU TSYUN'-KHULA [Liu Ch'ün-hua]; PASHINKIN, A.S.; NOVOSELOVA, A.V.

Germanium diselenide. Zhur.neorg.khim. 7 no.9:2159-2161 S '62.
(MIRA 15:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Germanium selenide)

ZLOMANOV, V.P.; POPOVKIN, B.A.; TANANAYEVA, O.I.; NOVOSELOVA, A.V.

Some properties of lead selenite and oxyselenites. Zhur.neorg. khim. 7 no.12:2746-2751 D '62. (MIRA 16:2)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Lead selenite)

AVIRMED, A.; RESHETNIKOVA, L.P.; NOVOSELOVA, A.V.

Simultaneous solubility of lithium and beryllium sulfates in sulfuric acid. Vest.Mosk.un.Ser.2: Khim. 17 no.2:47-49 Mr-Ap '62. (MIRA 15:4)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.
(Lithium sulfate) (Beryllium sulfate) (Solubility)

S/020/62/143/001/020/030
B106/B138

AUTHORS: Zlomanov, V. P., and Novoselova, A. V., Corresponding Member of the AS USSR

TITLE: Study of the reaction of lead selenide with oxygen

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 1, 1962, 115 - 118

TEXT: Kinetics of the reaction are studied in the range 122 to 496°C. The composition of the reaction products was ascertained by X-rays. Surface and specific resistance of the lead selenide samples prior to and after oxidation were determined. The subtly pulverized samples were produced from monocrystalline lead selenide synthesized by the vibration method and subsequently vacuum sublimed. The surface of the samples was determined by adsorption measurements, the BET formula being used. When assuming that the pulverized sample consisted of cubes with edge x, the most probable value $x \cong 2 - 3\mu$ (also confirmed by electron-microscope observations), was obtained from the values of the surface and from value $d = 8.30\ g/cm^3$ of the density of lead selenide (Ref. 6: see below). The measuring device for investigating the kinetics of the reaction of lead

Card 1/4

Study of the reaction of lead...

S/020/62/143/001/020/030
B106/B138

selenide with oxygen consisted of a microbeam balance constructed by G. G. Muttik (Ref. 7: ZhFKh, 31, 263 (1957)) (sensitivity $2\cdot10^{-5}$g, load = 10 g, temperature coefficient $<2\cdot10^{-5}$g per 1°C), a high-vacuum plant ($2\cdot10^{-5}-6\cdot10^{-6}$ mm Hg, ВН-461 (VN-461) and ММ-40А (MM-40A)) pumps of a plant for purifying oxygen, containers for O_2, Kr, He, Ar (He and Ar served to heat the sample in inert atmosphere), an electric ТГ-02 (TG-02) furnace, and apparatus for potentiometric temperature control (potentiometer Р-307 (R-307)), and regulation of heating (ЭПВ-01 (EPV-01) potentiometer). Oxygen pressure in all experiments was 150 ± 1 mm Hg. The results obtained are shown in Table 1 and Fig. 1. The initial rate of the reaction of lead selenide with oxygen follows the equation $(\Delta m)^2 = kt$ (Δm = variation of the amount of absorbed oxygen with the time t). $\Delta E = 15$ kcal/degree·mol for the activation energy was obtained from the temperature dependence of the rate constant k. In the X-ray analysis, the samples were exposed to CoK and CuK_{α} radiations in РКУ-86 (RKU-86) and РКД-57 (RKD-57) cameras with asymmetrically inserted films. The main product of the oxidation of lead selenide with oxygen in the temperature range investigated is lead selenite $PbSeO_3$. The lattice parameter a = 6.114 ± 0.001 kX of PbSe did

Card 2/7

Study of the reaction of lead...

S/020/62/143/001/020/030
B106/B138

not vary in the oxidation within the error limits. This constancy of the lines contradicts the results in Ref. 9 (see below). The linear rise of the initial parts of the kinetic curves (Fig. 1) is associated with the oxygen diffusion in anion vacancies accompanied by the development of an oxide phase. Lead selenite is formed both before and after the date corresponding to the discontinuation in the kinetic curves. The oxidized part of PbSe at the time of the discontinuation is 0.07% (122°C), 2.01% (275°C), 3.6% (317°C), and 13.6% (496°C). The break is assumed to correspond to the formation of an oxide film which is sufficiently thick to have a protecting effect and to decrease the oxidation rate sharply at the relevant temperature. The greatest thickness of the oxide film has values of approximately 4 Å (122°C), 150 Å (275°C), 170 Å (317°C), and 700 Å (496°C). The film covers the PbSe surface completely. The PbSe oxidation is associated with an increase in the compact surface layers of $PbSeO_3$ which are fixed by the PbSe layer lying below. The course of the kinetic curves after the break corresponds to a noticeable decrease of the oxidation rate caused by the growth of the oxide phase, the surface decrease, and the occurrence of mechanical defects. In this case, the kinetics of the oxidation can not be described unambiguously. X

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Study of the reaction of lead... S/020/62/143/001/020/030
B106/B138

The decrease of the electric conductivity in the reaction of PbSe with oxygen, occurring at all temperatures investigated except 122°C (Table 1), corresponds to the increase in the amount of lead selenite in the sample. The authors thank G. G. Muttik for assistance in the construction of the microbalance. There are 1 figure, 2 tables, and 13 references: 9 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: J. F. Miller, R. C. Himes, J. Electrochem. Soc., 107, No 11, 915 (1960); R. H. Jones, Proc. Phys. Soc., 70B, 704 (1957); Ref. 9: R. H. Jones, Proc. Phys. Soc., 70B, 1025 (1957); R. A. Beeb et al. J. Am. Chem. Soc. 67, 1554 (1945).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: December 7, 1961

Table 1. Results of the reaction $PbSe+O_2$.

