SOV/56-36-2-7/63

On the Relative Probabilities
of the Photoeffect in Shells and Subshells of the Atom

the relative photoabsorption coefficient τ_K/τ_L for 140 and 411 kev. Comparison between experimental results and Hall formula for the relativistic case of Grigor'yev and Zolotavin et al. (Ref 9); b) Davidson and Latyshev (Ref 10) measurement of τ_K/τ_L for E_γ = 2614 kev as amounting to 4.8(Pb) and 5.3(Ta). In references 11 and 12 Latyshev found the values 4.9 and 5.4 respectively. c) Bazin (Ref 13) measured the photo-absorption coefficient for the molybdenum line K_{α_1}($h\nu$ = 17.5 kev) on several targets. The results obtained for sulfur, chromium, silver, and selenium are given. d) Havakov, Hultberg (Khultberg), and Andersson (Ref 14) found τ_K/τ_L = 5.5 (uranium target) for E_γ = 516 and 880 kev. The results published in the following by the authors of this paper were obtained from decay investigations of various isotopes which were carried out in the course of the past 5 years. Measurements were carried out by means of a β-spectrometer (cf. Ref 15). The lines of photo-electrons, produced by the absorption of monochromatic γ-radiation on K-, $L_{I,II,III}$ and M+N shells of various

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SOV/56-36-2-7/63

On the Relative Probabilities
of the Photoeffect in Shells and Subshells of the Atom

elements were investigated. The lines had an (energy-dependent) half width of 0.4 - 0.8%. An axially symmetric source and a thin target were used in this case (cf. Fig 1 and Refs 16, 17). It is assumed with justification that the angular distribution of the photoelectrons in energy intervals (0.1-2.0) Mev, which varies with quantum energy within the limits of 15%, does not influence results. The following was determined:

1) The ratio $(\tau_{L_I} + \tau_{L_{II}})/\tau_{L_{III}}$. Results are shown by table 1 and by figures 2 and 3. The table shows the measuring data, compared with theoretical data, for 4 different hν-values. $Z = 83$, bismuth target 0.1 mg/cm^2, γ-sources: Se^{75} and Tb^{160}. Figure 2 shows the L_I+L_{II}- and the L_{III}-line of the photoelectrons of γ-rays from Tb^{160} with E_γ = 86.6 kev, Bi-target 0.25 mg/cm^2; figure 3 shows the same lines for E_γ = 265 kev from Se^{75} with Bi-target 0.1 mg/cm^2.

2) The ratio τ_L/τ_M was determined for γ-radiation of various

energies on various targets as amounting to $\tau_L/\tau_M = 3.5\pm0.5$.

3) The ratio τ_K/τ_L. Table 2 contains the measuring results for different targets (Ag, Sb, Pt, Au, Pb, Bi, Th) of different thicknesses (0.25 - 13.0 mg/cm^2) and for different γ-energies (121 - 1696 kev). Figures 4a,b show the K- and the L and M+N-peaks of photoelectrons with use of γ-radiation of J^{131} with an energy of 364 kev; Bi-target, 3 mg/cm^2. Figure 5 shows the dependence τ_K/τ_L on Z in comparison with the results obtained by other authors. Figure 6 shows the dependence τ_K/τ_L on E_γ for targets from heavy elements, and figure 7 shows the same for silver- and antimony targets.

4) The share of τ_K in the total absorption coefficient . Figure 8 shows the dependence τ_K/τ on Z in comparison with the theoretical Allen's curves.

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On the Relative Probabilities
of the Photoeffect in Shells and Subshells of the Atom

SOV/56-36-2-7/63

The authors in conclusion thank Professor B. S. Dzhelepov for his advice and discussions, and N. A. Bonch-Osmolovskaya for allowing them to make use of his survey of the photoeffect before its publication. There are 8 figures, 2 tables, and 20 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet
(Leningrad State University)

SUBMITTED: August 16, 1958

Card 5/5

ZOLOTAVIN, A. V., Cand Phys-Math Sci -- (diss) "Determination of the relative intensities of γ-rays and the coefficients of the internal conversion of the γ-transitions of Se^{75} and Sb^{124} with the aid of a magnetic spectrometer with double focussing and wide aperture." Leningrad, 1960. 7 pp; (Academy of Sciences USSR, Radium Inst im V. G. Khlopin); 200 copies; price not given; bibliography at end of text (13 entries): (KL, 29-60, 124)

ZOLOTAVIN, A.V.

3

S/020/61/136/002/014/034
B019/B056

AUTHORS: Grigor'yev, Ye. P., Gromov, K. Ya., Dzhelepov, B. S., Corresponding Member of the AS USSR, Zvol'ska, V., Zolotavin, A. V., Veys, M., and Van Yun-yuy

TITLE: The Decay of the Two-hour Isotope Lu^{168}

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 2, pp. 325-328

TEXT: In the lutetium fraction forming in the course of an irradiation which of tantalum with 660-Mev protons, conversion lines were discovered, which had a period of two hours. The authors investigated the lutetium isotope to which these lines belong. For this purpose they used a β-spectrometer with double focusing, the magnetic field was measured by means of proton resonance, and calibration was carried out according to exactly known lines. Recording was carried out by means of two Geiger-Müller counters. Three conversion lines with a period of (2.15 ± 0.20) hours were discovered; closer details are given in Table 1. By comparing the energy differences between these three lines with X-ray data, it was found that the Lu-isotope goes over into an ytterbium isotope. From the close study

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of the known Lu-isotopes, of their decays, and their spectra, the authors come to the conclusion that the required isotope with a period of 2.15 hours must be $_{71}Lu^{168}$, which has an odd-odd deformed nucleus. Fig. 3 shows the decay scheme of this isotope. There are 3 figures, 3 tables, and 5 references: 4 Soviet and 1 US.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov) Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

The Decay of the Two-hour Isotope Lu^{168}

S/020/61/136/002/014/034
B019/B056

Таблица 1

[illegible]

[illegible] 1	[illegible] 2	[illegible] 3	[illegible] 3	
874,1	77,34	L_{II}	87,32	87,34 ±0,04*
881,4	[illegible]	L_{III}	87,38	
[illegible],5	87,02	M_I	87,32	

* [illegible]

Card 3/3

S/048/62/026/001/012/018
B125/B102

AUTHORS: Grigor'yev, Ye. P., Dzhelepov, B. S., Zvol'ska, V., Zolotavin, A. V., Malysheva, T. V., Khotin, B. A., and Adam, I.

TITLE: Conversion electrons of the short-lived platinum and tungsten isotopes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 1, 1962, 120 - 124

TEXT: The conversion electron spectra of the platinum and the tungsten fractions were measured by a β-spectrometer with double focusing by the method of nuclear resonance in the intervals 68 - 106 kev, and 70 - 90 kev, respectively. The neutron-deficient platinum and tungsten isotopes were produced by bombarding gold with 660-Mev protons. Table 1 gives the parameters of the 16 lines obtained for the platinum fraction. 7 of these lines have been newly discovered. The 106.43-kev transition cannot be attributed to one of the Pt isotopes but only to an Ir isotope. The intensity ratio of the lines L_{II} and L_{III} suggests an E2 or E3-type transition. Also for the 110.10-kev transition in an iridium nucleus

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S/048/62/026/001/012/018
Conversion electrons of the... B125/B102

the isotope on whose decay transition takes place cannot be determined due to its insufficiently accurate half line. The L_I, L_{II}, L_{III} lines with the energies 96.71, 97.25 and 98.87 kev of the 110.10-kev transition have a half life of (20±0.3) hr. The ratio of the line intensities of inner conversion on the L-subshells suggests a transition of type E1 or E2+M1. Also the 93.94-kev transition mentioned in 1960 at the X Soveshchaniye po yadernoy spektroskopii (Tenth Congress on Nuclear Spectroscopy) in Moscow takes place in an iridium nucleus. The three conversion lines with the half life (2.6±0.6) hr and the energies 72.4, 74.3, and 83.2 kev which the authors studied in the 70 - 90-kev spectral range belong to the decay of W^{176} or W^{177}. The first two lines are M- and N-lines of the 74.9-kev transition in Ta. The intensities of the (L_I+L_{II}), L_{III}, M, and N conversion lines of the well-known transition with $h\nu$ = 88.35 kev $(2^+ \rightarrow 0^+)$ in Hf^{176} initially increase with the half life (2.5±0.4) hr and then decrease with the half life 8 hr of Ta^{176}. The half life 2.5 hr of W^{176} obtained by the author differs essentially from the value obtained by G. Wilkinson. There are 2 figures, 7 tables,

✓

Card 2/~~4~~3

held in Kiev from 25 January to 2 February 1962/

SOURCE: AN SSSR, Izv. Seriya fizicheskaya, v.27, no.7, 19[illegible], 91[illegible]-922

TOPIC TAGS: β-spectrometer, aperture

L 23017-66 EWT(m)/EPF(n)-2/EWP(t)/EWA(h) JD/GG/JG

ACC NR: AP6014823 SOURCE CODE: UR/0367/65/001/006/0958/0960

AUTHOR: Avotina, M. P.; Grigor'yev, Ye. P.--Grigoryev, E. P.; Dzhelepov, B. S.; Zolotavin, A. V.

