

5(4)

AUTHORS:

Vol'pin, M. Ye., Zhdanova, K. I., SOV/62-59-4-37/42
Kursanov, D. N., Setkina, V. N., Shatenshteyn, A. I.

TITLE:

On the Interaction of Tropilium Salts With Electrophilic Reagents (O vzaimodeystvii soley tropiliya s elektrofil'nymi reagentami)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 754-755 (USSR)

ABSTRACT:

This is a brief communication on the investigation of the deuterium exchange of tropilium salt in anhydrous D_2SO_4 .

It was found that at room temperature the tropilium ion does not take part in the reaction of the deuterium exchange even in the course of 168 hours. Thereafter the deuterium exchange was investigated under aggravated conditions, in liquid DBr in the presence of $AlBr_3$. It was found that tropilium bromide does practically not exchange the deuterium even under aggravated conditions, with $AlBr_3$ excess. (The exchange amounts to no more than 0.9% in the course of 94 hours). The experiments showed a strong restraint of the electrophilic attack in tropilium salts. In this respect tropilium turned out to

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On the Interaction of Tropilium Salts With Electrophilic Reagents

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be considerably more inactive than benzene and even unsaturated hydrocarbons. The cause of such a difficult course of the electrophilic substitution in the tropilium ion might be that all carbon atoms of the tropilium ring have a positive charge and the system has an electron deficit. This is in accordance with the general conception of the effect of the charge on the deuterium exchange (Ref 5). It can be expected that also other electrophilic reactions will be as little characteristic of the tropilium ion and as difficult as the deuterium exchange. There are 7 references, 4 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences, USSR). Fiziko-khimicheskiy institut im. Karpova (Physico-chemical Institute imeni Karpov)

SUBMITTED: September 7, 1958

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24(7), 5(3), 5(4)

SOV/51-b-5-12/34

AUTHORS: Astaf'ev, I.V. and Shatenshteyn, A.I.

TITLE: The Absorption Spectra of Carbanions (Spektry pogloshcheniya karbanionov)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 5, pp 631-636 (USSR)

ABSTRACT: A preliminary communication on this subject was published in 1956 (Ref 1). The work on the absorption spectra of these carbanions was undertaken in connection with the study of the mechanism of hydrogen isotope-exchange reactions in hydrocarbons, catalysed with potassium amide in liquid ammonia. Hydrocarbons react then like acids, and ions with trivalent negative carbon (carbanions) are formed. The paper reports studies of the electronic absorption spectra of carbanions formed in ionization of fatty-aromatic hydrocarbons and their derivatives. Spectra of 20 carbanions of the $ArCH_2^-$, Ar_2CH^- , Ar_3C^- and other types are reported. A quartz cell of 5-8 ml capacity with plane-parallel optical windows was used as the reaction vessel. The cell was filled with one of the hydrocarbons and a solution of potassium amide in liquid ammonia was added. The technique of obtaining spectra of ammonia solutions at room temperature was that described by Shatenshteyn and Izrailevich (Refs 7, 8). Liquid ammonia was found to leave the

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The Absorption Spectra of Carbanions

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absorption spectra of the hydrocarbons practically unaffected and the observed displacement of the absorption bands towards long wavelengths is due to formation of carbanions by acidic ionization of the aliphatic C-H bond whose carbon atom is attached to the aromatic ring. In Figs 1-3 the spectra of non-ionized substances dissolved in liquid ammonia (denoted by numbers with primes) are compared with the spectra of their anions (numbers without primes correspond to the numbers of anions in Tables 1-3). The data on the ArCH_2^- anions are given in Table 1 and Fig 1, on Ar_2CH^- in Table 2 and Figs 1 and 3 and on Ar_3C^- in Table 3 and Figs 2, 3. The figures show the value of $\log \epsilon$ plotted against wavelength and the tables give the positions of the absorption maxima (λ_{max}) and values of $\log \epsilon$ at these maxima. Certain regularities in the carbanion spectra are described and discussed. The carbanion spectra are compared with the spectra of carbonium ions (carbocations) of similar structure in Table 3, where cols 3 and 4 given the λ_{max} and $\log \epsilon_{\text{max}}$ of anions and cols 5 and 6 λ_{max} and $\log \epsilon_{\text{max}}$ of cations.

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The Absorption Spectra of Carbanions

Acknowledgments are made to D.A. Drapkina and V.F. Lavrushin for supply of some of the compounds. There are 3 tables, 3 figures and 22 references, 8 of which are Soviet, 12 English and 2 German.

SUBMITTED: June 16, 1958

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5(2), 5(4)

SOV/75-14-1-20/32

AUTHORS:

Shatenshteyn, A. I.,
Antonchik, Yu. I.

TITLE:

A Semi-Micromethod for the Isotopic Analysis of Substances
With a Deuterium Content of About 100% (Polumikrometod
izotopnogo analiza veshchestv s sodержaniyem deyteriya,
blizkim k 100 protsentam)

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 1, pp 100-103
(USSR)

ABSTRACT:

In the isotopic analysis described by the present paper the copper oxide substance is burned at 700^o, for which purpose the access of moisture from the atmosphere must be rendered impossible, because the heavy water formed is highly hygroscopic. The water formed is collected in a vessel containing metallic calcium in order to bind carbonic acid and nitrogen oxides. From there the water is distilled over into a tube at the end of which there is a gauged quartz float, by means of which water density is measured. The accuracy of determination is 0.05 at.%. It is necessary to put in so much substance that 0.2 - 0.3 ml of water is produced by combustion. An apparatus for bringing about combustion in the deuterium-

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A Semi-Micromethod for the Isotopic Analysis of
Substances With a Deuterium Content of About 100%

SOV/75-14-1-20/32

containing substance is illustrated and described in detail. Preparation of the apparatus before determination and combustion itself (both for organic compounds and for ammonia) is very accurately described in this paper. Also the isotopic analysis of the produced water by measuring density is described in detail. The process of calculating the isotopic composition of the initial substance from the determination of heavy water density is described on the basis of the example of deuteronaphthalene analysis. The method worked out was used for the analysis of completely "deuterated" organic compounds and of deuterioammonia which was obtained by the reaction of D_2O with Mg_3N_2 . In these compounds the deuterium content amounted to nearly 100%. There are 2 figures and 5 Soviet references.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva
(Physico-Chemical Institute imeni L. Ya. Karpov, Moscow)

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SOV/74-28-1-1/5

5(2), 5(4)
AUTHOR:

Shatenshteyn, A. I. (Moscow)

TITLE:

Concerning the Nature of Hydrogen Exchange in Solutions (O prirode vodorodnogo obmena v rastvorakh)

PERIODICAL:

Uspekhi khimii, 1959, Vol 28, Nr 1, pp 3-32 (USSR)

ABSTRACT:

This paper discusses the question of the isotope exchange of hydrogen on the basis of publications which have recently appeared and which have held several stand points. In the first chapter it is shown that the velocity of the hydrogen exchange not only for the C-H bond but also for H-H-, N-H-, O-H-, P-H-, and S-H bonds depends upon the acidity-basicity of the reagent solution. The second chapter treats the question of rapid and slow hydrogen exchange. The mechanism of these two reactions depends upon the structure of the electron shell of the atoms to which the hydrogen is bonded. The presence of a pair of free electrons predisposes a rapid reaction and the lack of such electrons gives a slow exchange. The experimental basis of this rule is described in detail in reference 1. The acid and basic catalysis can be considered as a general indication for reactions involving hydrogen exchange in solutions. The third

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chapter, which treats the question of the classification of the hydrogen exchange reactions, is summarized here. The chief characteristic of the classification is the protolytic function of the substrate. This depends to a large extent upon the reagents and the medium. There are acid, basic, and amphoteric exchanges. Besides the association and ionization mechanisms of exchange the intermediate forms must also be taken into consideration. The fourth chapter, "Hydrogen Exchange and the Problem of the Acid-Base Interaction", cites experimental and theoretical works (Refs 2,4,11,45,47,66,75,82-100,102-105) which confirm and enlarge the idea according to which the area of the protolytic reactions is not only restricted by the purely ionization process, as was indicated by the determinations of Brönsted. Measurements given for infra-red spectra, the dipole moments, and velocity constants indicate the possibility of estimating quantitatively the acid-base interaction in the initial state. There is no doubt, however, that the entire area of protolytic reactions must be treated as a whole, from the weakest to the strongest acid-base interaction, without considering the single peculiarities. The fifth chapter

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Concerning the Nature of Hydrogen Exchange in Solutions

considers the question of the relation between the velocity of the hydrogen exchange, the velocity of ionization of the protolyte, and its strength. On the basis of the works cited (Refs 3-8, 11, 55, 73, 75, 82, 99, 106, 107, 110-113, 115-122) it is apparent that the deviation from the rule which considers the velocity of the exchange reaction to be dependent upon only the strength of the protolytes involved confirms the correctness of the conception concerning the acid-basic nature of the heterolytic hydrogen exchange. Considering results published in recent years it is shown that the schemes of acid-basic interactions and the definition of acids and bases by Brønsted is inadequate. The ionization of electrically neutral acids and bases is only a state which the protolytic reaction completes under favorable conditions. It consists of a direct relationship between the equilibrium of the protolytic reaction and the velocity of its stabilization. The measurement of the rate of exchange can only serve as a method for determining the strength of very weak acids and bases in considering other factors affecting the kinetics of the hydrogen exchange in solutions. There are 7 figures, 12 tables, and 122 references, 60 of which

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Concerning the Nature of Hydrogen Exchange in Solutions
are Soviet.

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5 (2,3) SO7/79-29-3-21/61
AUTHORS: Shatenshteyn, A. I., Kalinacherko, V. R., Yurygina, Ye., N.,
Basmanova, V. M.

