LUTSKIY, A. E.

22991 izmeneniye plotnosti v izologicheskikh ryadakh opganicheskikh soedinenye.
Trudy khar'k. Khim.-Tekhnol-In-ta im. Kirova, Vyp.7, 1949, C. 37-51.
Bibliogr: 8 Nazy.

SO: LETOPIS' NO. 31, 1949

LUTSKIY, A. E.

22990 Vliyaniye kontsentratsii oleuma na bykhod metaizomera pri introvanii atsetofenona . Trudy khar'k. Khim.-Tekhol. In-ta im. Kirova, Vyp. 7, 1949, C. 101-02

SO: LETOPIS' NO. 31, 1949

LUTSKIY, A. YE.

57/49T14

USSR/Chemistry - Bonds Apr 49
Chemistry - Dipole Moments

"Intermolecular Hydrogen Bond and the Dipole Moments in Organic Compounds," A. Ye. Lutskiy, Khar'kov Chemicotechnol Inst imeni S. M. Kirov, 6½ pp

"Zhur Fiz Khim" Vol XXIII, No 4

Determines dipole moments of ortho, meta, paraoxy, and metoxy acetophenones, and analyzes their characteristics. Submitted 23 Apr 48.

[redacted] 57/49T14

**Ultraviolet absorption spectra of some heterocyclic
compounds in the presence of alkali.** A. B. Lutskii (S.
M. Kirov Chem.-Technol. Inst., Kharkov). *Zhur. Obshchei
Khim.* (J. Gen. Chem.) 20, 794-800(1950).—(1) In 0.01 *M*
solns. of rhodanine in EtOH, in the presence of 1000
mols. EtONa per mol. rhodanine, absorption begins at 4550
A., rises slowly to a broad band with a max. at 3900 A., ϵ =
55, then, after a shallow min. at 3620 A., ϵ = 30, rises
again and ends at 3240 A. In a 0.001 *M* soln., the curve
starts at 3780, rises steeply to 3000, and has a deep min. at
2685 A., ϵ = 200. In a 0.0001 *M* soln., the curve starts
at 3530, rises steeply to a narrow band with a max. at 2955
3440 A., ϵ = 5000, and a broad band with a max. at
A., ϵ = 13,000. At the long-wave edge of the latter band,
there are an inflection in the range 3620-3170 A., and 2 min.,
3330 A., ϵ = 3000, and 2655, 200. Comparison with the
spectrum of rhodanine in EtOH without EtONa (*C.A.*
39, 4800^6) shows that in the presence of alkali there is no
coincidence of the beginning and the end of the absorption
curve on diln. with EtOH. Furthermore, alkali shifts the
whole absorption curve to longer waves, giving rise to 2
new bands at 3900 and 3440 A. The band at 2950 A.,
found in the neutral soln., is broadened in the presence of
alkali. These changes may be attributable to enolization
of rhodanine in alk. soln. After 24 hrs'. standing, ab-
sorption curves of 0.001 and 0.0001 *M* solns. with *M* and
0.1 *M* EtONa, resp., undergo sharp changes. The
curve starts at 3060 A. and rises steeply to only one
narrow band, max. 2945, ϵ 250, passes through a shallow
min., rises again, and ends at 2330 A. Bands observed
in fresh solns. disappear, except for the 2950-A. band,
which, however, falls to about 2% of its intensity. The
curve of 24-hr.-old 0.001-0.0001 *M* solns. appears as a
sort of continuation of the curve of a 0.01 *M* soln. (2)
The absorption curve of *N*-phenylrhodanine in 0.01
0.0001 *M* soln. in EtOH, with 1000 mols. EtONa/mol.
dye, begins at 4600 A., rises steeply to a broad band with
a max. at 4150, ϵ = 300, falls to a min. at 3765, 30, and
rises again to 2860 A., with 2 inflections at 3250-3160 (ϵ
= 500-300) and 3070-2980 (6000-3000). As compared
with the absorption in the absence of EtONa, alkali causes
the appearance of a new broad band, 4150, and an in-
flection at 3250-3160 A. Unlike the effect of alkali on
rhodanine, there is no significant shift to longer waves of
the curves of freshly prepd. 0.001 0.0001 *M* solns. and no
lack of coincidence of the beginnings and ends of the curves.
The 2950-A. band, which in rhodanine undergoes con-
siderable broadening by alkali, appears in *N*-phenylrho-
danine, with lowered intensity, in the form of the inflec-
tion at 3070 2980 A. (3) The absorption curve of 5-
[3-ethyl-2,3-dihydrobenzothiazolidene-(2)]-rhodanine, in
0.00004 *M* soln. in EtOH, in the presence of 1000 mols.
EtOH/mol. dye, can be interpreted as consisting of 2
groups of bands, high-intensity bands with max. at 4200
and 2180 A., characteristic of the coupling product of 2
heterocycles in neutral alc. soln., and of bands characteris-
tic of rhodanine (2955 A., and of benzothiazole (2546 A.)
in alk. alc. No other bands of rhodanine and of benzothia-
zole appear in the spectrum of this dye. The whole ab-
sorption curve is the result of a superposition of bands of
the sep. rhodanine and benzothiazole and of bands of their
coupling product. (4) The same interpretation can be
given to the absorption spectrum of 5-[3-ethyl-2,3-di-
hydrobenzothiazolidene-(2)-ethylidene]rhodanine in alk.
alc., only here all bands are shifted to longer waves almost
parallel to those of the dye referred to under (3), evidently
owing to an accented bathochromic effect of the alkali on
account of the 2 Me groups lying between the 2 hetero-
cycles.
N. Thon

2

CA

Variation of the density in homologous series of organic compounds. A. R. Lutskii (S. M. Kirov Chem.-Technol. Inst., Kharkov). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 801-6(1950).—The d. of a compd. with *n* C atoms is representable by $d_n = d_l bn/(bn + 1)$, where d_l is the limiting d. for the given homologous series, and *b* a const. Empirical values of d_l and *b* are: for normal hydrocarbons (20°) 0.8665 and +0.6351; thio-alcs. (25°) 0.8420 and +41.813; normal alcs. (0°) 0.8527 and +7.230; fatty acids (20°) 0.877 and −4.486. Deviations of the calcd. from the exptl. ds. do not exceed, except in the 1st terms of a series, 0.5%, and are mostly less than 0.25%. The existence of a limit of d. in each series is due to the conflicting effects of the increasing mass *m* of the mols. and of the decreasing no. of mols. per unit vol. This leads to the formula $d_{n+1} = d_n(M_{n+1}/M_n)(1 - \Delta)$, where Δ expresses the relative decrease of the no. of mols. per unit vol. as a result of lengthening the chain by one CH_2 group. The magnitude Δ decreases with increasing *n*, more rapidly in the 1st terms of a homologous series. At equal *n*, Δ varies but little (not more than by 1-2%) with the nature of the functional group; it decreases very slightly with rising temp. Examples of values of Δ, at 20, 30, and 40°, are, for *n* = 6, 0.108, 0.107, 0.104; *n* = 8, 0.090, 0.090, 0.088; *n* = 11, 0.070, 0.070, 0.070. The limiting d_l may be reached long before *n* approaches infinity; specifically, $d_n = d_l$ when $(M_{n+1}/M_n) - (M_{n+1}/M_n)\Delta$ becomes = 1. In series in which this difference is more than 1, the d. will increase with *n*, whereas if that difference is less than 1, the d. in the given series will decrease with increasing *n*; examples of the 1st case are hydrocarbons or F derivs., of the 2nd case, Br and I derivs. The mol. vol. $V = (M/d_l)[1 + (1/bn)]$ becomes increasingly more nearly proportional to the mol. wt. *M* as *n* approaches infinity; at that limit, the increment ΔV per CH_2 group tends to the limiting const. value of $14.031/d_l$. N. Thon

AI - 4

B.1

Ultra-violet absorption spectra of some heterocyclic compounds in presence of an alkali. A. K. Lutsky (*J. gen. Chem. USSR*, 1950, 20, 794–800 (U.S. transl., 833–837); cf. A., 1948, I, 199).—The extinction coeff. and λ of band max. are measured between 4000 and 2000 A. for EtOH solutions of rhodanine (I) and *N*-phenylrhodanine with and without the addition of 1000 mol. of NaOEt per mol. of org. compound. Addition of NaOEt causes new bands to appear in the spectra. The spectrum of I is shifted to the red by addition of NaOEt. The effect of alkali on the absorption spectra of EtOH solutions of 5-[2-3'-ethyl-2' : 3'-dihydrobenzthiazol-3'ylidene-ethylidene]rhodanine is similar, indicating that the absorption of this dye in alkaline solution results from the superposition of the absorption spectra of the component heterocycles and an absorption typical of the combination product as a whole.