ORG: Leningrad State University (Leningradskiy gosudarstvennyy universitet)

TITLE: Three-hour activity of lutetium

SOURCE: Yadernaya fizika, v. 1, no. 6, 1965, 958-960

TOPIC TAGS: lutetium, isomer, tantalum, proton

ABSTRACT: The presence of the isomer Lu^{176m} among the products of the deep splitting of tantalum by 660 MEV protons is confirmed. The L_{II}-, L_{III}-, M_{II}-, M_{III}-, and N-line intensities of the 88.37 ± 0.03 KEV transition in Hf^{176} were measured. The authors thank K. Ya. Gromov for discussions of the results; N. A. Lebedev for the separation of the lutetium particles; V. Ye. Ter-Nersesyants and G. A. Mironov for assistance with the measurements. The work was carried out at the Joint Institute of Nuclear Research. Orig. art. has: 1 figure and 1 table. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20 / SUBM DATE: 28Dec64 / ORIG REF: 004 / OTH REF: 003

Card 1/1

GRIGOR'YEV, Ye.F.; YEGOROV, Yu.S.; ZOLOTAVIN, A.V.; SERGEYEV, V.O.; SOVTSOV, M.I.

On Mo^{90} decay. Izv. AN SSSR.Ser. fiz. 29 no.5:723-728 My '65. (MIRA 18:5)

L 25763-66 EWT(m) DIAAP JD/JG

ACC NR: AP6016390 SOURCE CODE: UR/0048/65/029/007/1098/1102

57

AUTHOR: Avotina, M. P.; Grigor'yev, Ye. P.; Dzhelepov, B. S.; Zolotavin, A. V.

B

ORG: [illegible] Research Physics Institute, Leningrad State University (Nauchno-
[illegible]

[illegible]

SOURCE: [illegible] tiya. Seriya fizicheskaya, [illegible] 1098-1102

TOPIC TAGS: erbium, holmium, radioactive decay, dysprosium, proton, tantalum, spectrometer, radioisotope, electron

ABSTRACT: This article is a description of an experiment intended for further investigation of the proposed existence of a second excited level of Dy^{160}. In the experiment the K-capture during [illegible] of Ho^{160} was determined according to the intensity of [illegible] of erbium and dysprosium occurring during [illegible]. The Er^{160} was obtained by irradiation of tantalum with [illegible] an energy of 660 Mev and subsequent chemical and chromatic separation of the products of the reaction. The measurements were made on a β-spectrometer with double focusing at an angle of $\pi\sqrt{2}$. The measurements were made 50-70 hours after separation of the erbium fraction from the rare earths; therefore, a state of dynamic equilibrium was set up

2

L 25763-66

ACC NR: AP6016390

0

during the time of the experiment between the various isotopes making up the decay chain. Analysis of the results shows that in spite of the high degree of accuracy in the determination of the intensity of Auger electrons, it is not possible to draw any conclusions regarding the nature of electron capture in Er^{160}. It is stated, however, that the results of the experiment do not contradict the earlier conclusion that it is necessary to introduce a second excited level of Ho^{+} with the characteristics 0^{+} and 1^{+}. It is concluded that the 1^{+} level must be close to the basic state of Ho^{+}, and apparently the decay of Er^{160} takes [illegible] figures, formulas, and tables.

[illegible] OTH REF: [illegible]

Card

LIVSHITS, M.A., inzh.; ZOLOTAVIN, B.N., inzh.; CHUKVINSKIY, M.M., inzh.;
MOISEYEV, G.I., kand. tekhn. nauk

Study of the operation of a once-through type PK-38 boiler in a block with a K-160-130 turbine at rapid pressure changes. Teploenergetika 12 no.7:16-20 Jl '65. (MIRA 18:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy teplotekhnicheskiy institut i Yuzhnoye otdeleniye Gosudarstvennogo tresta po organizatsii i ratsionalizatsii rayonnykh elektrostantsiy i setey.

ZOLOTAVIN, B.N., inzh.; CHUKVINSKIY, M.M., inzh.

Dynamic characteristics of the PK-38 boiler and choice of optimal automatic systems. Elek. sta. 36 no.12:5-9, 81 D '65. (MIRA 18:12)

14(1) SOV/66-59-5-15/35

AUTHORS: Vol'khin, V., Engineer, Zolotavin, V., Doctor of Technical Sciences

TITLE: Refrigeration Air Thermostat

PERIODICAL: Kholodil'naya tekhnika, 1959, Nr 5, pp 54-55 (USSR)

ABSTRACT: The article describes the design and functioning of a refrigeration air thermostat capable of keeping a steady temperature of $-20^{\circ}C$ maintained by a toluene thermoregulator working with an accuracy of $\pm 0.1^{\circ}C$. The apparatus consists of a ribbed serpentine evaporator contained in an insulated box; it is equipped with a fan driven by an outside motor; guide plates fixed to the ribs of the evaporator distribute the air evenly. For the construction of the thermostat Freon compressor BR-RKF-0,9 is made use of. The thermostat is intended for use in laboratories, to investigate chemical processes, for which it is important to maintain constant temperature over a certain period of time. The thermostat is also suitable for purification of water.
There are 2 diagrams and 1 reference.

Card 1/1

137-58-4-8648

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 332 (USSR)

AUTHORS: Zolotavin, L. V., Ogarkova, A. F.

TITLE: Fractional Method of Determining Vanadium by Means of Ferric Thiocyanate (Drobnyy metod otkrytiya vanadiya pri pomoshchi rodanovogo zheleza)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 69, pp 148-150

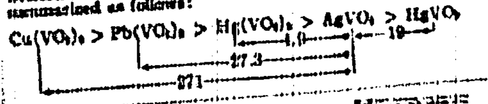
ABSTRACT: To 1 cc of acid solution containing NH_4VO_3 powdered Zn is added to reduce the V^{5+} to V^{2+} (which is partially oxidized by atmospheric O_2 to V^{3+}). 1 or 2 drops of this solution are added to a ferric thiocyanate solution made by mixing 0.5 cc 0.005% ammonium ferric alum and 1-2 drops of 10% NH_4CNS solution. The reduction of Fe^{3+} to Fe^{2+} causes the Fe thiocyanate to become colorless. The sensitivity of the reaction is to within 20-30 γ at a maximum dilution of 1:12,500 . It is inhibited by Ti, W, Mo, and NO_3^-.