Legend: (1) Prior to oxidation; (2) after oxidation; (3) weighed portion, g; (4) variation of weight at degasification, in % of the initial

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35521

S/020/62/143/003/017/029
B110/B138

21.2300

AUTHORS: Muratov, F. Sh., and Novoselova, A. V., Corresponding Member AS USSR

TITLE: The problem of reaction equilibrium of the carbon reduction of beryllium oxide

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 3, 1962, 599-602

TEXT: The equilibrium of the reaction: $BeO_{sol} + 3/2\ C_{graph} \rightleftharpoons 1/2\ Be_2C_{sol} + CO_{gas}$ (1) was determined between 1800 and 2000°C. The initial components beryllium oxide and carefully decalcined charcoal were heated for 8-10 hr at 1900-2000°C and about $1 \cdot 10^{-4}$ mm Hg. Stoichiometric amounts of the components shifted to 200 mesh were mixed in a glass mill with ebonite balls for 25-30 hr. To prevent lumps the mixture was ground in an agate mortar. It was compacted in a graphite mold at 1200°C and 15 atm. The following check was used to establish whether equilibrium was reached: carbon monoxide pressure was raised 1-2 mm Hg, and if it dropped again to the original value, equilibrium was reached (generally after 6-8 hr). The

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S/020/62/143/003/017/029
B110/B138

The problem of reaction ...

time required depends on the amount of reagents and volume of the installation. Weighed portions of 100-150 mg were used in order to reduce errors caused by gas separation. The X-ray analysis was carried out in a 75.4 mm camera with Fe radiation. Beryllium carbide and unreacted beryllium and carbon are present in the reduction products from 1800-2000°K. Where there was a large amount of beryllium carbide, the carbon bound in Be_2C was determined chemically. The reduction products were treated with concentrated caustic potash solution, and the methane liberated by carbide hydrolysis was determined by burning. Knowing the volume of the installation, the carbide amount could be found from reaction (1). The carbon monoxide pressure was read after the heating was finished and the furnace cooled to the thermostat temperature (25°C). The chemically determined values agreed well with those calculated from the carbon monoxide pressure. Between 1800 and 3000°K the temperature dependence of the equilibrium constants is: $\log K_{eqatm} = (9.021 \pm 0.092). (20712 \pm 222)/T$ (2). From (2) it follows that for (1): $\Delta H^{o}_{T}(1800 - 2000^{o}K) = 94.8 \pm 1.0$ kcal/mole BeO and $\Delta S^{o}_{T}(1800\text{-}2000^{o}K) = 41.28 \pm 0.42$ eq.units. The temperature dependence of the isobaric potential in the same temperature interval is:

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$Z^o_T = 94778 - 41.28\ T$. By using the heat capacity of BeO_{sol} (298 - 1200°K and 1200-2820°K), of C_{graph} and CO_{gas} and Be_2C_{sol} (298-1200°K), the following was obtained for (1): $\Delta H^o_{298} = 98.1$ kcal/mole, $\Delta S^o_{298} = 44.08$ eq. units. If these values from (1) are used with those by M. V. Smirnov and N. Ya. Chukreyev (ZhNKh, 3, 2445 (1958)) for the reaction $Be_{sol} + 1/2\ CO_{2gas} = BeO_{sol} + 1/2\ C_{graph}$ and the values for $1/2\ CO_{2gas} + 1/2\ C_{graph} = CO_{gas}$, the following is obtained as standard heat of formation for Be_2C_{sol}: $\Delta H^o_{298} = -32.8$ kcal/mole, and as standard entropy: $S^o_{298} = 4.36$ eq. units. According to S. L. Gregg et al. (see below) and V. D. Scott (see below), no equilibrium set in at > 2000°K during the reaction (1). There are 2 figures, 3 tables, and 10 references. The two most important references to English-language publications are: S. L. Gregg et al., J. Nucl. Mat., 2, 225 (1960). V. D. Scott, Nature, 186, 466 (1960).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: December 27, 1961

Card 3/3

S/020/62/144/004/016/024
B101/B138

AUTHORS: Grigoryan, L. A., and Novoselova, A. V., Corresponding Member AS USSR

TITLE: Investigation of niobium sulfides

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 4, 1962, 795-797

TEXT: Following investigations of the electrical properties of niobium selenides and niobium tellurides, its sulfides were now studied. Metallic Nb degassed in vacuo at 1600°C was heated with different quantities of S in vacuum ampules for 1000 hrs at 500°C and then allowed to cool to 20°C within 1000 hrs. The preparations containing ≤ 50 at% S were homogeneous, black powders, those containing > 50 at% S were caked black masses, and that containing 75 at% S was soft with threadlike crystals inside and acicular crystals on the surface, showing identical powder patterns corresponding to NbS_3. Conductivity and thermo-emf were determined by a method already described (DAN, 135, 864 (1960)). The results (Fig. 3) indicate a semi-metallic nature of the sulfur bond in the preparations.

✓

Card 1/1 2

LYU TSYUN' -KHUA [Liu Ch'un-hua]; PASHINKIN, A.S.; NOVOSELOVA, A.V.

Germanium - selenium system. Dokl. AN SSSR 146 no.5:1092-1093 O '62.
(MIRA 15:10)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova).
[illegible] (Germanium selenide)

KORENEV, Yu. M.; SIMANOV, Yu. P.[deceased]; NOVOSELOVA, A. V.

Rhombic modification of beryllium fluoride. Dokl. AN SSSR
147 no.4:846-848 D '62. (MIRA 16:1)

1. Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova).

(Beryllium fluoride)

Investigation of the system germanium-sulfur and germanium-selenium.
A. S. Pashinkin, Lyu-Tsun'-Khua, A. V. Novoselova (10 minutes).

(Not presented).]

Thermodynamic investigation of alloys of the system gallium-antimony.
L. N. Gerasimenko, N. A. Goryunova, I. V. Kirichenko, L. N. Lozhkin,
A. G. Morachevskiy (10 minutes).

Report presented at the 3rd National Conference on Semiconductor Compounds,
Kishinev, 16-21 Sept 1963

TUROVA, N.Ya.; NOVOSELOVA, A.V.

Compounds of beryllium bromide and iodide with ethers. Zhur.neorg.-khim. 8 no.2:525-528 F '63. (MIRA 16:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Beryllium halides) (Ethers)

TUROVA, N.Ya.; SITDYKOVA, N.S.; NOVOSELOVA, A.V.; SEMENENKO, K.N.

Thermal decomposition of beryllium halide etherates. Zhur.neorg.khim. 8 no.2:528-531 F '63. (MIRA 16:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Beryllium halides) (Ethers)

TUROVA, N.Ya.; SEMENENKO, K.N.; NOVOSELOVA, A.V.