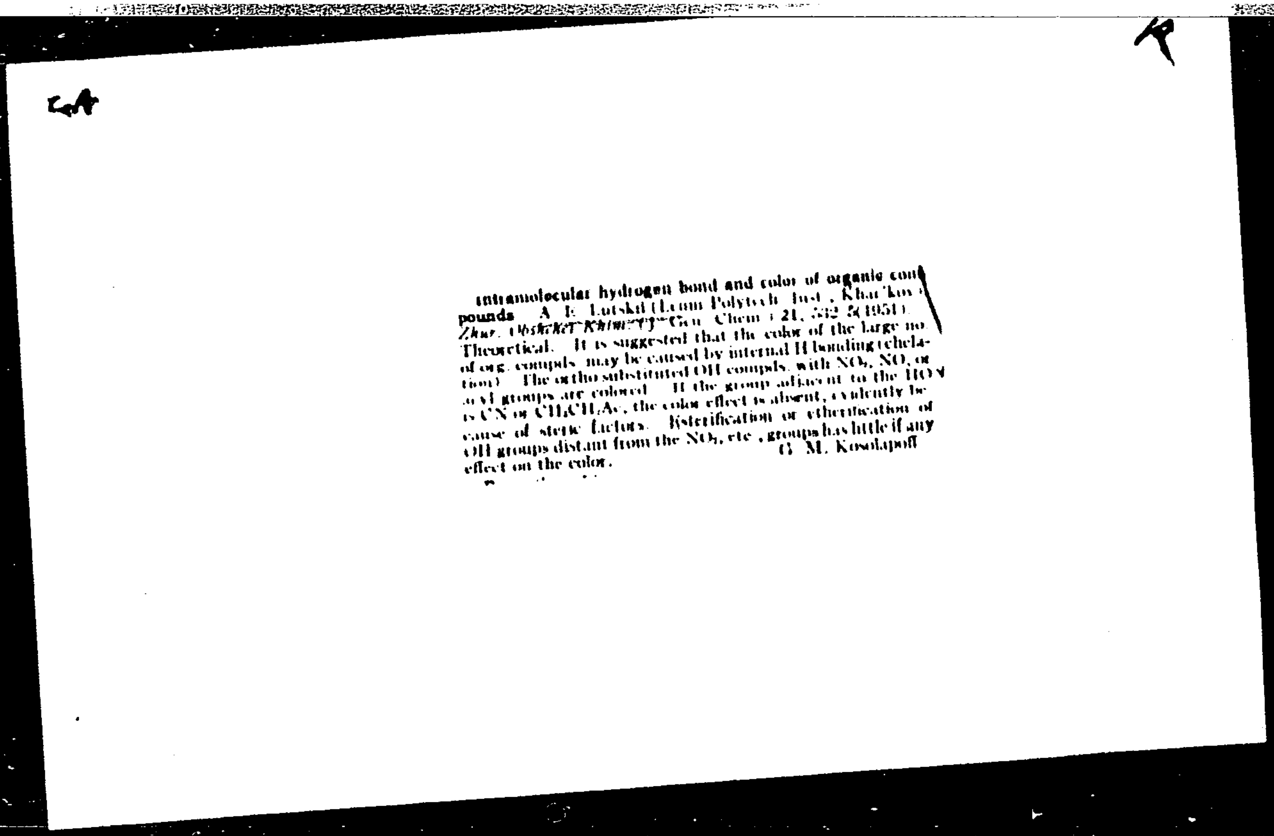
O. D. Saltmarsh

C.A.

2

Certain regularities in the change of isobaric density with temperature. A. E. Lutskii (Lenin Polytech. Inst., Khar'kov). *Zhur. Fiz. Khim.* 24, 786-97(1950).—The coeff. of expansion, *K*, decreases linearly with an increase in mass and dipole moment, and in a homologous series *K* decreases with increasing no. of C atoms in the hydrocarbon chain but approaches a limiting value. *K* is proportional to the sq. root of the mass and the 4th root of the dipole moment. Formulas are derived for the calcn. of *K* in homologous series.

Paul W. Howerton



CA

R

Intramolecular hydrogen bond and color of organic compounds A. E. Lutskii (Lenin Polytech. Inst., Khar'kov). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 532-8(1951). Theoretical. It is suggested that the color of the large no. of org. compds. may be caused by internal H bonding (chelation). The ortho-substituted OH compds. with NO₂, NO, or acyl groups are colored. If the group adjacent to the HO is CN or CH₂CH₂Ac, the color effect is absent, evidently because of steric factors. Esterification or etherification of OH groups distant from the NO₂, etc., groups has little if any effect on the color. G. M. Kosolapoff

C.A.

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Absorption spectra and structures of benzene derivatives. XV. 3-Hydroxy- and 3-methoxyacetophenones. N. A. Valyashko and A. E. Lutskii (Kirov Chem.-Technol. Inst., Kharkov). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 939-50(1951); cf. *C.A.* 42, 2588g; 43, 1349h.—The ultraviolet absorption spectra of 3-hydroxy- and 3-methoxyacetophenones were examd. They are developed from the spectrum of AcPh, and, as in the case of the 2-HO deriv. the α-type spectrum results with strong development of bands of α_1 and α_2 types. The α_2 band of the 3-HO and 3-MeO derivs. is a complex band, composed of 2 superimposed bands, of which one corresponds to the α_2 band of AcPh. The curve of the 3-HO deriv. is close to that of the 2-HO isomer but is slightly shifted toward the shorter waves; the shift to 3-MeO of the deriv. does not change the spectrum significantly. Only in concd. H_2SO_4 does the φ-type spectrum develop. The results indicate considerable freedom of separate conjugations of Ac, OH, and OMe groups in this group of derivs.; the α form of these substances may be ascribed to the condition of mutual conjugation, while the φ condition calls for separate conjugations of the substituent groups with the Ph ring. The absorption curves of the compds. are reproduced in various solvents. The 3-MeO deriv. gives an α_2 band at 3085 A. (ε 3500), a φ band at 2490 (7000), and an α'_1 band at 2185 (16600) in EtOH; in 10% aq. H_2SO_4 these become: 3110 (4000), 2510 (8000), and 2160 (16000), resp. In concd. H_2SO_4 the bands are: α'_2 at about 4200 A. (ε 700), α_2 3725 (13000), φ 2975 (13000) and α'_1 2270 (9000). The 3-HO deriv. gives, resp.: 4300 (400), 3720 (6000), 2935 (13000), and 2270 (10000), in concd. H_2SO_4; in 10% H_2SO_4, these are —, 3095 (6000), —, α_1 2505 (15000), and α'_1 2195 (17500); in EtOH these are: α_2 3110 (5000), α_1 2525 (10000), and α'_1 2180 (25000), resp. The effect of H bonding on the spectra is discussed with numerous references. G. M. K.

C.A.

10

Absorption spectra and structures of benzene derivatives.
XVI. 3,5-Dihydroxy and 3,5-dimethoxyacetophenones. N.
A. Valyashko and A. E. Lutskii (Lenin Polytech. Inst., Khar-
kov). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 1080-91
(1951); cf. C.A. 46, 884*e*.—The absorption spectra of 3,5-
dihydroxy- (I) and 3,5-dimethoxyacetophenone (II), in
hexane, EtOH, alc. NaOEt, alc. HCl, concd. and dil.
H_2SO_4 are reproduced. Introduction of the 2nd HO or
MeO group into the 5-position of *m*-hydroxy- or methoxy-
acetophenone causes development of more pronounced ab-
sorption in the bands of the α and the φ states. In I, in the
presence of much EtONa there is a development of absorp-
tion in the region of both the α_1 and the φ bands. Alc.
HCl and dil. H_2SO_4 show no significant effect on the spectrum
in comparison with EtOH solns. Both I and II show in
concd. H_2SO_4 a development of absorption in the regions of
α_1 and φ bands. The results are explainable by existence
in these substances of 2 states, α and φ, which are in equil.
with each other and are characterized by discrete or com-
bined conjugation with the Ph ring unsatn. because of the
disposition of HO and MeO group. In both I and II there is
competition between the α and φ states, which explains the
peculiarities of the spectra. The preservation of the same
band intensity of α_1' and α_1 bands in I as in the 3-HO
compd. shows that combined conjugation with the unsatn.
of the Ph ring can occur with participation of but 1 OH
group at a time. I in EtOH gives max. at 3210, 2850, and
2180 A., with min. at 2985 and 2410 A.; II in EtOH gives
max. at 3180, 2830, and 2185, with min. at 2900 and 2380 A.
Heating 60 g. BzOH with 250 g. 13% oleum 30 min. to
231°, adding two 50-g. portions of $ClSO_3H$, heating 1.5 hrs.
at 250°, neutralizing with $BaCO_3$, filtering, and acidifying
with HCl gave 79% 3,5-$(HO_3S)_2C_6H_3CO_2H$, isolated as the
Ba salt. Fusion with KOH gave 65-70% *3,5-$(HO)_2C_6H_3$-*
CO_2H, m. 238-9° (decompn.); methylation with Me_2SO_4
gave the *di-MeO analog*, m. 181-3° (from EtOH). Heating
the latter with MeOH-H_2SO_4 gave 90% *Me ester*, m. 38°;
this with EtOAc gave 43% *Et (3,5-dimethoxybenzoyl)acetate*,
oil (hydrazone, m. 154-5°). Ketonic cleavage gave (II),
b_8, 143-6°, m. 41-2° (from petr. ether). Demethylation
in ClPh with $AlCl_3$ gave the I, m. 147-8° (from H_2O).

XVII. 2,6-Dihydroxyacetophenone and its methyl ethers.
Ibid. 1091-1117.—The absorption spectra of 2,6-dihydroxy-
(I), 2-hydroxy-6-methoxy-(II), and 2,6-dimethoxyaceto-
phenones (III) in hexane, EtOH, alc. NaOEt, alc. HCl, and
concd. and dil. H_2SO_4 are reproduced. Introduction of the
2nd HO and MeO into the 6-position of *o*-HOC_6H_4COMe
causes the principal development of absorption of the α
type, with some development of the φ type. The H bond
of intramol. type causes the peculiarities of the spectrum of I.
as only 1 of the *o*-HO groups participates in the bond; in
this compd., the salt formation at the 2nd HO group has an
insignificant effect on the spectrum. Methylation of I
causes a significant spectrum change and the result is com-
parable to the spectrum of *m*-$C_6H_4(OMe)_2$. In III the con-
jugation of CO with the Ph ring is greatly reduced by vari-
ous media; in concd. H_2SO_4 the conjugation of Ac group
with Ph is reestablished. Hence many so-called steric

LUTSKII, A. E.

"Absorption spectra and structures of benzene derivatives. XVII. 2,6-Dihydroxyacetophenone and its methyl ethers." by N. A. Valyashko and A. E. Lutskii. (p.1091)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No. 6

LUTSKIY, A. YE.

PA 197T19

USSR/Chemistry - Hydrocarbons Dec 51

"Molecular Mass and Physical Properties of Liquids," A. Ye. Lutskiy, Polytech Inst imeni V. I. Lenin, Khar'kov

"Zhur Fiz Khim" Vol XXV, No 12, pp 1397-1406

From investigation of properties of large number of hydrocarbons substituted with F, Cl, Br, I, Si, Ge, Sn, Pb, Zn, Cd, Hg, N, P, As, Sb, Bi, O, S, Se, and Te found that the most diverse phys properties in isologic series basically vary linearly with mol mass. Density and viscosity increase in direct proportion to mol mass; sp heat cond decreases in inverse proportion to mol mass.

LC 197T19

LUTSKIY, A-Ye

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USSR .

