30031
S/020/61/141/001/016/021
B140/B101

Detection of oxygen atoms in the ...

of atomic O and H is up to 2 % of the total pressure. Since the measurement was made 10 mm outside the flame, the actual concentration of O and H atoms in the flame is probably higher. Papers by V. N. Kondrat'yev (Spektroskopicheskoye izucheniye khimicheskikh reaktsiy (Spectroscopic investigation of chemical reactions) Izd. AN SSSR, 1944) and V.N. Panfilov, Yu. D. Tsvetkov, V. V. Voyevodskiy (Kinetika i kataliz, 1, no. 2, 333 (160)) are mentioned. There are 1 figure, 1 table, and 12 references: 8 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: E. J. Buckler, R. G. W. Norrish, Proc. Roy. Soc., 167, 318 (1938); E. R. Rawson, R. . Beringer, Phys. Rev, 88, 677 (1952); S. Krongelb, M. W. P. Strandberg, J. Chem. Phys , 31, no 5, 1196 (1956); C. J. Ultee, J. Phys. Chem., 64, no. 12, 1873 (1960).

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

PRESENTED: May 31, 1961, by V. N. Kondrat'yev, Academician

SUBMITTED: May 24, 1961

Card 3/3

MANTASHYAN, A.A.; NALBANDYAN, A.B.

Determination of the quantum yield, chain length and its temperature dependence in photochemical reactions of methane and ethane oxidation. Izv.AN Arm.SSR.Khim,nauki 15 no.1:3-14 '62. (MIRA 15:7)

1. Institut khimicheskoy fiziki AN SSSR.
(Paraffins) (Oxidation) (Quantum chemistry)

MANTASHYAN, A.A.; NALBANDYAN, A.B.

Photochemical mercury vapor sensitized oxidation of ethane. Report No. 3: Ratios of rate constants of elementary reactions. Izv.AN Arm.SSR.Khim.nauki 15 no.1:15-24 '62. (MIRA 15:7)

1. Institut khimicheskoy fiziki AN SSSR.
(Ethane) (Oxidation) (Chemical reaction, Rate of)

AZATYAN, V.V.; AKOPYAN, L.A.; NALBANDYAN, A.B.

Detection of free hydrogen, oxygen, and deuterium atoms in rarefied flames of carbon monoxide using the electron paramagnetic resonance method. Dokl. AN Arm. SSR 35 no.3:123-128 '62. (MIRA 16:6)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent AN Armyanskoy SSR (for Nalbandyan).
(Carbon monoxide)
(Paramagnetic resonance and relaxation)

GORBAN', N.I.; NALBANDYAN, A.B.

Determination of the rate constants of elementary reactions of atomic hydrogen with simple saturated hydrocarbons. Zhur.fiz.khim. 36 no.8:1757-1761 Ag '62. (MIRA 15:8)

1. Institut khimicheskoy fiziki AN SSSR.
(Hydrogen) (Hydrocarbons) (Chemical reaction, Rate of)

AZATYAN, V.V.; NALBANDYAN, A.B.; TSUY MEN-YUAN' [TS'ui Mêng-yüan]

Determination of the rate constant of the reaction between atomic oxygen and ethane. Dokl. AN SSSR 147 no.2:361-364 N '62. (MIRA 15:11)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N. Kondrat'yevym.
(Oxygen) (Ethane)
(Chemical reaction, Rate of)

GUDKOV, S.F.; IVANOV, A.K.; KORNILOV, V.F.; LUR'YE, B.I.; NALBANDYAN, A.B.; RUDENKO, P.S.

Plant test of the direct production of formaldehyde from natural gas. Gaz. prom. 8 no.4:35-39 '63.
(MIRA 17:10)

L 12867-63 EPA/EPR/FCS(f)/EWP(j)/EPF(c)/EWT(m)/BDS/ES(s)-2 AEDC/AFFTC/
RPL/SSD/APGC Paa-4/Ps-4/Pc-4/Pr-4/Pt-4 EM/BW/WW/JW

ACCESSION NR: AP3002633 S/0171/63/016/003/0201/0203 89

AUTHOR: Azatyan, V. V.; Gershenzon, Yu. M.; Nalbandyan, A. V.; Ts'ui-Men-Yuan

TITLE: Discovery of free hydrogen & oxygen atoms in vacuum-flaming of mixtures of carbon monoxide & oxygen in the presence of small additions of ethylene

SOURCE: AN ArmSSR. Izv. Khimicheskiye nauki, v. 16, no. 3, 1963, 201-203

TOPIC TAGS: free O atom, free H atom, ethylene, self-combustion

ABSTRACT: To verify the mechanism of CO combustion in the presence of ethylene, the concentration of free O and H atoms was determined by electron paramagnetic resonance measurement. Ethylene accelerates CO combustion and lowers the limit of self combustion; the ethylene concentration at which O content is maximum is also the concentration at which the lower self-combustion limit is minimum - about 0.2%. O and H concentrations increase with ethylene increase (to about 2.5 and 0.4%, respectively), then decrease. Increase in temperature increases O content faster than H concentration. Orig. art. has: 1 figure and 8 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

Card 1/1

S/252/63/036/001/001/002
D403/D307

AUTHORS: Azatyan, V.V., Nalbandyan, A.B., Corresponding Member of the AS of the Armenian SSR, and Ts'ui Meng-Yüan

TITLE: Determination of the velocity constants of the reaction of atomic oxygen with propane and n-butane

PERIODICAL: Akademiya nauk Armyanskoy SSR. Doklady, v. 36, no. 1, 1963, 23-29

TEXT: The method developed earlier for the determination of rate constants in reactions between atomic oxygen and hydrogen-containing compounds, consisting essentially of measuring the lower limit of combustion of CO in oxygen in the presence of the hydrogen donor, was applied to the reactions $O + C_3H_8 \xrightarrow{K_3^I} OH + C_3H_7$ and $O + n\text{-}C_4H_{10} \xrightarrow{K_3^{II}} OH + n\text{-}C_4H_9$. The probable mechanism is discussed. It was found that

Card 1/2

Determination of the velocity ...

$$K_3^I = (1.85 \pm 0.60) \times 10^{-10} \cdot \exp\left(-\frac{6200 \pm 500}{RT}\right)$$

and

$$K_3^{II} = (1.3 \pm 0.4) \times 10^{-10} \cdot \exp\left(-\frac{4200 \pm 500}{RT}\right)$$

cm^3 $molecule^{-1}sec^{-1}$, between 590 and 650°C, the respective activation energies being 6.2 ± 0.5 and 4.2 ± 0.5 kcal. The results for butane were in good agreement with literature data. There are 4 figures and 3 tables.

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

SUBMITTED: October 11, 1962

L 16987-63 FCS(f)/EWP(j)/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pc-4/Pr-4
RM/WW/JD/JFW S/020/63/149/005/011/018

72
71

AUTHOR: Azatyan, V. V., Nalbandyan, A. B., and Ts'ui Meng-Yüan

TITLE: Determination of reaction rate constants when atomic hydrogen and oxygen react with ethylene

27

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 5, 1963, 1095-1098

TEXT: The authors investigate the reaction rate constants for reactions of atomic hydrogen and oxygen with ethylene in the temperature range 570-600°C on the basis of measurements of the initial limits of spontaneous ignition of hydrogen-oxygen mixtures and mixtures of carbon monoxide with oxygen in the presence of small amounts of ethylene. They determine at E_6 = 7,200 cal. the activation energy of the reaction of atomic hydrogen with ethylene, finding it to differ considerably from the corresponding values obtained at lower temperatures. Evidently, at high temperatures the mechanism of interaction changes. For while at low temperatures the predominating reaction is that of the combination of atomic hydrogen with ethylene, at low temperatures the predominating reaction is that leading to the formation of vinyl radical and molecular hydrogen. The activation energy at low temperatures for the reaction of atomic oxygen with ethylene also is much lower than that obtained by the authors. There are 3 figures.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences USSR)

Card 1/2

SACHYEN, G.A., NALBANDYAN, A.B.

Electron paramagnetic resonance method of detection of free hydrogen and oxygen atoms in rarefied flames of hydrogen sulfide with oxygen. Izv. AN SSSR Ser. khim. no.7:1340-1341 Jl '64. (MIRA 17:8)

1. Institut khimicheskoy fiziki AN SSSR.

IVANOV, O.A.; NALBANDYAN, A.B.

Oxidation of methane into formaldehyde initiated by nitrosyl chloride and nitrile chloride. Neftekhimiia 4 no.2:280-285 Mr-Ap '64 (MIRA 17:8)

MOSHKINA, R.I.; NALBANDYAN, A.B.

Oxidation of methane in formaldehyde initiated by nitrogen [illegible].
Neftekhimiia 4 no.2:286-289 Mr-Ap'64 (MIRA 17:8)

1. Institut khimicheskoy fiziki AN SSSR.

AZATYAN, V.V.; NALBANDYAN, A.B.; TSUY MEN-YUAN' [TS'ui Meng-yuan]

Determination of the rate constant of the reaction of atomic oxygen with methane. Kin. i kat. 5 no.2:201-210 Mr-Ap '64. (MIRA 17:8)

1. Institut khimicheskoy fiziki AN SSSR.

L 2[illegible]-65 EWP(c)/EWP(j)/EWT(m) [illegible]

ACCESSION NR: AP4030383 S/0271/64/017/002/0117/0121

AUTHOR: Azatyan, V. V.; Nalbandyan, A. B.; Silakhtaryan, N. T.