TITLE: Deuteron Exchange Between Liquid DBr and Phenylated Alkanes
(Deyterobmen mezhdu zhidkim DBr i fenilirovannymi alkanami)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, pp 849-855 (USSR)

ABSTRACT: The reaction rate of the electrophilic substitution of hydrogen
in alkyl benzenes [(of the chlorination (Refs 1,2), bromination
(Ref 3), nitration (Ref 4) and alkylation according to Friedel-
Crafts (Ref 5)] decreases in the following order:
 $C_6H_5CH_3 > C_6H_5C_2H_5 > C_6H_5CH(CH_3)_2 > C_6H_5C(CH_3)_3$. This is ex-
plained (Refs 6,7) by the effect of "superconjugation" ($\sigma\pi$ -con-
jugation). It may be assumed in an analogous way that the rate
of the corresponding reactions, under participation of the poly-
phenylated alkanes, also depends on the ratio of the number of
the α -CH-bonds to the number of the aromatic rings. If it is,
however, taken into account that the bromination rate of the
alkyl benzenes depends on the ramification of the carbon chain
not only on the α -, but also on the β -carbon atom of the alkyl

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Deuteron Exchange Between Liquid DBr and Phenylated Alkanes

group (Ref 3) it is not impossible that in the reactions of the electrophilic substitution of hydrogen in other phenylated alkanes the ratio between the number of rings and the number of the more remote CH-bonds is of importance. In order to prove the correctness of these assumptions the authors investigated the deuteron exchange between the polyphenylated alkanes and liquid DBr (Refs 8,9). Its mechanism is closely related with the mechanism of the chemical reactions of the electrophilic substitution of hydrogen (Ref 10). Some results were already earlier published (Ref 11). Experiments of this kind were carried out with the following hydrocarbons: diphenyl, triphenyl, tetraphenyl methane, fluorene, dibenzyl, sym.-tetraphenyl ethane, 1,1,1-triphenyl ethane, 1,3-diphenyl propane, 1,4-diphenyl butane and 1,5-diphenyl pentane. Thus it was demonstrated that the phenyl rings separated by the carbon atom (in tetraphenyl methane) are of mutual influence as regards the reactivity. It is compared with the influence exerted by the effect of the π - and σ, π -conjugation upon the reactivity of the aromatic ring. There are 2 tables and 36 references, 16 of which are Soviet.

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SOV/79-29-3-21/61

Deuteron Exchange Between Liquid DBr and Phenylated Alkanes

ASSOCIATION: Fiziko-khimicheskiy institut imeni L. Ya. Karpova i Nauchno-
issledovatel'skiy institut poluproduktov i krasiteley
(Physico-Chemical Institute imeni L. Ya. Karpov and Scientific
Research Institute of Semiproducts and Dyes)

SUBMITTED: February 10, 1958

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5(4)
AUTHORS: Shatenshteyn, A. I. Zvyagintseva, Ye. N. SOV/79-29-5-73/75

TITLE: Investigation of the Mechanism of Acid - Basic Reaction
by the Method of Deuterium Exchange (Izucheniye mekhanizma
kislотно-osnovnogo vzaimodeystviya metodom deyterobmena)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, p 1751 (USSR)

ABSTRACT: A determination was made of the velocity constants in the
reaction between the amines $C_6H_2D_3N(CH_3)_2$, $(C_6H_2D_3)_2NCH_3$ and
 $(C_6H_2D_3)_3N$ and the acids acetic acid, formic acid, mono-
chloroacetic acid, trichloro acetic acid, trifluoroacetic
acid and hydrobromic acid (Table). The reaction scheme
according to Brönsted was found to be inadequate. Further
investigations are to provide more accurate values. There
are 1 table and 2 Soviet references.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L. Ya. Karpova (Physico-
chemical Institute imeni L. Ya. Karpov)

SUBMITTED: February 6, 1959
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SOV/76-35-6-43/44

28(4)

AUTHORS:

Zhdanova, K. I., Basmanova, V. M., ~~Slatskaya, A. I.~~

TITLE:

Method of Taking Weighed Samples From Substances Which Easily React With Air Moisture (Sposob vzyatiya navesok veshchestv, legko reagiruyushchikh s atmosfernoy vlagoy)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 6, pp 1438 - 1439 (USSR)

ABSTRACT:

This article describes a device (Fig) which permits precisely weighed samples (from 0.0001 to 2 g) of easily melting substances to be taken with the exclusion of moisture and air. The device is to be used for physico-chemical investigations with the aid of substances such as the halides of aluminum, titanium, tin, and similar elements. In principle, the device is a glass vessel in which - under vacuum and after corresponding heating - a glass ampule with the substance is broken at the moment of melting. The liquid substance enters into small weighed glass ampules (up to 20 pieces) which are closed by melting with the aid of a heated wire. After an accurate description of the device and the working procedure, the authors express their thanks to the glass blower A. A. Orlov. There is

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Method of Taking weighed Samples From Substances which SOV. No. 45-6-43/44
easily React With Air Moisture

1 figure.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (Physico-
chemical Institute named L. Ya. Karpova, Moscow)

SUBMITTED: December 10, 1958

Card 2/2

5(4)

AUTHORS:

Shatenshteyn, A. I., Vyrskiy, Yu. P., SOV/20-124-1-41/69
Rabinovich, Ye. A.

TITLE:

On the Salt Effect in Deuteron Exchange in Liquid Ammonia
(O solevom effekte pri deytiroobmene v zhidkom ammiake)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 146-149
(USSR)

ABSTRACT:

The salt effect in deuteron exchange has hitherto hardly been investigated at all. A suitable means of investigating it is liquid ammonia, because it has a low dielectric constant and because it is a good solvent for numerous organic substances and salts. The characteristic features of the influence exercised by salts on the kinetics of the dissolution of lactones, ethers, and halide compounds have already been determined (Ref 1), and the results obtained were also confirmed by other authors. Neutral salts accelerate these reactions all the more, the higher the charge and the smaller the radius of the ions. ($\text{Ca}^{++} > \text{Sr}^{++} > \text{Ba}^{++}; \text{Li}^+ > \text{Na}^+$; $\text{Cl}^- > \text{Br}^- > \text{NO}_3^- > \text{J}^- > \text{ClO}_4^-$). The energy E and the entropy ΔS^* of activation are increased. The authors assume that the rules

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governing the salt effect in electron exchange and in solvolytic reactions in liquid ammonia are similar to each other. Provisional experiments were carried out with indene and acetophenone, and also systematic experiments were carried out with methyl- β -naphthyl-ketone. 0.2 g of this substance were dissolved in ~ 2.5 g ammonia in the presence of a carefully dried salt. The concentration of the salt was ~ 2.5 n, and frequently different salt preparations were used. The experiments carried out without salt lasted 0.5 - 2 hours, but those with salt lasted half an hour. The experiments carried out for the purpose of determining activation energy and activation entropy were carried out with methyl- β -naphthyl-ketone, which was partly deuterized in the methyl group. The authors further investigated the manner in which the equilibrium of the production of the colored complexes of 3,5 dinitrobenzoic acid (I) and phenolphthalein (II) with ammonia shifts in the case of the addition of salts. Also the results obtained by kinetic measurements carried out in the case of the presence of 2.5 n ammonium salts are given. The reactions of deuteron exchange are accelerated by salts,

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and, in general, such series of anions and cations continue to hold as have already been found previously in reactions of dissolution in ammonia. Similar series of anions and cations were found also by measuring the equilibrium shift of complex formation. The problem is then investigated as to how the parameters of the Arrhenius equation vary by the addition of a salt. The here discussed deliberations agree well with the rules governing the salt effect in the reactions of deuteron exchange and ammonolysis in liquid ammonia, and they also explain their common features. Further investigations will contribute towards interpreting the phenomena discussed here. The authors thank Corresponding Member, AS USSR, Ya. K. Syrkin and Professor M. B. Neyman for discussions. There are 5 tables and 12 references, 9 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut
im. L. Ya. Karpova (Physico-Chemical Scientific Research
Institute imeni L. Ya. Karpov)

Card 3/4

PHASE I BOOK EXPLOITATION

SOV/4170

Shatenshteyn, Aleksandr Isayevich

Izotopnyy obmen i zameshcheniye vodoroda v organicheskikh soyedineniyakh; v svete teorii kislot i osnovaniy (Isotopic Exchange and Substitution of Hydrogen in Organic Compounds; in the Light of the Theory of Acids and Bases) Moscow, 1960. 394 p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Ed.: M.I. Kabachnik, Academician; Ed. of Publishing House: L.S. Povarov;
Tech. Ed.: T.P. Polenova.

PURPOSE: This book is intended for chemists and chemistry students taking courses in general, physical, and organic chemistry.

COVERAGE: The book discusses mechanisms of hydrogen replacement reactions and gives considerable attention to isotopic hydrogen exchange reactions. The mechanisms of these reactions are studied from the point of view of the acid-base properties of reagents. One section of the book presents proof that

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Isotopic Exchange (Cont.)

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the hydrocarbons which take part in such reactions function as acids or bases. Problems of acid-base catalysis and the mechanism of acid-base interaction as well as the nature and mechanism of heterolytic hydrogen exchange in solutions and interaction phenomena of atoms in molecules are also discussed. The book was written as a result of investigations of hydrogen exchange reactions in nonaqueous solutions made under the general direction of the Uchenyy soviet po probleme "Teoriya khimicheskogo stroyeniya, kinetiki i reaktsionnoy sposobnosti" pri Otdelenii khimicheskikh nauk Akademii nauk SSSR (Scientific Council on Problems of the "Theory of Chemical Structure, Kinetics and Reactivity" of the Section of Chemical Sciences of the Academy of Sciences USSR). The following personalities are mentioned: V.N. Kondrat'yev, Academician and Chairman of the Scientific Council, Academician M.I. Kabachnik, A.I. Brodskiy, Academician, AS UkrSSR, and N.A. Izmaylov. Soviet and non-Soviet references are given at the end of each section.

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S/195/60/001/004/001/015
B017/B055

AUTHORS: Yakushin, F. S., Shatenshteyn, A. I.