The hydrogen bond and the chemical properties of organic compounds. The effect of solvents on the kinetics of chemical reactions. A. E. Lutskii. *Sbornik Statei po Obshchei Khim. Akad. Nauk S.S.S.R.* 2, 1202-10(1953); cf. *C.A.* 48, 9893*h*.—When the solvent does not contain groups that can form H bonds with the reagent, the rate const. of the reaction changes with the dielec. const. of the solvent. When stable complexes form between solvent and reagent by H-bond formation, an anomalous rise or decrease in rate const. occurs. The attraction of the dipoles of reagent and solvent in the cybotactic field or the formation of H-bond complexes causes decreased energy of activation and probable formation of active complexes. H. M. Leicester

LUTSKIY, A. Ye.

USSR.

✓Priority of scientific and industrial discovery of aniline. A. E. Lutskii. *J. Appl. Chem. U.S.S.R.* 26, 1253-6(1953) (Engl. translation).—See *C.A.* 48, 3079e. H. L. H.

① 2

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

Priority of scientific and industrial discovery of aniline. A. E. Lutskii. *Zhur. Priklad. Khim.* 26, 1314-17(1953).—Historical sketch with numerous references in which Zinin's priority of discovery of $PhNH_2$ is emphasized, with credit given also to Fritsche for much of the early work.
G. M. Kosolapoff

11-5-54

LUTSKIY, A.YE.

Dipole moments of molecules and physical [illegible] of liquids. A. E. Lutskii.

[illegible]

LUTSKIY, A.Ye.; YUKHNOVSKIY, G.L.

Il'ia Ivanovich Strelkov; 1898-1954; obituary. Ukr.khim.zhur. 20 no.3:335-339 '54. (MLRA 7:8)
(Strelkov, Il'ia Ivanovich, 1989-1954)

Lutskiy, A. Ye.

AID P - 1018

Subject :	USSR/Chemistry
Card 1/1	Pub. 119 - 3/8
Author :	Lutskiy, A. Ye. (Kharkov)
Title :	The hydrogen bond and chemical properties of organic compounds
Periodical :	Usp. khim., 23, no. 4, 479-490, 1954
Abstract :	The effect of the intramolecular hydrogen bond (functional properties of phenol hydroxyl, and of the carbonyl and nitro groups), and of the intermolecular hydrogen bond (reactions of hydrolysis and alcoholysis, formation of molecular compounds) are discussed. 172 references (34 Russian: 1886-1953).
Institution :	None
Submitted :	No date

LUTSKIY, A.E.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 151 - 13/36

Authors : Lutskiy, A. E.

Title : The hydrogen bond and density of solutions

Periodical : Zhur. ob. khim. 24/1, 74-78, Jan 1954

Abstract : The density values of solutions of seventy different compounds were determined in benzene and in ethyl alcohol at 50°. It was found that in benzene and in alcohol the very same density ratios are retained by non-associated and associated inter- and intramolecular compounds as in the case of individual substances in the liquid state. The applicability of the density data to qualitative determination of the presence and nature of association of a dissolved substance was established. Two references: 1-USA and 1-USSR (1910 -1950). Tables.

Institution : The Polytechnicum, Khrakov

Submitted : March 23, 1953

LUTSKIY, A.E.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 151 - 2/38

Authors	: Lutskiy, A. E.
Title	: Hydrogen bond and viscosity of solutions
Periodical	: Zhur. ob. khim. 24/2, 203-206, Feb 1954
Abstract	: The viscosity values of various phenol solutions, their acids and ethers were determined in benzene and ethyl alcohol at 50°. The viscosity ratios of non-associated and associated inter- and intramolecular compounds in benzene and in alcohol were found to be the same as for individual substances in liquid state. It was established that the data regarding the viscosity of specific compounds can be applied for qualitative determination of the presence and nature of association of a dissolved substance. The effect of the hydrogen bond on the viscosity of solutions, is explained. Three references: 1-USA and 2-USSR (1910-1954). Tables.
Institution	: The Polytechnicum, Kharkov
Submitted	: March 23, 1953

LUTSKIY, A. E.

USSR/Chemistry - Physical chemistry

Card 1/1 : Pub. 151 - 7/37

Authors : Lutskiy, A. E.

Title : Hydrogen bond and physical properties of certain phenol and anisole substitutes

Periodical : Zhur. ob. khim. 24/3, 440-444, Mar 1954

Abstract : Experiments showed that the formation of a hydrogen bond in molecules or between them results in considerable changes of the latter. The laws governing such changes for infrared spectra, combined diffusion spectra, absorption spectra in ultraviolet and visible zone of the spectrum, as well as for dipole moments of molecules, were established. Guaiacol in liquid state was found to have an intramolecular hydrogen bond; pyrocatechin in liquid state displayed the characteristics of a mixed-associated compound (associated inter- and intramolecularly simultaneously). Density, viscosity and surface tension values for numerous phenol and anisole substitutes were determined at 131 and 184°. Seventeen references: 8-USA; 6-USSR and 3-German (1881-1950). Tables; diagrams.

Institution : The V. I. Lenin Polytechnicum, Kharkov

Submitted : May 18, 1953

LUTSKIY, A-Ye.

~~GERM~~

Hydrogen bond and physical properties of some substituted phenols and anisoles. A. E. Lutskii. *J. Gen. Chem. U.S.S.R.* 24, 449-52(1954)(Engl. translation).—See *C.A.* 48, 8009e.
H. L. H.

LUTSKIY, A. E.

USSR/Chemistry - Physical chemistry

Card 1/1 : Pub. 151 - 33/37

Authors : Lutskiy, A. E.

Title : The hydrogen bond and physical properties of 8-hydroxyquinoline

Periodical : Zhur. ob. khim. 24/3, 561-562, Mar 1954

Abstract : The density, surface tension and viscosity values were determined for 8-hydroxy- and methoxyquinolines and just plain quinoline at 209°. The investigated physical properties of the quinolines indicate the presence of a strong hydrogen bond in their molecules. The laws governing the physical properties of compounds with inter- and intramolecular associations were found to be well applicable to corresponding heterocyclic compounds. Seven references: 3-USSR; 1-Swiss; 2-German and 1-USA (1881-1950). Table.

Institution : The V. I. Lenin Polytechnicum, Kharkov

Submitted : May 18, 1953

Lutskiy, A-Ye.

USSR 3

Hydrogen bond and properties of 8-hydroxyquinoline. A. E. Lutskii. J. Gen. Chem. U.S.S.R. 24, 575-6(1954) (Engl. translation).—See C.A. 49, 6260i. H. L. H.

LUTSKIY, A.E.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 147 - 3/27

Authors : Lutskiy, A.E.

Title : Density of liquids

Periodical : Zhur. fiz. khim. 28/2, 204-212, Feb 1954

Abstract : The density of liquids is normally determined by various thermodynamic factors and the properties of the body particles, their dimensions, mass, form, dipole moment and polarizability. The laws governing the changes in different kinds of normal liquids were established. It was found that association increases the density. Criteria are presented which make it possible to determine the existence of association by the density of the liquid. The density of liquids consisting of molecules with intramolecular hydrogen bond was determined. Fifteen references : 9-USSR; 2-USA; 1-Belgian and 3-German (1907-1952). Tables; graphs.

Institution : The V.I. Lenin Polytechnicum, Kharkov

Submitted : March 24, 1953

LUTSKIY, A.Ye.

Size of molecules. Dokl.AN SSSR 94 no.3:513-516 Ja '54.
(MLRA 7:1)

1. Khar'kovskiy politekhnicheskiy institut im. V.I.Lenina.
Predstavleno akademikom A.N.Frumkinym. (Molecules)

LUTSKIY, A. Ye.

"Molecular Constants and Boiling Temperature of Liquids", a paper presented at the second conference on the Liquid State of Matter, Kiev, 30 May to 3 June 1955, Usp. Fiz. Nauk, April 1955

LUTSKIY, A. Ye.

Hydrogen bond and physical properties of some substituted phenols and anisoles. II. Halogen substituted phenols. A. E. Lutskii. *J. Gen. Chem. U.S.S.R.* 25, 1043-7(1955)(Engl. [illegible]). III. Hydroxybenzophenones. *Ibid.* 1049-[illegible] [illegible] C.A. 50, 3281c.

B. M. R.

LUTSKIY,A.Ye.

Hydrogen bonds and physical properties of some substituents of phenols and anisoles. Part 2. Halogen substituted phenols. Zhur.ob.khim.25 no.6:1086-1092 Je '55. (MLRA 8:12)

1. Khar'kovskiy politekhnicheskiy institut
(Phenols)

LUTSKIY, A.Ye.

Hydrogen bonds and physical properties of some substituents of phenols and anisoles. Part 3. Oxybenzophenones. Zhur.ob.khim. 25 no.6:1092-1094 Je'55. (MLRA 8:12)

1. Khar'kovskiy politekhnicheskiy institut.
(Benzophenone)

LUTSKIY, A.E.

USSR/Scientists - Necrology

Card 1/1 Pub. 147 - 26/26

Authors : Lutskiy, A. E.; Yukhnovskiy, G. L.; and Ganenko, V. A.

Title : Ilya Ivanovich Strelkov

Periodical : Zhur. fiz. khim. 29/1, 205-208, Jan 1955

Abstract : In commemoration of the first anniversary of the death of I. I. Strelkov (1898-1954), a eulogy is presented of this famous Soviet chemist, member corresp. of the Academy of Sciences Ukr SSR, professor of Colloidal Chemistry Faculty at the Khrakov Polytechnicum. Some of the scientific books written by Strelkov are listed. Sisteen USSR references (1936-1954). Illustration.

Institution : ....

Submitted : July 5, 1954

Lutskiy, A. Ye.

