S/203/62/002/001/002/019
I023/I223

Magnetic measurements...

measurements: 2½ min.) show almost constant values. During the same period variations on Earth were quite big: 20-25γ. On February 1', 1961, the AIS was in the corpuscular stream (assumption based on data from a particle trap). The magnetic field of the stream was less than 9γ in the direction of the axis of the transducer. From data on the neutron component of cosmic rays it can be deduced that the field of the stream was weak also on Earth. Geomagnetic disturbances can be explained by a direct interaction of the corpuscular stream with the geomagnetic field. There are 3 figures.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestrial Magnetism, Ionosphere, and Radio wave Propagation, AS USSR)

SUBMITTED: December 6, 1961

Card 2/2

PUSHKOV, N.V.

International Conference on the Year of the Quiet Sun. Geomag. i aer. 2 no.6:1153-1154 N-D '62. (MIRA 16:1)
(Sun)

S/203/62/002/006/004/020
A160/A101

3.9110

AUTHORS: Dolginov, Sh. Sh., Zhuzgov, L. N., Pushkov, N. V., Tyurmina, L. O., Fryazinov, I. V.

TITLE: Some results of measuring the constant magnetic field of the Earth with the third artificial sputnik of the Earth above the territory of the USSR

PERIODICAL: Geomagnetizm i aeronomiya, v. 2, no. 6, 1962, 1061 - 1075

TEXT: The author presents some results of measuring the constant magnetic field of the Earth with the help of the third Soviet sputnik above the territory of the USSR from May to June 1958. A brief description is given of the metrological properties of the used equipment and of the method of eliminating magnetic board noises from the sputnik magnetograms. It was determined that the deviation may be represented by three harmonics whose mean amplitude values equal U_{1m} = 1,500, U_{2m} = 500 and U_{3m} = 200 γ. A comparison of the measured values of the geomagnetic field intensities with the values of this intensity permitted to establish their agreement within the limits of 0.1 - 1% above a

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Some results of measuring the...

major part of the USSR territory, including the Siberian world magnetic anomaly. The conclusion is illustrated by a limited number of typical magnetograms obtained on the segments of the trajectories traversing the whole territory of the USSR. The material yielded by the magnetic investigations with the third Soviet sputnik permits to fully determine the possibilities of carrying out special magnetic experiments. 1) The main harmonics of the Gaussian series can be determined with a precision of 0.1%. 2) With the help of a long-lasting sputnik the real existence of the exterior sources of the magnetic field has to be found out, not taking into consideration the theoretical values of the field, computed from the ground data. 3) Regular work should be done on the secular variation of the geomagnetic field. 4) In order to obtain highly accurate data, the requirements for the complex of auxiliary equipment should be determined. There are 12 figures and 1 table.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation, AS USSR)

SUBMITTED: July 10, 1962

Card 2/2

ASTAPOVICH,I.S.; BAKULIN,P.I.; BARKALOV,A.N.; BRONSHTEN,V.A.; DUGOSLAVSKAYA, N.Ya.[deceased]; VASIL'YEV,O.B.; GRISHIN,N.I.; DAGAYEV,M.M.; DUBYAGOVSKIY,K.K.[deceased]; ZAKHAROV,G.P.; ZOTKIN,I.T.; KRAMER,Ye.N.; KRASOVSKIY,Ye.L.; KULIKOVSKIY,P.G.; KUNITSKIY,R.V.; KUROCHKIN,N.Ye.; ORLOV,S.V.[deceased]; POPOV,P.I.; PUSHKOV,N.V.; RYBAKOV, A.I.; RYABOV,Yu.A.; SYTINSKAYA, N.N.; TSESEVICH, V.P.; SHCHIGOLEV,B.M.; VORONTSOV-VEL'YAMINOV,B.A.,red.; POLOZHENTSEVA,G.A., red.; KRYUCHKOVA, V.N., tekhn. red.

[Astronomical calender; permanent part] Astronomicheskii kalendar'; postoiannaia chast'. Izd.5., polnost'iu perer. Otv. red. P.I.Bakulin. Red.kol.V.A.Bronshten i dr. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1962. 771 p. (MIRA 15:4)

(Astronomy--Yearbooks)

PUSHKOV, N.V.

"Magnetic storms and ionospheric disturbances."

Report submitted to the Symposium on Results of the IGY-IGC (Intl. Geophysical Year) Los Angeles, California 12-16 Aug 1963

BURKHANOV, V.F.; PUSHKOV, N.V.

Assembly devoted to the International year of the Quiet Sun. Vest. AN SSSR 33 no.6:82-83 Je '63. (MIRA 16:7)
(Sun—Congresses)

PUSHKOV, N.V.

Principal scientific tasks during the International Year of the Quiet Sun. Geofiz. biul. no.13:3-17 '63. (MIRA 17:2)

L 18390-65 EEC-4/EWG(v)/EWA(h)/EWT(1)/EEC(t)/FCC Pe-5/Pi-4/Po-4/Pq-4/Pb-4
Pae-2/Peb SSD(c)/ASD(f)-2/SSD/AFMD(c)/AFWL/AFTC(a)/APGC(b)/AFETR/AEDC(b)/
ASD(a)-5/ESD(gs)/ESD(t)/ESD(si) GW/WS

ACCESSION NR: AR4040397 S/0269/64/000/005/0057/0057

SOURCE: Ref. zh. Astron. Otd. vy*p. Abs. 5.51.437

AUTHOR: Pushkov, N.V.

TITLE: Principal scientific objectives in the International Quiet Sun Year

CITED SOURCE: Geofiz. byul. Mezhduved. geofiz. kom-t pri Prezidiume AN SSSR, no. 13, 1963, 3-17

TOPIC TAGS: International Quiet Sun Year, solar activity, magnetosphere, artificial earth satellite, meteorological satellite, solar wind, solar corpuscular stream, solar radiation, chromospheric flare, magnetic field, radiation belt, geomagnetic disturbance

TRANSLATION: The International Quiet Sun Year will fall in the period of the minimum of solar activity and will run from 1 January 1964 through 31 December 1965. This period is characterized by a lesser number of disturbances on the sun and in space near the earth, which will facilitate the establishment of an unambiguous correlation between them and disturbances on the earth. Change is solar activity is accompanied by a change in the number, position, magnetic polarity and area of sunspots, number of chromospheric flares and attenuation of solar radiation in the UV region

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and in the radio range. Obviously there should also be a change in the solar constant. Its determination beyond the limits of the dense atmosphere by the use of artificial earth satellites and rockets is one of the objectives during the International Quiet Sun Year. Another interesting field of investigation is the study of solar corpuscular streams which lead in the long run to changes in the behavior of the earth's radiation belts. On the basis of already formulated concepts concerning the conditions under which solar corpuscles are captured by the earth's magnetic field, it can be expected that during the International Quiet Sun Year it will be possible to discover appreciable differences in the parameters of the radiation belts in comparison with the International Geophysical Year period, a time of maximum solar activity. At the same time, the use of artificial earth satellites with greatly elongated elliptical orbits will make it possible during the International Quiet Sun Year to make a detailed investigation of the structure of the earth's magnetic field and the changes caused in it by solar corpuscular streams. This will make it possible to check the hypothesis of the existence of a solar wind created by these streams and disturbances in the earth's magnetosphere caused by them. Meteorological satellites will provide extensive data on the earth's cloud cover and the quantity of radiation which it receives and reradiates. Artificial earth satellites will also be used for study of the structure of the ionosphere above the F2 electron

concentration maximum. These and other objectives of the International Quiet Sun Year, directed to the study of the earth-sun problem, require continuous observations of the state of solar activity. This will be carried out within the framework of international geophysical cooperation. The program of meteorological observations during this period provides for study of the upper atmosphere as the object most subject to the sun's influence. Observations of the ozone layer and water vapor at great heights and observations of atmospheric circulation together with actinometric measurements will be carried out with the extensive use of new experimental techniques. Rocket sounding of the atmosphere will be expanded for the purpose of study of the D layer of the ionosphere, the electron and ion concentrations and their temporal changes in relation to solar activity. Equally important for the study of elementary processes in the upper atmosphere will be observations of the night airglow and the twilight sky and auroras; this program will be more extensive than during the International Geophysical Year. It also is planned that there will be studies of intensity variations, the energy spectrum and composition of cosmic rays. The successful implementation of the planned program will enrich modern science with new data and will made it possible to draw new conclusions and generalizations. A. Zh.

SUB CODE: AA, ES ENCL: 00

PUSHKOV, N.V.

Meeting of the Executive Committee of the International Association of Geomagnetism and Aeronomy. Geomag. i aer. 3 no.1:177-178 Ja-F '63. (MIRA 16:4)

(Magnetism, Terrestrial) (Cosmic physics)

PUSHKOV, N.V.

Second Assembly (at Rome) on the International Years of the Quiet Sun (IYQS). Geom. i aer. 3 no.4:786-789 Jl-Ag '63. (MIRA 16:11)

L 17341-63 EWT(1)/BDS/ES(v) AFFTC/ASD/ESD-3 Pe-4 GW

ACCESSION NR: AP3007337 S/0293/63/001/001/0055/0097

AUTHOR: Dolginov, Sh. Sh.; Pushkov, N. V. 61

TITLE: Investigation of the magnetic field in space

SOURCE: Kosmicheskiye issledovaniya, v. 1, no. 1, 1963, 55-97

TOPIC TAGS: magnetic field, terrestrial magnetic field, interplanetary medium, lunar magnetic field, outer radiation belt, magnetosphere, magnetic storm, solar plasma, ring current, geomagnetic field, venusian magnetic field

ABSTRACT: Experimental data on the magnetic fields of the earth, moon, and interplanetary space, obtained by Soviet and U. S. rockets and missiles, have been surveyed, and the results of measurements made near the earth, in the outer radiation belt, and at the boundary of the geomagnetic field have been compared. It was found that the energy necessary to create and maintain the outer zone is supplied by the sun, but the mechanism whereby the solar plasma energy is transferred to the magnetosphere is still not clearly understood. It has not yet been possible to determine with finality

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L 17341-63

ACCESSION NR: AP3007337

0

where or whether the classic current system associated with the main phase of magnetic storms actually exists. It has been found that: 1) at distances exceeding 8 R_e (radius of the earth) the measured values of the field on the day and night sides of the earth exceed those theoretically computed, 2) the direction of the field at distances up to 12 R_e differs from 30 to 60° from the direction of the dipole field, 3) considerable field fluctuations are noted in the region from 10 to 15 R_e, 4) no notable difference exists in the characteristics of the terrestrial field on the day and night sides, 5) a transition zone probably exists in the 10 to 15 R_e region between solar plasma and the geomagnetic field, 6) information is lacking on comparative conditions in the 12 to 15 R_e region, and 7) it is possible for a magnetic trail to exist on the night side. Future attempts will be made to obtain convincing proof of the existence and localization of the current ring of magnetic storms and a precise establishment of the topology of the magnetic field at great distances.