TITLE: Kinetic Isotope Effect in Deuterium and Tritium Exchange in Liquid Ammonia

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 4, pp. 489-495

TEXT: The kinetics of the isotopic exchange of deuterium and tritium in fluorene and methyl- β -naphthyl ketone in liquid ammonia at 25°C was investigated. Deuterium exchange was found to be twice as rapid as that of tritium. Data on activity measurements of the water obtained by combustion of the samples are shown in Table 1. The accuracy of determination was 2-3%. The investigations of the kinetics of isotopic exchange are described in Tables 2-5. A comparison of the results with those obtained at metalization of organic substances by means of organoalkali compounds showed that both reactions obey the same laws. The occurrence of a positive kinetic isotope effect confirms that the reaction rate is limited by the scission rate of the C-H bond. The kinetic isotope effects of hydrogen exchange with bases and with acids are of the same magnitude but

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Tritium Exchange in Liquid Ammonia

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The exchange mechanisms are different. The results are compared with those of Western researchers. As yet, they do not suffice to explain the reaction mechanism. The Soviet researchers Ye. A. Shilov and F. M. Vaynshteyn are mentioned. There are 3 figures, 5 tables, and 35 references: 8 Soviet, 7 US, 5 British, 1 Danish, 1 German, and 3 Swedish. ✓

ASSOCIATION: Fiziko-khimicheski institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: July 25, 1960

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11803
807/19-30-2-46/78

AUTHORS: Shatenshteyn, A. I., Talanov, A. N., Rubnev, Ya. I.

TITLE: Concerning the Mechanism of Hydrogen Exchange Between Aromatic Compounds and Bases (Factors of Partial Rate of Deuterioexchange Between Diphenyl Ether and Potassium Amide in Liquid Ammonia)

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, pp 583-589 (USSR)

ABSTRACT: This paper describes the determination of factors of partial rate of exchange of o-, m-, and p-hydrogen atoms (1) of diphenyl ether and methoxybenzene with potassium amide in liquid ammonia at low temperatures. The apparatus and procedure used were described previously (A. I. Shatenshteyn, Ye. N. Zvyagintseva, DAN SSSR, 117, 352, 1957; A. I. Shatenshteyn, ZnOKh, 15, 246, 1941). The following reagents were used: diphenyl ether, distilled under vacuum over sodium, mp 27°, n_D²⁰ 1.5796; 2,2',4,4',6,6'-hexadeuteriodiphenyl ether was prepared by dissolving

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diphenyl ether in liquid D₅N; the deuteration of benzene was done according to reaction $\text{ND}_3 + \text{KND}_2$; 2,4,6-tri-deuteriomethoxybenzene was described previously (A. I. Shatenshteyn, A. V. Vedeneyev, ZhCKh, 28, 2644, 1938). It was found that there is a linear dependence between the log of factors of partial rate of deuterioexchange of o-hydrogen atoms in benzene derivatives and the negative log of ionization constants in water of acetic acid derivatives with the same substituents. The rate of isotopic exchange of o-hydrogen atoms in benzene derivatives is determined by the acidity of the CH-bonds, which depends on its polarization resulting from the inductive effect of the substituent. The rate of hydrogen exchange with organic bases is, to a considerable degree, determined by the degree of C-H bond cleavage in the abstraction of protons by bases. There are 2 figures;

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Exchange Between Aromatic Compounds and
Bases (Factors of Partial Rate of Deuterio-
exchange Between Diphenyl Ether and Potassium
Amide in Liquid Ammonia)

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6 tables; and 15 references, 2 U.S., 2 U.K., 2
German, 9 Soviet. The U.S. and U.K. references are:
G. E. Hall, R. Piccolini, J. D. Roberts, J. Am. Chem.
Soc., 77, 4540 (1955); H. C. Brown, D. H. McDaniel,
O. Höffiger, in book, "Determination of Organic Struc-
ture by Physical Methods," ed. by A. E. Braude, F. C.
Nachod; D. Bryce-Smith, J. Chem. Soc., 1954, 1079;
D. Bryce-Smith, V. Gold, D. P. N. Satchell, J. Chem.
Soc., 1954, 2743.

ASSOCIATION: L. Ya. Karpov Institute of Physical Chemistry (Fiziko-
khimicheskiy institut imeni L. Ya. Karpova)

SUBMITTED: February 6, 1959

Card 3/3

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76308
S07719-50-5-51/09

AUTHORS: Shtatenshteyn, A. I., Alikhanov, P. P.

TITLE: Concerning Catalytic Action of Iodine in the Deuterium Exchange in Liquid Hydrogen Iodide

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 40, No 5, pp 997-999 (USSR)

ABSTRACT: Rate of deuterium exchange of monodeuteriotoluene (I) and monodeuteriobiphenyl (II) with HI was studied in the presence of iodine as a catalyst. HI was synthesized in a quartz apparatus described previously (V. R. Kalinachenko and others, ZhFKh, 30, 1140, 1956). A test tube containing a thin-walled glass ampoule filled with the investigated compound and catalyst (iodine) was attached to the apparatus to fill it with the HI obtained (-45°). After filling with HI, the test tube was detached from the apparatus and kept at $25 \pm 0.2^{\circ}$. The glass ampoule inside the test tube was imploded by the HI vapor, and the exchange

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Concerning Catalytic Action of Iodine in
the Deuterium Exchange in Liquid Hydrogen
Iodide

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reaction started. The reagents used were prepared by Ye. N. Yurygina. Results of the experiments are shown in Table 1. Absorption spectra of iodine in liquid HI were taken at room temperature according to a previously described method (A. I. Shatenshteyn, Ye. A. Izrailevich, ZHFKh, 26, 377, 1952). SF-8 spectrophotometer and a quartz cell (0.11 cm) were used. Specific electric conductivity of liquid HI was measured at -44° and found to be equal to $2 \cdot 10^{-5} \text{ ohm}^{-1} \text{ cm}^{-1}$. The measurements were taken in a cell with nonplatinized platinum electrodes using an alternate current bridge constructed under the supervision of V. Ye. Kazakevich. There was no noticeable increase in the conductivity of the solution after the addition of iodine, mesitylene, or hexamethylbenzene. Catalytic action of iodine is due to the polarization of the bond H-I in the complex formed in the ternary system: aromatic hydrocarbon-hydrogen iodide-iodine:

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Date: 10/10/2001

DEPARTMENT OF ENERGY

Concentration of the atoms of cerberium isotope is given in Table 1. The authors express their gratitude to Ye. B. ... for the cerberium-containing hydro- ... There are ... references, ... U.S., ... U.K., ... German, ... Soviet. The 5 most recent U.S. and U.K. references are: G. Olah, S. Kuhn, A. Puzish, Nature, 178, 623 (1956); E. L. Mackor, F. J. Dain, J. H. van der Waals, Trans. Farad. Soc., 54, 1500 (1957); V. Gold, D. P. Satchell, J. Chem. Soc., 1957, 2004, 546 (1958); H. H. Hymen, M. Klipfelck, J. J. Katz, J. Am. Chem. Soc., 79, 5008 (1957); A. G. Schmeller, "Hydrogen Oxidation," ed. H. H. Hymen, Freeman Press, N. Y., 54 (1959).

ASSOCIATION: I. Ya. Karpov Scientific Research Institute of Physical Chemistry (Nauchno-Issledovatel'skiy Fiziko-khimicheskiy Institut imeni I. Ya. Karpova)

SEARCHED:

April 10, 1959

Card 3/8

Table 1. Results of experimental neutron spectrum exchanges with
1000000.

Nr	a	b	c	d	e	f	g	h
1	14		1080	128	40	10	-	11
2	14		1080	128	40	10	-	11
3	15		1000	120	40	10	-	11
4	15		1000	120	40	10	-	11
5	15	10	1000	120	40	10	10	11
6	15	10	1000	120	40	10	10	11
7	15	10	1000	120	40	10	10	11
8	15	10	1000	120	40	10	10	11
9	15	10	1000	120	40	10	10	11
10	15	10	1000	120	40	10	10	11
11	15	10	1000	120	40	10	10	11
12	15	10	1000	120	40	10	10	11

Table 1. Results of Card 5/8

No	a	b	c	d	e	f	g	h
j								
13	1.1		2.1	2.1	11	1		
14	1.2	1.1	2.2	2.2	10	2	3.6	17.5
15	1.3	2.1	2.3	2.3	9	3	2.9	16.5
16	1.4	3.1	2.4	2.4	8	4	2.7	15.5
17	1.5	3.2	2.5	2.5	7	5	2.4	14.5
18	1.6	3.8	2.6	2.6	6	6	2.3	13.5
19	1.5	4	2.7	2.7	5	7	2.3	12.5
20	1.8	4	2.9	2.9	4	8	2.4	11.5
21	1.8	5	3.0	3.0	3	9	2.4	10.5
k								
22	0.75		8.10	5.37	45	82		
23	0.63	0.8	8.10	5.97	28	86	10.8	79
24	0.67	2.1	8.10	4.44	12	15	7.2	32
25	0.86	3.8	8.10	4.93	7	25	6.6	32
26	0.71	12	8.10	5.28	17	91	7.6	31
l								
27	0.71	1.8	7.80	4.76	45	35	2.6	39
28	0.82	3.4	7.80	5.19	29	53	1.7	24
29	0.75	5.2	7.80	4.27	21	75	1.5	16
30	1.1	7.8	7.80	4.76	12	14	1.8	14
31	0.24	11	7.80	5.42	5	20	1.8	11
32	0.83	12	7.80	5.49	4	23	1.9	11
33	0.82	17	7.80	5.91	3	36	2.1	11

Card 5/8

(Key to Table 1 on Card 6/8)

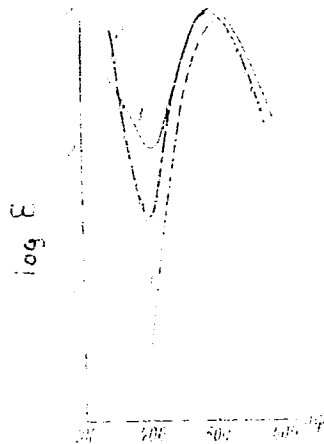
Concerning Catalytic Action of Iodine in
the Deuterium Exchange in Liquid Hydrogen
Iodide

180/2
30V/72-30-1-100

Key: (a) $C_{ARD} \cdot 10^2$ is the number of hydrocarbon moles per mole of HI; (b) C_{J_2} is the iodine concentration in moles per mole of HI; (c) C_B^0 is the deuterium concentration in water after the precipitation of the compound before the experiment (in atom %); (d) C_B^t after the end of the experiment; (e) τ is duration of the experiment in hours; (f) k is constant of the rate of deuterium exchange; (g) $k' = k/C_{J_2}$ is the specific rate constant in reference to the concentration of iodine in the solution; (h) $C = C_{ARD}/V_{J_2}$; (i) o-D-toluene; (j) o-D-toluene; (k) o-D-bi-phenyl; (l) o-D-bi-phenyl.

