

FILONOV, V.A., inzh. [deceased]; YUDIN, M.I., inzh.; LOLA, V.N., inzh.;
MIVSHOVICH, V.S., inzh.; AVRAMENKO, I.N., inzh.; PAVLISHCHEV, V.B., inzh.

New technology for the production of wide-strip stainless steel with
a thickness of less than 1,5 mm. Stal' 23 no.1:60-61 Ja '63.
(MIRA 16:2)

1. Zavod "Zaporozhstal".

(Rolling (Metalwork))

AVRAMENKO, I.Ya., inzh.; RAFOVA, P.P., inzh.

Reprocessing of supplied pressed oil cakes in the Armavir oil
extracting branch plant. Masl.-zhir.prom. 28 no.3:34-37 Mr '62.
(MIRA 15:4)

1. Upravleniye pishchevoy promyshlennosti Krasnodarskogo sovnarkhoza.
(Krasnodar Territory Oil Industries) (Oil cake)

SHCHERBAKOV, Vladimir Grigor'yevich; KCZ'MINA, N.P., doktor biol. nauk, prof., retsenzent; ABDURAKHIMOV, A.A., kard. tekhn. nauk, retsenzent; AVRAMENKO, I.Ya., inzh.-tekhnclog, retsenzent; MOHOZOVA, T.I., red.; KISINA, Ye.I., tekhn. red.

[Biochemistry and the commercial study of oil raw materials]
Biokhimiia i tovarovedenie maslichnogo syr'ia. Moskva, Pishchepromizdat, 1953. 351 p. (MIRA 16:11)

1. Kafedra tekhnologii zhirov Tashkentskogo politekhnicheskogo instituta (for Abdurakhimov).
(Oilseed plants--Analysis and chemistry)

SILYAR, V.A.; AVRAMENKO, K.P.; PAVLOV, D.P.; BOBKOV, N.V.; BERSTOVAYA, R.V.;
SKRYPIK, Ye.P.; SIMONENKO, Ye.T.; SERGEYEVA, V.P.; KOLYAKO, D.A.,
red.; SOLDATOVA, N.P., otvetstv.za vypusk; GRISINYAYEV, B.G.,
tekhn.red.

[Economy of Krasnoiar Territory; a statistical manual] Narodnoe
khoziaistvo Krasnodarskogo kraia; statisticheskii sbornik.
Krasnodar, Gosstatizdat, 1958. 233 p. (MIRA 12:2)

1. Krasnodarskiy kray. Statisticheskoye upravleniye. 2. Nachal'nik
Krasnodarskogo krayevogo statisticheskogo upravleniya (for Kolyako).
(Krasnodar Territory--Statistics)

SAKHNNENKO, Vladimir L'vovich; MAKSIMOVICH, Vadim Aleksandrovich; TROITSKIY, Anatoliy Vasil'eyvich; TRICHUN, Ivan Petrovich; POTISHKO, Aleksey Vasil'yevich; AYRAMENKO, Ilya Arkhant'yevich; VAREYKIS, Arnel'd Mikhaylovich; VITKUP, G.I., redaktor; RAYKO, M.V., redaktor; SAMOKHVALOV, Ya.A., vedushchiy redaktor; VAL'CHUK, G.I., vedushchiy redaktor; PATSALYUK, P.M., tekhnicheskiy redaktor

[Atlas of machine parts; mechanical joints and couplings] Atlas
detalei mashin; soedineniia i sufty. Kiev, Gos. izd-vo tekhn. lit-
ry USSR, 1956. 146 p. (MLBA 10:2)
(Couplings) (Welding) (Fastenings)

POCHINOK, V.Ya.; ZAYTSEVA, S.D.; Prinimali: učestiyes Pochinok, P.Ya.;
BEKINSKAYA, R.V., student; PRDCHENKO, L.F., student; AYRAMENKO, L.F.,
student; MARCHENKO, N.G., student

Thiazolotetrazoles and triazenes synthesized from them.
Zhur.prikl.khim. 33 no.7:351-355 J1 '60.
(MIRA 1):7)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.
(Tetrazole) (Triazene)

AVRAMENKO, L.F.; VILENSKIY, M.B.; GUSEVA, L.K.; IVANOV, B.M.; POCHINOK,
V.Ya.; STEKLYANNIKOVA, Z.I.; FAYERMAN, G.P.

Stabilizing effect of thiazolotetrazoles and tetrazolobenzo-
thiazoles on silver chloride photographic emulsions. Zhur.nauch.
i prikl.fot.i kin. 5 no.4:294-295 J1-Ag '60. (MIRA 13:8)

1. Gosudarstvennyy universitet Kiyev, Filial Nauchno-issledovatel'-
skogo kino-fotoinstituta, Shostka i Institut kino-inzhenerov,
Leningrad.

(Photographic emulsions) (Tetrazole)

POCHINOK, V.Ya.; AVRAMENKO, L.F.

Thiazolotetrazoles and their tautomerism. Ukr.khim.zhur. 28
no.4:511-517 '62. (MIRA 15:8)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G.Shevchenko.
(Tetrazole) (Tautomerism)

AVRAMENKO, L.F.; POCHINOK, V.Ya.; ROZUM, Yu.S.

Effect of substituents on the formation of the condensed
tetrazole(1,5-b)benzothiazole. Zhur.ob.khim. 33 no.3:980-985
Mr '63. (MIJA 16:3)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko
i Institute organicheskoy khimii AN UkrSSR.
(Tetrazolobenzothiazole) (Substitution (Chemistry))

AVRAMENKO, L.F.; VILENSKIY, Yu.B.; IVANOV, B.M.; ZAYTSEVA, S.D.;
POCHINOK, V.Ya.

Mechanism of the stabilizing effect of tetrazolobenzothiazole derivatives on photographic emulsions. Part 2. Nature of the adsorption compound. Zhur. nauch. i prikl. fot. i kin. 8 no.6:419-426 N-D '63. (MIRA 17:1)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko i filial Vsesoyuznogo nauchno-issledovatel'skogo kinofotoinstituta, Shostka.

ASTM

2112. **Induced Predissociation in the Visible Bromine Spectrum.**
 L. Avramenko and V. Kondratjev. *Phys. Zits. d. Sowjetunion*, 10, V. 77, 741-744, 1969. In German.—Experiments are made upon the predissociation induced in the visible absorption spectrum of Br₂ vapour. Four maxima of selective enhancement of absorption, corresponding to $v' = 23, 26, 30$ and 24 , are observed and are interpreted as regions of induced transition of the excited Br₂ molecule to unstable electronic states. It is further observed that the plot of the reciprocal of the alteration of the absorption coefficient against the reciprocal of the pressure of the foreign gas is a straight line for pressures up to 600 mm. The effective cross-section for the collisions, as deduced from these data, comes out to be about 10 times greater than the gas-kinetic cross-section. The observed effects are practically independent of that nature of the foreign gas, whence it is concluded that chemical forces play a small part in the mechanism.
 L. A. W.