Infrared absorption spectra and some problems of the complex formation of inorganic halides with ethers. Zhur.neorg.khim. 8 no.4:882-892 Ap '63. (MIRA 16:3)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Halides) (Ethers) (Complex compounds--Absorption spectra)

L 17005-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD
S/078/63/008/005/005/021

57

AUTHOR: Muratov, F. Sh. and Novoselova, A. V.

TITLE: Reduction of beryllium oxide by carbon in the presence of nickel 27

27 27

PERIODICAL: Zhurnal neorganicheskoy khimii, v. VIII, No. 5, May 1963, 1084-1087

TEXT: Using apparatus described in an earlier article (Izv. VUZ, Tsvetnaya metallurgiya, No. 2, 113, 1060, same authors), the authors reduced beryllium oxide at several temperatures in the range 1800 - 2050°. The results are given in tabular form. There are 2 figures and 1 table. The most important English-language reference reads as follows: H. Gruber, W. Rohn, USA Patent 2228310, January 14, 1940.

ASSOCIATION: Moskovskiy gusudarstvennyy universitet im. M. V. Lomonosova, Khimicheskiy fakul'tet (Moscow State University im. M. V. Lomonosov, Chemical Department)

SUBMITTED: August 21, 1962

Card 1/1

L 17011-63 EWP(q)/EWT(m)/BDS AFFTC/ASD RDW/JD
S/078/63/008/005/014/021

58

AUTHOR: Popovkin, B. A., Odin, I. N. and Novoselova, A. V.

TITLE: A PbO - PbSe system

PERIODICAL: Zhurnal neorganicheskoy khimii, v. VIII, No. 5, May 1963, 1224-1227

TEXT: This work is a continuation of an investigation of chemical reaction in the trinary system leadselenium-oxygen and of the fusion diagrams of individual sections of this system. The authors conclude from their experimental study that at temperatures up to 1100° PbSe definitely does not interact with PbO. On the basis of a thermal and X-ray analysis they construct a fusion diagram for a PbO - PbSe system. The system was of simple eutectic type, with fusion point at 760 ± 10° and 20 mol % PbSe. There are 2 figures and 2 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. Lomonosova (Moscow State University im. M. V. Lomonosov)

SUBMITTED: November 16, 1962

Card 1/1

NOVOSELOVA, A.V.

ACCESSION NR: AP3001216 S/0078/63/008/006/1378/1380

AUTHOR: Aslanov, L. A.; Novoselova, A. V.

TITLE: Synthesis of barium zirconyl carbonate and formation of barium zirconate

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 6, 1963, 1378-1380

TOPIC TAGS: ferroelectric materials, synthesis of BaZrO(CO sub 3) sub 2 and BaZrO sub 3, firing temperature of BaZrO(CO sub 3) sub 2, x-ray and chemical analysis

ABSTRACT: Barium zirconyl carbonate (BZC) has been synthesized for the first time by the reaction given in formula (1) of Enclosure. With a view toward adapting a previously reported method (W. S. Clabaugh, E. M. Swiggard, R. Gilchrist. J. Res. Nat. Bur. Standards, v. 56, 289 (1956)) for synthesizing ferroelectric material (BaTiO sub 3) and obtaining products possessing a high dielectric constant and a low firing temperature, BZC was thermally

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ACCESSION NR: AP3001216

treated at 1100C to form a mixture of BaZrO sub 3 and ZrO sub 2. X-ray phase analysis confirmed the formation of both products. Chemical analysis of BZC showed that the molar ratio of BaO to ZrO sub 2 was close to 1; the composition of BZC was concluded to be BaZrO(CO sub 3) sub 2 1.5H sub 2 O. X-ray analysis of a BZC sample dried at 100C revealed to be amorphous. To obtain BZC with a molar ratio of BaO to ZrO sub 2 of 1, the reaction rate must be rapid with vigorous agitation, and a 50--55% excess of ammonium hydrocarbonate is necessary. Product yield under these conditions was 50 plus or minus 3%. Attempts were made to obtain the pure form of BaZrO sub 3 by dissolving BZC in the following acids: HCl (1:50), CH sub 3 COOH (1:20), a 2% solution of CH sub 3 COOH in an H sub 2 O--acetone mixture (1:1), and a 10% NH sub 4 Cl solution. Formation of BaZrO sub 3 and ZrO sub 2 mixtures along with hydrolysis of the zirconates took place. The optimal condition for obtaining BaZrO sub 3 with approximately 1% ZrO sub 2 was found to be firing of BZC at 1100C. To determine the ZrO sub 2 content, BaZrO sub 3 was dissolved in concentrated HCl. ZrO sub 2 was found in the amount of 0.7--0.9%. X-ray analysis of the resultant BaZrO sub 3 revealed only the presence of narrow lines corresponding to BaZrO sub 3, with highly resolved doublets. The elemental unit cell value of a = 4.197 plus or minus 0.01

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ACCESSION NR: AP3001216

Angstroms is in agreement with previously reported data. An attempt to form calcium and strontium zirconates by the same experimental procedure was not successful. Orig. art. has: 4 formulas and 3 tables.

ASSOCIATION: none

SUBMITTED: 16Nov62 DATE ACQ: 01Jul63 ENCL: 01

SUB CODE: 00 NO REF SOV: 007 OTHER: 005

Card 3/4

ACCESSION NR: AP3001216 ENCLOSURE: 01

$$BaCl_2 + (NH_4)_2ZrO(CO_3)_2 \rightarrow BaZrO(CO_3)_2 + 2NH_4Cl \quad (1)$$

Card 4/4

NOVOSELOVA, A.V.; PASHINKIN, A.S., kand. khim. nauk

Chemistry of semiconductors. Priroda 52 no.12:39-44 '63.
(MIRA 17:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova).

L 16972-63 EWP(q)/EWT(m)/BDS S/020/63/149/006/016/027
AFFTC/ASD JD

AUTHOR: Korenev, Yu. M., and Novoselova, A. V.