TITLE: Investigation of the reaction of atomic oxygen and hydrogen with propylene

SOURCE: AN ArmSSR. Izvestiya. Khimicheskiye nauki, v. 17, no. 2, 1964, 117-121

TOPIC TAGS: oxygen propylene reaction, hydrogen propylene reaction, reaction rate, rate constant, radical formation, combustion limit method, combustion mechanism

ABSTRACT: Reactions of atomic oxygen and hydrogen with propylene were investigated by the combustion limits method. The following equations represent the mechanism of CO combustion at low pressures in the presence of propylene:

$$OH + CO = CO_2 + H \quad (1)$$
$$H + O_2 = OH + O \quad (2)$$
$$O + C_3H_6 = OH + C_3H_5 \quad (3)$$

Card 1/4

$$H + \text{wall} \longrightarrow \text{termination} \quad (4)$$
$$O + \text{wall} \longrightarrow \text{termination} \quad (5)$$
$$H + C_3H_6 = H_2 + C_3H_5 \quad (6a)$$
$$H + C_3H_6 = C_3H_7 \quad (6b)$$

The following group of equations represents the hydrogen combustion mechanism:

$$OH + H = H_2O + H \quad (1)$$
$$H + O_2 = OH + O \quad (2)$$
$$O + H_2 = OH + H \quad (3)$$
$$O + C_3H_6 = OH + C_3H_5 \quad (3')$$
$$H + \text{wall} \longrightarrow \text{termination} \quad (4)$$
$$H + C_3H_6 = H_2 + C_3H_5 \quad (6a)$$
$$H + C_3H_6 = C_3H_7 \quad (6b)$$

On increasing the amount of propylene in the $2CO + O_2$ mixture the ignition limit is reduced, indicating reactions 3' and 1. With a further increase in propylene the limit is raised, showing reaction of hydrogen with propylene to form less active radicals (reactions 6a and 6b). The pressure (P) of the gas mixture for

the combustion of hydrogen at the lower ignition limit is shown by the equation:

$$P_{p_{O_2}} = \left[\frac{(K_4^0)^{H_2} \cdot T^{2.5}}{10^{19} 2K_7} + \frac{K_{6a} + K_{6b}}{2K_7} P_{p_{C_3H_6}} \right] \frac{K_3'(RH) + K_3(H_2)}{K_3'(RH) + 2K_7(H_2)}$$

where K_i are the rate constants for the respective reactions, and P_{O_2} and $P_{C_3H_6}$ are the partial pressures of O_2 and propylene. The equation for the lower ignition limit during the combustion of CO in the presence of propylene:

$$\frac{p_{CO} p_{O_2}^{CO}}{1+\beta} = \frac{(K_4^0)^{CO} \cdot T^{2.5}}{10^{19} K_3} \left[1 + \frac{(K_5^0)^{CO} \cdot T^{2.5}}{10^{19} p_{CO} p_{C_3H_6}^{CO} K_3'} \right]$$

where

$$\beta = \frac{K_6 p_{CO} p_{O_2}^{CO} \cdot 10^{19}}{(K_4^0)^{CO} \cdot T^{2.5}}, \qquad K_6 = K_{6a} + K_{6b}$$

The rate constants for equations 3' and 6 for propylene at 640C were:

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L 23942-65
ACCESSION NR: AP4030383

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$K'_3 = 1.2 \times 10^{-11}$, $K_6 = 4.8 \times 10^{-13}$ cm^3 $molec^{-1}$ sec^{-1}. The reaction rates of oxygen and of hydrogen with propylene are faster than with ethylene. Orig. art. has: 3 figures and 14 equations.

ASSOCIATION: Institut khimicheskoy fiziki, AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 03Sep63 ENCL: 00 SUB CODE: FP

NO REF SOV: 006 OTHER: 002

Card 4/4

ACCESSION NR: AP4012972 S/0020/64/154/004/0883/0885

AUTHORS: Balakhnin, V.P.; Gershenzon, Yu. M.; Kondrat'yev, V.N. (Academician); Nalbandyan, A.B.

TITLE: Measuring the concentrations of atomic oxygen and hydrogen in a rarefied hydrogen flame by the method of electron paramagnetic

SOURCE: AN SSSR. Doklady*, v. 154, no. 4, 1964, 883-885

TOPIC TAGS: elementary reaction, successive reaction, stoichiometry, stoichiometric mixture, resonator, atom concentration, atomic oxygen, atomic hydrogen, rarefied flame, magnetic moment

ABSTRACT: This project relates to the finding of atomic oxygen and the measurements of the concentration of O and H atoms in a rarefied hydrogen flame by the spectra of the electron paramagnetic resonance. The jet-type reactor used in the experiment was placed inside the resonator which made it possible to determine the O and H atom concentrations in the combustion area. The project began with a study

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ACCESSION NR: AP4012972

of a rarefied flame of a mixture containing 5% H_2 and 95% O_2. Large quantities of atomic oxygen (up to 6 x 10^{15} particles) were recorded in the flame of that mixture. The concentration of atomic hydrogen in this case lies within the sensitivity range of the instrument (1-2 x 10^{14} particles). The area of preferential formation of atomic hydrogen is found in mixtures containing 15% and less hydrogen. The area of preferential formation of atomic hydrogen lies in the mixtures containing over 70% molecular hydrogen. It should be pointed out that in the determination of the absolute concentration of hydrogen and oxygen atoms, the difference in their magnetic moments was not taken into account, and the resulting concentrations of atomic oxygen were therefore 4.5 times as large. Orig. art. has 2 figures and 1 formula.

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

Card 2/2

ACCESSION NR: AP4016511 S/0020/64/154/005/1142/1144

AUTHORS: Balakhnin, V.P.; Gershenzon, Yu. M.; Kondrat'yev, V.N. (Academician); Nalbandyan, A.B.

TITLE: Discovering a free hydroxyl in a rarefied hydrogen flame by the electron paramagnetic resonance method

SOURCE: AN SSSR. Doklady*, v. 154, no. 5, 1964, 1142-1144

TOPIC TAGS: hydrogen flame, rarefied flame, microwave spectrum, hydroxyl, free hydroxyl, dipole, dipole transition, hydroxyl absorption, resonator, linear velocity, OH spectrum, OH absorption, atomic oxygen, molecular oxygen

ABSTRACT: Studies made by Dousmanis, Radford and other researchers revealed that the microwave spectrum of OH absorption is dependent on electric dipole transitions, the intensity of which is considerably greater than that of the ordinary electron paramagnetic resonance lines brought about by the magnetic dipole transitions. It

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ACCESSION NR: AP4016511

follows that when the pressure in the flame of H_2 with O_2 is low, it is possible to detect the signals of paramagnetic absorption of a free hydroxyl; the discovery of OH is possible only when the particles are placed in the loop of an ultra-high frequency electric field. The reactor made for investigation purposes (from quartz) was designed in such a way that the absorbing cell filled the entire resonator and this made it possible to observe the spectrum determined by the electric and magnetic dipole transitions. It was found that the OH sign gradually rises with the increasing H_2 content and reaches a maximum when the latter amounts to 60%, while the H sign shows a sharper increase and reaches its maximum value at 70% H_2. No signal of atomic oxygen was observed in our experiment as it was completely suppressed by the signal of molecular oxygen, the amplitude of which at a low temperature of the absorbing cells is considerably greater than the O signal. However, the O concentrations previously observed in H_2-poor mixtures have been considerably greater (60-80 times) than the concentrations of atomic hydrogen.

Card 2/3

ACCESSION NR: AP4016511

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

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

SUBMITTED: 050ct63	DATE ACQ: 12Mar64	ENCL: 00
SUB CODE: PH	NO REF SOV: 003	OTHER: 004

Card 3/3

AZATYAN, V.V.; NALBANDYAN, A.B., akademik; OGANESYAN, K.T.

Reaction between oxygen atoms and methyl alcohol. Dokl. AN SSSR 157 no.4:930-933 Ag '64 (MIRA 17:8)

1. Institut khimicheskoy fiziki AN SSSR. 2. AN ArmSSR (for Nalbandyan).

L 21415-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RPL WW/JTW/RM

AUTHOR: Azatyan, V. V.; Nalbandyan, A. B.(Academician AN ArmSSR); Sarkisyan, E. N.

TITLE: Discovery of atomic oxygen in the cold flame oxidation of carbon disulfide by molecular oxygen

SOURCE: AN SSSR. Doklady*, v. 158, no. 1, 1964, 179-181

TOPIC TAGS: carbon disulfide, atomic oxygen, cold flame oxidation, atomic oxygen formation, low temperature combustion, EPR spectra

ABSTRACT: The low temperature combustion reaction of carbon disulfide with molecular oxygen was subjected to EPR studies to determine the formation of atomic oxygen and the dependence of its concentration on reaction conditions. In reactions run with $\alpha = 0.8-14$ ($\alpha = [O_2]/[CS_2]$) at 269-271C under 3-6 mm Hg pressure, the EPR signal for atomic oxygen appeared at $\alpha \geq 2.5$. In reactions at ~370C, no atomic oxygen was formed at $\alpha < 2.2$; atomic oxygen formation started at $\alpha = 2.2 - 2.5$ and its concentration increased with increase in α to a maxi-

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L 21415-65
ACCESSION NR: AP4045104

molecular oxygen concentration) of molecular hydrogen reduced atomic oxygen

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR

POROYKOVA, A.I.; NAIBANDYAN, A.B.