180/2
30V/72-30-1-100

Fig. 1. Absorption spectra of
the ionized monomer (1)
in H_2O , (2) in H_2O ,
and (3) in H_2O .



Journal of the Chemical Society, London, 1967, p. 1011
 D. G. Semak, B. G. Gerasimov, I. M. Gerasimov, N. N. Gerasimov
 1011

1967
 SOV 79-1011

Table 1. Comparison of the constants of neutralization
 exchange rate with different hydrogen halides at 25°C
 (sec⁻¹)

	HI	HBr	HCl
a	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰
b	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰
c	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰
d	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰
e	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰
f	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰	1.0 × 10 ¹⁰

Key: (a) Hydrocarbon; (b) o-D-toluene; (c) p-D-toluene;
 (d) o-D-biphenyl; (e) o-D-biphenyl; (f) Cl-D-ortho-
 xylene.

SHATENSHTEYN, A I

AUTHORS: Yurzgina, G. N., Shatenšteyn, A. I., Iskenderova, Ye. A., Manorzhina, L. N., Shatenšteyn, A. I. (Moscow) 3/075/60/034/03/013/038 315/2016

TITLE: The Kinetics of Deuterium Exchange of the Iomers of Monodeutero-toluene, Monodeutero-diphenyl, and Monodeutero-naphthalene With Liquid Hydrogen Bromide and a Solution of Potassium Azide in Liquid Ammonia

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1960, Vol 34, Nr 3, pp 597 - 599 (USSR)

TEXT: The aim of the investigation under review was the determination of the factors of the partial rate f in the hydrogen isotopic exchange of the substances mentioned in the title with the reagents likewise mentioned in the title. The synthesis of monodeuterated hydrocarbons, the deuterium concentration in water on combustion of the hydrocarbons, and the carrying out of experiments are described. The rate constant of the deuterium exchange is calculated by an equation and, when using ammoniacal solutions, by a simplified form of this equation. The results of the measurements made with liquid HBr are given in table 1, those of the experiments with ammoniacal solutions in table 2, and the mean values of the constants of the deuterium exchange rate

Card 1/3

in table 3. The activation energy of deuterium exchange is also given. Table 4 presents the factors of the partial rate f of the deuterium exchange of isomeric monodeuterated hydrocarbons with a KNH_2 solution in NH_3 and with HBr.

The order of the partial rate factors in the isotopic exchange between non-equivalent deuterium atoms in the toluene and diphenyl molecule differs in reactions with acids and with bases, which is due to the different mechanism of these reactions in which the conjugative and the inductive effect considerably manifest themselves in the mutual action of the atoms in the hydrocarbon molecule. The rules in the deuterium exchange in toluene and diphenyl indicate that the inductive effect of the methyl group has the reverse sign compared to that of the phenyl group. Finally, it can be said that the acid and the base react in the deuterium exchange with the carbon atoms of the CH-bonds and the base with the hydrogen atoms of the CH-bonds, and protonize these atoms. A method is described for obtaining isomeric monodeutero-diphenyls. It is described exactly how the authors divided this work among themselves. There are 4 tables and 19 references, 12 of which are Soviet.

Card 2/3

ASSOCIATION: Fiziko-khimiicheskiy institut im. L. Ya. Karpova (Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: June 13, 1958

S/076/60/034/03/016/038
B115/B016

AUTHOR: Shatenshteyn, A. I. (Moscow)
TITLE: A Comparison of the Rules Governing Deuterium Exchange and Other Reactions

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 3, pp 594 - 602 (USSR)

TEXT: In the previous paper of this series (Ref 1) it was shown that the isotopic exchange between hydrogen and acids and bases proceeds with different mutual action of the atoms in the molecule of the substance. Considering the reaction mechanism, the comparison of the rules governing the deuterium exchange with other similar reactions is important. On the basis of the known factors of the partial rate for some electrophilic substitution reactions of hydrogen and for the metallization as well as of some reactions of strong bases, such a comparison may be carried out more successfully than before (Ref 2), which is done in the present paper. Table 1 gives the rate constants of the deuterium exchange in benzene and deuterio-toluene-, deuterio-phenyl-, and deuterio-naphthalene isomers as well as the partial rate constants $f = k/k_{C_6H_6}$. It was found (Table 2) that the chlorination of naphthalene proceeds by hundred thousand times more

A Comparison of the Rules Governing Deuterium Exchange
and Other Reactions

S/076/60/034/03/016/038
B115/B016

quickly than that of benzene, whereas naphthalene with cyclohexyl bromide in the presence of $AlCl_3$ reacts only by three times more quickly than benzene. The same rule holds also when comparing the factors of the partial rate in the electrophilic substitution of the hydrogen atoms in toluene (Table 3). The reactions between acids and bases are investigated, and the analogy with the electrophilic substitution reactions is referred to. The dependence of the values $\log f_p$ of F_S for the deuterium exchange in toluene with acids, investigated in the figure, and for the chemical reactions with deuterium, summarized in table 3, showed that the points determined are with fair accuracy on a straight line. The relative substitution rate of the non-equivalent hydrogen atoms and their selectivity depend on the polarity of the bond being formed in the state of transition, which, in its turn, depends on the degree of polarity of the reagent and on the dielectric constant of the medium. The electrical conductivity of ternary systems consisting of liquid HBr, an aromatic hydrocarbon, and a halide were measured, in order to determine the ionization of the polarized complex in solution, its conditions and its degree. The measurements of the kinetics of the isotopic exchange of hydrogen with various acids confirm that not only its rate and selectivity, but also the relative reactivity of the para- and ortho-atoms may

Card 2/4

A Comparison of the Rules Governing Deuterium Exchange
and Other Reactions

S/076/60/034/03/016/038
B115/B016

change (Table 4). The rules governing the deuterium exchange in an ammoniacal amide solution were also compared with those observed in some reactions proceeding under the participation of strong bases, and in this connection the deuterium exchange in the alkyl groups of toluene, ethyl benzene and isopropyl benzene was investigated. The alkyl group inactivates like in the case of toluene the aromatic ring in the deuterium exchange and metallization, mainly in the ortho position (Table 5). Papers by G. A. Razuvayev (Ref 36), B. A. Kazanskiy, and I. V. Gostunskaya (Refs 41,42) are mentioned. The contents of the present paper were presented at the VIII Mendeleevskiy s'yezd po obshchey i prikladnoy khimii, Sektsiya radiokhimii i khimii izotopov (VIII Mendeleev Congress on General and Applied Chemistry, Department of Radiochemistry and Isotope Chemistry). Abstracts of the lectures and reports were published by the Publishing House of the AS USSR, M., Nr 12, p 43. The details given in the paper were more thoroughly dealt with in the following papers: A. I. Shaten-shcheyn Nauchnaya konferentsiya "Stroyeniye i reaktivnaya sposobnost' organicheskikh soyedineniy" (Scientific Conference "Structure and Reactivity of Organic Compounds") Kratkoye sodержaniye dokladov (Brief Discussion of Contents of the Lectures), Goskhimizdat, L., 1959, p 3; F. S. Yakushin, Ya. G. Dubinskiy, Ye. A. Yakovleva, A. N. Shatenshteyn, Zhurnal fizicheskoy

Card 3/4

A Comparison of the Rules Governing Deuterium Exchange
and Other Reactions

S/076/60/034/03/016/038
B115/B016

khimii, Vol 33, p 2820, 1959; A. I. Shatenshteyn, A. N. Talanov, Yu. I. Ranneva, Zhurnal obshchey khimii, Vol 30, p 587, 1960, A. I. Shatenshteyn "Izotopnyy obmen i zameshcheniye vodoroda v organicheskikh soyedineniyakh v svete teorii kislot i osnovaniy" ("Isotopic Exchange and Substitution of Hydrogen in Organic Compounds in the Light of the Theory of Acids and Bases"), published by the Publishing House of the AS, USSR, M., 1960. There are 1 figure, 5 tables, and 44 references, 14 of which are Soviet. ✓

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: June 13, 1958

Card 1/4

SHATENSHTEYN, A.I.; ZHDANOVA, K.I.; BASMANOVA, V.M.

Mechanism of the isomerization and deuterium exchange of naphthenes in liquid HBr. Dokl.AN SSSR 133 no.5:1117-1120 Ag '60.
(MIRA 13:8)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Predstavleno akademikom S.S.Medvedevym.

(Naphthenes)

(Deuterium)

(Hydrobromic acid)

SHATENSHTEYN, A.I.

"Über die Saure-Base-Katalyse und ihre Bedeutung für den Isotopenaustausch des Wasserstoffs."

Report presented at the 2nd Conf. on Stable Isotopes
East German Academy of Sciences, Inst. of Applied Physical Material
Leipzig, GDR 30 Oct - 4 Nov 1961.

S/001/1/003/004/006/014
8/01/67

AUTHORS: Astaf'yev, I. V., Rabinovich, Y. A., Stetsko, A. I.