ASSOCIATION: none
SUBMITTED: 01Dec62
SUB CODE: AS
Card 2/2

DATE ACQ: 21Oct63
NO REF SOV: 037

ENCL: 00
OTHER: 066

AID Nr. 972-35 21 May

PUSHKOV, N. V.

PLANS OF THE I. Y. Q. S. (USSR)

Pushkov, N. V. Priroda, no. 4, 1963, 36-41. S/026/63/000/004/001/005

During the International Year of the Quiet Sun, special solar and geophysical investigations are planned, including study of the intensity of solar flares, of faculae, of flocculi, of x-radiation, and of ultraviolet radiation. The "solar winds" or corpuscular streams, will be of particular interest, and their influence on the earth's radiation belts and ionosphere will be studied. Special artificial satellites and meteorological rockets will be used for measuring solar ultraviolet and x-radiation outside the terrestrial atmosphere and for determining the influence of corpuscular streams on the earth's magnetic field and radiation belts. Special satellites are planned for studying the ionosphere from above. These investigations are very important for radio communication. A dense network of geophysical stations is planned for continued observations of meteorological phenomena, auroras, cosmic rays, and airglow. Instructions have been prepared for carrying out the various types of observations. [EG]

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PUSHKOV, N.V., doktor fiz.-matem.nauk

International Year of the Quiet Sun. Priroda 52 no.4:36-41 '63.
(MIRA 16:4)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR, Moskva.
(Sun)

[illegible], N. [illegible]

When the sun is right. Av. i beim. 47 no.5 77-81 F '65.
(MIRA 18:4)

BELOUSOV, V.V.; PUSHKOV, N.V., doktor fiz.-mat. nauk

To all participants of the International Year of the Quiet Sun.
Izv. AN SSSR. Fiz. atm. i okeana 2 no.1:101 Ja '66.
(MIRA 19:1)

1. Predsedatel' Mezhduvedomstvennogo geofizicheskogo Komiteta pri Prezidiume AN SSSR, chlen-korrespondent AN SSSR (for Belousov).
2. Vitse-prezident Spetsial'nogo (mezhdunarodnogo) komiteta Mezhdunarodnogo goda spokoynogo Solntsa i predsedatel' sovetskoy Rabochey gruppy po Mezhdunarodnomu Godu spokoynogo Solntsa (for Pushkov).

L 02976-67 EWT(1)/FSS-2/FCC TT/GW

ACC NR: AP6032857 SOURCE CODE: UR/0020/66/170/003/0574/0577

AUTHOR: Dolginov, Sh. Sh.; Yeroshenko, Ye. G.; Zhuzgov, L. N.; Pushkov, N. V.

ORG: Institute of Terrestrial Magnetism, Ionosphere, and Radiowave Propagation, Academy of Sciences, SSSR (Institut Zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln Akademii nauk SSSR)

TITLE: Measurement of the magnetic field in the vicinity of the moon by the Luna-10 artificial satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 574-577

TOPIC TAGS: magnetic field, lunar orbit, lunar satellite, LUNAR ENVIRONMENT, MAGNETIC FIELD MEASUREMENT

ABSTRACT: The magnetic field intensity in the vicinity of the moon was measured by a three-component magnetometer carried on Luna-10. The magnetometer measurement range and its threshold of sensitivity in each direction were 50 γ (1 $\gamma = 10^{-5}$ Oe) and 1 γ, respectively. During the lunar orbital flight the satellite rotated around a given axis. The magnetic field components parallel ($T_{\parallel}$) and perpendicular ($T_{\perp}$) to this axis were measured. The absolute and relative errors in measuring the resultant magnetic field were estimated to be ± 10 γ and ± 5 γ, respectively. During the observation period (3 April to 4 May 1966), the total magnetic field and its components fluctuated in the following ranges: $T = 23—40$ γ, $T_{\parallel} = 18—38$ γ, and $T_{\perp} = 12—16$ γ. A correlation was established between variations in T and $T_{\parallel}$

Card 1/2 UDC: 538.7

L 02976-67

ACC NR: AP6032857

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and changes in the magnetic activity index. It was not possible to establish the presence of a lunar dipole magnetic field or the Earth's magnetospheric tail by means of these direct observation methods. The most reliable average value of T_L obtained was 15 γ, which exceeds the interplanetary value for the same index of magnetic activity. It is hypothesized that the moon is magnetically permeable. The authors express their gratitude to E. I. Magilovskiy, V. N. Orbidko, Yu. V. Afanas'yev, and V. P. Lyulik. Orig. art. has: 2 figures.

SUB CODE: 03/ SUBM DATE: 27Jul66/ ORIG REF: 001/ OTH REF: 003/ ATD PRESS: 5099

Card 2/2 egh

PUSHKOV, T.

Perspektivy razvitia Tomskoi dorogi. [The prospects for the development of Tomsk railway]. (Zheleznod. transport, 1946, no.4, p. 49-55). DLC: HE7.Z5

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

SOV/130-59-2-5/17

AUTHORS: Germaidze, G.Ye. and Pushkov, V.G., Engineers

TITLE: Inter-Plant School for Bottom Repairs and Maintenance of Open-Hearth Furnaces (Mezhzavodskaya shkola po remontu podin i ukhodu za martenovskimi pechami)

PERIODICAL: Metallurg, 1959, Nr 2, pp 13-16 (USSR)

ABSTRACT: In July 1958, the Tekhnicheskoye upravleniye (Technical management) of the Sverdlovskiy sovnarkhoz (Sverdlovsk Economic Council) together with the TsBTI ran an inter-works school at the Ural works. The object was to find and evaluate the best methods for open-hearth furnace bottom repairs, give practical help to works on the adoption of progressive methods and to indicate ways of reducing furnace down time for bottom repairs. The best steel melters and senior foremen of works coming under the council and also of the Chelyabinsk truboprokatnyy (Chelyabinsk tube-rolling) and Kazakhskiy metallurgicheskiy (Kazakh Metallurgical Works) participated. The authors tabulate the bottom-repair down-time figures for the different works for 1957 and six months of 1958 showing a great diversity. Best results were obtained by the Nizhne Tagil'skiy

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Inter- Plant School for Bottom Repairs and Maintenance of Open-Hearth Furnaces

kombinat (Nizhniy-Tagil Combine) Nr 1 melting shop where the use of progressive methods (described in a separate article by N.L.Lapin) has reduced the average time to 0.8% of calendar time, values of 0.64 and 0.86% being obtained by senior foremen, A.S.Pozdnyakov and I.A.Shirnin respectively. At the kombinat imeni Serova (Serov combine) improvements were obtained by changing to two-layer and then to single-layer melting-on of bottoms. At the Alapayevskiy kombinat a 42% reduction in down-time has been obtained. Although improvements have been effected at the Kushvinskiy and Verkh-Isetskiy works the general level of down-time remains high. After briefly mentioning the types of steel melted at the different works the authors examine bottom repair practice at the Serov Combine and the Severskiy and Verkh-Isetskiy metallurgical Works. The recommendations of the school stress the importance of maintaining bottom smoothness, the desirability of a weekly rather than a monthly repair schedule, careful

Inter- Plant School for Bottom Repairs and Maintenance of Open-Hearth Furnaces

preparation for repairs, thorough removal of residual slag and metal at minimal firing rates with compressed air or oxygen, mechanisation of magnesite powder and mill-scale feed to the bottom, the use of a single layer (up to 150 to 200 mm thick) of melted-on magnesite-powder, the heating of the layer at the melt-down firing rate for not more than 1.5 hours, the addition of mill scale (in amounts of 25 to 50% of the weight of magnesite powder) following which slag should not be allowed to accumulate in the bottom, the ramming of the casting hole on a sheet-iron pipe. There is 1 table.

Card 3/3

PUSHKOV, V. G.; VINOKUROV, V. G.

Steelmakers from the Urals are striving to make use of internal potentialities in the industry. Metallurg 7 no.11:11-13 N '62. (MIRA 15:10)

1. Sverdlovskiy sovet narodnogo khozyaystva.

(Ural mountain region—Iron and steel plants)

[redacted], V. A.

"Significance of the larval characters for the systematics and the phylogeny of Pentatomorpha."

report submitted for 12th Intl Cong of Entomology, London, 8-16 Jul 64.

[redacted], B.I.; [redacted], V.G.; [redacted], V.D.

Introduction of new equipment in metallurgical enterprises of the Central [redacted]. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.6:3-[redacted] Je '64.
(MIRA 17:11)

[illegible], [illegible]; [illegible], [illegible]

