CHALIKOV, Anatoliy Viktorovich; VARSHAVNKIY, V.I., nauch. red.;
GINTSBURG, V.I., ved. red.

[Fregramming of design calculations] Programming anie proektnykh raschetov. Leningrad, Izd-vo "Nedra, 1964. 113 p. (NIR 17:7)

L 04905-67 Edf(d)/EMP(1) 181(8) SOURCE CODE: UR/0000/66/000/000/0158/0164				
ACC NR. AT6022684 SOURCE CODE: UR/0000/66/000/000/013970104				
AUTHOR: Varshavskiy, V. I.; Vorontsova, I. P.				
ORG: none				
TITLE: The use of stochastic automatons of variable structure to solve certain behavior problems				
SOURCE: Moscow. Institut avtomatiki i telemekhaniki. Samoobuchayushchiyesya avtomaticheskiye sistemy (Self-instructing automatic systems). Moscow, Izd-vo Nauka, 1966, 158-164				
TOPIC TAGS: game theory, stochastic process, finite automaton				
ABSTRACT: The authors analyze some behavior problems for variable-structure stochastic automatons in game situations. The definitions and notation adopted in the paper are those of M. L. Tsetlin (e.g., Konechnyye avtomaty i modelirovaniye prosteyshikh form povedeniya.—UMN, 1963, vol. XVIII, vyp. 4 (112)). The zero-sum game of a variable-structure automaton with a single opponent using one pure strategy is considered in an effort to demonstrate the conditions for asymptotic behavior optimality of such an automatic device in a stationary random environment. The simplest stochastic automaton version is considered, i.e., the line-				
Card 1/2				

L 04906-67

ACC NR: AT6022684

automaton without input. Expressions are derived for the mathematical win expectancy of such an automaton (Ck). Games by two such Ck automatons are considered for pure strategies, state diagrams are analyzed, and experimental data on Ck automaton assignment game behavior are presented. In the case of the nonstationary (random) environments (to which the problem of inter-automaton gaming can ultimately be resolved) it is not yet possible to formulate requirements as the method of changing the state transition probabilities. It is also shown that a Ck automaton which has functioned for any extended period of time in one stationary medium is very slow to retrain itself for operation in another environment. The elimination of this defect is seen as the key to the design of an automaton capable of optimal behavior in nonstationary environments. The authors wish, in conclusion, to express their sincere gratitude to M. L. Tsetlin, I. I. Pyatetskiy-Shapiro, V. Yu. Krylov, S. L. Ginzburg, and V. A. Volkonskiy for their willingness to take part in a discussion of the problems considered in this paper and for their many helpful suggestions. Orig. art. has: 2 figures, 3 tables, and 9 formulas.

SUB CODE: 09,12/ SUBM DATE: 02Mar66/ ORIG REF: 008

Card 2/2

SOV/153-2-3-20/29

5(2) AUTHORS: Pozin, M. Ye., Kopylev, B. A., Varshavskiy, V. L.

TITLE:

The Flotability of Gypsum and of a Precipitate With Different

Reagents

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya

tekhnologiya, 1959, Vol 2, Nr 3, pp 412-419 (USSR)

ABSTRACT:

The authors investigated various enrichment reagents and reg-

ulators for the flotation of gypsum (CaSO4.2H20) and the

precipitate (CaHPO₄·2H₂O) to achieve a separation of the two

substances by flotation. The investigations carried out showed the following results: in the presence of oleic acid (consumption: 750-1000 g/ton) and of IM-11 (consumption: 500-750 g/ton) the precipitate and gypsum were practically completely floated at pH 6.5-7. The flotability of the precipitate and gypsum by oleic acid decreases rapidly with the decrease of the pH value of the pulp. In the flotation with IM-11 a decrease of the pH value leads to a certain activation of the gypsum flotation and to a considerable reduction of the flotation of the pre-

Card 1/4

cipitate. These effects of the pH value are shown by figure 2.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

SOV/153-2-3-20/29

The Flotability of Gypsum and of a Precipitate With Different Reagents

The anion reagent aeroflot-25 proved to be the most efficient among the flotation reagents investigated. In the presence of aeroflot-25 the precipitate is strongly floated whereas gypsum is hardly floated at all. The flotation of a precipitategypsum mixture differs from the flotation of the individual components since in the common presence of gypsum and precipitate in the liquid phase of the pulp a mutual inhibition of the flotability occurs. It was found that a reduction of the content of precipitate in the mixture leads to a considerable reduction of the flotation which is due to the inhibiting effect of gypsum on the flotation of the precipitate. The use of aeroflot-25 in the mixture with kerosene as collector for the basic flotation in the presence of copper salts and the processing of the residues with reagent IM-11 in the presence of trikresyl phosphate makes it possible to obtain a concentrate containing 29-30% P205 from the original mixture with a content of approximately 17% \tilde{P}_2^{0} . In this case 79-80% of P_2^{0} are again obtained. Furthermore it was found that the use of trikresyl phosphate as peptizer in the processing of the residues

Card 2/4

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

sov/153-2-3-20/29

The Flotability of Gypsum and of a Precipitate With Different Reagents

of basic flotation makes it possible to obtain a concentrate strongly enriched with P₂O₅. 2 tables show the results of flotation of precipitate gypsum mixtures with contents of 21.5% P₂O₅ (Table 1), and 17.2% P₂O₅ (Table 2), respectively, by Aeroflot-25 in the presence of copper sulphate. Table 3 shows the results of flotation of a precipitate gypsum mixture with 17.2% P₂O₅ by the addition of aeroflot-25 in 4 portions in the presence of kerosene and copper sulphate. Table 4 gives a survey on the processing of the residues obtained in basic flotation with the reagent IM-11 in the presence of trikresyl phosphate. Figure 8 shows a principal scheme of the separation of a precipitate-gypsum mixture by flotation with aeroflot-25 in the presence of kerosene and by the reagent IM-11 in the presence of trikresyl phosphate. There are 8 figures, 4 tables, and 4 Soviet references.

ASSOCIATION:

Card 3/4

Leningradskiy tekhnologicheskiy institut imeni Lensoveta Kafedra tekhnologii neorganicheskikh veshchestv (Leningrad Technological Institute imeni Lensovet, Chair of Inorganic

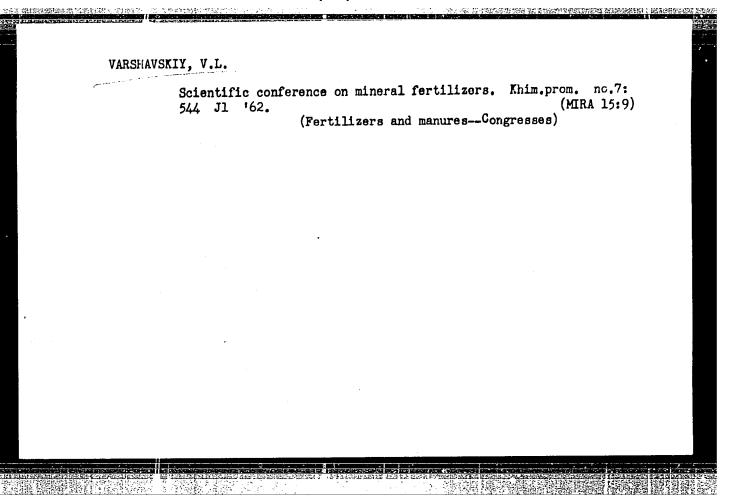
SOV/153-2-3-20/29
The Flotability of Gypsum and of a Precipitate With Different Reagents

Substances)

SUBMITTED: March 12, 1958

Card 4/4

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

POZIN, M.Ye.; KOPYLEV, B.A.; VARSHAVSKIY, V.L.

Various rengents for the floatability of gypsum and dicalcium phosphate. Izv.vys.ucheb.zav.; khim.i khim.tekh. 2 no.3: 412-419 '59. (MIRA 13:3)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta, kafedra tekhnologii neorganicheskikh veshchestv. (Gypsum) (Calcium phosphate) (Flotation)

POZIN, M.Ye.; KOPYLEV, B.A.; VARSHAVSKIY, V.L.; PINTER, I.

Crystallization of calcium sulfate in the reaction of monocalcium phosphate with sulfuric acid in a phosphoric acid medium. Zhur. prikl.khim. 34 no.ll:2384-2390 N '61. (MIRA 15:1)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta. (Calcium sulfate)

VARSHAVSKIY, V.L.

Interuniversity Scientific Conference devoted to the development of the new methods of manufacturing mineral fertilizers. Znur.—
(MIRA 16:5)
prikl.khim. 35 no.12:2805-2806 D '62.
(Fertilizers and manures--Congresses)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

VARSHAVSKIY, V. L.

Interuniversity Scientific Conference of Departments of the Technology of Inorganic Substances devoted to the development of new methods of the production of mineral fertilizers.