ASD-51A METALLURGICAL LITERATURE CLASSIFICATION

PROCEDURES AND PROPERTIES INDEX

A-1

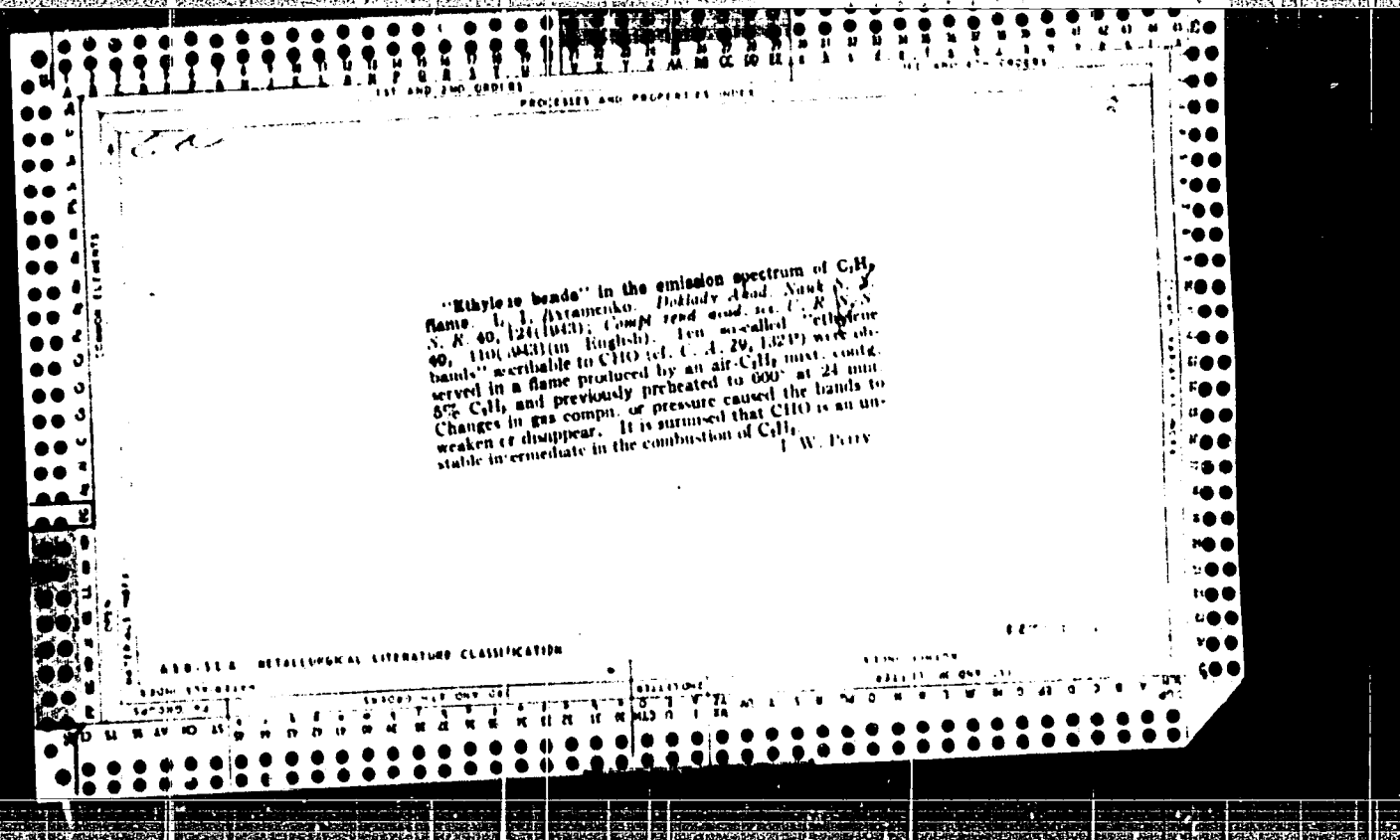
B6

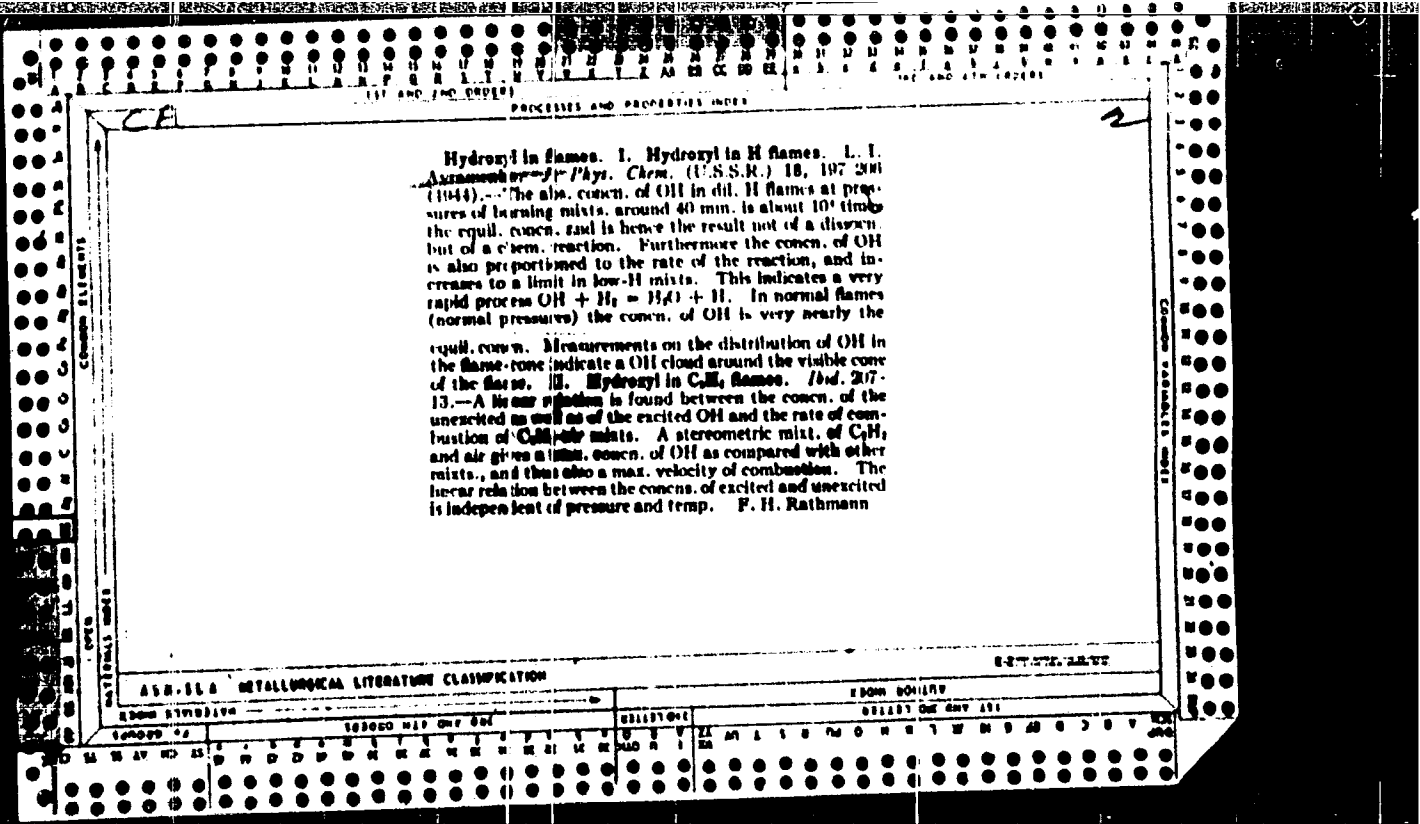
Light absorption and absolute concentration of hydroxyl. L. AVRAMKO and V. KONDRATSEV (Acta Phys. Chem. U.S.S.R. 1957, 7, 587-590).— Abs. absorption coeff. for 2 lines in the OH band at $\lambda = 2824$ μ . calc. by theoretical formula from absorptivity measurements made at different temp. on the mixture $2/3 H_2O + 1/3 O_2$. The calc. heat of the reaction $H_2 + 2OH \rightarrow 2H_2O$ is 124 kg.-cal. and equilibrium consts. for the reaction are derived. The data are used to find the concn. of OH radicals in a dil. H_2 flame. J. A. K.

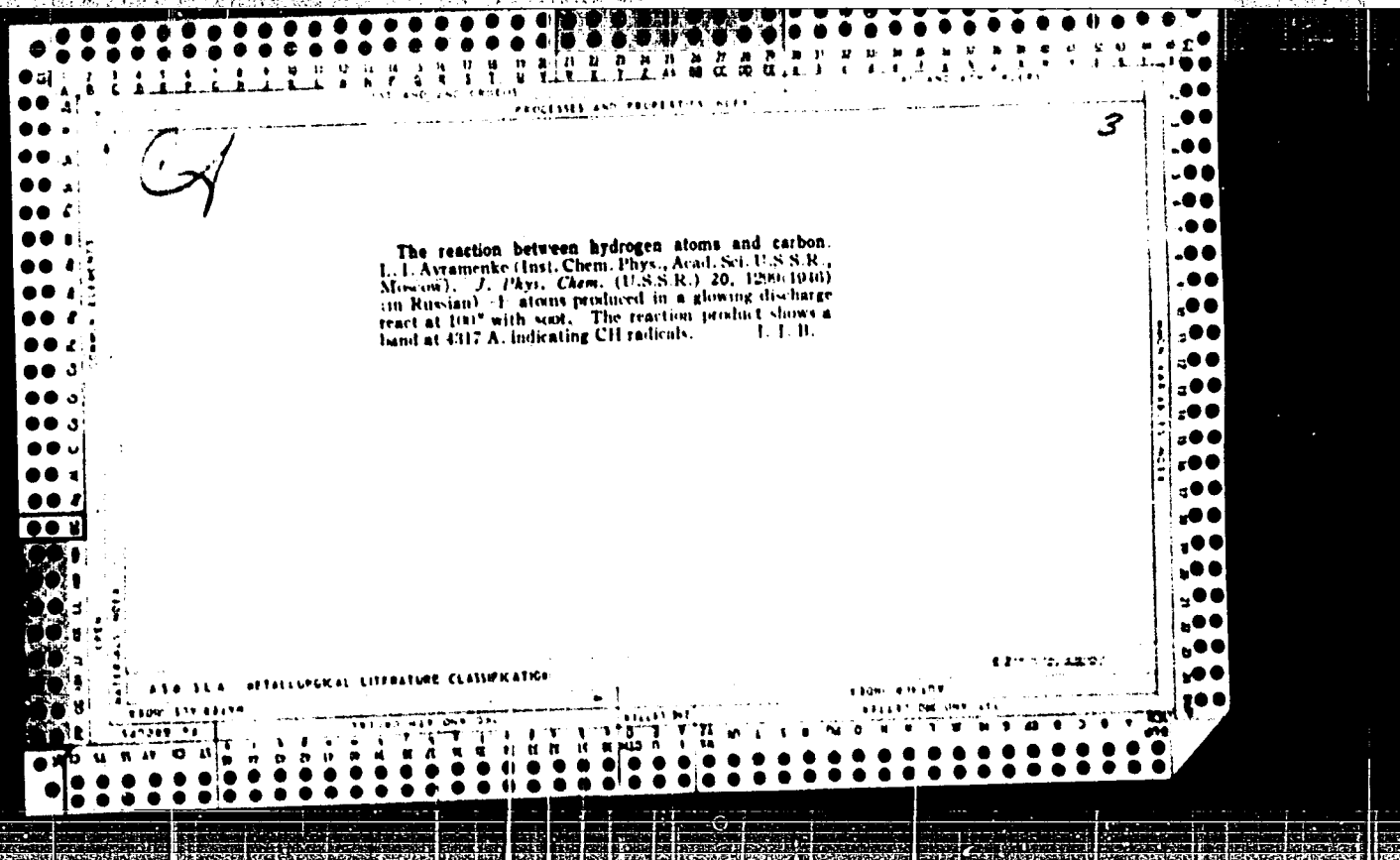
ABB. 11A DETAILING LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Hydroxyl in flame. II. Hydroxyl in the acetone flame. L. I. Avramenko (*Acta Physicochim. U.R.S.S.*, 1942, 18, 48-61) — There is a linear dependence of the concn. of non-excited and excited OH on the rate of combustion of a C_3H_6 -air mixture. The stoichiometric mixture of air and C_3H_6 gives a max. [OH], and such a mixture has max. rate of combustion. The emission spectrum of OH in a related C_3H_6 -air flame has been investigated, and it is shown that the method may be used to determine [OH] and [OH*].
A. J. M.







PROCESSING AND PROPERTY INDEX

*A Kinetic Method of Physico-Chemical Analysis. I. The Kinetics of the Reaction of Lead-Sodium Alloys with Ethyl Chloride Vapour. L. I. Arsenenko, M. I. Getler, M. B. Neiman, and V. A. Shushunov (*Zhur. Fiz. Khim.*, 1948, 20, 1347-1358; *C. Abs.*, 1947, 41, 3969).—(In Russian). The reaction between ethyl chloride gas and lead-sodium alloys gives $PbEt_2$ in about 90% yield. The measurable reaction starts after an induction period τ which is connected with the state of the alloy, because ethyl chloride transferred from an alloy after the end of the induction period to a fresh alloy requires another τ , whereas an alloy specimen which was kept in contact with ethyl chloride for τ hr. immediately reacted with a fresh specimen of ethyl chloride. At const. temp. and pressure, τ depends on the composition of the alloy (30-50 at.-% sodium) and shows a minimum at 50 at.-% sodium. Hence, it is possible to detect the compound $PbNa$ by kinetic measurements. τ is greater the smaller the pressure; e.g. at 20° C. in the presence of $PbNa$ τ is 5 hr. at 80, and 1.5 hr. at 600 mm. Hg. On a temp. rise, τ first decreases (e.g. from 3 hr. at 20° C. to 0.6 hr. at 35° C.) and then suddenly becomes very great. The temp. T at which the rapid increase of τ takes place is independent of the composition of the alloy and increases with the pressure of ethyl chloride from e.g. 20° C. at 100 to 58° C. at 1600 mm. Hg. Probably, the reaction has a chain mechanism, the breaking of chains has a greater temp. coeff. than the chain formation, and at T the rates of formation and breaking become equal.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

627

60/49723

Chemistry - Oxygen
Chemistry - Glass

Jul 49

Attraction of Atomic Oxygen in a Discharge in Water Vapors and Several of Its Reactions," I. I. Aramanko, Lab of Elementary Processes, Inst of Chemistry, Acad Sci USSR, 94 pp

"Zhur Fiz Khim" Vol XIII, No 7

Concentration of atomic oxygen obtained in this manner may reach 0.1 mm Hg. Observed effect of extinguishing the oxygen afterglow with water. Shows that rate of recombination of atomic oxygen on the surface of molybdenum glass has a greater temperature coefficient than rate of destruction of atoms of oxygen in volume. Includes formulas for calculating absolute value of constant of rate of recombination of atomic oxygen on glass, and for constant of rate of volumetric recombination. Submitted 18 Oct 48.

60/49723

USSR/Chemistry - Benzene Phenol 21 Jun 49

"Reaction of Oxygen Atoms With Benzene," L. I. Artemenko, I. I. Lofte, R. V. Lorentso, Lab of Elem Processes, Inst of Chem Phys, Acad Sci USSR, 2 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 6

Experiments to determine whether and in what quantities phenol is obtained in the direct reaction of benzene with atomic oxygen. Obtained oxygen atoms by passing stream of molecular oxygen through high-voltage discharge (3,500 v).

