NIKOLAEV, N. S.

The soly. of $NaHF_2$ in HF and water was investigated at 0°, 10°, and 30°. The soly. in water increase with increase temp. (from 0.907 at 10° to 1.278 g. per 100 g. of soln. at 30°), and that in HF with increase of the HF concn. and temp. (from 0.46 g. in 0.1% HF at 0° to 1.43 g. per 100 g. of soln. in 36.48% HF at 30°). The soly. was detd. by weighing the dried (at 120°) undissolved residue of Na_2... decompn. of the latter into Na_2SO_4 and weigh... The soly. of $AlF_3\cdot3H_2O$, which was prepd. ... with 15% HF at b. temp., increases in ... temp. (from 0.127 g. at 0° to 3.42 g. ... at 100°), and in HF with the increase ... temp. (from 0.83 to 0.5% HF at 18° to ... HF and 6.30 g. per 100 g. of soln. in 40% HF
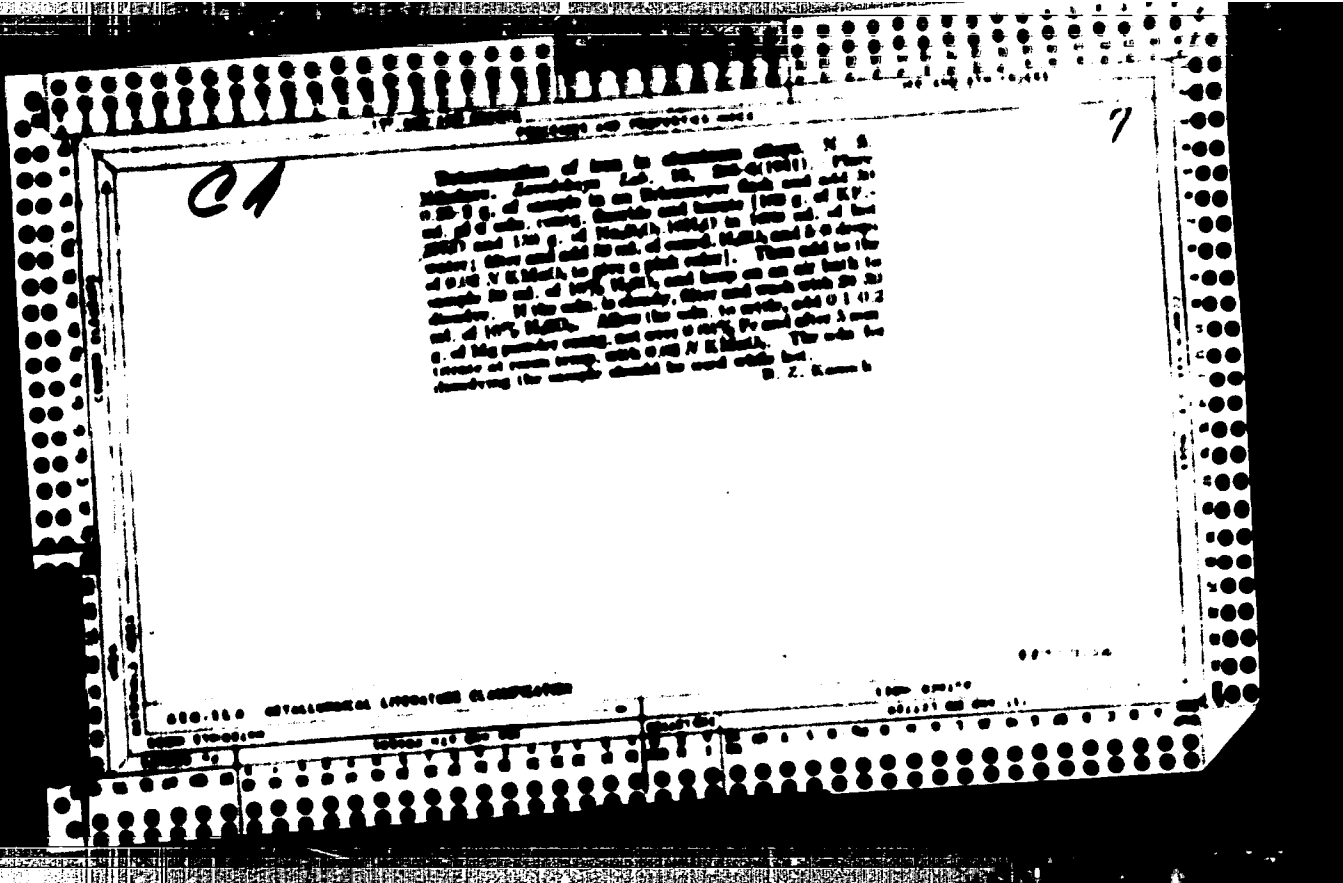
at 60°). The compn. of $AlF_3\cdot3H_2O$ was detd. by analy... of the samples dried in air, over H_2SO_4, and ... between filter paper. The dehydrating temp. of $AlF_3\cdot$ $3H_2O$ is 230°. It has an orthorhombic cryst. structure. Soly. diagrams are constructed and analyzed data are tabulated. Eight references.   A. A. Pedgarty
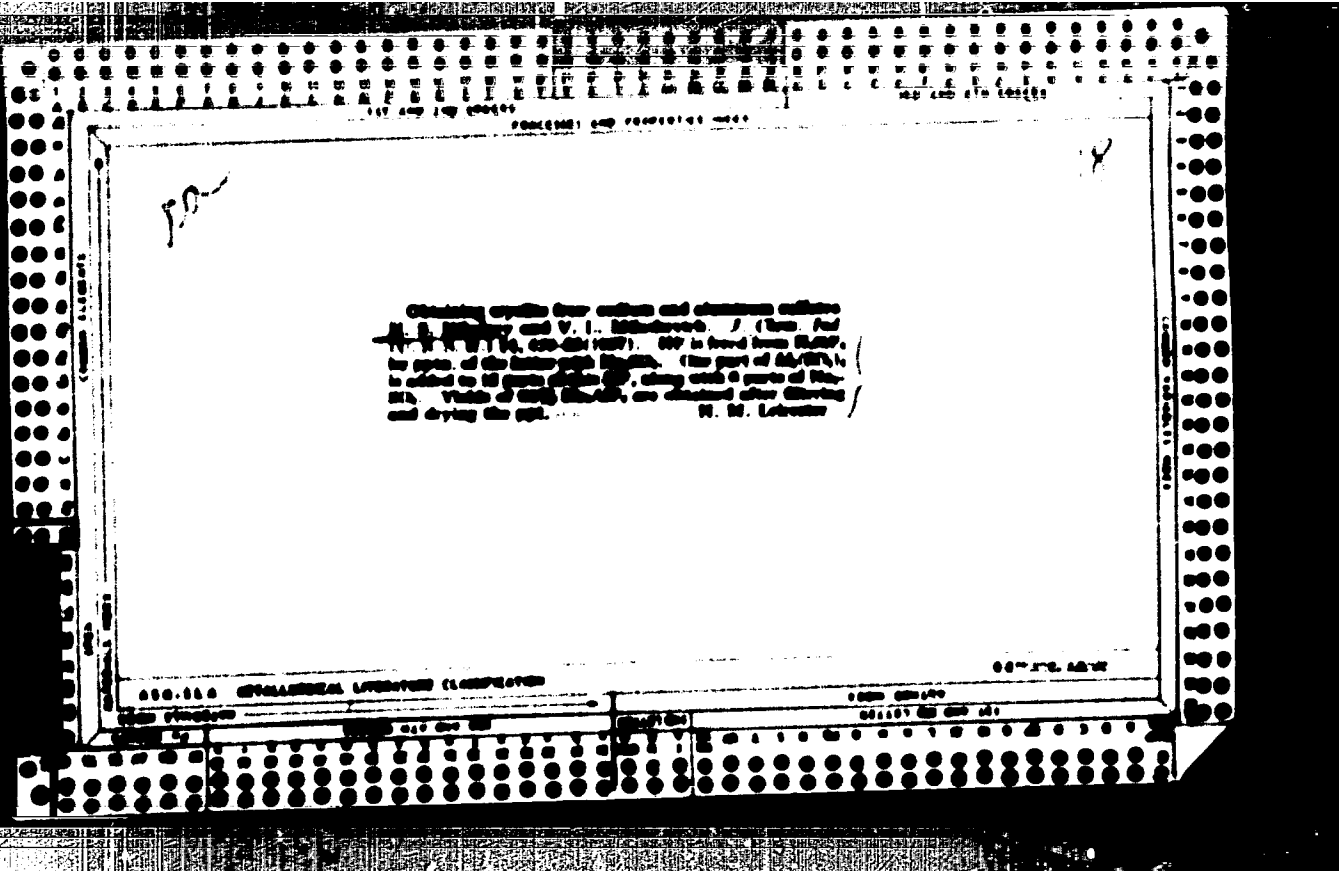
CA

The reaction of hydrogen sulfide with sulfur dioxide in aqueous solution

Nat. Gbo.

Determination of Copper in Aluminum Alloys. N. S. [illegible] (Rend.)
IA (illegible) 1961, 39, 673-676; C. Abs., 1962, 39, 79). [illegible]
in the determination of Pb (cf. following abstract) it is possible to determine
Cu from the same sample. When the sample is dissolved in the [illegible]
[illegible] solution, the Cu and Al remain in the residue. [illegible] dissolve the Cu
in [illegible], filter, and determine the Cu in the filtrate. The consumption of
[illegible] can be reduced by the use of a solution of [illegible] and [illegible]
[illegible]. Use 1 ml. for each mg. of Cu present.

NIKOLAYEV, N. S.

"Analysis of Organic Fluoro-Compounds," Bull. Acad. Sci. URSS, Cl. Sci. Chim.,
pp. 309-313. 1945.