Photochemical oxidation of propane in the presence of Cl_2.
Kin. i kat. 6 no. 6:982-989 N-D '65 (MIRA 19:1)

1. Institut khimicheskoy fiziki AN SSSR. Submitted March 20, 1965.

OGANESYAN, K.T.; NALBANDYAN, A.B.

Determination of the rate constants of reactions of atomic hydrogen with propyl and butyl alcohols. Izv. AN Arm. SSR. Khim. nauki 18 no.3:237-243 '65. (MIRA 18:11)

1. Institut khimicheskoy fiziki AN SSSR. Submitted September 2, 1964.

OGANESYAN, K.T.; NALBANDYAN, A.B., akademik; PARSAMYAN, N.I.

Determination of the rate constant of H atom reaction with C_2H_5OH molecule. Dokl. AN Arm. SSR 40 no.3:159-163 '65.
(MIRA 18:12)

1. Institut khimicheskoy fiziki AN SSSR i Laboratoriya khimicheskoy fiziki AN ArmSSR. 2. AN ArmSSR (for Nalbandyan).
Submitted November 18, 1964.

OGANESYAN, K.T.; NALBANDYAN, A.B., akademik

Determination of the rate constants in the reactions of H and O atoms with the NH_3 molecule. Dokl. AN SSSR 160 no.1: 162-165 Ja '65. (MIRA 18:2)

1. AN ArmSSR (for Nalbandyan).

GERSHENZON, Yu.M.; NALBANDYAN, A.B., akademik; SAGHYAN, G.A.

Electron paramagnetic resonance spectrum of a rarefied hydrogen sulfide flame. Dokl. AN SSSR 163 no.4:927-930 Ag '65.
(MIRA 18:8)

1. Institut khimicheskoy fiziki AN SSSR. 2. AN ArmSSR (for Nalbandyan).

POROIKOVA, A.I.; NALBANDYAN, A.B., akademik

Formation of alcohols in the photochemical oxidation of propane initiated by chlorine. Dokl. AN SSSR 163 no.5:1165-1168 Ag '65. (MIRA 18:8)

1. Institut khimicheskoy fiziki AN SSSR. 2. AN ArmSSR (for Nalbandyan).

L 23822-66 EWT(m)/EWP(j)/T WW/JW/WE/RM

ACC NR: AP6014401 SOURCE CODE: UR/0426/66/019/002/0083/0088

AUTHOR: Poroykova, A. I.; Voyevodskiy, V. V.; Nalbandyan, A. B.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Oxidation mechanism of propane in the presence of hydrogen bromide and bromine. I. The reaction of propyl and isopropyl hydroperoxides with hydrogen bromide and bromine in the gas phase

SOURCE: Armyanskiy khimicheskiy zhurnal, v. 19, no. 2, 1966, 83-88

TOPIC TAGS: hydrocarbon oxidation, reaction mechanism, combustion

ABSTRACT: It was found that isopropyl hydroperoxide and n-propyl hydroperoxide react with HBr and Br_2 at room temperature to form, respectively, acetone and a mixture of propionaldehyde and n-propyl alcohol. The reaction between isopropyl hydroperoxide and HBr follows second-order kinetics; the reaction rate constant in the range 18—62C is

$$k_1 = 0{,}8 \cdot 10^{-11} e^{-\frac{9200 \pm 1500}{RT}} \frac{cm^3}{molecule \cdot sec}$$

The investigation of the reaction of hydroperoxides with Br_2 is complicated by the

Card 1/2 UDC: 541.124+542.943+547.213

L 23822-66

ACC NR: AP6014401

fact that the reaction takes place at the wall, as well as in the homogeneous phase. Orig. art. has: 5 figures. [VS]

SUB CODE: 21/ SUBM DATE: 01Sep65/ ORIG REF: 012/ OTH REF: 003/ ATD PRESS: 4247

Card 2/2

L 23823-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/JW/WE/RM

ACC NR: AP6014402 SOURCE CODE: UR/0426/66/019/002/0089/0095

AUTHOR: Poroykova, A. I.; Voyevodskiy, V. V.; Nalbandyan, A. B. 34 B

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Oxidation mechanism of propane in the presence of hydrogen bromide and bromine. II. Evaluation of the rate constant of the reaction of the RO_2 radical with hydrogen bromide

SOURCE: Armyanskiy khimicheskiy zhurnal, v. 19, no. 2, 1966, 89-95

TOPIC TAGS: hydrocarbon oxidation, reaction mechanism, propulsion

ABSTRACT: The photochemical oxidation of propane, initiated by addition of small amounts of hydrogen bromide (0.5—5%), was studied in the temperature range 150—240C. Acetone was found to be the main product of oxidation. The small amounts of acetaldehyde formed in the course of the reaction easily undergo further reactions under the experimental conditions employed. The fast stream method used made it possible to measure the amounts of acetaldehyde formed and to determine the ratio of the reaction rate constants for reactions (1) and (2):

$$(CH_3)_2CHO_2 + HBr \longrightarrow (CH_3)_2CHO_2H + Br \longrightarrow CH_3COCH_3 + Br + H_2O, \quad (1)$$

$$CH_3COCH_3 + Br + H_2O$$

$$(CH_3)_2CHO_2 \longrightarrow CH_3CHO + CH_3O. \quad (2)$$

Card 1/2 UDC: 541.124+542.943+547.213

L 23823-66

ACC NR: AP6014402

The ratio of the reaction rate constants was found to be

$$\frac{K_1}{K_2} = 10^{-22,9} e^{\frac{1670}{RT}} \frac{cm^3}{molecule}$$

Orig. art. has: 4 figures. [VS]

SUB CODE: 21/ SUBM DATE: 01Sep64/ ORIG REF: 015/ OTH REF: 004/ ATD PRESS: 4247

Card 2/2

L 23824-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/JW/WE/RM

ACC NR: AP6014403 SOURCE CODE: UR/0426/66/019/002/0096/0110

AUTHOR: Poroykova, A. I.; Voyevodskiy, V. V.; Nalbandyan, A. B.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: The mechanism of propane oxidation in the presence of hydrogen bromide and bromine. III. Photochemical oxidation of propane in the presence of Br_2

SOURCE: Armyanskiy khimicheskiy zhurnal, v. 19, no. 2, 1966, 96-110

TOPIC TAGS: hydrocarbon oxidation, reaction mechanism, combustion

ABSTRACT: The photochemical oxidation of propane, initiated by addition of Br_2, was studied in the temperature range 160—240C. In the early phase of the reaction, when HBr is present only in negligible amounts, acetone was found to be the predominant reaction product. This observation, together with a number of kinetic relationships, as well as the absence of CH_3OH in the reaction products, indicate that the formation of acetone can best be explained by the following reactions alone:

$$iso\text{-}C_3H_7O_2 + HBr \rightarrow [C_3H_7O_2H] + Br$$
$$[C_3H_7O_2H] \rightarrow CH_3COCH_3 + HBr + OH,$$
$$iso\text{-}C_3H_7O_2 + C_3H_8 \longrightarrow n\text{-}C_3H_7O_2H + C_3H_7,$$
$$iso\text{-}C_3H_7O_2H \xrightarrow[Br_2]{HBr} CH_3COCH_3 + H_2O.$$

Card 1/2 UDC: 541.124+542.943+547.213

L 23824-66

ACC NR: AP6014403 O

The possible reaction $iso\text{-}C_3H_7O_2 + Br_2 \longrightarrow CH_3COCH_3 + HBr + BrO_2$ and the mechanism of acetone and HBr formation, which is in good agreement with the experimental data, are examined. Orig. art. has: 6 figures. [VS]

SUB CODE: 21/ SUBM DATE: 04Sep65/ ORIG REF: 016/ OTH REF: 025/ ATD PRESS: 4247

Card 2/2 FV

L 23881-66 EWT(1) IJP(c) WW/GG

ACC NR: AP6014404 SOURCE CODE: UR/0426/66/019/002/0135/0139

48
B

AUTHOR: Sachyan, G. A.; Nalbandyan, A. B.

ORG: Laboratory of Chemical Physics, AN ArmSSR (Laboratoriya khimicheskoy fiziki AN ArmSSR)

TITLE: An EPR study of the behavior of hydrogen atoms, oxygen atoms, and reaction products in a rarefied hydrogen sulfide flame

SOURCE: Armyanskiy khimicheskiy zhurnal, v. 19, no. 2, 1966, 135-139

TOPIC TAGS: free radical , flame study, combustion

ABSTRACT: The oxidation of hydrogen sulfide is governed by a branched chain mechanism. Rarefied hydrogen sulfide flames were subjected to EPR measurements. The

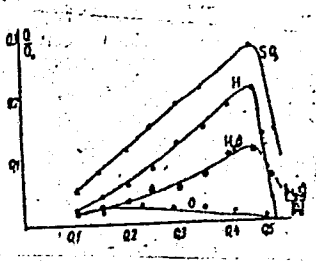

Fig. 1. Dependence of the concentration of SO_2, H_2O, H and O on the composition of the reaction mixture at an initial pressure of 5 mm. The ordinate represents the ratio of the amount of the product obtained Q to the amount of starting reaction mixture Q_0. The maximum concentration of hydrogen atoms was $\sim 10^{15}$ particles/cm^3, that of oxygen atoms $\sim 10^{14}$ particles/cm^3.