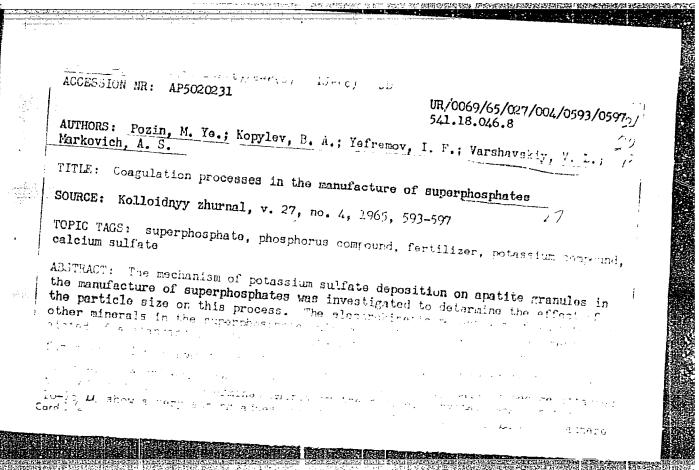
Zhur. VKHO 8 no.2:221-222 163. (MIRA 16:4)

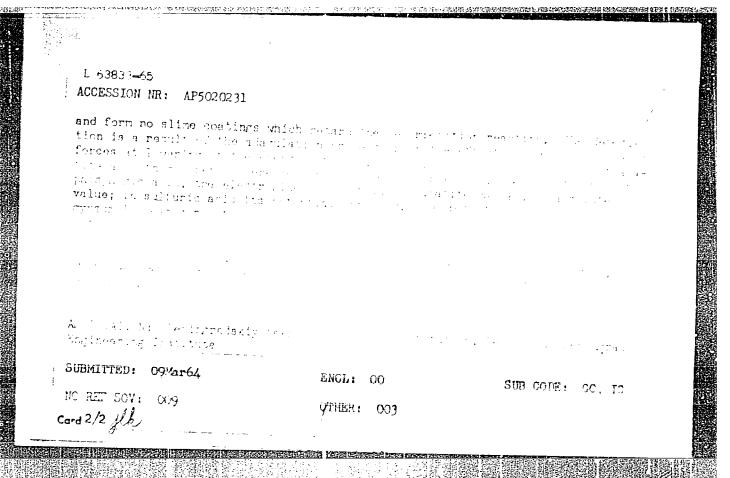
(Fertilizers and manures-Congresses)

ARNAUTOV, V.T.; BAHANOV, V.M.; FONSKOY, S.A.; PASTUKHOV, A.1.; SMIUNOV, I.A.;
TORSHILOV, Yu.V.; TRET'YAKOV, M.A.; UDOVENKO, V.G.; FREYDENZON, Ye.Z.;
SHCHEKALEV, Yu.S.; Prinimali uchastiye: MAKAYEV, S.V.; KOMPANIYETS,
G.M.; NAGOVITSYN, D.F.; NOVOLODSKIY, P.I.; VARSHAVSKIY, V.L.;
KOROGCDSKIY, V.G.; KLIBANOV, Ye.L.: MEDVEDEVSKIKH, Yu.; TALANTSEVA,
T.I.; DUBROV, N.F.; DZEMYAN, S.K.; TOPYCHKANOV, B.I.; CHARUSHNIKOV,
O.A.; KHARITONOV, Yu.A.

Developing and mastering the technology of converting vanadium cast iron in oxygen-blown converters with a 100 ton (Mg) capacity. Stal' 25 no.6:50%-508 Je '65. (MIRA 18:6)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat (for Makayev, Koroseniyets, Nagovitsyn, Novolodskiy, Varshavskiy, Korosedskiy, Klibesov, Medvedevskikh, Talantseva). 2. Ural'skiy nauc mo-issledovatel'skiy institut chenykh metallov (for Lubrov, Ezemyan, Topychkanov, Cherosennikov, Kharitonov).





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NIXITENKO, M.D., inzh.; SURIN, P.P., inzh.; VARSHAVSKIY, V.L., inzh.

Manganese content of Ell, El2 and El3 electrical steel. Staltel no. 1:30-31 Ja '61. (MIRA 14:1)

1. Alpayevskiy metallurgicheskiy kombinat. (Manganese steel...Electric properties)
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VARSHAVSKIY, V.L.; BEDRIK, I.A.

Rapid ramming of new hearths. Metallurg 8 no.5:13 My 163.

1. Starshiy insh. tekhnicheskogo otdela Alapayevskogo metallurgicheskogo kombinata (for Varshavskiy). 2. Starshiy master martenovskogo tsekha Alapayevskogo metallurgicheskogo kombinata (for Bedrik).

(Open-hearth furnaces-Maintenance and repair)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

5/183/62/000/004/001/001 B117/B144

AUTHORS:

Sigal, M. B., Varshavskiy, V. Ya., Koziorova, T. N.

Determination of fiber-forming properties of new polymers

TITLE:

Khimicheskiye volokna, no. 4, 1962, 21 - 24

TEXT: The author's method and apparatus described earlier (Khim. volokna, no. 5, 29 (1959)) are superior to those more recently reported (Man-Made no. 5, 38, no. 439, 71 (1961)) in that they need a minimum of only 1 g polymer as against 25 g. The improved device allowed considerable variations in the conditions for fiver formation from the melt and stretching, these processes being conducted either continuously or individually. The reliability and reproduceability of the method was checked with a standard polycaprolactam fiber. The fiber-forming properties of some new polymers produced in the VNIIV, Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental Organic Compounds AS USSR) and other institutions were determined. The best of these, yielding strong, elastic, and stretchable fibers, were: polyamide on the basis of n-amino-ethyl-phenyl acetic acid, copolymer of octamethylene diamine salt and hexahydro terephthalic acid (72 %) containing 28 % caprolactam, a polyamide on the basis of non-Card 1/2

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

Determination of fiber-forming ... S/183/62/000/004/001/001

amethylene diamine salt and hexahydro terephthalic acid, which is 1 figure and 1 table.

ASSOCIATION: VNIIV

SUBMITTED: December 12, 1961

Card 2/2

VARSHAVSKIY, V.Ya.; SIGAL, M.B.

Polyformaldehyde, a new raw material for synthetic fibers. Khim.volok. no.1:5-9 '63. (MIRA 16:2)

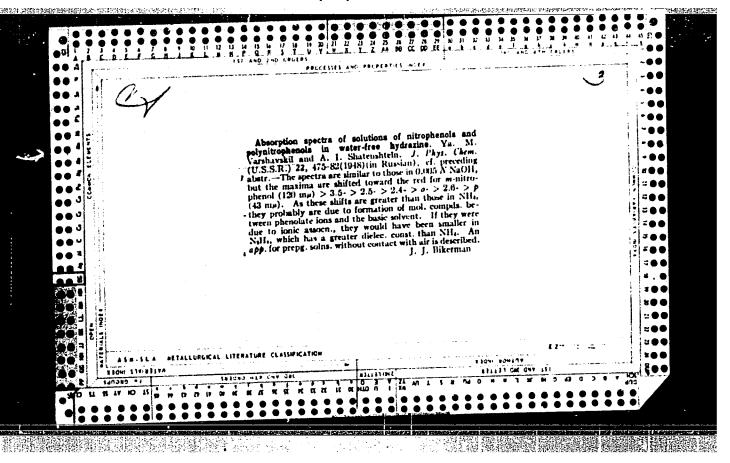
1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna, (Formaldehyde) (Textile fibers, Synthetic)

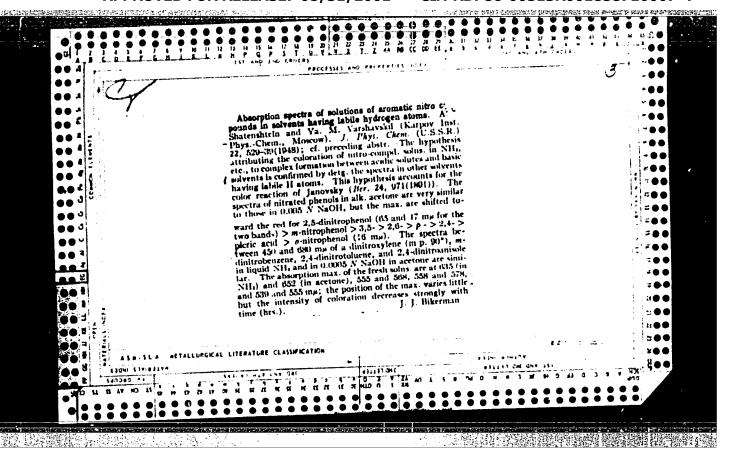
SIGAL, M.B.; SHABLYGIN, M.V.; VARSHAVSKIY, V.Ya.

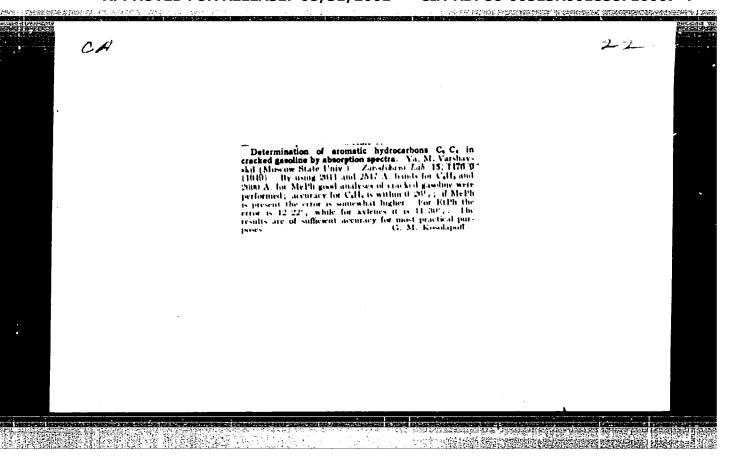
表的**,我们就是不是一个一个一个一个一个一个一个一个一个一个**

Use of the infrared spectroscopy method for studying "polifen" (MIRA 18:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.