151T10

USSR/Chemistry - Benzene (Contd) 21 Jun 49

Prepared benzene by decarboxylizing benzoic acid. Showed definitely phenol forms as result of spontaneous interaction. Submitted by Acad N. N. Semenov 8 Apr 49.

151T10

AVRAMENKO, L. I.

PA 66/49T21

USSR/Chemistry - Hydroxyl
Hydrocarbons Aug 49

"Reactions of a Free Hydroxyl With Hydrocarbons," L. I. Avramenko, R. V. Lorentso, Inst of Phys Chem, Acad Sci. USSR, 3 pp

"Dok Ak Nauk SSSR" Vol. LXVII, No 5

Expresses a formula for deriving the constant of the rate of the reaction of a hydroxyl group with combustible hydrocarbons, and from tabular data given in the instances of ethane, ethylene, and acetylene calculates this particular constant in each case. Submitted 14 Jun 49.

66/49T21

CA

2-

Reaction of free hydroxyl with aldehydes. I. I. Avramov and R. V. Larentov (Inst. Khim. Fiziki, Akad. Nauk S.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 207, 7 (1974). Rate constants of the reactions (1) $\text{OH} + \text{HCHO} \rightarrow \text{H}_2\text{O} + \text{HCO} \rightarrow \text{H} + \text{CO}$ or $\text{H} + \text{CO}$ and (2) $\text{OH} + \text{AcH} \rightarrow \text{H}_2\text{O} + \text{Ac}$ or $[\text{CH}_2\text{CHO}]$ were detd. by the spectroscopic method of A. (C.A. 48, 2247), between 210 and 400°K., and 200 and 400°K., resp. The rate const. of the 1st reaction is practically independent of the temp., i.e. the activation energy, determinable within 0.5 kcal., is certainly less than 1 kcal./mole. For reaction (2), $E = 4$ kcal./mole. The rate const. are (1) $10^{-11} \sqrt{T} e^{-4000/T}$, and (2) $2.5 \times 10^{-11} \sqrt{T} e^{-4000/T}$ sec.⁻¹ cm.³. N. Tam

CA

21

Reaction of hydroxyl with molecules of various gases
 II. Reaction of free hydroxyl with hydrogen and carbon
 monoxide. L. I. Avramenko and R. V. Lortentso (Acad.
 Sci. U.S.S.R., Moscow); *Zhur. Fiz. Khim.* 34, 207-13
 (1960); cf. *C.A.* 43, 8026d. - An equation is given for
 calc. the const. K of reaction between OH and a gas (A)
 binding OH, if both gases stream through a tube at a rate
 v and the total amt. of OH in the tube is detd. from the
 absorption of the 3004-A line. Besides, the concn. of A
 and of OH must be known. New eqns. on the reaction
 between OH and H₂ (to give H₂O) and H₂ confined
 in the tube. Between 378 and 480° abs., $K = 7 \times$
 $10^{-10} \sqrt{T} e^{-11000/T}$ cm.³/sec. This calcn. assumes that the
 const. of recombination of OH on a glass surface is $1.5 \times$
 10^6 cm.³/sec. (cf. *C.A.* 43, 8026d). From the
 previous eqns. the const. of the reaction OH + CO =
 CO₂ + H is calcd. to be $10^{-12} \sqrt{T} e^{-11000/T}$ cm.³/sec.
 J. J. Bierbaum

Elementary reaction of atomic oxygen with ethane. I. I. A. Yatsenko and R. V. Kolesnikova. *Doklady Akad. Nauk SSSR*, 103: 40 (1953); cf. *C.A.B.* 47, 953a.—Two series of expts. were made for the reaction of at. O with ethane. In the first series the O was obtained from the decompn. of H_2O vapors, and in the next series the reaction took place with gases from the decompn. of mol. O (O and O_2). The reaction products were the same in both series except that there was a difference in the ratio of formaldehyde to acetaldehyde; the ratio was much higher in the first series. A reaction mechanism was proposed, and earlier observations were confirmed. L. Kevia; Leach.

MA. Jee

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USSR/Chemistry - Reaction Kinetics

11 Aug 53

"Elemental Reactions of Atomic Oxygen with Methane," L. I. Avramenko and R. V. Kolesnikova

DAN SSSR, Vol 91, No 1, pp 107-109

Studied the reaction between O and CH₄ using a method previously employed in other work. Results indicate that the degree of conversion achieved did not exceed that indicated by other workers [western], although data pertaining to flameless combustion were included. MeOH was found in the reaction products indicating that it forms as a

result of the interaction of O and CH₄ and is converted to CH₂O. On the basis of this data, it was difficult to ascertain which of two possible reactions (primary or secondary) forming CH₂O takes place. Presented by Acad N. N. Semenov 4 May 53.

26674

AKRAME NKO, L. I.

USSR

The experimental determination of the sequence for the elementary reactions of atoms and radicals. L. I. Avramenko and R. V. Khusmukha. *Doklady Akad. Nauk SSSR*, 92, 339-342 (1953); cf. following abstr.—The sequence of elementary reactions of atoms and radicals is discussed theoretically for the reaction of O with different aliph. Generalized kinetic equations are set up for the formation of primary, secondary, etc. products. The method developed theoretically is applied to exptl. data and found to be in good agreement.

J. Rovtar Leach

Small

AVRAMENKO, L. I.

Development of organic synthesis based on the oxidation of hydrocarbons from petroleum. S. R. Sarginko. *Problemy Oksidatsiya Ugleodorodov*, 1953, 533, U.S.S.R. *Izv. Vuzov*, 1954, 4-10. — In the introductory remarks made at the Moscow All-Union meeting on 14-15 May 1951, an increase in the use of petroleum in chemical industry was advocated. A brief summary was given of the achievements in this field in U.S.S.R. during the last 10 years. Development in the theory of chain oxidation of hydrocarbons. N. N. Semenov. *Ibid.*, 13-59. — A comprehensive review covering the following topics was given: direct reaction between two saturated hydrocarbons; chain length and activity of free radicals; effect of biradicals on the chain propagation; competition between the chain reaction and the direct reaction among the molecules; branching of chain reactions and limiting phenomena; decay of chain reactions; oxidation of simple paraffins; wall effects in chain reactions. 47 references. Mechanism of negative catalysis in oxidation of hydrocarbons. M. B. Nelsman. *Ibid.*, 40-60. — A review with 12 references. Elementary reactions of simple hydrocarbons with atomic oxygen. G. I. Avramenko and R. V. Kozhnikova. *Ibid.*, 61-9. — Oxidation of ethane, ethane, propane, and benzene is reviewed. 17 references. Oxidation of hydrocarbons in the presence of hydrogen bromide. Z. F. Malauz and N. M. Emanuel. *Ibid.*, 60-77. — A review of kinetics. 4 references. Investigation of oxidation of C¹⁴-labeled propylene. A. F. Lukovnikov. *Ibid.*, 78-89. — Synthesis of C¹⁴-propylene, its oxidation, chromatographic separation, and determination of radioactivity of the reaction products are reviewed. 11 references. Mechanism of oxidation of propane. V. Yu. Shtein. *Ibid.*, 89-101. — A review with

12 references. Unique features of oxidation of paraffinic hydrocarbons in liquid phase. A. N. Rashkurov and Ya. B. Chertkov. *Ibid.*, 101-8; cf. *C.I.*, 45, 1218. — A review with 5 references. The immediate effect of molecular oxygen on hydrocarbons of various structure in liquid phase. S. I. Ivanov. *Ibid.*, 111-23. — Preparations of the following peroxides are fully reviewed: heptane 2-hydroperoxide, *b.p.* 38°, *n_D²⁰* 1.4303, *d₄²⁰* 0.8072, $\delta = (\pi_r - n_e)/d \cdot 10^4 = 58.0$, *M_R* 37.68; 2-methylhexane 2-hydroperoxide, *b.p.* 21°, *n_D²⁰* 1.4270, *d₄²⁰* 0.8954, *M_R* 37.91; 2,2,4-trimethyl-3-pentanone 4-hydroperoxide, *b.p.* 31°, *m.p.* 75°, cyclohexane hydroperoxide, *m.p.* -20°, *n_D²⁰* 1.4638, *d₄²⁰* 1.013, *M_R* 31.50; 1-ethylcyclohexane 1-hydroperoxide, *b.p.* 34°, *n_D²⁰* 1.4078, *d₄²⁰* 0.9007, δ 85.4, *M_R* 40.45; 1-propylcyclopentane 1-hydroperoxide, *b.p.* 34.5°, *n_D²⁰* 1.4500, *d₄²⁰* 0.9581, δ 81.9, *M_R* 40.96; indan 4-hydroperoxide, *b.p.* 99-100°, *n_D²⁰* 1.53848, *d₄²⁰* 1.1111; fluorene 9-hydroperoxide, *m.p.* 93°, 1,4-dihydronaphthalene 1-hydroperoxide, *b.p.* 120-5°, *n_D²⁰* 1.5683, *d₄²⁰* 1.183; 1,1-diphenylethane 1-hydroperoxide, *m.p.* 82°, *P₂O* 81°. 0 references. Peroxides from autooxidation of some alkanes and cycloalkanes. K. I. Ivanov, V. K. Savinova, and V. P. Zhakovalova. *Ibid.*, 124-30. — Preparations and phys. properties are reviewed and discussed in detail. 15 references. Oxidation products of Tetralin. A. I. Karginova and L. A. Sulmin. *Ibid.*, 140-4. — The mechanism of tar formation is studied by analyzing the autooxidation products of Tetralin. The fraction extd. with 5% aq. NaHCO₃ contained enols of 3,4-dihydro-1(2H)-naphthalenone and dihydronaphthoquinone. Among the oxidation products were: 1,2,3,4-tetrahydro-1-naphthyl hydroperoxide; 3,4-dihydro-1(2H)-naphthalenone; 3,4-dihydro-2(1H)-naphthalenone; dihydronaphthoquinone; o-HO.CC.H₂CH₂CO.H, and polymerization products. Synthesis of 1,1-diphenylethane hydroperoxide and thermal decomposition of tertiary hydroperoxides. T. I. Yutchenko, L. K. Tolopko, and V. A. Puchin. *Ibid.*, 145-51. cf. *C.I.*

S.P. SERGIENKO

45, 2916a. Oxidation of petroleum jelly and kerosene with air and HNO₃. L. P. Losy and N. Smirnov. *Ibid.* 162-66.—A review. Oxidation of high-molecular weight hydrocarbons and petroleum oils in liquid phase. Chernozhukov. *Ibid.* 167-74.—A review with 10 references. Industrial methods of oxidation of petroleum hydrocarbons in liquid phase. V. K. Tsyshovskii. *Ibid.* 177-83.—A review with 17 references. Oxidation of paraffin wax. D. A. Chernyev, N. S. Malyshinskaya, and G. P. Dorovolski. *Ibid.* 76-81.—Prep. of lubricating oils from paraffin wax on industrial scale is described in detail with diagrams of equipment. Conditions for the optimum yields are given and discussed at length. Fatty acids from paraffins. J. Yu. Rabinovich. *Ibid.* 200-7.—Discussion of technological processes. No references. Use of hydroxy acids from oxidation of petroleum hydrocarbons as film-forming materials. P. V. Stikhovskii. *Ibid.* 208-21.—Compn., sept., and properties of HO ACIDS from oxidation of solid and liquid petroleum fractions are extensively discussed and the prepn. of varnishes on laboratory and plant scales is reviewed. A. K. ...