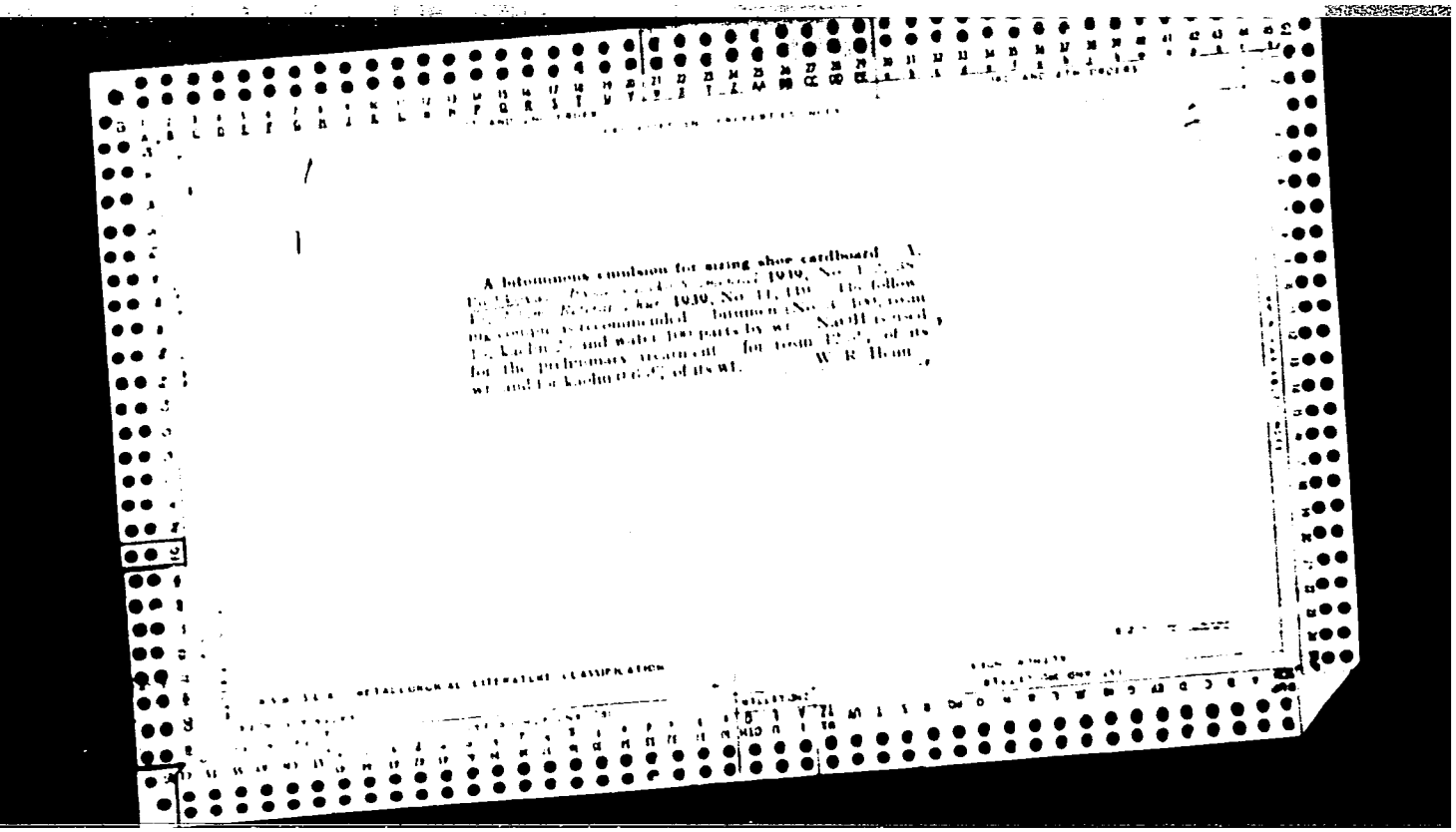
Technical information and the introduction of new equipment. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.8:87-89 Ag '64.

(MIRA 17:11)

PUSHKOV, Zdravko, inzh.

Thankfulness of a rationalizer. Ratsionalizatsiia no.2:19 '62.

1. Nachalnik Nauchno-issledovatelskoto Biuro po pompostroene pri zavod "G. Dimitrov," Vidin.



LIPKIN, M.Ye.; VESELOV, V.A.; PUSHKOVA, K.T.

Use of luminescent sera in practical work. Zhur.mikrobiol., epid. i immun. 32 no.11:26-29 N '61. (MIRA 14:11)
(SERUM)

PANTELEEV, D.L.; PUSHKOVA, R.Iv.; BOZHANOV, An. S.

Two cases of rheumatic psychoses. Suvrem. med. Sofia 8 no.3:96-100 1957.

1. Iz Psikho-nevrologichnata bolnitsa v gr. Biala. (Gl. lekar: D. L. Panteleev).

(RHEUMATISM, complications,
psychoses (Bul))
(PSYCHOSES, etiology and pathogenesis,
rheum. (Bul))

[illegible], M. F.; [illegible], V. I.; SHVANOV, V. N.

"Extraction processing of the irradiated fuels by using the solution of tributylphosphate in carbon tetrachloride."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva, 31 Aug-9 Sep 64.

PUSHLENKOV, M. F.

"The Effect of Electric Discharge upon the Cold Flame Oxidation of Butane,"

Iz. AK. Nauk SSSR, Otdel. Khim. Nauk, Nos. 2-3, 1944.

Mbr., Inst. Chemical Physics, Dept. Chem. Sci., Acad. Sci., -1944-.

PUSHLENKOV, M. F.

USSR/Chemistry - Thermal Analysis Nov/Dec 51

"Method for the Thermal Analysis of Systems Containing a Volatile Component," B. A. Nikitin, M. P. Koval'skaya, M. F. Pushlenkov, Radium Inst imeni V. G. Khlopin, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, 661-666

In establishing the mp diagram for systems contg a volatile component, one must det the quantity of the latter remaining in the gas phase. To enter correction for this quantity, one must det diagrams of temp - pressure in gas phase in the presence of phases having all 3 phys states. Solidus curves must be used for establishing compn. New method for detg these curves was developed (centrifuging of sealed tubes at const temp near eutectic point; presence or absence of liquid in melting or freezing mixt is observed). The compd formed in system H_2S - phenol was found to be $H_2S \cdot 3C_6H_5OH$ rather than $H_2S \cdot 2C_6H_5OH$, as assumed by foreign workers.

PA 197T1

PUSHLENKOV, M.F.; NIKITINA, G.F.; VODEN, V.G.

Complex formation between uranyl nitrate and organophosphorus compounds. Part 2. Radiokhimiia 2 no.6:215-221 '60. (MIRA 14:4)

(Uranyl nitrate)
(Phosphorus organic compounds)

S/186/60/002/005/004/017
A051/A130

AUTHORS: Pushlenkov, M. F.; Komarov, Ye V.; Shuvalov, O. N.

TITLE: The effect of the nature of diluents on the extraction of uranyl nitrate using Tri-N.-Butylphospate

PERIODICAL: Radiokhimiya, v. 2, no. 5, 1960, 537 - 540

TEXT: A study was made of the effect of certain diluents on the extracting ability of TBPh. where it was established that within the limits of the row investigated, the change in the extracting ability of the TBPh cannot be associated in the same way with the degree of polarity of the diluents. The extracting properties of the TBPh are said to depend both on the degree of dilution and on the nature of the diluent. The authors have studied the effect of both polar and non-polar diluents on the extraction with a solution of TBPh of uranyl nitrate within a wide range of concentrations of the latter. Infra-red spectroscopy was used to determine the various nature of the interaction of the TBPh molecules with different diluents. The manifold recrystallized hexahydrate, uranyl nitrate, was used. The experimental procedure was as follows: The Khar'kov Plant TBPh

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The effect of the nature of .....

grading chemical reagents were processed with a 5 % solution of sodium alkali and a solution of permanganate and were then dried and distilled under vacuum. Tetrachlorodifluoroethane, tetrachloroethylene, chloroform and bromobenzene were purified by simple distillation. The purity of the organic liquids was checked by the boiling point and specific weight. The uranium was determined by the weight method in the water and organic phases, in the form of U_3O_8. The TBPh content was determined by the phosphorous according to the weight method in the form of $Mg_2P_2O_7$. The distribution coefficient was calculated as the ratio of the analytical concentrations of uranium in the organic and aqueous phases. The organic layer was a mixture of 40 volume % TBPh and 60 volume % diluent. The experiments were carried out at 20°C. The infra-red spectra of the pure TBPh and its solutions in carbon tetrachloride chloroform, and bromobenzene, within the area of valency fluctuation of the phosphorous group, were obtained by means of a MKC-12(IKS-12)-type spectroscope, with a prism made of sodium chloride. The measurements showed that the spectral width of the aperture was about 2 cm^{-1}. All the measurements were carried out with the same cuvette, with openings made of potassium bromide. The absorption coefficient k was calculated according to the formula:

Card 2/6

The effect of the nature of ....

$$k_v = \frac{1}{C \cdot l} \cdot \log \frac{I_0}{I} .$$

The study of the infra-red spectra of the pure TBPh and its solutions in the carbon tetrachloride, chloroform and bromobenzene led to the conclusion of the various energies of the molecular interaction in all cases. The latter proved that a significant deviation exists in the solutions investigated from that of the ideal state. Figure 1 shows graphically the results of irradiating the distribution of the uranyl nitrate between the aqueous solution and the TBPh mixture with diluents. The threshold value of saturation is reached at concentrations of the uranyl nitrate in water equalling 960 g/l, when the ratio (TBPh) (U) in the organic layer becomes equal to 2. The table shows that an increase of the extracting ability of the TBPh when shifting over to the investigated diluents, from chloroform to tetrachloroethylene, cannot have the same affiliation to the characteristics such as dipole moment (μ), dielectric constant (ϵ) or refractive index (n_D), (Ref. 3: A, Vaysberger, E. Proskauer, Dzh. Riddik, E. Tups, Organicheskiye rastvoriteli, Izd. IL.M., 1958). The authors assume that the change of the extracting ability of the TBPh in various diluents is

The effect of the nature of ....

connected with the change of the intermolecular action of the diluents with the TBPh and the disolvate. The solutions of TBPh in chloroform are found to differ most of all from the investigated diluents, which is explained by the fact that an unstable molecular compound of TBPh and the chloroform is formed by means of a hydrogen bond. Experimental data on the TBPh absorption in the region of 1180 - 1300 cm^{-1}, are shown in Figure 2, 3. The spectra show that the absorption intensity changes in different ways depending on the nature of the diluent. There are 1 table and 3 figures. 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc. The three references to English language publications read as follows: Z.J. Dizdar, J. K. Rajnvajn, O. S. Gal, Bull. Inst. Nucl. Sciences "Boris Kidrich", 8, 59,1958; T. V. Healy, H. A. C. McKay, Trans farad. Soc., 52, 5, 633, 1956; R.C. Lord, B. Hilon, H. O. Stidham, J. Am. Chem. Soc., 77, 5, 1365, 1955.

Card 4/6

The effect of the nature of ....

Table 1: (1) diluent; (2) distribution coefficient; (3) 100 g $UO_2(NO_3)_2$ to 1 l; (4) 150 g $UO_2(NO_3)_2$ to 1 l.