SHATEHERTEYH, A. I., VARSHAVSKIY, YA. E.

Chlorofluoroethane

Physicochemical constants of 1,2-chloroflourcethane. Zhur. ob. khim. 22 no. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

Colombia de la companya de la compa

VAPSHAVSKIY, YA. M.

USSR/Chemistry - Reaction, Kinetics
Denterium

1 Jul 52

"The Reaction Capacity of Some Aromatic Compounds," A. I. Shatenshtein, Ya. M. Varshavskiy

"Dok Ak Nauk SSSR" Vol LXXXV, No 1, pp 157-160

A study of the reaction capacity of org substances as related to their constitution and the nature of the reaction medium is conducted by measuring the rate of isotopic exchange of hydrogen. In this work a systematic investigation of exchange reactions of aromatic org.substances in acid medium is begun. The solvent used is deuterium bromide. For the study in alk medium, deuteroummonia is used. Presented by Acad A. N. Frumkin 7 May 52. 224T23

SIMONS, Joseph, 1897- [redaktor]; KNUNYANTS, I.L., chlen-korrespondent [redaktor]; VARSHAVSKIY, Ya.M., kandidat khimicheskikh nauk [redaktor].

[Fluorine and its compounds] Ftor i ago soedineniia. Volume 1. Perevod s angliiskogo, pod red. I.L.Kmuniantsa i IA.M.Varshavskogo. Moskva, Ixd-ve inostrannoi lit-ry, 1953-. (MLRA 6:8)

1. Akademiya nauk SSSR (for Knunyanta).

(Fluorine)

THE PROPERTY OF THE PROPERTY O

MELLON, Melvin Guy, 1893- [author]; IL'INAYA, A.A.; VARSHAVSKIY, Ya.M. [trans-lators]; SHPOL'SKIY, E.V. [redaktor].

[Absorbtion spectroscopy; collection of articles] Absorbtsionnaia spektroskopiia; sbornik statei. Perevod s angliiskogo A.A.Il'inoi i IA.M. Varshavskogo, pod red. E.B.Shpol'skogo. Moskva, Izd-vo inostrannoi lit-ry, (MIRA 5.0)

(Spectrum analysis)

VARSHAVSKIY, Ya. M.

Investigation of the reactivity of aromatic compounds by the method of isotopic exchange with deuterium bromide. V. R. Kalinachenko, Ya. M. Varshavskiy, and A. I. Shatenshteyn. Doklady Akad. Nauk S.S.S.R. 91, 577-80, (1953); cf. C. A. 46, 9395.

Nuclear Science Abstracts July 15, 1954 Chemistry		ISOTOPIC EXCHANGE OF HYDROGEN IN HYDROCARBONS IN A LIQUID MEDIUM OF DEUTERIUM PLUORIDE. Yz. M. Varshavskii and A. I. Blatenshtain, Dobindy Akad, Nauk S.S.E.R. 91, 397(1953) Mar. 11. (In Russian) The mechanism of the rate of D exchange between Denriched HF and hydrocarbons was investigated, Denriched HF was produced by the isotopic exchange reaction of HF and heavy water. Isotopic exchange was		
			measured botween DF and the hydrocar tolumn, anthracese, phany methyl cute naphthaline, pheasuthrene, diphenyl met methase, chlorobename, tetraline, dec methy-tohexane, hexane, and heptane. T exchange is explained by the probable g fluorine oxide during the preparation of (J.S.R.)	bond benzene, & directlyianiline, hane, triphenyl lin, cyclohezane, he rate of meration of D-enriched HF.
		•		9-17-34
			•	
	•		44	

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

AUDRIETH, Ludwig Frederick; OGG, Betty Ackerson; YAKOVLEVA, Ye.A.[translator];

VARSHAYSKIY, Ya.M., redaktor; SARATOVA, M.V., redaktor; POPOV, V.I.,

redaktor GERSIMOVA, Ye.B., tekhnicheskiy redaktor

[The chemistry of hydrazine. Translation from the English] Khimiia
gidrazina. Perevod s angliiskoge B.A.IAkovlevoi. Pod red. IA.M.

Varshavskogo. Moskva, Izd-vo inostrannoi lit-ry, 1954. 237 p.

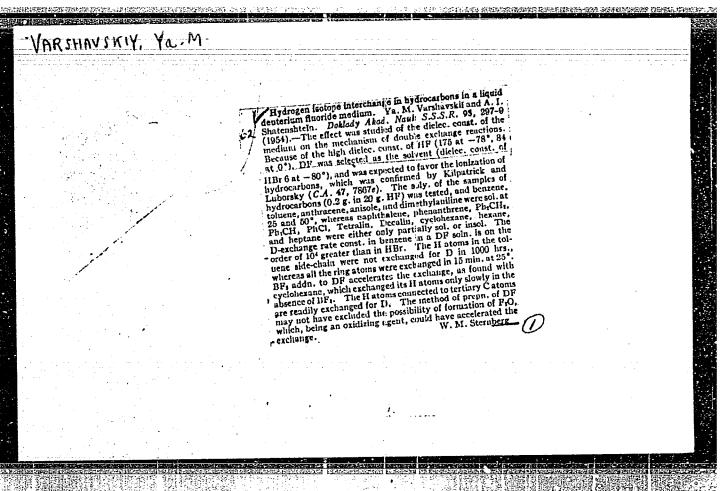
(Hydrazine)

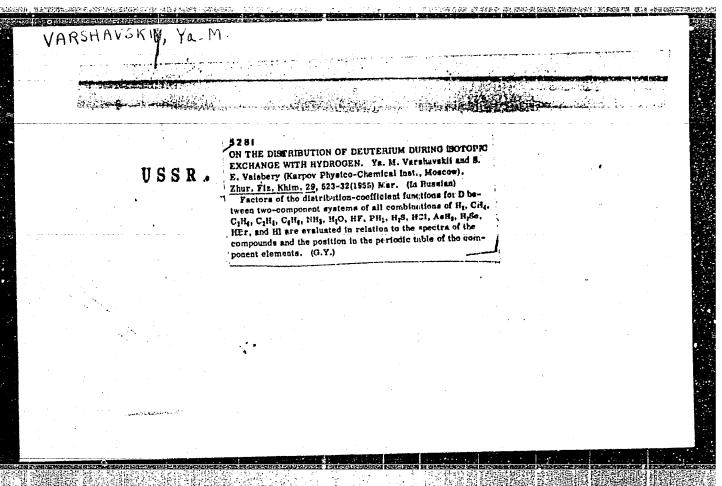
(MIRA 8:4)

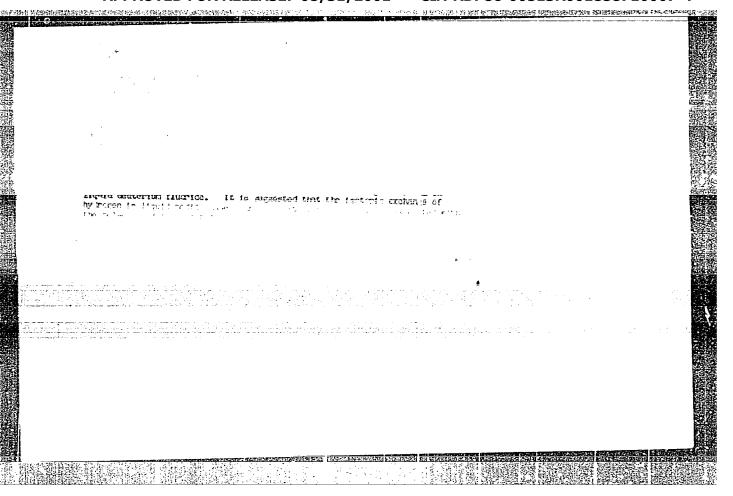
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A THE PURPOS OF SOURCE COME THE ELECTRONISM COMES DESIGNATION CONTROL OF THE ELECTRONISM COMES DESIGNATION OF THE ELECTRON YARSHAYSKIY, YO.M. TEREST YEVA, You.A. "Quantitative ultramicroanalysis." P.Kirk. Translated by IA.M. Varshavskii; I.P. Alimarin ed. Reviewed by E.A. Terent'eva. (MLRA 7:7) Usp.khim. 23 no.4:524-526 '54. (Chemistry, Analytical -- Quantitative) (Kirk, Paul) (Microchemistry)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"







CIA-RDP86-00513R001858710007-4 "APPROVED FOR RELEASE: 08/31/2001

VARSHAVSKIY, YAM.

USSR/ Chemistry - Physical chemistry

Card 1/2

Pub. 22 - 25/50

Authors

* Varshavskiy, Ya. M., and Vaysberg, S. E.

Title

Residence and an annual state of the state o About rules governing the equilibrium distribution of deuterium during isotopic hydrogen interchange reactions

Periodical : Dok. AN SSSR 100/1, 97-100, Jan 1, 1955

Abstract

Experiments show that the maximum possible deuterium distribution coefficient should occur during isotopic hydrogen exchange between the hydride of the most heavy alkali metal and one of the non-metal compounds of the first period. The equilibrium constant of the interchange reaction depends upon the nature of the statistical deuterium distribution between the reacting molecules and upon the various degree of hetero-dynamism of the

Institution : The L. Ya. Karpov Scientific Research Phys-Chemical Institute

Presented by: Academician V. A. Kargin, July 27, 1954

CIA-RDP86-00513R001858710007-4" **APPROVED FOR RELEASE: 08/31/2001**

Periodical: Dok. AN SSSR 100/1, 97-100, Jan 1, 1955

Card 2/2 : Pub. 22 - 25/50

Abstract

hydrogen isotopes in the molecules of both substances. It was established that the very same deuterium distribution rules pertain also to tritium as well as isotopes of other monovalent elements except that the distribution effects will be different. Five references: 4 USSR and 1 USA (1947-1954). Tables; diagram.