2/2

Avramenko, L.I.

✓ 1956. NECESSARY REACTIONS OF THE STRONGEST HYDROCARBONS WITH ATOMIC OXYGEN.
 AVRAMENKO, L.I. and KOLESIKINA, R.V. (Moscow Acad. Sci. U.S.S.R.; 1956, Abstracts of Chemistry of Hydrocarbons, 51-59; orig. in Ref. Zh. Khim. (Moscow), 1956, 178, 37739). Previous work on the reactions of atomic oxygen with methane, ethane, propane and benzene is set out and a more detailed description is given of the experimental method. When reacting with H hydrocarbon molecules atomic oxygen preferentially breaks a C-C bond and enters the molecule by a C-H bond.

FU

4000

PM
4/20

Avramenko, L.I.

USSR Kinetics - Combustion. Explosions. Topochemistry. Catalysis. B-9

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18553

Author : L.I. Avramenko, R.V. Kolesnikova.

Inst : Academy of Sciences of USSR.

Title : Experimental Determination of Succession of Elementary Reactions of Atoms and Radicals.

Orig Pub : in symposium: 'Tsepnyye reaktsii okisleniya uglevodородiv v gazovoy faze. M., AN SSSR, 1955, 187-209

Abstract : A more detailed report on work published earlier (Rzhkhin, 1956, 61054).

Card 1/1

- 226 -

AVRAMENKO, L. I.; KOLESNIKOVA, R. V.

Chemical determination of the initial concentration of oxygen atoms in a stream. Zhur.fiz.khim. 29 no.3:539-541 Mr '55.
(MIRA 8:7)

1. Akademiya nauk SSSR, Institut khimicheskoy fiziki, Moscow.
(Oxygen)

Avramenko I.I.

USSR/Kinetics - Combustion. Explosions. Topochemistry. Catalysis. B-9

Abstr Jour : Referat Zhur - Khimiya, No 6, 1957, 18554

Author : L.I. Avramenko, R.V. Kolesnikova.

Title : On the Mechanism of Hydrogen Peroxide Formation from
Atoms and Radicals.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 4, 763-768

Abstract : The dependence of the amount of H_2O_2 forming from the discharge products in water vapor on the distance between the discharge and the trap was measured. The total concentration of the radical OH was determined spectroscopically. Comparing the amount of H_2O_2 found experimentally with the amount which could be expected, if it were produced of OH, the authors arrive to the conclusion that OH could not be responsible for the formation of H_2O_2 . The formation of H_2O_2 from O atoms and H_2O molecules on trap walls cooled with liquid air was observed, and it was shown that H_2O_2 was formed in the same way from gases

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AUTHORS: Ayramenko, L. I. Kolesnikova, R. V., 62-58-3-3/30
Postnikov, L. M.

TITLE: A New Method for the Determination of the Velocity Constants of the Elementary Reactions of Atoms and Radicals (Novyy metod opredeleniya konstant skorostey elementarnykh reaktsiy atomov i radikalov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 3, pp. 277-284 (USSR)

ABSTRACT: The authors suggested a new method for the determination of the above-mentioned velocity constants which was worked out by them. This method avoids many a difficulty connected with the measurement of the absolute concentration of the atoms. The reaction of the oxygen-atom with different molecules serves as example. All processes which take place in the experiment are schematically represented (see scheme pp. 277 and 278). By means of the suggested method of measurement the summary velocity constant (in this case for the oxygen atom) can be determined. This also applies to the velocity constants of individual primary elementary reactions. It is

Card 1/2

A New Method for the Determination of the Velocity Constants of
the Elementary Reactions of Atoms and Radicals

62-58-3-3/30

pointed out that all conclusions are only valid in the case of sufficiently high A_0 -values (initial concentration of the initial substance) in comparison with $(O)_0$ (initial concentration of the oxygen atoms). On the basis of the described method (see formulae 1-16) the velocity constants of the elementary reactions of the oxygen atoms with molecules such as CO, CH₄, CH₃OH were determined. Moreover the velocity constants of the reactions of the radicals CH₃ and C₂H₅ with the oxygen molecule were obtained. There are 13 references, 4 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute for Chemical Physics, AS USSR)

SUBMITTED: January 21, 1957

Card 2/2

AUTHORS: Avramenko, L. I., Kolesnikova, R. V. SOV/62-58-10-5/25

TITLE: Reactions of Free Ethyl Radicals With Molecular Oxygen
(Reaktsii svobodnykh etil'nykh radikalov s molekulyarnym kislorodom.)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1958, Nr 10, pp 1192-1198 (USSR)

ABSTRACT: The deficiency in most of the papers previously published concerning reactions of aliphatic radicals with oxygen is that the problem of the subsequent order of the formation of reaction products is not explained. The authors of the present paper chose another way to explain the problem concerning the reactions of the ethyl radicals with molecular oxygen. They attempted to determine the primary products of the interaction of the ethyl radical with the oxygen molecule. In the experiments carried out the authors succeeded in producing ethyl radicals by the action of hydrogen atoms on ethylene. The products of this reaction of the ethyl radical with molecular oxygen (at temperatures of 100-300° C) are either ethylene monoxide or acetaldehyde and hydrogen peroxide.

Card 1/2

Reactions of Free Ethyl Radicals With Molecular
Oxygen

SOV/62-58-10-5/25

The course of the reaction ($C_2H_5+O_2$) is to a high degree influenced by the surface state of the reaction vessel. The formation of ethylene oxide in the interaction of the ethyl radical and the oxygen molecule takes place at the walls of the reaction vessel, prepared in a corresponding way. The interaction of the ethyl radical with the oxygen molecule neither directly nor by way of the intermediate reactions leads to the formation of the formaldehyde (at temperatures of up to $300^{\circ}C$). There are 5 figures, 1 table, and 8 references, 3 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute of Chemical Physics of the Academy of Sciences USSR).

SUBMITTED: April 18, 1957

Card 2/2

5(4)

AUTHORS:

Avramenko, L. I., Kolesnikova, R. V.

SOV/76-32-12-19/32

TITLE:

The Mechanism of Formation of H_2O and H_2O_2 in the Reaction of Hydrogen Atoms With Oxygen Molecules (O mekhanizme obrazovaniya H_2O i H_2O_2 pri reaktsii atomov vodoroda s molekuloy kisloroda)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2780 - 2786 (USSR)

ABSTRACT:

The results obtained by other authors are given (Refs 1 to 7). They point to the fact that the formation of water takes place in the interior of the reaction vessel, while hydrogen peroxide forms on the refrigerated wall of the receiving vessel. The contradictions to be found in previous papers are probably due to differences in the surface finish of the walls of reaction vessels. To establish this more clearly, hydrogen atoms formed in the high-tension discharge tube were made to react with molecular oxygen at low pressure (6 mm Hg). The receiving vessel was cooled by liquid nitrogen. The wall of the reaction vessel had been pretreated with the reaction products of electric

Card 1/4

The Mechanism of Formation of H_2O and H_2O_2 in the
Reaction of Hydrogen Atoms With Oxygen Molecules

SOV/76-32-12-19/32

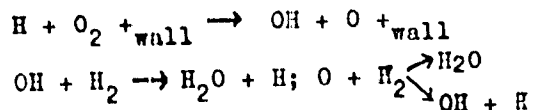
discharge in hydrogen atmosphere. The absolute atom concentration of hydrogen was measured by the heating of a platinum wire or by binding with ethylene. The tests confirmed the assumption that the water is formed in the interior of the reaction vessel, and also that the wall acts as actuator. It follows that the finish of the wall surface also determines the yield. The tests furthermore confirmed the opinion that the hydrogen peroxide is formed on the cooled wall of the receiving vessel. By the addition of ethylene aldehydes are formed. If ethylene is added to the mixture of H and O_2 , aldehydes form generously, while an ethylene-hydrogen mixture to which oxygen is added has a lower aldehyde yield and produces no formaldehyde. If the wall of the reaction vessel is pretreated with the discharge products of the arc in water vapor (and not in hydrogen), much less hydrogen peroxide is produced, and by the addition of ethylene the aldehyde yield is lower and no formaldehyde produced. The investigation proves that a chain reaction with atomic oxygen takes place, for which the lighting in the vessel

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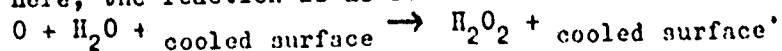
The Mechanism of Formation of H_2O and H_2O_2 in the
Reaction of Hydrogen Atoms With Oxygen Molecules

SOV/76-32-12-19/32

(such as it is found in the case of atomic oxygen and hydrocarbons) is yet another proof. The following reaction process has been established:



No molecular oxygen participates in the formation of H_2O_2 . Here, the reaction is as follows:



It was proved also by S. N. Foner and R. L. Hudson (Ref 6) that this is not the case of a binding of two OH-groups. Academician N. N. Semenov was very helpful with his advice. There are 3 tables and 15 references, 5 of which are Soviet.

Card 3/4

The Mechanism of Formation of H_2O and H_2O_2 in the
Reaction of Hydrogen Atoms With O_2 Molecules

SOV/76-32-12-19/32

ASSOCIATION: Akademiya nauk SSSR (Academy of Sciences, USSR) Institut
khimicheskoy fiziki, Moskva (Chemico-Physical Institute,
Moscow)

SUBMITTED: January 30, 1957

Card 4/4

5(4)
AUTHORS: Avramenko, L. I., Kolesnikova, R. V. SOV/62-59-4-33/42

TITLE: On the Reaction of Atomic Hydrogen With Ethylene (O reaktsii atomnogo vodoroda s etilenom)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdelennye khimicheskikh nauk, 1959, Nr 4, pp 746-748 (USSR)

ABSTRACT: This brief communication describes the investigation of the reaction $H + C_2H_4$. The investigation was carried out by the discharge tube method on a plant described in reference 15. Two characteristic results which were determined in the analysis of the reaction products in two experimental series with different jet speed are shown in percentages in table 1. Hence it appears that there is always less butane than ethane and propane formation. The ratio ethane-butane increases with a higher jet speed. The measurements of the concentration of hydrogen atoms (without ethylene addition) showed that the initial concentration of H atoms ranks 2 orders higher than the concentration of the ethylene radicals (with ethylene addition). Hence it may be concluded that ethane is formed without the ethyl radicals contained in the volume. Thus

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On the Reaction of Atomic Hydrogen With Ethylene

SOV/62-59-4-33/42

only a process is possible which proceeds on the surface of the reaction vessel. In order to check this assumption experiments were carried out in a vessel whose walls had been covered with $ZnO \cdot Cr_2O_3$. The results are shown in table 2. Hence it appears that the ratio ethane-butane changed considerably and approached the ratio observed in photochemical tests. It was found that under the conditions assumed (low pressure, fast jet and clean vessel walls) the reaction of the hydrogen atoms with ethylene does not take place in the volume but on the surface. In photochemical tests ethane is mainly formed during the disproportionation of the ethyl radicals at a rate pertaining to the volume process. In the discharge tube ethane is mainly formed on the vessel walls with its characteristic rate. For this reason the different results obtained in photochemical tests and in investigations in the discharge tube might go back to the different mechanisms and rates of ethane formation. The authors thank V. L. Tal'roze and his co-workers for the mass-spectrometrical analysis. There are 2 tables and 16 references, 1 of which is Soviet.