Molecular constants and surface tension of liquids. A. E. Lutskii (V. I. Lenin Polytech. Inst., Kharkov). (2) *Zhur. Fiz. Khim.* 29, 983-05(1955); cf. *C.A.* 48, 7961*f*.—Surface tension, γ, was detd. by the method of max. bubble pressure. If γ of $PhNO_2$ at 131° and 184° is 31.0 and 25.3 dynes/cm., resp., then γ of o-$O_2NC_6H_4OH$ is 32.3 and 25.8, of m-$O_2NC_6H_4OH$ 41.4 and 36.5, p-$O_2NC_6H_4OH$ 45.7 and 40.9, of o-, m-, and p-$O_2NC_6H_4OMe$ 33.4, 28.1; 32.7, 27.4; and 34.3, 29.1, resp.; PhAc 26.7, 22.1; o-, m-, and p-HOC_6H_4Ac 29.2, 24.2; 37.5, 33.3; and 39.7 and 35.1, resp.; o-, m-, and p-$MeOC_6H_4Ac$ 31.2, 26.1; 29.4, 24.5; and 30.0, 25.1, resp.; EtOBz 24.3, 19.5; o-, m-, and p-$HOC_6H_4CO_2Et$ 26.6, 21.2; 30.8, 26.9; and 31.7, 27.1, resp.; and o- and p-$MeOC_6H_4CO_2Et$ 27.2, 22.1; 27.8, 22.5; all at 131° and 184°, resp. At 131° and 172° γ was for o-, m-, and p-cresol 28.7, 22.5; 26.7, 23.5; 26.8, 23.7, resp., and for o-, m-, and p-MeC_6H_4OMe 21.6, 18.3; 21.9, 18.2; and 23.3, 18.0, resp. At 131° γ of o-, m-, and p-$MeOC_6H_4CHO$ was 32.5, 31.7, and 30.6, resp., for PhOH 30.0, and PhOMe 23.1. By means of these and literature data the effect of structure on γ was discussed. J. J. Bikerman

LUTSKIY, A. YE.

USSR/Atomic and Molecular Physics - Liquids, D-8

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34473

Author: Lutskiy, A. Ye.

Institution: Polytechnic Institute, Khar'kov

Title: Molecular Constants and Viscosities of Liquids, II

Original Periodical: Zh. fiz. khimii, 1955, 29, No 7, 1162-1172

Abstract: The correctness of the following approximate empirical relationships between the values of the viscosity η of normal liquids and the properties of their component molecules is established:

$$(\eta/\sqrt{m})_{p,T,\phi,\mu} = \text{const } (MR_D)^{3/2};$$

$$(\eta)_{p,T,\phi,m,\alpha} = A + \text{const } \mu;$$

$$[\eta/\sqrt{m}(MR_D)^{3/2}]_{p,T,\phi} = A + \text{const } \mu,$$

where m is the mass of the molecules, M the mass per unit volume, and μ the dipole

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USSR/Atomic and Molecular Physics - Liquids, D-8

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34473

Author: Lutskiy, A. Ye.

Institution: Polytechnic Institute, Khar'kov

Title: Molecular Constants and Viscosities of Liquids, II

Original Periodical: Zh. fiz. khimii, 1955, 29, No 7, 1162-1172

Abstract: moment. Based on this relationship, the character of the variation of the viscosity in the homological and isological series, and also in the derivative hydrocarbons of the RX type (X is the functional group) is explained. In the opinion of the author, the formulation of an exact and additive scheme for the viscosity is impossible in principle. The liquids associated as the result of the hydrogen bonds (alcohols and carbonic acids), unlike liquids with internal hydrogen bonds, do not obey the above relationships. The anomalously increased value of η for associated compounds is determined from the properties of the viscous flow of the associated liquids, consisting of z molecules. It is shown that z can be approximately computed from the viscosity relationships of the associated compound η_{ass} (for example, C_4H_9OH) and its unassociated metamer η_{met} (for example, $(C_2H_5)_2O$): $Z^2 \approx \eta_{ass}/\eta_{met}$. Viscosities of 34 derivative benzols were measured at 131 and 184 or 172°.

LUTSKIY, A.Ye.

13008

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CH In memory of Professor Nikolai Avksent'evich Valyashko (1871-1955). A. E. Lutskii and V. I. Atroshchenko. *Zhur. Obshchei Khim.* 26, 289-94(1955).—Obituary with portrait and complete bibliography. G. M. Kosolapoff

1955

LUTSKIY, A. Ye.

USSR/ Physical Chemistry - Molecule. Chemical bond B-4

Abs Jour : Referat Zhur - Khimiya, No4, 1957, 10903

Author : Lutskiy A.Ye.
Title : Hydrogen Bond and Physical Properties of Nitroanilines

Orig Pub : Zh. obshch. khimii, 1956, 26, No 8, 2295-2299

Abstract : Determined were the densities d (first figure), surface tensions γ (second figure), and viscisities $\eta \cdot 10^6$ (third figure), at 172°, of melts of the following compounds: o-nitroaniline (1.161;36.6;919), nitro-dimethylanilines: ortho: 1.039;27.7;673, meta: 1.047;27.9;601 and para: 1.101;34.7;1015, and η of m-nitroaniline 936, and p-nitroaniline 1436. For some of the substances, these properties were determined also at 131°, and for all of them d and η were determined at 50° in benzene and ethanol solutions. Comparison of the values so obtained showed that m- and P-nitranilines are intermolecularly associated, whereas nitro-dimethylanilines are normal liquids. The author considers o-nitroaniline a mixed-associated liquid the molecules of which are associated both intermolecularly and intramolecularly.

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LUTSKIY, A. Ye.

USSR/ Physical Chemistry - Molecule. Chemical bond B-4

Abs Jour : Referat Zhur - Khimiya, No 4, 1957,

Author : Lutskiy A.Ye.
Title : On association of Amines and of Imines

Orig Pub : Zh. obshch. khimii, 1956, 26, No 8, 2299-2304

Abstract : The author asserts that uniquely defined criteria of the state of molecules in a liquid can be provided only by correlations between property values of macrobodies and of the microparticle components of these bodies, for example:the changes in density, latent heat of evaporation, viscosity coefficient η, $T_k/R_D^{\frac{1}{2}}$ (T_k --boiling point, R_D --molecular refraction), R_D and other, with a change in dipole moment of the molecules. On analyzing literature data on physical properties of fatty and aromatic amines and imines, the author arrives at the conclusion that fatty and aromatic amines and imines,are normal, whereas aromatic amines and imines are associated liquids. Difference in behavior of fatty and aromatic amines and imines, apparently, is due to greater mobility of the hydrogen of the amine- and imine-group in the latter because of the conjugation of these groups with the double bonds of the benzene ring.

1/1

Lutskiy, A.Ye.

USSR/Atomic and Molecular Physics - Statistical Physics. Thermodynamics. D-3

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 8983

Author : Lutskiy, A.Ye.
Inst : Khar'kov Polytechnic Institute
Title : Molecular Constants and Physical Properties of Liquids. III. Boiling Temperature.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 2, 396-406

Abstract : Relationships are established between the values of the boiling temperatures and the properties of the molecules. On the basis of the established relationships, an explanation is given for the character of the variation in the boiling temperature in various types of compounds: homological, isolog series, isoelectronic compounds, substitutional, etc. Criteria established for the inter and intramolecular association from data for the boiling temperature of liquids. Bibliography, 19 titles.

Card : 1/1

LUTSKIY, A. YE.

USSR/Atomic and Molecular Physics - Liquids, D-8

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34466

Author: Lutskiy, A. Ye.

Institution: Khar'kov Polytechnic Institute

Title: On the Free Volume of Liquids

Original Periodical: Zh. fiz. khimii, 1956, 30, No 3, 487-491; English resumé

Abstract: One of the basic parameters defining the equilibrium and kinetic properties of liquids is the volume of liquid V_{mot}, accessible for the motion of microparticles. The expressions for V_{mot} given by Lennard-Johnson and Devonshire, and also by Ayring & Hirschfeld, give values of V_{mot} that are almost equal for various bodies and amount to 0.1 - 0.7 cm^3/mol. This is one order of magnitude less than the values of V_{mot} calculated from the viscosity equations or calculated with the aid of the radial distribution function. In the opinion of the author, the above expressions for V_{mot} evaluate only the volume due to the thermal vibrations of the molecules and do not take into account all the volume accessible for the movement. V_{mot} is determined on the basis of the absence of further order in the liquid and the presence in the liquid of temporary conglamorations and microscopic cavities.

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USSR/Atomic and Molecular Physics - Liquids, D-8

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34466

Author: Lutskiy, A. Ye.

Institution: Khar'kov Polytechnic Institute

Title: On the Free Volume of Liquids

Original Periodical: Zh. fiz. khimii, 1956, 30, No 3, 487-491; English resumé

Abstract: At every instant of time, not all the free volume can be accessible to the motion of the micro-particles, since it is necessary to overcome a considerable energy barrier (V_s) to penetrate in certain sections, making $V_{mot} = V - (NV_m + V_s)$. (Here V is the molar volume and NV_m is the sum of the specific volumes of the molecules). Thus, V_{mot} consists both of volumes that are filled during the thermal vibrations of the molecules, as well as of volumes that are not shielded and that are accessible for the motion of micro-particles, holes, and cavities. In this manner the author derives the following equations: $V_{mot} = V[RT/(\Delta H_{ev} - RT)]$ and $V_{mot} = R(\beta/\alpha)$ (where β is the compressibility and α the coefficient of thermal expansion). The calculated values of V_{mot} are in satisfactory agreement with the data obtained from viscosity, and with the values calculated with the aid of the radial

USSR/Atomic and Molecular Physics - Liquids, D-8

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34466

Author: Lutskiy, A. Ye.

Institution: Khar'kov Polytechnic Institute

Title: On the Free Volume of Liquids

Original Periodical: Zh. fiz. khimii, 1956, 30, No 3, 487-491; English resumé

Abstract: distribution function. An analysis of the values of V_{mot} and V_s for various compounds gives certain laws for their dependence on the properties of molecules.

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LUTSKIY, A.Ye.

USSR/ Physical Chemistry - Molecule. Chemical bond B-4

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10893

Author : Lutskiy A.Ye.
Title : On Parachor as Criterion of Structure and State of Molecules

Orig Pub : Zh. fiz. khimii, 1956, 30, No 7, 1547-1552

Abstract : Utilizing the values of density and surface tension γ (RZhKhim, 1956, 12292) of a series of substituted phenols and anisols, the parachors P at 131 and 184° have been calculated. On the basis of literature data relating to a large number of normal and associated liquids, the author asserts that P can not serve as a definite criterion of structure and state of the molecules.

Card 1/1

LUTSKIY, A. Ye.

PRIKHOT'KO, A F.