SIMONS, J.H., editor; KNUNYANTS, I.L., akademik, redaktor; VARSHAVSKIY, Ya.M., kandidat khimicheskikh nauk, redaktor; ZAKHAR YEVSKIY, V.A., redaktor; GRIBOVA, M.P., tekhnicheskiy redaktor

[Fluorine chemistry. Translate: from the English] Ftor i ego soedineniia. Perevod s angliiskogo. Pod red. I.L. Knuniantsa i IA.M. Varshavskogo. Moskva, Izd-vo inostrannoi lit-ry, Vol.2. 1956. 495 p. (MIRA 9:11)

SHATHNSHTHYN, A.I.; VARSHAYSKIY, Ya.M.

Nethods of isotopic analysis of vater. Part 1: New apparatus for density measurement by the dropping method. Zhur. anal. khim.

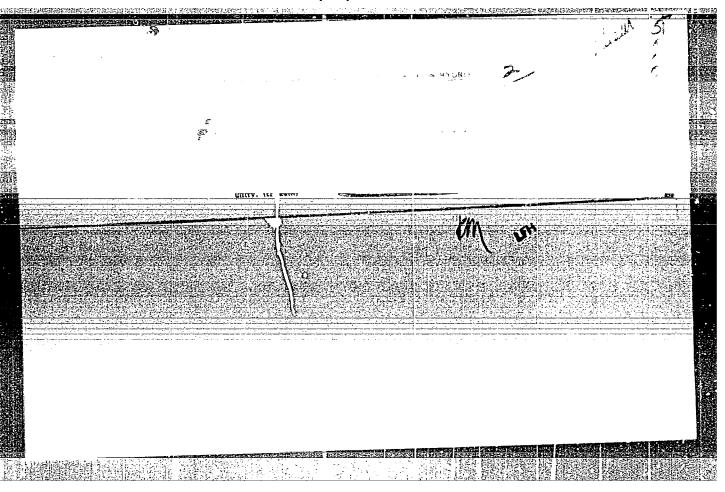
11 no.6:746-748 N-D '56.

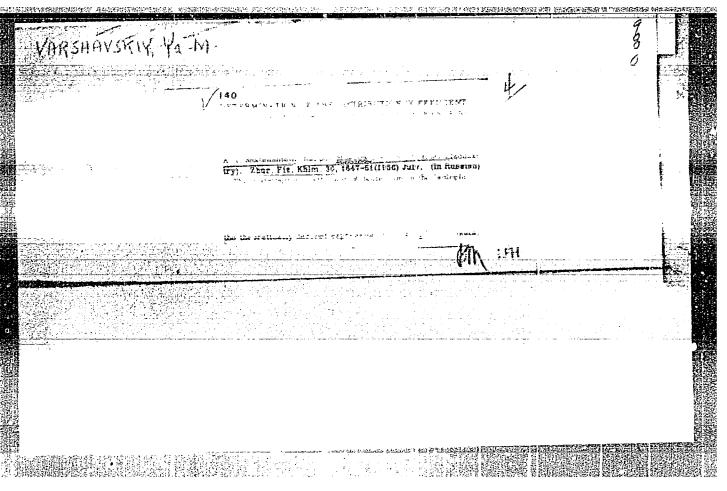
1. Fisiko-khimicheskiy institut im. L.Ya. Karpova, Moskva.

(Water)

(Specific gravity)

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4





VARSHAVSKIY, YA M.

1990年1984年1月1日

SHATENSHTEYN, A.I.; KALINACHENKO, V.R.: VARSHAVSKIY, Ya.M.

Hydrogen exchange between benzene and haphthalene derivatives and liquid deuterium bromide [with English summary in insert]. Zhur. fiz.khim. 30 no.9:2098-2105 S 156. (MIRA 9:12)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva. (Hydrocarbons) (Hydrobromic acid-)

VARSHAVSKIY, Yakov Mikhaylovich Name:

Investigation of reactions of isotope exchange of hydrogen Pissertation:

Doc Chem Sci Degree:

Not indicated Affiliation:

30 Dec 56, Council of Order of Labor Red Banner Sci Res Phys-Chem Inst Pefense Date, Place:

imeni Karpov

Gertification Date: 20 Apr 57

Scurce: FMVO 14/57

31

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

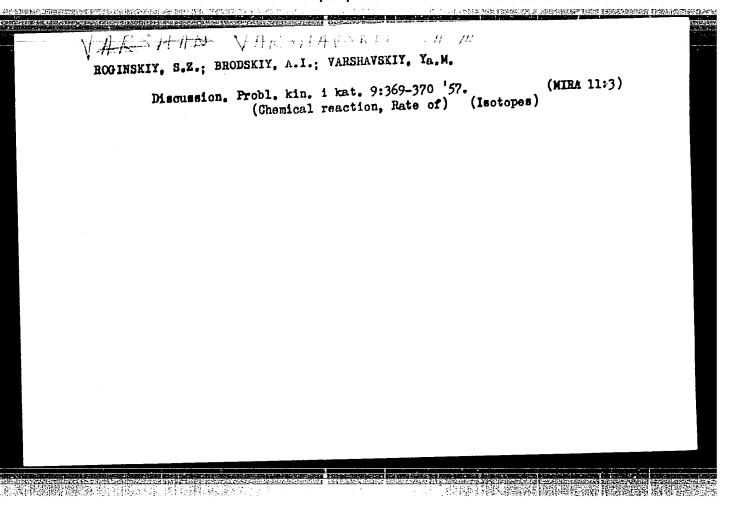
SHATENSHTEYN, A.I.; ZVYAGINTSEVA, Ye.N.; YAKOVLEVA, Ye.A.; IZRAILEVICH, Ye.A.;
VARSHAVSKIY, Ya.M.; IOZHKINA, M.G.; VEDENBIEV, A.V.

VARSHAVSKIY, Ya.M.; IOZHKINA, M.G.; VEDENBIEV, A.V.

Acid-base catalysis of the hydrogen isotope exchange reaction. Probl.

(MIRA 11:3)

(Catalysis) (Hydrogen—Isotopes)



The influence of thermodynamic isotope effect on the kinetics of the substitution reaction. Probl. kin. i kat. 9:363-368 57. (Chemical reaction, Rate of) (Isotopes) (MIRA 11)	.:3)

CONTRACTOR OF THE PROPERTY OF THE PARTY OF T

SHATENSHIEYN, A.I.; VARSHAVSKIY YA.K.

Methods for isotopic analysis of water. Report No.3. The complete isotopic analysis of water by decomposition with iron [with summary in English]. Zhur.anal.khim. 12 no.2:236-239 Hr-kp 157. (MLRA 10:7)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova, Moskva.
(Water--Analysis) (Oxygen--Isotopes) (Hydrogen--Isotopes)

A rapid semi-micro method for complete isotopic analysis of water is described. In combination with the drop determination of density the method permits separate determination of heavy isotopes of 0²⁷ and H (deuterium)¹⁷ in samples with any content of deuterium.

VARSHAVSKIY,

AUTHORS:

74-12-4/4 Varshavskiy, ¥3. M., and Vaysberg, S. E., (Moscow).

TITLE:

Thermodynamic and Kinetic Peculiarities of the Isotope-Exchange-Reaction of Hydrogen (Termodinamicheskiye i kineticheskiye osoben= nosti reaktsii izotopnogo obmena vodoroda).

PERIODICAL:

Uspekhi Khimii, 1957, Vol. 26, Nr 12, pp. 1434-1468 (USSR).

ABSTRACT:

Deuterium is of particularly great importance especially in organic chemistry, because it makes it possible to determine the way taken by hydrogen in chemical reactions by means of marked atoms. The exchange velocity can serve as a criterion for the structure and the preparedness of reaction of various substances. The article comprises the most important research results in the field of the thermodynamics and kinetics of the isotope exchange reaction of hydrogen; in this connection also general rules governing isotope exchange reaction are derived. The following chapters are dealt with:

The thermodynamics of isotope exchange.

The connection between the distribution coefficient of isotopes I) and the equilibrium constant of the isotope exchange reaction. a)

Methods for the statistical computation of equilibrium in isob)

Card 1/2

Rules governing the deuterium distribution in the isotope exc)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

Thermodynamic and Kinetic Peculiarities of the Isotope-Exchange-74-12-4/4 Reaction of Hydrogen.

change of hydrogen.

- Experimental data concerning the distribution of the equilid) brium of deuterium in isotope exchange reactions of hydrogen.
- II) Some details concerning the reaction kinetics of isotope ex= change:

General problems, a)

On the kinetic equation of the isotope reaction. b)

Limits of the applicability of the kinetic equation of first c)

There are 2 figures, 5 tables, and 76 references, 36 of which are Slavic.

AVATLABLE:

Library of Congress.

2. Isotope exchange-Thermodynamics 1. Hydrogen-Reaction

Card 2/2

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USCOMM-DC-54784

CIA-RDP86-00513R001858710007-4" APPROVED FOR RELEASE: 08/31/2001

VARSHAUSKIY, Ja. M.