P. K.

1. Vanadium--Determination 2. Ferric thiocyanate --Applications

Card 1/1

Study of sparsely soluble metavanadates from the point of view of the law of series. V. L. Zolotavin. *Zhur. Anal. Khim.* 2, 364-72(1947).—The soly. of a no. of metavanadates was qualitatively estd. by adding a satd. NH_4VO_3 soln. (6.47 g. of salt per l. of H_2O) to 1 *N* solns. of metal nitrates. Soly. of the vanadates decreased in the following order: Mg^{++}, Ca^{++} (no pptn.); Ni^{++}, Co^{++}, Mn^{++}, Sr^{++}, Cd^{++}, Zn^{++} (pptn. after standing); Al^{+++}, Ba^{++} (instantaneous pptn.); Cu^{++}, Ag^{+}, Fe^{+++}, Hg^{+}, Hg^{++}, Pb^{++} (instantaneous complete pptn.). The lowest pH at which pptn. of metavanadate is possible was detd. At pH 2.5 the pptd. metavanadates were those of univalent Hg, Fe, Ag, and Cu. Ppts. were washed, dried, and analyzed for their content of cation and V. Pb, Ag, and univalent Hg were clearly metavanadates. The compn. of the bivalent Hg ppt. deviated from theoretical for reasons as yet unknown. The compn. of the Cu ppt. deviated from theoretical, a fact that is attributed to hydrolytic decompn. The greatest deviation was observed in the Fe ppt. and because of that it was studied only qualitatively. Further, the pH was studied at which the ppts. begin to dissolve, at room temp. and at the boiling temp. Only Cu vanadate dissolved to any marked degree. Most stable were $HgVO_3$ and $AgVO_3$. In arranging the metavanadate series use is made of N. A. Tananaev's concept of "reduced soly. product." The reduced soly. product is obtained by raising the abs. value of the soly. product of a given compd. to a power equal to the coeff. of this compd. in a given reaction. Thus, in the reaction of $Ag_2CrO_4 + 2Cl^- \rightarrow 2AgCl + CrO_4^{--}$, $S_{AgCl} = 10^{-10}$; the coeff. of AgCl is 2; therefore the reduced $S = (10^{-10})^2 = 10^{-20}$. The reduced soly. product facilitates detn. of the direction of an equil. reaction, since a reaction always proceeds in the direction of the smaller reduced soly. product. The basic property of the smaller reduced soly. product is that each member [illegible] in its soln. and the soln. of a salt of the next member will form the corresponding ppt. This principle was used in establishing the sequence of metavanadates. In these expts. a metal metavanadate was caused to react with a metal nitrate. Each reaction was studied from left to right and right to left and in each direction the reaction was studied with a deficiency and excess of precipitant, at room and boiling temps. The metavanadates arranged themselves in a series: $Cu(VO_3)_2 > Fe(VO_3)_3 > Hg(VO_3)_2 > [Pb(VO_3)_2, AgVO_3] > HgVO_3$. The formula $Fe(VO_3)_3$ is arbitrary. The soly. of the metavanadates in this series did not differ very much. The correctness of this order was checked by the method of simultaneous pptn. of insol. electrolytes having a common ion. This method consists of adding to a soln. contg. equiv. quantities of both ions studied enough of the precipitant to ppt. one of the ions but insufficient to ppt. all of both ions and then analyzing the soln. After these tests the order appeared as follows: $Cu(VO_3)_2 > Fe(VO_3)_3 > [Hg(VO_3)_2, Pb(VO_3)_2] > AgVO_3 > HgVO_3$. In another series of expts. using the above method the equil. consts. were detd. for reactions between insol. metavanadates. $AgVO_3$ was used in each case, since its sol. product was carefully detd. by Britton and Robinson (*C.A.* 25, 801). The results can be summarized as follows:



$Cu(VO_3)_2 > Pb(VO_3)_2 > Hg(VO_3)_2 > AgVO_3 > HgVO_3$

Finally, by use of the soly. product 6 × 10^{-7} (av. of values given by Britton and Robinson) and the detd. equil. consts., the soly. products of metavanadates were calcd. as follows: $Cu(VO_3)_2$ 10^{-11}, $Pb(VO_3)_2$ 6.8 × 10^{-19}, $Hg_2(VO_3)_2$ 10^{-11}, $AgVO_3$ 5 × 10^{-7}, and $HgVO_3$ 2.6 × 10^{-6}.

M. Hosoh

CA

2

Dissociation constant of metavanadic acid. V. L. Zolotavin (Ural Ind. Inst., Sverdlovsk, U.S.S.R.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 18, 813-16(1948). —Potentiometric measurements of $NaVO_3$ solns., 0.01, 0.025, and 0.05 *M*, gave, resp., pH = 8.09, 8.13, and 8.30. By the relation pH = 0.5 pK + 7 + 0.5 log *c*, the dissocn. const. *K* of the acid, at the 3 concns. given, is 0.7×10^{-4}, 1.4×10^{-4}, and 2.0×10^{-4}, resp. The increase of *K* with increasing concn. is unexplained. By the order of magnitude of *K*, metavanadic acid is stronger than AcOH and close to HCO_2H. N. Thon

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

21

5

Chemical Analysis of Metals Without Taking Drillings of the Material to be Analysed. V. L. Zolotavin. (Elektricheskie Stancii. 1950, Mar., p. 2). [In Russian]. A chemical method of determining the silicon and manganese contents of a steel boiler plate without removing chips or drillings is described.—E.G.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZOLOTAVIN, V. L.

PA 161T98

USSR/Metals - Boilers
Metallurgy

Mar 50

"Nonchip Method of Metal Analysis," V. L. Zolotavin, Cand Chem Sci, 2 pp

"Elek Stants" No 3

Usual method of obtaining sample of metal from boiler is to drill and use resultant chips. Drilling is undesirable in case of high-pressure boiler. Describes procedure for obtaining sample by use of a few drops of nitric acid, and explains how to analyze resultant solution.

[illegible]

161T98

ZOLOTAREV, V. M.

USSR/Mathematics - Stochastics

Card 1/1

Author : Zolotarev, V. M.

Title : A problem from the theory of branching random processes

Periodical : Usp. mat. nauk, 9, No 2(60), 147-156, 1954

Abstract : Treats a process representing a particular case of the so-called branching random processes, which were discussed in detail by B. A. Sevast'yanov in his article "Theory of branching random processes," Usp. mat. nauk, 6, No 6, 47-99, 1951. The described process is that of a set of particles of one type varying randomly with the course of time according to the following law: in an interval of time $(t, t+dt)$ each of the particles independently of the others decays into k particles with probability $p_k dt + o(dt)$, disappears with probability $p_0 dt+o(dt)$, and does not undergo change with probability $1+p_1 dt+o(dt)$.

Submitted : October 15, 1953

ZoloTAVIN, V. L.

USSR/Chemistry - Synthesis

Submitted : [illegible]

[illegible]

Zolotrvin, V.L.

Submitted : [illegible]

ZOLOTAVIN, V.L.; KALUGINA, N.N.

Study of vanadyl complex compounds. Part 2. Citrate complexes. Zhur.ob.khim. 26 no.5:1355-1362 My '56. (MIRA 9:9)

1.Ural'skiy politekhnicheskiy institut imeni S.M.Kirova. (Vanadium acetate) (Compounds, Complex)

ZOLOTAVIN, V. L.

0-1

USSR/Analytical Chemistry. General Topics.

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 19466.

Author : L.P. Zharova, V.L. Zolotavin.

Inst : Ural Polytechnical Institute.

Title : New Luminescent Acid-Basic Indicator.

Orig Pub : Tr. Ural'skogo Politekhn. In-ta, 1956, No 57, 76-78.

Abstract : The solution of chlorine hydrate 2-methoxy-6-chloro-7-amino-9 of β-diethylamino-α-methylbutylaminoacridine (I) (7-aminoatebrin) in alcohol produces a bright green fluorescence under the illumination with ultra-violet rays; addition of I to an acid solution causes orange fluorescence that turns into a green one when the solution is alkalized. At pH < 6, 7, 8 and 8 > orange, yellow, green and green fluorescence takes place respectively (the transition interval corresponds to pH 6 - 8). It was established by titration of 0.1 n. H_2SO_4 with alkaline solution that the titration index (pT) of I was somewhat greater than that of bromothymol blue (pT = 6.8) and equal to 7.0. The described

Card 1/2

ZOLOTAVIN V. L.

137-58-1-2159 D

Translations from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 294 (USSR)

AUTHOR: Zolot~~avin, V.L.~~

TITLE: An Investigation in the Field of the Analytical Chemistry of Vanadium (Issledovaniya v oblasti analiticheskoy khimii vanadiya)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Doctor of Chemical Sciences, presented to the Ural'skiy fil. AN SSSR (Ural Branch, USSR Academy of Sciences), Sverdlovsk, 1957.

ASSOCIATION: Ural'skiy fil. AN SSSR (Ural Branch, USSR Academy of Sciences), Sverdlovsk

Vanadium—Chemistry—Bibliography

Card 1/1

ZOLOTAVIN, V.L.

5(2) PHASE I BOOK EXPLOITATION SOV/1727

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth
Elements; Extraction, Analysis and Application) Moscow, Izd-vo AN SSSR,
1958. 331 p. 2,200 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Editorial Board: I. P. Alimarin,
Corresponding Member, USSR Academy of Sciences, I. N. Zaozerskiy, Doctor
of Chemical Sciences, E. V. Koglyarov, Candidate of Technical Sciences,
V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of
Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences;
Eds. of Publishing House: D. N. Trifonov and T. G. Levi; Tech. Ed.: S. G.
Markovich.

PURPOSE: This book is intended for scientists, chemists, teachers and students
of higher educational institutions, chemical and industrial engineers, and
other persons concerned with the extraction, separation, use, or study of
rare earth elements.