$C_2 H_2$ and F in an Org. Compound (not containing S, P or other halogen) may be
determined simultaneously as CO_2, water, and SiF_4 by making use of the reaction
$SiO_2 + 4HF = SiF_4 + 2H_2O$, the H being derived from the org. compound.
It is essential to prevent condensation of water before it is absorbed, because
liquid water (but not vapour) converts SiF_4 into H_2SiF_4 (cf. Jacobson, A. 1925, ii,
105). Combustion is effected in a quartz tube, 800-850 mm. long and 17-18
mm. diameter. The entering O_2 traverses (a) oxidized Cu foil, (b) the combustion
boat (placed one third of the way along the tube containing the org. compound,
mixed with 10-15 times its wt. of finely powdered quartz and covered by a layer
of quartz, (c) a cylinder of oxidized Cu foil (5-6 cm. long) enclosing quartz
granules (0.5 - 2 mm. size) at 12-15 cm. from the exit end of the tube,
(d) a Pt spiral. The tube projecting from the furnace is heated with a flame to
prevent condensation of water. The latter is absorbed first, in $\rightarrow$ 92% H_2SO_4
(SiF_4 is insol. in $\rightarrow$ 90% H_2SO_4). SiF_4 is then absorbed by anhyd. granular
KF and CO_2 is finally absorbed by the usual reagents. Combution is started by
heating the exit end of the tube to 850-900° and then extending the heating to
the region of the boat, which should reach 450-500° after 1 hr. and should remain
at 500-550° for a further 0.5 hr. In all, 10.1 of O are passed through in
2-2.5 hr., followed by 10.1 of air in 40 min.
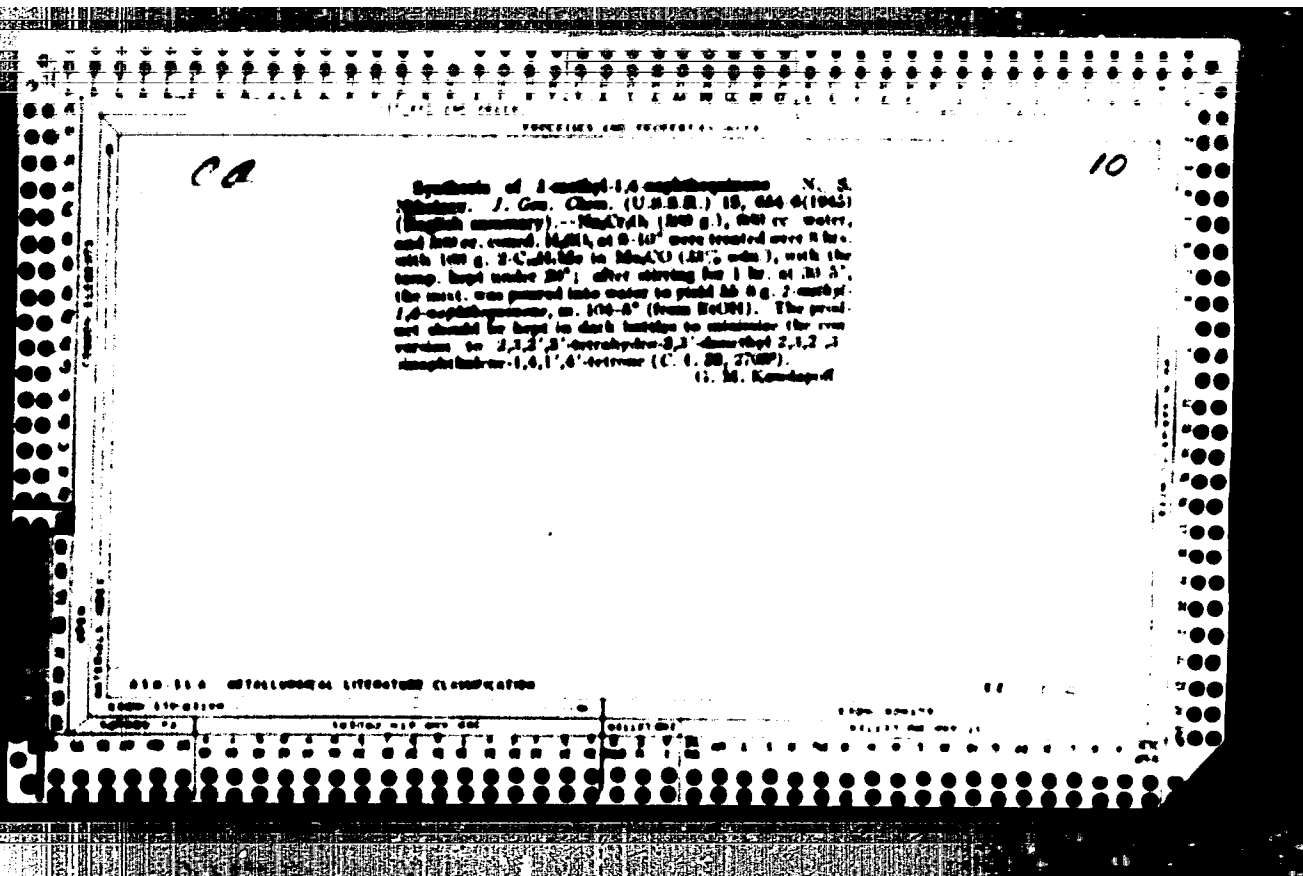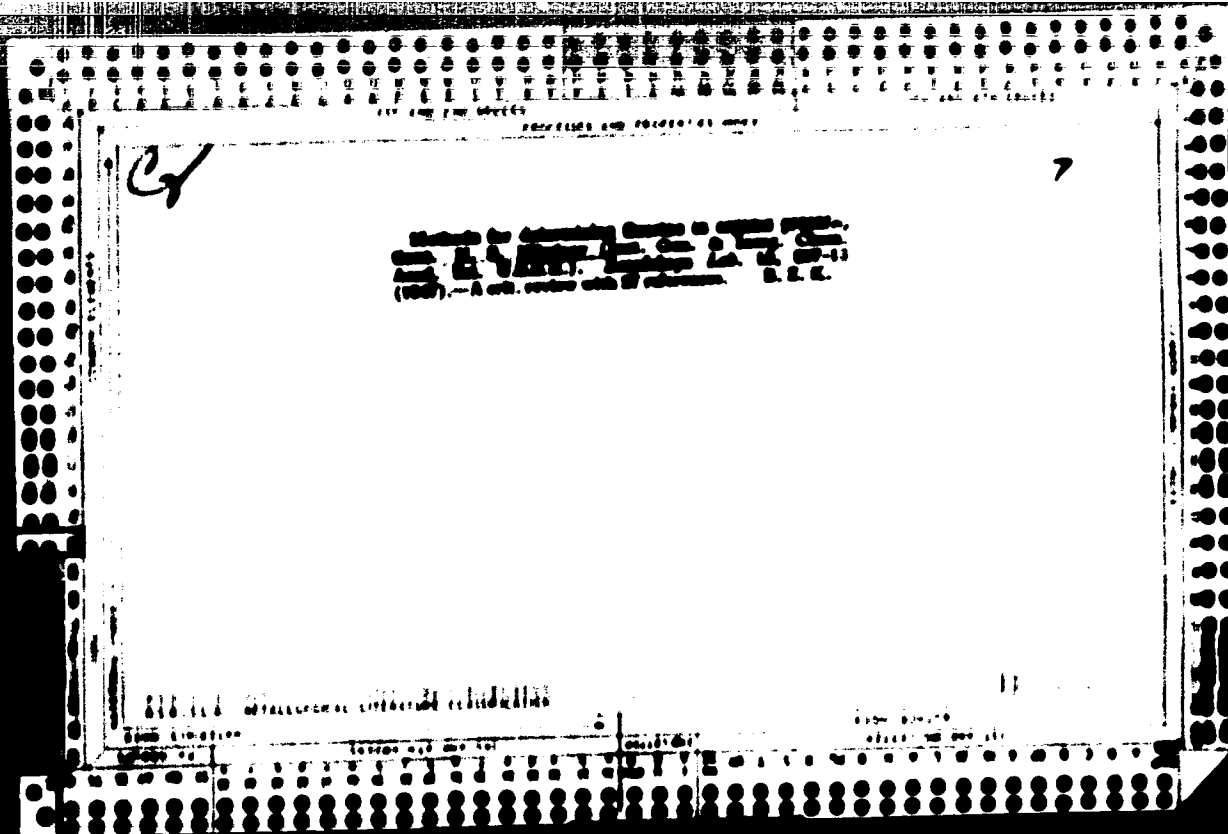
The activity of solution components in liquid hydrogen fluoride. N. S. Nikolaev and I. V. Tananaev. Izvest. Sektor Fiz.-Khim. Anal., Inst. Obshchei Neorg. Khim., Akad. Nauk S.S.S.R. 20, 184-9 (1950).—The activity (a) was calcd. from the basic equations of Lewis and Randall. Metzing and Klatt (C.A. 31, 8299) found in detns. of vapor pressure depression that HF molds. in the liquid state associated into [HF]n. Dahmlos and Jung (C.A. 37, 4148) found in m.p. detns. that HF molds. existed as [HF]2. Thus, ΔH (latent heat of vaporization) was taken to be 6150 cal. and the latent heat of fusion 4048 cal. The freezing point depression was calcd. to be 1.3° and the b.p. rise 1.9°. a was detd. cryoscopically and ebullioscopically with KF, NaF, and LiF soln. in HF. Ebullioscopic detns. could be made for KF up to 10.1f, for NaF up to 8.1f, and for LiF up to 2.8M. Above these concns. boiling stopped. On curves of the activity coeff. (f) of HF vs. concn. of solute the curves of KF and NaF had a max. beyond which they dropped sharply and approached asymptotically concns. corresponding to KF.5HF and NaF.10HF, resp. The LiF curve had no max. nor did it have an asymptotic branch but ended at a point corresponding to LiF.30HF. The sharp drop of f and the interruption of boiling point is a peculiar condition apparently brought about by the formation of the acid salts. The ascending part of the curve (before reaching the max.) points to a break-up of the aggregated mols. as suggested by Getman and Daniels. From a math. analysis of the curves were found the following relationships between f and the concn. of the solute —68.03 Nf₂ + 44.706 Nf₂ — f and the concn. of the solute ...

Activity of alkali fluorides in liquid hydrogen fluoride. N. S. Nikolaev. Ibid. 190-203.—In this investigation was calcd. the relationship between the activity coeff. of HF and the activity coeff. of KF, NaF, and LiF. The results are tabulated and presented graphically. The results indicate the multimol. nature of HF. The dissolved fluoride reacts first with HF monomers until they are used up. During this stage the activity coeff. of the solvent decreases. Further increase in the concn. of the solute causes breakup of HF polymers. At this stage the activity coeff. of the solvent increases and of the solute decreases. This proceeds until all of the HF polymers disappear. At this point sets in a satd. compn. which for KF is KF.5HF, and some excess solvent is also present. A rise in temp. drives off this excess and the acid salt begins to dissociate. The effect of alkalies on the disaggregation of HF polymers is K > Na > Li. III. Activity of hydrogen fluoride in ammonium base solutions. N. S. Nikolaev and I. V. Tananaev. Ibid. 204-11.—Activity and activity coeff. were studied in the systems NH₄-HF, C₂H₅NH₃HF, CH₃NH₃-HF, and (C₂H₅)₂NH-HF. Exptl. (ebullioscopic) and calcd. values of f for these systems are tabulated. The calcns. were made on the basis of [HF]a, mol. wt. 62. The accumulated data show a striking correspondence between Aexp. and fcalc. ρ is the ratio of mol. rise in boiling temp. to the ebullioscopic const. of HF which is taken to be 1.9 (cf. Fredenhagen and Cadenbach, C.A. 37, 3281). Thus e.g., for NH₄-HF Aexp. = 0.846, and this corresponds to fexp. = 1.39. The facts that ρ < 1 and f > 1 is taken to indicate that there is an increase in the active mass of the solvent. f₁ was plotted vs. N₁, the mole fraction of solute, and from these curves were calcd. the coeffs. A, B, C, and D in the equation for f₁. Generally, the values of f₁ calcd. from the empirical equation were close to those obtained by expt., but in some parts of the studied systems the differences were considerable. The limiting compds. for the studied systems were NH₄F.6HF, C₂H₅NH₃F.7HF, CH₃NH₃F.10HF, and (C₂H₅)₂NH₂F.16HF. M. Hoseh

NIKOLAYEV, N.S.

SHLIKHAN, A.N.; SANSONOV, O.V.; ERSTN, O.Ye.; STEPANOV, I.S., inzhener, retsenzent; TANANAYEV, I.V., retsenzent; POGODIN, S.A., professor, dokter, zasluzhennyy deyatel' nauki i tekhniki, retsenzent; ROMM, Ye.Ye., professor, dokter, retsenzent; ABRIKOSOV, N.Kh, dokter khimicheskikh nauk, retsenzent; SHAMRAY, P.I., dokter khimicheskikh nauk, retsenzent; NOROSOV, I.S., kandidat khimicheskikh nauk, retsenzent; ROON, Ye.A., kandidat khimicheskikh nauk, retsenzent; NIKOLAYEV, N.S., kandidat khimicheskikh nauk, retsenzent; SVORYKIN, A.N., kandidat khimicheskikh nauk, retsenzent; BASHILOVA, N.I., kandidat khimicheskikh nauk, retsenzent; VYSOTSKAYA, V.N., redaktor; KANAYEVA, O.N., redaktor; ATTOPOVICH, N.K., tekhnicheskiy redakter

[Metallurgy of rare metals] Metallurgiia redkikh metallov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii. 1954, 414 p.   (MLRA 7:9)

1. Chlen-korrespondent Akademii nauk SSSR (for Tananayev)
   (Metals, Rare—Metallurgy)

Yumakov Inst. Gen. + Inorg. Chem., AS USSR

NIKOLAYEV N.S.