"A Method For Investigating the Reactions of Hydrogen Isotope Exchange in a Liquid Deuterium Fluoride Medium," by Ya. M. Varshavskiy and M. G. Lozhkina, Physico-Chemical Institute imeni L. Ya. Karpov, Zhurnal Fizicheskoy Khimii, Vol 31, No 4, Apr 57, pp 911-914

A description is given of a method for obtaining pure liquid hydrogen fluoride enriched with deuterium and of a procedure for hydrogen isotope exchange studies in this solvent. The deuterium fluoride was prepared by the thermal decomposition of KF.DF. The equipment used and methods for preventing corrosion by hydrogen fluoride and escape of hydrogen fluoride preventing corrosion by hydrogen fluoride and escape of hydrogen fluoride and boron trifluoride are described in detail. The equipment was constructed of monel and fluorine plastics. (U)

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

75-13-3-6/27 Varshavskiy, Ya. M., Shatenshteyn, A. I. AUTHORS:

A Photographic Method for Measuring the Color Intensity of TITLE:

a Solution in Small Volumes (Fotograficheskiy metod izmereniya

intensivnosti okraski rastvora pri malykh ob"yemakh)

Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, PERIODICAL:

pp 294 - 298 (USSR)

For determining very small amounts of a compound by means of microspectro-ABSTRACT:

ultramicrochemical methods (References 1,2) photometry can also be successfully employed, as due to its high sensitivity it is possible to work with very diluted solutions. In publications some types of microcuvettes were described which can in connection with a photometer (mainly with the electrical spectrophotometer $C\bar{Q}$ -4) be used for measuring the color intensity of very small amounts in a solution (References 3,4). In the present paper a simple device for a photographic method of measuring the color intensity of a solution is described. Capillary cuvettes with a volume of 0,05-0,1 ml were used. 2 cuvettes one of them containing the solution to be in-

vestigated, and the other a comparison solution with lower color

Card 1/3

CIA-RDP86-00513R001858710007-4"

APPROVED FOR RELEASE: 08/31/2001

A Photographic Method for Measuring the Color Intensity 75-13-3-6/27 of a Solution in Small Volumes

intensity are directly beside each other fastened in front of a photographic plate (the axis of the capillary cuvettes lie at a right angle to the plate). A beam of parallel light rays first goes through the cuvettes and then blackens the plate. The intensity of blackening depends on the light used and on the concentration of the solution. In front of the comparison cuvette a controllable light-absorption device is fastened by which an equal blackening of the plate for both cuvettes can be obtained. The absorption of the solution to be investigated is then equal to the absorption of the light-absorption device. When the corresponding absorption is determined for every position of the light-absorption device the concentration of the solution to be investigated can be immediately determined from Beer's law without using a calibration curve. The construction of the device used, which is drawn in the paper, is described in detail. The cuvettes, the light-absorption device and the measuring method are also described in detail. There are 4 figures and 5 references, 3 of which are Soviet.

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A Photographic Method for Measuring the Color Intensity 75-13-3-6/27 of a Solution in Small Volumes

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva

(Moscow, Physical-Chemical Institute imeni L. Ya. Karpov)

June 21, 1956 SUBMITTED:

1. Solutions--Spectrographic analysis

card 3/3

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

CIA-RDP86-00513R001858710007-4 "APPROVED FOR RELEASE: 08/31/2001

AUTHORS:

-Varshavskiy, Ya. H., Vaysberg, S. E.

76-32-2-32/38

TITLE:

On the Limits of Applicability of the First Order Kinetic

Equation for Isotopic Exchange Reactions

(O granitsakh primenimosti kineticheskogo uravneniya pervogo

poryadka dlya reaktsiy izotopnogo obmena)

PERIODICAL:

Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Hr 2, pp. 454-459

(USSR).

ABSTRACT:

The authors investigate the problem concerning the limits of applicability of first order equations for reactions of isotopic exchange in dependence upon the degree of deviation of the quantity a (distribution coefficient of isotopes) from unity. The investigation is carried out with the example of a bimcle= cular reaction where any dissociation reaction intendedly is expressed by a first order equation (as its velocity is limited by the dissocoiation of a component), the greatest part of the association reaction, however, apparently still is bimolecular. The kinetic equation for the reaction of isotopic exchange (taking place according to bimolecular mechanism) is deduced. It is shown

Card 1/3

that this equation is one of second order and practically becomes

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4" On the Limits of Applicability of the First Order Kinetic Equation for Isotopic Exchange Reactions 76-32-2-32/38

a first order equation only on certain conditions. For this, one of the following three conditions is sufficient: 1. - When the coefficient of equilibrium distribu tion of the isotopes is close to unity. 2. - A small concentration of that component in which the accumulation of the respective isotope is measured. 3. - Small concentration of that isotope in the system the accumulation of which is measured in the respective component. It is shown that the deviation of the velocity constant of the bimolecular reaction in the isotopic exchange continuously increases from the velocity constant calculated according to the first order equation with the increase of the exchange proportion, and that it tends towards a certain maximum. This maximum is not greater than twice the mini= mum value corresponding to the beginning of the exchange. For a number of values of the isotopic distribution coefficient the corresponding maximum deviations are calculated which practi= cally can occur within the range of the concentration changes of the component and of the isotopes. The extent of this deviation makes it possible to estimate the degree of non-conformity between the velocity constant and the kinetic equation of first order and to determine the limits of applicability of this equation.

Card 2/3

On the Limits of Applicability of the First Order Kinetic Equation for Isotopic Exchange Reactions

76-32-2-32/38

There are 2 figures, and 12 references, 5 of which are Soviet.

ASSOCIATION: Physic o chemical Institute imeni L. Ya. Karpov, Moscow

(Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva)

SUBMITTED: April 15, 1957.

1. Exchange reactions -- Mathematical analysis

Card 3/3

 $(g_{ij}, k) = (g_{ij}, k) \frac{1}{2}$

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

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Varohauskiy, ya. M

AUTHORS: Varshavskiy, Ya. M., Vasil'yev, G. Ya., 20-2-31/60

Karpov, V. L., Lazurkin, Yu. S., Petrov, I. Ya.,

TITLE: On Isotopic Exchange Between Gaseous Hydrogen and Solid Poly-

mers Under the Action of Nuclear Radiation (Ob izotopnom obmene mezhdu gazoobraznym vodorodom i tverdymi polimerami pri dey-

stvii yadernykh izlucheniy)

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 2, pp. 315-316 (USSR)

ABSTRACT: In the case of irradiation of polymeric hydrocarbons gaseous products, which mainly conatain hydrogen, are separated out. The

explanation of the problem of the reversibility of the corresponding process, i.e. of the possibility of the penetration of hydrogen from the gaseous phase into the molecules of the polymer during the irradiation would be desirable. The authorstried to explain this problem by the method of the marked atoms, using deuterium; they studied the exchange of isotopes between the gaseous deuterium and various solid polymers in the radiation

field of a nuclear rector. The following polymers of the vinylseries were examined: Polyethylene, polypropylene, polystyrol,

Card 1/3 divinyl-caoutchouc, polymethyl-metacrylate. The performance of

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On Isotopic Exchange Between Gaseous Hydrogen and Solid Poly- 20-2-31/60 mers Under the Action of Nuclear Radiation

the measurements is described shortly. A table illustrates the effectively found percentage of deuterium in the above given polymerics after the irradiation. The results of various parallel measurements differ at the most for 0,02 per cent. On occasion of all these polymers it was shown in particular that the penetration of deuterium is not connected with the adsorption of gaseous deuterium. The control tests, which were made for this purpose, showed that, if there is no radiation, no dueterium was found in the polymer. The effects, observed here, obviously are cuased by a chemical interaction between the molecules of the polymer and the molecules of the deut_erium on occasion of the action of deuterium. The highest quantity of deuterium penetrated into polyethylene and into polypropylene. In polybutadiene and polystyrol the exchange is some what slower, whereas in the case of polymethyl-metacrylate no signs were noticed of an exchange. At present a mechanism with the formation of free radicals, is assumed for polyethylene: R-CH2-R1-~ > R-CH-R1 + H. Probably the deuterium penetrates in the case examined here because of a reaction between a polymeric radical and a deuterium molecule into the polymer: $\hat{R} + D_2 \longrightarrow RD + D$, $RH + D \longrightarrow \hat{R} + HD$. The equili-

Card 2/3

On Isotopic Exchange Between Gaseous Hydrogen and Solid Poly- 20-2-31/66 mers Under the Action of Nuclear Radiation

brium concentration of the solved deutrium in the polymer has the order of 10⁻⁶ mol/g. The penetration of deuterium into the molecules of the polymers may, to some degree, also be caused by exchange of isotopes between the gaseous dueterium and the free radicals. There are 1 table, and 5 references, 4 of which are Slavic.

PRESENTED:

June 24, 1957, by V.A. Kargin, Academician

SUBMITTED:

June 24, 1957

AVAILABLE:

Library of Congress

Card 3/3

5(4) AUTHORS:

Varshavskiy, Va. M., Vaysterg, S. E.,

SOV/20-122-5-23/56

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Trubitsyn, B. A.