COVERAGE: This collection contains reports presented at the June 1956 Conference
on Rare Earth Elements at the Institute of Geochemistry and Analytical Chem-
istry imeni V. I. Vernadskiy of the Academy of Sciences USSR. The articles
treat chemical methods of separating rare earth mixtures, methods of processing
rare earth ores, ion exchange chromatography, chemical analysis, and some in-
dustrial applications of rare earths. Aside from contributing authors, the
editors mention the following Soviet scientists, who are studying rare earth
elements, rare earth deposits, extraction methods, and the preparation of oxides
and salts: Martynov, Mel'nikov, Khrushchev, Melikov, Pisarzhevskiy, Chernyak,
Tanatar, Belousov, Zhukov and especially, N. A. Orlov, who first obtained the
majority of rare earth elements in the pure state, separated many complex
molecular compounds of these elements, and determined their specific properties.
References are given at the end of each article.

TABLE OF CONTENTS:

Card 7/11

(7)

Zolotavin, V.L.

5(2) PHASE I BOOK EXPLOITATION SOV/2402

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Production, Analysis, and Use) Moscow, Izd-vo AN SSSR, 1959. 331 p. 5,000 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Eds. of Publishing House: D. N. Trifonov and T.G. Levi; Tech. Ed.: S. G. Markovich; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. N. Zaozerskiy, Doctor of Chemical Sciences, R. V. Kotlyarov, Candidate of Chemical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences.

PURPOSE: This book is intended for chemists in general and for geochemists and analytical chemists in particular.

COVERAGE: This collection of articles consists of reports presented at the Rare Earth Elements Symposium held in June 1956 at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy. The book may be divided into three sections: the characteristics, uses and production of rare earth elements (REE); the methods of analyzing REE; and the application of individual rare earth elements and REE mixtures in the glass and metallurgical industries, and their use as catalysts. Considerable space is devoted to the application of ion-exchange chromatography in the production of pure forms of all rare earth elements. The combinations of this method with other methods in separating REE on an industrial scale are discussed by D. I. Ryabchikov, Yu. S. Sklyarenko, and M. M. Senyavin. Chemical methods of separating REE compounds are discussed by I. V. Tananayev (who is said to be the first in the USSR to develop methods of processing REE), [illegible] V. Kotlyarov, S. F. Andreyeva, A. V. Nikolayev, and G. F. Aleksandrov. Quantitative X-ray spectral analytical methods are described by E. Ye. Vaynshteyn, and chemical methods of analysis by I. P. Alimarin and F. I. Pavlotskaya. The determination of REE impurities in pure products and atomic materials are discussed at length in three articles by A. N. Zaydel' and his associates. All articles are accompanied by photographs, diagrams, tables, and bibliographic references.

S/081/61/000/021/026/094
B101/B147

AUTHORS: Ponomareva, L. K., Zolotavin, V. L.

TITLE: Determination of cesium^{137} in open waters

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 103, abstract 21D56 (Tr. Ural'skogo otd. Mosk. o-va ispyt. prirody, no. 2, 1959, 201 - 205)

TEXT: The authors studied the possibility of Cs concentration in natural waters by coprecipitation with $KPb[Co(NO_2)_6]$ or $K_2Ag[Co(NO_2)_6]$. They observed a 96.6% Cs extraction. In the presence of gelatin, the precipitates coagulate within 10 - 15 min. 4 milliliters (ml) of a KNO_3 solution (200 mg K), 1 ml of a $CsNO_3$ solution (25 mg Cs), 10 ml of 70% CH_3COOH, 10 ml of a $Pb(NO_3)_2$ solution (246 mg $Pb(NO_3)_2$ in 1 ml), 50 ml of a solution of $Na_3[Co(NO_2)_6]$ (323 mg of salt in 1 ml), and 3 - 5 ml of a 1% gelatin solution are added to 1 liter of water. Mixing is performed for 5 min; the solution is decanted after 10 - 15 min. 10 ml of concentrated

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Determination of cesium^{137}...

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HCl is added to the precipitate under heating. The resulting precipitate of $Na_3[Co(NO_2)_6]$ is removed by centrifuging, the solution is cooled with water, then it is mixed with 10 ml of concentrated HCl and 8 ml of a 50% solution of cesium chlorostannate. The precipitate is filtered through a blue-band paper filter, washed with ethanol, and the activity is measured. To determine the complete Cs separation, the filter is moistened in a platinum bowl with 2 - 5 ml of water; 600 mg of crystalline $H_2C_2O_4$ is added; the substance is evaporated to dryness, calcined at 500°C for a few seconds; then, the Cs_2CO_3 is extracted with hot water, and titration is performed with 0.05 N HCl and methyl orange as indicator. The analysis takes 1 - 1.5 hr. Sensitivity of the method 10-10 curies/liter, maximum error ± 8%. The determination of Cs^{137} is not disturbed by Sr^{90} (Yt^{90}), Ce^{144} (Pr^{144}), and Ru^{106} (Rh^{106}). [Abstracter's note: Complete translation.]

Card 2/2

PONOMAREVA, L.K.; ZOLOTAVIN, V.L.

Determination of radioactive strontium in waters of open basins.
Radiokhimiia 1 no.2:208-211 '59. (MIRA 12:8)
(Strontium--Analysis) (Water--Analysis)

PONOMAREVA, L.K.; ZOLOTAVIN, V.L.

Desorption of radiostrontium and radiocesium from suspended particles in open reservoir waters. Radiokhimiia 1 no.5:619-621 '59. (MIRA 13:2)

(Strontium--Isotopes) (Cesium--Isotopes)

22463

21.8100

S/186/60/002/001/017/022
A057/A129

AUTHORS: Zolotavin, V.L.; Ponomareva, L.K.

TITLE: Determination of radioactive strontium in the water of open water tanks

PERIODICAL: Radiokhimiya, v. 2, no. 1, 1960, 104 - 106

TEXT: A new method for the determination of small amounts of strontium-90 and strontium-89 in water with sodium rhodizonate is described. The method is based on observations by H. Weiss and W. Shipman [Ref. 2: Anal. Chem., 29, 12, 1764 (1957)] that strontium forms difficultly soluble compounds with rhodizonate salts and can thus be separated from calcium in determinations of radioactive strontium in water. The activity was measured in the present experiments with an СИ-2Б (SI-2B) end-window counter, precipitating Sr^{90} (with 30 mg carrier) in the form of strontium carbonate on a special funnel (suggested for activity measurements of precipitates by V.I. Spitsyn et al. [Ref. 4: Metody raboty s primeneniyem radioaktivnykh indikatorov (preparative methods using radioactive indicators) 160, Izd. AN SSSR (Ed. AS USSR), M., (1955)]. Strontium-90 was concentrated by co-precipitation with $SrCO_3$ and $CaCO_3$ [Ref. 1: Radiokhimiya, 1, 2, 208 (1959)].

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Determination of radioactive strontium in.... S/186/60/002/001/017/022
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After dissolving the precipitate in diluted HCl the solution was neutralized and strontium was precipitated with sodium rhodizonate keeping the pH at 6 - 7. It must be considered that Na-rhodizonate solutions are stable only for 2 - 3 hours. After centrifuging the separated strontium rhodizonate precipitate is dissolved in concentrated HCl and iron is precipitated twice in the solution to eliminate other fission products by co-precipitation with iron hydroxide. Finally Sr^{90} is precipitated as carbonate on the special funnel and the activity is determined. The method was tested on three water samples taken from open water tanks (see Table). The duration of the method is 1.5 - 2 hours, the maximum error is ± 10% and the sensitivity $5 \cdot 10^{-11}$ curie/l, i.e., one order of magnitude smaller than the amount allowed. Qualitative experiments demonstrated that Cs^{137}, Ru^{106}, Ce^{144} and Zr^{95} do not interfere with the determination. There are: 1 table and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc.

X

SUBMITTED: August 12, 1959

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22463

Determination of radioactive strontium in....

S/186/60/002/001/017/022
A057/A129

Table: Determination of strontium-90 in natural water. ① source of the water; ② introduced Sr^{90} in curie/l; ③ obtained Sr^{90}; ④ cpm; ⑤ curie/l; ⑥ relative error in %; ⑦ extraction of the isotope carrier in %.