5

Solubility in the system $HF \cdot V_2O_5 \cdot H_2O$ ...
and YU. A. ...
Cher. Mosc. ...
... were ...
The sol. relations ... of V_2O_5 ...
HF. The system displays the phases ...
$HF \cdot H_2O$, $4VOF_3 \cdot HF \cdot 2H_2O$, $2VOF_3 \cdot HF \cdot H_2O$, ...
The results are shown graphically ...
V in a mixt. the potentiometric titration with ...
used and V is ... with ... algom in the ...
... under which conditions ...
$V = 21$ ...

NIKOLAEV, N.S.; BUSLAEV, Yu.A.

Solubility isotherm 0° of the system: HF—CrO_3—H_2O. Izv.Sekt.fiz.-khim.
anal. 26:270-274 '55.   (MLRA 8:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN
SSSR.   (Chromium trioxide) (Hydrofluoric acid) (Solubility)

PERL'MAN, Faina Moiseyevna; ZVORYKIN, Aleksandr Yakovlevich; NIKOLAYEV, N.S.,
    dokter khimicheskikh nauk, nauchnyy redaktor; GOLUBKOVA, V.A.,
    redaktor; YUDINA, N.L., tekhnicheskiy redaktor

[How chemistry originated and with what it is concerned] Kak
voznikla khimiia i chem ona zanimaetsia. Moskva, Goskul'tpro-
svetizdat, 1956. 14 p. and 5 l.   (MIRA 10:2)
        (Chemistry--History)

NIKOLAYEV, N.S.; BUBLAYEV, Yu.A.

Study of the solubility in the system KF -- I_2O_5 -- H_2O (isotherm 0°). Zhur.neorg.khim. 1 no.7:1672-1675 Jl '56. (MLRA 9:11)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova Akademii nauk SSSR.
(Hydrofluoric acid) (Iodine oxides)

NIKOLAEV, N.S. [translator]; PETROVA,S.B. [translator].

Germanium and its compounds. O. Johnson (Translated from Chemical Reviews, 1952, 51:431-469 by N.S.Nikolaev, S.B.Petrova.Usp.khim.25 no.1:105-132 Ja '56. .... (Germanium)   (MIRA 9:4)
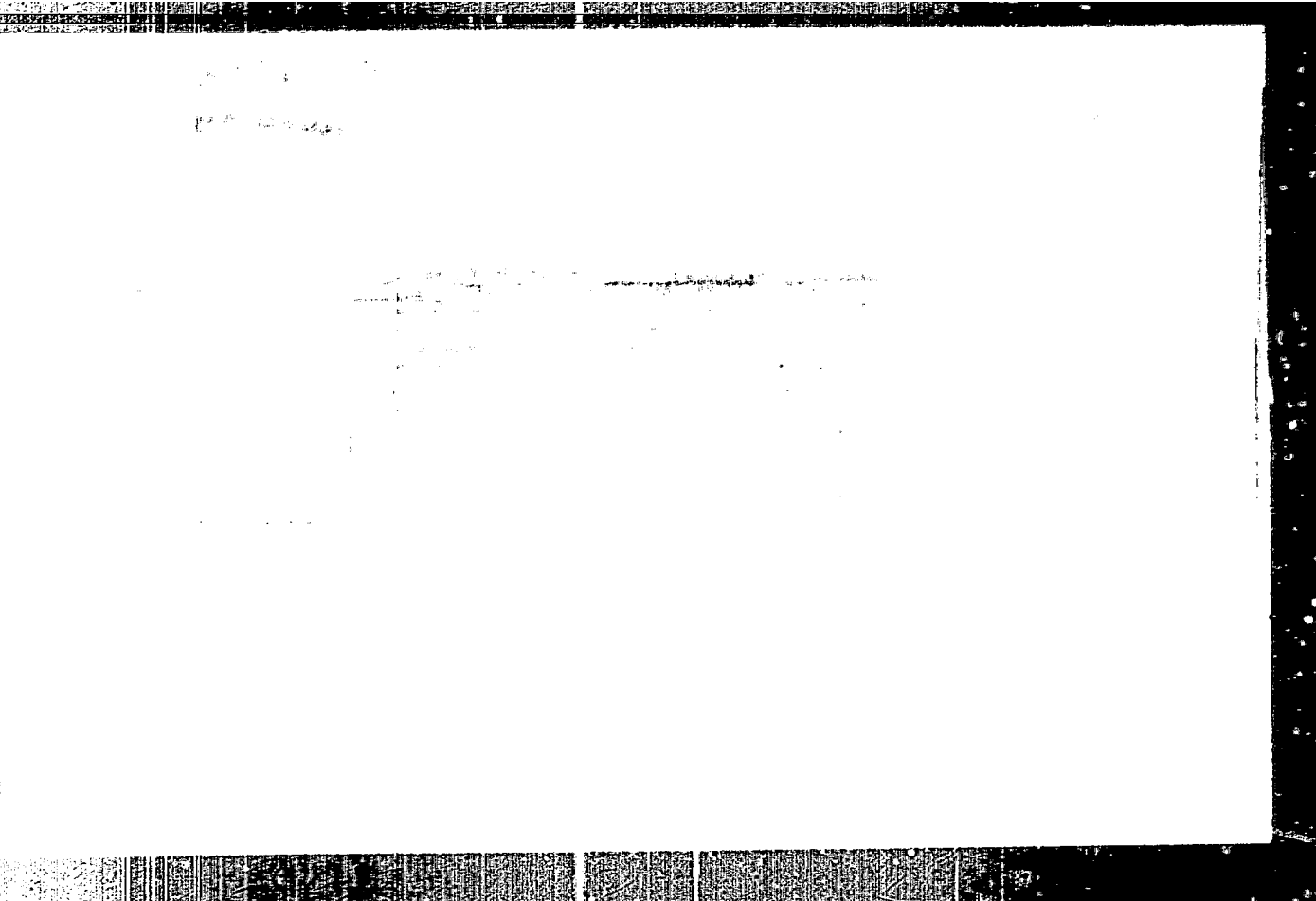
TITLE. Exhaust (relief) valve

SOURCE. Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1964,

TOPIC TAGS. aircraft cabin equipment, valve

Translation: An exhaust (relief) valve for the pressurized cabin of an air-
craft. The distinguishing feature is a more dependable depressurization of
the cabin. It has a force spring in the form of a flat membrane which
is fastened to a joint of the valve. In the rigid center of which a tube is
attached. The tube enters into the body of the valve body. Compressed
air is supplied to the tube through a valve which contains a shuttle valve
... and has 1 figure.

B-05
ACCESSION NR: AP5O1012R
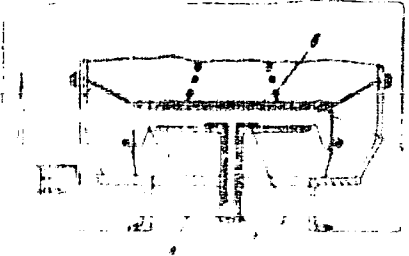
Keys: 1 - "limp" membrane; 2 - rigid
       center of the "limp" membrane;
       3 - tube; 4 - valve joint, 5 -
       valve membrane; 6 - conical spring,
       7 - shuttle valve; 8 - pipe

ASSOCIATION   Organizatelye gosomitets po aviatsionnoy tekhnike   (State Organization
the State Committee for Aviation Technology)

70-3-4-23/30

AUTHORS: Alenchikova, I. F.,   Zaytseva, L. L.,   Lipis, L. V.,
Nikolayev, N. S.,   Fomin, V. V.,   Chebotarev, N. T.

TITLE: Investigation of the Physico-Chemical Properties of Plutonyl
Fluoride (Izucheniye fiziko-khimicheskikh svoystv ftoristogo
plutonila)

ABSTRACT: The synthesis of plutonyl fluoride from hydrochloric acid
solutions of plutonium-VI with liquid hydrofluoric acid
was elaborated.
The plutonyl fluoride produced by this synthesis was ana-
lyzed as follows:
a) by chemical analysis
b) by determination of the state of valence of plutonium
by means of the electron absorption spectrum
c) by the determination of the composition based on the
U. R. -absorption spectrum
d) by X-ray structural analysis.
The chemical analysis showed that plutonyl fluoride has the
following formula: PuO_2F_2.

Card 1/2

AUTHORS: Nikolayev, V. ..., Buslayev, Yu. A.,   SOV/78-3-8-5/48
Opalovskiy, A. A.

TITLE: Synthesis of Higher Fluorides of Niobium, Tantalum and
Molybdenum by Means of Trifluorochloride (Sintez vysshikh
ftoridov niobiya, tantala i molibdena pri pomoshchi
trekhftoristogo khlora)

ABSTRACT: The present paper gives an account of the production of
pentafluorides of niobium, tantalum as well as of the hexa-
fluoride of molybdenum by fluorination of the metallic powder
of the above mentioned metals with vaporous trifluorochloride.
The trifluorochloride is the fluorination reagent with the
best capability of reaction. The equipment for the fluori-
nation consists of quartz reactor and condenser. The result-
ing niobium- and tantalum fluorides are refined of ClF, by
melting. The preparations contain about 0,75 Cl ... be puri-
fication of hexafluoromolybdenum is accomplished by an
additional fluorination using another portion of molybdenum

Card 1/2

 nthesis of Higher Fluorides of Niobium,   SOV/   /58
Tantalum and Molybdenum by Means of Trifluorochloride

and subsequent irrigation of the apparatus with liquid HF.
After two purifications by liquid HF the preparation does
not contain ClF_3 any more.

There are 1 figure and 11 references, 0 of which is Soviet.

SUBMITTED: June 10, 1957

Card 2/.

32-24-4-14/67

AUTHORS: Nikolayev, N.S., Alenchikova, I.F.

TITLE: The Determination of Water in Liquid Hydrogen Fluoride
(Opredeleniye vody v zhidkom ftoristom vodorode)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 418-419 (USSR)

ABSTRACT: This method is based upon the already described determination of
water in hydrogen fluoride by means of Fischer's reagent in
pyridine, but in the present case, in contradiction to Cook and
Findlater (Ref 3) as well as to Mitchel and Smit (Ref 2) this is
carried out by way of potassium fluoride and not immediately
from hydrogen fluoride. Also M.P. Gustyakova took part in these
experiments. The ratio between potassium bifluoride and the
hydrogen fluoride to be investigated was fixed at 8 : 1. The mix-
ture of hydrogen fluoride and potassium bifluoride is mixed in
pure methanol in Fischer's reagent and is re-titrated with a
methanol with a certain quantity of water. The end of titration
is electrometrically determined. Thus, three determinations
carried out with one and the same sample investigated resulted

Card 1/2

NIKOLAEV, N.S.

5

The system KF–MoO₃–H₂O. The 25° isotherm. N. S. Nikolaev, A. A. Opalovskii, and N. P. Malygina. Bul. Akad. Nauk S. (1959).—The soly. isotherm at 25° for the system KF–MoO₃–H₂O was investigated by a soly. method. Above the concn. of 10% KF, a compound K₂MoO₃F₂ is formed. At lower concns. of KF the solid phase has no const. compn. and it is assumed to consist of a solid soln. of KF in MoO₃. The Gibbs phase diagram of the ternary system is given.   I. Abrahamer

SAMSONOV, Grigoriy Valentinovich; KONSTANTINOV, Vladimir Ivanovich.
Prinimali uchastiye: XIV, Ye.F.; KOSOLAPOVA, T.Ya. NIKOLAYEV,
A.S., doktor khim.nauk, setsenzent; VAYSENBERG, A.I., kand.tekhn.
nauk, retsenzent, red.; KOLCHIN, O.P., kand.tekhn.nauk, retsenzent,
red.; ARKHANGEL'SKAYA, M.S., red.izd-va; VAYNSHTEYN, Ye.B., tekhn.
red.

[Tantalum and niobium] Tantal i niobii. Moskva, Gos.nauchno-tekhn.
izd-ve lit-ry po chernoi i tsvetnoi metallurgii, 1959. 264 p.
(MIRA 12:11)

(Tantalum)   (Niobium)

NIKOLAYEV, N.S.; OPALOVSKIY, A.A.