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UDC: 542.943+546.11+546.21+546.221.1

L 23881-66
ACC NR: AP6014404 O

effect of the composition of the reaction mixture on the changes in concentration of hydrogen atoms and oxygen atoms and on the reaction products (SO_2 + H_2O) was demonstrated. It was shown that new products appear in the absence of complete combustion. The effect of additions of n-butane on the lower ignition limit of hydrogen sulfide was examined. Orig. art. has: 1 figure. [VS]

SUB CODE: 21/ SUBM DATE: 27Dec65/ ORIG REF: 013/ OTH REF: 001/ ATD PRESS: 4246

Card 2/2 ada

L 23825-66 EWT(m) EWP(j)/T WW/JW/JWD/WE/RM

ACC NR: AP6014405 SOURCE CODE: UR/0426/66/019/002/0150/0156

AUTHOR: Oganesyan, K. T.; Nalbandyan, A. B. 54 B

ORG: Laboratory of Chemical Physics, AN ArmSSR (Laboratoriya khimicheskoy fiziki AN ArmSSR)

TITLE: The reaction of atomic hydrogen with dimethylamine and trimethylamine

SOURCE: Armyanskiy khimicheskiy zhurnal, v. 19, no. 2, 1966, 150-156

TOPIC TAGS: free radical, hydrogen oxidation, combustion

ABSTRACT: The effect of dimethylamine and trimethylamine addition on the combustion of stoichiometric hydrogen-oxygen mixtures was investigated. It was shown that trimethylamine is a better inhibitor than dimethylamine. The following values for the effective rate constants of H + amine → were found:

$$K_{H+(CH_3)_2NH} = (0{,}27 \pm 0{,}10)\cdot 10^{-10}\, e^{-\frac{10800\pm700}{RT}} \frac{cm^3}{mole\cdot sec}$$

$$K_{H+(CH_3)_3N} = (1{,}22 \pm 0{,}45)\cdot 10^{-10}\, e^{-\frac{11800\pm700}{RT}} \frac{cm^3}{mole\cdot sec}$$

Comparison of rate constants indicates that on changing from dimethylamine to tri-

Card 1/2 UDC: 546.11+547.233

L 23825-66

ACC NR: AP6014405

methylamine the numerical coefficient and the activation energy increase. The low value of E for H + $(CH_3)_2NH$, as compared to that for triethylamine, probably reflects the weak N-H bond. Further studies are needed for individual determination of rate constants of abstraction of hydrogen atoms from CH_3 and NH groups of dimethylamine on attack by atomic hydrogen. Orig. art. has: 5 figures. [VS]

SUB CODE: 21/ SUBM DATE: 28Dec65/ ORIG REF: 007/ OTH REF: 011/ ATD PRESS: 4247

Card 2/2

L 26001-66 EWT(m)/EWP(j)/T DS/WE/RM

ACC NR: AP6015616 SOURCE CODE: UR/0020/66/168/002/0386/0387

AUTHOR: Poroykova, A. I.; Voyevodskiy, V. V. (Academician); Nalbandyan, A. B. (Academician AN ArmSSR) 38 B

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

TITLE: Quantum yield of acetone and length of the reaction chain in photochemical oxidation of propane in the presence of bromine

SOURCE: AN SSSR. Doklady, v. 168, no. 2, 1966, 386-387

TOPIC TAGS: photochemical oxidation, propane, acetone, quantum yield, chain reaction kinetics

ABSTRACT: Bromine-initiated photochemical oxidation of propane has been studied to determine quantum yield Φ of the main product, acetone, and the length of the reaction chain, $\nu = 1/2\Phi$. Oxidation was carried out in a jet vacuum apparatus at 202C with illumination by a mercury quartz lamp under given partial pressures of reactants. The degree of conversion was small and the rate of acetone formation constant. The formula

$$\Phi = \frac{1}{I_0}\frac{d(CH_3COCH_3)}{dt}$$

was used to calculate quantum yield, where I_0 is the rate of initiation and

Card 1/2 UDC: 541.7

L 26001-66

ACC NR: AP6015616

$d(CH_3COCH_3)/dt$ is the rate of acetone formation. I_0 was determined by measuring the rate of HBr formation in the photochemical reaction of hydrogen and bromine. The latter reaction was carried out in the same apparatus at 266C. The rates of acetone and HBr formation were calculated from the time-dependence of the acetone and HBr yields. Φ of acetone was found to be 75 and $\nu = 37$. Orig. art. has: 1 figure and 8 formulas. [JK]

SUB CODE: 07/ SUBM DATE: 17Aug65/ ORIG REF: 006/ OTH REF: 006/ ATD PRESS: 4255

Card 2/2

L 34042-66 EWT(m)/EWP(j)/T WW/JW/JWD/WE/RM

ACC NR: AP6019532 SOURCE CODE: UR/0020/66/168/004/0851/0853

AUTHOR: Gershenzon, Yu. M.; Glebova, O. N.; Azatyan, V. V.; Balakhnin, V. P.; Nalbandyan, A. B. (Academician AN ArmSSR)

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

TITLE: Detection of the OH radical by the EPR method in the rarefied flame of carbon monoxide in the presence of small amounts of hydrogen

SOURCE: AN SSSR. Doklady, v. 168, no. 4, 1966, 851-853

TOPIC TAGS: carbon monoxide combustion, carbon monoxide flame, hydrogen donor, hydroxyl radical, EPR method

ABSTRACT: The basic processes of the propagation and branching of combustion of CO in the presence of a small amount of H_2 are the following:

$$CO + OH \rightarrow CO_2 + H; \quad (I)$$
$$H + O_2 \rightarrow OH + O; \quad (II)$$
$$O + H_2 \rightarrow OH + H. \quad (III)$$

Card 1/4 UDC: 543.422

For small amounts of H_2, reaction (III) is rate determining. Earlier, the EPR method was applied to detect noticeable concentrations of oxygen and hydrogen atoms in the rarified CO flame in the presence of hydrogen donors such as H_2, CH_4, C_2H_4, H_2O, etc. For direct detection and determination of all three active species, i.e., hydrogen and oxygen atoms and the OH radical, the absorption cell was specially made to fit completely into the space in the resonator and was placed in close proximity to the reaction furnace. Measurement of the absolute concentrations of OH radicals was made with respect to molecular oxygen according to the formula:

$$N_{OH} = N_{O_2} \frac{Q_{OH}}{Q_{O_2}} \frac{f_+}{l_+}.$$

where N is the concentration; Q is the numerical coefficient varying with the absorption bands, e.g., ranging from 40 to 200 for oxygen; and f_+ and l_+ are the space factors for the magnetic and the electric fields, respectively. The results of the measurements are given in the form of two graphs which indicate the dependence of the concentrations of active centers on the time of contact and the amount of added H_2.

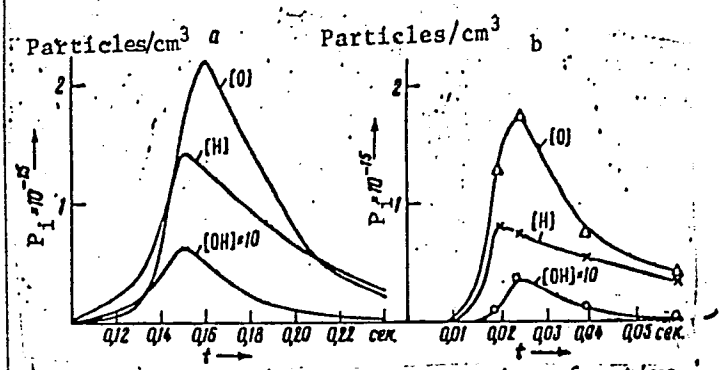

Fig. 1. Dependence of concentration of active centers on the contact time (T = 923 K, P = 3 mm Hg; H_2 = 6%)

a - Calculated; b - experimental.

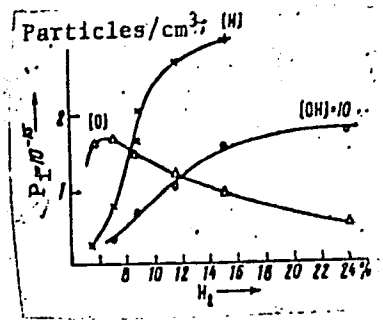

Figure 2. Dependence of the maximum concentration of active centers on the addition of hydrogen (T = 923 K, P = 3 mm Hg, W = 30 to 40 cm^3/min.