① Источник воды	② Введено Sr^{90} (в кюри/л)	③ Получено Sr^{90}		⑥ Относительная ошибка (в %)	⑦ Извлечение изотопного носителя (в %)
		④ (в имп./мин.)	⑤ (в кюри/л)		
1	$8.4 \cdot 10^{-10}$	992	$8.7 \cdot 10^{-10}$	+ 3.6	76.5
	$8.4 \cdot 10^{-10}$	960	$8.3 \cdot 10^{-10}$	− 1.2	78.2
	$2.8 \cdot 10^{-10}$	325	$2.8 \cdot 10^{-10}$	0	73.2
	$2.8 \cdot 10^{-10}$	360	$3.1 \cdot 10^{-10}$	+10.7	75.8
	$8.4 \cdot 10^{-11}$	105	$9.0 \cdot 10^{-11}$	+ 7.1	75.9
	$8.4 \cdot 10^{-11}$	95	$7.7 \cdot 10^{-11}$	− 8.3	77.1
2	$8.4 \cdot 10^{-10}$	999	$8.7 \cdot 10^{-10}$	+ 3.6	71.3
	$8.4 \cdot 10^{-10}$	950	$8.0 \cdot 10^{-10}$	− 4.8	83.0
	$2.8 \cdot 10^{-10}$	333	$2.9 \cdot 10^{-10}$	+ 3.5	77.8
	$2.8 \cdot 10^{-10}$	304	$2.6 \cdot 10^{-10}$	− 7.2	75.3
	$4.2 \cdot 10^{-11}$	52	$4.5 \cdot 10^{-11}$	+ 7.0	73.0
	$4.2 \cdot 10^{-11}$	53	$4.5 \cdot 10^{-11}$	+ 7.1	75.1
3	$8.4 \cdot 10^{-10}$	952	$8.2 \cdot 10^{-10}$	− 2.4	79.0
	$8.4 \cdot 10^{-10}$	1060	$9.1 \cdot 10^{-10}$	+ 8.3	75.2
	$2.8 \cdot 10^{-10}$	332	$2.9 \cdot 10^{-10}$	+ 3.6	78.2
	$2.8 \cdot 10^{-10}$	343	$3.0 \cdot 10^{-10}$	+ 7.2	78.5

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24095

S/186/60/002/006/020/026
A051/A129

26.2541

AUTHORS: Bagretsov, V. F.; Nikolayev, V. M.; Zolotavin, V. L.; Kostina, N.P.; Skorova, L. V.

TITLE: The sorption of microquantities of strontium and cesium on biotite

PERIODICAL: Radiokhimiya, v. 2, no. 6, 1960 734 - 738

TEXT: In a study of the sorption processes of strontium-90 and cesium-134 microquantities on biotite in the presence of macroquantities of alkali-earth metal and magnesium ions, the exchange equivalent and the applicability of the law of acting masses to the investigated system was established. The authors point out that the quantitative laws of ion exchange are expressed through the exchange isotherm. In deriving an equation for the ion exchange isotherm the activity coefficient of the microcomponent ion must be taken into consideration. The distribution coefficient concept (Ref. 12: S. Yu. Yelovich, ZhOKh, 3, 144, 660, 1933) is used. In case of sorption exchange of the microquantities of the element on the sorbent saturated by the macrocomponent, the ratio of the activity coefficients in the solid phase is a constant value, since the composition

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The sorption of microquantities of S/186/60/002/006/020/026
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of the solid solution changes very little, although the ionic strength of the solution can change here. Thus, the exchange constants are calculated for the investigated systems by determining B_0 from experimental data. Biotite of the following composition was used in the experiments: SiO_2-35.74, Al_2O_3-13.92, Fe_2O_3-5.83, FeO-19.67, MnO-1.48, TiO_2-3.89, BaO-0.18, CaO-0.74, MgO-5.93, $K_2O + Rb_2O + Cs_2O$ - 4.03, Na_2O - 3.38. The activity coefficient of the ions were taken from literature data (Ref. 13: M. Kh. Karapet'yants, Khimicheskaya termodinamika. (Chemical thermodynamics). Goskhimizdat, M.-L., 1953). The given isotherms of distribution show that the experimental results coincide favorably with the calculations, i. e., the interaction of cesium^{134} and strontium^{90} with biotite follows the law of acting masses. The value of G was found to be $1.013 \cdot 10^{-5}$ mole Me^{2+} to 1 gram of sorbent. An anomalous bond strength was noted between the cesium ions and the sorbent. Finally, the following series of cation replacement on the biotite was derived from the calculated values of the exchange constants: $Cs^+ > Ba^{2+} > Sr^{2+} > Ca^{2+} > Mg^{2+}$. There are 2 tables, 2 figures and 16 references: 8 Soviet-bloc and 8 non-Soviet-bloc. The references to the four most recent English language publications read as follows: A. P. Vanselow, J. Am.'

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The sorption of microquantities of ....

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Chem. Soc., 54, 1307, 1932; A. P. Vanselow, Soil. Sci. 33, 95, 1932; J. Barchad, J. Am. Min., 33, 655, 1948; J. Barchad, J. Am. Min., 34, 675, 1949.

SUBMITTED: January 18, 1960.

X

Card 3/3

ZOLOTAVIN, V.L.; VOL'KHIN, V.V.; REZVUSHKIN, V.V.

Effect of freezing on the properties of metallic hydroxide coagulates. Part 1: Effect of freezing and thawing on the properties of iron hydroxide gel. Koll.zhur. 22 no.3:305-313 My-Je '60. (MIRA 13:7)

1. Ural'skiy politekhnicheskiy institut im. S.M.Kirova, Sverdlovsk.

(Iron hydroxide)

ZOLOTAVIN, V.L., prof.; RESHETNIKOVA, Ye.A.; PILIPENKO, A.T.(Kiyev); SHCHERBOV, D.P. (Alma-Ata); POPOV, M.A.; NAZARCHUK, T.N.

Supplying laboratories with chemical reagents. Zav.lab. 26 no.8:1034-1036 '60. (MIRA 13:10)

1. Ural'skiy politekhnicheskiy institut, Sverdlovsk (for Reshetnikova). 2. Rukovoditel' metodicheskoy gruppy TSentral'noy laboratorii Novosibirskogo geologicheskogo upravleniya (for Popov). 3. Zaveduyushchiy laboratoriyey khimicheskogo i fazovogo analiza Instituta metallokeramiki i spetsial'nykh splavov AN USSR (for Nazarchuk).

(Chemical laboratories) (Chemical tests and reagents)

S/080/60/033/009/017/021
A003/A001

AUTHORS: Zolotavin, V.L., Vol'khim, V.V.

TITLE: On the Effect of the Cooling Rate on the Properties of Hydrated Metal Oxides During Their Freezing

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol. 33, No. 9, pp. 2141-2143

TEXT: The freezing of hydrated metal oxides leads to the formation of coarsely-grained precipitates with small volume and good filtering properties (Refs. 1-4). It was shown earlier (Refs. 5-7) that the cooling rate in this process plays a role only at deep temperatures. The authors found, however, that this effect can be observed already at -15°C if dissolved substances are present. The investigation of a coagulum of iron hydroxide showed that cooling in a liquid with intensive heat exchange yields a precipitate of larger volume than under conditions of less intensive heat exchange. A coagulum of manganese dioxide was studied in the presence of urea. The solidification of the liquid in the coagulum reduces the volume of the precipitate because the dehydration of the oxide particles is promoted and compressing forces arise. The best effect is obtained by cooling to a temperature below the eutectic point and with a

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A003/A001

On the Effect of the Cooling Rate on the Properties of Hydrated Metal Oxides During Their Freezing

cooling rate as slow as possible. In the absence of dissolved substances the effect of the cooling rate is observed only at very low temperatures. There are 2 figures and 8 references: 3 Soviet, 2 German, 2 French, 2 English.

SUBMITTED: February 15, 1960

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S/137/62/000/001/222/237
A154/A101

AUTHOR: Zolotavin, V. L.

TITLE: The present state of the analytical chemistry of vanadium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 8, abstract 1K48 (V sb. "Metody opredeleniya i analiza redk. elementov". Moscow, AN SSSR, 1961, 462-486)

TEXT: This review contains a description of methods of determining and separating V: determination in natural and industrial objects, particularly in cast-iron and steel, spectral methods of determination, determination of admixtures in metallic V, volumetric determination of small amounts of V, photometric determination of V by the ferrodipyridyl method and photometric determination in steel with H_2O_2. Determination of V in Fe-V, Fe-Mo, Fe-Ti and metallic Ti is described. There are 102 references.

B. Melent'yev

[Abstracter's note: Complete translation]

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ZOLOTAVIN, V.L.