Studying solutions of Mo (VI) in hydrofluoric acid. Izv.Sib.
otd.AN SSSR no.12:49-58 '59.   (MIRA 13:5)

1. Institut obshchey i neorganicheskoy khimii im.N.S.Kurnakova
AN SSSR i Institut neorganicheskoy khimii Sibirskogo otdeleniya
AN SSSR.
         (Molybdenum)   (Hydrofluoric acid)

5(2)

AUTHORS: Nikolayev, N. S., Opalovskiy, A. A.   SO7/20-124-4-28/67

TITLE: Difluoroxy Molybdic Acid (Diftoroksimolibdenovaya kislota).
(Synthesis and Properties) (sintez i svoystva)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 830-833
(USSR)

ABSTRACT: For molybdenum (VI) the hexafluoride MoF_6 and the
oxyfluorides $MoOF_4$ and MoO_2F_2 are known. The latter are
produced by the action of anhydrous hydrogen fluoride in
corresponding oxychlorides (Ref 1). In investigating the
system $HF - MoF_6 - H_2O$ by the method of isothermal solubility
(Ref 3) the authors proved that on the interaction of molybdenum
trioxide with hydrofluoric acid an azidocomplex compound is
formed: difluoroxy molybdic acid $H_2MoO_3F_2 \cdot H_2O$. It appears in
the system both as a solid phase (Fig 2) and as a compound in
the solution. Its potassium salt was described (Ref 4). In this
paper the authors illustrated a method of synthesizing the
latter acid by the interaction of molytdic with hydrofluoric
acid and mentioned some of its properties. Rising temperature
Card 1/4 (from 0 to 25°) increases the solubility of molytdic acid in

5(2), 5(4)
AUTHORS: Nikolayev, N. S., Buslayev, Yu. A.

TITLE: I. Investigation of Solubility and Hydrolysis in the System HF-NbF$_5$-H$_2$O (I. Issledovaniye rastvorimosti i gidroliza v sisteme HF-NbF$_5$-H$_2$O)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 205-212 (USSR)

ABSTRACT: The solubility of niobium pentoxide in hydrofluoric acid was investigated in the concentration range from 0 to 100% HF. The investigation of the HF-NbF$_5$-H$_2$O system was carried out by means of the isothermic solubility method and other physico-chemical methods. An analytical method of determining fluorine in niobium mixtures has been worked out. The following solid phases were found in the HF-NbF$_5$-H$_2$O system: Nb$_2$O$_5$·2H$_2$O, HNb$_2$F$_{11}$·4H$_2$O, HNbF$_6$·H$_2$O, and NbF$_5$. The compound HNb$_2$F$_{11}$·4H$_2$O was separated in the form of large colorless crystals. The compound HNbF$_6$·H$_2$O may be considered a hydroxonium salt (H$_3$O)NbF$_6$. The solubility of niobium pentoxide in hydrofluoric acid leads to NbF$_5$

Card 1/3

SCV/78-4-1-35/48

I. Investigation of Solubility and Hydrolysis in the System $HF-NbF_5-H_2O$

in the present work. There are 8 figures, 5 tables, and 16 references, 7 of which are Soviet.

SUBMITTED: May 5, 1958

Card 3/3

SOV/78-4-2-32/40

Investigation of the System HF - TaF$_5$ - H$_2$O

pentoxide with fluoric acid is a neutralization and at the same time a complex forming reaction, whereas the interaction between vanadium pentoxide and fluoric acid is a neutralization reaction only. There are 9 figures, 6 tables, and 14 references, 6 of which are Soviet.

SUBMITTED: May 19, 1958

Card 2/2

.5(4)
AUTHORS: Nikolayev, N. S., Opalovskiy, A. A.   SOV/78-4-5-38/46

TITLE: Investigation of the System $HF-MoF_6-H_2O$

                  (Solubility Irothermal Line of 0°)
                  (Issledovaniye sistemy $HF-MoF_6-H_2O$ (Isoterma rastvorimosti 0°))

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5, pp 1173-1183 (USSR)
ABSTRACT: The system $HF-MoF_6-H_2O$ was investigated by the method of the 0°
                  solubility isothermal line. Molybdenum hexachloride and
                  hydrofluoric acid were used as initial products for the
                  purpose of investigating the system. Synthesis of the
                  molybdenum hexafluoride was carried out by fluorination of a
                  molybdenum metal ClF_3. The apparatus used for this purpose
                  is shown by figure 1. Purification of the molybdenum
                  hexafluoride obtained was carried out by means of liquid
                  hydrofluoric acid at the temperature of dry ice. The melting
                  point of the purified product is at $+17.5^\circ$ and boiling point
                  is at 35.0°. These data show good agreement with data found in
                  publications. MoF_6 is stored in "teflon" vessels with liquid
                  nitrogen. The apparatus system used for purifying the liquid

Card 1/4

Investigation of the System HF-MF$_6$-H$_2$O   SOV/78-4-5-38/45

(Solubility Isothermal Line of 0°)

hydrofluoric acid is shown by figure 2. The solubility of
molybdenum hexafluoride in 100% hydrofluoric acid amounts to
14.28 %. If the hydrofluoric acid is diluted, the solubility
of the molybdenum hexafluoride increases. MoF$_6$ exists within

the region of from 100 to 61.8 % HF. In the case of a 61.8 %
hydrofluoric acid concentration the phase MoF$_6$ goes over into

MoOF$_4$.2.5H$_2$O. This compound is considered   to be molybdenum-
tetrafluoroxy salt H$_2$MoO$_2$F$_4$.1.5H$_2$O. The compound exists within

the region of from 61.8 - 54.7 % HF. The phase was thermally
investigated, and figure 5 shows the thermogram. At 45° the

compound melts in its own crystal water. At 160° the yellow
powder of molybdenum trioxide (MoO$_3$) is formed.

At 340° and 450° endothermal effects occur, and the MoO$_3$

Card 2/4   changes its color from yellow to greenish-yellow to dark

Investigation of the System $HF-MoF_6 \cdot H_2O$ SOV/78-4-5-38/46

(Solubility Isothermal Line of 0°)

In the range of concentration below 17.2 % - 0 HF only H_2MoO_4 is formed. There are 6 figures, 2 tables, and 34 references, 8 of which are Soviet.

SUBMITTED: February 28, 1958.

Card 4/4

NIKOLAYEV, N.S.; VLASOV, S.V.; BUSLAYEV, Yu.A.; OPALOVSKIY, A.A.

Studying hydrolytic processes and solutions of the higher
fluorides of the chromium subgroup in hydrogen fluoride.
Izv. Sib. otd. AN SSSR no. 10:46-56 '60.   (MIRA 13:12)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.
Kurnakova AN SSSR i Institut neorganicheskoy khimii Sibirskogo
otdeleniya AN SSSR.
          (Fluorides)

BURLAYEV, Yu.A.;   NIKOLAYEV, N.S.;   GUSTYAKOVA, M.P.

Studying solutions in the system HF - SIO2 - H_2O. Izv. Sib.
otd. AN SSSR no. 10:57-63 '60.   (MIRA 13:12)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.
Kurnakova AN SSSR.
          (Hydrogen fluoride)   (Silicon oxide)

5. 2400 (B)

s(c)

68613

S/020/60/130/05/024/061

2011/2005

AUTHORS: Chernyaev, I. I. Academician, Ippolitov, Ye. G.

TITLE: New Methods of Preparing Hexafluoroplatinates

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1041 -1043 (USSR)

ABSTRACT: By the methods used hitherto, hexafluoroplatinates could not be prepared in aqueous solution since they hydrolyse irreversibly. The authors found that a mixture of bromine with bromopentafluoride dissolves metallic platinum rather quickly (pure BrF_5 does not act on platinum). A dark-yellow crystalline compound $PtBr_2F_{10}$ was obtained by evaporating the solution. This salt is instantaneously hydrolysed by water forming bromine vapors. It is insoluble in hydrogen fluoride, inflames on contact with alcohol, and does not react with CCl_4. $PtBr_2F_{10}$ is well soluble in BrF_3. When potassium fluoride is added to the resulting clear red solution and the solvent is removed under vacuum at room temperature, $K_2PtF_6 \cdot 1.1 \, BrF_3$ remains

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68613

New Methods of Preparing Hexafluoroplatinates   S/020/60/130/05/024/061
B011/B005

BrF$_3$ is formed besides the difluorobromoniumhexafluoro-
platinate (see Schemes (1), (2)). According to the analytical
data, the summary equation $Br_2 + 5BrF_5 + Pt \rightarrow (BrF_2)_2PtF_6 +$
$+ 3BrF_3$ corresponds to the reaction products obtained by the
authors. V. A. Golovnya, and S. K. Sokol are mentioned in the
paper. There are 1 table and 14 references, 4 of which are
Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova
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Chemistry imeni N. S. Kurnakov of the Academy of Sciences,
USSR)

SUBMITTED: October 14, 1959

Card 3/3

S/020/60/132/02/37/067
B011/B002

5.2400 (B)

AUTHORS: Chernyayev, I. I., Academician, Nikolayev, N. S., Ippolitov, Ye. G.

TITLE: New Methods of Producing Hexafluoro Platinates. Fluorination by Chlorotrifluoride

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 378-379

TEXT: Since chlorotrifluoride is the most active fluorinating agent among all fluorine compounds and does not develop by-products during fluorination, the authors investigated its action on a platinum - potassium bifluoride mixture. The present paper is the continuation of a former one (Ref. 1) and its purpose is the development of a better method of producing potassium hexafluoro platinum. The authors found out that platinum in the above mixture (5 g of platinum black, 3 g of potassium bifluoride) is completely transformed into potassium hexa-fluoro platinate after being heated up to 200° in a nickel boat in the chloro-trifluoride current. The product is separated from the potassium bifluoride excess by means of recrystallisation in hot water. The conversion of potassium hexachloro platinate in potassium hexafluoro platinate by means of chlorotrifluoride showed even better results. This process, however, must take place at 500° with

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New Methods of Producing Hexafluoro Platinates.
Fluorination by Chlorotrifluoride

S/020/60/132/02/37/067
B011/B002

gaseous ClF₃ (reaction (1)). This process stretches over approximately 1.5 h.
The boat can only be removed from the quartz tube in which the experiment was
conducted, after it has been cooled down, otherwise K₂PtF₆ would react with the
atmospheric moisture. The crystals obtained by recrystallisation in water were
completely identical with those obtained after the process at 200°. The authors
developed a method for the analysis of K₂PtF₆ by means of the pyrohydrolysis of
the weighed portion with overheated vapor (Ref. 1). This method however, was
too time-consuming. Therefore they suggest another method: a weighed portion of
salt of 0.2-0.4 g is mixed in the platinum boat with 1 g of calcined soda and
covered by a soda layer. For 15-20 min. the boat is heated in the quartz tube
in the H₂ current up to 400°. The loss in weight was determined after the boat
had been cooled down. It was in agreement with the equation (see Equation).
After the sample was leached on a filter by hot water, the platinum residue
was annealed on the filter and weighed. In the filtrate, fluorine was determined
as PbClF, and potassium as K₂PtCl₆. The analysis did not take more than one day.
The density of the synthesised preparation was 4.79 g/cm³ (in publications it is
4.85 g/cm³). Experiments with gaseous fluorine under the same conditions showed
that K₂PtCl₆ is transformed into potassium hexafluoro platinate. Its yield
however, is much lower and requires purification by recrystallisation. There are

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S/020/60/135/006/019/037
B016/B060

5 4110

AUTHORS: Buslayev, Yu. A. and Nikolaev~~~~~~~~~~

TITLE: Investigation of the HF - HfF$_4$ - H$_2$O System (Solubility Isotherm 25°C)