Разбавитель (1)	(2) Коэффициент распределения: 100 г $UO_2(NO_3)_2$ на 1 л (3)	150 г $UO_2(NO_3)_2$ на 1 л (4)	μ	ε	$n_D^{15°}$
$HCCl_3$	0.10	0.18	1.15	4.806	1.44858
$Cl(CH_2)_2Cl$	0.61	0.765	2.06	10.36	1.44759
C_2H_5Br	1.075	1.095	2.01	9.39	1.42756
CCl_4	1.11	1.16	0.00	2.238	1.46305
FCl_2CCCl_2F	1.25	1.20	—	—	—
Cl_2CCCl_2	1.44	1.26	0.0	2.30	1.50759

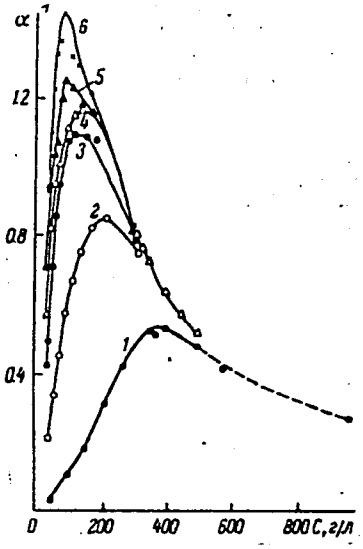

Figure 1: Distribution coefficients (α) of uranyl nitrate between water and organic phase. C - equilibrial concentration $UO_2(NO_3)_2$ in water, 1 - $HCCl_3$, 2 - $Cl(CH_2)_2Cl$; 3 - C_2H_5Br; 4 - CCl_4; 5 - FCl_2CCCl_2F; 6 - Cl_2CCCl_2.

Card 5/6

S/186/60/002/005/004/017
A051/A130

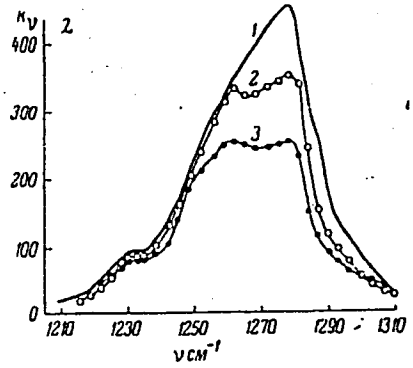

Figure 2: Absorption band P =0 in carbon tetrachloride. 1 - pure TBPh; 2 -11.1% solution of TBPh; 3 - 5.9% solution of TBPh.

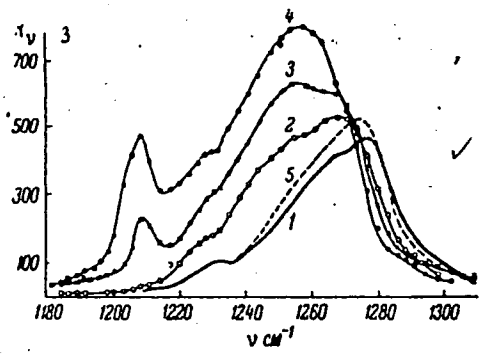

Figure 3: Absorption band of P = 0 in chloroform. 1 - pure TBPh, 2 - 91 % solution of TBPh, 3 - 67 % solution of TBPh, 4 - 50 % solution of TBPh, 5 - 50 % solution of TBPh in bromobenzene.

Card 6/6

S/186/60/002/002/012/022
E071/E433

AUTHORS: Pushlenkov, M.F., Nikitina, G.P. and Voden, V.G.

TITLE: A study of the formation of uranyl nitrate complexes with phosphorusorganic compounds. II

PERIODICAL: Radiokhimiya, 1960, Vol.2, No.2, pp.215-221

TEXT: In Part I (Ref.1: V.G.Voden, G.P.Nikitina, M.F.Pushlenkov, Radiokhimiya, 1, 2, 121 (1959)) it was established that uranyl nitrate is transferred from the aqueous phase ($[HNO_3]$ = 0.2 to 1.1 M) into the organic phase in the form of a disolvate $UO_2(NO_3)_2 \cdot 2T$ (where T = DBEBPh di-n.butyl ester of n.butylphosphinic acid or TBPhO - tri-n.butylphosphinoxide). The stability constants (K_K) for the compounds $UO_2(NO_3)_2 \cdot 2TBPh$ and $UO_2(NO_3)_2 \cdot 2DBEBPh$ were determined by the distribution method (12 and 9.5 x 10^2 respectively). The calculated stability constant for the latter compound was 6.3 x 10^2. The difference between the determined and calculated values of the constants was assumed as being due to the presence of oxide impurities which changes the slope of the curve $\ln S = f[NO_3^-]_w$ from 0.6 to 1 and correspondingly increases the value of the constant

$$S = \frac{[NO_3^-]_w^2 [T]_o^2}{K_p}$$

Card 1/4

where $[NO_3^-]_w$ is the concentration of NO_3^- ions in the equilibrium aqueous solution; $[T]_o^2$ - concentration of T in the organic solution; K_p - coefficient of distribution of $UO_2(NO_3)_2$ between the aqueous and organic phases. The stability constant for $UO_2(NO_3)_2 2TBPhO$ was obtained only by calculation, since the dependence of ln S on $[NO_3^-]$ was represented by a curve indicating the presence of some factors influencing the distribution which were not taken into consideration. For the system: aqueous solution of uranyl nitrate - solution of n.butyl ester of di-n.butylphosphinic acid in carbon tetrachloride, neither the composition of the complex extracted nor its stability constant were determined. The scope of the present work was to determine the composition and the stability of the complex extracted in the latter system, the determination of the stability constant of $UO_2(NO_3)_2 \cdot 2DBEBPh$ when the DBEBPh is known to be free from oxide admixtures and to explain the curvature of the relationship $S = f[NO_3^-]_w$ for the system: aqueous solution of $UO_2(NO_3)_2$ - TBPhO in CCl_4. For this purpose it was necessary to obtain three relationships:
1) $\lg K_p = f(\lg[BEDBPh]_o)$, where K_p - coefficient of distribution of $UO_2(NO_3)_2$ between the aqueous and organic phases;

2) $\ln S = f[NO_3^-]_w$ at μ, $[H^+]_w$, $[T]_o$ = constant for BEDBPh and 3) the same relationship for DBEDBPh. The experimental procedure was the same as in Part I, except that DBEBPh and BEDBPh were purified from oxygen containing impurities by a few days retention over metallic sodium, followed by filtration through a glass filter and a vacuo distillation. The experiments were carried out at a temperature of 25 $\pm$ 0.05°C. It was established that the composition of the complex compounds of uranyl nitrate with BEDBF extracted by carbon tetrachloride corresponded to the general formula of $UO_2(NO_3)_2 \cdot 2T$. The stability constant for $UO_2(NO_3)_2 \cdot 2DBEBPh$ and $UO_2(NO_3)_2 \cdot 2BEDBPh$ were found to be 6.03×10^2 and 2.95×10^4, respectively. The curvature of the line representing the relationship $\ln S = f[NO_3^-]$ for TBPhO at a constant ionic force (μ), pH in the aqueous phase ($[H^+]_w$) and the concentration of TBPhO in the organic phase ($[T]_o$), is apparently caused by the extraction into the organic phase of two other complexes: $UO_2NO_3ClO_4 \cdot 2TBPhO$ and $UO_2(ClO_4)_2 \cdot 2TBPhO$, in addition to $UO_2(NO_3)_2 \cdot 2TBPhO$. There are 4 figures, 4 tables and 2 references: 1 Soviet and 1 non-Soviet. The reference to an

Card 3/4

S/186/60/002/002/012/022
A study of the formation of uranyl ... E071/E433

English language publication reads as follows:
G.M.Kosolapoff. Organophosphorus Compounds, New York - London, 1950.

SUBMITTED: July 11, 1959

Card 4/4

PUSHLENKOV, M. F.

62

Combination of hydrogen sulfide with phenylhydrazine. B. A. Nikitin and M. F. Pushlenkov. *Izvest. Akad. Nauk S. S. S. R., Otdel. Khim. Nauk* 1954, 9-15.—The method of thermal analysis was used to det. the fusibility diagram of the system $C_6H_5NH.NH_2$–H_2S. It was shown that the substance formed corresponds to compds. of the type $(C_6H_5NH.NH_2)_2S$. The temp.-pressure diagram for presence of the 3 phases, solid, liquid, and gas, was detd. for the purpose of making correction for the quantity of volatile component remaining in the gaseous phase while detg. the fusibility diagram. At 0° the dissocn. pressure of solid compd. formed from phenylhydrazine and gaseous H_2S was 3.3 atm. The heat of formation of this compd. was calcd. to be 8500 cal./mole. The compd. is not analogous with the noble gas compds; it should be considered as an ammonia-type compd. Gladys S. Macy.

(1)

Calcium Inst. in V. G. Khlopin AS USSR

VODEN, V.G.; NIKITINA, G.P.; PUSHLENKOV, M.F.

Investigation of the complex formation of uranyl nitrate with phosphorus organic compounds. Radiokhimiia 1 no.2:121-130 '59. (MIRA 12:8)
(Uranyl nitrate) (Phosphorus organic compounds)

21420 abs. 2209

S/186/61/003/005/008/022
E071/E485

AUTHORS: Komarov, Ye.V., Pushlenkov, M.F.

TITLE: On the coordination chemistry of uranyl compounds with phosphoroorganic derivatives containing P=O group. I

PERIODICAL: Radiokhimiya, v.3, no.5, 1961, 567-574

TEXT: Absorption spectra of molecular compounds of uranyl bromide, chloride, nitrate and acetate with tri-n-butyl-phosphate (TBPh) in the ranges 6 to 11 μ and 350 to 550 mμ were studied and the differences in the spectra obtained were interpreted in the light of coordination and interaction of the additives in the internal sphere of the complexes. Aqueous solutions of the above uranyl salts were obtained from $UO_3 \cdot H_2O$ and an equivalent amount of the corresponding concentrated acid, taken by weight. Solid $UO_2(NO_3)_2 \cdot 6H_2O$ and $UO_2(CH_3COO)_2 \cdot 2H_2O$ obtained from the above solutions were also used. TBPh after a treatment with alkali and permanganate was distilled in vacuo. The content of uranium and phosphorus in the organic layer was determined colorimetrically. The amount of water in the organic phase and solvates was determined by titration with Fischer's reagent. The measurements of spectra in the range 350 to 550 mμ were done with a