24(7) p 3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Lutskiy, A. Ye. Electron Spectra and the Intramolecular Hydrogen Bond

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197

Bulanin, M.O., and V.M. Chulanovskiy. Study of the Effect of the Solvent on the Frequencies and Form of Absorption Bands of Water Molecules in the Valence-vibration Range

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Raskin, Sh. Sh. Some Characteristics in the Raman Spectra of Complex Compounds Containing Antimony Trichloride

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Shigorin, D.N. Nature of the Hydrogen Bond and Its Effect on Vibrational and Electron Spectra of Molecules

205

Babushkin, A.A., N.G. Guseva, and V.M. Yemel'yanov. Infrared Spectra of Boron Trifluoride Molecular Compounds With Certain Amines

Card

Lutskiy, A. Ye.

Chem

Phy

Hydrogen bond and valency vibration frequency of carbonyl group. A. E. Lutskii and D. S. Bidnaya (Polytech. Inst., Kharkov). *Optika i Spektroskopiya* 2, 160-4(1957).—Raman spectra of acetophenone o-, m-, and p-$HOC_6H_4COCH_3$, and o-, m-, and p-$CH_3OC_6H_4COCH_3$ and their solns. in C_6H_6, CCl_4, dioxane, acetone, $CHCl_3$, EtOH, and PhOH gave, resp., the following frequencies (cm.$^{-1}$) of carbonyl group: 1634, 1640, 1671, 1655, 1671, 1691, 1673; —, —, 1671, 1666, —, —, —; 1689, 1645, —, —, 1678, 1684, 1679; 1687, 1643, 1655, 1678, 1672, 1687, 1678; —, 1645, 1686, 1676, —, —, —; 1680, 1637, —, 1652, 1667, 1681, 1672; 1687, 1643, 1674, 1660, 1671, 1668, 1672; and 1667, 1637, 1660, 1665, —, 1670, 1657. The changes in the ν(C:O) are discussed in the light of intra- and intermol. H-bond effect. 15 references. A. P. Kotloby

Lutskiy, A. Ye.

27 21

7

1-4E4j

1-4E3d

Intramolecular hydrogen bond and absorption spectra in the ultraviolet. III. Electronic spectra of aminoacetophenones and some of their derivatives. A. E. Lutskii and V. V. Dorofeev (Polytech. Inst., Khar'kov). *Zhur. Obshchei Khim.* 27, 1050-64(1957); cf. *C.A.* 40, 520'; 50, 3281*e*.—*o*-Amino- and *o*-acetamidoacetophenones differ from their meta isomers in having the absorption bands in the longer wave lengths and conversion of these to *N,N*-dimethylamino derivs. leads to absorption in shorter wave length regions, while the meta isomers of the dimethylamino derivs. absorb in longer wave regions. The peculiarity of the ortho isomers is ascribed to their internal H bonding. The spectra are reproduced and the following absorption max. in A. are reported; *o*-$H_2NC_6H_4Ac$ 3550, 2545; *m*-isomer 3220, 2435; *p*-isomer 3140, 2860; *o*-$AcNHC_6H_4Ac$ 3310, 2605; *m*-isomer 2975, 2500; *p*-isomer 2725; *o*-$Me_2NC_6H_4Ac$ 3730, 2550; *m*-isomer 3470, 2625; *p*-isomer 3080; AcPh 3250, 2685, 2370; $PhNH_2$ 2830, 2300. IV. Effect of solvents on electronic spectra of aminoacetophenones and some of their derivatives. *Ibid.* 1064-72.—Isomeric aminoacetophenones, *N*-acetamido, and *N,N*-dimethylamino derivs. were examd. in Et_2O, EtOH, and H_2O for the solvent effects on their spectra. The following results indicate internal H bonding in the ortho isomers. In Et_2O: *o*-$H_2NC_6H_4Ac$ absorption max. 3555 A., 2560; *m*-isomer 3330, 2497; *p*-isomer 2575; *o*-$AcNHC_6H_4Ac$ 3325, 2575; *m*-isomer 3040, 2550; *p*-isomer 3260, 2830; *o*-$Me_2NC_6H_4Ac$ 3830, 2630; *m*-isomer 3240, 3490, 2605; *p*-isomer 3165; in EtOH, resp.: 3690, 2570;

$AcNHC_6H_4Ac$ 3325, 2575; m-isomer 3040, 2550; p-isomer 3360, 2530; o-$Me_2NC_6H_4Ac$ 3330, 2630; m-isomer 3240, 3490, 2505; p-isomer 3165; in EtOH, resp.: 3520, 2570; 3365, 2550; 3105; 3370, 2600; 3075, 2600; 2230; 3490, 2370, 3505, 2417; 3315, 2405; in H_2O: 3580, 2530; 3335, 2540; 2325, 3115; 3230, 2600; 3015, 2580; 2815; 3750, 2060; 3550, 2420; 3425, 2380. The spectra are reproduced. V. Effect of acid on electronic spectra of aminoacetophe-

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L[illegible] E I, A.A.; DOROFEEV, [illegible]

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1-4E4

1-4E3d

nones and some of their derivatives. *Ibid.* 1303–11.—Ultraviolet spectra are shown for isomers of amino, acetamido, and dimethylaminoacetophenones in aq. solns. of HCl and H_2SO_4. The o-amino and o-acetamido derivs. in concd. H_2SO_4 showed a lesser tendency to form oxonium salts, the effect being ascribed to internal H bonding. It is suggested that salt formation at these groups, while weakening

G. M. Kosolapoff

MT

LUTSKIY, A.Ye.; DOROFEYEV, V.V.

Intramolecular hydrogen bonds and absorption spectra in the ultraviolet region. Part 4: Effect of solvents on the electron spectra of aminoacetophenones and some of their derivatives. Zhur. ob. khim. 27 no.4:1064-1072 Ap '57. (MLRA 10:8)

1. Khar'kovskiy politekhnicheskiy institut.
(Acetophenone--Spectra)

LUTSKIY, A.Ye.; DOROFEYEV, V.V.

Intramolecular hydrogen bond and ultraviolet absorption spectra. Part 5: Effect of acids on the electron spectra of aminoacetophenones and some of their derivatives. Zhur.ob.khim. 27 no.5:1303-1311 My '57. (MLRA 10:8)

1. Khar'kovskiy politekhnicheskiy institut.
(Acetophenone--Spectra)

LUTSKIY, A.YE.

2

Yu. V. Korshun (1873-1951). A. E. Lutskii. *Zhur. Obshchei Khim.* 27, 2204-7(1957).—Obituary and summary of scientific work in organic chemistry; bibliography of 49 references. G. M. Kosolapoff

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OM

LUTSKIY, A. YE.

Molecular constants and the physical properties of liquids. IV. Critical temperatures. A. E. Lutskii (V. I. Lenin Polytech. Inst., Kharkov). *Zhur. Fiz. Khim.* 31, 377-80 (1957); cf. C.A. 50, 11073e.—An attempt was made to correlate the properties of individual mols. (dipole moment, μ, mass, m, dimensions, v_m, form, f, and polarizability α) to the crit. temp. of liquids (T_{cr}). It was established that T_{cr} of normal liquids is a function only of f, α, and μ and that the over-all effect of the last 2 properties was expressed by the relation $(T_{cr})_f = \alpha^x(A + B\mu)$, where for the majority of substances $x = 0.5$ and A and B are consts. $T_{cr}/(T_{b.p.})_{p=1\,atm.}$ is a function of μ and α as well as of f. The assocn. of mols. has a significant influence on the value of T_{cr}.

J. Rovtar Leach

4

4E4j

LUTSKIY, A.E.

Distr: 4E4j

Molecular constants and macrophysical properties of
mixtures. I. Viscosity of liquid binary mixtures. A. E.
Lutskii and B. M. Obukhova (V. I. Lenin, Polytech. Inst.,
Kharkov). Zhur. Fiz. Khim. 31, 1693-702(1957).—At different
temps. the viscosity was detd. of binary mixts. having
various concns. of C_6H_6, $CHCl_3$, or Me_2CO as one component
and as the 2nd component a member of series of
isologous, homologous, isoperiodic compds., substituted
compds., or metamers of AcOEt and AcOMe, and isoperiodic
compds. of $C_6H_5COCH_3$ and $PhNO_2$. The viscosity
of the 2-component liquids, $\eta_{1,2}$, and changes in viscosity
with changes in concn. of the components, $\Delta\eta_{1,2}$, were calcd.
by formulas derived and compared with exptl. data in the
literature. The relations reflect the total effects of the
properties of the mols. on the viscosity of the mixt. and are
proposed as criteria for the compn. of the micromols. in the
W. M. Sternberg
mixt.

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1/1

LUTSKIY, A.YE.

LUTSKIY, A.Ye.; OBUKHOVA, Ye.M.

Molecular constants and macrophysical properties of mixtures. Part 2: The density of liquid binary mixtures [with summary in English]. Zhur.fiz.khim. 31 no.9:1964-1975 S '57. (MIRA 11:1)

1.Politekhnicheskiy institut im. V.I.Lenina, Khar'kov.
(Liquids--Density) (Mixtures)

LUTSKIY, A.Ye.; OBUKHOVA, Ye.M.; SIDOROV, I.A.

Association and concentration dependence of properties of organic binary mixtures. Zhur.ob.khim. 28 no.9:2386-2395 S '58.
(MIRA 11:11)

1. Khar'kovskiy politekhnicheskiy institut.
(Systems (Chemistry))

76-32-3-38/43

AUTHORS: Lutskiy, A. Ye., Obukhova, Ye. M., Petrenko, B. G.