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 6, pp. 1385-1387

TEXT: The authors report on their study of the solubility in the HF - HfF$_4$ - H$_2$O system. On the one hand they wanted to determine the differences in the solubility of zirconium- and hafnium fluoride, and the composition of resulting solid phases, on the other. To find out these differences the authors examined the Hf^{181} distribution between liquid and solid phase in the abovementioned system. Data found in the literature (Refs. 1,2) ignore important circumstances, and the results are therefore distorted. The method applied by the authors has been described earlier (Refs. 3,4). At a molecular ratio HF : HfO$_2$ < 4 and a temperature of 25±0.1°C the reaction had the following course:

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Investigation of the HF - HfF$_4$ - H$_2$O System   S/020/60/135/006/019/037
(Solubility Isotherm 25°C)   B016/B060

6KF + 4HCl + HfO$_2$ = K$_2$HfF$_6$ + 4KCl + 2H$_2$O. Table 1 shows the solubility in
the mentioned system and the composition of the residues from the reaction
(solid phase). In Fig. 1 the same data are presented in a Gibbs diagram.
The considerable decrease of solubility observable in the curve is, in
the authors' opinion, due to the formation of H$_2$HfF$_6$·2H$_2$O. This solid
phase is incongruently soluble. When the mother lye is removed this phase
decomposes. Table 2 shows the change of the distribution coefficient of
Hf^{181} between the liquid and the solid phase in the HF - ZrF$_4$ - H$_2$O system
on the basis of the ratio of specific hafnium activity in the solution
versus the initial activity. In the concentration range of hydrofluoric
acid, which corresponds to the existence of the solid ZrF$_4$·3H$_2$O phase,
the authors found no divergence between the solubility of zirconium fluor-
ide and hafnium fluoride. The greatest difference in their solubility is
attained during the crystallization of hexafluoro zirconic acid from
15.68% HF on. At an HF concentration of 50.58% the solubility of hafnium
fluoride is twice that of zirconium fluoride. The authors conclude on the

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Investigation of the HF - HfF$_4$ - H$_2$O System   S/020/60/135/006/019/037
(Solubility Isotherm 25°C)   B016/B060

strength of these results, that the higher solubility of hafnium fluoride,
as compared with that of zirconium fluoride, is conserved in HF solutions,
in the same way as it is conserved in the case of potassium- and ammonium
fluorides of hafnium in aqueous solutions. There are 1 figure, 2 tables,
and 5 references: 3 Soviet and 2 German.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S.
              Kurnakova Akademii nauk SSSR (Institute of General and In-
              organic Chemistry imeni N. S. Kurnakov of the Academy of
              Sciences, USSR)

PRESENTED: July 7, 1960, by I. V. Tananayev, Academician

SUBMITTED: June 4, 1960

Card 3/4

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S/020/60/135/006/019/037
B016/B060
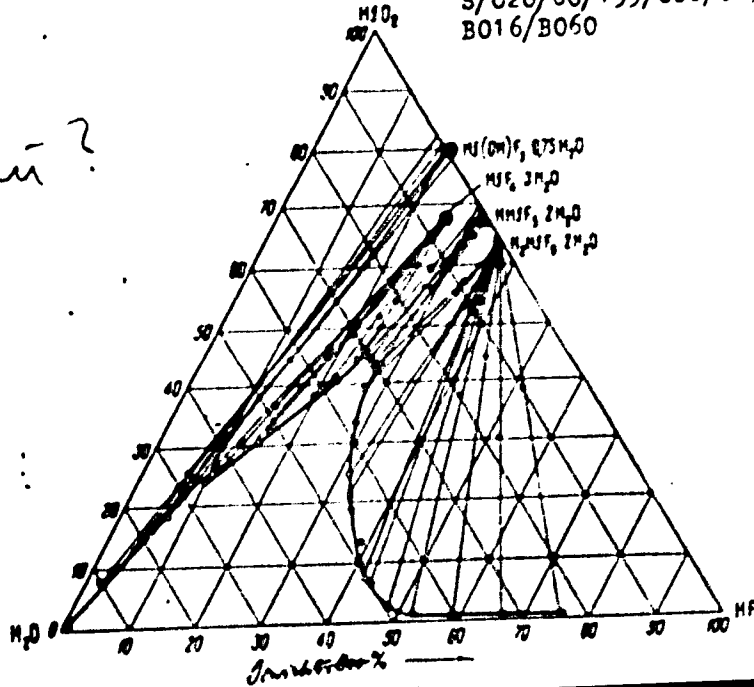
Card 4/4

NIKOLAYEV, N.S.

SOV/5820

PHASE I BOOK EXPLOITATION

Galkin, N. P., A. A. Mayerov, U. D. Veryatin, B. N. Sudarikov,
N. S. Nikolayev, Yu. D. Shishkov, A. B. Krutikov

Khimiya i tekhnologiya ftoristykh soyedineniy urana (Chemistry and Tech-
nology of Uranium Fluoride Compounds) Moscow, Gosatomizdat, 1961. 347 p.
Errata slip inserted. 4500 copies printed.

Ed. (Title page): N. P. Galkin, Doctor of Technical Sciences, Professor;
Ed.: N. A. Korobteeva; Tech. Ed.: S. N. Popova.

PURPOSE: This book is intended for chemical and nuclear engineers and
teachers and students of schools of higher education.

COVERAGE: The monograph reviews Soviet and non-Soviet literature published
up to June 1960 on the physicochemical properties of uranium fluorides
and methods of producing them from salts, oxides, and metallic uranium.
Methods of processing uranium chemical concentrates to the tetra- and hexa-
fluorides, which are initial products in the production of nuclear fuel,

Card 1/8

S/078/61/006/007/002/014
B107/B2**

21.4100

AUTHORS: Alenchikova, I. F., Zaytseva, L. L., Lipis, L. V.,
Nikolayev, N. S., Fomin, V. V., Chebotarev, N. T.

TITLE: Properties of plutonyl fluoride complexes

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 7 1961, 1513-1519

TEXT: The object of the present study was the production and investigation
of plutonyl fluoride complexes with alkali metals. The systems
PuO_2F_2 - MeF - H_2O with Me = Na, K, NH_4, Rb, Cs were investigated in the
range Me/Pu = 1 to 50 by means of electron absorption spectra. The latter
were recorded by means of the ИСП-5' (ISP-5') spectrograph at the boiling
temperature of liquid nitrogen. The compounds prepared were analyzed;
Table 1 provides a list of the compounds produced as well as the analytical
values. The compounds $MePuO_2F_3 \cdot H_2O$ are isotopic and of cubic symmetry.

Fig.2 shows schematically the powder diagrams, obtained in the РКУ-86
(RKU-86) camera with chromium radiation, for the following compounds
(lattice constant in brackets): $KPuO_2F_3 \cdot H_2O$ (9·26 Å), $RbPuO_2F_3 \cdot H_2O$

Card 1/6 2

NIKOLAYEV, N.S.; IPPOLITOV, Ye.G.

Preparation of anhydrous hydrogen fluoride from ammonium fluoride and hydrogen chloride. Zhur.neorg.khim.

(MIRA 14:4)

(Hydrochloric acid)   (Ammonium fluoride)   (Hydrochloric acid)

ALENCHIKOVA, I.F.; LIPIS, L.V.; NIKOLAYEV, N.S.

Investigation of the system PuO$_2$F$_2$—HF—H$_2$O (isotherm 20°C). Atom. energ. 10 no.6:592-596 Je '61.

(Plutonium compounds)

(MIRA 14:6)

/

21· 4300

AUTHORS: Nikolayev, N. S., Luk'yanychev, Yu. A.

TITLE: Investigation of the hydrolysis of uranium tetrafluoride

PERIODICAL: Atomnaya energiya, v. 11, no. 1, 1961, 67 - 69

TEXT: There are entirely different and sometimes conflicting views on the problem of the degree of and conditions for the hydrolysis of UF_4 in water, and whether it occurs at all. Conflicting views are published, for example, in Refs. 3 and 4. So the authors of the present paper have investigated recently the hydrolysis of UF_4. The tetrafluoride in the form of $UF_4 \cdot 2.5 \ H_2O$ was obtained by the electrolytic reduction of uranyl fluoride solution. Experiments were carried out on it with the help of the cation exchanger KУ-2 (KU-2) and the anion exchanger ЭДЭ-10П (EDE-10P). Experiments showed that the uranium was absorbed by the cationite by up to 90 - 95%, and not at all by the anionite. From this it may be concluded that the UF_4 in the solution is present in the form of cations. The hydrolysis

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S/089/61/011/001/010/010
B102/B214

Investigation of the ...

of UF_4 was followed by pH measurements at different concentrations of the solution. These measurements had an accuracy of ± 0.02 pH units. The results are shown in Table 1. The saturated UF_4 solutions are seen to have a high degree of acidity, which can be explained only by the assumption of hydrolysis. The data obtained in two series of measurements were used for the calculation of the equilibrium constant of the hydrolytic reactions. The hydrolysis may be described by the reaction equation $UF_4 + nH_2O \rightleftharpoons$ $U(OH)_n F_{4-n} + nHF$, or, if account is taken of the low solubility, by $U^{4+} + nH_2O \rightleftharpoons$ $U(OH)_n^{+(4-n)} + nH^+$, where n is the number of hydroxyl groups; $n = 1..4$. Thereby one obtains for the equilibrium constant $K_p = \dfrac{\left[U(OH)_n^{+(4-n)}\right]\left[H^+\right]^n}{\left[U^{4+}\right]} = \dfrac{\left[H^+\right]^{n+1}}{n(C-\left[H^+\right]/n)}$.

C is the total concentration of uranium in the solution. Table 2 gives the K_p values obtained for the two series of measurement and for four different hydrolytic reactions. The general instability constants for the

Card 2/5

TANANAYEV, I.V.; NIKOLAYEV, N.S.; LUK'YANYCHEV, Yu.A.; OPALOVSKII, A.A.

Chemistry of uranium fluorides. Usp.khim. 30 no.12:1490-1522
D '61.
(MIRA 14:11)

1. Institut obshchey neorganicheskoy khimii imeni N.S.
Kurnakova, AN SSSR.
(Uranium fluoride)

Synthesis of Complex Fluorides of
Hexavalent Rhenium

S/020/61/136,001,023/017
B016/3055

product corresponded to the formula K_2ReF_8. After several hours in air,
the raspberyy-colored crystals begin to decompose, accompanied by a color-
change via pale blue to black. This is due to hydrolysis, by which water-
soluble products forming pale-blue solutions are obtained. K_2ReF_8 is
soluble in hot water forming green solutions which soon turn brown owing to
hydrolysis. K_2ReF_8 can be stored in polyethylene ampoules, but rapidly
decomposes at contact with glass and corrodes it. K_2ReF_8 is soluble in HF
with decomposition and precipitation of ReF_6. By dissolving K_2ReF_8 in HF
containing 0.02% water and cooling the pale-blue solution to -70°C, pale-
blue crystals consisting of potassium oxyhexafluorhenate $K_2ReOF_6 \cdot 2HF$ were
obtained. With water, this salt forms a pale-blue solution which after 10
min turns green and soon after brown. A similar color-change takes place
on dissolving the potassium oxyhexafluorhenate in HF. Though the authors
did not analyze the crystals precipitated from the green solutions on
cooling, they assume them to be a hydrolysis product of potassium hexa-
fluorhenate, for instance $K_2ReO_2F_4$. The substances prepared (Ref. 2) were

Card 2/3

89732

S/020/61/136/003/016/027
B016/B052

5.2620   2209, 1266, 1273

AUTHORS: Nikolayev, N. S. and Sukhoverkhov, V. F.