Card. 2/3

On the Reaction of Atomic Hydrogen With Ethylene

SOV/62-59-4-33/42

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute
of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: August 7, 1958

Card 3/3

5(4)

AUTHORS:

~~Avramenko, L. I.~~, Kolesnikova, R. V.

SOV/62-59-9-8/40

TITLE:

The Reaction Kinetics and Mechanism of Oxygen Atoms With Carbon Monoxide

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1562-1570 (USSR)

ABSTRACT:

This article contains a description of a method of determining the velocity constants for the vanishing of an atom or a radical during a reaction (by entering the bound state) on the formation of carbon dioxide from carbon monoxide and oxygen. On the basis of the consideration of a bimolecular spatial process (collision of two components $CO + O \rightarrow CO_2$) with low activating energy and a small steric factor, and also from the consideration of a trimolecular process ($CO + O + M$), a general equation was obtained for the velocity coefficient. In the statistical consideration of the path of an O-atom in the discharge tube, a function is found which expresses the dependence of the concentration on the traversed path of the atom (7). This function is assumed to be linear (interruption of the ex-

Card 1/2

SOV/62-59-9-8/40
The Reaction Kinetics and Mechanism of Oxygen Atoms With Carbon Monoxide

ponential series after the first term), the concentration is determined at various "x" by experiment and herefrom the velocity constant is calculated. If this function cannot be assumed to be linear, a graphic analysis of the equation is made (Figs 1,2); the represented derivation is generally valid and can be applied to any atoms and radicals desired. The mentioned functions for CO and O are represented on figures 3-5 and the results are discussed. It was possible to draw a conclusion from these on the bimolecular process of the formation of CO₂ from CO and O. There are 5 figures, 1 table and 17 references, 5 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: December 11, 1957

Card 2/2

66868

SOV/76-33-11-30/47

Elementary Reaction of the Formation of Oxygen
Atoms on the Glass Surface

products of a water vapor discharge were used. Special experiments were made on the course of a chain reaction at which the concentration of the hydrogen atoms was measured according to two methods. It was established that the water forms due to a chain reaction, which was also confirmed by experiments with ethylene additions. The experiments showed (Table 1) that the wall of the receiver cooled with liquid nitrogen, causes the formation of the hydrogen peroxide, according to the reaction $O + H_2O + \text{cold surface} \rightarrow H_2O_2 + \text{cold}$

surface. Investigations on the dependence of the accumulation rate of the water and hydrogen peroxide from the rate of addition of the hydrogen showed (Table 2) that the formation of the hydrogen peroxide decreases with a reduction of the transformation percentage of the oxygen. When ethylene was added, i.e. at the reaction $H + O_2 + C_2H_4$, the formation of

aldehydes was observed in the reaction vessel (and not on the cold surface) (Table 3). The series of experiments in the second reaction unit yielded results differing from those obtained in the above described experiments: considerably ✓

Card 2/3

AVRAMENKO, L.I.; KOLESNIKOVA, R.V.

Kinetics and mechanism of the reaction between ethyl radicals
and molecular oxygen. Izv.AN SSSR Otd.khim.nauk no.5:806-811
My '60. (MIRA 13:6)

1. Institut khimicheskoy fiziki Akademii nauk SSSR.
(Radicals (Chemistry)) (Oxygen)

85602

S/062/60/000/006/015/025/XX
B020/B060

11.6200
AUTHORS:

Avramenko, L. I., Koleennikova, R. V.

TITLE:

Kinetics and Mechanism of Interaction of Ethyl Radicals with
Molecular Oxygen. Communication 2. Dependence of Reaction
Kinetics on the Third Particle

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1960, No. 6, pp. 989-995

TEXT: The first part of this article has given a description of method and measurement results of recombination rate constants in the interaction of ethyl radicals with molecular oxygen for a constant concentration of the third particle. The present paper provides the results obtained for different concentrations of the third particle. It follows from the empirically determined dependence of the effective rate constant of the loss of ethyl radicals on pressure (Fig. 1) that the rate constant k_0^* of the loss is proportional to pressure in the region concerned. Fig. 2 shows different forms of function $k_0^* = f(M)$ calculated from

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85602

Kinetics and Mechanism of Interaction of
Ethyl Radicals With Molecular Oxygen.
Communication 2. Dependence of Reaction
Kinetics on the Third Particle

S/062/60/000/006/015/025/XX
B020/B060

equation (4) for different ratios of the constants, where the concentration of the third particle (M) is expressed by pressure p for $T = 421^{\circ}\text{K}$. It may be stated that the loss of ethyl radical takes place according to a trimolecular scheme with constant k_2 , whose value has been determined at about $3 \cdot 10^{-28} \text{ cm}^6 \cdot \text{sec}^{-1}$, and which holds for the case of the third particle being a H molecule. Fig. 3 shows the empirical dependence of the quantity $1/k_0'$ on $1/p_{\text{H}_2}$ for the recombination of ethyl radicals, while Fig. 4 illustrates the empirical dependence of the effective rate constant of the reaction of the ethyl radical with oxygen atom on pressure. Fig. 5 shows $1/k$ as a function of $1/p$ for the reaction of ethyl radicals with molecular oxygen. The absolute value of the rate constant of the bimolecular reaction in the formation of the high-energy $\text{C}_2\text{H}_5\text{O}_2^*$ radical from C_2H_5 and an O_2 molecule was determined at $k_4' = 1.1 \cdot 10^{-12} \text{ cm}^3 \cdot \text{sec}^{-1}$, and the k_4'/k_5' ratio of the decomposition rate of the radical concerned versus the stabilization rate of the high-energy peroxide radical was determined at $2 \cdot 10^{-17} \text{ cm}^3$.

Card 2/3

86478

S/062/60/000/011/002/016
B013/B078

11.6200
AUTHORS: Avramenko, L. I., Postnikov, L. M.

TITLE: Kinetics and Mechanism of the Interaction of Methyl Radicals With Molecular Oxygen

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 11, pp. 1921 - 1929

TEXT: A study has been made of the reaction mechanism of methyl radicals with molecular oxygen at pressures ranging between 0.5-3.5 mm Hg and at temperatures of 100° - 450°K. A special system was used making it possible to suppress side reactions (Fig.1) (light effect in photochemical reactions). The main characteristic of the system is the circumstance that the production source of CH₃ radicals (place of the thermal dissociation of acetone) is separated from the reaction zone of CH₃ and O₂ by a nozzle. It was observed that of the two oxygen-containing reaction products - methyl hydroperoxide and carbon dioxide - the former is the chief product. The carbon dioxide amounted to ~30% of the amount of

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86478

Kinetics and Mechanism of the Interaction of Methyl Radicals With Molecular Oxygen

S/062/60/000/011/002/016
BC13/B078

methyl hydroperoxide. Formaldehyde could not be found at higher temperatures either. Apart from the qualitative investigation of the reaction direction, it was also possible to measure the rate constants of primary elementary reactions on the mentioned system. For this purpose, the authors' own method (Ref.10) was applied: on the basis of an assumed reaction scheme, the effective rate constant of the reaction of methyl radicals with oxygen molecules can be determined by measuring formation of methyl hydroperoxide (Fig.2). The primary character of methyl hydroperoxide ensures a linear relationship between the reciprocal end value of the hydroperoxide concentration and the reciprocal initial value of the oxygen concentration (Fig.3). On the strength of the data obtained it is also possible to determine the absolute value of the rate constant of the "quadratic decomposition" (kvadratichnaya gibel') of methyl radicals k''' . The determination took place by the method described in Ref.11^o(Fig.4). The results are in good agreement with results obtained by other authors (Table 1). Experiments were conducted at temperatures of 200^o and at 300^oK (Table 2). The curves obtained in this connection resemble those of Figs. 2-4. It was observed that the reaction of the methyl radical with the oxygen proceeds practically without activation

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80094

S/O20/60/131/C6/39/071
B(104/B007

57200

AUTHORS: Avramenko, L. I. Kolesnikova, R. V.

TITLE: Reaction of the Isopropyl Radical with the Oxygen Molecule

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 131, No. 6, pp. 1370 - 1372

TEXT: The authors set themselves the task of investigating the reaction mentioned in the title under conditions which excluded every side-reaction of hydrogen used for the preparation of the isopropyl radical with oxygen. This method was already employed in the investigation of the reaction of the ethyl radical with molecular oxygen (Refs 2,3). Molecular hydrogen was decomposed into atoms by electric discharge, and was caused to react with propylene. Through a nozzle the zone of the reaction $H + C_3H_6 \rightarrow$ isopropyl was separated from oxidation of the isopropyl radicals carried out at $150^{\circ}C$ and 8 torr by means of O_2 . Preliminary experiments had shown that in the oxidation zone (2 cm behind the nozzle) no H-atoms existed. The oxidation products were collected in a vessel cooled with liquid nitrogen, and then analyzed. The peroxide was polarographically analyzed as well as by means of titration of the separated I_2 after the addition of KI. Acetone was

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Reaction of the Isopropyl Radical With the Oxygen Molecule

80094

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B004/B007

determined by means of the furfural method. Isopropyl alcohol¹ was qualitatively detected by means of m-nitrobenzaldehyde. An analysis for aldehydes was made polarographically. As shown by table 1, peroxide, acetone, and isopropylalcohol were found, whereas analysis for aldehydes was unsuccessful. On the assumption that the reaction temperature for the formation of aldehydes was too low, experiments were undertaken, in which the oxidation zone of 150°C was followed by a second reaction zone of 350°C. As shown by table 2, the peroxide yield decreased, and no more isopropyl alcohol formed, whereas the acetone yield decreased only slightly. Also in this case a formation of aldehydes could not be detected. Herefrom the authors conclude that at 350°C the peroxide radical again decomposes into isopropyl and O₂. The acetone probably forms on the surface of the reactor vessel, which is covered with KCl. There are 2 tables and 6 references, 4 of which are Soviet. ✓

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: October 26, 1959, by V. N. Kondrat'yev, Academician

SUBMITTED: October 20, 1959

Card 2/2

AVRAMENKO, L.I.; KOLESNIKOVA R.V.

Kinetics and mechanism of the reaction of the CH_2OH radical with the O_2 molecule. Izv. AN SSSR Otd.khim.nauk no.4:591-598 Ap '61.

(MIRA 14:4)

1. Institut khimicheskoy fiziki AN SSSR.
(Oxygen) (Radicals (Chemistry))

AVRAMENKO, L.I.; KOLESNIKOVA, R.V.; KUZNETSOVA, N.L.

Rate constant and mechanism of the reaction of oxygen atoms with
methyl alcohol. Izv.AN SSSR Otd.khim.nauk no.4:599-603 Ap '61.
(MIRA 14:4)

1. Institut khimicheskoy fiziki AN SSSR.
(Oxygen) (Methanol)

AVRAMENKO, L.I.; KOLESNIKOVA, R.V.; SOROKINA, M.F.