Card 1/4

4-4 (SF-4) quartz spectrometer and in the range 6 to 11 μ on an infrared spectrometer with a sodium chloride prism, and windows and cells from potassium bromide. The water content in complexes of uranyl bromide, chloride and nitrate with TBPh was found to be very low and, therefore, the composition of complexes can be expressed as $UO_2A_2(TBPh)_2$, where A = Br, Cl, NO_2. On the basis of analogy with uranylnitrate, it is assumed that the water in dihydrate of uranylacetate is displaced on the addition of TBPh and does not form an independent phase but dissolves in TBPh with the possible formation of a molecular compound $TBPh \cdot H_2O$. Therefore, the composition of the acetate complex is taken as $UO_2(CH_3COO)_2(TBPh)_2$. On the basis of the absorption spectra obtained, it was shown that ester oxygen of TBPh does not participate directly in the formation of the bond with uranyl but coordination of TBPh molecules takes place only through the phosphoryl oxygen. It was established that in $UO_2Br_2 \cdot (TBPh)_2$ and $UO_2Cl_2 \cdot (TBPh)_2$ complexes, the coordination number of uranyl is 4. It is thought that the decrease in the coordination number could be due to the fact that bromine and chlorine ions on interaction with uranium do not decrease their ionic radii sufficiently, so that spatial

difficulties for the coordination of the subsequent four atoms of oxygen belonging to the additives arise. However, these purely geometrical considerations do not explain why the coordination number decreases to 4 and not to 5. There is also a possibility that the partially covalent nature of the bonds of uranyl with additives fixes the position of bromine and chlorine about the uranium atom due to the fixed spatial distribution of orbitals participating in the formation of covalent bonds. The spectra of uranyl complexes in the 350 to 500 mμ range showed a considerable influence on replacing one acid residue by another. This can be explained by a direct interaction of anions with uranium atoms. Thus an interaction of additives in the internal coordination sphere of uranyl in the compounds studied was established. There are 2 figures, 2 tables and 26 references: 16 Soviet-bloc, 2 Russian translations from non-Soviet-bloc publications and 8 non-Soviet-bloc. The four most recent references to English language publications read as follows:
Ref.15: L.L.Burger, J. Phys. Chem., v.62, 5, 590 (1958);
Ref.18: J.Kennedy, Chem. Industry, v.30, 950 (1958);
Ref.22: J.R.Ferraro, J. Inorg. Nucl. Chem., v.10, 3/4, 319 (1959);
Card 3/4

31890
S/186/61/003/005/008/022
On the coordination chemistry ... E071/E485

Ref. 24: B.W.Gatehouse, A.E.Comyns, J. Chem. Soc., 3965 (1958).

SUBMITTED: July 14, 1960

Card 4/4

31691
S/186/61/003/005/009/022
E071/E485

21 4100 abs 2209

AUTHORS Komarov, Ye.V., Pushlenkov, M.F.

TITLE On the coordination chemistry of uranyl compounds with phosphoroorganic derivatives containing P=O group. II

PERIODICAL Radiokhimiya, v.3, no.5, 1961, 575-581

TEXT An investigation of complexes of uranyl bromide, nitrate and acetate with tri-n-butylphosphinoxide (TBPhO) was carried out and the results obtained compared with those previously obtained for similar tri-n-butylphosphate (TBPh) complexes. The reagents and experimental technique were the same as in the previous investigation (Ref.1: Radiokhimiya, v.3, no.5, 567 (1961)). In order to obtain solutions of molecular compounds of uranyl salts with TBPhO, its solution (0.486 M) in benzene was used. Analytical and spectral data indicated that the composition of the complexes formed corresponds to the following formulae: $UO_2Br_2(TBPhO)_2$, $UO_2(CH_3COO)_2(TBPhO)_2$ and $UO_2(NO_3)_2(TBPhO)_2$. The spectral data indicated that the mechanism of coordination of molecules TBPhO and TBPh is the same and is realized through the phosphoryl oxygen. It was established that in the $UO_2Br_2(TBPhO)_2$ complex, similar to the corresponding TBPh complex, the coordination number of uranyl

Card 1/2

equals 4. The nature of changes in the spectra of the TBPh and TBPhO complexes in the range of electron transitions and in the infrared range indicated that the interaction of additives is related to changes in the electron shell of the uranium atom. The values of the differences between $\Delta\nu$ in the series of the compounds investigated are of the second order in comparison to the value of the shift itself, nevertheless, it is shown that the energy equivalent of this effect can lead to sharp differences in the extracting abilities of the corresponding uranyl salts.
There are 3 figures, 2 tables and 18 references: 9 Soviet-bloc, 3 Russian translations from non-Soviet-bloc publications and 6 non-Soviet bloc. The four most recent references to English language publications read as follows: Ref.3: L.L.Burger, J. Phys. Chem., v.62, 590 (1958); Ref.11: J.G.Jones, J.B.Poole, J.C.Tompkinson, R.J.P.Williams, J. Chem. Soc., S.408, 2001 (1958); Ref.17: J.Kennedy, Chem. Industry, 30, 950 (1958); Ref.18: B.W.Gatehouse, A.E.Comyns, J. Chem. Soc., 3965 (1958).

SUBMITTED July 14, 1960

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001343620018-3"

LASKORIN, B.N.; PUSHLENKOV, M.F.; BERESTOVOY, A.M.; SMIRNOV, V.F.; SHCHEPETIL'NIKOV, N.N.

Horizontal mix-and-settle extractor. Ekstr.; [illegible]or.,prim.,ap[illegible] no.2:347-360 '62. (MIRA 15:9)
(Extraction apparatus)

S/186/62/004/002/003/010
E075/E136

AUTHORS: Nikitina, G.P., and Pushlenkov, M.F.

TITLE: Mechanism of extraction of zirconium with phosphoroorganic compounds. I.

PERIODICAL: Radiokhimiya, v.4, no.2, 1962, 137-147

TEXT: The object of the work was to elucidate the mechanism of extraction of Zr from nitric acid solutions with the following phosphoro-organic compounds: tri-n-butylphosphate (TBF), di-n-butyl ester of n-butylphosphorous acid (DBEBF) and n-butyl ester of di-n-butylphosphorous acid (BEDBF). The extractions were carried out at 250 °C. After extraction, Zr, P and HNO_3 were determined in each phase. ^{95}Zr was determined by Geiger-Müller counter, non-active Zr was determined spectrophotometrically. It was shown that the solvation numbers for DBEBF are 1.93, 1.95, and for BEDBF 2.12. Since it was found that

$$\frac{\partial \lg Kp}{\partial \lg [H^+]_B} = 2.05 \simeq 2$$

(where Kp is the distribution coefficient)

Card 1/3

it became evident that 2 ions of H take part in the extraction of Zr and that there is very little formation of complexes of the type $H_jMe[NO_3]_{i+j}$ in the aqueous phase. The study of the dependence of Kp (for Zr) on the concentration of NO_3 revealed that there is formation of nitrate complexes in the aqueous phase. It was concluded that the mechanism of extraction is best expressed by the equation

$$ZrO^{2+} + 2H^+ + 4NO_3^- + 2T \overset{K''_k}{\rightleftarrows} H_2ZrO(NO_3)_4\ 2T,$$

where T represents a molecule of extractant and K''_k equilibrium constant for the reaction. The constants for TBF, DBEBF and BEDBF were found to be 2.66, 2.37×10^{-2} and 6.54×10^{-4} respectively. In general it was found that by changing the ester group for an alkyl group in a molecule of the extractant the extraction capacity of the latter became different. For the region of concentrations of NO_{3B}^- from 0.16 to 2.0 M, ionic strength 2.5 and concentration of H^+ ions equal to 2.5 the

corresponding Zr compounds are ZrO^{2+}, $ZrO(NO_3)_2$, and $[ZrO(NO_3)_4]^{2-}$ with the stability constants of the complexes being 81 and 43 respectively. When the concentration of NO_{3B}^{-} is 2 - 2.5 M, $[ZrO(NO_3)_5]^{-3}$ appears with the stability constant equal to 9.

There are 5 figures and 11 tables,

SUBMITTED: April 27, 1961

Card 3/3

PUSHLENKOV, M.F.; FEDOROV, V.S.

Method for the direct and continuous observation of the process of salt transfer in liquid-liquid extraction. Radiokhimia 4 no.4:443-446 '62. (MIRA 15:11)
(Extraction (Chemistry))
(Electrolytes)
(Chemical equilibrium)

S/186/62/004/005/002/009
E075/E436

AUTHORS: Pushlenkov, M.F., Komarov, Ye.V., Shuvalov, O.N.

TITLE: The influence of the nature of solvents on the extraction of uranyl nitrate with tributylphosphate

PERIODICAL: Radiokhimiya, v.4, no.5, 1962, 543-550

TEXT: The authors studied the dependence of the distribution of $UO_2(NO_3)_2$ between water and organic solvents on its concentration in water and evaluated quantitatively the influence of the nature of solvents on the extraction of U and water with tributylphosphate (TBP). The experimental procedure was described previously by the present authors (Radiokhimiya, v.2, no.5, 1960, 537). Distribution coefficient α for the investigated range of U concentrations irrespective of the nature of solvents is given by

$$\alpha = \frac{1}{2}\left[\left(\frac{c_T}{x} + \frac{1}{16Qx^4\gamma_{\pm}^3}\right) \pm \sqrt{\left(\frac{c_T}{x} + \frac{1}{16Qx^4\gamma_{\pm}^3}\right)^2 - \left(\frac{c_T}{x}\right)^2}\right] \quad (6)$$

where x - equilibrium concentration of U in aqueous solution,
$\gamma_{\pm}$ - mean activity coefficient of $UO_2(NO_3)$ in water,

Card 1/4

The influence of the nature ...

c_T - overall concentration of TBP in the organic phase ($TBP \cdot H_2O$ + free TBP) and

$$Q = \frac{\alpha}{4x^2\gamma_{\pm}^3 (c_T - 2\alpha x)^2} \qquad (5)$$

and is related to the total transfer of water and $UO_2(NO_3)_2$ to the organic phase. The solvents used were: $CHCl_3$, $ClCH_2CH_2Cl$, CCl_4 and bromobenzene. The equilibrium constant β for the formation of solvate $UO_2(NO_3) \cdot TBP_2$ is given by

$$\beta = \frac{\alpha\gamma_S}{4x^2\gamma_{\pm}^3 T^2\gamma_T^2} \qquad (1)$$

where γ_S and γ_T are the activity coefficients of the solvate and TBP respectively in the organic phase and T - concentration of free TBP in the organic phase. As this constant is related only to the distribution of $UO_2(NO_3)_2$, the variation of $(\beta\gamma_T^2)/(\gamma_S)$ produced by changes of the solvents measures quantitatively the

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effect of solvents on the distribution. The values Q, $(\beta\gamma_T^2)/\gamma_S$ abd β_{water} increase in the order $CHCl_3$, $ClCH_2CH_2Cl$, CCl_4 and C_6H_5Br. Comparison of $(\beta\gamma_T^2)/\gamma_S$ and β_{water} shows that the distribution of water influences significantly the distribution of U. By changing the concentration of U in the organic phase between 0.1 and 0.5 M and that of TBP between 0.07 and 0.7 M, the above values do not change appreciably, but by increasing the concentration of TBP from 0.7 to 3.3 M the activity coefficients of $UO_2(NO_3)_2$ in both CCl_4 and $ChCl_3$ increase rapidly. $CHCl_3$ and $ClCH_2CH_2Cl$ decrease the extractive capacity of TBP more than the other solvents due to hydrogen bonding of H in C - H groups, next to C - Cl group, to phosphoric groups. The association constants for $CHCl_3$ and $ClCH_2CH_2Cl$ are about 7 and 0.6 respectively. The large constant for $CHCl_3$ explains a rapid decrease in Q with increasing concentration of $CHCl_3$ in the organic phase. It is indicated that $CHCl_3$, as a solvent in the extractions of various salts with TBP, should decrease considerably the distribution coefficients in comparison with the solvents not associating with TBP. Although bromobenzene is more polar than $CHCl_3$, $(\beta\gamma_T^2)/\gamma_S$ values for

bromobenzene exceed those for $CHCl_3$ and CCl_4 by factors of 100 and 2 respectively. This shows that the effect of solvents on the extraction cannot be estimated from their polarities. There are 8 tables and 2 figures.