TITLE: Investigation of the system BeF_2--ZrF_4

58

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 6, 1963, 1337-1339

TITLE: In connection with studies of the ternary system KF-BeF_2-ZrF_4 the authors undertook to investigate the corresponding binary systems. In the present articles they report on results of an investigation of the system BeF_2-ZrF_4, which has not previously been described in literature. The system was subjected to a thermal analysis on a Kurnakov pyrometer. The melts to be analyzed were prepared by taking mixtures of $(NH_4)_2 BeF_4$ and $(NH_4)_3ZrF_7$ in definite proportions and driving off ammonium fluoride in a current of CO_2. The melts were placed in a platinum crucible with tightly fitting lid containing a pocket for a thermocouple. To avoid loss of zirconium fluoride due to evaporation, the melts were placed in a furnace that was heated in advance somewhat above the melting point of the melt. Subsequently the melts were subjected to X-ray phase analysis. A constitutional diagram is plotted for the system BeF_2-ZrF_4, and a relationship is established between the reflection angles and line intensities in the roentgenograms of melts of the system BeF_2-ZrF_4. There are 2 figures.

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

SUBMITTED: January 17, 1963

Card 1/1

LYU TSYUN'-KHUA [Liu Ch'ün-hua]; PASHINKIN, A.S.; NOVOSELOVA, A.V.

Germanium - sulfur system. Dokl. AN SSSR 151 no.6:1335-1338 Ag '63. (MIRA 16:10)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova.

GRIGOR'YEV, A.I.; ORLOVA, Yu.V.; SIPACHEV, V.A.; NOVOSELOVA, A.V.

Vibration spectra of alkali metal fluoberyllates of the type M_2BeF_4. Dokl. AN SSSR 152 no.1:134-136 S '63. (MIRA 16:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova).

(Fluoberyllates—Spectra)

L 23872-65 EWT(m)/EPF(n)-2/EPR/EWP(t)/EWP(b) Ps-4/Pu-4 IJP(c) JD/JG/MLK

ACCESSION NR: AT5002775 B+1 S/0000/64/000/000/0172/0175

AUTHOR: Nagorskaya, N. D.; Simanov, Yu. P. (Deceased); Nikolayeva, V. V.; Novoselova, A. V.; Fridlyander, I. N.; Yatsenko, K. P.; Savostin, A. P.

TITLE: Investigation of the interaction of beryllium with rhenium 21 21

SOURCE: Vsesoyuznoye soveshchaniye po probleme reniya, 2d, Moscow, 1962. Reniy (Rhenium); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1964, 172-175

TOPIC TAGS: beryllium, rhenium, beryllium rhenium system, beryllium alloy, rhenium containing alloy, microstructure, hardness

ABSTRACT: The microstructure and hardness of cast, annealed, and quenched Be-Re alloys containing up to 45 wt (3.79 at)% Re have been investigated. The alloys were induction melted from 99.5%-pure Be

base solid solution are contained in a binary eutectic. In the eu-

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L 23872-65

ACCESSION NR: AT5002775

tectic which contains 8.8 wt% (0.45 at%) Re, the γ-phase based on Be_{2} Re compound forms a finely branched network. The primary formations of the γ-phase in hypereutectoid alloys are scattered within the solid solution of Be. In the investigated alloys Be is present in the form of the α-modification and in an f.c.c. γ-phase on a $Be_{20}Re$ base which has a theoretical Re content of 50.78 wt%. The solubility of Re in Be is less than 1.0 wt% at the eutectic temperature, and less than 0.7 wt% at 600C. The cast alloys containing 2—12% Re have a considerably higher hardness than that according to the additivity rule, which is ascribed to the presence of mechanical stresses in the finely branched eutectic crystallized under conditions of rapid cooling. As the amount of the eutectic decreases and the amount of the γ-phase increases, the hardness of the alloys drops, and in alloys containing more than 12% Re it is equal to the mean arithmetic value of the hardnesses of individual phases. Orig. art. has: 2 figures and 1 table. [MS]

ASSOCIATION: none

Card 2/3

L 23872-65

ACCESSION NR: AT5002775 0

SUBMITTED: 05Aug64	ENCL: 00	SUB CODE: MM
NO REF SOV: 001	OTHER: 002	ATD PRESS: 3178

Card 3/3

ACCESSION NR: AP4040687 S/0129/64/000/006/0012/0015

AUTHOR: Nagorskaya, N. D.; Molchanova, L. V.; Rayevskaya, M. V.; Novoselova, A. V.; Fridlyander, I. N.; Yatsenko, K. P.; Rogova, L. K.

TITLE: Crystallization in the Be-Nb system

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 6, 1964, 12-15, and insert facing p. 25

TOPIC TAGS: beryllium niobium system, beryllium niobium alloy, alloy crystallization, alloy structure, alloy phase composition, alloy hardness, niobium beryllide, niobium beryllium solubility

ABSTRACT: Investigation of alloys of the Be-Nb system containing up to 58% Nb showed the existence of three phases: the beryllium base α-phase, the Nb-Be$_{12}$ compound γ-phase, and the NbBe$_{17}$ compound δ-phase. In the alloys containing up to 46% Nb, the α- and γ-phases form a eutectic with a very limited amount of the latter phase. The Vickers hardness of the alloy annealed at 850C for 14 days and water quenched increases from 121 at 0.7% niobium to 1108 at 58% niobium.

ACCESSION NR: AP4040687

The cast alloy had roughly the same hardness as alloys annealed for 29 days. The Vickers hardness of individual phases (annealed and water quenched) was found to be 110 for the α-phase, 160 for the eutectic, 480 for the γ-phase, and 1060 for the δ-phase. The solid state solubility of niobium in beryllium is low. A considerable amount of $NbBe_{12}$ was found in an alloy containing as little as 0.7% Nb The eutectic of the α- and γ-phases contains 2.5% Nb. The eutectic temperature is close to the melting temperature of pure beryllium. Alloys of the eutectic and hypoeutectic compositions have a fine structure, but at a certain amount of primary formations of intermetallic compounds, the fine structure disappears. In hypereutectic alloys the structures of the upper and lower parts of ingots are different due to segregation. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00	ATD PRESS: 3051	ENCL: 00
SUB CODE: MM	NO REF SOV: 004	OTHER: 006

Card 2/2

TUROVA, N.Ya.; KEDROVA, N.S.; SEMENENKO, K.N.; NOVOSELOVA, A.V.

Interaction of etherates of beryllium chlorides and aluminum chlorides. Zhur.neorg.khim. 9 no.4:905-916 Ap '64. (MIRA 17:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 15313-65 EWT(m)/EPF(c)/EPR/EWP(b) Pr-4/Ps-4 JD/JW
S/0078/64/009/008/2042/2042

ACCESSION NR: AP4043588

AUTHOR: Novoselova, A. V.; Korenev, Yu. M.; Borzenkova, M. P.