TITLE: The Heat of Mixing and the Dipole Moment of Component Molecules (Teplota smesheniya i dipol'nyy moment molekul komponentov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 3, pp. 720-721 (USSR)

ABSTRACT: According to the statistical theory of nonelectrolyte mixtures a certain connection between the mixing temperature ΔH_{mix} and the difference of properties of the molecules of the components is assumed. Different possibilities are given for the various differences of properties. Macrophysical properties of the bodies (such as the molar volume and the boiling point), rather than corresponding properties of the molecules, are used. Determinations of the mixing temperature of binary mixtures were performed at 20°C, benzene serving as one component, and substances from the series of isoperiodic compounds of the composition C_6H_5X, whose

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76-32-3-38/43

The Heat of Mixing and the Dipole Moment of Component Molecules

molecules except for the dipole moment, possessed similar properties, were used as the second component. The measuring method was already described earlier and the obtained results are given in a table. It is noticed that, for still unknown reasons the mixing temperature of a number of components increases with the dipole moment, while it drops in others. In this connection a sharp independence of the linear form is observed in compounds with a content of hydroxyl groups, which show a sharp increase in the heat of mixing. This is explained by the destruction of complexes formed by hydrogen bonds. There are 1 figure, 1 table, and 12 references, 2 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina (Khar'kov Polytechnical Institute imeni V.I. Lenin)

SUBMITTED: March 3, 1957

AVAILABLE: [illegible]

Card 2/2

AUTHORS: Lutskiy, A. Ye., Panova, A. N. SOV/76-32-9-35/46

TITLE: The Specific Heat of Liquid Nitrobenzene (Teployemkost' zhidkogo nitrobenzola)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 2183-2186 (USSR)

ABSTRACT: The specific heat at constant pressure (C_p) of nitrobenzene was measured over the interval 60-140°C. The method of absolute condensation was used (Refs 7,8). The apparatus was assembled with the assistance of I. A. Sidorov. By gaging and using correction formulae it was possible to achieve an accuracy of 0,7%. The results are presented in a table (Table 1) and in a diagram (Fig 1). The direction of the curve is given by the following formula:

$$C_p = 0{,}349 + 0{,}0_4 106t + 0{,}0_5 382\, t^2.$$

In contrast to earlier data (Ref 3) the curve obtained here has no minimum at 60°C and is not level between 110° and 120°C. The C_p value does not vary linearly with the temperature, but this is no valid indication that molecule complexes are forming.

Card 1/2

The Specific Heat of Liquid Nitrobenzene

SOV/76-32-9-35/46

There are 1 figure, 2 tables, and 29 references, 13 of which are Soviet.

ASSOCIATION: Politekhnicheskiy institut im. V. I. Lenina, Khar'kov (Khar'kov Polytechnical Institute imeni V. I. Lenin)

SUBMITTED: April 20, 1957

Card 2/2

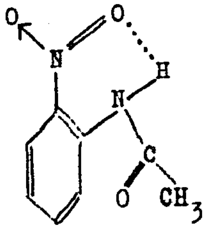
5 (3)

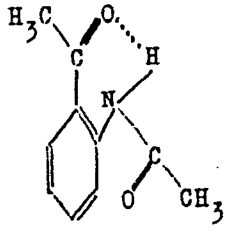
AUTHORS: Lutskiy, A. Ye., Kondratenko, B. P. SOV/79-29-6-64/72

TITLE: Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds (Vnutrimolekulyarnaya vodorodnaya svyaz'i dipol'nyye momenty organicheskikh soyedineniy). IV. Nitro- and Acetylacetanilides (IV. Nitro- i atsetilatsetanilidy)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 6, pp 2073 - 2076 (USSR)

ABSTRACT: On the basis of data obtained from absorption spectra in the near ultraviolet, from melting points, and from other properties of the nitro- and acyl- substituted acetanilide compounds (Refs 1,2), one assumes in their ortho-isomers in basic state the presence of a hydrogen bond of the type





Card 1/3

Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds. IV. Nitro- and Acetylacetanilides SOV/79-29-6-64/72

It was of interest to analyze closer the value of the dipole moments of the isomeric acyl- and nitroacetanilides, in order to determine the character of the bearing of the indicated bond upon the properties of the dipole moments. In connection with it, the dielectric constants $\varepsilon_{1,2}$ and the densities $d_{1,2}$ of the acetanilide, n-methylacetanilide, o-,m- and p-nitro- and acetylacetanilide in benzene and dioxane solution at 25°, were determined. The synthesis and purification of the analyzed acetanilides were carried out, according to publications (Refs 4,5) (Tables 1 and 2). Accordingly, the dipole moment values of acetanilide, n-methylacetanilide and o-,m- and p-nitro and acetylacetanilides were determined. Based on the reciprocal relationship of dipole moments of isomers, of bi- and monosubstituted compounds of benzene, which were observed and computed for various configurations and for free circulation of the functional groups, which do not interact, the presence of an intramolecular hydrogen bond in the o-nitro and o-acetylacetanilides has been confirmed. Table 1 shows densities and dielectric con-

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stants of acetanilide and table 2 its dipole moments. There are 2 tables and 12 references, 3 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut (Khar'kov Polytechnic Institute)

SUBMITTED: March 20, 1958

5 (3)

AUTHORS: Lutskiy, A. Ye., Kondratenko, B. P. SOV/79-29-6-65/72

TITLE: The Dipole Moments of the N-Nitroso-methyl Aniline and Its Nitro-substituted Compounds (Dipol'nyye momenty N-nitrozometilanilina i yego nitrozameshchennykh)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 6, pp 2077 - 2079 (USSR)

ABSTRACT: The methyl-amino group has nucleophilic properties in relation to the aromatic ring. The authors wanted to elucidate the characteristics of the conversion of the p-electrons of this group with the π-electrons of the ring when amino hydrogen is substituted by the nitroso group. For this purpose the values of the dipole moments of the N-nitroso-methyl aniline and its ortho-, metha- and para-nitroso substituted compounds in a benzene and dioxane solution have been determined. These compounds were obtained and purified according to data found in publications (Ref 1). This synthesis and purification of the product, as well as the method of the determination of the dielectric constant $\mathcal{E}_{1,2}$ and the density $d_{1,2}$ are precisely described (Ref 2). The determined dielectric constants and the densities of

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The Dipole Moments of the N-Nitroso-methyl Aniline and Its Nitro-substituted Compounds SOV/79-29-6-65/72

solutions at 25° are listed in table 1, and the computed values of the products $P_{2\sim}$, P_{E+A} to be analyzed, and of the dipole moments -μ (in D) are listed in table 2. The obtained value of the moment of N-nitroso-methyl aniline are almost in accordance with the values quoted in publications (3.62 D) (Ref 3). The values of the dipole moments of the nitro-N-nitroso-methyl anilines can be sufficiently well explained, assuming that at the substitution of nitro-hydrogen of the methyl amino group by the nitroso group the nucleophilic characteristic of the methyl amino group is preserved. The two tables give the results of the experiments. There are 2 tables and 4 references, 2 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut (Khar'kov Polytechnic Institute)

SUBMITTED: March 20, 1958

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SOV/79-29-9-41/76

5(3)

AUTHORS: Lutskiy, A. Ye., Alekseyeva, V. T.

TITLE: Intramolecular Hydrogen Bond and Absorption Spectra in the Ultraviolet. VI. Absorption Spectra of Nitro-aniline

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 9, pp 2992 - 2998 (USSR)

ABSTRACT: The absorption spectra of o-, m- and p- nitro-anilines were frequently investigated by spectrum analysis (Refs 1-9). The characteristic features of their spectra are explained by the formation of quinoid structures (Ref 1), by the varying stability of the intramolecular bonds of the isomers (without explaining their nature) (Ref 2), and by the difference in their energy levels between which electron transitions take place (Refs 7,8,1o). On the basis of the physical and chemical properties of these compounds (Refs 11-14) the intramolecular hydrogen bond is assumed to be only present in the ortho-isomer.

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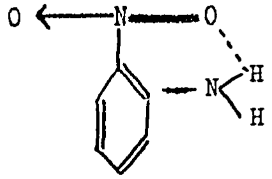
Intramolecular Hydrogen Bond and Absorption Spectra in the Ultraviolet. VI. Absorption Spectra of Nitro-aniline SOV/79-29-9-41/76



The relation between the individual absorption bands and certain kinds of electron transition is bound to be reflected by the kind of its variation when another solvent is used. For this reason the authors determined the spectra of nitrobenzene, aniline, and o-, m-, p-nitro-aniline in six different solvents which had hitherto not been used for such investigations, i.e. benzene, chloroform, diethyl ether, n-butanol and sulphuric acid (98% and 9.8%). Figures 1-6 show the results of investigation. They reveal that the characteristics of the nitro-aniline spectra are similar to those observed in all disubstituted benzenes with active groups,

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Intramolecular Hydrogen Bond and Absorption Spectra in the Ultraviolet. VI. Absorption Spectra of Nitro-aniline SO7/79-29-9-41/76

observed in all disubstituted benzenes with active groups, i.e. with a nucleophilic and electrophilic group. The long-wave band of nitro-anilines is an N → V-band of electron transitions in which the electrons of both functional groups take part. In o-nitro-aniline the intramolecular hydrogen bond is characterized by a distinct shift and broadening of the band (A) toward the long-wave range. The table shows the data characteristic of the absorption spectra of nitro-anilines. There are 6 figures, 1 table, and 26 references, 8 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut (Khar'kov Polytechnic Institute)

SUBMITTED: July 27, 1958

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5(3)

SOV/79-29-9-42/76

AUTHORS: Lutskiy, A. Ye., Alekseyeva, V. T.

TITLE: Absorption Spectra of Disubstituted Benzenes With Functional Groups Acting in the Same Way. I. Nitro-acetophenone

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 9, pp 2998 - 3005 (USSR)

ABSTRACT: To clarify the nature of the electron transitions which correspond to the various ultraviolet absorption bands of the aromatic compounds, it is necessary to investigate the characteristics of absorption in the case of disubstituted benzenes containing functional groups acting in the same way. The spectra of the compounds of this kind (nitro-acetophenone, nitro-benzaldehyde, dinitro-benzene, etc) have been investigated several times (Refs 1-8), as a rule, however, only in hexane or ethanol without consideration of all isomers. Knowledge of the character of the variation in the absorption bands in polar, hydroxyl-containing, and acid solvents is necessary (Refs 9-11) for a determination of the nature of the electron transitions. The spectra of the compounds of this kind were investigated in the following seven solutions: in apolar ones

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Absorption Spectra of Disubstituted Benzenes With Functional Groups Acting in the Same Way. I. Nitro-acetophenone SOV/79-29-9-42/76

(hexane, benzene, dioxane), in a polar solution (ether), a hydroxyl-containing one (n-butanol) as well as in 98 and 9.8% sulphuric acid. The results of measurement of the spectra of nitro-benzene and its o-, m-, and p-acetyl derivatives in the **aforementioned** solvents are given. The absorption curves of nitro-acetophenones are similar with respect to the number and position of the absorption bands as well as to the variation caused by the nature of the solvent; this similarity refers also to the absorption curves of the monosubstituted compounds (mainly nitro-benzene). The characteristic features of the spectra of the kinds of compounds under investigation are due to the hindered transition of the charge in molecule excitation under the participation of the electrons of both substituents. The presence of a steric effect of the groups is only confirmed by o-nitro-acetophenone. The bands corresponding to the $p \longrightarrow \pi$ transitions do not undergo a hypsochromic shift in hydrogen-containing solvents and acids in groups with π- and some p-electron pairs. There are 11 figures, 1 table, and 21 references, 4 of which are Soviet.