Rate constant and the mechanism of reaction between oxygen atoms
and acetaldehyde. Izv.AN SSSR,Otd.khim.nauk no.6:1005-1010 Je '61.
(MIRA 14:6)

1. Institut khimicheskoy fiziki AN SSSR.
(Acetaldehyde) (Oxygen) (Chemical reaction, Rate of)

AVRAMENKO, L.I.; KOLESNIKOVA, R.V.

Photochemical investigation of the mechanism of reaction
between oxygen atoms and acetaldehyde. Izv. AN SSSR.
Otd.khim.nauk no.7:1231-1234 J1 '61. (MIRA 14:7)

1. Institut khimicheskoy fiziki AN SSSR.
(Oxygen) (Acetaldehyde) (Photochemistry)

AVRAMENKO, L.I.; KOLESNIKOVA, R.V.; RUZNETSOVA, N.L.

Rate constant and mechanism of interaction between oxygen atoms and
1,2-dichloroethane. Izv. AN SSSR. Otd.khim.nauk no.9:1565-1571
S '61. (MIRA 14:9)

1. Institut khimicheskoy fiziki AN SSSR.
(Ethane) (Oxygen)

29518
S/062/61/000/011/005/012
B101/B147

11.1570
11.1220
AUTHORS:

Avramenko, L. I., and Kolesnikova, R. V.

TITLE:

Determination of the rates of elementary reactions of hydrogen atoms. Communication 1. Constant of the recombination rate $H + H + H_2 \rightarrow 2H_2$, and constant of the reaction rate $H + O_2 + H_2 \rightarrow HO_2 + H_2$

PERIODICAL:

Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1961, 1971-1976

TEXT: It was the purpose of the present paper to determine exactly the reaction constant in ternary collisions $H + O_2 + H_2$. So far, the values determined by other scientists have differed by two orders of magnitude. The method of measuring the constant has already been published by the authors (Ref. 7. Izv. AN SSSR. Otd. khim. n., 1958, 277). The device of Fig. 1 was used for the experiments. Atomic hydrogen was obtained in an ozonizer tube (5) whose voltage was increased by a transformer to 40,000 v.

Card 1/0

Determination of the rates of...

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B101/B147

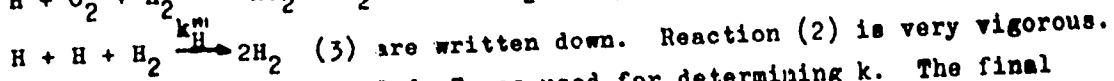
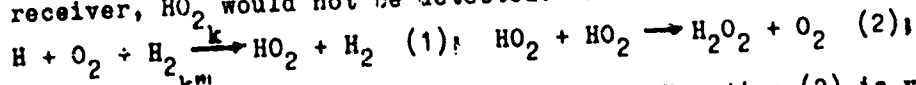
To obtain a great number of H atoms in reaction vessel (7), the wall of nozzle (6) was coated with phosphoric acid. The reaction vessel was 20 mm in diameter and 1.2 m long. Valve (2) was similar to valves of Aqualungs used by divers, and guaranteed a constant pressure of electrolytic H₂ leaving cylinder (1). The apparatus was evacuated by an oil forepump; P_H of the reaction vessel was 60 mm Hg, and the rate w of the H stream was 90 m/sec. The experiments were conducted at room temperature. Liquid N₂ was used for cooling receiver (10). Results: (1) H₂O₂ could not be titrimetrically detected in 10 without O₂ additions. (2) With O₂ additions, (6-7)·10⁻⁶ M H₂O₂ was titrimetrically detected in 10. (3) 40 mm behind the nozzle H₂O₂ formation is completed. Greater length of the reaction vessel no longer affects the H₂O₂ yield. (4) H₂O₂ does not form at lower pressures (10 mm). Hence, it is concluded that: (A) H₂O₂ formation is independent of the length of the cold wall and, therefore, takes place in

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B101/B147

Determination of the rates of...

the bulk. (B) A third particle takes part in H₂O₂ formation. The reaction, therefore, necessarily follows the equation H + O₂ + H₂ → HO₂ + H₂. In experiments with a cooled receiver placed only 40 mm off the nozzle, the asymmetric epr spectrum of the HO₂ radical could be taken in the frozen condensate. Its g factor hardly differs from that of diphenyl picryl hydrazyl. The total signal width is 23-26 oe. When the condensate is thawed, the signal disappears. With a greater distance between nozzle and receiver, HO₂ would not be detected. The reactions



The method published in Ref. 7 was used for determining k. The final concentration [H₂O₂]_f is expressed by [H₂O₂]_f = [O₂]₀ - [O₂]_f, where [O₂]₀

is the initial oxygen concentration. Since [H₂O₂] and [O₂] were constant

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B101/B147

Determination of the rates of...

under experimental conditions, the equation

$$\left[\frac{k}{k-k_H^m} \right] ([O_2]_0 - [H_2O_2]_f) + \left\{ [H]_0 - \left[\frac{k}{k-k_H^m} \right] [O_2]_0 \right\} \left(1 - \frac{[H_2O_2]_f}{[O_2]_0} \right)^{k_H^m/k} - 0$$

is obtained. $(1 - [H_2O_2]_f/[O_2]_0)^{k_H^m/k}$ is expanded in a series, the first two members of which are used: $1/[H_2O_2]_f = 1/[H]_0 + k_H^m/k[O_2]_0$ (9). This linear equation gives: $k = k_H^m/\tan\alpha$ (10). Hence, the determination of k_H^m is necessary. It was conducted by a method described by the authors (Izv. AN SSSR, Otd. khim. n. 1959, 1562). The experimental data yielded: $k_H^m[H]_0 = w \tan\beta/[H_2]$ (13). It was found: $k_H^m[H]_0 = 9 \cdot 10^{-19} \text{ cm}^3/\text{sec} \cdot \text{molecule}$. Hence, $k_H^m = 5.2 \cdot 10^{-32} \text{ cm}^6 \cdot \text{sec}^{-1} \cdot \text{molecules}^{-2}$ is obtained for an initial concentration $[H]_0 = 1.72 \cdot 10^{13} \text{ molecules/cm}^3$, which is in good agreement with data obtained by other scientists. $k = 1.2 \cdot 10^{-33} \text{ cm}^6 \cdot \text{cm}^{-1} \cdot \text{molecules}^{-2}$ is obtained from Eq. (10). This value is in good agreement with that given by A. B. Nalbandyan, V. V. Voyevodskiy (Mekhanizm okisleniya i gorennya

Card 4/6

Determination of the rates of...

29518
S/062/51/000/011/005/012
B101/B147

vodoroda (Mechanism of hydrogen oxidation and burning), Izd. AN SSSR, 1949). The authors thank G. A. Kapralova for taking the epr spectra. There are 4 figures, 1 table, and 10 references: 4 Soviet and 6 non-Soviet. The two most recent references to English-language publications read as follows: J. Amdur, J. Amer. Chem. Soc., 60, 2347 (1938); S. N. Foner, R. L. Hudson, J. Chem. Phys., 21, 1608 (1953); 32, 1974 (1955).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 15, 1961

FIG. 1. Diagram of apparatus. (1) Cylinder with hydrogen; (2) special valve; (3) tube with CaCl_2 ; (4), (9), and (11) taps; (5) ozonizer tube; (6) nozzle; (7) reaction vessel; (8) manometer; (10) receiver; (12) calibrated vessel for O_2 ; (13) gas meter for O_2 ; (14) transformer.

Card 5/06

AVRAMENKO, L.I.; KOLESNIKOV, R.V.

Detection of HO₂ radicals by means of electron paramagnetic resonance. Dokl. AN SSSR 140 no.5:1100-1101 0 '61.

(MIRA 15:2)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N.Kondrat'yevym.

(Radicals(Chemistry)---Spectra)

AVRAMENKO, L.I.; KOLESNIKOVA, R.V.; KUZNETSOVA, N.L.

Rate constant of the reaction of oxygen atoms with ammonia.
Izv. AN SSSR. Utd. khim. nauk no. 6: 983-989 '62. (MIRA 15:8)

1. Institut khimicheskoy fiziki AN SSSR.
(Oxygen) (Ammonia) (Chemical reaction, Rate of)

12651

S/062/62/000/011/016/021
B117/B101

11. 15/10

AUTHORS: ~~Avtamenco, L. I.,~~ Buben, N. Ya., Kolesnikova, R. V.,
Tolkachev, V. A., and Chkheidze, I. I.

TITLE: EPR study of radicals formed by hydrogen atoms reacting with benzene

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1962, 2079-2081

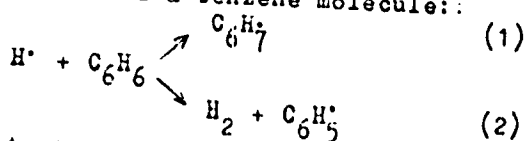
TEXT: The authors analyzed the epr spectra of free radicals formed by hydrogen atoms reacting with benzene in the gas phase at 20 and 200°C and frozen out with liquid nitrogen. Experimental conditions: silent discharge (6000 v, 150 ma), benzene concentration, $\sim 6 \cdot 10^{14}$ molecules per cm^3 ; hydrogen pressure, 14-15 mm Hg; linear flow rate, 160 cm/sec; duration, 12-18 min. The epr spectrum of the radicals formed at 200°C by the reaction $\text{H} \cdot + \text{C}_6\text{H}_6$ is a triplet with a total splitting of 93 ± 5 oe. In addition each component of the triplet is split into four lines at a distance of 10 ± 1 oe. This spectrum was identified as the spectrum of

Card 1/2

EPR study of radicals formed...

S/062/62/000/011/016/021
B117/B101

the $C_6H_7^{\cdot}$ radical. When the reaction temperature is raised up to $200^{\circ}C$, not only the $C_6H_7^{\cdot}$ radical is formed, but also radicals of another type - obviously $C_6H_5^{\cdot}$ - which show a singlet. Their relative amount increases as the temperature is raised. Hence the two primary reactions may occur between hydrogen atoms and a benzene molecule:



it is assumed that at room temperature reaction (1) mainly occurs and at higher temperatures reaction (2) takes place. The weak lines detected on the edges of all spectra were attributed to the background, of which the spectrum analysis took no account and which therefore requires a separate investigation. There are 2 figures.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 15, 1962
Card 2/2

S/C62/63/000/001/006/025
B101/B186

AUTHORS: Avramenko, L. I., Kolesnikova, R. V., and Savinova, G. I.

TITLE: Rate constants and mechanism of the reaction of oxygen atoms with ethylene, propylene, and isobutylene

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 1, 1963, 36-45

TEXT: A continuous vacuum apparatus was used for studying the reaction of C_2H_4 , C_3H_6 and $i-C_4H_8$ with atomic oxygen produced by high voltage discharge in pure O_2 . The reaction products were condensed with liquid nitrogen and analyzed. Inflammation of the reaction mixture proceeding as chain reaction was prevented by covering the walls of the reaction vessel with KCl so that the quantity of the products formed corresponded to that of the O consumed. Based on the equations derived previously (Izv. AN SSSR, Otd. khim. n. 1962, 985), the constant of the reaction rate was determined from the total aldehydes formed. The constant of the oxygen consumption was determined by measuring the concentration of oxygen atoms, which

Card 1/4

Rate constants and mechanism ...

S/062/63/000/001/006/025
B101/B186

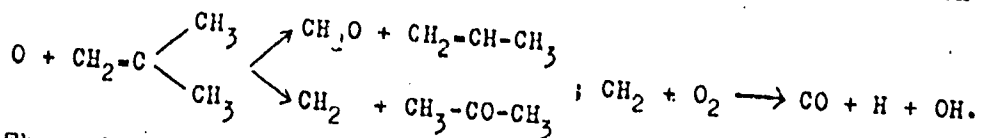
decreases along the reaction vessel. Results: (A) In the reaction with C_2H_4 , the formaldehyde component of the aldehydes formed is 80% at $50^\circ C$ and more than 90% at $200^\circ C$. Moreover, acetaldehyde forms. CO and CH_2O form in equal quantities. The content of free O atoms decreases linearly along the reaction vessel. $k_{C_2H_4} = 1 \cdot 10^{-13} \exp(-1350/RT) \text{ cm}^3 \cdot \text{sec}^{-1} \cdot \text{molecules}^{-1}$ and the activation energy is $1350 \pm 500 \text{ cal/mole}$. (B) In the reaction with C_3H_6 , the CH_2O component of the carbonyl compounds formed is 70% at $100^\circ C$, and 80-85% at $200^\circ C$. The second aldehyde forming is acetaldehyde. In addition acetone is formed (in a quantity $\sim 15\%$ that of the acetaldehyde). CO forms in a larger quantity than acetaldehyde. Consequently not only the CH_2 radical is oxidized to CO as in case A, but also the $CH_3CH\cdot$ radical is partially oxidized to CO. $k_{C_3H_6} = 2.65 \cdot 10^{-12} \exp(-3000/RT) \text{ cm}^3 \cdot \text{sec}^{-1} \cdot \text{molecules}^{-1}$ and the activation energy is $3000 \pm 500 \text{ cal/mole}$. (C) In the reaction with $i-C_4H_{10}$, 60-70%

Card 2/4

Rate constants and mechanism ...

S/062/63/000/001/006/025
B101/B186

of the carbonyl compounds is formaldehyde, the remainder acetone. Additionally, propylene forms in the same quantity as formaldehyde, and CO in the same quantity as acetone. Hence, the following reaction scheme is derived:



The radical $\cdot C(CH_3)_2$ is regrouped completely to propylene.

$$k_{i-C_4H_8} = 4 \cdot 10^{-12} \exp(-2550/RT) \text{cm}^3 \cdot \text{sec}^{-1} \cdot \text{molecules}^{-1} \text{ and the activation}$$

energy is 2550 cal/mole. It was confirmed that in the reaction of atomic oxygen with unsaturated hydrocarbons mainly the C=C double bond is split and that carbonyl compounds, predominantly formaldehyde, form. There are 6 figures and 4 tables. The most important English-language references are: H. W. Ford, N. Endow, J. Chem. Phys., 27, 1277 (1957); F. Kaufman, J. Chem. Phys., 28, 352 (1958); L. Elias, H. J. Schiff, Canad. J. Chem., 38, 1657 (1960).
Card 3/4

Rate constants and mechanism ...

S/062/63/000/001/006/025
B101/B186

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute of Chemical Physics of the Academy of Sciences
USSR)

SUBMITTED: April 10, 1962

Card 4/4

L 17060-63 EPF(s)/EWP(q)/EWT(m)/BDS s/062/63/000/004/004/022
AFPTC Pr-4 RM/WH/JD
AUTHOR: Avramenko, L.I., Kolesnikova, R.V., and Kuznetsova, N.I. 63

TITLE: Reaction rate constants and the mechanism of reactions of oxygen atoms with methane and ethane 1 27

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, 1963, 620-627

TEXT: The absolute values of the reaction rate constants of oxygen atoms with methane and ethane were measured over the range 313-583° K at reduced pressure. The reaction activation energies of oxygen atoms with methane and ethane equal to 7800 and 5200 cal/M, and the pre-exponents equal to $3.4 \cdot 10^{-11}$ and $0.9 \cdot 10^{-11}$ respectively were determined. The two basic directions in the interaction of oxygen atoms with methane are: the first, the formation of CH_2 and H_2O ; the second, the formation of CH_2O and H_2 . The basic direction of the interaction of oxygen atoms with ethane is the reaction proceeding with the cleavage of the C-C bond and the formation of CH_2O , H_2 , and CH_2 . There are 5 figures and 3 tables.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 21, 1962

Card 1/1

L 12734-63 EPF(c)/EWP(j)/EWT(m)/BDS Pr-l/Pc-l RM/WW
ACCESSION NR: APX02281 S/0062/63/000/006/0976/0980

AUTHOR: Avramenko, L. I.; Kolesnikova, R. V.; Savinova, G. I.

64
63

TITLE: The rate constant and the mechanism of reaction of oxygen atoms with n-butane

SOURCE: AN SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 6, 1963, 976-980

TOPIC TAGS: reaction of n-butane with oxygen, formation of formaldehyde and acetaldehyde

ABSTRACT: A study has been made on the measurement of the reaction rate constant of oxygen atoms with n-butane between temperature intervals of 40 to 195C for the determination of the magnitude of activation energy and the exponential multiplier of the speed of the reaction $O + n-C_4H_{10}$. The activation energy of the reaction rate constant was found to be 4100 cal/mole and the exponential multiplier value was found to be 1.3×10^{-11} . Only a general conclusion can be made concerning the reaction mechanism between the oxygen atoms and n-butane. Assuming that the main products of the reaction are formaldehyde and acetaldehyde, it is possible to conclude that the reaction of oxygen with n-butane results in the rupture of the c-c bond. (Orig. art. has: 3 figures, 3 tables, and 2 formulas.)

Association: Inst. of Chemical Physics, Academy of Sciences, SSSR
Card 1/2/

AVRAMENKO, L.I.; KRASHEN'KOV, V.M.

Reactions involving nitrogen atoms. Report No.1: Certain properties of nitrogen atoms and the rate constants for the recombination of atoms in space and on various surfaces. Izv. AN SSSR. Ser.khim.no.7: 1196-1203 J1 '63. (MIRA 16:9)

1. Institut khimicheskoy fiziki AN SSSR.
(Nitrogen)

AVRAMENKO, L. I.; KRASNEN'KOV, V. M.

Reactions of nitrogen atoms. Report No. 2: Rate constant and the mechanism of the elementary reaction of nitrogen atoms with ethylene. Izv AN SSR Ser Khim no. 4:600-604 Ap '64. (MIRA 17:5)

1. Institut khimicheskoy fiziki AN SSSR.

MAZARENKO, L.I.; KRASHEN'KOV, V.P.

Reactions of nitrogen atoms. Report No. 5. Rate constant
and mechanism of the reaction of nitrogen atoms with
acetylene. Izv. AN SSSR, Ser. khim. no. 3:872-825 My '67.
(MIRA 2786)

1. Institut khimicheskoy fiziki AN SSSR.

L 4(778-65 EWG(j)/EWT(m)/EPF(c)/EPR/EWP(j)/EWP(t)/EWP(b) Pc-4/Pr-4/PS-4
ACCESSION NR: AP5006411 IJP(G)/RPL JD/RM S/0062/65/000/001/0029/0035

AUTHOR: Avramenko, L. I.; Kolesnikova, R. V.; Savinova, G. I. 42
46

TITLE: Constants of the speeds of reaction of atomic oxygen with cyclohexane and benzene

SOURCE: AN SSSR. Izvestiya, Seriya khimicheskaya, no. 1, 1965, 28-35

TOPIC TAGS: cyclohexane, benzene, cyclic hydrocarbon, oxygen, oxygen compound, aromatic compound

ABSTRACT: Constants of the speeds of reaction of atomic oxygen with cyclohexane and with benzene were measured and the mechanism of these reactions were examined especially to clarify the behavior of the atomic oxygen with the aromatic and the saturated ring. The energies of activation of the atomic oxygen reactions with cyclohexane and benzene were found to be 4500 and 4700 cal/M respectively. One of the main directions of these reactions is splitting of the ring and formation of radicals (aldehydes). Orig. art. has: 4 figures, 4 tables, 7 equations.

Card 1/2

I 41778-65

ACCESSION NR: AP5006411

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of
Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 11Mar63

ENCL: 00

SUB CODE: GC, OC

NO REF SOV: 008

OTHER: 003

BU
Card 2/2

I. 38559-65 EPA/EPA(b)-1/EA(m)/EPA(o)/EPA(j)/EPA(c) Po-1/Pr-1/Ps-1/Pt-10
ACCESSION NR: AP5029657 UR/0062/65/000/003/0408/0412

AUTHOR: Avramenko, L. I.; Kolesnikova, R. V.; Sivina, G. I.

53
52
B

TITLE: The mechanism and the rate constant of oxygen atoms with acetylene

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1965, 408-412

TOPIC TAGS: acetylene, fuel, propulsion, ram jet, supersonic combustion

ABSTRACT: The rate constant and the mechanism of the reaction $O + C_2H_2$ were studied at 30—2600 and 4—20 mm Hg. The following expression was obtained for the rate constant:

$$k = 2.9 \cdot 10^{-13} e^{-3100/RT} \text{ cm}^3 \cdot \text{sec}^{-1} \cdot \text{molecule}^{-1}$$

The atomic oxygen was generated by high-voltage discharge from molecular oxygen, and the reaction products, formaldehyde, glyoxal, carbon monoxide, and hydrogen, were determined by chemical and

Card 1/2

L 38559-65

ACCESSION NR: AP5009657

polarographic analysis. At low pressure (4 mm Hg) formaldehyde was the only aldehyde present, while at 20 mm Hg both formaldehyde and glyoxal were formed. The most important step in the atomic oxygen-acetylene reaction is splitting the $C\equiv C$ bond. Orig. art. has: 12 formulas and 3 figures. [PV]

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 02Apr63

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 007

OTHER: 002

ATD PRESS: 3225

Cord 2/2

L 31891-66 EWT(m)/EWP(j)/T IJP(c) DS/WW/JW/RM

ACC NR: AP6012522

SOURCE CODE: UR/0062/66/000/003/0417/0422

AUTHOR: Avramenko, L. I.; Krasnen'kov, V. M.

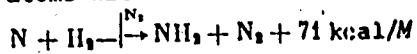
ORG: Institute of Chemical Physics, Academy of Sciences SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Reactions of nitrogen atoms. Communication 4. Rate constant and the mechanism of the elementary reaction of nitrogen atoms with molecular hydrogen

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1965, 417-422

TOPIC TAGS: hydrogen, nitrogen, ammonia, kinetics, chemical reduction

ABSTRACT: The purpose of this investigation was to elucidate the mechanism of the reaction of nitrogen atoms with hydrogen molecules and to measure the rate constant of the elementary process on the basis of the method developed previously by the authors and reported in *Izv. AN SSSR. Otd. Khim. n.*, 277 (1958). The experiments were conducted with vacuum flow apparatus. The walls of the reaction vessel were coated with TiO₂ on which recombination of nitrogen atoms takes place very well at a rate proportional to the square of the concentration of nitrogen atoms. Only the following primary process for the reaction of nitrogen atoms with H₂ need be considered:



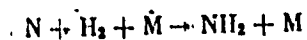
UDC: 541.124+541.127

Card 1/2

L 31891-66

ACC NR: AP6012522

Reactions of the NH_2 radical can lead to formation of only two stable products, ammonia and hydrogen, which can be condensed in a liquid nitrogen cooled trap. An attempt was made here to detect these products. Hydrazine was not detected even at 300°C reaction temperature and 10 mm pressure in the stream. Ammonia was found at 6 mm pressure and above and at room temperature. A rate constant was measured for the thermal reaction



at different temperatures and pressures. It was found that the reaction of nitrogen atoms with hydrogen proceeds with a rate constant independent of temperature. The rate constant for the reaction may be written as:

$$k = 1 \cdot 10^{-32} \text{ cm}^6 \cdot \text{molecules}^{-2} \cdot \text{sec}^{-1}$$

Orig. art. has: 2 tables, 4 figures.