TITLE: New Complex Compounds of Hexafluorides of Molybdenum,
               Tungsten, Uranium, and Fluorides of Cesium and Ammonium

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 3,
               pp. 621-623

TEXT: The authors report on the synthesis of complex compounds of
molybdenum, tungsten, and uranium hexafluorides with cesium and ammonium
fluorides of the general formula $MMeF_7$. They used a fundamentally new
method based upon the interaction of the above hexafluorides and fluorides
with trifluoro chlorine (ClF_3). The following reaction scheme was assumed:

$$ClF_3 \rightleftharpoons ClF_2^+ + F^-; \quad n\left[ClF_2^+ \cdot F^-\right] + MeF_6 \rightleftharpoons \left[ClF_2\right]MeF_{6+n};$$
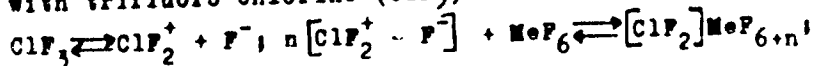
$$MF + \left[ClF_2\right]_n MeF_{6+n} \rightleftharpoons M_n MeF_{6+n} + nClF_3,$$ where $Me - Mo$, W or U and M
represent the alkali element. The authors give the solubilities of some

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89732

New Complex Compounds of Hexafluorides of   S/020/61/136/003/016/027
Molybdenum, Tungsten, Uranium, and Fluorides   B016/B052
of Cesium and Ammonium

components in ClF3 which they determined (except for NH4F) as being very
low. The reacting solutions were mixed in a Teflon vessel. The authors
succeeded in obtaining the final products in a pure state, due to the
homogeneous character of the reaction and the absence of side processes.
Since these products formed as precipitations difficultly soluble in ClF3,
they were washed by ClF3, the traces of which were then removed in
vacuum. The solubility of NH4F could not be determined as it burns
rapidly, sometimes even explosively. Small and dry portions of it were
therefore added to saturated hexafluoride solutions of Mo, W, and U in
ClF3 cooled down by dry ice. The precipitation was also treated with a
hexafluoride solution and then washed three times with ClF3. Table 1 shows
the results of the analysis. There are 1 table and 13 references: 2 Soviet,
5 German, and 1 International.

PRESENTED: September 19, 1960, by I. V. Tananayev, Academician

SUBMITTED: June 4, 1960

Card 2/3

27879
S/020/61/140/001/016/024
B103/B101

The problem of...

vapor pressure at 200°C. All operations were carried out under cooling with liquid nitrogen. All alkali fluorides, except for lithium fluoride, were found to react in two stages according to the equations:
$ReF_6 + 2MeF = Me_2ReF_8$ (1), and $Me_2ReF_8 + ReF_6 \rightleftharpoons 2MeReF_7$ (2). (1) describes the reaction at a molar ratio between ReF_6 and alkali fluoride of 1:2 at 200°C. Pink octafluoro rhenates Me_2ReF_8 are formed, where Me = Na, K, Rb, or Cs. At low temperatures, the Me_2ReF_8 (except for Na_2ReF_8) add a further ReF_6 molecule according to formula (2). Thus, yellow heptafluoro rhenates $MeReF_7$ are produced, where Me = K, Rb, or Cs The $MeReF_7$ differ from Me_2ReF_8 by their color, crystal shape, and chemical properties. The heat resistance of $MeReF_7$ decreases in the order Cs > Rb > K > Na. $NaReF_7$ cannot be produced at all, whereas $KReF_7$ starts dissociating at 50°C according to (2), and after long storing in vacuo is transformed to K_2ReF_8. Thermogravimetric studies in the dry nitrogen flow

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27879
S/020/6*/140/00*/016/024
B103/B10*

The problem of...

showed that $KReF_7$ rapidly decomposes at 200 - 300°C with ReF_6 escaping. The residue after decomposition amounts to 59% by weight which corresponds to the K_2ReF_8 weight calculated according to (2). Heat resistance of K_2ReF_8 is very high. Only at 700°C, the weight inconsiderably decreases, and a yellow, heterogeneous product is formed Although $RbReF_7$ and $CsReF_7$ are more resistant than $KReF_7$ they are completely transformed according to the equation $MeReF_7 \cdot MeF - Me_2ReF_8$ (3) under heating with corresponding fluorides at 200°C. The salts produced consisted of one crystalline phase. At V G. Kuznetsov's laboratory, the X-ray spectra of these salts were recorded in an ionization chamber. The density of K_2ReF_8 was found to be 4.35 g/cm³. The magnetic moment (measured by V. I. Belova in Ya. K. Syrkin's laboratory) of all Me_2ReF_8 is 1.7 - 1.8μ_B. The $MeReF_7$ are also paramagnetic, but their magnetic moment is smaller, than calculated. All Me_2ReF_8 (except for Na_2ReF_8) are almost unsoluble in water. When left standing with water for some minutes, the solution

Card 3/4

35598

S/062/62/000/003/003/014
B110/B101

// 2130
5. 2430

AUTHORS: Buslayev, Yu. A., Bochkareva, V. A., and Nikolayev, N. S.

TITLE: Reaction of titanium dioxide with hydrofluoric acid

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh
              nauk, no. 3, 1962, 388-392

TEXT: The solubility of titanium dioxide in hydrofluoric acid, and the
composition of the compounds formed in the solid phase and in solution were
determined. The TiO_2 (~ 0.5 % impurities) dissolved in HF, was stirred,
together with the solid phase, for 24 hrs at 25°C. In order to control the
equilibrium obtained, saturated solutions of TiO_2 in HF were kept for three
months in the exsiccator over KOH. When removing HF and H_2O from the
solution, a solid phase was separated which was stirred in the thermostat
together with the solution, and analyzed for Ti- and HF content. Ti was
reduced by means of Zn-Hg, brought into ferric sulfate solution and
titrated by means of $KMnO_4$. HF in the presence of Ti was determined

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Reaction of titanium dioxide with...

potentiometrically. To reduce the solubility of K_2TiF_6, 4-6 ml C_2H_5OH were added besides KF. The solubility of TiO_2 increases almost linearly with the HF concentration. In saturated solutions, the molar ratio of fluorine varies between 4.01 and 4.33, as $[TiOF_4]^{2-}$ was formed in the solution. The first solid phase is about TiO_2. At 25.95-39.60 % of HF, $TiOF_2 \cdot H_2O$ is formed. In a solution with the ratio F: Ti = 4, a change of the particle number from 1.45 to 1.22 was determined cryoscopically. Concentration dependence and dissociation point towards

$$TiF_4 + 2H_2O \rightleftharpoons [TiF_4 \cdot 2H_2O] \rightleftharpoons H^+ + [TiF_4(OH)H_2O].$$ The degree of dissociation of hydrated TiF_4 agrees with the electric conductivity of titanium solutions of the ratio F/Ti = 4.2. The steep rise of the molar conductivity with the ratio F:Ti is explained by the following equilibrium:

$$H[TiF_4(OH)H_2O] + HF \rightleftharpoons H[TiF_5H_2O] \rightleftharpoons H^+ + [TiF_5H_2O]^-;$$
$$H[TiF_5H_2O]^- + HF \rightleftharpoons H_2[TiF_6] \rightleftharpoons 2H^+ + [TiF_6]^{2-}.$$ Two solutions with the

Card 2/3

Reaction of titanium dioxide with...

concentration 0.5 and 0.22 mole/liter TiF_4 were titrated conductometrically. A well marked break in the curve of conductometric titration at the ratio F/Ti = 5 proves the formation of pentafluorotitanic acid $H[TiF_5 \cdot H_2O]$. The conductivity increase at F/Ti > 5 occurs owing to formation of hexafluorotitanic acid, which decomposes according to: $[TiF_6]^{2-} \xrightleftharpoons{H_2O} [TiF_5 \cdot H_2O]^- + F^-$. There are 3 figures and 3 tables.

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SUBMITTED: October 10, 1961

Card 3/3

37540

S/062/62/000/005/112/108
B110/B101

AUTHORS: Ippolitov, Yo. G., and Nikolayev, N. S.

TITLE: Properties of complex fluorides of hexavalent rhenium

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh
              nauk, no. 5, 1962, 748-755

TEXT: The synthesis of complex rhenium(VI) fluorides from molten ReF_6
and alkali fluorides has the following course of reaction:

$$2ReF_6 \rightleftharpoons ReF_4^{++} + ReF_8^{--}; \quad 2ReF_6 \rightleftharpoons ReF_5^{+} + ReF_7^{-};$$

$$ReF_4^{++} + ReF_8^{--} + 2MF = M_2ReF_8 + ReF_6; \quad ReF_5^{+} + ReF_7^{-} + MF = MReF_7 + ReF_6.$$
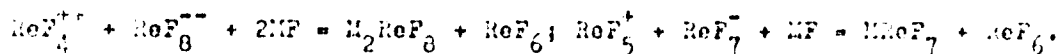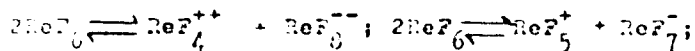
Octafluoro rhenates of alkali metals hydrolyze in the succession:
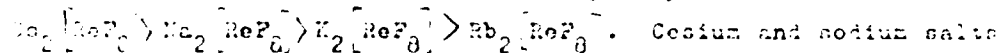
$$Na_2ReF_8 > K_2ReF_8 > Rb_2ReF_8 .$$ Cesium and sodium salts
hydrolyze immediately, while potassium and rubidium salts take 30-40 min in
cold water. Hydrolysis is considerably speeded up by stirring and

Card 1/5

heating. Blue solutions are formed by the addition of $40_{\circ}$ HF or ice water (30-40 min stirring). The latter reaction has the form:

$K_2[ReF_8] + H_2O = KReOF_5 + KF \cdot 2HF$. M^IReOF_5, $M=K,Rb,Cs$, were obtained by evaporation of the blue solutions. Their stability drops in the succession: $CsReOF_5 > RbReOF_5 > KReOF_5 > NaReOF_5$. Rhenium dioxide is

separated in the decomposition process. Oxypentafluoro rhenates are readily soluble in water, alcohol, and ketones. The hydrolysis of potassium octafluoro rhenate in dilute solutions at $10^{\circ}C$ was studied by the conductivity method on the conductivity-time curve, where three sections were established at 0.001 mole of K_2ReF_8 solution:

(1) hydrolysis, (2) disproportionation of Re^{VI} to Re^{IV} and Re^{VII}, and
(3) slow oxidation of Re^{IV} to Re^{VII} by means of atmospheric oxygen. The following reaction takes place: $4K_2ReF_8 + 14H_2O + O_2 = 4KReO_4 + 4KF \cdot 2HF$.
The blue solutions decompose as follows: $3K_2[ReF_8] + 12H_2O$

Card 2/5

Properties of complex fluorides of ...   S/062/62/000/005/002/008
                                                B110/B101

$+6K^+ + 24F^- + 24H^+ + 2ReO_4^- + ReO_2 \cdot 2H_2O$. Octafluoro rhenates possess a
magnetic moment similar to that of an unpaired electron. The unpaired
electron, energetically weakly bound in the $[ReF_8]^{-2}$ ion, makes the
valence state of Re^{VI} unstable and effects redox reactions: disproportionation,
reduction by means of KI in acid medium, and oxidation by different agents.
Since the potentials of $ReO_3/ReO_4^- = -0.768 \pm 0.005$ v, and those of

$ReO_2/ReO_3 = -0.368$ v, ReO_3 is a weaker oxidizing agent than Fe^{3+}. In

acid medium ReO_3 separates iodine from iodides and is oxidized to rhenic

acid by. $FeCl_3$. Rhenium hexafluoride oxidizes silver and gold at $500°C$.

Rhenium (VI) iodides react readily with hydrazine and sulfurous acid in
acid medium, separating a black amorphous precipitate in the process.
In saturated KCNS solution potassium octafluoro rhenate dissolves in
10-15 min to form a green solution. From the latter, pyridine separates
yellowish-green crystals of the composition $2(C_5H_5N_2) \cdot ReO(CNS)_3 \cdot HF \cdot H_2O$.

Hexavalent rhenium is a strong reducing agent in alkaline and neutral
Card 3/5

Properties of complex fluorides of ...   S/062/62/000/005/002/003
                                            B110/B101

: - 5.26 kX; for CeAeF$_7$: a - 5.17 kX, c - 5.50 kX. There are 7 figures.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S.
               Kurnakova Akademii nauk SSSR (Institute of General and
               Inorganic Chemistry imeni N. S. Kurnakov of the Academy
               of Sciences USSR)

SUBMITTED: December 15, 1961

Card 5/5

AUTHORS: Nikolayev, N. ..; ....ov, N. ..; ...ov, A. ..; Perepletchikov, L. Ya.

TITLE: A slave valve with positive pneumatic closing. Class .., No. 16.565

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 4, 1964, 96

TOPIC TAGS: pneumatic device, valve

ABSTRACT: This Author Certificate presents a slave valve assembly with positive pneumatic closing. The assembly includes a casing with a cover and a nozzle, the basic valve fastened to a spring-loaded membrane, and a "repeater" (see Fig. 1 on the Enclosure). The device is provided with a pneumatic unit which contains a shuttle valve with a spring, two check valves, a spring-loaded membrane with a rigid center to which a needle valve is attached, and a two-way stopcock. The nozzle of the casing is provided with a check valve mounted on the side of the housing of the basic valve. Orig. art. has: 1 figure.

ASSOCIATION: Organizatsiya gosudarstvennogo komiteta po aviatsionnoy tekhnike SSSR (Organization of the State Committee for Aviation Technology, SSSR)

SUBMITTED: 10Jan64   ENCL: 01
NR REF SOV: 000   OTHER: 000

40139

5,2420

AUTHORS: Nikolayev, N. S., Buslayev, Yu. A., Gustyakova, M. P.

TITLE: Study of the interaction in the system HF - ZrF_4 - H_2O at 25°C

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 7, 1962, 1685 - 1692

TEXT: The solubility isotherm of the system HF - ZrF_4 - H_2O at 25°C in
the HF concentration range between 0 and 70.49 % was studied. Using
$ZrF_4 \cdot 3H_2O$ as solid initial phase and following the method of investigation
described in an earlier paper by the two first-mentioned authors with
I. V. Tananayev (Zh. neorgan. khimii, 1, 274 (1956)). At 25°C, the system
shows the following solid phases: $Zr_4O_3F_{10} \cdot 6H_2O$ at an HF concentration in
the liquid phase of 0.51 - 7.26 % by weight; $ZrF_4 \cdot 3H_2O$ at 8.50 - 29.28 %
HF; $HZrF_5 \cdot 4H_2O$ at 29.83 - 33.79 % HF; $H_2ZrF_6 \cdot 2H_2O$ at 33.79 - 70.49 % HF.
The compound $HZrF_5 \cdot 4H_2O$ was analysed by x-ray diffraction, thermography,
and thermogravimetry. It shows endothermic effects at 60, 100, 125, 300,

Card 1/2

ᴣ/ 4ᴖCC

AUTHORS: Nikolayev, N. S., Luk'yanychev, Yu. A.

TITLE: Determination of the solubility product of thorium tetrafluoride

PERIODICAL: Atomnaya energiya, v. 12, no. 4, 1962, 334-336

TEXT: V. I. Spitsyn (Zh. rus. fiz.-khim. o-va, 42, 357, 1917) and I. V. Tananayev and A. D. Vinogradova (Zh. neorganich. khim., 2, no. 10, 2455, 1957) had already determined the solubility product of ThF_4 and obtained $1.2 \cdot 10^{-29}$ and $1.84 \cdot 10^{-24}$, respectively. The present authors determined the solubility of a $ThF_4 \cdot 0.5 \, H_2O$ as a function of the solvent $(HClO_4)$ concentration. The solubility was found to increase rapidly with the concentration up to about 0.5 M $HClO_4$ which indicates a reaction of the type

$$ThF_4 + (4 - n)H^+ \rightleftharpoons ThF_n^{4-n} + (4 - n)HF.$$ This reaction can be described by

$$\lg [ThF_n^{4-n}] = \frac{4-n}{3-n} \lg [H^+] +$$

$$+ \frac{1}{3-n} \lg K_p - \frac{4-n}{3-n} \lg (4-n)$$

Card 1/3

Determination of the solubility ...

where K_p is the equilibrium constant. As the HF_4 solubility is a function of the hydrogen ion concentration, n can be determined from the slope of the straight line $-\log S = f(pH)$ $((4-n)/(5-n)$ is the tangens of inclination).

The reaction equation reads: $ThF_4 + 3H^+ \rightleftharpoons ThF^{3+} + 3HF$; the equilibrium constant is $8.1 \cdot 10^{-11}$. The solubility product is obtained from

$SP = [Th^{4+}][F^-]^4$ with $[F^-] = 4[S_{Th}]/(1 + [H^+]/k_1)$, $k_1 = 6.9 \cdot 10^{-4}$, the dissociation constant, and

$$[Th^{4+}] = \frac{S_{Th}}{\left(1 + \frac{[F^-]}{K_{ThF^+}} + \cdots + \frac{[F^-]}{K_{(ThF_i)}} \cdots\right)} $$

$$+ \frac{[OH^-]}{K_{ThOH^+}} + \cdots + \frac{[OH^-]}{K_{(ThOH)_a^{i-1}}} $$

i.q. = 1..4. For $K_{ThF^{3+}} = 1.2 \cdot 10^{-6}$ and $K_{ThOH^{3+}} = 0.15$, $SP = 4.5 \cdot 10^{-26}$ is obtained. The deviation from the SP value obtained by Tananayev and Vinogradova is attributed to the fact that they neglected complexation and

Card 2/3

S/089/62/013/002/007/011
B102/B104

AUTHORS: Luk'yanychev, Yu. A., Nikolayev, N. S.

TITLE: Solubility of uranium (IV) hydroxide in hydrofluoric acid
             solutions

PERIODICAL: Atomnaya energiya, v. 13, no. 2, 1962, 179-181

TEXT: As only scarce and contradictory data have hitherto been published
on the interaction between U(IV) and F ions, the authors examined the
solubility of U(IV) hydroxide by two methods: (1) Freshly prepared U(IV)
slime was filled into a teflon container with a stirrer and a hydraulic
seal and kept under a H_2 atmosphere. Equilibrium was reached after 3 hrs.
(b) Together with hydrofluoric acid the U(IV) hydroxide slime was filled
into a polyethylene flask and nitrogen was passed through it. Equilibrium
was reached after 25 days. The U^{4+} concentration increased with the molar
HF concentration (HF: $5 \cdot 10^{-4}$, $1 \cdot 10^{-3}$, $1 \cdot 10^{-2}$; U^{4+}: $4.6 \cdot 10^{-5}$, $6.6 \cdot 10^{-5}$,
$1.06 \cdot 10^{-4}$). Results: The dissolution is characterized by the formation
of complex ions: $U^{4+} + nHF \rightleftharpoons UF_n^{4-n} + nH^+$. The change in the HF

Card 1/2

BUSLAYEV, Yu.A.; BOCHKAREVA, V.A.; NIKOLAYEV, N.S.

Interaction between titanium dioxide and hydrofluoric acid.
Izv.AN SSSR.Otd.khim.nauk no.3:334-392 Mr '62.   (MIRA 15:3)

1. Institut obshchey i neorganicheskoy khimii im. N.S.
Kurnakova AN SSSR.
          (Titanium oxides) (Hydrofluoric acid)

Fluorination reaction of...

S/020/62/143/001/023/030
B106/B138

to 100°C. If temperatures are still higher, UF_5 is formed as a result of the reaction $3U_2F_9 + ClF_3 \rightarrow 6UF_5 + 1/2\ Cl_2$ (4). The dipping part of the curves in Fig. 1 corresponds to a decrease in the amount of UF_4 and to the predominance of the U_2F_9 phase in solid residues. This phase is fluorinated in the course of the reaction following Eq. (4). Finally, the almost pure phase UF_5 is found at 150°C. It continues to react with chlorine trifluoride, following the pattern $3UF_5 + ClF_3 \rightarrow 3UF_6 + 1/2\ Cl_2$ (5). This reaction shows a much lower intensity than reaction (1) so that the UF_6 yield diminishes and finally reaches a minimum. Within this minimum, the formation of UF_6 takes place exclusively via uranium pentafluoride. The higher UF_6 yield with increased temperature (up to 300°C) is caused by an increase in the intensity of reaction (5). The fluorination of UF_4 was compared with the well known reaction of uranium tetrafluoride with gaseous fluorine (Ref. 4: see below) when fluorine acts

Card 2/5

Fluorination reaction of...

S/020/62/143/001/023/030
B106/B138

experiments. ClF was only formed in unimportant small amounts which were probably caused by secondary reactions. There are 1 figure and 5 non-Soviet references. The four most recent references to English-language publications read as follows: H. R. Leech, Chem. and Ind., 1960, 5, 242; V. Y. Labaton, J. Inorg. and Nucl. Chem., 10, 86 (1959); Ref. 4: V. Y. Labaton, K. D. Johnson, J. Inorg. and Nucl. Chem., 10, 74 (1959); L. Stein, R. Vogel, Ind. and Eng. Chem., 48, No. 3 (1956).

PRESENTED: October 11, 1961, by I. V. Tananayev, Academician

SUBMITTED: October 11, 1961

Card 4/5

LUK'YANYCHEV, Yu.A.; NIKOLAYEV, N.S.; ASTAKHOV, I.I.; LUK'YANYCHEVA, V.I.

Mechanism of copper fluorination at high temperatures. Dokl. AN SSSR 147 no.5:1130-1132 D '62.   (MIRA 16:2)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN SSSR. Predstavleno akademikom I.P. Tananayevym.
          (Copper)   (Fluorination)

TYCHINSKAYA, I.I.; NIKOLAYEV, N.S.

Fluogermanates in the system of the Na_2GeF_4 - HF - H_2O type. Zhur.neorg. khim. 8 no.3:734-737 Mr '63.   (MIRA 16:4)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.
              (Fluogermanates)   (Hydrofluoric acid)

LUK'YANYCHEV, Yu.A.; NIKOLAYEV, N.S.

Solubility products of uranium tetrafluoride. Zhur. neorg.
khim. 8 no.7:1786-1788 Jl '63.   (MIRA 16:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.
Kurnakova AN SSSR.
            (Uranium fluorides)   (Solubility)

L 14226-63   EWT(q)/EWT(m)/EPF(c)   JL/JW/JG
ACCESSION NR: AP3003988   S/0089/63/015/001/0081/0081

AUTHORS: Nikolayev, N. S.; Shishkov, Yu. D.

TITLE: Fluorination of uranium sulfate by chlorine trifluoride

SOURCE: Atomnaya energiya, v. 15, no. 1, 1963, 81

TOPIC TAGS: fluorination, uranium sulfate, chlorine trifluoride

ABSTRACT: The authors have studied the fluorination reaction of uranium sulfate
by a gaseous chlorine trifluoride in a horizontal cylindrical nickel reactor.
ClF_3 acted on $U(SO_4)_2$ for an hour at various temperatures. The composition of the
solid phase was analyzed chemically and by X-ray diffraction. The yield of reac-
tions was measured by UF_6. The results are given in a table. The fluorination
reaction is described by a chemical formula. Orig. art. has: 1 formula and 1
table.

ASSOCIATION: none
SUBMITTED: 01Nov62
SUB CODE: PH

Card 1/1

LUK'YANYCHEV, Yu.A.; NIKOLAYEV, N.S.

Solubility of uranium tetrafluoride in aqueous acid solution. Atom.
energ. 15 no.5:423-425 N '63.   (MIRA 16:12)

L 1510-45   EWT(d)/EWD-2/EWP(1)   Po-4/Pq-4/Pg-4/Pk-4   IJP(c)   JB/OO/MLX

ACCESSION NR: AT5002493   8/0000/64/000/000/0027/0045

AUTHOR: Nikolayev, N.S.