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Absorption Spectra of Disubstituted Benzenes With Functional Groups Acting in the Same Way. I. Nitro-acetophenone SOV/79-29-9-42/76

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut (Khar'kov Polytechnic Institute)

SUBMITTED: July 27, 1958

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5(4)

AUTHORS: Lutskiy, A. Ye., Kochergina, L. A. SOV/76-33-1-29/45

TITLE: Intramolecular Hydrogen Bonds and Dipole Moments of Organic Compounds (Vnutrimolekulyarnaya vodorodnaya svyaz' i dipol'nyye momenty organicheskikh soyedineniy). II. The Dipole Moments of Naphthols, Acylnaphthols, and of Their Methyl Esters (II. Dipoln'nyye momenty naftolov, atsilnaftolov i ikh metilovykh efirov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 1, pp 174-179 (USSR)

ABSTRACT: The dipole moments μ of the acylnaphthols are of interest in connection with an explanation of the characteristics and the influence of the second cycle in naphthalene on the bond of π- and n-electrons of the substitution groups (Ref 1). Furthermore, the applicability of the connections of benzene derivatives (Ref 2) to naphthalene derivatives can be examined. The μ values for 1- and 2-naphthols, 1-formyl-2-naphthol, 2- and 4-acetyl-1-naphthol and their methyl esters in benzene and dioxane were determined. The method of weak solutions was used. The dielectricity constants ε were calculated from the proportion of the condenser capacities which were filled with

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Intramolecular Hydrogen Bonds and Dipole Moments SOV/76-33-1-29/45
of Organic Compounds. II. The Dipole Moments of Naphthols, Acylnaphthols,
and of Their Methyl Esters

the solution and the pure solvent and their density $d_{1,2}$ was shown in tables(Tables 1,2). In correspondence to phenol and its derivatives, the methyl esters of the naphthols also have a smaller μ value than the initial oxy-compounds. The presence of the second cycle in naphthalene obviously favors the influence of the medium on the dipole moment of the molecules of the substance dissolved and causes an obvious increase of the binding degree of the functional molecule groups (as compared to the benzene derivatives). The orthoacylnaphthols react like orthosubstituted phenols with an intramolecular hydrogen bond because their μ value is abnormally smaller than that of paraisomers. The investigation results obtained confirm the applicability of the criteria on the dipole moment of benzene derivatives to dissubstituted naphthalene and the presence of a solid intramolecular hydrogen bond with ortho-isomers of the latter. There are 3 tables and 23 references, 6 of which are Soviet.

ASSOCIATION: Politekhnicheskiy institut im. V. I. Lenina, Khar'kov
(Polytechnic Institute imeni V. I. Lenin, Khar'kov)

SUBMITTED: July 6, 1957
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5(4) SOV/76-33-2-15/45

AUTHORS: Lutskiy, A. Ye., Dorofeyev, V. V.

TITLE: The Intramolecular Hydrogen Bond and the Dipole Moments of Organic Compounds (Vnutrimolekulyarnaya vodorodnaya svyaz' i dipol'nyye momenty organicheskikh soyedineniy). III. Amino and Dimethylamino Acetophenones (III. Amino- i dimetilamino-atsetofenony)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 331 - 334 (USSR)

ABSTRACT: The electron spectra of the amino acetophenones and their NN-dimethyl derivatives indicate the presence of an intramolecular hydrogen bond in o-amino acetophenone (I) (Ref 1), and such bonding to a greater extent with the dimethyl amino group than with the amino group. Since these peculiarities were also observed in regard to the dipole moments of the molecules, these were determined for the particular compounds under consideration (Table 2). The dielectric constants $\varepsilon_{1,2}$ and the densities $d_{1,2}$ of the solutions of o-, m-, and p-amino- and NN-dimethylamino acetophenones

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The Intramolecular Hydrogen Bond and the Dipole Moments of Organic Compounds. III. Amino and Dimethylamino Acetophenones SOV/76-33-2-15/45

in benzene (as solvent) were determined (Table 1). The value of μ for p-amino acetophenone agrees well with the data obtained by Curran and Estok (Kurran)(Ref 3) and is somewhat higher than the value obtained by Hassel and Naeshagen (Khassel' and Nezgagen)(Ref 4). The value of μ for m-amino acetophenone found by Weizman (Veitsman) (Ref 5) is incorrect. The data obtained for μ (Table 2) show an analogous ratio between the isomeric amino- and dimethylamino acetophenones and that of the substituted phenols and naphthols, which possess an intramolecular hydrogen bond in the o-isomer. The dipole moment of (I) is markedly reduced (to 0.86 D) as compared to the value calculated from formula (1) of Fuchs (Fuks)(Ref 7) and proceeding on the assumption of a free rotation of the groups. A replacement of hydrogen atoms in the amino group of (I) with methyl groups gives compounds with a considerably increased dipole moment (1.50 D). The above mentioned observations in addition to others indicate the presence of an intramolecular hydrogen bond in (I). There are 2 tables and 10 refer-

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ences, 2 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im.Lenina (Khar'kov Polytechnical Institute imeni Lenin)

SUBMITTED: July 6, 1957

Card 3/3

5 (4)

AUTHORS: Lutskiy, A. Ye., Panova, A. N. (Khar'kov) SOV/76-33-5-2/33

TITLE: The Hydrogen Bond and Physical Properties of Some Substituted Derivatives of Phenol and Anisole (Vodorodnaya svyaz' i fizicheskiye svoystva nekotorykh zameshchennykh proizvodnykh fenola i anizola). 5. The Heat Capacity of Nitrophenols and Nitroanisoles (5. Teployemkost' nitrofenolov i nitroanizolov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 5, pp 970-975 (USSR)

ABSTRACT: The methods of measuring the heat capacity, the apparatus, the purification of the substances investigated, are described in reference 5. Table 1 shows the values of C_p, depending on temperature, for phenol, anisole, and their o-, m-, and p-nitroderivatives. The temperature dependence in the interval investigated (63°-137°) can be represented by the equations $C_p = a + bt$ or $C_p = a + ct^2$. The values of the coefficients a, b, c are shown in table 1. Table 2 shows the values of C_p and MC_p (M = molecular weight) for the same compounds at 90°, 115°, and 135°. Thus it appears that the position of the

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substituent does not influence C_p in the case of nitroanisoles whereas in the case of nitrophenols, the C_p value for the orthoderivative is lower than that for the two other isomers. This fact can be explained by the formation of an intermolecular hydrogen bond which suppresses the tendency of the orthoderivative of forming molecular complexes. Figures 1-4 show the diagrams of the heat capacity depending on temperature of the compounds investigated. The following equation holds for normal liquids consisting of individual molecules:

$MC_p = \frac{T\alpha^2 v}{\beta} + C_{inn} + C_{tr + rot}$ (α, β - coefficient of expansion, and of isothermal compression, respectively; v - molecular volume; C_{inn} - inner vibration and rotation heat capacity; $C_{tr + rot}$ - translation and rotation heat capacity). In the case of compounds which tend towards complex formations by means of hydrogen bond, heat capacity is increased mainly by

The Hydrogen Bond and Physical Properties of Some Substituted Derivatives of Phenol and Anisole. 5. The Heat Capacity of Nitrophenols and Nitroanisoles SOV/76-33-5-2/33

additional heat consumption C_{ass} which is used for destroying the molecular complexes. Thus the difference of the C_p values for the three isomer nitrophenols is:

$$M(C_{p_{m-(p-)}} - C_{p_{(o-)}}) \approx \left[\left(\frac{T\alpha^2 v}{\beta}\right)_{o-} - \left(\frac{T\alpha^2 v}{\beta}\right)_{m-(p-)}\right] + C_{ass}.$$

This dependence is used in the approximate evaluation of C_{ass} of m- and p-nitrophenol. The supersonic velocities in melts of nitrophenols (at 124°) and in nitroanisoles (at 90°) were measured by means of the ultrasonic detector of defects UZD-7N. The values for u (in m/sec) and for

$$\frac{C_p}{C_v} = 1 + \frac{T\alpha^2 u^2}{J\ C_p} \text{ and } M(C_p - C_v) = \frac{T\alpha^2 v}{\beta}$$ are shown in table 3

(J = mechanic heat equivalent). The C_{ass} values of m- and p-nitrophenol have the same magnitude as those of aliphatic alcohols. There are 4 figures, 3 tables, and 17 references,

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The Hydrogen Bond and Physical Properties of Some Substituted Derivatives of Phenol and Anisole. 5. The Heat Capacity of Nitrophenols and Nitroanisoles SOV/76-33-5-2/33

7 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina (Khar'kov Polytechnic Institute imeni V. I. Lenin)

SUBMITTED: April 20, 1957

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5(4) SOV/76-33-9-21/37

AUTHORS: Lutskiy, A. Ye., Kondratenko, B. P.

TITLE: Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds. V. Nitroanilines and Their N-Methyl- and N,N-Dimethyl Derivatives

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 9, pp 2017 - 2023 (USSR)

ABSTRACT: The presence of an intramolecular hydrogen bond and the participation of the hydrogen from the N-H group in the molecule of o-nitroaniline as well as in the 1,2- and 2,1-nitronaphthyl amines affect their macrophysical properties and the absorption spectrum. To explain the influence exerted by such bonds on the dipole moment of aniline derivatives, the authors measured the dielectric constant $\varepsilon_{1,2}$ and density $d_{1,2}$ of aniline (I), methyl aniline(II), and dimethyl aniline (III), as well as their o-, m- and p-nitro derivatives in benzene (IV) and dioxane (V) at 25° (Tables 1 and 2). Further, they calculated the dipole moments and compared them to data available in publications (Table 3). In addition, data are given on the influence exerted by the above hydrogen bond,

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Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds. V. Nitroanilines and Their N-Methyl- and N,N-Dimethyl Derivatives SOV/76-33-9-21/37

by the position of the functional groups within the molecule, as well as by the exchange of (IV) for (V) as solvents on the dipole moments. The anomalous effect of (V) is ascribed to the formation of complexes through hydrogen bonds as well as to an induction of the dipoles as the dioxane molecules and the dissolved substance are oriented. This effect is determined by the possibility and the degree of conjunction of the groups as well as by their inductive interaction. There are 3 tables and 25 references, 6 of which are Soviet.