Figure 2 indicates that the oxygen concentration passes through a maximum, contrary to the monotonically increasing concentration of H and OH. This is explained by the assumption that in the case of small amounts of added H_2, reaction (III) is the rate determining step, and in the case of high H_2 concentration, reaction (II) is the rate

L 34042-66

ACC NR: AP6019532

determining step. The OH concentration is the smallest because the rate constant of reaction (I) is the largest. Orig. art. has: 2 figures. [BN]

SUB CODE: 21, 07 SUBM DATE: 30Aug65/ ORIG REF: 009/ OTH REF: 008/

ATD PRESS: 5014

Card 4/4

L 06523-67 EWT(m), EWP(WW/JW/JWD/RM

ACC NR: AP7000470 SOURCE CODE: UR/0074/66/035/004/0587/0618

NALBANDYAN, A. B.; Institute of Chemical Physics, Academy of Sciences USSR (Institut khimicheskoy fiziki AN SSSR)

42

B

"Study of the Kinetics and Mechanism of Branched Chain Reactions in the Gas Phase"

Moscow, Uspekhi Khimii, Vol 35, No 4, 1966, pp 587-618

Abstract: This review article discusses the basic results of research conducted chiefly at the Institute of Chemical Physics, Academy of Sciences USSR in the last five to six years in the field of branched chain reactions, based on the theory of N. N. Semenov. The mechanisms of complex chemical processes have been verified and new systems have been studied with the aid of new techniques such as electron paramagnetic resonance and the use of electronic computers. The main topics discussed are the study of the kinetics and mechanism of combustion of hydrogen and carbon monoxide by the electron paramagnetic resonance method, including studies of hydrogen combusion at low pressures and the combustion of carbon monoxide in the presence of small additions of hydrogen; methods of determining the rate constants of elementary reactions of hydrogen and oxygen atoms with various compounds, including citations of the values of the rate constants of elementary reactions of hydrogen and oxygen atoms with various molecules; the use of the

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L 06525-67

ACC NR: AP7000470

electron paramagnetic resonance method to establish the site of attack of atomic oxygen on a complex molecule; and the investigation of certain rarefied flames by the electron paramagnetic resonance method, including the reaction of sulfur vapors with oxygen, rarefied flames of carbon disulfide with oxygen, and rarefied flames of hydrogen sulfide. Orig. art. has: 22 figures, 12 formulas and 5 tables.

TOPIC TAGS: electron paramagnetic resonance, chain reaction, reaction mechanism, chemical reaction kinetics

SUB CODE: 07 / SUBM DATE: none / ORIG REF: 077 / OTH REF: 029

Card 2/2 egs

ACC NR: AP6034758 (A,N) SOURCE CODE: UR/0020/66/170/005/1117/1120

AUTHOR: Balakhnin, V. P.; Kondrat'yev, V. N. (Academician); Malbandyan, A. B. (Academician AN ArmSSR); Gershenzon, Yu. M.

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

TITLE: Quantitative study of the hydrogen combustion mechanism in the vicinity of the lower limit of ignition

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1117-1120

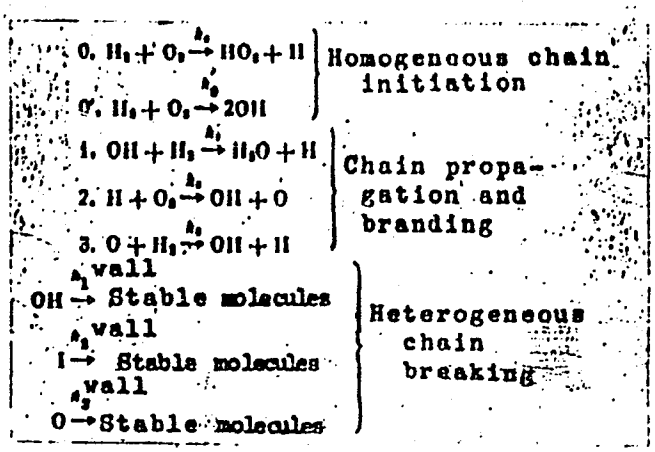
TOPIC TAGS: hydrogen, ~~hydrogen~~ combustion, reaction kinetics, reaction mechanism, ignition

ABSTRACT: A calculation has been made of the rate constants of certain elementary reactions in the mechanism of hydrogen combustion at 900—1052K using absolute concentrations of active centers measured by EPR spectroscopy as a function of flow velocity. The amount of water formed was determined by freezing in a calibrated trap. The concentration of molecular oxygen was determined by direct EPR spectroscopic measurement at the exit of the reaction zone. The following rate constants were calculated at several temperatures in the range 900—1052K:

Card 1/4

ACC NR: AP6034758

k_1, k_2, k_3, and k_2^{wall} for the reactions,



The optimum values of these and some other constants were selected by varying them and comparing the results of an electronic-computer solution of the appropriate system of equations with the experimentally measured maximum active-center concentrations and degrees of combustion.

Card 2/4

ACC NR: AP6034758

It was shown that the maximum active-center concentration (in the region of greatest intensity of the combustion zone) are not affected by longitudinal diffusion. A similar result was obtained on varying the initiation rate constant. From the value of the induction period in best agreement with the experimental value of contact time, reaction (0') was selected as the most optimum process and its constant was

$$k_0' = 10^{12.4} e^{-39000/RT} \text{ cm}^3 \cdot \text{mol}^{-1} \cdot \text{sec}^{-1}$$

Variation of values of the rate constants of reactions which are the reverse of chain branching and chain propagation (1, 2, and 3) showed that the best agreement of calculation and experiment is obtained when all three reverse reactions are taken into account, although

$$H + O_2 \leftarrow OH + O$$

has the greatest effect on maximum concentrations. The maximum concentrations of H, O, OH and the concentrations of O_2 and H_2O obtained by solving the system of equations were compared with experimental values.

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ACC NR: AP6034758

The best agreement was obtained for the following values of rate constants:

$$k_1 = 2 \cdot 10^{-10} \cdot e^{-8000/RT}\ \text{cm}^3\ \text{mol}^{-1}\ \text{sec}^{-1}$$
$$k_2 = 1{,}7 \cdot 10^{-10} \cdot e^{-16600/RT}\ \text{cm}^3\ \text{mol}^{-1}\ \text{sec}^{-1}$$
$$k_3 = 0{,}0 \cdot 10^{-10} \cdot e^{-11700/RT}\ \text{cm}^3\ \text{mol}^{-1}\ \text{sec}^{-1}$$

It was shown that variation of the values of the rate constant of reaction (1 wall) has no effect on the results of the solution; therefore, its rate constant cannot be determined by this method. The optimum values of probabilities of heterogeneous destruction of H and O atoms were

$$\gamma_H = (2{,}4 \pm 0{,}8) \cdot 10^{-3} \cdot e^{-3000/RT},$$
$$\gamma_O = (8{,}0 \pm 4{,}8) \cdot 10^{-2} \cdot e^{-6000/RT}.$$

[WA-68]

SUB CODE: 21, 07/ SUBM DATE: 05Apr66/ ORIG REF: 011/
OTH REF: 006

Card 4/4

ACC NR: AP6034758 (A,N) SOURCE CODE: UR/0020/66/170/005/1117/1120

AUTHOR: Balakhnin, V. P.; Kondrat'yev, V. N. (Academician); Nalbandyan, A. B. (Academician AN ArmSSR); Gershenzon, Yu. M.

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

TITLE: Quantitative study of the hydrogen combustion mechanism in the vicinity of the lower limit of ignition

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1117-1120

TOPIC TAGS: hydrogen, ~~hydrogen~~ combustion, reaction kinetics, reaction mechanism, ignition

ABSTRACT: A calculation has been made of the rate constants of certain elementary reactions in the mechanism of hydrogen combustion at 900—1052K using absolute concentrations of active centers measured by EPR spectroscopy as a function of flow velocity. The amount of water formed was determined by freezing in a calibrated trap. The concentration of molecular oxygen was determined by direct EPR spectroscopic measurement at the exit of the reaction zone. The following rate constants were calculated at several temperatures in the range 900—1052K:

Card 1/4

ACC NR: AP6034758

k_1, k_2, k_3, and k_2^{wall} for the reactions,

0. $H_2 + O_2 \xrightarrow{k_0} HO_2 + H$ 0'. $H_2 + O_2 \xrightarrow{k_0'} 2OH$	Homogeneous chain initiation
1. $OH + H_2 \xrightarrow{k_1} H_2O + H$ 2. $H + O_2 \xrightarrow{k_2} OH + O$ 3. $O + H_2 \xrightarrow{k_3} OH + H$	Chain propagation and branding
$OH \xrightarrow{k_1^{wall}}$ Stable molecules $I \xrightarrow{k_2^{wall}}$ Stable molecules $O \xrightarrow{k_2^{wall}}$ Stable molecules	Heterogeneous chain breaking

The optimum values of these and some other constants were selected by varying them and comparing the results of an electronic-computer solution of the appropriate system of equations with the experimentally measured maximum active-center concentrations and degrees of combustion.

Card 2/4

ACC NR: AP6034758

It was shown that the maximum active-center concentration (in the region of greatest intensity of the combustion zone) are not affected by longitudinal diffusion. A similar result was obtained on varying the initiation rate constant. From the value of the induction period in best agreement with the experimental value of contact time, reaction (0') was selected as the most optimum process and its constant was

$$k_0' = 10^{12.4} e^{-39000/RT} \text{ cm}^3 \cdot \text{mol}^{-1} \cdot \text{sec}^{-1}.$$

Variation of values of the rate constants of reactions which are the reverse of chain branching and chain propagation (1, 2, and 3) showed that the best agreement of calculation and experiment is obtained when all three reverse reactions are taken into account, although

$$H + O_2 \leftarrow OH + O$$

has the greatest effect on maximum concentrations. The maximum concentrations of H, O, OH and the concentrations of O_2 and H_2O obtained by solving the system of equations were compared with experimental values.

Card 3/4

ACC NR: AP6034758

The best agreement was obtained for the following values of rate constants:

$$k_1 = 2 \cdot 10^{-10} \cdot e^{-8000/RT} \text{ cm}^3 \text{ mol}^{-1} \text{ sec}^{-1}$$
$$k_2 = 1{,}7 \cdot 10^{-10} \cdot e^{-16600/RT} \text{ cm}^3 \text{ mol}^{-1} \text{ sec}^{-1}$$
$$k_3 = 0{,}9 \cdot 10^{-10} \cdot e^{-11700/RT} \text{ cm}^3 \text{ mol}^{-1} \text{ sec}^{-1}$$

It was shown that variation of the values of the rate constant of reaction (1 wall) has no effect on the results of the solution; therefore, its rate constant cannot be determined by this method. The optimum values of probabilities of heterogeneous destruction of H and O atoms were

$$\varepsilon_H = (2{,}4 \pm 0{,}8) \cdot 10^{-3} \cdot e^{-5000/RT},$$
$$\varepsilon_O = (8{,}0 \pm 4{,}8) \cdot 10^{-2} \cdot e^{-6000/RT}.$$

[WA-68]

SUB CODE: 21, 07/ SUBM DATE: 05Apr66/ ORIG REF: 011/
OTH REF: 006

Card 4/4

ACC NR: AP6011688 SOURCE CODE: UR/0063/66/011/002/0162/0168

AUTHOR: Azatyan, V. V. (Candidate of chemical sciences); Nalbandyan, A. B. (Academician AN ArmSSR)

ORG: none

TITLE: Determination of the rate constants of elementary reactions by the flammability limit method

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo. Zhurnal, v. 11, no. 2, 1966, 162-168

TOPIC TAGS: chemical reaction, reaction rate, reaction mechanism, flammability limit

ABSTRACT: In this article the authors survey and discuss various methods of determining the rate constants of elementary reactions. Using the method of flammability limits, the authors state that at the flammability limit the differential equations describing the change of concentrations of the reaction components can be reduced to algebraic equations describing the boundaries of the region of chain combustion. By the simultaneous solution of these equations with the use of the values of the limiting concentrations of the starting substances it is proposed to determine the rate constants of the reactions participating in the competition

 UDC: 541.036

ACC NR: AP6011688

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of the branching and breaking of chains. In this case it is necessary to know the mechanism of the process, i.e., the totality of the basic elementary reactions, but there is no need to know the concentrations of atoms and radicals, which is one of the virtues of the method. Until recently the rates of elementary reactions were determined by the method of limits only by studying the combustion of hydrogen-oxygen mixtures containing additions of various substances. In such mixtures the rates of branching and breaking of the chains are determined only by the reactions of atomic hydrogen. The atoms O and radicals OH enter, for all practical purposes, only into the reaction of chain development. The reactions of chain breakage with the participation of these particles in the mixtures, which are not poor in hydrogen, do not play a substantial role. Therefore only the rate constants of the reactions of hydrogen atoms were determined by the method of limits. The authors propose to study the reaction of atomic oxygen by the method of limits by selecting a system in which these reactions determine the magnitude of the rate of branching or breaking of the chain. As such a system the authors select a rarefied plane of CO and O_2 mixtures containing small additions of H_2 or other hydrogen-containing substances. The rate constants of a number of reactions which the authors determined by the method of limits are given in tabular form. Orig. art. has: 2 tables, 5 figures, and 14 formulas.

SUB CODE: 07/ SUBM DATE: None/ ORIG REF: 027/ OTH REF: 023

Card 2/2

PANOSYAN, A.K.; AKHINYAN, R.M.; NALBANDYAN, A.Dz.

Effect of fertilizers on the activity of azotobacterin. Izv.AN Arm. SSR. Biol. i sel'khoz. nauki 9 no.9:51-55 S '56. (MLRA 9:11)

1. Sektor mikrobiologii Akademii nauk Armyanskoy SSR.
(AZOTOBACTER) (FERTILIZERS AND MANURES)

USSR/Cultivated Plants. Fruits. Berries. H

Abs Jour : Ref Zhur-Biol., No 15, 1958, 68375

Author : Minasyan, A. I., Malbandyan, A. D., Makrosyan, G. Ye.

Inst : Armenian Scientific Research Institute of Viniculture, Wine Production, and Fructiculture.

Title : The Effect of Fertilizers on the Microbiological Activity of Vineyard Soils.

Orig Pub : Byul. nauchno-tekhn. inform. Arm. n.-i. in-ta vinogradarstva, vinodeliya, i plodovodstva, 1957, No 1, 17-20

Abstract : Azotobacter is common everywhere in the soils of vineyards of the Araksa Lowland, and also, the atmospheric N is fixated intensively on

Card : 1/2

NALBANDYAN, A.D.

30(1) SOV/30-59-1-50/57

AUTHORS: Afrikyan, E. K., Kuchayeva, A. G., Candidates of Biological Sciences

TITLE: Use of Antibiotics in Plant Cultivation (Primeneniye antibiotikov v rasteniyevodstve)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 142-143 (USSR)

ABSTRACT: A conference dealing with this subject took place in Yerevan from 8 to 13 October, 1958; it had been called by the Institut mikrobiologii Akademii nauk SSSR (Microbiological Institute of the Academy of Sciences USSR), the Vsesoyuznyy institut sel'skokhozyaystvennoy mikrobiologii VASKhNIL (All-Union Institute for Agricultural Microbiology of the VASKhNIL) and the Sektor mikrobiologii Akademii nauk Armyanskoy SSR (Department for Microbiology of the Academy of Sciences of the Armyanskaya SSR).

M. Kh. Chaylakhyan spoke about microbe metabolites which promote the development of higher plants.

N. M. Pidoplichko reported on investigations of several years' duration carried out by Ukrainian mycologists on soil fungus flora and its utilization in the fight against agricultural plant diseases.

V. I. Bilay, S. F. Koskorets dealt with the utilization of the fungus Trichoderma in fighting the diseases of cotton bushes, potatoes and some other agricultural breeds.

R. O. Mirzabekyan's report dealt with the excretions of actinomycetes which produce active antibiotics against the carriers of potato wart disease and diplodia in maize.

S. Oryzhayev, V. N. Kasunina spoke about the utilization of the actinomycetes antagonists in fighting potato ring rot and mucous bacteria in cabbage.

G. M. Kublanovskaya reported on the effect of preparations from cultures of actinomycetes to prevent wilt of the cotton bush.

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V. G. Tumanyan, E. K. Afrikyan, P. A. Bobilyan, Ya. ?. Nikitina spoke about the successful utilization of several bacteria against diseases of vegetable cultures and potato wilt.

Yu. M. Voznyakovskaya, O. G. Shirokov, A. D. Nalbandyan dealt with the utilization of epiphyte microflora in fighting several fungus diseases in plants.

D. M. Trakhtinberg, E. I. Vadinmarskaya, L. P. Slavkina, V. G. Okeant'yan mentioned results obtained in investigations of phytobacteriomycene as well as its utilization in fighting diseases occurring in cotton bushes and beans.

R. N. Galakhiyan, Ye. P. Protsenko, A. G. Kuchayeva, N. A. Chelyubina tried the effect of antibiotic preparations as tomatoseed steeps against bacterial cankers in fighting diseases of decorative plants.

Ye. Ya. Rashba, K. I. Bal'tyukova described the investigation of plant antibiotics.

?. K. Bekker, A. B. Silayev spoke about the production of the preparations "grizeoful'vin" and "trikhotetsin" and their effect on fungus carriers of diseases in cabbage, wheat and water melons.

A. G. Kuchayeva reported on results achieved in the utilization of antibiotics against unpaired silk moths.

Card 3/4

V. P. Izrail'skiy, N. D. Buyanova, M. D. Kulikovskaya dealt with the formation of phytopathogen forms of bacteria resistant to antibiotics.

K. A. Vinogradova, N. S. Agre described a method of rapid determination of the effect of antibiotics on plants. The participants in the conference found the work carried out in this field in the USSR insufficient. The organization of an industrial production of antibiotics and microbe preparations for the purpose of their large-scale practical introduction in agriculture was pointed out as necessary. The necessity of an intensification of joint investigation of the growth stimuli and the development of plants of microbial origin was further pointed out. The importance of coordination of work for purposes of research and utilization of antibiotics in plant breeding was emphasized as well as the holding of periodical conferences dealing with this problem.

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NALBANDYaN, A. D., Cand Bio Sci — (diss) "Bacterial Antagonists of Fusarium molds and the Possibilities of their Use Against Fusariosis of Wheat and Cotton," Yerevan, 1960, 25 pp, 150 copies (Department of Biological Sciences, AS Armenian SSR) (KL, 47/60, 100)

MINASYAN, A.I., kand.biologicheskikh nauk; NALBANDYAN, A.D., kand. biologicheskikh nauk

Microflora of semidesert stony "Kirov" soils and their change under cultivation. Agrobiologiia no.6:842-848 N-D '61. (MIRA 15:2)
(Micro-organisms)
(Sandy soils)

MINASYAN, A.I.; NALBANDYAN, A.D.; KARAPETYAN, O.A.