SUBMITTED: July 7, 1961

Card 4/4

L3313
S/186/62/004/005/005/009
E075/E135

AUTHORS: Zemlyanukhin, V.I., Savoskina, G.P., and Pushlenkov, M.F.

TITLE: Investigation of the complex formation of americium with neutral phosphoroorganic compounds. 1.

PERIODICAL: Radiokhimiya, v.4, no.5, 1962, 570-575

TEXT: The authors investigated the extraction of Am with tri-n-butylphosphate (TBP), di-n-butyl ester of n-butylphosphorous acid (DBEBP), n-butyl ester of di-n-butyl phosphorous acid (BEDBP) and tri-n-butylphosphine oxide (TBPO). This was done in view of the lack of data in the literature on the extraction of trivalent elements with neutral P compounds, with the exception of tributyl and trioctylphosphates (TBP and TOP). Am was used in quantities below 0.1 mg/litre dissolved in 5M $NaNO_3$. Kerosene was used as diluent for the extractants. The procedure used was described previously (V.I. Zemlyanukhin and G.P. Savoskina, Radiokhimiya, v.3, no.4, 1961, 411). The extraction of Am increases when TBP is replaced by TBPO. When the concentration of the latter is above 0.01 M a third phase is formed. The distribution coefficients (α_{Am}) increase rapidly with the concentration of HNO_3

Card 1/2

and reach maximum values (2.16 and 13.3 for DBEBP and BEDBP respectively) in approximately 2M HNO_3. In general, $Am(NO_3)_3$ interacts with the extractants (T):

$$Am^{3+} + 3\ NO_3^- + 3T \rightleftharpoons Am(NO_3)_3 \cdot 3T \qquad (1)$$

The equilibrium constants for this reaction are:
$K_{TBP} = 0.4$; $K_{DBEBP} = 7.4$; $K_{BEDBP} = 112$; $K_{TBPO} = 1780$.
The activity coefficients of Am decrease with the increasing concentration of HNO_3, the departure from ideality increasing in the order TBP, DBEBP, BEDBP, TBPO.
There are 7 figures and 3 tables.

SUBMITTED: July 7, 1961.

Card 2/2

ZEMLYANUKHIN, V.I.; SAVOSKINA, G.P.; PUSHLENKOV, M.F.

Complex formation of americium with diisoamyl ester of methylphosphinic acid. Radiokhimiia 4 no.6:655-660 '62. (MIRA 16:1)

(Americium compounds) (Phosphinic acid)

KOMAROV, Ye.V.; PUSHLENKOV, M.F. ; SHURENKOVA, M.Ye.

Factors determining the distribution of inorganic acids between aqueous and organic phases. Trudy Kom.anal.khim. 14:47-58 '63. (MIRA 16:11)

NIKITINA, G.P.; PUSHLENKOV, M.F.

Vibrational spectra of zirconium complexes with organophosphorus derivatives. Part 1: Spectra of extracts from hydrochloric and nitric acid solutions. Radiokhimiia 5 no.4:436-445 '63.
(MIRA 16:10)

(Zirconium compounds--Spectra)
(Phosphorus organic compounds)
(Extraction (Chemistry))

NIKITINA, G.P.; PUSHLENKOV, M.F.

Interaction in the system tri-n-butylphosphine oxide - hydrochloric acid. Radiokhimiia 5 no.4:445-456 '63. (MIRA 16:10)

(Phosphine oxide) (Hydrochloric acid)

NIKITINA, G.P.; PUSHLENKOV, M.F.

Vibrational spectra of zirconium complexes with organophosphorus derivatives. Part 2: complexes of zirconium tetrachloride. Radiokhimiia 5 no.4:456-464 '63. (MIRA 16:10)

(Zirconium chlorides) (Complex compounds--Spectra)

PUSHLENKOV, M.F.; SHUVALOV, O.N.

Characteristics of interphase equilibrium during the extraction of uranyl nitrate with organophosphorus derivatives with calculation of the activity coefficients of components in the organic phase. Part 1: Determination of the activity coefficients in the system diluent - tributyl phosphate - $UO_2(NO_3)_2$ - H_2O from the vapor pressure. Radiokhimiia 5 no.5:536-543 '63.

Characteristics of interphase equilibrium during the extraction of uranyl nitrate with organophosphorus derivatives with calculation of the activity coefficients in the organic phase. Part 2: Extraction of uranyl nitrate with a mixture of tributyl phosphate with diluents. 543-550

Characteristics of interphase equilibrium during the extraction of uranyl nitrate with organophosphorus derivatives with calculation of the activity coefficients of components in the organic phase. Part 3: Extraction of uranyl nitrate with a mixture of tributyl phosphate, dibutyl butyl phosphate, butyl dibutyl phosphate, tributylphosphine oxide with diluents. 551-559 (MIRA 17:3)

ZIL'BERMAN, B.Ya.; IVANOVA, A.G.; PUSHLENKOV, M.F.

Study of equilibrium between liquid and vapor in the system HNO_3 - HCl - H_2O at boiling point and under atmospheric pressure. Zhur. prikl. khim. 36 no.5:1143-1145 My '63. (MIRA 16:8)

(Nitric acid) (Hydrochloric acid)
(Phase rule and equilibrium)

L 27604-65 EWT(m)/EWP(j)/T/EWP(t)/EWP(b) Pc-4 IJP(c) JD/JG/RM

ACCESSION NR: AP5001643 S/0186/64/006/006/0694/0701

28

AUTHOR: Zemlyanukhin, V. I.; Savoskina, G. P.; Pushlenkov, M. F. 22B

TITLE: Complexing of americium with neutral organophosphorus compounds. Part 2

SOURCE: Radiokhimiya, v. 6, no. 6, 1964, 694-701

TOPIC TAGS: americium extraction, americium complex, organophosphorus compound, alkyl phosphate

ABSTRACT: The authors studied the extraction of americium from nitric acid solutions, and investigated the influence of both the diluent and the chain length of radicals in the extracting agents. The extraction of americium from 1 M HNO_3 solutions was found to increase in the series TBP < DBEBP<BEDBP<TBPT. The extraction of nitric acid also increases in the same order, but to a much lesser extent. As the chain length of the aliphatic radicals increases in the phosphate extracting agents, the electronegativity of the P=O group rises, causing steric hindrance, and hence the conditions for complexing become less favorable. The effective constant of complex formation by americium and HNO_3 with neutral organophosphorus compounds depends on the nature of the diluent. The effective complexing constant of americium (K_{Am}) is higher the more dilute the extracting agent; the

Card 1/2

L 27604-65

ACCESSION NR: AP5001643

opposite is true in the case of K_{HNO3}. Orig. art. has: 8 figures and 7 tables.

ASSOCIATION: none

SUBMITTED: 12Dec63 ENCL: 00 SUB CODE: IC

NO REF SOV: 004 OTHER: 000

Card 2/2

L 00032-66
ACCESSION NR: AP5020305

UR/0186/65/007/004/0424/0430
542.61:546.791.6'175

AUTHOR: Pushlenkov, M. F.; Fedorov, V. S.

TITLE: Kinetics of reextraction of uranyl nitrate from alkylphosphate solutions into water. I. Uranyl nitrate·tributylphosphate -- diluent system

SOURCE: Radiokhimiya, v. 7, no. 4, 1965, 424-430

TOPIC TAGS: tributylphosphate, uranyl nitrate, solvent extraction, solution kinetics

ABSTRACT: The reextraction reaction in the systems investigated is represented in the form

$$UO_2(NO_3)_2 \cdot 2TBP + mH_2O \rightarrow UO_2^{+2}{}_{(aq)} + 2NO_3^-{}_{(aq)} + 2TBP$$

The rate of reextraction and the rate constant are defined by the expression

$$\rho = dC_s/dt = -KC_s$$

where ρ is the rate of the reextraction reaction, C_s is the surface concentration of the extracted compound and K is the rate constant. The purpose of this author's

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L 00032-66
ACCESSION NR: AP5020305

investigation was to measure ρ and K and to determine the temperature coefficients in systems with the diluents chloroform, dichloroethane, carbon tetrachloride, tri-n-butylphosphate, benzene and mesitylene. The relationship of the rates of the re-extraction reaction to the nature of the diluent are shown in Fig. 2 (Enclosure). On the basis of these data the experimental and free energy and entropy of activation for the reextraction reactions of uranyl nitrate from the diluents listed were calculated. The calculations were in accordance with the activated complex theory, which correlates the reaction rate constant with thermodynamic activation quantities. The authors propose that the activation energy consists of the energy necessary for splitting off of the diluent molecules, solvating molecules of disolvate, and the energy of transition of disolvate into an activated complex. The mechanism and the influence of these three factors is elucidated. Orig. art. has: 3 tables and 2 figures.