TITLE:

The Equilibrium Distribution of Deuterium in Hydrogen Exchange With Liquid Hydrogen Chloride (Ravnovesnoye raspredeleniye deyteriya pri vodorodnom obniene s

zhidkim khloristym voderodom)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 122, Hr 5,

pp 851 - 833 (USSR)

ABSTRACT:

The present paper deals with the first investigation of the deuterium exchange in liquid hydrogen chloride;

the isotope-equilibria in several systems which contain hydrogen chloride are investigated. Some earlier papers are first discussed. It was of importance, above all, to obtain a reliable value of the distribution coefficient a of the deuterium for the isotopic equilibrium between hydrogen chloride and the areas tic C-H-bond and to compare its value

with that of α for the case of an O-H bond and an alighatic C-H bond. Knowledge of these quantities

Card 1/3

The Equilibrium Distribution of Deuterium in Hydrogen SOV/15-122-5-25/56 Exchange With Liquid Hydrogen Chloride

is of importance also for the investigation of deuteron exchange with liquid hydrogen chloride at present being carried out by the authors. The authors investigated the equilibrium distribution between hydrogen chloride and Lennene, cyclopentane, and also water. These investigations were carried out on liquid-phase systems under pressure. After the establishment of equilibrium, the liquid hydrogen was vaporised and the water obtained by neutralization was then investigated with respect to its deuterium content. The carrying out of measurements is discussed in short. In isotope-exchange, equilibrium was attained from both sides by carrying out experiments with direct and inverse exchange. The tests concerning isotope exchange in hydrocarbons were carried out with an aluminum-chloride catalysis. The data thus obtained are compiled in a table. They permit the following conclusion to be drawn: At one and the same temperature the values obtained for the isotope

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507/20-122-5-23/56 The Equilibrium Distribution of Deuterium in Hydrogen Exchange With Liquid Hydrogen Chloride

> exchange of hydrogen chloride with compounds containing an O-H bond and also an aromatic or aliphatic O-H bond are found to agree in practice. The hydrogen exchange (in the presence of AlCl₃) between liquid hydrogen chloride and a saturated hydrocarbon that contains no third carbon atom is of special interest. Liquid hydrogen chloride is suited for the investigation of the suitability of organic compounds for the reactions of electrophile substitution by the method of deuteron exchange. There are 1 figure and 12 references, 9 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im.L.Ya.Karpova (Physico-

Chemical Institute imeni L.Ya.Karpov)

PRESENTED:

June 9, 1958, by V.A.Kargin, Academician

SUBMITTED:

June 9, 1958

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

VARSE	AVSKIN, Ta.W.	
	Hature and mechanism of electrophilic hydrogen exchange. Probl.fis.khim. no.2:61-96 '59. (MIRA 13:7) 1. Laboratoriya khimicheskoy reaktsionnosti i polimorizatsii Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta imeni L.Ya. Karpova. (Deuterium) (Hydrogen)	

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

VARSHAVSKIY, Ya.M., doktor khimicheskikh nauk; VAYSBERG, S.E., kand.

khimicheskikh nauk

Present-day methods for producing heavy water. Khim.nauka i prom.

(MIRA 13:8)

4 m.4:498-509 159.

(Deuterium oxide)

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5(4) 5.2400(H), 5.3200

SOV/20-128-6-33/63

Varshavskiy, Ya. M. Alikhanov, P. P.,

TITLE:

Equilibrium Distribution of Deuterium on Hydrogen Exchange With

Liquid Deuterium Iodide

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1214-1216

(USSR)

ABSTRACT:

This paper belongs to a series of investigations of the isotope equilibria in various systems of hydrogenous compounds (Refs 1-4). An investigation is made of the exchange reaction between the aromatic C-H bond and the deuterium-containing HJ. Benzene, which would be well suited for this investigation because of the too slowly so that diphenyl had to be used. In the dissolution of diphenyl in liquid hydrogen iodide the 6 H-atoms in ortho- and para-position are easily exchanged while the 4 H-atoms in meta-position virtually did not react. The deuterium concentration in HJ was determined by analysis of the water obtained by decomposition of HJ in the nitrogen current over CuO at 350 - 400°. The reaction with diphenyl took place in sealed glass tubes at a pressure of 4 - 15 atm. After equilibration had been reached, the HJ was evaporated, the diphenyl in the oxygen current was burnt, and

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SOV/20-128-6-33/63

Equilibrium Distribution of Deuterium on Hydrogen Exchange With Liquid Deuterium Iodide

the deuterium content of the water obtained was determined. The resulting distribution coefficient a was checked by the counterreaction of D-substituted diphenyl in ortho- and para-position with HJ. The experimental data on a are compared in the table with the values calculated by means of the formulas contained in reference 8. The values coincide well. As is shown in figure 1, good agreement was also obtained for the other hydrogen halides (Refs 2-4). In the present paper the following values are given for the equilibrium coefficient α : $\alpha_{00} = 4.07$,

 α_{250} = 3.47 and α_{500} = 3.13. There are 1 figure, 1 table, and 9 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.

L. Ya. Karpova (Scientific Research Institute of Physical Chemis-

try imeni L. Ya. Karpov)

June 19, 1959, by S. S. Medvedev, Academician PRESENTED:

April 13, 1959 SUBMITTED:

Card 2/2

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

GRECHKO, V.V.; SHKARENKOVA, L.S.; VARSHAVSKIY, Ya.M.

Heat denaturation of INA in heavy water. Biokhimiia 28 no.6: 1059-1064

1. Institute of Radiation and Physical-Chemical Biology, Academy of Sciences of the U.S.S.R., Moscow.

N-D'63

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VARSHAVSKIY, Ya.M., doktor khim.nauk, red.; GKL'BSHTKYN, A.I., kand.

Khim.nauk [translator]; SHUB, D.M., kand.khim.nauk [translator];

SHEGLOV, O.F., kand.khim.nauk [translator]; ARNOL'DOV, V.V., red.;

IOVLEVA, N.A., tekhm.red.

[Catalytic, photochemical, and electrolytic reactions] Kataliticheskie, fotokhimicheskie i elektroliticheskie reaktaii. Moskva,

Izd-vo inostr.lit-ry, 1960. 436 p. Translated from the English.

(Chemical reactions)

KITOVA, A.I.; VARSHAVSKIY, Ya.M. Electron absorption spectra of solutions of aromatic hydrocarbons

in liquid HCl in the presence of AlCl3. Dokl. AH SSSR 135 no.6:1395-(MIRA 13:12) 1398 D 160.

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Predstavleno akademikom V.A. Karginym. (Hydrocarbons -- Spectra)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

KNUMYANTS, I.L., glav. red.; HAKHAROVSKIY, G.Ya., zem. glav. red.;
EUSEV, A.I., red.; VARSHAVSKIY, Ya.M., red.; GEL'PERIN,
N.I., red.; DOLIN, P.I., red.; KIREYEV, V.A., red.; MEYERSON,
G.A., red.; MURIN, A.N., red; POGODIN, S.A., red.; REBINDER,
P.A., red.; SLONIMSKIY, G.S., red.; STEPANENKO, B.N., red.;
EPSHTEYN, D.A., red.; VASKEVICH, D.N., nauchmyy red.; GALLE,
R.R., nauchmyy red.; GARKOVENKO, R.V., nauchmyy red.; GODIN,
Z.I., nauchmyy red.; MOSTOVENKO, N.P., nauchmyy red.;
LEHEDEVA, V.A., mladshiy red.; TRUKHANOVA, M.Ye., mladshiy
red.; FILIPPOVA, K.V., mladshiy red.; ZHAROVA, Ye.I., red.;
KULIDZHANOVA, I.D., tekhn. red.

[Concise chemical encyclopedia] Kratkaia khimicheskaia entsiklopediia. Red. koll.: I.L.Knuniants i dr. Moskva, Gos. nauchn.
izd-vo "Sovetskaia entsiklopediia." Vol.1. A .. E. 1961.
(MIRA 15:2)

(Chemistry-Dictionaries)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

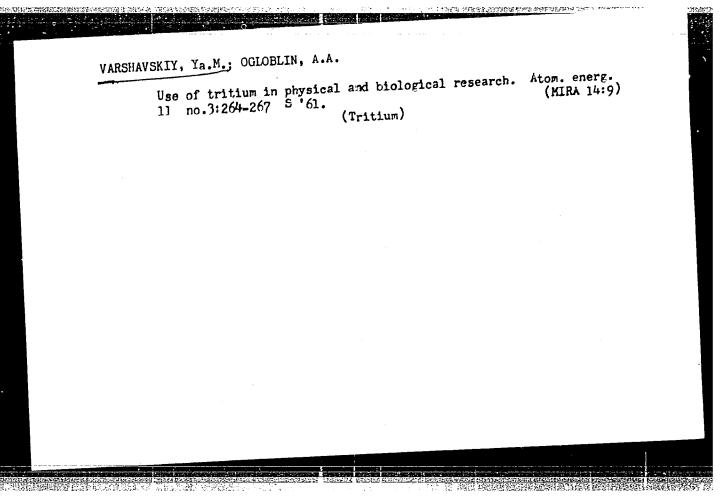
VARSHAVSKIY, Ya.M., doktor khimicheskikh nauk; ROGINSKIY, S.Z.; SHNOL',
S.E., kand.biologicheskikh nauk

Isotopes in biochemistry. Zhur.VKHO 6 no.3:275-284 '61.

(MIRA 14:6)

(Radioisotopes)

(Biochemistry)



S/020/61/136/001/031/037 B004/B056

AUTHORS:

Kartasheva, L. I., Bulanovskaya, Z. S., Barelko, Ye. V.,

Varshavskiy, Ya. M., and Proskurnin, M. A.

TITLE:

Investigation of Radioactive Benzene Oxidation in Aqueous

Solution by Means of Tagged Atoms

Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 143-146 PERIODICAL:

TEXT: The authors discuss the process of interaction between benzene and the products of water radiolysis with reference to the results obtained in Refs. 1 - 9. In discrepancy to the scheme of I. Stein and J. Weiss (Ref. 3) assuming $C_6H_6 + OH \longrightarrow C_6H_5 + H_2O$; $C_6H_6 + H \longrightarrow C_6H_5 + H_2$ they regard direct OH° and H° addition with C_6H_7 and C_6H_6OH ° formation as being more probable. The authors attempt to explain this problem by examining benzene radiolysis in the presence of heavy water. If addition of H° and OH° to C6H6 occurs, the forming insoluble substance is found to contain deuterium not only in the OH groups but also in the C=H bonds in which no isotope exchange takes

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4"

Investigation of Radioactive Benzene Oxidation S/020/61/136/001/031/037 in Aqueous Solution by Means of Tagged Atoms B004/B056

place unless under irradiation (Ref. 10). The residual content of C-bound D in the substance was determined by "washing out" deuterium from the OH groups by means of a solvent of ordinary hydrogen composition (exchange OD ⇌OH). The ratio OD: CD expresses the probability of OH and H addition. Benzene and water containing 26.7 atom per cent were irradiated

from Co ; Y-dose was 170 r/sec, time of irradiation 250 hours. The mixture which previously was degassed by repeated freezing was irradiated in glass ampoules. The white substance that had formed was centrifuged off and divided into three portions after drying. In the first portion deuterium was directly determined. The second portion was dissolved in alcohol and evaporated for 14 times in order to remove the deuterium of the hydroxyl groups by isotopic exchange. Subsequently, the deuterium content was determined. The third portion was repeatedly treated with soda solution in order to remove phenol traces and to attain isotopic exchange in the hydroxyl groups. Furthermore, deuterium was also determined in the benzene which had not undergone reaction. The following results were obtained: Table 1

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S/020/61/138/001/019/023 B101/B231

AUTHORS:

Bulanovskaya, Z. S., Varshavskiy, Ya. M., Karpov, V. L.,

and Petrov, I. Ya.

TITLE:

Influence of gamma radiation of Co on isotopic exchange

between hydrocarbon polymers and gaseous deuterium

PERIODICAL:

Doklady Akademii nauk SSSR, v. 138, no. 1, 1961, 146-148

TEXT: In a previously issued work (DAN, 118, 315 (1958)) it has been demonstrated that ionizing radiation leads to isotopic exchange between the hydrogen of some polymers and deuterium. Experiments made at that time were based on the radiation of a water-moderated water-cooled reactor. It was the aim of the present work to give this effect a more detailed examination by applying pure gamma rays of Co60 and to find out whether such exchange also occurs in low-molecular hydrocarbons. Experiments were made in metal ampoules (20 ml) at a deuterium pressure of up to 150 atmospheres. The stuffing box of the ampoule valve was made of polyethylene. Its cover was provided with an end cap. After irradiation the deuterium pressure was measured, the sample was burnt in O2 at a temperature of

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Influence of gamma radiation of...

900°C, and the deuterium concentration in the water of the combustion product was determined. As has been shown by control tests, long-lasting product between polymer and deuterium fails to form heavy water in the combustion product. The polymers used in the process were polyethylene and polymethylmethacrylate. Fig. 1 shows the deuterium concentration in polyethylene as a function of the radiation dose, Fig. 2 as a function of pressure (dose, 200·10° r). Applying low pressure (up to 2 atmospheres) pressure (dose, 200·10° r). Applying low pressure (up to 2 atmospheres) resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration which slowed resulted in a rapid increase of the deuterium concentration of the resulted in a rapid increase of the deuterium concentration of the radiation dose, Fig. 2 as a function of polyethylene as a function of the radiation dose, Fig. 2 as a function of polyethylene as a function of the radiation dose, Fig. 2 as a function of polyethylene as a function of the radiation dose, Fig. 2 as a function of polyethylene as a function of the radiation dose, Fig. 2 as a function of polyethylene as a function of the radiation dose, Fi

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Table 1

substance	originally weight-in quantity, g	pressure of D, atm, before after irradiation		concentration of D, atom%	yield, molecules per 100 ev	
n-pentane n-pentane cyclopentane cyclopentane n-hexane cyclohexane cyclohexane benzene	0.80 0.70 0.50	10 147 10 147 10 142 10 142 10	10 141 10 125 10 135 10 142 !0	0.09 0.46 0.18 0.55 0.10 0.26 0.02 0.21 0.05 1.32	0.8 3.9 1.3 4.0 0.8 2.2 0.1 1.6 0.2 5.2	<i>X</i> _

It has thus been confirmed that ionizing radiation initiates isotopic exchange of hydrogen between the C-H bonds. The type of radiation has no

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S/020/61/138/001/019/023 B101/B231

Influence of gamma radiation of ...

sensible influence on this effect which must be taken into consideration when using radioactive indicators in the fields of chemistry and biology. There are 2 figures, 1 table, and 2 Soviet-bloo references

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-

chemical Institute im L Ya. Karpov)

December 12, 1960, by V. A. Kargin, Academician PRESENTED:

December 8, 1960 SUBMITTED:

Card 4/5

CIA-RDP86-00513R001858710007-4" APPROVED FOR RELEASE: 08/31/2001

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29825 S/020/61/140/006/024/030 B107/B101

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AUTHORS:

Varshavskiy, Ya. M., and Vaysberg, S. E.

TITLE:

Equilibrium distribution of tritium in isotopic exchange of hydrogen

Akademiya nauk SSSR. Doklady, v. 140, no. 6, 1961, 1361-1363 PERIODICAL:

TEXT: Data for calculating the equilibrium constants and the distribution ratio protium - tritium by the method by Urey (Ref. 1, see below), Bigeleisen - Mayer (Ref. 2, see below) and V. M. Tatevskiy (ZhFKh, 25, 261 (1951)) are not available up to date. The present work gives a method for calculating roughly the distribution ratio protium - tritium by means of the so-called & factors. These Afactors (Ya. M. Varshavskiy, S. E. Vaysberg, Usp. khim., 29, 1434 (1957)) are a quantitative measure for the thermodynamic inequality of two isotopes of an element in a certain substance. In first approximation, they depend only on the number of outside electrons and occupied electron shells. Thus the β factors of CH_4 , NH_3 , and H_2O are all

about equal to the β -factor of HF. The β factors for the tritium - protium exchange in diatomic hydrides (including free radicals) may be calculated

Card 1/82

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858710007-4" 22825

Equilibrium distribution of...

S/020/61/140/006/024/030 B107/B101

from the vibration frequencies of the hydride (ν_H) and the tritide (ν_T) : $\beta = (\nu_T/\nu_H) \left\{ \left[1 - \exp(hc\nu_H/kT) \right] / \left[1 - \exp(-hc\nu_T/kT) \right] \right\} \exp\left[(-hc/2kT) (\nu_H - \nu_T) \right]$. The β factors for the tritium - protium exchange at 20°C are listed in Table 1 and represented as function of the atomic number in Fig. 1. Table 2 gives the calculated distribution ratios at 20°C. $(\alpha = \beta_1/\beta_2)$. There are 1 figure, 2 tables, and 9 references: 6 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: Ref.1: H. C. Urey, J. Chem. Soc., 1947, 562; Ref.2: J. Bigeleisen, M. Mayer, J. Chem. Phys., 15, 261 (1947); Ref. 8: P. Stats, H. Morgan, J. Goldstein, J. Chem. Phys., 24, 916 (1956).

ASSOCIATION:

Institut radiatsionnoy i fiziko-khimicheskoy biologii Akademii nauk SSSR (Institute of Radiation- and Physicochemical Biology of the Academy of Sciences USSR)

PRESENTED:

May 23, 1961, by A. N. Frumkin, Academician

SUBMITTED: Card 2/52

May 23, 1961

VARSHAVSKIY, Ya.M.; KITOVA, A.I.

Optical cell for measuring absorption spectra of chemically active solutions under pressure. Opt. i spektr. 13 no.4:569-571 (MIRA 16:3)

0 '62. (Absorption spectra) (Solution (Chemistry))

(Optical instruments)

VARSHAVSKIY, Ya. M.

"Some particulars of the bithermic separation method of hydrogen isotopes." $\label{eq:separation}$

CHEMISTRY (PHYSICAL), SOCIETY OF (French) - 12th Annual Meeting-Paris, France, 4-8 Jun 62

Institute of Radiation and Phsico-chemical Biology, Academy of Sciences USSR

CIA-RDP86-00513R001858710007-4

34827 5/020/62/142/005/019/022 B110/B101

5.2430

Kitova, A. I., and Varshavskiy, Ya. M2 AUTHORS:

TITLE:

Exchange of deuterium between aromatics and liquid deuterium

chloride

Akademiya nauk SSSR. Doklady, v. 142, no. 5, 1962, 1112-PERIODICAL:

1115

TEXT: The principal investigation results of the isotopic exchange of hydrogen with liquid deuterium chloride are given. HCl enriched with 1.5-2% deuterium was obtained from a mixture of concentrated H2SO4 and HC1 with the calculated amount of D_2^0 . The high vapor pressure (-40 atm) of

DC1 at room temperature required Teflon-lined Monel metal containers. required DCl amount was siphoned to the hydrocarbon in the Monel test tube, and heated in the thermostat for a certain time. DC1 was evaporated, the hydrocarbon purified, burned in the 0_2 flow, and the deuterium concentration was determined by the dropping method in the resulting water. n

Card 1/4

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Exchange of deuterium between ...

(rate of isotopic exchange) and k (velocity constant) were calculated according to the second author (ZhFKh, 30, 1376 (1956)), the coefficient α for the deuterium distribution between hydrocarbon and HCl was assumed to be 2.2. In benzone, about 2 H atoms are exchanged at ~20°C within one year (K_C-20₆ = 4·10⁻⁸ sec⁻¹). The isotopic equilibrium is established faster with increasing number of aromatic rings: at 25°C, in naphthalene, (71 hrs (n = 7.6); phenanthrene, (23 hrs (n = 10); pyrene, (6 hrs (n = 9.6)). The decrease of k with increasing test duration proves the nonequivalence of the individual H atoms in the molecule as to electrophilic substitution. k(naphthalene): 1·10⁻⁴ - 1·10⁻⁵ sec⁻¹; k(phenanthrene): 0.9·10⁻⁴ - 0.6·10⁻⁴ sec⁻¹; k(pyrene): 6·10⁻⁴ - 1·10⁻⁴ sec⁻¹. Results obtained for diphenyl: at 25°C: 2 hrs, n = 0.5; 10 hrs, n = 0.7; 2! hrs, n = 1.7; 49 hrs, n = 2.9; at 20°C: 79 hrs, n = 3.0; 279 hrs, n = 5.2; 1200 hrs, n = 6.0; 4800 hrs, n = 6.0. Owing to the chemical

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Exchange of deuterium between...

properties of diphenyl, the four H atoms in m-position are not inclined to electrophilic substitution. Results obtained for toluene, ethyl benzene, and isopropyl benzene: at 25° C: 6 hrs, n = 0.4.0.4, 0.5; 10 hrs, n = 0.7, 0.7, 0.7; 24 hrs, n = 1.7, 1.5, 1.4; at 20 C: 1200 hrs, n = 4.4, 4.0, 4.1. The similarity of values proves the low effect of the alkyl group substituents on the substitutionability of H atoms in the benzene ring. In monoalkyl benzenes, the metahydrogen atoms are well suited for electrophilic substitution since the inductive effect and the effect σ of the π -conjugation of the alkyl group have the same sign. mesitylene, durene, pentamethyl benzene, the isotopic equilibrium is established at 25°C within 1 hr. Since the H atoms of CH3 groups do not react with DCl, no isotopic exchange took place in hexamethyl benzene. In di- and triphenyl methane, only the o- and p-hydrogen atoms were exchanged. The ability for electrophilic substitution decreases with increasing number of phenyl groups per aliphatic C-H bond. In naphthalene, the hydrogenation of one ring increases the substitutionability of H atoms

Card 3/4

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Exchange of deuterium between...

of the other ring. Addition of AlCl₃ accelerates the isotopic exchange C_6H_6 - DCL, cyclopentane - DCl, and cyclohexane - DCl, but not that of C_6H_6 - DCl. The electrophilic reactivity increases as follows: HI \angle HBr \angle HF, which does not agree with the increase in acidity HF \angle HCl \angle HBr \angle HI. There are 1 table and 17 references: 15 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: H. C. Brown et al., J. Am. Chem. Soc., 75, 6292 (1953). R. P. Bell, Acids and Bases, London, 1952, p. 57.

X

AUSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-

chemical Institute imeni L. Ya. Karpov)

PRESENTED: September 30, 1961, by A. N. Frumkin, Academician

SUBMITTED: September 22, 1961

Card 4/4

VAYSBERG, S.E.; VARSHAVSKIY, Ya.M.

Dual-temperature hydrogen isotope exchange between a gas-vapor mixture and a solution of the gas. Zhur.fiz.khim. 37 no.1:87-93

Ja '63.

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.

s/076/63/037/002/006/018 B101/B186

AUTHORS:

Vaysberg, S. E., Yarshavskiy, Ya. M. (Moscow)

TITLE:

Investigation of the two-temperature exchange of deuterium in the system water - hydrogen chloride

PERIODICAL:

Zhurnal fizicheskoy khimii, v. 37, no. 2, 1963, 307-309

TEXT: It was sought to determine efficiency of two-temperature columns, which is important for the concentration of deuterium, and to compare it which is important for the concentration of deuterium, and to compare it with that of rectification. For this purpose, di-temperature isotopic with that of rectification. For this purpose, di-temperature isotopic separation of hydrogen was effected in counter-current columns in the system hydrochloric acid - gas-vapor mixture of hydrogen chloride and water. The deuterium content of the water was 0.65 at%, that of the hydrochloric acid 0.61 at%. Results: The two-component state of the phases may lead to a shift in the enrichment peak to beyond the current ratio λ , equal to the partition factor α of deuterium. Maximum enrichment in the given system at column temperatures of t = 17°C and t' = 90°C corresponded to $\lambda = 2.7-2.9$, whereas α_{17} °C and t' = 90°C corresponded to rectification of water and the HET on di-temperature isotopic exchange has Card 1/2

Investigation of the two-temperature ... S/076/63/037/002/006/018

been found equal to 0.4. There are 1 figure and 1 table.

ASSOCIATION:

Fiziko-khimicheskiy institut im. L. Ya. Karpova

(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED:

August 17, 1961

Card 2/2

GRECHKO, V.V., MASLOVA. R.N.; ShrARENKOVA, L.S.; SILINA, Ye.I. [document]; VARSHAVSKIY Ya.M.

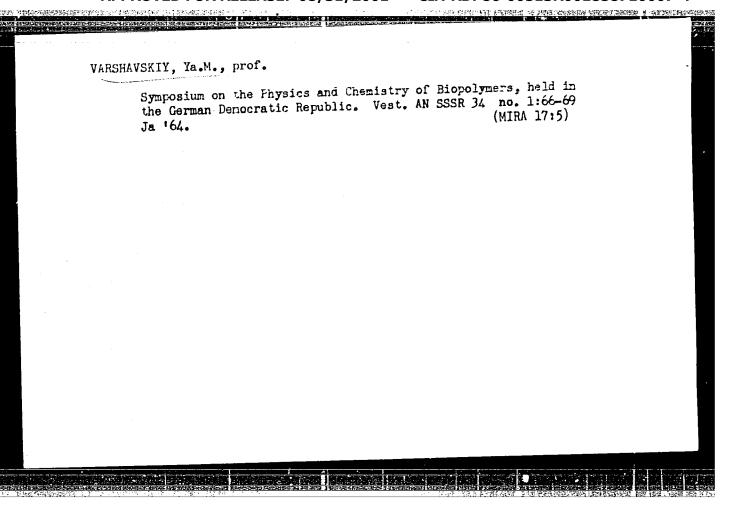
Effect of heavy water on the properties of DNA and proteins. Dokl. AN SSSR 152 no.3:740-742 S '63. (MIRA borlz)

1. Institut radiatationney i Cizike-khimitcheskey biologii AN SSSR. Predstavlene akademikom V.A.Engel'gardiom.

MANUSAUZHYAN, V.G.; ZYAKUN, A.M.; CHUVILIN, A.V.; VARSHAVSKIY, Ya.M.

Use of the mass spectrometric method for studying the derivatives of amino acids and smaller peptides. Part 2:
Mass spectrometric analysis of ethyl esters of N-acylpeptides.
Izv. AN Arm. SSR. Khim. nauki 17 no. 2:143-155 '64. (MIRA 17:6)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR.



MANUSADZHYAN, V.G.; SARKISYAN, G.S.; BAZHULINA, N.P.; VARSHAVSKIY, Ya.M.

Use of the infrared spectroscopy method in studying short peptides and their derivatives. Dokl. AN Arm. SSR 38 no.5:277-283 '64.

(MIRA 17:6)

1. TSentral naya nauchno—issledovatel skaya laboratoriya All Armyanskoy SSR. Predstavleno chlenom—korrespondentom All Armyanskoy SSR N.M. Kocharyanom.

MANUSADZHYAN, V.G.; BAZHULINA, N.P.; SARKISYAN, G.S.; VARSHAVSKIY, Ya.M.

Infrared spectra of the hydrochloric salts of ethyl esters of di- and tripeptides and ethyl esters of N-acetyl of di- and tripeptides. Dckl. AN Arm. SSR 39 no.1:21-28 '64. (MIRA 17:8)

1. Predstavleno chlenom-korrespondentom AN ArmSSR N.M.Kocharyanom.

MANUSADZIYAN, V.G.; YAKUSHINA, L.M.; VARISHAYUKIY, Ya.M.

Infrared spectra of di- and triamine alcohole. Dokl. AN Arm.
SSR 39 no. 2:69-72 164.

1. Predstavleno chlenom-korrespondentom AN Armyanskoy USE
N.M.Kocharyanom.

MANUSADZHYAN, V.C.; VARSHAVSKIY, Ya.M.

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Use of the mass spectrometric method for studying the derivatives of amino acids and smaller peptides. Part 1: On the possibility of identification of amino acids by characteristic peaks in esters of their acyl derivatives. Izv.AN Arm.SSR.Khim.nauki 17 no. 2:137-142 (MIRA 17:6)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR.

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