TITLE: The mechanism of initiating styrene polymerization by means of potassium amide in liquid ammonia

PERIODICAL: *Vysokomolekulyarnaya khimiya*, No. 4, 1967, 555-559

TEXT: The production of polymers by means of anionic polymerization necessitates the clarification of this process. The present study aimed at determining the structure of the carbanions resulting from the initiation of styrene polymerization by means of NH_2^- ions in liquid NH_3 . The color of 10^{-2} - 10^{-3} mole styrene in liquid ammonia was spectrophotometrically examined in the presence of 3 N KNH_2 and compared with the spectra of α - and β -phenylethyl amine recorded under the same conditions. Styrene and β -phenylethyl amine showed similar spectra with the maximum at 330 m μ . Thus, it is concluded that both substances form the same product, like α -phenylethyl amine anion, however, differed only little from that of the KNH_2 solution.

✓

Styrene Nitroformation
1957

✓
—

... showed under the same conditions a spectrum with $\lambda_{max} = 450 \text{ m}\mu$. The styrene spectrum changed only little by raising the KNH_2 concentration to 0.050 M and increasing the styrene concentration to 0.1 mole. This result is discussed, and the following equation given as probable reaction for styrene polymerization initiation: $\text{C}_6\text{H}_5\text{CH}=\text{CH}_2 + \text{NH}_2^- \rightarrow \text{C}_6\text{H}_5\text{CH}^-\text{CH}_2\text{NH}_2$. Accordingly, NH_2^- adds to the β -carbon atom of the vinyl group. Fig. 3 lists the results of the spectrophotometric study of the reaction of 1,1'-diphenyl ethylene and triphenyl ethylene in liquid NH_3 and in the presence of 0.010-0.020 M KNH_2 . The absorption curve with $\lambda_{max} = 410 \text{ m}\mu$ was identical to that for diphenyl-methyl anions $(\text{C}_6\text{H}_5)_2\text{CH}^-$. The intensity of absorption correspond to a quantitative splitting of the double bond of di- and triphenyl ethylene. Diphenyl-methyl anions were proved by diphenyl methane separation. In the presence of 3 N KNH_2 after a longer period of standing, the spectrum of triphenyl ethylene dissolved in NH_3 showed the formation of a second colored substance (Fig. 3). On the basis of the absorption maximum

Cont 2/1

S/190/61/003/004/006/014
B101/B207

The mechanism of ...

at 550 mμ, the substance is assumed to be the same as developed in the reaction between benzyl amine and KNH_2 . The authors thank D. N. Kursanov, S. V. Vitt, and S. G. Entelis for the preparations provided, and V. I. Chicherina for his cooperation. There are 3 figures and 12 references: 3 Soviet-bloc and 9 non-Soviet-bloc. The 3 references to English-language publications read as follows: J. J. Sanderson, C. R. Hauser, J. Amer. Chem. Soc., 71, 1595, 1949; C. R. Hauser et al., J. Amer. Chem. Soc., 71, 294, 1949, J. Amer. Chem. Soc., 78, 1653, 1956; P. J. Hamrick, C. R. Hauser, J. Amer. Chem. Soc., 81, 3144, 1959.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute im. L. Ya. Karpov)

SUBMITTED: July 9, 1960

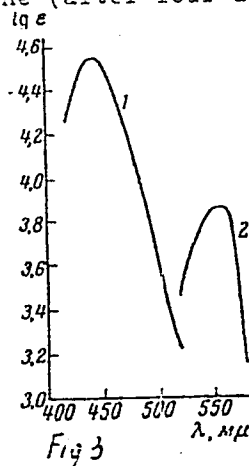
Card 3/4

S/190/61/003/004/006/014
B101/B207

The mechanism of ...

Fig. 3: Spectra of the interaction products of 1,1-diphenyl ethylene and triphenyl ethylene with KNH_2 in liquid ammonia.

Legend: 1) 1,1-diphenyl ethylene, triphenyl ethylene, and diphenyl methane (10^{-3} - 10^{-4} mole) in 0.02 N KNH_2 ; 2) triphenyl ethylene (after four days) in 3 N KNH_2 .



Card 4/4

88488

S/079/61/031/001/022/025
B001/B066

5.1190

2209

AUTHORS:

Shatenshteyn, A. I., Zhdanova, K. I., and Basmanova, V. M.

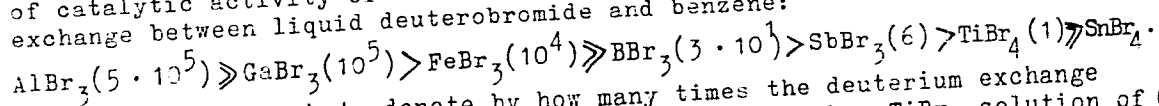
TITLE:

Comparison of Some Bromides as Catalysts in the Deuterium Exchange Between Aromatic Compounds and Liquid Deuterobromide

PERIODICAL:

Zhurnal obshchey khimii, 1961, Vol. 31, No. 1, pp. 250 - 258

TEXT: Only few data are available on the acid catalysis of the isotopic exchange of hydrogen in CH-bonds of organic compounds. The present paper bases upon those by M. Polanyi and co-workers (Ref. 2), by A. Klit, A. Langseth (Ref. 3), and by Shatenshteyn (Ref. 4). The following order of catalytic activity of bromides was established by means of deuterium exchange between liquid deuterobromide and benzene:



The numbers in brackets denote by how many times the deuterium exchange with the given bromide proceeds more quickly than with a TiBr_4 solution of the same concentration. SnBr_4 does not markedly accelerate the reaction.

Card 1/3

88488

S/079/61/031/001/022/025
B001/B066

X

Comparison of Some Bromides as Catalysts in the Deuterium Exchange Between Aromatic Compounds and Liquid Deuterobromide

InBr_3 is one of the most active catalysts. The resultant data characterizing the relative electrophilic ratio of the bromides are compared with published data on their relative acidity. The catalysis of hydrogen exchange in aromatic compounds with acid-like bromides dissolved in liquid DBr is explained by the formation of complexes consisting of an aromatic compound, deuterobromide, and bromide. Owing to the coordinated unsaturated state of the bromide, and to the relationship between hydrogen carbon and deuterium, the D-Br bond is polarized or split, which favors the passing of deuterium into the aromatic nucleus. The formation of a bond between the functional group of the aromatic compound ($\text{C}_6\text{H}_5\text{NO}_2$; $\text{C}_6\text{H}_5\text{COOH}$) and the bromide suppresses the catalytic activity of the latter and retards the hydrogen exchange in the aromatic ring. The data obtained agree with the assumption that one and the same reaction of hydrogen exchange had to proceed according to the associative or to the ionic mechanism, depending on its accomplishment. An overlapping of the mechanisms and the formation of intermediates is possible in this connection.

Card 2/3

Comparison of Some Bromides as Catalysts in
the Deuterium Exchange Between Aromatic Com-
pounds and Liquid Deuterobromide

88488

S/079/61/031/001/022/025
B001/B066

P. P. Alikhanov is mentioned. There are 1 figure, 8 tables, and
ad references: 21 Soviet, 24 US, 13 British, 6 German, and 1 French.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: January 29, 1960

X

Card 5/3

SHATENSHTEYN, A.I.; RANNEVA, Yu.I.

Factors of the partial rate of deuterium exchange in dimethylaniline with potassium amide solution in liquid ammonia, and the mechanism of basic deuterium exchange. Zhur.ob.khim. 31 no.5:1423-1431 My '61. (MIRA 14:5)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Deuterium) (Potassium amide) (Aniline)

SHATENSHTEYN, A.I.; ZVYAGINTSEVA, Ye.N.; OVCHINNIKOVA, Z.N.

Study of the acid-base interaction between aromatic amines and
carboxylic acids by the deuterium exchange method. Zhur.ob.khim.
31 no.5:1432-1440 My '61. (MIRA 14:5)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Amines) (Acids, Organic) (Deuterium)

ZHDANOVA, K.I.; BASMANOVA, V.M.; SHATENSHTEYN, A.I.

Catalytic isomerization of methylcyclopentane in liquid hydrogen bromide. Zhur.ob.khim. 31 no.7:2134-2138 J1 '61. (MIRA 14:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Cyclopentane) (Cyclohexane)

S/020/61/136/004/024/026
B028/B060

AUTHORS: Shatenshteyn, A. I., Yakovleva, Ye. A., and Petrov, E. S.

TITLE: Initiation of Polymerization With Solid Potassium Amide and
an Alcoholate in Dimethoxy Ethane

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 4,
pp. 882-885

TEXT: The present paper deals with anion polymerization on the basis of
anion radical formation. Earlier experiments (Ref. 3) of polymerization
with potassium amide in liquid ammonia gave rise to polymers with
molecular weight 2000-4000. The heterogeneous catalysis of styrene
polymerization with solid potassium amide gave rise to polymers with a
molecular weight of several millions. The initiation of polymerization
with an alcoholate in dimethoxy ethane took place on the strength of
considerations on the effect of solvents on the catalytic activity of the
alcoholate. This effect may be regarded as an increase of the electron
donor ability of the alcoholate. Alcoholate in dimethoxy ethane also

Card 1/4

Initiation of Polymerization With Solid
Potassium Amide and an Alcoholate in
Dimethoxy Ethane

S/020/61/136/004/024/026
3028/3060

accelerates the polymerization of vinyl monomers. $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OK}$ gives rise to a rapid polymerization of methyl methacrylate. The styrene polymerization also took place when mixing styrene with solutions or suspensions of $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OK}$ or CH_3OK . Fig. 1 shows curves of light absorption for various concentrations of the solution. The position of the maxima corresponds to the one occurring in the reaction of fluorines with KOH in liquid ammonia. ($\lambda = 365, 465, 480 \text{ m}\mu$). Less acid hydrocarbons, such as triphenyl methane, are not ionized under these conditions. The action of $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OK}$ leads in the case of fluorines to ionization and formation of carbon ions. In the polymerization of styrene at room temperature a polymer was obtained, which was weakly soluble in benzene. The intrinsic viscosities η in toluene ranged between 5.1 and 8.8. In polymers of methyl methacrylate, in chloroform and methanol at 25° , η amounted to 3.2 and 2.2. The experiments involved the use of 2 ml dimethoxy ethane with 0.02 ml alcohol, 0.01-0.1 g metallic potassium, and 0.5-3 ml monomer. The maximum of light absorption for styrene polymers ranged between 520 and

Card 2/4

Initiation of Polymerization With Solid
Potassium Amide and an Alcoholate in
Dimethoxy Ethane

S/020/61/136/004/024/026
B028/B060

530 mμ. The styrene polymerization was dependent upon the various experimental conditions (3-30%). Ye. A. Radinovich and Yu. P. Vyrskiy participated in the work. There are 2 figures and 16 references: 9 Soviet, 1 US, and 7 British.