Microflora of the root system of grapevines under conditions prevailing in gravely semidesert soils ("kirs"). Izv. AN Arm. SSR. Biol. nauki 14 no.9:39-46 S '61. (MIRA 14:9)

1. Laboratoriya pochvennoy mikrobiologii Instituta vinogradarstva, vinodeliya i plodovodstva Ministerstva sel'skogo khozyaystva Armyanskoy SSR.
(ARMENIA--GRAPES) (RHIZOSPHERE MICROBIOLOGY)

NALBANDYAN, A.D.

Toxins from Fusarium wilts and their inactivation. Vop. mikrobiol. no.2:295-312 '64. (MIRA 18:3)

NALBANDYAN, A.D.

Determination of the antagonism in micro-organisms with the help of colloidal capsules. Izv. AN Arm. SSR. Biol. nauki 18 no.3:11-14 Mr '65. (MIRA 18:5)

1. Armyanskiy nauchno-issledovatel'skiy institut vinogradarstva, vinodeliya i plodovodstva; otdel mikrobiologii.

NALBANDYAN, A.D.; KHACHIKYAN, R.Ye.; PETYAN, E.O.

Antagonistic properties of actinomycetes isolated from semi-desert soils of Armenia. Izv. Al Arm. SSR. Biol. nauki 18 no.8:61-68 Ag '65. (MIRA 18:9)

1. Botanicheskiy institut AN Armyanskoy SSR.

MINASYAN, A.I.; NALBANDYAN, A.D.

Effect of azotobacterin on the rooting and growth of grape cuttings. Dokl. AN Arm. SSR 41 no. 4:251-255 '65
(MIRA 19:1)

1. Botanicheskiy institut AN Armyanskoy SSR.

L 27124-66 EWT(1)/T JK

ACC NR: AP6016889 SOURCE CODE: UR/0298/65/018/003/0011/0014

20
B

AUTHOR: Nalbandyan, A. D.

ORG: Armenian Research Institute of Viticulture, Wine-Making, and Fruit Culture (Armyanskiy nauchno-issledovatel'skiy institut vinogradarstva, vinodeliya i plodovodstva)

TITLE: Use of collodion tubes to study antagonism among microorganisms

SOURCE: AN ArmSSR. Izvestiya. Seriya biologicheskikh nauk, v. 18, no. 3, 1965, 11-14

TOPIC TAGS: fungus, bacteria, bacteriology

ABSTRACT: The use of collodion tubes makes it possible to cultivate microorganisms - antagonists and test objects - simultaneously in a liquid culture medium and to observe the growth of both. After sterilization, the tubes were inoculated with the bacterial antagonists of Myc. globiforme (189), Ps. liquefaciens (393), Ps. fluorescens (394), and Bac. megatherium (414). Some of the test tubes were inoculated at the same time with the conidia of the fungus Fusarium (first series of experiments), some were left to be inoculated with the fungi after a 2-day growth of the bacteria (second series), while the rest were not inoculated with the fungi, but were subsequently used to determine the titer of the antifungus substance (third series). In the first series (combined cultivation of bacteria and fungus), the weight of the mycelium in the control (the fungus alone) averaged 115 mg, whereas

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ACC NR: AP6016889 O

in the other variants mycelial growth was weak - 17-52 mg (fungus with bacterial antagonists). In the second series, the weight of the mycelium in the control was likewise 115 mg. But the other variants showed a marked difference from the first series. When culture 189 (Myc. globiforme) was used, the fungus did not grow at all and in the other variants the mycelium weighed 10-19 mg. The third series involved testing the titer of the antifungus substance. It was found that the different bacteria released substances that acted on Fusarium in various ways. Moreover, the antifungus substances of the same culture did not have the same effect on Fusarium culmorum and Fusarium lini. The author concluded from his experiments that the mechanism of suppressive action of the bacterial antagonists on fungus growth is based on their elaboration of antifungus substances. Orig. art. has: 2 tables and 1 figure. [JPRS]

SUB CODE: 06 / SUBM DATE: 16Apr63 / ORIG REF: 003

Card 2/2

NALBANDYAN, B. G.

USSR/Miscellaneous - Communications

Card 1/1 : Pub. 133 - 10/20

Authors : Nalbandyan, B. G.

Title : How we improve means of communications in agricultural regions

Periodical : Vest. svyazi 7, 18-19, July 1954

Abstract : Report by chief of Tambov regional communications office on the progress made in developing and improving communications media (telephone, telegraph, radio) of agricultural regions under jurisdiction of the Tambov office.

Institution : Regional Communications Office, Tambov

Submitted : ...

NALBANDYAN, B.G.

Advancement of women as heads of district communications offices.
Vest.sviazi 16 no.3:23-24 Mr '56. (MLRA 9:7)

1.Nachal'nik Tambovskogo oblastnogo upravleniya svyazi.
(Telecommunication--Employees)

SOV/111-58-2-15/27

AUTHOR: Nalbandyan, B.G., Chief of the Administration

TITLE: Some Operational Problems with New Intra-Rayon Communication Equipment (Nekotoryye voprosy ekspluatatsii novoy tekhniki VRS)

PERIODICAL: Vestnik svyazi, 1958, Nr 2, pp 18 - 19 (USSR)

ABSTRACT: Dial telephone exchanges (ATS) with a capacity of 20 or 40 numbers, and semiautomatic telephone equipment (UPTS) were introduced into the intra-rayon communication system of the Tambov Oblast' recently. Considerable difficulties were encountered in developing interconnection systems between the dial telephone offices of the intra-rayon communication system (manufactured by the plant "KhTKZ") and the automatic town telephone exchanges of types "ATS-47" and "S-29". The circuits of the 20-number dial telephone exchanges of the intra-rayon communication system, developed by NIITS, provides a joint operation of such stations with only manual telephone exchanges of type "MB" and "TsB". It was necessary to connect lines of dial telephone exchanges of the intra-rayon communication system with the automatic exchanges of

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Some Operational Problems with New Intra-Rayon Communication Equipment

Tambov and Michurinsk. For this purpose, Engineer N.S. Varnashin, from the Michurinsk Dial Telephone Exchange, developed a system which permits the interconnection of a 20-number ATS VRS (manufactured by "KhTKZ") with the town exchange "ATS-47" as shown by Figure 1. Another connection system for telephone exchanges "ATS-47" and "-29", was developed by A.G. Kozlov and V.F. Markushin, Technicians of the Tambov Dial Telephone Exchange. This system is explained by Figures 2,3 and 4. In addition, some maintenance and repair problems of the telephone exchange equipment are mentioned. There are six diagrams.

ASSOCIATION: Tambovskoye oblastnoye upravleniye svyazi (Tambov Oblast Administration of Communications)

AUTHOR: Nalbandyan, B.G., Manager SOV/111-58-11-12/36

TITLE: The Experience with the Introduction of Semiautomatic Equipment at the Tambov Long-Distance Telephone Exchange (Opyt vnedreniya poluavtomatiki na Tambovskoy MTS)

PERIODICAL: Vestnik svyazi, 1958, Nr 11, pp 14-15 (USSR)

ABSTRACT: The author reviews the experience obtained through the operation of the Tambov Long-Distance Telephone Exchange after the introduction of semiautomatic equipment on the Moscow-Tambov line. For this purpose, factory-made equipment (IKTN) for two-frequency semiautomatic long-distance communication was installed. This equipment was developed by TsNIIS and its efficiency was proved during three years of operation. The engineer of the Tambov Long-Distance Telephone Exchange, Orlov, developed simplified circuits for connecting this equipment with the local telephone channels. The author

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SOV/111-58-11-12/36

The Experience with the Introduction of Semiautomatic Equipment at the Tambov Long-Distance Telephone Exchange

makes some recommendations for the further development of such semiautomatic equipment as automatic time counting devices. There is 1 sketch.

ASSOCIATION: Tambovskoye oblastnoye upravleniye svyazi (Tambov Oblast' Directorate of Communications)

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NALBANDYAN, B.G.

Delivery of mail to postal boxes which are equipped with call buttons. Vest. sviazi 20 no.4:26-27 Ap '60. (MIRA 13:7)

1. Nachal'nik Tambovskogo oblastnogo upravleniya svyazi.
(Postal services)

NALBANDYAN, B.G.

Testing device for VRS automatic telephone stations with a capacity of 20 numbers. Vest.sviazi 20 no.6:15 Je '60. (MIRA 13:7)

1. Nachal'nik Tambovskogo oblastnogo upravleniya svyazi.
(Telephone, Automatic--Testing)

NALBANDYAN, B.G.

Problems concerning the further development of rural telephone communications. Vest.sviazi 21 no.10:13 O '61. (MIRA 14:10)

1. Nachal'nik Tambovskogo oblastnogo upravleniya svyazi.
(Telephone)

NALBANDYAN, B.G.

Use of communication means and radio broadcasting in the villages of the Tambov Province. Vest. sviazi 24 no.10:19-20 O '64. (MIRA 17:12)

1. Nachal'nik Tambovskogo oblastnogo upravleniya svyazi.

NALBANDYAN, B.S.

Some problems in using new techniques in district-wide telephone service. Vest. sviazi 18 no.2:18-19 F '58. (MIRA 11:2)

1. Nachal'nik Tambovskogo oblastnogo upravleniya svyazi.
(Telephone, Automatic--Equipment and supplies)

GRIGORYAN, Sarkis Ovsepovich, inzh.; NALBANDYAN, D.B., inzh.

Experimental studies of a system with controlled characteristics using an experiment electric locomotive. Izv.vys.ucheb.zav.; elektromekh. 4 no.8:48-60 '61. (MIRA 14:8)

1. Leningradskiy institut inzhenerov zheleznodorozhnogo transporta (for Grigoryan).
(Electric locomotives)

NALBANDYAN, D.B., inzh.

Approximation method for constructing an angular velocity curve of a motor with independent excitation in transient operation. Trudy LIIZHT no.175:66-73 '61. (MIRA 15:12)

(Electric driving)

NALBANDYAN, D.B., inzh.

Experimental investigation of the transient processes in the networks of electric locomotives with controlled characteristics. Trudy LIIZHT no.176:16-35 '61. (MIRA 15:5)
(Electric locomotives--Testing)

NOR-AREVYAN, N.G.; SEMERDZHYAN, S.P.; NALBANDYAN, Dzh.M.; ATAYAN, R.R.; AVAKYAN, TS.M.

Effect of the gibberellin solution concentration on the penetration of radioactive phosphorus into pea sprouts. Izv. AN Arm. SSR. Biol. nauki 16 no.5:95-97 My '63. (MIRA 17:6)

1. Laboratoriya biofiziki Armyanskogo instituta zemledeliya.

SEMERDZHYAN, S.P.; NALBANDYAN, Dzh.M.; NOR-AREVYAN, N.G.; ATAYAN, R.R.

Effect of gibberellin on the incorporation of radioactive phosphorus p^{32} into various phosphorus compounds. Fiziol. rast. 12 no.4:730-731 Jl-Ag '65. (MIRA 18:12)

1. Laboratoriya biofiziki Nauchno-issledovatel'skogo instituta zemledeliya, Echmiadzin. Submitted February 4, 1964.

L 37206-66 EWT(m)/EWP(j) RM

ACC NR: AP6014416 SOURCE CODE: UR/0062/66/000/004/0773/0773

AUTHOR: Vasil'yev, R. F.; Nalbandyan, D. M.

ORG: Institute of Chemical Physics Academy of Sciences SSSR and Institute of Agriculture ArmSSR (Institut khimicheskoy fiziki Akademii nauk SSSR i Institut zemledeliya ArmSSR)

TITLE: New chemiluminescent reaction: interaction of dicyclohexylperoxydicarbonate and N,N-dimethylaniline

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 4, 1966, 773

TOPIC TAGS: chemiluminescence, chemical reaction, organic nitrogen compound, secondary amine, peroxy organic acid

ABSTRACT: The reaction of dimthylaniline and dicyclohexylperoxydicarbonate in benzene at 20° is accompanied by chemiluminescence in the visible range of the spectrum, and is visible to the eye if reagent concentrations are 0.2 M/l and the reaction is run in the presence of oxygen. The reaction will go in the absence of oxygen; the luminescence is then less intense and is maximum at the instant of reagent mixing and decreases according to $I^{-1/2} = I_0^{-1/2} + \alpha t$ within a certain range of reagent concentrations. This led to the conclusion that the reaction goes

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through an intermediate complex before the formation of N-cyclohexyloxy methyl-N-methylaniline. Orig. art. has: 1 equation.

SUB CODE: 07/ SUBM DATE: 11Feb66/ ORIG REF: 001

Card 2/2 MLP

NALBANDYAN, M.G. , uchitel'

Method of making marks in determining the growth rate of plants. Biol.v shkole no.4:88 Jl-Ag '60. (MIRA 13:7)

1. Srednyaya shkola No. 25, Tbilisi.
(Growth (Plants))

NALBANDYAN, M.G., uchitel'

Experiments and observations for the course of human anatomy, physiology and hygiene. Biol. V shkole no.6:35-41 N-D '61. (MIRA 14:11)

1. Srednyaya shkola No.25, Tbilisi.
(Physiology--Study and teaching)

NALBANDYAN, M.G.

Summer assignments in botany for the fifth grade students. Biol. v shkole. no.2:19-25 Mr-Ap '63. (MIRA 16:4)

1. Shkola No.25, Tbilisi.
(Botany--Study and teaching)

05460
SOV/120-59-3-31/46

AUTHORS: Karabekov, I. P., Avakyan, V. V., and Nalbandyan, N. A.

TITLE: On the Characteristics of the GK-7 Hodoscopic System (O kharakteristikakh godoskopicheskoy sistemy GK-7)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 3, pp 130-132 (USSR)

ABSTRACT: The GK-7 hodoscopic system has been investigated experimentally with the aim of using it in a magnetic mass spectrometer. The main characteristics of the GK-7 "cells" are given, as well as an analysis of the factors which limit the application of this system in the region of small pulses (less than 10 v) from Geiger-Muller counters. The effect of the magnetic field on the working of GK-7 is also considered. A typical hodoscopic "cell" of the GK-7 system is shown in Fig 1. A negative pulse from a G.M. counter is applied to the cathode of an MTKh-90 tube. This leads to an increase of the silent discharge current between the control anode an. the cathode. A master pulse 2-3 μs long then appears at the main anode of the MTKh-90 and if it coincides with the current pulse in the control anode circuit which is produced by the pulse from the counter, a discharge is triggered between the main anode and the cathode. This leads to the appearance

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On the Characteristics of the GK-7 Hodoscopic System

at the cathode of the first thyratron of a coincidence pulse which triggers the next part of the "cell". This circuit differs from the usual coincidence circuits in that the pulses to be selected should be applied to it not simultaneously but with a certain shift in time. Fig 2 shows the time diagram for coincidences to occur with the MTKh-90 thyratron. Curve a is the pulse from the counter, curve b represents the potential at the cathode of the MTKh-90 when the current pulse appears and curve c shows the master pulse. It is shown that the pulse from the counter must be greater than 10 v in order to achieve stable characteristics. It is further shown that the maximum magnetic field in which the system will work under normal conditions is 50 oersted. A. V. Khrimyan is thanked for directing this work. There are 4 figures and 6 Soviet references.

ASSOCIATION: Fizicheskiy institut AN ArmSSR (Physical Institute of the Academy of Sciences, Armenian SSR)

SUBMITTED: March 17, 1958

Card 2/2

NALBANDYAN, N. A.

RESEARCH INTO THE NATURE AND SPECTRA OF PARTICLES PRODUCED BY HIGH ENERGY NUCLEONS

A. I. Alikhanov, A. V. Khrimyan, V. K. Koemachevsky, V. L. Avakyan, K. S. Egiyan, Yu. P. Korotkov, N. A. Nalbandyan

The nature and the momentum spectra of secondary particles produced in lead by fast cosmic nucleons were studied at an altitude of 3,250 m. above sea level by means of a magnetic mass-spectrometer, five-layer proportional counter and five-layer sointillation counter.

The momentum spectra of π-mesons, K-mesons, protons and deutrons, generated by the charged and neutral components of cosmic radiation, are presented.

The spectra of $\pi^{\pm}$-mesons produced by neutrons do not differ from the spectra of $\pi^{\pm}$-mesons produced by fast charged particles. The N^{+}/N^{-} ratio for π-mesons generated by protons differs from that for π-mesons generated by protons differs from that for π-mesons generated by neutrons.

Among the products of stars with momenta up to 720 Mev/c, the number of K-mesons is of the order of 10% of the π-mesons. In the 720 - 1,000 Mev/c range, $N_K/N_p > 0.2$.

In the momentum range up to 1,000 Mev/c, an increase in the number of K-mesons is observed with increase in momentum. An evaluation of the σ_n/σ_p ratio was undertaken where σ_n σ_p are the cross sections of K-meson production by neutrons and

protons.

Data are presented on the number of neutrons and protons of different energies in cosmic radiation flux at an altitude of 3,250 metres above sea level.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959.

NALBANDYAN, N.A.

S/058/61/000/010/021/100
A001/A101

AUTHORS: Khrimyan, A.V., Kosmachevskiy, V.K., Avakyan, V.V., Gorodkov, Yu.V., Yegikyan, K.Sh., Nalbandyan, N.A.

TITLE: Investigation of the nature and spectra of particles produced by high-energy nucleons

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 97, abstract 10B507 ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 1", Moscow, AN SSSR, 1960, 183 - 187)

TEXT: The authors present the results of investigating particles with momenta up to 900 Mev/c produced in lead by high-energy nucleons of cosmic radiation at an altitude of 3,200 m above sea level (the Aragats mountain, Armenia). The ionizing capability of individual particles was determined with an average accuracy of ± 14% by means of a gas counter and of ± 10% by means of five scintillation counters.

L. Dorman

[Abstracter's note: Complete translation]

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NALBANDYAN, M. A., EGYAN, K. SH., PLESHKO, M. P., KHRIMYAN, A. V.,

AVAKYAN, V. V., ~~Asatiani, T. L.~~

"The Composition of the Flux of the Cosmic Ray Nuclear-Active Particles of Momenta Higher than 1.8 Gev/c at the Altitude of 3250 m Above Sea Level."

report submitted for the Intl. Conf. on Cosmic Rays and Earth Storm (IUPAP) Kyoto, Japan 4-15 Sept. 1961.