SUB CODE: 07/

SUBM DATE: 23Oct63/

ORIG REF: 004/

OTH REF: 005

LS

Card 2/2

L 1130-66 EWT(m)/HPF(o)/EWP(j)/ RPL RM

ACCESSION NR: AP5027928

UII/0062/65/000/008/1336/1345

541.124 + 547.024

AUTHOR: Avramenko, I. I.; Yevlashkina, L. M.; Kolesnikova, R. V.

TITLE: Reactions of the HO₂ radical. Part 1. Mechanism of the interaction of HO₂ radicals with saturated and unsaturated hydrocarbons and with methyl alcohol

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 8, 1965, 1336-1345

TOPIC TAGS: free radical, reaction mechanism, hydrocarbon, methyl alcohol

ABSTRACT: The mechanism and primary products of the interaction of HO₂ radicals with methane, ethane, propane, ethylene, propylene, isobutylene and methyl alcohol are studied. The HO₂ radicals were generated *in situ* by the collision of H atoms with O₂. The silent discharge zone was connected with the reaction vessel through a nozzle lined with phosphoric acid. The interaction of H atoms with O₂ occurred at 60 mm Hg pressure. The reaction products were collected in a liquid nitrogen trap. The duration of the actual experiments was 20 minutes and the total pressure was 60 mm Hg. At 25°C, maximum concentration of HO₂ radicals was 1.6 · 10¹³ molecules per cm³. The experiments were conducted at 23° and 200°C. With saturated hydrocarbons except methane, the HO₂ radical produces a rupture of C-C bond and for-

Card 1/2

L 1130-66

ACCESSION NR: AP5022928

4
mation of OH radicals and a carbonyl compound. There is no reaction between HO₂ and methane. Up to 200°C there is no abstraction of H atoms from a paraffin molecule. With unsaturated hydrocarbons up to 200°C, the HO₂ radicals attack the double bond with the resulting formation of a carbonyl compound and an alcohol radical. With methyl alcohol, the two primary reaction products are: H₂O₂ and a CH₂OH radical. Orig. art. has: 3 tables, 18 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 28Jun63

ENCL: 00

SUB CODE: GC

NO REF SOV: 007

OTHER: 000

Card 2/2

ACC NR: AP6032586

SOURCE CODE: UR/0062/66/000/008/1340/1343

AUTHOR: Avramenko, L. I.; Kolesnikova, R. V.

ORG: Institute of Chemical Physics, Academy of Sciences, SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Formation of carbon atoms in the gas phase and some of their reactions

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 8, 1966, 1340-1343

TOPIC TAGS: flame spectroscopy, carbon atom, electric discharge, carbon, water vapor, luminescence

ABSTRACT: A study has identified the species which cause the blue luminosity given by the reaction of CCl_4 with gaseous products from an electric discharge through water vapor. The experiments were carried out in a previously described apparatus which is usually employed in studies of atomic hydrogen reactions (L. I. Avramenko, R. V. Kolesnikova and N. L. Kuznetsova. Izv. AN SSSR. Otd. khim. nauk, 1962, 983). Studies of the reaction of CCl_4 with gaseous products of a discharge through water (case (CCl_4 -water)) or through H_2 , O_2 , mixtures of $\text{O}_2 + \text{H}_2 + \text{Ar}$ containing 0.01% N_2 , or mixtures of $\text{Ar} + \text{O}_2$ were carried out. Studies of the effect of O_2 , NO , N_2O , and CO additives on luminosity in case (CCl_4 -water) were also conducted. Spectra of the luminosity produced in each case were recorded and identified. It was found that in case (CCl_4 -water), the luminosity is due to the excited molecules CH and C_2O . It was shown that only the simultaneous presence of H and O atoms leads

Card 1/2

UDC: 547.024+539.184.5+546.26

KUDRYAVTSEVA, K.P.; ZHUKOVETS, M.S.; ARUTYUNOV, I.S.; NOGAYEV, B.N.;
SPITSYN, V.V.; RYAKINA, M.A.; NEKHAYEVA, G.G.; IKAYEV, N.V.;
AVRAMENKO, I.M.; TSOGUYEV, T.Kh., otv.red.; BAYMATOV, P.S.,
tekhn.red.

[Economy of the North Ossetian A.S.S.R.; statistics] Narodnoe
khoziaistvo Severo-Osetinskoi ASSR; statisticheskii sbornik.
Ordzhonikidze, 1958. 130 p. (MIRA 12:10)

1. North Ossetian A.S.S.R. Statisticheskoye upravleniye.
2. Nachal'nik Statisticheskogo upravleniya Severo-Osetinskoy
ASSR (for TSoguyev).
(Ossetia--Statistics)

KVITNITSKIY, M.Ye., kand.med.nauk; AVRAMENKO, L.V.

Allergic reactions to hydrocortisone injections in the lower
nasal conchae. Zhur.ush., nos. 1 gorl. bol. 24 no.5:78-80
S-0 '64. (MIRA 18:3)

1. Iz Nauchno-issledovatel'skogo instituta otolaringologii
Minist-rstva zdravookhraneniya UkrSSR (dir. .. zasluzhennyy deyatel'
nauki prof. A.I.Kolomiychenko).

21.2100

69162
S/139/59/000/06/019/034
E032/E114

AUTHOR: Ayramenko, M.D.

TITLE: Some Factors which have an Effect on the γ -Radiation
from a Betatron 19

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika,
1959, Nr 6, pp 131-134 (USSR)

ABSTRACT: This paper was presented at the Inter-Collegiate Conference on Accelerators (Tomsk, February 1958).
An attempt is reported to increase the intensity of the γ -radiation from a betatron using an orbital contractor which alters the topography of the magnetic field at the time of injection of the electrons into the accelerating chamber of a betatron. The contractor is analogous to that described by Adams in Ref 14. The pulsed current generator which was used to produce 2.5 amp pulses 8-15 μ sec long is shown in Fig 1. The pulsed generator is synchronised with the magnetic field of the betatron by means of a permalloy probe which produces synchronising pulses fed into the input of the pulsed current generator. The contractor is shown schematically in Fig 3 and consists of two turns of a wire fixed directly on the accelerating chamber. It was found that the greatest

Card
1/3

69792

S/139/59/000/06/019/034

E032/E114

Some Factors which have an Effect on the γ -Radiation from a Betatron

increase in the intensity of the γ radiation from a betatron is achieved when the pulsed current through the contractor is delayed by 1 μ sec after the beginning of the injection of electrons into the accelerating chamber. The Table on page 134 has the following headings: Column 1 gives the intensity of the radiation without the contractor in r/min.m; Column 2 gives the intensity of radiation with the contractor included; and Column 3 gives the ratio of these intensities. The largest relative increase in the intensity is obtained when the intensity before the contractor is switched on is small. The efficiency of the contractor is found to depend on the duration of the current pulses. The optimum duration in the case of the 22 MeV betatron at the Institute of Physics of Metals was found to be 8 μ sec. The maximum increase in the intensity with the contractor included is obtained when the heating of the electron gun is reduced by 10%. By feeding the current pulses into the contractor coils through a coaxial cable the efficiency

Card
2/3

4

AVRAMENKO, N., kapitan

Without faith in people... Komm. Voorush. Sil 3 no.1:58 Ja '63.
(MIRA 16:1)

(Communist youth league) (Military discipline)

AVRAMENKO, N.D., burovoy master

We are drilling wells under complex conditions. Neftianik 5
no. 12:19 D '60. (MIRA 13:12)

1. Kontora bureniya No. 1 Neftpromyslovogo upravleniya
Malgobekneft'.
(Malgobek region--Oil well drilling)

AVRAMENKO, N.M.

Retention of the teeth roots in the treatment of periodontitis.
Stomatologiya 35 no.2:59 Mr-Apr '56. (MLBA 9:8)

1. Zaveduyushchiy subproteznym otdeleniyem stomatologicheskoy
polikliniki Kishineva MSSR.
(~~TEETH--DISEASES~~)

AVRAMENKO, N.M.

Dental caries in children suffering from tuberculosis of the
bones and joints. Stomatologiya 42 no.2:92 M=ip'63

(MIRA 17:3)

1. Iz kostno-sustavnogo sanatoriya "Dermenzhi" Moldavskoy SSR.

ANIKH, A.G.; DOGAC-SVA, G.M.; AVRAMENKO, N.V.

Mass spectrum of octahydro-1,4-dioxane. Plast. massy
no. 140-23 '65. (MIRA 18:4)

I 58812-65 EWT(m)/EWP(c)/EWP(j)/EWP(t)/EWP(b) Pc-4/Pr-4 JD/JAJ/2M
ACCESSION NR: AP501389

UR/0078/65/039/006/1507/1508
541.123

27
26
8

AUTHOR: Avramenko, N. V.; Anikdn, A. G.; Dugacheva, G. M.

TITLE: Effect of experimental conditions on the effective distribution ratio in zone melting

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 6, 1965, 1507-1508

TOPIC TAGS: zone melting, zone refining, organosilicon compound

ABSTRACT: Zone melting was carried out on dimethyldichlorosilane. Factors dependent on the experimental conditions and having an adverse influence on the effective distribution ratio (temperature gradients and overheating of the zone) were kept to a minimum. The width of the zone was uniform, and an inert gas was used when necessary. As a result of five-zone passes, the upper fraction (1/10th) of dimethyldichlorosilane was purified 38-fold, i. e. until the impurity content was 0.035 mole %. Best results were obtained when the zone melting was performed in a vertical test tube; the effective distribution ratio was estimated at 0.15. After five passes, the average content of impurities in the upper half of the bar of dimethyldichlorosilane after fusion was 0.19 mole %. A disadvantage of the method is that the test tube sometimes cracks when the
Card 1/1

L 51812-65

ACCESSION NR: AP5015893

zone approaches the bottom (the zone must go from top to bottom). To avoid breakage, the molten zone should be kept about 1 cm away from the bottom. Orig. art. has: 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova
(Moscow State University)

SUBMITTED: 02Apr64

ENCL: 00

SUB CODE: OC

NO REF SOV: 004

OTHER: 001

Card 2/2 *SNP*

POPEREKA, M.Ya.; AVRAMENKO, O.I.; ZAKHAROVA, V.A.

Electrocrystallization stresses in bismuth deposits. Zhur. fiz.
khim. 37 no.5:1165-1167 My '63. (MIRA 17:1)

1. Krasnoyarskiy politekhnicheskiy institut.