TITLE: Grid electromodels of the type EIS-1 and USM-1

SOURCE: Analogovyye metody i aredstva resheniya krayevykh zadach (Analog methods and means of solving boundary value problems) trudy Vsesoyuznogo soveshchaniya. 1962. Kiev, Naukova dumka,

TOPIC TAGS: electromodel, simulation, analog computer, heat transfer, boundary value problem

ABSTRACT: The paper discusses the range of applicability of the grid electromodelling devices of the types EIS-1 and USM-1, as well as some of the drawbacks in their design. The use of these devices now permits the solution of equations for heat transfer to bodies having a variable phase state. It has been possible to solve equations of the fourth order (biharmonic) using the USM-1 as well as some other systems. The means for improvement of these devices include 1. further expansion of the logical possibilities for programmed control of boundary value data, 2. automatic measurement of problem results requiring improvement in the treatment and processing of these results.

Card   1/2

L 23610-65
ACCESSION NR: AT5002493

the problem of combining grid analog and digital computers, which has been sucessful requires urther work. 4 miniaturization and microminiaturization of the components rig Art. has: 3 figures, 1 table and 11 formulas.

ASSOCIATION: none

SUBMITTED: 05Sep64   ENCL: 00   SUB CODE: DP, MA

NO REF SOV: 000   OTHER: 000

Card 2/2

L 39714-65   EWT(m)/EPF(c)/EPR/EWP(b)   Pr-4/Ps-4   JD/JW/WLK

ACCESSION NR: AT4046215   S/0000/63/000/000/0093/0096

AUTHOR: Nikolayev, N. S. (Moscow); Buslayev, Yu. A. (Moscow); Gustyakova, M. P. (Moscow)

TITLE: The solubility of the fluoride salts of zirconium and hafnium in hydrofluoric acid

SOURCE: Yubileynaya konferentsiya po fiziko-khimicheskomu analizu. Novosibirsk,

Novosibirsk, Izd-vo Sib. otd. AN SSSR, 1963, 93-96

TOPIC TAGS: zirconium fluoride, hafnium fluoride, fluorozirconate, fluorohafnate, zirconium solubility, hafnium solubility, zirconium hafnium separation

ABSTRACT: The authors determined the solubility of ammonium and potassium fluorozirconates in hydrofluoric acid, and established the coefficient of separation of zirconium and hafnium by means of the radioactive indicator Hf^{181}. The results of the investigation showed that the solubility of ammonium and potassium pentafluorozirconate is similar. At the beginning, the solubility of ammonium fluorozirconate increases sharply with HF concentration, but changes little at high concentrations of HF. Chemical analysis gave an empirical formula of NH_4ZrF_5 and $KZrF_5 \cdot H_2O$. In contrast to $(NH_4)_2ZrF_6$, the solubility of K_2ZrF_6 increases steadily with an increase in HF concentration. Pentafluorozirconates are more soluble in HF than hexa-

Card 1/2

L 9174-65
ACCESSION NR: AT4046216

fluorozirconates. The coefficient of separation is 1.49, which indicates that the solubility of K_2HfF_6 is 1.49 times as high as that of K_2ZrF_6. It was also established that during conversion of the hepta- and hexafluoro salts of zirconium and hafnium into the pentafluorosalts, the coefficient of separation of zirconium and hafnium increases. Orig. art. has 2 tables, 2 figures and 3 formulas.

ASSOCIATION: none

SUBMITTED: 10Sep63   ENCL: 00   SUB CODE: IC

NO REF SOV: 002   OTHER: 001

Card   2/2

L 24521-66   EWT(m)/EPF(c)/EIF(n)-2/EPR/EWP(t)/EWP(b)   Pr-4/Ps-4/Pu-4   IJF(c)/AFWL
              JD/WH/JW/JG
ACCESSION NR AM4040592   BOOK EXPLOITATION   S/

Tananayev, Ivan Vladimirovich (Academician); Nikolayev, Nikolay Sergeyevich;
Luk'yanychev, Yuriy Alekseyevich; Alekseyeva, Inna Petrovna

Chemistry of fluoride compounds of actinides (Khimiya ftoristykh soyedi...iy
     aktinidov), Moscow, Izd-vo AN SSSR, 1963, 227 p. illus., biblio. Errata slip
     inserted. 3,000 copies printed. At head of title: Akademiya nauk SSSR.
     Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova.

TOPIC TAGS: actinide-fluoride compound, chemistry, thorium-fluoride compound,
uranium-fluoride compound, neptunium-fluoride compound, plutonium-fluoride compound,
americium-fluoride compound, curium-fluoride compound

PURPOSE AND COVERAGE: In the last twenty years, research on the chemistry of
fluoride compounds has increased considerably. Interest in this group of compounds
is due chiefly to their use in processing nuclear raw material and the use of
uranium, thorium, and plutonium fluorides directly as nuclear fuel. Despite the
large number of experimental studies of actinide fluorides, there are no general
... related to the achievements ... actinide
... graph is to generalize the available material ... of actinide
...ides. The authors believe that the monograph will be useful for a wide circle

ACCESSION NR: AM404C592

of researchers and engineers. The monograph gives a complete review of material on
methods of obtaining, the physical and chemical properties of actinide-fluoride
compounds that have been published in Soviet and foreign literature up to 1963; it
also considers certain works that appeared in 1964.

TECHINAKAYA, I.I.; OPALOVSKIY, A.A.; NIKOLAYEV, N.S.

Solubility isotherms in the systems
Cs_2GeF_6 - HF - H_2O and Rb_2GeF_6 - HF - H_2O (0°). Zhur.
neorg. khim. 9 no.7:1696-1700 Jl '64.   (MIRA 17:9)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

ABSTRACT: A study has been made of the mechanism of formation, the phase compos-
... n, crystal structure, and thickness of nickel fluoride films formed ...
... nickel surface at ...

Card   1/3

chlorine at atmospheric pressure. The kinetics of the reaction were studied gravi-
metrically. A diffusion of nickel and chlorine ions through the film was found

corresponding to different atoms

diffusion

TYCHINSKAYA, I.I.; OPALOVSKIY, A.A.; NIKOLAYEV, N.S.

Reaction of lithium hexafluorogermanate with hydrogen fluoride
solutions. Izv. AN SSSR. Ser.khim. no.4:744-746 '65.   (MIRA 18:5)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.

L 8935-66   EWT(m)/EPF(n)-2/EWP(j)/T/EWP(t)/EWP(b)   IJP(c)   JD/WH/JW/JG/RM
ACC NR: AP5027212   SOURCE CODE: UR/0078/65/010/011/2577/2579

AUTHOR: Nikolayev, N. S.; Buslayev, Yu. A.; Gustyakova, M. P.

ORG: None

TITLE: The difference in solubility of complex fluorine salts of zirconium and hafnium
SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 11, 1965, 2577-2579

TOPIC TAGS: fluorine compound, zirconium compound, hafnium compound, solubility

ABSTRACT: Radioactive Hf^{181} in the form of hafnium dioxide was dissolved in hydrofluoric acid (40%), the excess acid was evaporated off, and zirconium tetrafluoride trihydrate, $ZrF_4 \cdot 3H_2O$, containing 0.05% HfO_2, was introduced into the solution obtained. The zirconium tetrafluoride was dissolved by heating, the solution was slowly evaporated until $ZrF_4 \cdot 3H_2O$ started to crystallize out, and was then placed in a desiccator under KOH. The $ZrF_4 \cdot 3H_2O$ crystals were filtered out and dried in air. The specific activity of the solid phase was then determined. Zirconium tetrafluoride trihydrate with a known specific activity (800-

Card 1/2   UDC: 621.4'161-386+546.832.4'161-386

2

L 8935-66
ACC NR: AP5027212

/

        1200 impulses/min-mg) was the starting material for the prepara-
tion of the salts to be investigated. The experimentally found solubility of ammo-
nium and potassium fluorozirconates in hydrofluoric acid at 20 C and values of
the separation coefficient a re shown in a table. The separation coefficient re-
flects the ratio of the specific activity of Hf[181] in the saturated solution to the
initial specific activity. In the ammonium fluoride salts of zirconium and hafnium
a sequence can be established in the solubility of the zirconium and hafnium salts
as a function of their composition. The ratio of the solubilities increases on
passing from the heptafluorine salts to the pentafluorine salts, as follows:

$$\frac{(NH_4)_3HfF_7}{(NH_4)_3ZrF_7} = 1.07, \quad \frac{(NH_4)_2HfF_6}{(NH_4)_2ZrF_6} = 1.3 \quad = \quad \frac{NH_4HfF_5}{NH_4ZrF_5} = 1.6$$

An increase in the coordination[7] number in fluorine complexes of zirconium and
hafnium decreases somewhat the difference in the properties of these compounds
in solution. Orig. art. has: 2 tables
SUB CODE: IC/ SUBM DATE: 03May65/ ORIG REF: 001/   OTH REF: 001

Card 2/2

NIKOLAYEV, N.S.

"Methods of analysis of brines and salts" by IU.V. Morachevskii,
F.M. Petrova. Zhur. anal. khim. 20 no.7:900 '65.

(MIRA 18:9)

L 2732-66   EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(1)   IJP(c)   GS/BC
ACCESSION NR: AT5023169   UR/0000/65/000/000/0134/0140

AUTHOR: Nikolayev, N. S. (Moscow); Epshteyn, V. L. (Moscow)

TITLE: The "Prokat" computer control unit

SOURCE: Vsesoyuznaya konferentsiya po avtomaticheskomu operativnomu upravleniyu proizvodstvennymi predpriyatiyami. 1st, Moscow, 1963. Avtomaticheskoye operativnoye upravleniya proizvodstvennymi protsessami (Automatic operative control of production processes); trudy konferentsii. Moscow, Izd- M   a, 1965, 134-140

TOPIC TAGS: metallurgic industry, compute contr l system, computer system, automatic control equipment, automatic control

ABSTRACT: The present paper describes a system of operative control of rolling producttion, called "Prokat." The unit is intended for construction at one of the large metallurgical plant complexes. The paper outlines the technological-economical assumptions underlying the specification of the unit, gives a detailed description of the structural diagram, and presents a system for the realization of the control algorithms by means of a universal computer with a speed of the order of 5000 operation/sec. The results are transmitted in the form of commands onto the signal panel and are then fed into the local computers and into the information units of the dispatcher for surveying. "L. H. Sorokina, A. M. Frid, and V. L. Epshteyn (Supervisor) participated in the development of the

Card   1/2

Card

NIKOLAYEV, N.S., inzh.

What a network diagram is. Avt. dor. 28 no.12:10-12 D '65.
(MIRA 19:1)

DEVYATYKH, G.G.; ZORIN, A.D.; NIKOLAYEV, N.I.

Study of carbon and oxygen isotope distribution by the fractional
distillation of the oxides of carbon, methane and molecular oxygen.
Zhur.prikl. khim. 31 no.3:368-375 Mr '58.   (MIRA 11:4)
          (Carbon--Isotopes) (Oxygen--Isotopes) (Distillation, Fractional)

42187

S/076/62/036/011/017/021
B101/B160

5 4119

AUTHORS: Kolotyrkin, V. M., and Nikolayev, N. I.

TITLE: Distribution of lithium isotopes in immiscible solvents

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 11, 1962, 2540-2541

TEXT: Lithium chloride was dissolved in mixtures of water and organic
solvents. After demixing, the isotope composition was examined by mass
spectrometry in both phases, and the α separation coefficient was
determined. Results: (1) In acetone-water mixtures, α = 1.027 ± 0.008 was
found for the water-saturated LiCl solution. In more dilute solutions
(about 1 N LiCl in the aqueous phase), the isotope composition remained
unchanged. (2) In the system water-isoamyl alcohol, α was 1.02 for
saturated LiCl solution, and 1.032 for 2 N LiCl solution. Li^6 concentrated
in the aqueous phase. (3) In mixtures of diethyl ether and $LiNO_3$ dissolved
in concentrated nitric acid, and in mixtures of amyl acetate and LiCl
dissolved in hydrochloric acid, there was no change in the isotope
composition. (4) In a mixture of 30% aqueous solution of methyl amine and

Card 1/2

ZOLOTURKIN, V. M.; NIKOLAYEV, N. I.

Distribution of lithium isotopes in immiscible solvents.
Zhur. fiz. khim. 36 no.11:2540-2541 N'62.   (MIRA 17:5)