ASSOCIATION: none

SUBMITTED: 14Aug64 ENCL: 01 SUB CODE: IC, GC

NO REF SOVIET: 004 OTHER: 002

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L 00032-66
ACCESSION NR: AP5020305

ENCLOSURE: 01

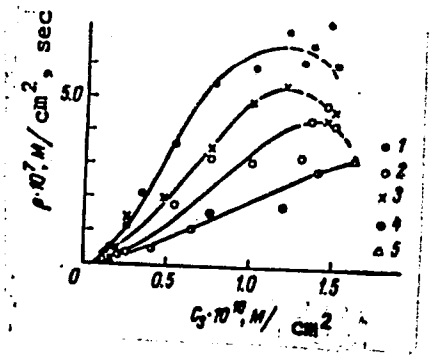

Fig. 1. Rate of reextraction reaction as a function of the nature of the diluent. 1 - chloroform; 2 - carbon tetrachloride; 3 - dichloroethane; 4 - tributylphosphate; 5 - undiluted uranyl nitrate disolvate.

Card 3/3

ACC NR: AP6022872 (N) SOURCE CODE: UR/0186/66/008/002/0132/0136

AUTHOR: Fedorov, V. S.; Pushlenkov, M. F.

ORG: none

TITLE: Kinetics of reextraction of nitrates of certain metals from alkylphosphate solutions into water. Part 1: The systems $UO_2(NO_3)_2 \cdot 2S$ (S = DBBP, BDBP, TBPO)

SOURCE: Radiokhimiya, v. 8, no. 2, 1966, 132-136

TOPIC TAGS: solvent extraction, uranyl nitrate

ABSTRACT: The rate constants of reextraction reactions of the form

$$UO_2(NO_3)_2 \cdot 2S + nH_2O \rightarrow UO_2^{2+}{}_{hydr.} + 2NO_3^-{}_{hydr.} + 2S$$

were studied in relation to the nature of S, which is a neutral organophosphorus ligand (dibutyl butylphthalate DBBP, butyl dibutylphosphonate BDBP, tributylphosphine oxide TBPO). The reextractions were carried out from solutions of the disolvates $UO_2(NO_3)_2 \cdot 2S$ in the diluents carbon tetrachloride, chloroform, and mesitylene. The values of the rate constants of the reextraction reactions were found to decrease with the number of ester oxygens in the molecule of the extracting agent. It was noted that Hammett's rule applied to the rates of reactions of reextraction from organic phases consisting of 100% disolvates. The nature of the diluent was found to affect the reextraction rate; this effect diminishes from DBBP to TBPO, i. e., as the

UDC: 541.128.8.9+541.127

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ACC NR: AP6022872

number of ester oxygens in the molecule of the extractant increases. This result is explained by assuming that the reextraction process takes place in the following two stages:

(1) $$UO_2(NO_3)_2 \cdot 2S \cdot mR \rightarrow UO_2(NO_3)_2 \cdot 2S + mR$$

(2) $$UO_2(NO_3)_2 \cdot 2S + nH_2O \rightarrow UO_2(NO_3)_2 \cdot 2S \cdot nH_2O \rightarrow UO_2^{2+}{}_{hydr.} + 2NO_3^-{}_{hydr.} + 2S.$$

Orig. art. has: 3 figures and 2 tables.

SUB CODE: 07/ SUBM DATE: 26Mar65/ ORIG REF: 005/ OTH REF: 001

Card 2/2

L 39082-66 EWT(m)/EWP(j)/ETI IJP(c) RM/JD/JG

ACC NR: AP6022873 SOURCE CODE: UR/0186/66/008/002/0136/0139

AUTHOR: Fedorov, V. S.; Pushlenkov, M. F.

ORG: none

TITLE: Kinetics of reextraction of nitrates of certain metals from alkylphosphate solutions into water. Part 2: The systems $La(NO_3)_3 \cdot 3S$ + diluent

SOURCE: Radiokhimiya, v. 8, no. 2, 1966, 136-139

TOPIC TAGS: solvent extraction, lanthanum compound, nitrate

ABSTRACT: The rates of reextraction of $La(NO_3)_3$ were studied in order to (1) determine the influence of a decrease in the number of ester oxygens in the molecules of the investigated extractants on the reaction rates and (2) determine whether the character of the influence of the "inert" diluent on the reextraction rate, established for systems with uranyl nitrate, is preserved. The reaction rates of reextraction of $La(NO_3)_3$ from organic phases consisting of solutions of $La(NO_3)_3 \cdot 3TBP$ (TBP = tributyl phosphate) in carbon tetrachloride, chloroform, and tributyl phosphate, and solutions of $La(NO_3)_3 \cdot 3TBPO$ (TBPO = tributylphosphine oxide) in chloroform and benzene were determined. The nature of the extractant and inert diluent was found to affect the reextraction rate, and do so in a manner analogous to the case of systems involving uranyl nitrate. It was noted that the effect of the nature of the diluent on the

Card 1/2 UDC: 541.123.8.9+541.127

L 39082-66

ACC NR: AP6022873

reextraction rate is independent of the nature of the distributed salt. This result confirms earlier assumptions to the effect that the reextraction process occurs in stages. Orig. art. has: 2 figures and 1 table.

SUB CODE: 07/ SUBM DATE: 26Mar66/ ORIG REF: 005/ OTH REF: 003

Card 2/2

L 02018-67 EWT(m) IJP(c)

ACC NR: AP6035632 SOURCE CODE: UR/0089/66/020/005/0419/0421

AUTHOR: Zil'berman, B. Ya.; Komarov, V. N.; Pushlenkov, M. F.

ORG: none

TITLE: Calculation method for azeotropic steam fraction, applied to the TBP-CCl_4 system

SOURCE: Atomnaya energiya, v. 20, no. 5, 1966, 419-421

TOPIC TAGS: azeotropic mixture, factional distillation

ABSTRACT: The propagation principle of uniform molar flow for stratified systems was used to investigate the azeotropic propagation principle leads to the concentration of "fictive" components in the sum of the liquid phases. The equation for the system is analogous to that of a homogeneous two-component system; the difference is that in the homogeneous condensate phase a concentration of fictive components appears. Orig. art. has: 2 figures and 3 formulas. [NA]

SUB CODE: 07 / SUBM DATE: 23 Jul 65 / ORIG REF: 003 / OTH REF: 004

Card 1/1 UDC: 66.048.6:661.723.2466.062.6

0922 0034

[redacted], V.I.; TUSHIENKOV, M.F.

Vibration spectra of zirconium complexes with organophosphorus compounds. Part 3: Spectra of zirconium extracts from strong nitric acid solutions. Radiokhimiia 6 no.3:347-360 '64. (MIRA 18:3)

PUSHLENKOV, M.F.; KOMAROV, Ye.V.

Association of organophosphorus derivatives with chloroform and the effect of the nature of diluents on the extraction of salts. Radiokhimiia 6 no.4:426-433 '64. (MIRA 18:4)

ZEMLYANUKHIN, V.I.; SAVUSKINA, G.P.; MUSHIENKOV, M.F.

Complex formation of americium with neutral organophosphorus compounds. Part 2. Radiokhimiia 6 no.6:694-701 '64.
(MIRA 18:2)

L 55077-65 EWT(m)/EWP(j)/T/EWP(t)/EWP(b) Pc-4 IJP(c) JD/RM

ACCESSION NR: AP5018000 UR/0186/64/006/006/0714/0724

20

B

AUTHOR: Zemlyanukhin, V. I.; Savoskina, G. P.; Pushlenkov, M. F.

TITLE: Complex formation of nitrates of the transuranium elements with neutral organophosphorous compounds

SOURCE: Radiokhimiya, v. 6, no. 6, 1964, 714-724

TOPIC TAGS: nitrate, organic phosphorus compound, transuranium element, transuranium compound

Abstract: The complex formation of the nitrates of U (IV), Np (VI), Pu (VI), and Pu (IV) with: tri-n-butyl phosphate (TBP), di-n-butyl ester of n-butylphosphinic acid (DBEBP), and the n-butyl ester of di-n-butylphosphinic acid (BEDBP), was studied in 100% extraction reagents, to exclude the influence of solvents. The distribution curves of the nitrates were obtained for the series of neutral organophosphorous compounds within the interval 0.1-18 M HNO_3. The complexation constants of $UO_2(NO_3)_2 \cdot 2T$, $NpO_2(NO_3)_2 \cdot 2T$, $PuO_2(NO_3)_2 \cdot 2T$, and $Pu(NO_3) \cdot 2T$ were calculated and increased in the series TBP < DBEBP < BEDBP. It was concluded that the bond energy increases in proportion to the number of ester radicals replaced by alkyls and the number of molecules of the extraction reagent added to the metal