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PHASE I BOOK EXPLOITATION SOV/5777

Vinogradov, A. P., Academician, and D. I. Ryabchikov, Doctor of Chemical Sciences, Professor, Resp. Eds.

Metody opredeleniya i analiza redkikh elementov (Methods for the Detection and Analysis of Rare Elements) Moscow, Izd-vo AN SSSR, 1961. 667 p. Errata slip inserted. 6000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo.

Ed. of Publishing House: M. P. Volynets; Tech. Ed.: O. Gus'kova.

PURPOSE: This book is intended for analytical chemists and for students of analytical chemistry.

COVERAGE: The handbook was published in accordance with a decision of the Vsesoyuznoye soveshchaniye po analizu redkikh elementov (All-Union Conference on the Analysis of Rare Elements) called

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together by the Gosudarstvennyy nauchno-tekhnicheskiy komitet Soveta Ministrov SSSR (State Scientific and Technical Committee of the Council of Ministers of the USSR) and the Academy of Sciences USSR in December, 1959. The material is arranged in accordance with the group position of elements in the periodic system, and each section is prefaced by an article discussing the analytical methods most used in the Soviet and non-Soviet countries. Each section deals with the physical, physicochemical, and chemical methods for the analysis of raw materials, semi-products, and pure metals, and is accompanied by an extensive bibliography listing works published in the field in recent years. The following are mentioned for their help in preparing the book for publication: I. P. Alimarin, G. N. Bilimovich, A. I. Busev, E. Ye. Vaynshteyn, M. [illegible]. Volynets, V. G. Goryushina, A. M. Dymov, S. V. Yelinson, O. Ye. Zvyagintsev, G. M. Kolosova, Ye. K. Korchemnaya, V. I. Lebedev, G. A. Malofeyeva, B. N. Melent'yev, V. A. Nazarenko, I. I. Nazarenko, T. V. Petrova, N. S. Poluektov, A. I. Ponomarev, V. A. Ryabukhin, N. S. Stroganova, and Yu. A. Chernikhov.

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AVAILABLE: Library of Congress

JA/rsm/ec
12-1-61

Card 5/5

33186

S/186/61/003/006/005/010
E051/E135

21.4200

AUTHORS: Vol'khin, V.V., and Zolotavin, V.L.

TITLE: The use of freezing for the separation of radioactive isotopes from solution

PERIODICAL: Radiokhimiya, v.3, no.6, 1961, 719-723

TEXT: In order to obtain radioactive isotope preparations with a high specific activity, it is necessary to use as little isotopic carrier as possible in the separation. When certain elements are precipitated from solution as hydroxides in the presence of only small amounts of carrier, colloidal solutions are formed and only low yields of precipitate can be recovered, even with centrifuging. If the colloidal solutions are frozen and after a time thawed, coagulation of the colloidal particles takes place and much higher yields of precipitated hydroxide can be obtained. To test the effect of freezing on radiocolloidal hydroxides, solution of chromium nitrate (10^{-5} and 10^{-6} M), ferric chloride (10^{-5} M) and niobium and zirconium sulphate (10^{-5}, 10^{-6} and 10^{-11} M), containing respectively

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The use of freezing for the ... S/186/61/003/006/005/010
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^{51}Cr, ^{59}Fe, ^{95}Nb and ^{95}Zr at a specific activity of ~10 curies/ℓ were made up. The solutions were slowly cooled to -1, -5 or -10 °C, after being brought to pH 6.5-7.0 with alkali. The solutions were kept at these temperatures for eight hours, then allowed to thaw and stand at room temperature for another twelve hours. Similar solutions were allowed to stand at room temperature for the whole twenty hours to act as comparisons. 1 mℓ aliquots of the supernatent liquid from each trial were evaporated to dryness under infrared lamps and their radioactivity compared with standard sources prepared from the original solutions. The activity remaining in solution amounted to 2.7% of the total added at 10^{-5} M concentrations of all four elements for solutions cooled to -5 °C. At 10^{-6} M, 15-35% of the activity remained in solution and at 10^{-11} M, 30-45%. Solutions frozen to -1 and -10 °C gave slightly worse results, but in solutions which had been kept at room temperature some 60% of the activity remained unprecipitated. The yield of precipitate was thus improved 10-20-fold at 10^{-5} M, 3-5-fold at 10^{-6} M and 2-2.5-fold at 10^{-11} M concentration. Moderate concentrations (0.1 M) of

X

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The use of freezing for the ... S/186/61/003/006/005/010
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neutral salts had only a slight effect on the yield of precipitate. Still higher yields of precipitated hydroxides could be obtained by centrifuging the solutions after they had been subjected to the freezing process.
I.Ye. Starik, V.M. Vdovenko, L.N. Lazarev and Ya.S. Khvorostin are mentioned in the article.
There are 4 tables and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: May 24, 1960

Card 3/3

X

ZOLOTAVIN, V.L.; BEZRUKOV, I. Ya.; SANNIKOV, Yu. I.

State of hexavalent uranium and pentavalent vanadium in water-ammonia solutions. Zhur.neorg. khim. 6 no.3:581-586 Mr '61. (MIRA 14:3)

1. Ural'skiy politekhnicheskiy institut imeni S. M. Kirova.
(Uranium compounds)
(Vanadium compounds)

VOL'KHIN, V.V.; ZOLOTAVIN, V.L.; TIPIKIN, S.A.

Effect of freezing on the properties of metal hydroxide coagulates. Part 4: Manganese dioxide coagulate [with summary in English]. Koll.zhur. 23 no.4:404-407 Jl-Ag '61. (MIRA 14:8)

1. Ural'skiy politekhnicheskiy institut im. S.M. Kirova, Sverdlovsk.
(Manganese oxide) (Particle size determination)

24002
S/080/61/034/006/004/020
D247/D305

21,3200
11,1325

AUTHORS: Vol'khim, V.V., and Zolotavin, V.L.

TITLE: The effect of freezing on the sorption properties of ferric hydroxide and manganese dioxide

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 6, 1961, 1218 - 1225

TEXT: Use of coagulated metal hydroxides in separating radioactive isotopes has produced many difficulties which are attributed to the form in which such compounds are obtained. They are bulky, gelatinous, contain up to 99 % moisture and are difficult to filter. Before recommending freezing as a method for easier separation of such hydroxides, it was necessary to investigate the effect of freezing on the degree of separation of ^{45}Ca, ^{89}Sr, ^{95}Zr, ^{95}-Nb and ^{144}Ce isotopes from solutions by sorption with ferric hydroxide and ~~magnesium~~ dioxide. Freezing of coagulated ferric hydroxide

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The effect of freezing ...

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obtained after purification of the radioactive effluent was first carried out by S.A. Voznesenskiy, G.A. Sereda, P.F. Dolgikh and L.I. Baskov (Ref. 13: Doklady sovetskikh uchenykh na vtoroy mezhdunarodnoy konferentsii po mirnomu ispol'zovaniyu atomnoy energii (Russian Contributions at the Second International Conference on the Peaceful Uses of Atomic Energy), 4, 189-194, M. 1959). The experiments consisted of ascertaining the effects of freezing on the distribution of the radioactive isotopes between the solvent and the coagulated solids and determining the sorption capacity of the two compounds. A series of tests was carried out to determine the sorption of radioactive isotopes by Fe $(OH)_3$ and MnO_2 in alkaline and acid solutions, both before and after freezing. The resulting pH - sorption curves were found to coincide which showed that freezing did not cause desorption of cations. The solutions used in these experiments all contained coagulating agents and the sorbents were in a fully coagulated form. Behavior of colloidal solutions was also studied using microquantities of ^{89}Sr. It was shown that in both alkaline and acid media freezing tends to suppress pepti-

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zation, the strongest effect occurring at pH exceeding 6 - 7. Further experiments involved investigations of the so-called "additional sorption" of isotopes during freezing, which took place in both acid and alkaline solutions. This occurred as a result of concentration of the sorbent and isotopes among the ice crystals of the frozen out solvent. Since the particles of $Fe(OH)_3$ and MnO_2 conglomerate on freezing, small amounts of radioactive isotopes were trapped within and remained occluded after thawing. The ease with which such particles could be liberated just by stirring indicated the absence of any mechanical forces. The stability of sorption properties of $Fe(OH)_3$ and MnO_2 subjected to freezing has also been confirmed by comparing them before and after freezing. For this purpose isotherms of strontium sorption on $Fe(OH)_3$ and MnO_2 at 22 ± 1°C were plotted. It is clear from the results that the maximum sorption capacity of $Fe(OH)_3$ and MnO_2 is numerically equal to the cotangent of the angle between the plotted line and the abscissa and is the same for treated and untreated sorbents. It may be said, therefore, that the chemical nature of the sorbtion

24002

The effect of freezing ... S/080/61/054/006/004/020
D247/D305

centers of $Fe(OH)_3$ and MnO_2 remains constant when subjected to freezing at temperatures not below -15°C. There are 6 figures, 1 table and 14 references: 7 Soviet-bloc and 7 non-Soviet-bloc. The references to the English-language publications read as follows: J.D. Kurbatov, J.L. Kulp, E. Mack, J. Am. Chem. Soc., 67, 1923, 1945; M.H. Kurbatov, G.B. Wood, J. Phys. Chem., 56, 698, 1952; R.N. Ghosh, S.N. Chakravary, M.L. Kundu, J. Indian Chem. Soc., 28, 6, 319-322, 1951.