ASSOCIATION: Politekhnicheskiy institut im. V. I. Lenina, Khar'kov (Polytechnic Institute imeni V. I. Lenin, Khar'kov)

SUBMITTED: February 26, 1958

Card 2/2

LUTSKIY, A.Ye.; PANOVA, A.N.

Hydrogen bond and the velocity of sound propagation in liquids. Akust. zhur. 6 no.1:126-128 '60. (MIRA 14:5)

1. Khar'kovskiy politekhnicheskiy institut im. V.I.Lenina.
(Hydrogen bonding) (Sound—Speed)

LUTSKIY, A. YE.

PHASE I BOOK EXPLOITATION SOV/5151

Leningrad. Universitet

Molekulyarnaya spektroskopiya (Molecular Spectroscopy) [Leningrad] Izd-vo Leningr. univ., 1960. 198 p. 4,700 copies printed.

Resp. Ed.: F. I. Skripov; Eds.: Ye. V. Shchemeleva and V. D. Piastro; Tech. Ed.: S. D. Vodolagina.

PURPOSE: This collection of articles is intended for scientific workers, instructors and students of physics and chemistry. It may also be used by engineers and technicians employing molecular spectroscopy.

COVERAGE: The collection of articles describes spectroscopic studies of liquids and solutions, and includes data on applied molecular spectroscopy. Individual articles deal with the molecular interaction in solutions, and specifically with the hydrogen bond problem. Works on the optimum utilization of spectral apparatus and on the analytical application of molecular spectroscopy are also included.

Aspects of the structure of high and low molecular compounds and of molecular complexes are also covered. The collection was published in honor of the 70th birthday of Professor Vladimir Mikhaylovich Chulanovskiy, Soviet specialist in molecular spectroscopy and spectral analysis. There are no references.

Molecular Spectroscopy SOV/5151

AVAILABLE: Library of Congress

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LUTSKIY, A.Ye.; ALEKSEYEVA, V.T.

Absorption spectra of disubstituted benzene derivatives having functional groups of the same directing influence. Part 3: Nitrobenzoic acids and ethylnitrobenzoates. Zhur.ob.khim. 30 no.8:2737-2742 Ag '60. (MIRA 13:8)
(Benzoic acid--Spectra)

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5(4) SOV/76-33-10-3/45

AUTHORS: Lutskiy, A. Ye., Kochergina, L. A.

TITLE: Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds. VI. Nitro- and Nitroso-naphthols

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2135-2140 (USSR)

ABSTRACT: The authors determined the dipole moments of nitro- and nitroso-naphthols as well as of their methyl esters for the following reasons: 1) in order to explain the influence exercised by the intramolecular hydrogen bond on the dipole moments of molecules; 2) in order to check a generalization of previously found relationships between the dipole moments of the substituents of naphthalene and benzene (Ref 1); 3) in order to employ the electric properties of molecules for an investigation of the behavior of nitroso-naphthols and the 2,1- and 1,2-disubstituted derivatives of naphthalene. The results of measurement of the dielectric constant and the density of the various substances in benzene and dioxane are

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SOV/76-33-10-3/45

Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds. VI. Nitro- and Nitroso-naphthols

given (Tables 1, 2). The values calculated for $P_{2\infty}$ according to Hedestrand (Ref 4) as well as $P_{e+a} = 1.05\ MR_D$ and the dipole moments were compared (Table 3). The experimental values of the dipole moments for the corresponding disubstituents of benzene are listed, and the same values are calculated for the condition of free rotation of functional groups not affecting one another. The latter calculation was made according to Fuchs' equation (Ref 5). The dipole moments show that there is an intramolecular hydrogen bond in 1,2- and 2,1-nitro-naphthols, while it lacks in 1,2- and 2,1-nitrosonaphthols. Except for 1-nitro-2-naphthol methyl ester, all nitro-naphthols and their methyl esters have a dipole moment higher than that of the corresponding disubstituents of benzene. This confirms that there is a considerably stronger bond of the groups in the naphthalene cycle than is in the benzene cycle. In benzene, 1,4-nitrosonaphthol has primarily a phenol structure as well as (apparent-

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Intramolecular Hydrogen Bond and Dipole Moments of Organic Compounds. VI. Nitro- and Nitroso-naphthols

SOV/76-33-10-3/45

ly) the 1,2- and 2,1-nitroso-naphthols (no quinone monoxime structure as assumed before). There are 3 tables and 20 references, 7 of which are Soviet.

ASSOCIATION: Politekhnicheskiy institut im. V. I. Lenina, Khar'kov (Polytechnic Institute imeni V. I. Lenin, Khar'kov)

SUBMITTED: February 26, 1958

Card 3/3

LUTSKIY, A.Ye.; KONEL'SKAYA, V.N.

Intramolecular hydrogen bond and absorption spectra in the ultraviolet. Part 8: Electron spectra of N-methyl- and N-phenyl-substituted nitrobenzenes. Zhur. ob. khim. 30 no.11: 3773-3782 N'60. (MIRA 13:11)

1. Khar'kovskiy politekhnicheskiy institut.
(Hydrogen bonding) (Benzene--Spectra)

LUTSKIY, A.Ye.; KOMEL'SKAYA,V.N.; KONDRATENKO, B.P.

Intramolecular hydrogen bond and absorption spectra in the ultraviolet. Part 9: Nitroacetanilides and Nitro-N-acetyldiphenylamines. Zhur. ob. khim. 30 no.11:3782-3789 N'60. (MIRA 13:11)

1. Khar'kovskiy politekhnicheskiy institut.
(Hydrogen bonding) (Acetanilide) (Diphenylamine)

LUTSKIY, A.Ye.; KONEL'SKAYA, V.N.; BUGAY, P.M.

Electron spectra of nitrosamines of the aromatic series.
Zhur. ob. khim. 30 no.11:3789-3795 N'60. (MIRA 13:11)

1. Khar'kovskiy politekhnicheskiy institut.
(Amines--Spectra)

LUTSKIY, A.Ye.; KOCHERGINA, L.A.; ZADOROZHNYY, B.A.

Intramolecular hydrogen bonding and dipole moments in organic compounds. Part 7: Phenylazo-, carboxyl-, and carbomethoxy-substituted naphthols. Zhur. ob. khim. 30 no.12:4080-4085 D '60.
(MIRA 13:12)

1. Khar'kovskiy politekhnicheskiy institut.
(Naphthol-dipole moments) (Hydrogen bonding)

LUTSKIY, A.Ye.; VOLOVA, L.M.; CHERNYAYEVSKIY, P.A.

Intramolecular hydrogen bonding and dipole moments in organic compounds. Part 8: 2,4- and 4,6-Diacetylresorcinols and their methyl esters. Zhur. ob. khim. 30 no.12:4085-4088 D '60.
(MIRA 13:12)

1. Khar'kovskiy politekhnicheskiy institut.
(Resorcinol--Dipole moments) (Hydrogen bonding)

LUTSKIY, A. Ye.; ATROSHCHENKO, V.I.; VORONOV, A.V.

Sergei Stepanovich Urazovskii; obituary. Ukr.khim. zhur. 27 no.2:274-278 '61. (MIRA 14:3)

(Urazovskii, Sergei Stepanovich, 1903-1961)

LUTSKIY, A.Ye.; OBUKHOVA, Ye.M.

Change in the properties of substances in the different series of chemical compounds. Part 3: Series of isoperiodic compounds. Zhur. ob.khim. 31 no.5:1590-1596 My '61. (MIRA 14:5)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I.Lenina.
(Periodic law) (Molecules—Dipole moments)

LUTSKIY, A.Ye.; OBUKHOVA, Ye.M.

Change in the properties of substances in the different series of chemical compounds. Part 4: Series of substituted compounds. Zhur. ob.khim. 31 no.5:1596-1601 My '61. (MIRA 14:4)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I.Lenina.
(Periodic law) (Molecules—Dipole moments)

LUTSKIY, A. Ya.; OBUKHOVA, Ye.M.

Association and properties of binary mixtures of organic compounds as a function of concentration. Part 3: Mixtures of isoperiodic compounds. Zhur.ob.khim. 31 no.8:2692-2702 Ag '61. (MIRA 14:8)

(Systems (Chemistry)—Dipole moments)

LUTSKIY, A. Ye.; OBUKHOVA, Ye.M.

Association and properties of binary mixtures of organic compounds as a function of concentration. Part 4: Compounds with similar dipole moments. Zhur.ob.khim. 31 no.8:2702-2708 Ag '61.
(MIRA 14:8)

(Systems (Chemistry)—Dipole moments)

LUTSKIY, A.Ye.; ALEKSEYEVA, V.T.; KONDRATENKO, B.P.

Dipole moments of disubstituted benzenes having electron-acceptor functional groups. Zhur.fiz.khim. 35 no.8:1706-1709 Ag '61. (MIRA 14:8)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I. Lenina.

(Benzene—Dipole moments)

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LUTSKIY, A.Ye.; KONEL'SKAYA, V.N.

Intramolecular hydrogen bonds and dipole moments of nitrodiphenylamines and some of their derivatives. Zhur.fiz.khim. 35 no.9:1938-1943 '61. (MIRA 14:10)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I. Lenina.
(Diphenylamine--Dipole moments)
(Hydrogen bonding)

LUTSKIY, A.Ye.; OBUKHOVA, Ye.M.

Changes in the properties of substances in various series of chemical compounds. Part 1: Homologous series of organic compounds. Zhur.fiz.khim. 35 no.9:1951-1959 '61. (MIRA 14:10)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I. Lenina.
(Homologous series)