TITLE: The KF-BeF_2 system

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 8, 1964, 2042

TOPIC TAGS: KF-BeF_2 system, differential thermal analysis, phase diagram, KBe_2F_5, eutectic, $KBeF_3$, polymorphic transition

ABSTRACT: The KF-BeF_2 system in the range encompassing 50-100 mol% BeF_2 was investigated by differential thermal analysis. The phase diagram shown in the figure for the entire system was constructed based on present data and data from earlier work (M. P. Borzenkova, A. V. Novoselova, Yu. P. Simanov, V. I. Cherny*kh, Ye. I. Yarembash, Zh. neorgan. khimii, 1, 2071 (1956)). The $\alpha \rightleftharpoons \beta$ transition of $BeFe_2$ is at 220C. The compound KBe_2F_5 melts congruently at 353C. The eutectic between $KBeF_3$ and KBe_2F_5 exists at 58 mol% $BeFe_2$ and 327C; the eutectic between BeF_2 and KBe_2F_5 exists at

Card 1/3

5913-65
ACCESSION NR: AP4043588

0

72 mol% BeF_2 and 346C. Orig. art. has: 1 figure.

ASSOCIATION: None

SUBMITTED: 02Mar64 ENCL: 01

SUB CODE: GC, IC NO REF SOV: 002 OTHER: 000

Card 2/3

L 15313-65
ACCESSION NR: AP4043588

ENCLOSURE: 01

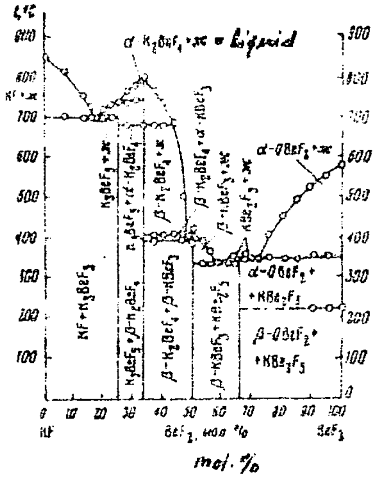

fig. 1

Phase diagram of the KF- BeF_2 system

Card 3/3

L 20682-65 EWT(m)/EWP(b)/EWP(t) IJP(c) RDW/JD/JG
ACCESSION NR: AP4044816 S/0078/64/009/009/2264/2265

AUTHOR: Aslanov, L. A., Novoselova, A. V., Ukrainskiy, Yu. M.; Simanov, Yu. P.

TITLE: Variable composition phases in the tantalum-selenium system

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 9, 1964, 2264-2265

TOPIC TAGS: tantalum, selenium system, variable phase composition, tantalum selenide, tantalum diselenide

ABSTRACT: The phase relationships in the Ta-Se system in the composition region $TaSe_{1.0-2.0}$ were investigated. Samples were prepared by heating the Ta and Se in evacuated quartz ampoules at 800C for 400 hours and cooling slowly to room temperature. In compositions in the region $TaSe_{1.98-1.67}$ x-ray powder diagrams showed the presence of beta-, gamma- and delta- modifications. On prolonged heating the beta-modification decreased while the gamma- and delta- increased; the $\beta \rightarrow \gamma$ transitions occurred in the samples richer in Ta, while $\beta \rightarrow \delta$ occured only near the composition $TaSe_{1.98}$. Hence the beta-modification

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L 20682-65 0

ACCESSION NR: AP4044816

is metastable in the $TaSe_{1.98-1.67}$ region; the solid solutions based thereon
are converted to the stable gamma- and delta-modifications. Examination of the
parameter c of the unit cell of the tantalum selenides in this region showed c for
the beta-modification increased, while for gamma- it decreased as the tantalum
content increased. There was no change in c on heating tantalum selenides in
region $TaSe_{1.63-1.50}$, hence compositions $TaSe_{1.50-x}$, where 1.63 x 1.67,
is stable. $TaSe_{1.38}$ showed lines of transition to $TaSe_{1.00}$ and did not fit the
hexagonal unit cell. $TaSe_{1.00}$ was volatile in vacuum above 900C and reacted
with glass, while $TaSe_{1.50}$ did not. Orig. art. has: 1 figure

ASSOCIATION: None

SUBMITTED: 12Oct63 ENCL: 00

SUB CODE: SS, GC NO REF SOV: 002 OTHER: 007

Card 2/2

SEMENENKO, K.N.; NAUMOVA, T.N.; GOROKHOV, L.N.; SEMENOVA, G.A.; NOVOSELOVA, A.V.

Interaction between the chlorides of Al and Fe. Dokl. AN SSSR
154 no.1:169-170 Ja'64. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova).

SEMENENKO, K.N.; NAUMOVA, T.N.; GOROKHOV, L.N.; NOVOSELOVA, A.V.

Interaction between the chlorides of aluminum and beryllium.
Dokl. AN SSSR 154 no. 3:648-649 Ja '64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova.
2. Chlen-korrespondent AN SSSR (for Novoselova).

NAGORSKAYA, N.D.; MOLCHANOVA, L.V.; RAYEVSKAYA, M.V.; NOVOSELOVA, A.V.;
FRIDLYANDER, I.N.; YATSENKO, K.P.; ROGOVA, L.K.

Crystallization in the system Be - Nb. Metalloved. i term.
obr. met. no. 6:12-15 Je '64. (MIRA 17:7)

RESHETNIKOVA, L.P.; NOVOSELOVA, A.V.; ZAKHAROVA, B.S.

Solubility of $(NH_4)_2 BeF_2$ in solutions of propyl and butyl alcohols. Vest. Mosk. un. Ser. 2 Khim. 19 no.2:30-32 Mr-Ap'64 (MIRA 17:6)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.

NOVOSELOVA, A.V.; ORLOVA, Yu.V.: SOBOLEV, B.P.; SIDOROV, L.N.

Mechanism of beryllium silicate ($Be_2 SiO_4$) formation. Dokl. AN SSSR 159 no.6:1338-1341 D '64 (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet. 2. Chlen-korrespondent AN SSSR (for Novoselova).

L 41234-65 EWT(m)/EWG(m)/EWP(b)/EWP(t) IJP(c) RDW/JD
ACCESSION NR: AP5011851 UR/0189/65/000/002/0034/0038

17
15

AUTHOR: Zlomanov, V. P.; Novoselova, A. V.; Zlomanova, G. G.

TITLE: Purification of lead selenide by vacuum sublimation

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 2, 1965, 34-38

TOPIC TAGS: lead selenide, purification, vacuum sublimation, impurity distribution

ABSTRACT: Distribution of the main impurities between sublimed lead selenide and the residue of vacuum sublimation and between different fractions of the sublimate has been studied. The importance of this study was stressed in the preparation of lead selenide for light sensors and thermoelectric generators. Lead selenide was synthesized by melting lead and selenium at 1100--1150C in evacuated quartz

the apparatus made possible condensation of lead selenide

Card 1/3 2

L 44134-65
ACCESSION NR: AP5011851

2

[illegible] mainly in a boat and on the insert. A vacuum of 10^{-4}–10^{-5} mm Hg was maintained throughout the operation. The condensate was divided into fractions of equal length. Each fraction and the residue was weighed and analyzed spectroscopically for main impurities. The analysis was semi-quantitative, by visual evaluation of the intensity of spectral lines. Thermal emf of each fraction was also determined and found negative in each case because of an excess of lead over the stoichiometric PbSe in the condensate. The experimental data indicated that Fe, Cu, Ag, and Al contents were significantly lower in the condensate than in the starting PbSe material, Bi was concentrated in cooler fractions, and Ca, Mg, and [illegible] were evenly distributed among the condensed fractions and the residue in nearly the same amounts as in the starting material. Moreover, the purest were the middle fractions [illegible], depending on whether the sublimation temperature was 705C or 770C. The highest purity was achieved at [illegible], although the yield was lower than at higher temperature. Distribution of are the products of thermal dissociation of the selenides. Orig. art. has: 2 figures and 1 table. [JK]

ASSOCIATION: Kafedra neorganicheskoy khimii, Moskovskiy universitet (Department of Inorganic Chemistry, Moscow University)

Card 2/3 Submitted 27 June 64

L 55961-65 EWT(m)/EPF(c)/EPF(n)-2/EPR/T/EWP(t)/EWP(b)/EWA(c) Pr-4/Ps-4/Pu-4
IJP(c) JD/WW/JW/JG
ACCESSION NR: AP5009368 UR/0363/65/001/002/0201/0203
546.34'161+546.831'161 44
03

AUTHOR: Korenev, Yu. M.; Novoselova, A. V.; Glinskiy, K. K.; Shornikov, V. V. B

TITLE: Study of the lithium fluoride-zirconium tetrafluoride system

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 2, 1965, 201-203

TOPIC TAGS: lithium fluoride, zirconium tetrafluoride, phase diagram, thermal analysis, x ray diffraction analysis

ABSTRACT: The $LiF-ZrF_4$ system was investigated by the differential thermal analysis and x-ray diffraction. Lithium fluoride and ammonium florozirconate were used for preparing the mixtures. After the removal of ammonium fluoride by distillation the specimens were placed in a platinum crucible with a tightly fitting cover and put into a furnace, which had been preheated above the melting point of the composition. Following melting the cooling curves were recorded. The gravimetric analysis indicated an insignificant loss of zirconium during the recording of the cooling curves. The phase diagram of the $LiF-ZrF_4$ system is shown in fig. 1 of the Enclosure. Three compounds were found in this system: Li_4ZrF_8, Li_3ZrF_7 and Li_2ZrF_6.

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L 55961-65
ACCESSION NR: AP5009368

It was established that Li_3ZrF_8 is stable as a solid up to 464°C. Li_3ZrF_7 exists above 474°C. It melts congruently at 640°C. It was found that Li_2ZrF_6 is formed according to the peritectic reaction: melt $\overset{570^\circ}{\rightleftarrows} Li_2ZrF_6$ Orig. art. has: 1 figure.

ASSOCIATION: Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chemistry Department, Moscow State University)

SUBMITTED: 24Oct64 ENCL: 01 SUB CODE: IC, SS

NO REF SOV: 002 OTHER: 004

Card 2/3

L 58710-65 EWT(m)/EPF(c)/EPR/EWP(j)/T/EWA(c) Pc-4/Pr-4/Ps-4 RPL WW/RM

ACCESSION NR: AP5016576 UR/0363/65/001/005/0633/0637
541.6

30

27

B

AUTHOR: Orlova, T. Yu.; Grigor'yev, A. I.; Novoselova, A. V.

TITLE: **Alkoxyaluminum acetates**

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 5, 1965, 633-637

TOPIC TAGS: aluminum organic compound, alkoxyaluminum compound, heteroorganic polymer

ABSTRACT: By reacting normal aluminum acetate with CH_3OH, C_2H_5OH, C_3H_7OH, and C_4H_9OH, the authors obtained compounds having the composition $Al(OR)_{1.5}(OCOCH_3)_{1.5}$. As in the case of alkoxyberyllium acetates, the ratio of acetate to alkoxy groups is 1:1. The reaction by which alkoxyaluminum acetates are formed is

$$Al(OCOCH\ ) + 1.5ROH \rightarrow Al(OR)\ (OCOCH\ )1.5 + 1.5CH\ COOH$$

cant feature is the preservation of the general pattern of the spectra and positions of the

Card 1/2

L 58710-65

ACCESSION NR: AP5016578

bands in passing from the solids to their solution in chloroform. Molecular weights of the alkoxyaluminum acetates, measured ebullioscopically, showed that the compounds were high polymers (MW 2500, 3300, and 4500 for the ethoxy, propoxy, and butoxy compounds, respectively). Ethoxyaluminum acetate was also prepared from aluminum ethoxide and glacial acetic acid, and had a molecular weight of 3500. Orig. art. has: 4 figures and 1 table.

SUBMITTED: 15Feb65 ENCL: 00 SUB CODE: OC

NO REF SOV: 003 OTHER: 001

dm

Card 2/2

NOVOSELOVA, A.V.

Chemical transport reactions. Izv. AN SSSR.Neorg. mat. 1 no.7:1010-1015 Jl '65. (MIRA 18:9)

1. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni M.V.Lomonosova.

GRIGOR'YEV, A.I.; POGODILOVA, Ye.G.; NOVOSELOVA, A.V.