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L 55077-65

ACCESSION NR: AP5018000

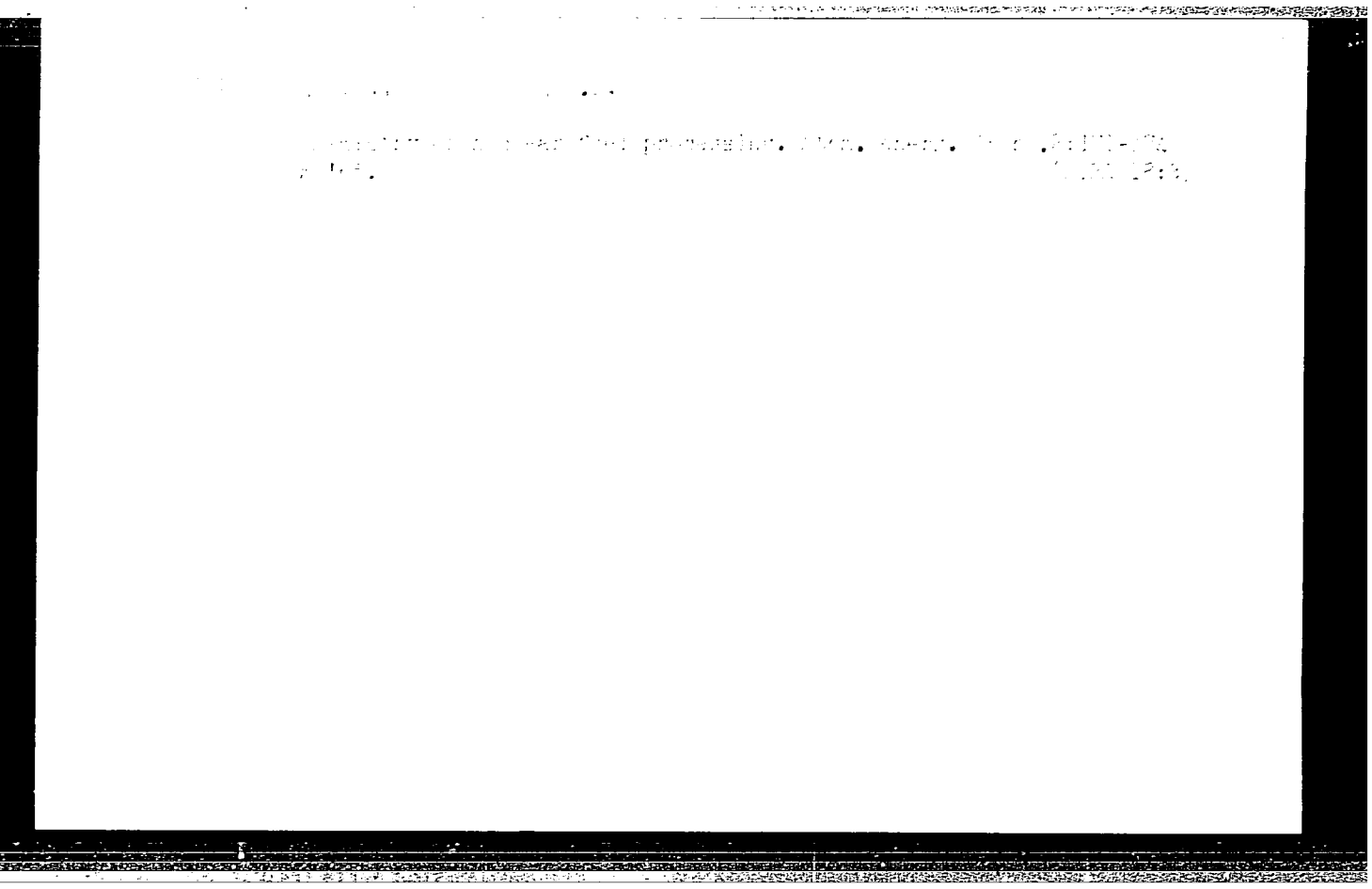
nitrate. At high acidities, when the HNO_3 content in the organic phase becomes equimolar with respect to the organophosphorus compound, the mechanism of the extraction changes. An analogy was drawn between the extraction behavior of the investigated nitrates for organophosphorus compounds and that for simple oxygen-containing compounds (ketones, ethers) and tertiary amines at high acidity: for all three classes, the organic substance, bound to nitric acid, acts as the extraction reagent. The average activity coefficients of the nitrates of U (VI), Np (VI), Pu (VI), and Pu (IV) in aqueous solutions were calculated as a function of the HNO_3 concentration within the range 0.1-5 M HNO_3. Orig. art. has 19 formulas, 10 graphs, and 6 tables.

ASSOCIATION: none

SUBMITTED: 15Mar63 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 021 OTHER: 007 JPRS

Card 2/2 MB



APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001343620018-3"

L 48839-65 EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pu-4 ES/DM

ACCESSION NR: AP5005808 S/0089/65/018/002/0171/0174

24
B

AUTHOR: Prusakov, V. N.; Pushlenkov, M. F.

TITLE: Chemistry of nuclear fuel reprocessing

SOURCE: Atomnaya energiya, v. 18, no. 2, 1965, 171-174

TOPIC TAGS: nuclear reactor, nuclear fuel reprocessing, extraction processing, nuclear waste

ABSTRACT: This is a review of the 40-odd papers delivered at the 1964 Geneva Conference on the subject of nuclear fuel processing. Only two Soviet papers are mentioned. One (512) considers an extraction technology for the separation of the radioactive products contained in the reactor waste solutions. The extraction scheme consists of four stages: extraction of Ce^{144} in the tetravalent state by di-2-ethyl-hexyl-phosphoric acid, separation of Sr^{90} in an alkaline medium by a solution of salicyl-aldoxime in tributyl phosphate, separation of trivalent rare-earth elements by tributyl phosphate, and separation of divalent europium. The other paper (348) contains a description of methods of separating the transplutonic elements Am and Cm by extraction with neutral organophosphor compounds, and

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ACCESSION NR: AP5005808

also a description of the extraction properties of about 20 compounds.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NR REF SOV: 000 OTHER: 000

Card 2/2

S/186/62/004/006/003/009
E075/E433

AUTHORS: Zemlyanukhin, V.I., Savoskina, G.P., Pushlenkov, M.F.

TITLE: A study of the formation of complex compounds of americium with diisoamyl ester of methylphosphinic acid (DAMP)

PERIODICAL: Radiokhimiya, v.4, no.6, 1962, 655-660

TEXT: The results of the experimental extraction of americium with DAMP from nitric, perchloric, hydrochloric, sulphuric and acetic acid solutions are described. The ^{241}Am used contained no more than 2% of admixtures emitting α radiation. It was shown that the formation of complexes of americium with DAMP follows the same relationships as the formation of complexes with tributylphosphate. Americium is comparatively well extractable with DAMP from nitric and perchlorate solutions and weakly extractable from hydrochloric, sulphuric and acetic solutions. From nitric and perchlorate solutions americium is extracted in the form of $Am(NO_3)_3 \cdot 3DAMP$, the constant for which was calculated (k = 8.3). There are 5 figures and 4 tables.

SUBMITTED: September 9, 1961

Card 1/1

KOM SANDRALIN V.I., GAVRILOVA, G.P., [illegible] V.F.

Complex formation of americium with some organophosphorus compounds. Radiokhimiia 5 no. 6, [illegible] '63.

(MIRA 17:2)

PUSHMIN, V.

Province finance department keeps silent. Fin. SSSR 37 no.5: 61-62 My '63. (MIRA 16:5)

1. Zaveduyushchiy Kirenskim rayonnym finansovym otdelom Irkutskoy oblasti.

(Kirensk District--Public institutions—Accounting)

ACC NR: AT6012692 SOURCE CODE: UR/3136/65/000/991/0001/0044

AUTHOR: Goncharov, V. V.; Babulevich, Ye. N.; Shavrov, P. I.; Ryazantsev, Ye. P. Novikov, I. M.; Yegorenkov, P. M.; Cheryyatsov, A. A.; Frolov, I. P.; Zhigachev, V. M.; Pushnin, R. T.; Fishevskiy, V. K.; Zakharov, L. K.; Kruglov, A. B.; Karasev, N. A.; Goncharov, L. A.

ORG: State Committee on the Use of Atomic Energy SSSR, Institute of Atomic Energy im. I. V. Kurchatov, Moscow (Goasudarstvennyy komitet po ispol'zovaniyu atomnoy energii SSSR, Institut atomnoy energii)

TITLE: Experience in operation of the MR reactor and tests of fuel elements and materials

SOURCE: Moscow. Institut atomnoy energii. Doklady, no. 991, 1965. Opyt eksplautatsii reaktora MR i provedeniye ispytaniy TVEL i materialov, 1-44

TOPIC TAGS: nuclear research reactor, reactor fuel element, nuclear reactor material, nuclear reactor characteristic

ABSTRACT: The authors discuss the loop research reactor MR constructed at the Kurchatov Institute of Atomic Energy and intended for the test of fuel elements and materials in new atomic installations. It is described in paper P/323 of the Third Geneva Conference in 1964. The present article describes in detail its con-

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ACC NR: AP0012692

struction and the various test loops in it. The section headings are: I - Introduction. II. Operation of reactor. 1. Certain physical characteristics of the reactor. a) Fuel burnup. b) Efficiency of control valves, scram rods, and movable fuel assemblies. c) Fluxes of thermal and fast neutrons. 2. Control and protection system of the reactor. 3. Technological systems of the reactor. a) Cooling loop for fuel element assembly. b) Cooling loop for the reactor assembly blocks. c) Intermediate (second) cooling loop of reactor. d) Third cooling loop of reactor. e) Water purification system. 4. Fuel assembly operating conditions and conditions for the graphite stacking blocks. 5. Reloading operations. III. Operation of loop installations. Organization and performance of tests on fuel elements and materials. IV. Dosimetric control. Radiation shielding of reactor. The reactor has been in operation since 24 July 1964, and its power has been gradually increased from the initial 20 MW to 30 MW. The usual operation is at 25 MW. The reactor has 3 loop channels with 7 associated experimental channels. Various characteristics of the reactor at different power ratings are tabulated. Major contributions to the adjustment of the MR reactor were made by A. Ye. Alekseyev, B. A. Alekseyev, S. N. Begichev, A. B. Bugayenko, Yu. I. Kovalev, V. K. Lebedev, A. M. Rotankov, V. D. Rusov, N. V. Sarychev, Ye. S. Chernorotov, and Yu. A. Shikov. Orig. art. has: 13 figures and 6 tables.

SUB CODE: SUBM DATE: 00/ ORIG REF: 001

Card 2/2

SHIRANOVICH, P.I.; PUSHNITSA, F.A.

Species of fleas found on rats in European Russia. Med.paraz. i paraz.bol. 29 no.5:584-590 S-O '60. (MIRA 13:12)

1. Iz Rostovskogo-na-Donu gosudarstvennogo nauchno-issledovatel'skogo protivochumnogo instituta (dir. instituta A.K. Shishkin).
(FLEAS) (RATS—DISEASES AND PESTS)

1. MIRONOV, N. P.; PAVLOV, A. N.; PUSHNITSA, F. A.; SHIRANOVICH, P. I.

2. USSR (600)

4. Don Steppe - Suslik

7. Change of areal boundaries of the small suslik /Citellus pygamaeus Pall/, in the Don and Stavropol ' Steppes. Zool. zhur. 31 no. 5, 1952

9. Monthly List of Russian Accessions, Library of Congress, _____1953. Unclassified.

PUSHNITSIA, A.D.

Changes in the blood composition of white rats following X irradiation and loss of blood. Vop.radiobiol. 2:150-157 '57. (MIRA 12:6)

1. Sotrudnik TSentral'nogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya SSSR.
(X RAYS--PHYSIOLOGICAL EFFECT) (HEMORRHAGE)
(BLOOD--ANALYSIS AND CHEMISTRY)

STRELIN, G.S.; KASHCHENKO, L.A.; SHMIDT, N.K.; GALKOVSKAYA, K.F.; PUSHNITSINA, A.D.; ZIL'BERG, Yu.G.

Effect of the dose of radiation from radioactive cobalt (Co^{60}) on the reaction of the organism in total body irradiations. Vop.radiobiol. 2:30-43 '57. (MIRA 12:6)

1. Sotrudniki TSentral'nogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya SSSR.
(COBALT--ISOTOPES) (RADIATION--DOSAGE)