ASSOCIATION: Fiziko-khimicheskii institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

PRESENTED: August 28, 1960, by V. A. Kargin, Academician

SUBMITTED: July 22, 1960

Card 3/4

S/020/61/136/004/024/026
B028/B060

Legend to 1: a) absorption.

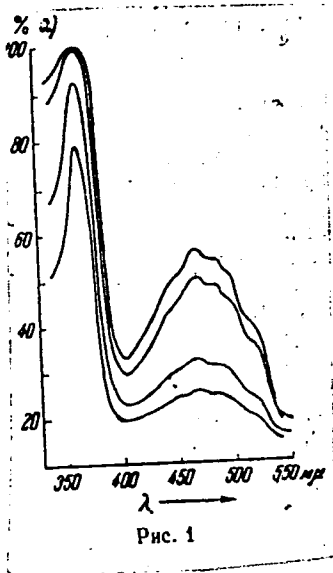


Рис. 1

Card 4/4

SHATENSHTEYN, A.I.; YAKOVLEVA, Ye.A.; PETROV, E.S.

Effect of solvents on the formation of anion radicals, carbanions,
and on hydrogen exchange between hydrocarbons. *Zhur.ob.khim.*
32 no.4:1350-1351 Ap '62. (MIRA 15'4)
(Radicals (Chemistry)) (Solvents) (Deuterium)

S/204/62/002/004/008/019
E075/E436

AUTHORS: Shatenshteyn, A.I., Yakovleva, Ye.A.,
Kovrizhnykh, Ye.A., Manochkina, P.N., Pravikova, N.A.

TITLE: Acidic properties of some monomers

PERIODICAL: Neftekhimiya, v.2, no.4, 1962, 507-511

TEXT: A method of deuterium exchange was used to determine the acidities of butadiene; 2-methylbutadiene-1,3; 2,3-dimethylbutadiene-1,3; hexadiene-2,4; 2,5-dimethylhexadiene-2,4 and α -methylstyrene. The experiments were conducted at 25°C with 0.05 N KNH₂ in liquid ND₃. In all cases low molecular polymers were formed and separated from solution. It was found that H atoms in the methyl groups in allyl position in respect to double bonds exchange for D more rapidly than the H atoms next to double bonds. For α -methylstyrene in 0.02 N KNH₂ the hydrogen exchange proceeds rapidly, the rate constant K being about $1.2 \pm 0.1 \times 10^{-3} \text{sec}^{-1}$. This rate of H exchange is faster than that in the methyl group in propylene and a little slower than that in the methyl group in toluene. The main role in the polymerization of α -methylstyrene is played by the processes connected with proton

Card 1/2

✓

Acidic properties of ...

S/204/62/002/004/008/019
E075/E436

transfer, in contrast to the polymerization of styrene. This is confirmed by the high content of N (1.4%) in polystyrene compared with that in poly α -methylstyrene (0.16%). It is expected that similar differences in the mechanism of polymerization exist between methylated dienes and butadiene. There are 2 tables.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya.Karpova
(Physico-Chemical Institute imeni L.Ya.Karpov)

Card 2/2

SHATENSHTEYN, A.I.; IZRAILEVICH, Ye.A.

Verification of the principle of additivity in deuterium exchange in polymethylbenzenes with a potassium amide solution in liquid ammonia. Zhur.ob.khim. 32 no.6:1934-1938 Je '62. (MIRA 15:6)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Additivity) (Benzene) (Hydrogen—Isotopes)

RABINOVICH, Ye.A.; ASTAF'YEV, I.V.; SHATENSHTEYN, A.I.

Carbanion mechanism of isomerization of unsaturated hydrocarbons.
Zhur.ob.khim. 32 no.3:748-750 Mr '62. (MIRA 15:3)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Hydrocarbons) (Carbanions)

SHATENSHTEYN, A.I.; RANNEVA, Yu.I.; KOVALENKO, T.T.

Deuterium exchange method of studying the electron acceptor and electron donor properties of substituents in aromatic rings. Zhur.ob.khim. 32 no.3:967-974 Mr '62. (MIRA 15:3)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Substitution (Chemistry)) (Deuterium)

S/079/63/033/001/008/023
D205/D307

AUTHORS: Petrov, E. S., Yakovleva, Ye. A. and Shatenshteyn, A.I.

TITLE: Comparison of the effect of solvents on the formation of anion radicals and carbanions

PERIODICAL: Zhurnal obshchey khimii, v. 33, no. 1, 1963, 107-112

TEXT: A development of an earlier study (DAN SSSR, 133, 645 (1960)) concerned with the effect of a series of ether solvents on the equilibrium in the system toluene-alkali metal. In the present work the authors determined the effects of the diethyl ether of diethylene glycol (I), dimethyl ether of ethylene glycol (II), tetrahydrofuran (III), and diethyl ether of ethylene glycol (IV) on the equilibrium of the formation of (1) anion radicals during the reaction of diphenyl with CH_3OK and $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OK}$ [Abstracter's note:

I is also given as the dimethyl ether of diethylene glycol. 7. Purified materials were used. The equilibria were weaned spectrophotometrically, using the $\text{C}\phi\text{-4}$ (SF-4) instrument. The optical densi-

Card 1/2

S/079/63/033/001/008/023
D205/D307

Comparison of the ...

ties at 625 μ were compared to determine the concentration of diphenyl anion radicals, C, finding that for 0.0028M solutions of diphenyl the relative values of C were: $C_I = 100$, $C_{III} = 40$, and $C_{IV} = 10$ (taking C_{II} as 100). In the fluorene-alcoholate systems, measurements of the optical density at 465 μ showed that the relative concentrations C', referred to $C'_{II} = 100$, were: (a) for CH_3OK : $C'_{III} = 14$, $C'_{IV} = 12$; (b) for $CH_3OCH_2CH_2OK$: $C'_{III} = 50$, $C'_{IV} = 25$. It is considered that solvation of the organo-(alkali metal) compound (case (1)) and of the alcoholates (case (2)) plays an important part in these reactions; the solvating tendency of the 4 ethers tested decreased in the order: $I > II > III > IV$. There are 2 figures and 4 tables.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L. Ya. Karpova
(Physico-Chemical Institute imeni L. Ya. Karpov)

SUBMITTED: February 26, 1962

Card 2/2

S/020/63/148/006/016/023
B117/B186

AUTHORS: Pokhodenko, V. D., Ganyuk, L. N., Yakovleva, Ye. A.,
Shatenshteyn, A. I., Brodskiy, A. I., Corresponding Member
AS USSR

TITLE: E.p.r. spectrum and rearrangement of the radical forming during
the oxidation of ionone-CD₃

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 6, 1963, 1314 - 1315

TEXT: Experiments with a tagged para-methyl group were made in order to
prove the rearrangement of the phenoxy radical (I) in benzyl radical (II)
which was observed during the oxidation of 2,6-di-tert-butyl-4-methylphenol
(ionone) by means of deuterium tagging. Ionone with deuterium in the
methyl group was obtained by hydrogen isotopic exchange with the KND₂ solu-
tion in liquid ND₃ under comparatively rigid conditions. Ionone-CD₃ (0.1 M
solution in C₆H₆) turns yellow during the oxidation with PbO₂ in vacuo. In
the infra-red spectra of the oxidized ionone-CD₃, dissolved in CCl₄, not
only the frequencies corresponding to the phenol and the C=O group
Card 1/2

E.p.r. spectrum and rearrangement...

S/020/63/148/006/016/023
B117/B186

(1610 cm^{-1}) were observed, but also a band (2692 cm^{-1}) corresponding to the OD group which confirms the regrouping (I) \rightarrow (II). The e.p.r. spectrum of the phenoxy radical of ionone- CD_3 was found to consist of 9 lines. Intensity ratio of these lines: 1:4.4:13:23:26:23:13:4.5:1; the splitting between the components is equal and is $a_1 = 1.8\text{ oe}$. This spectrum corresponds to that determined previously for the phenoxy radical of ionone- CH_3

(A. I. Brodskiy, V. D. Pokhodenko, L. N. Ganyuk, Zhurn. strukturn. khim (in press); A. L. Buchachenko, M. B. Neyman, DAN, 139, 916 (1961)). In the case of continuous oxidation it is not changed, as was observed in the spectrum of the phenoxy radical of ionone- CH_3 . After 1.5 hr it passes into a singlet with a width of 2.4 oe. There is 1 figure.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pizarzhevskogo Akademii nauk USSR (Institute of Physical Chemistry imeni L. V. Pizarzhevskiy of the Academy of Sciences UkrSSR); Fiziko-khimicheskii institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: November 4, 1962

Card 2/2

SHATENSHYEYN, A.I.; YAKOVLEVA, Ye.A.

Isotopic exchange of hydrogen between hydrocarbons catalyzed by
alcoholates in electron-donor solvents. Dokl. AN SSSR 146 no.1109-1112
0 :62. (MIRA 15:10)

1. Predstavleno akademikom M.I.Kabachnikom.
(Hydrogen---Isotopes) (Hydrocarbons) (Catalysts)

SHATENSHTEYN, A.I.; PETROV, E.S.; BELOUSOVA, M.I.; YANOVA, K.G.;
YAKOVLEVA, Ye.A.

Influence of the ether structure on the solvation effect when
sodium biphenyl and sodium naphthalene are formed. Dokl. AN
SSSR 151 no.2:353-356 J1 '63. (MIRA 16:7)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova. Predstavleno
akademikom V.A.Karginym.
(Ethers) (Sodium organic compounds) (Solvation)

SHATENSHTEYN, A.I.; SHAPIRO, I.G.; YAKUSHIN, P.S.; ISAYEVA, G.G.; BANNEVA, Yu.I.

Comparison of the acidity of organic compounds in dimethylsulfoxide, ammonia, and cyclohexylamine based on the variation of hydrogen exchange rates. Kin. i kat. 5 no.4:752-753 J1-Ag '64.

(MIRA 17:11)

1. Fiziko-khimicheskiy institut imeni Karpova.

SHATENSHTEYN, A.I.; YAKUSHIN, F.S.; ARSHINOVA, M.I.; YAKOVLEVA, Ye.A.

Kinetic isotope effect in deuterium and tritium exchange between hydrocarbons and bases. *Kin. i kat.* 5 no.6:1000-1007 N-D '64.
(MIRA 18:3)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

SHATENSHEYN, A.I.

"Isotopes exploring chemical reactions" by I.P. Gragerov.

Reviewed by A.I. Shatenshtein. "Ukr. khim. zhur. 30 no.1:

113-114 '64.

(MIRA 1716)

DEINOV, M.S., BELOUSOVA, M.I., SHATENSHTEYN, A.I.

Formation of lithium and sodium blue solutions in certain
ethers. Zhur. ob. khim. 34 no.7:2465 J1 '64 (MIRA 17:8)

1. Fiziko-khimicheskiy instytut imeni L. Ya. Karпова.

SHIBURO I.M., PETROV E.S., SHATENSTEIN A.I.

Comparison of the electrophoretic properties of the series
of aliphatic and cyclic ethers during interaction with CH_3OD .
Zh. fiz. khim. 54 no.12:2291-2298 1980 (MIRA 1988)

SHAPORSHEL'ZH, A.I.; MANOCHKINA, P.N.; YAKUSHEV, F.S.; KAROVLEVA, L.A.

Hydrogen exchange in the aliphatic amines as solvents. Zhur. obshch. khim. 34 no.8:2779-2784 Ag 1962. (MIRA 1962)

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

SECRETARY OF DEFENSE

Special Agent in Charge, Security Division, Department of Defense
Washington, D.C. 20301-3000

1. The subject is currently listed as being in the Department of Defense.

MAKIMOV, Ye. M.; SHAPESHTEYN, A. I.

Mobility of hydrogen in the methoxy group of aromatic compounds
as dependent on other substituents. Dokl. AN SSSR 155 no. 5:
1134-1136. Apr 1964. (M. RA 17:5)

L. Fiziko-khimicheskiy institut im. L. Ya. Karsova. Predstavleno
akademikom N. I. Kabachnikov.

SHAYNSHEIN, A.I., prof.; VINSKIY, Yu.I., kand. Khim. nauk,
FRABIKOVA, I.A., kand. tekhn. nauk; ALIKHANOV, F.F.,
kand. Khim. nauk; ZHDANOVA, K.I., kand. Khim. nauk;
IZYUMNIKOV, A.I., mlad. nauchn. sotr.; LEVINSKIY, Yu.V.,
red.

[Practical laboratory manual on the determination of the
molecular weights and molecular weight distribution of
polymers] Prakticheskoe rukovodstvo po opredeleniyu mo-
lekulyarnykh veshch i molekulyarno-vesovogo raspredete-
niya polimerov. [By] A.I. Shatenshtein i dr. Moskva,
Khimiya, 1961. 128 p. (HIRA 18:2)

L 13095-65 EWT(m)/EPF(c)/EPR/EMP(j)/T/EWA(c) Pc-l/Pr-l/PS-l RPL 173/RM
ACCESSION NR: AP5008367 S/0190/65/007/003/0423/0426

AUTHORS: Zvyagintseva, Ye. N.; Shatenshteyn, A. I.

TITLE: Polymerization of methylacrylate, metacrylonitrile, and acrylonitrile, initiated with KNH_2 solution, LiNH_2 , and $\text{Ba}(\text{NH}_2)_2$ suspensions, in liquid NH_3 , and with solid KNH_2

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 3, 1965, 423-426

TOPIC TAGS: polymerization, polymer, monomer, initiator, molecular weight, methylacrylate, metacrylonitrile, acrylonitrile

ABSTRACT: In their previous work the authors found that the molecular weight (MW) of polymethylacrylate (PMMA) is higher when certain initiators of polymerization are solid rather than in solution or in suspension. The present experiments were conducted to ascertain if the same phenomenon is true for polymethylacrylate (PMA), polymetacrylonitrile (PMAN), and polyacrylonitrile (PAN) polymerized in a solution of KNH_2 , on LiNH_2 and $\text{Ba}(\text{NH}_2)_2$ suspensions, in liquid NH_3 , and on solid KNH_2 . MW was calculated from the equations

$$\left\{ \begin{array}{l} \text{PMMA}:[\eta]_{25}^{\text{CHCl}_3} = 4,85 \cdot 10^{-5} M^{0,66}; \text{PMA}:[\eta]_{30}^{\text{C}_2\text{H}_6} = 1,28 \cdot 10^{-4} M^{0,714}; \\ \text{PMAN}:[\eta]_{30}^{\text{DMF}} = 3,06 \cdot 10^{-5} M^{0,602}; \text{PAN}:[\eta]_{25}^{\text{DMF}} = 2,43 \cdot 10^{-4} M^{0,75}. \end{array} \right.$$

L 43095-65

ACCESSION NR: AP5008367

2

Average values of MW obtained at -50C with various states of initiators are shown in Table 1 on the Enclosure. A substantial increase of MW was also observed when methylmetacrylate (MMA) was polymerized at -70C in a suspension (with solid precipitate) of NaNH₂ as compared with MW obtained in the solution of NaNH₂. Orig.

art. has: 2 formulas and 2 tables.

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

SUBMITTED: 07May64

ENCL: 01

SUB CODE: GC, OC

NO REF SOV: 003

OTHER: 001

Card 2/5

L 43095-65

ACCESSION NR: AP5008367

ENCLOSURE: 01

Table 1. Molecular weight of polymers ($M_v \cdot 10^{-3}$), obtained at -50C

Polymer	Solution of KNH_2	Suspension		Solid KNH_2
		LiNH_2	$\text{Ba}(\text{NH}_2)_2$	
PMMA*	40	900	1500	1300
PMA	3	8	3	50**
PMAN	300	500	4000	10000
PAN	50	-	20	800

* -33C; ** a single experiment

FPB
Card 3/3

Ad. I. N.

center-exchange method for studying the catalytic activity
of systems consisting of hydrogen acid and aprotic acid-like
substance. Acetic acid stannic chloride system. Zhur. et.
Zhur. et. (MIRA 18:4)
Zhur. et. (MIRA 18:4)

10. Ya. Karpova.

ZVYAGINTSEVA, Ye.N.; SHATENSHTEYN, A.I.

Polymerization of methyl acrylate, methacrylonitrile, and acrylonitrile initiated by a solution of KNH_2 and suspensions of LiNH_2 and $\text{Ba}(\text{NH}_2)_2$ in liquid NH_3 and solid KNH_2 . Vysokom. soed. 7 no.3:423-426 Mr '65. (MIRA 18:7)

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

SHATENSBET'YAN, A.I.; PETROV, E.S.; BUD-MENOVA, M...

Equilibria in the course of reactions of sodium and lithium with
diphenyl and naphthalene in electron-donor solvents. Dokl. AN
SSSR 161 no.4:889-892 Ap '65. (MIRA 18:5)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Submitted
September 4, 1964.

PETROV, F.S., BRATENSHTEYN, A.I.

Mechanism of the solvation of a sodium ion with some ethers
during the formation of anion radicals. Teoret. i eksper.
khim. 1 no.3:347-351 My-Je '65. (MIRA 18:9)

1. Fiziko-khimicheskiy institut imeni I.Ya. Karpova, Moskva.

SHATENSHTEYN, A.I.; GVOZDEVA, Ya.A.

Acidity of organic sulfides. Teoret. i eksper. khim. 1 no.3;
352-360 My-Je '65. (MIRA 18:9)

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

ACC NR: AP7010711

SOURCE CODE: UR/0020/66/170/005/1103/1106 /

AUTHOR: Yakovleva, Ye. A.; Tsvetkov, Ye. N.; Lobanov, D. I.; Kabachnik, M. I.
(Academician); Shatenshteyn, A. I.

ORG: Physico-Chemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy
Institut); Institute of Hetero-Organic Compounds, AN SSSR (Institut
elementoorganicheskikh soyedineniy AN SSSR)

TITLE: Protophilic deuterium exchange of some organic compounds of
trivalent phosphorus

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1103-1106

TOPIC TAGS: deuterium compound, deuterium, organic phosphorus compound,
organic nitrogen compound

SUB CODE: 07

ABSTRACT: The authors consider electron effects in organic compounds of
trivalent phosphorus, particularly the quantitative aspects of comparable
electron effects of substituents in phosphorus and nitrogen compounds of sim-
ilar structure. The rate of isotopic hydrogen exchange with a 0.8 N solution
of *tert*-C₄H₉OK is measured in mixtures of various volumes of diglim and deu-
terated tertiary butanol at 180°C or with a 0.02 N solution of potassium
amide in deuterated liquid ammonia at 0 or 25°C in several organic compounds.

Card 1/2

UDC: 547.341 2918

ACC NR AP7010711

The resultant data show a probability that the smaller differences in exchange rates of aromatic and aliphatic CH bonds in methyldiphenylphosphine than in methyldiphenylamine may be attributed to the higher mobility of hydrogen in the aliphatic CH bonds due to *d*-orbital conjugation, and the increase in mobility of hydrogen in the CH bonds in the ortho position due to the additional inductive effect of the second phenyl radical. This work should serve as a basis for more detailed studies on the kinetics of deuterium removal from substances containing deuterium at a definite position in the molecule. We thank M. I. ARSHINOVA and R. M. GORBATOVA for assistance in this work. Orig. art. has: 2 figures and 2 tables. [JPRS: 40,351]

Card 2/2

USSR/Medicine - Physiology

FD-2097

Card 1/1

Pub. 33-6/28

Author : Shatenshteyn, D. I.; Iordanskaya, Ye. N.

Title : Towards the physiology of the motor analysor of man

Periodical : Fiziol. zhur. 41, 35-42, Jan-Feb 1955

Abstract : Investigated the functional state of the central terminal of the motor analysor in man and the development of states of excitation and inhibition in it during work. Ergograms. Nine references, all USSR (6 since 1940)

Institution : Laboratory of Physiology of Labor of the Institute of Hygiene of Labor and Occupational Diseases of the Academy of Medical Sciences
USSR

Submitted : December 24, 1953

AUTHORS: Shemyakin, M. M., Kolosov, M. N., SOV/62-58-6-34/37
Arbuzov, Yu. A., Onopriyenko, V. V.,
Shatenshteyn, G. A.

TITLE: The Course Taken by the Synthesis of Ring A of Tetracyclic
Compounds (Put' sinteza kol'tsa A tetratsiklinov)

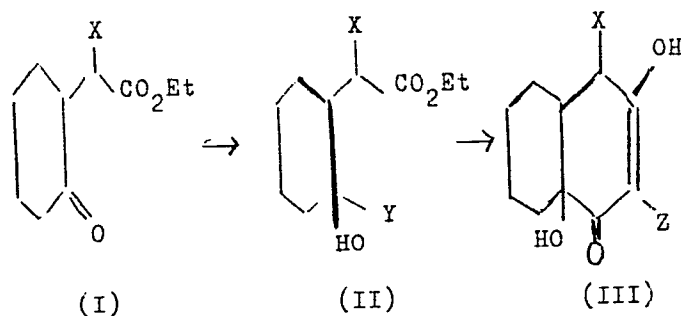
PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958,
Nr 6, pp. 794-795 (USSR)

ABSTRACT: Already in 1957 the authors of this report described the
synthesis of tricyclic compounds in which 2 rings, with respect
to their structure, resemble rings D and C of tetracyclic
compounds. The third ring, which corresponds to ring B,
contains a binary compound or a potential carbonyl group. At
present the authors are studying the possibility of synthesizing
ring A and describe this synthesis. The group $\text{CHX} \cdot \text{CO}_2$ is
introduced into the initial ketone, ketone ester is
ethylated, ethynyl carbinol (formula III) $\text{Y}=\text{C}\equiv\text{CH}$ is hydrated
in the neutral medium and oxy-ketoester (formula II; $\text{Y}=\text{Ac}$)
is cyclized into an oxy-diketone (formula III; $\text{Z}=\text{H}$).
(Formula III; $\text{Z}=\text{CONHR}$). The scheme has the following form:

Card 1/3

The Course Taken by the Synthesis of Ring A
of Tetracyclic Compounds

SOV/62-58-6-34/37



There are 2 references, 1 of which is Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR i Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR and Institute of Biological and ~~Medico-~~chemistry of the Academy of Medical Sciences of the USSR)

Card 2/3

The Course Taken by the Synthesis of Ring A of
Tetracyclic Compounds

SOV/62-58-6-34/37

SUBMITTED: April 29, 1958

1. Cyclic compounds--Synthesis
2. Cyclic compounds--Molecular structure.

Card 3/3

SARYCHEVA, I.K.; SHATENSHTEYN, G.A.; PLESHAKOV, M.G.; PREEBRAZHENSKIY, N.A.

Synthesis of 3-methyl-1,16-hexadecanedioic acid. Zhur.ob.khim.
30 no.8:2539-2542 Ag '60. (MIRA 13:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Hexadecanedioic acid)

KAZANSKIY, B.A.; LUKINA, N.Yu.; NAKHAPETYAN, L.A.; ZOPOVA, S.V.;
LOZA, G.V.; SHATKHSHTSEYU, G.A.; OVODOVA, V.A.; UVAROV, O.V.;
SOKOLOV, N.M.; SMOL'NIKOV, V.P.

Production of high purity cyclopropane. Khim. prom. no. 6:462-
465 S '60. (MIRA 13:11)

(Cyclopropane)

SHATENSHTEYN, L.¹, vrach.

What causes heartburn. Nauka i zhizn' 23 no.10:64 0 '56.
(MLRA 9:11)

(Gastric juice)

SUBJECT:

USSR/Medicine

25-4-33/34

AUTHOR:

Shatenshteyn, L.I., Doctor

TITLE:

Gout (Podagra)

PERIODICAL:

Nauka i Zhizn' - April 1957, # 4, p 63 (USSR)

ABSTRACT:

Gout is a metabolic disease, where the salt of uric acid accumulates in tissues and blood, and, if not eliminated by the kidneys, settles in the joint pouches and gristles of the human body. These accumulations of salts cause fits of pain. Abundant food, too little exercise, abuse of alcohol lead in the course of time to stiffening joints and painful swellings. As a cure patients are to be put on a diet which comprises milk products, fruit, and vegetables. Meat and fish must be avoided. Medicines dissolving the salt of uric acid, as for instance atophan, lithium are prescribed. Alkaline mineral waters as well as hydrogen sulfide baths are recommended.

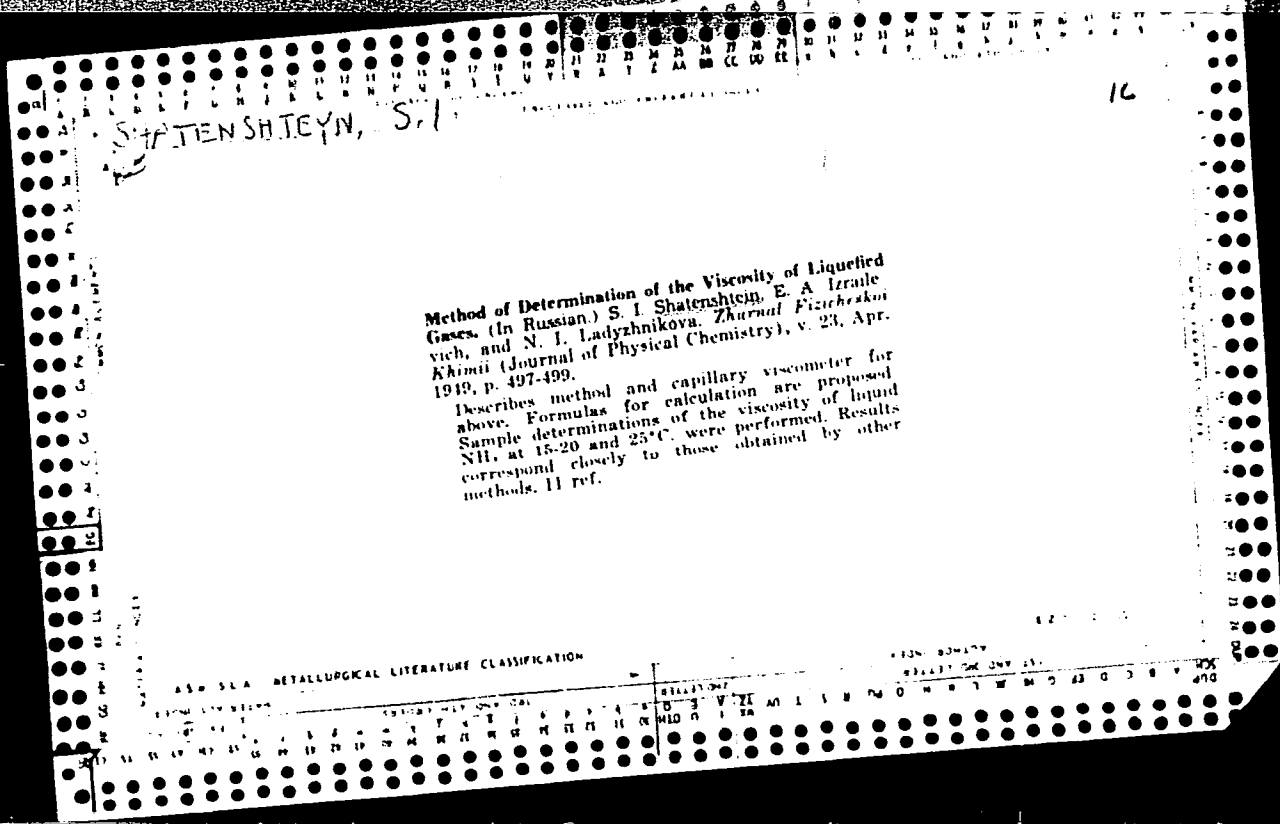
ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 1/1



SHATENSHTEYN, V.G.; AKSYUTA, A.A.

Investigating the heat conductivity of various refractories
for coke ovens with high temperatures. Met. i gornorud.
prom. no.6:45-46 N-D '65. (MIRA 18:12)

SPATENSHTEYN, V.G.

Heat losses to the ambient medium by PK-47 and PVR coke ovens.
Koks i khim. no.11:34-35 '61. (MIRA 15:1)

1. Voroshilovskiy koksokhimicheskiy zavod.
(Coke ovens)

SHATENSHTEYN, V.G.; TEMNIK, V.G.

Westing agents for a coke charge. Met. 1 gornorud. prom.
no.1:46-47 Ja-F '64. (MIRA 17/10)