Ammoniates of Be, Mg, Ca, Al, Sc, Y acetates. Zhur.neorg.khim. 10 no.4:772-779 Ap '65. (MIRA 18:6)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra neorganicheskoy khimii.

L 58346-65 EWT(1)/EPA(s)-2/EWT(m)/EPF(n)-2/EWG(m)/T/EWP(t)/EEC(b)-2/EWP(b)/EWA(c)
Pt-7/Pi-4/Pu-4 IJP(c) RDW/JD/WW/JG/GG
ACCESSION NR: AP5018255

UR/0078/65/010/007/1753/1755
546.815'213

AUTHOR: Zlomanov, V. P.; Matveyev, O. V.; Novoselova, A. V.

58
B

TITLE: Growing lead selenide single crystals from vapor phase

27 27 18

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 7, 1965, 1753-1755

TOPIC TAGS: lead selenide, single crystal growth, vapor phase growth, electrical property

21

ABSTRACT: Relatively large (15—30 g) single crystals of lead selenide, PbSe, have been grown from the vapor phase and some of their electrical properties were determined. Previously, only small PbSe single crystals were prepared by this method. The experimental setup was described, which consisted of an evacuated, sealed quartz ampul containing starting PbSe material heated in a vertical furnace.

of all these variables led to formation of large single crystalline ingots

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L 58346-65
ACCESSION NR: AP5018255

which reproduced exactly the geometry of the upper end of the ampul. An additional
treatment at 680—700C greatly improved the quality of the crystals by sup-
ing internal stress. The crystals had a p-type conductivity (excess of sele-
, thermoelectric power in the +130 to +250 μv/degree range, and a carrier con-
centration determined by the formula 1-6·10^{18} cm^{-3}. Spectroscopic analysis indicated
an additional purification accompanied the growth process. Vapor-liquid rather
vapor-crystal mechanism of condensation was believed to be involved in the
taken place below the

[illegible] vapor [illegible] liquid phase takes place [illegible]
growth process, although the formation of the [illegible] [JK]
melting point.

ASSOCIATION: none

SUBMITTED: 13Nov64 ENCL: 00 SUB CODE: SS

NO REF SOV: 006 OTHER: 011 ATD PRESS: 4042

Card 2/2

TUROVA, N.Ya.; NOVOSELOVA, A.V.

Alcohol derivatives of alkaline, alkaline earth metals, magnesium, and thallium. Usp.khim. 34 no.3:385-433 Mr '65. (MIRA 18:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

GRIGOR'YEV, A.I.; SIPACHEV, V.A.; NOVOSELOVA, A.V.

Vibration spectra of $Be(NH_3)_4^{2+}$ and $Be(H_2O)_4^{2+}$ ions. Dokl. AN SSSR 160 no.2:383-386 Ja '65. (MIRA 18:2)

1. Moskovskiy gosudarstvennyy universitet. 2. Chlen-korrespondent AN SSSR (for Novoselova).

TUROVA, N.Ya.; GIRGOR'YEV, A.I.; NOVOSELOVA, A.V.; ARZAMANOVA, I.G.;
GUR'YANOVA, Ye.N.

Structure and properties of the complex compound $BeCl_2.AlCl_3.3(C_2H_5)_2O$. Dokl. AN SSSR 164 no.3:590-593 S '65. (MIRA 18:9)

1. Moskovskiy gosudarstvennyy universitet i Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya. Karpova. 2. Chlen-korrespondent AN SSSR (for Novoselova).

CHAN NGOK MAY; KORENEV, Yu.M.; NOVOSELOVA, A.V.

System KF - K_2BeF_4 - K_3ZrF_7. Zhur. neorg. khim. 10 no.7:1683-1689 Jl '65. (MIRA 18:8)

ZLOMANOV, V.P.; MATVEYEV, O.V.; NOVOSELOVA, A.V.

Production of monocrystalline lead selenide from the gaseous phase. Zhur. neorg. khim. 10 no.7:1753-1755 Jl '65. (MIRA 18:8)

ZLOMANOV, V.P.; NOVOSELOVA, A.V.; ZLOMANOVA, G.G.

Purification of lead selenide by sublimation in vacuo. Vest. Mosk. un. Ser. 2: Khim. 20 no.2:34-38 Mr-Ap '65. (MIRA 18:7)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.

RESHETNIKOVA, L.P.; NOVOSELOVA, A.V.; BARANOVA, N.N.

Some physicochemical properties of beryllium phthalocyanine.
Vest.Mosk.un.Ser.2:Khim. 20 no.3:36-38 My-Je '65.
(MIRA 18:8)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.

ORLOVA, T.Yu.; GIGOR'YEV, A.I.; NOVOSELOVA, A.V.

Aluminum alkoxyacetates. Izv. AN SSSR. Neorg. mat. 1 no.5:633-637 My '65. (MIRA 18:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet.

L 38929-66 EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) WW/JG, JD/RM

ACC NR: AP6011659 SOURCE CODE: UR/0020/66/167/003/0604/0606

AUTHOR: Turova, N. Ya.; Popovkin, B. A.; Novoselova, A. V. (corresponding member AN SSSR)

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

58
B

TITLE: X-ray analysis of methylates of alkali-earth metals 1

SOURCE: AN SSSR. Doklady, v. 167, no. 3, 1966, 604-606 27

TOPIC TAGS: X ray analysis, beryllium, magnesium, calcium, strontium, barium

ABSTRACT: The authors made an x-ray analysis of methylates of Be, Mg, Ca, Sr, and Ba in the form of powder products obtained upon desolvation of Me $(OCH_3)_2 \cdot 4\ CH_3OH$ (Me = Mg, Ba) or in the form of unsolvated alcoholates. The x-ray patterns of the powder were obtained on Fe-K-radiation in an RKD-57 camera. The parameters were refined on the basis of the powder patterns recorded on CuKα-radiation with the use of a monochromatic illuminator. The specimens of the alcholates for photographing in the RKD camera were prepared by filling capillary tubes made of pyrex glass in a dry chamber in an argon atmosphere. Suspensions of powders in absolute liquid petrolatum were used for recording in the monochromator. The

Card 1/3 UDC: 546.4/.5+548.736

L 38929-66 O

ACC NR: AP6011659

density was determined pycnometrically and by the suspension method in mixtures of absolute benzene with CCl_4 or $CHBr_3$ with preliminary pressing of the powders in a vacuum. Both methods yielded results which agreed well. The quality of the x-ray patterns of the alkali-earth methylates somewhat deteriorates upon changing from strontium to calcium, only diffuse rings were present on the powder x-ray patterns of Mg $(OCH_3)_2$, and Be $(OCH_3)_2$ represented a completely x-ray amorphous substance. The x-ray patterns of Ca $(OCH_3)_2$, Sr $(OCH_3)_2$, Ba $(OCH_3)_2$ were fully identified in the hexagonal cells. On the basis of the coincidence of the indexes of the lines of the powder x-ray patterns of Ca $(OH)_2$ and of the methylates, their sequence, and the relative intensity, the authors conclude that all alkali-earth methylates are isostructural to calcium hydroxide and have the same space group P$\bar{3}$ml (C$\bar{3}$m). These methylates apparently have a laminar structure with the following alternation (in the direction of the c-axis) of atoms: $[(CH_3)OMeO(CH_3)][(CH_3)OMe$.... each of these atoms forms a layer perpendicular to the c-axis. This structure of the methylates is confirmed by the difference of the parameters of c in hexagonal cells of Ca $(OCH_3)_2$ and Ca $(OH)_2$ amounting to 3.44 A, which is very close to the difference between the heights of the cells of $LiOCH_3$ and LiOH (3.55 A). The constancy of the heights of the unit cells which was observed upon transition from Ca $(OCH_3)_2$ to Ba $(OCH_3)_2$ is attributed to the rather sharp increase of the degree of ionization of the metal-oxygen bond from the former to the latter compensating the increase of the radius of the metal. The same constancy of heights is observed in the methylates of lithium and sodium and for Na $(OCH_3)_{0.66}(OH)_{0.33}$ and $KOCH_3$. Orig. art. has:

Card 2/3

L 38929-66

ACC NR: AP6011659

1 table.

SUB CODE: 07,11 SUBM DATE: 09Sep65/ ORIG REF: 003/ OTH REF: 010

Card 3/3

L 38459-66 EWT(m)/EWP(t)/ETI IJP(c) RDW/JD

ACC NR: AP6023911 SOURCE CODE: UR/0363/66/002/007/1186/1189

42
B

AUTHOR: Karakhanova, M. I.; Pashinkin, A. S.; Novoselova, A. V.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Phase diagram of tin-selenium system

SOURCE: AN SSSR. Izv. Neorg materialy, v. 2, no. 7, 1966, 1186-1189

TOPIC TAGS: tin, selenium, ~~system, tin selenium~~ alloy, alloy phase ~~composition,~~ diagram, alloy ~~property~~ composition

ABSTRACT: Phase equilibrium in tin-selenium alloys with a selenium content varying
from 40 to 100 at% has been studied with the use of thermal and x-ray diffraction
analysis. Alloys were prepared by melting 0-1 tin (GOST 860-60) and rectifier-
grade selenium (GOST 6738-53) in a quartz ampoule under a pressure of 10^{-3}—10^{-4} mm Hg.
The phase diagram of the Sn-Se system (see Fig. 1), plotted on the basis of the
obtained data, is characterized by the presence of two compounds: tin monoselenide
(melting point, 880C) and tin diselenide (melting point, 675C). An Sn-Se eutectic

Card 1/2 UDC: 546.811+546.23

L 38459-66

ACC NR: AP6023911

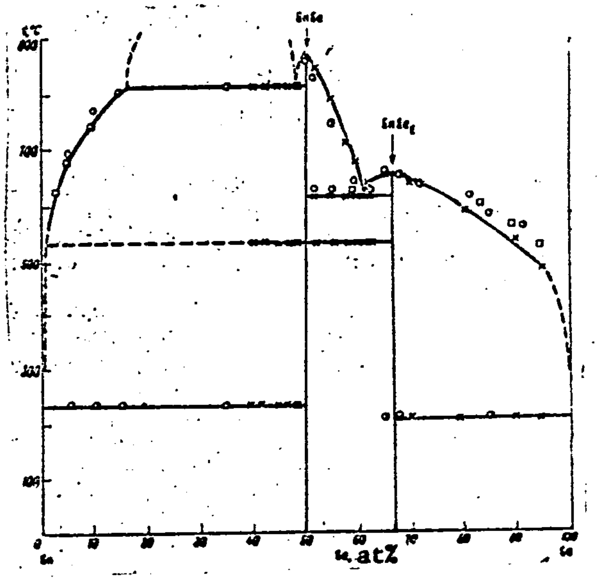

Fig. 1. Phase diagram of Sn-Se system

is formed from tin diselenide at 625C (61 at% Se). The solidus line was determined for alloys containing 50—60 at% Se. The existence of tin sesquiselenide was not confirmed. Orig. art. has: 2 figures and 1 table. [AZ]

SUB CODE: 11/ SUBM DATE: 19Aug65/ ORIG REF: 007/ OTH REF: 007/ ATD PRESS: 5143

Card 2/2 mcP

L 36398-66 EWT(l)/EWT(m)/T/EWP(t)/ETI IJP(c) GG/JD

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TITLE: Growing sillimanite crystals in a transport chemical reaction

SOURCE: Kristallografiya, v. 11, no. 3, 1966, 477-478

TOPIC TAGS: crystal growth, fiber crystal, transport process, x ray photography

ABSTRACT: A study was made of the conditions necessary to form sillimanite Al_2SiO_5 crystals in transport chemical reactions with the use of fluorine compounds. The reagents were placed into quartz ampoules (18-20 mm in diameter) which were evacuated to about 10^{-2} mm Hg pressure and heated 5 to 10 hrs in a furnace having a hot zone variation of 1280° to 1150°C and a temperature gradient of 50°C within the zone. Six different charges were made up, all containing Al_2O_3 and SiO_2, but varying in the use of fluorine compounds: Na_3AlF_6, Li_2BeF_4 or AlF_3 were 5% by wt. In some cases, BeO and ZnO were used in the charge. Sillimanite was only obtained in three of the tests and a picture was shown of the results; the crystals were 4 to 5 mm in length. X-ray powder patterns of the sillimanite crystals were compared with those taken from the ASTM literature. The relative merits of various transport agents were discussed and their characteristics in gaseous environments compared. Orig. art. has: 2 figures, 1 table.

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