SUBMITTED: September 14, 1960

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S/032/62/028/002/005/037
B101/B110

AUTHORS: Zolotavin, V. L., and Levashova, L. B.

TITLE: Vanadium determination in various valency states

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 2, 1962, 161 - 164

TEXT: Methods are proposed for determining V^{2+} and V^{3+} in mixed vanadium oxides or vanadium glasses. (1) At least 100 mg of the oxide is dissolved in a known volume of an exact 0.1 N solution of $K_2Cr_2O_7$. The amount of $K_2Cr_2O_7$ must be at least double the stoichiometric ratio, acidity at least 4 N H_2SO_4 for oxides containing $V^{3+} + V^{4+}$, and at least 6 N H_2SO_4 for $V^{2+} + V^{3+}$. In an aliquot part of the solution, containing at least one-fifth of the weighed portion, the excess chromate is titrated with 0.1 N Mohr's salt. The total V content is determined by reducing, in another aliquot part of the solution, the chromate by means of the amount of Mohr's salt found during the first analysis, by oxidizing the vanadium by means of $KMnO_4$, and reducing the excess permanganate by sodium nitrite

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B101/B110

Vanadium determination in...

and urea. The vanadium, now present as V^{5+}, is titrated with Mohr's salt (phenyl anthranilic acid as indicator, acidity 6 - 9 N H_2SO_4). (2A) The weighed portion (≥ 100 mg) is dissolved by heating with four times the excess ammonium ferric alum (2 N H_2SO_4 for $V^{3+} + V^{4+}$, 6 N for $V^{2+} + V^{3+}$). An inert atmosphere is produced in the vessel previous to heating by adding bicarbonate. In an aliquot part (≥ 1/5 of the weighed portion), Fe^{2+} is titrated with $K_2Cr_2O_7$ or ammonium vanadate. Another aliquot part is oxidized with saturated $KMnO_4$ solution, the excess permanganate reduced with sodium nitrite and urea, and the total V content is determined by titration with Mohr's salt (acidity 6 - 9 N H_2SO_4, indicator phenyl anthranilic acid). (2B) The weighed portion (≥ 25 mg) is heated in CO_2 atmosphere with 4-5-fold excess of alum (acidity 6 - 9 N H_2SO_4), and Fe^{2+} is titrated with 0.1 N $KMnO_4$ (phenyl anthranilic acid as indicator). By dropwise addition of saturated $KMnO_4$ solution, the vanadium is oxidized to V^{5+}, the

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Vanadium determination in...

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B101/B110

excess permanganate is reduced after cooling by nitrite and urea, and the total vanadium content is determined with Mohr's salt (indicator phenyl anthranilic acid). The analytical results agreed with the X-ray analyses of $VO_{1.127}$ - $VO_{1.86}$. There are 2 tables and 7 references: 4 Soviet and 3 non-Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

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S/0089/64/016/001/0048/0051

ACCESSION NR: AP4012265

AUTHOR: Pushkarev, V. V.; Yegorov, Yu. V.; Tkachenko, Ye. V.; Zolotavin, V. L.

TITLE: The clearing and purification of radioactive sewage by the flotation method

SOURCE: Atomnaya energiya, v. 16, no. 1, 1964, 48-51

TOPIC TAGS: ferrous hydroxide, aluminum hydroxide, flotation method, ion exchange, titration method, nephelometric method, residue, settling method, solvation

ABSTRACT: The flotation of ferrous and aluminum hydroxides to purify radioactive sewage water containing surface-active, detergent, and complex-forming substances has been investigated. The moisture of the floated hydroxides and the effective elimination of the hardsalt [sylvite], detergents, and certain radioactive elements from the solution were studied. Elimination of radioactivity from the drain water was determined by the extraction of Sr^{90}, Y^{90}, and Nb^{95}. The temperature maintained in the course of all experiments was 16—20C. Preliminary tests revealed sulfate soap to be a satisfactory flotation agent for the selected hydroxides. Comparison of

ACCESSION NR: AP4012265

the flotation and settling methods of water purification showed that the residue left by the flotation method is smaller in volume and contains less moisture than the residue obtained by the settling method under similar conditions. Also, the flotation method took much less time than the settling method in clearing the sewage water. Some industrial enterprises use ferrous salts as well as aluminum salts, or a mixture of both, as a coagulant for the purification of their waste waters. It was found that in a low-alkaline medium aluminum hydroxide can clarify a solution by either the settling or the flotation method. Orig. art. has: 3 tables.

ASSOCIATION: none

SUBMITTED: 28Jan63 ATD PRESS: 3045 ENCL: 00

SUB CODE: NP NO REF SOV: 007 OTHER: 003

Card 2/2

MUZGIN, V.N.; ZOLOTAVIN, V.L.; GAVRILOV, F.F.; BALAYEV, V.N.

Spectral analysis of vanadium by the vaporization method. Zav. lab. 30 no.6:697-699 '64 (MIRA 17:8)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

YATSENKO, A.P.; KURUMCHIN, Kh.A.; ZOLOTAVIN, V.L.

Obtaining pure vanadium pentoxide during the hydrolysis of industrial solutions. TSvet. met. 37 no.10:54-58 O '64. (MIRA 18:7)

SANNIKOV, Yu.I.; ZOLOTAVIN, V.L.; KRYLOV, Ye.I.

Study of iron (III) vanadates. Zhur. neorg. khim. 10 no.5: 1075-1081 My '65. (MIRA 18:6)

ZOLOTAVIN, V.L.; BUKREYEV, Yu.F.; TOLSTOV, L.K.; BEZRUKOV, I.Ya.

Photometric determination of sodium in pure vanadium pentoxide.
Zhur. prikl. spektr. 2 no.5:461-462 My '65. (MIRA 18:7)

ZOLOTAVIN, V.L., prof., doktor khimicheskikh nauk

Studies in the field of the analytical chemistry of vanadium. Sbor. nauch. trud. Ural. politekh. inst. no.122:111-119 '61.
(MIRA 17:12)

MUZGIN, V.N.; ZOLOTAVIN, V.L.; GAVRILOV, F.F.

Chemical-spectral method for determining impurities in vanadium.
Zhur. anal. khim. 19 no. 1:111-116 '64. (MIRA 17:5)

1. Ural'skiy politekhnicheskiy institut, Sverdlovsk.

PUSHKAREV, V.V.; YEGOROV, Yu.V.; TKACHENKO, Ye.V.; ZOLOTAVIN, V.L.

Use of the flotation method in clearing and purifying radioactive waste waters. Atom. energ. 16 no.1:48-51 Ja '64. (MIRA 17:2)

MAZALOV, S.A.; GERASIMOV, S.I.; SOKOLOV, S.V.; ZOLOTAVIN, V.L.

Methods of production and properties of organofluorine compounds. Part 1: Electrochemical method of production of perfluorinated tertiary heterocyclic amines. Zhur. ob. khim. 35 no.3:485-489 Mr '65. (MIRA 18:4)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova.

ZOLOTAVIN, V.L.; KORZNYAKOVA, E.G.

Study of the coprecipitation of vanadyl ions with iron hydroxide.
Trudy Ural.politekh.inst.no.121:9-17 '62.

(MIRA 16:5)

(Vanadium compounds) (Iron hydroxides)
(Precipitation (Chemistry))

ZOLOTAVIN, V.L.; VOL'KHIN, V.V.

Effect of freezing on certain properties of a manganese dioxide coagulate. Trudy Ural.politekh.inst.no.121:24-29 '62.

(MIRA 16:5)

(Manganese oxides) (Frost) (Coagulation)

SANNIKOV, Yu.I.; ZOLOTAVIN, V.L.

System $Fe(ClO_4)_3 - Na_5HV_{10}O_{28} - H_2O$. Zhur.neorg.khim. 8 no.2:
418-422 F '63. (MIRA 16:5)
(Iron perchlorates) (Sodium vanadates)

SANNIKOV, Yu.I.; ZOLOTAVIN, V.L.

Study of the system $Fe(ClO_4)_3 - NaVO_3 - H_2O$. Zhur.neorg.khim. 8 no.2:428-433 F '63. (MIRA 16:5)
(Iron perchlorates) (Sodium vanadates)

SANNIKOV, Yu.I.; ZOLOTAVIN, V.L.; BEZRUKOV, I.Ya.

Hydrolysis of pentavalent vanadium compounds. Zhur.neorg.khim. 8 no.4:923-933 Ap '63. (MIRA 16:3)
(Vanadium compounds) (Hydrolysis)

SANNIKOV, Yu.I.; ZOLOTAVIN, V.L.

Thermal stability of trivalent iron vanadates. Zhur.neorg.khim. 8 no.5:1151-1156 My '63. (MIRA 16:5)
(Iron vanadates--Thermal properties)

SANNIKOV, Yu.I.; KRYLOV, Ye.I.; ZOLOTAVIN, V.L.

Magnetic susceptibility of iron vanadates. Zhur.neorg.khim. 8 no.5:1157-1160 My '63. (MIRA 16:5)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.
(Iron vanadates--Magnetic properties)

ZOLOTAVIN, V.L.; SANNIKOV, Yu.I.

System $Fe(ClO_4)_3 - Na_2V_2O_7 - H_2O$. Zhur.neorg.khim. 8 no.4:
969-972 Ap '63. (MIRA 16:3)
(Iron perchlorates) (Sodium vanadates)

ZOLOTAVIN, V.L.; SANNIKOV, Yu.I.

System $Fe(ClO_4)_3 - Na_3VO_4 - H_2O$. Zhur.neorg.khim. 8 no.4:973-976 Ap '63. (MIRA 16:3)

(Iron perchlorates) (Sodium vanadates)

PONOMAREVA, L.K.; ZOLOTAVIN, V.L.; MESHALKIN, A.I.

Determination of cesium-137 in open bodies of water. Trudy Ural. otd. MOIP no.2:201-205 '59. (MI[illegible] 14:11)
(Water--Analysis)
(Cesium--Isotopes)

LEVASHOVA, L.B.; ZOLOTAVIN, V.L.

Trivalent vanadium salicylate. Zhur.neorg.khim. 7 no.4:811-813 Ap '62. (MIRA 15:4)
(Vanadium compounds) (Salicylic acid)

ZOLOTAVIN, V.L.; LEVASHOVA, L.B.

Determination of vanadium in different valent states. Zav.lab. 28 no.2:161-164 '62. (MIRA 15:3)

1. Ural'skiy politekhnicheskiy institut.
(Vanadium oxide)

VOZNESENSKIY, S. A.[deceased]; BAGRETSOV, V. F.; PUSHKAREV, V. V.;
ZOLOTAVIN, V. L.

Interaction of half-burnt dolomite with radioisotopes under dynamic conditions. Radiokhimia 3 no.4:510-511 '61.
(MIRA 14:7)

(Dolomites)
(Radioisotopes)

ZOLOTAVIN, V.L.; KAZAKOVA, V.M.

Photocolorimetric method for determining fluorine in natural and waste waters. Zav.lab. 31 no.3:297 '65.
(MIRA 18:12)

LEVASHOVA, L.B.; ZOLOTAVIN, V.L.

Oxalic acid complexes of trivalent vanadium. Zhur. neorg. khim. 10 no.1:145-149 Ja '65. (MIRA 18:11)

1. Submitted July 24, 1963.

VOL'KHIN, V.V.; PONOMAREV, Ye.V.; ZOLOTAVIN, V.L.

Effect of the method of granulating on the sorption properties of hydrated metal oxides. Izv. AN SSSR. Neorg. mat. 1 no.9: 1573-1576 S '65. (MIRA 18:11)

1. Permskiy politekhnicheskiy institut.

ZOLOTAVINA, I.L., kand.med.nauk, KARMILOVA, V.A.

Air cysts of the small and large intestine in nursing children [with summary in English]. Pediatriia 36 no.5:58-61 My'58 (MIRA 11:6)

1. Iz L'vovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i detstva (dir. I.D. Yashchuk) i Oblastnoy klinicheskoy bol'nitsy okhrany materinstva i detstva (glavnyy vrach I.A. Karagodin).

(INTESTINES--TUMORS)
(CYSTS)
(INFANTS--DISEASES)

ZOLOTAVINA, M.L., kandidat meditsinskikh nauk

Diagnosis of acute intestinal obstruction in children. Pediatriia no.3:62-66 My-Je '55. (MLRA 8:10)

1. Iz L'vovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i detstva (dir. I.D.Yashuk).
(INTESTINAL OBSTRUCTION, in inf.and child
diag.in acute cases)

ZOLOTAVINA, M.L.

ZOLOTAVINA, M.L., kand.med.nauk (L'vov, ul. Kopernika, d.32 kv.7)

Dynamic intestinal obstruction in children. Vest.khir. 79 no.7: 55-59 Jl '57. (MIRA 10:10)

1. Iz L'vovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i detstva (dir. - I.D.Yashchuk).
(INTESTINAL OBSTRUCTION, in infant and child, dynamic (Rus))

ZOLOTAVINA, M.L.; PTITSYN, A.I.

Diagnosis and therapy of necrotic phlegmon in neonates. Vest. khir. no.1:113-118'63. (MIRA 16:7)

1. Iz kliniki detskoy khirurgii (zav.-dotsent M.L.Zolotavina) Voronezhskogo meditsinskogo instituta.
(INFANTS (NEWBORN) —DISEASES)
(CONNECTIVE TISSUE—DISEASES) (NECROSIS)

ZOLOTAVINA, M.L., kand. med. nauk; KARMILOVA, V.A.

Air cysts of the small and large intestine in infants. Pediatriia 37 no.5:73-76 My '59. (MIRA 12:8)

1. Iz L'vovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i detstva (dir. I.D. Yashchuk) i Oblastnoy klinicheskoy bol'nitsy okhrany materinstva i detstva (glavnyy vrach I.A. Karagodin).
(INTESTINES, cysts
air cysts of small & large intestines in inf. (Rus))

ZOLOTAVINA, M.L., kandidat meditsinskikh nauk

Diagnostic value of gastrointestinal bleeding in pediatric surgery. Vest.khir. 76 no.8:40-45 S '55 (MLRA 8:11)

1. Iz L'vovskogo nauchno-issledovatel'skogo instituta okhrany materinstva i detstva (dir. I.D.Yashchuk) L'vov, ul. Kopernika, d. 32, kv. 7.
(GASTROINTESTINAL SYSTEM, hemorrhage
diag. value in pediatric surg.)
(HEMORRHAGE
gastrointestinal, diag.value in pediatric surg.)

Zolotavina, N.V.

AUTHOR: Zolotavina, N.V.

47-6-33/37

TITLE: Why Are Bright Bands Sometimes Observed Above the Sun or Moon? (Pochemu inogda nablyudayutsya svetlyye stolby nad Solntsem ili Lunoy?)

PERIODICAL: Fizika v Shkole, 1957, # 6, page 89 (USSR)

ABSTRACT:

The article explains the phenomenon of a bright band of white or reddish color observed before sunrise above the horizon at the place where the Sun (or the Moon) is to appear. These bands have also been noted above or beneath the Sun, shortly after sunrise.

These bright bands belong to the group of phenomena known under the collective name of halo. They are different in their form but the cause for their formation is the same - they develop as a consequence of the reaction of ice crystals on light rays. The article describes in detail the manner of their origin.

There are 2 figures.

ASSOCIATION: Institute for the Physics of Atmosphere, Academy of Sciences USSR (Institut fiziki atmosfery AN SSSR)

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connected with atmospheric conditions, but give a sufficiently detailed review of present-day data on the optical properties of the atmosphere. Attention is concentrated on studies made by the authors and their colleagues at the Laboratoriya atmosfernoy optiki Instituta fiziki atmosfery Akademii nauk SSSR (Laboratory of Atmospheric Optics of the Institute of Physics of the Atmosphere AS USSR). No personalities are mentioned. There are 173 references: 100 Soviet, 38 English, 25 German, and 10 French.

TABLE OF CONTENTS: