

MARKEVICH, A. M.

Cand. Chemical Sciences.

Mbr., Inst. Chemical Physics, Dept. Chem., Sci., Acad. Sci., -1947-49-.

Mbr., Inst. of Chemical Physics, -1949-.

With associates received the Presidium Prize, 30,000 Rubles, 1948, publ.

"Studies of the Properties of Gases at Super High Pressures and High Temperatures," c, 1947;

"The Role of the Surface in the Thermal Reaction of Cl_2 and H_2 ,"

SO: Zhur. Fiz., Khim. 22, No. 8, 1948.

MARKEVICH, A. M.

✓ 11924 ABC-47-2598 3
THE ELECTRICAL CONDUCTIVITY OF GASES AT HIGH

9 377 PRESENTATION
The electrical conductivity of air, A, N₂ and mixtures
of these gases at high temperatures and pressures is
attributed to the formation of NO at the high temperatures
and pressures, since the ionization potential is lowest for
N₂ and O₂ were present in the gases used. (T.R.H.)

62

64

Markovitch, A.M.

11300 AEC-00-3599

OPTICAL PROPERTIES OF LIQUIDS AT HIGH TEMPERATURE

Quoted from *Zh. Eksp. i Teor. Fiz.* 23, 564-75 (1952)

A study is made of the intensity of a heated Λ at a temperature of some thousands of degrees by adiabatic compression. The Λ is heated by means of a shock wave in a gas of nitrogen or acetylene. The Λ is formed by means of a shock wave in the Λ gas. As the pressure and temperature of the gas are increased the intensity of the Λ increases rapidly that part of the spectrum it is shown that in the ultraviolet region the distribution of energy in the continuum spectrum can be described by Wien's formula with a unique color temperature. The color temperature of the Λ is measured in its dependence on the compression for pressures from 2000 to 5500 kg/cm^2 and temperatures from 4000 to 8000 $^\circ\text{K}$.

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Inst. Chem. Physics, B.S. 11358

MARKOVICH, A. M.

Chern

USSR .

Compressibility of argon under high adiabatic compression. Yu. N. Ryabinin, A. M. Markevich, and I. I. Tamm. Zhur. Exptl. i Teoret. Fiz. 24, 107-12(1953).

The η , ν , and compression rate of A (technical grade: 94% A, 4% N₂, 2% H₂O) were measured at pressures from 2100 to 7000 kg./sq. cm. The Poisson coeff. was 1.60. The velocity of sound was calcd. to be the same as in the case of an ideal gas. The pV/RT ratio was approx. one. Thus, under the conditions used, A behaved like a quasi-ideal gas. A. P. Kotloby .

ROW
PM

Markevich, A.M.

USSR

A new, objective proof of the existence of an initial initiating reaction for homogeneous catalysis with hydrogen bromide. Z. K. Mal'us, A. M. Markevich, and N. M. Emanuel. *Doklady Akad. Nauk S.S.S.R.* 89, 1049-52 (1953); cf. *C.A.* 47, 3100a. — The existence of an initiating reaction for the oxidation of propane in the presence of HBr should be evidenced by 2 maxima on the curve for the heating of the reaction mixt. (Bogoyavlenskaya and Koval'skiĭ, *C.A.* 41, 2972g). A max. is found on the heating curve after the first 20 sec. of reaction, corresponding to the initiating reaction, and a 2nd, and greater max. is observed at 70-80 sec. of the reaction. It was shown experimentally that the heat corresponding to the 1st max. is not due to surface heating. The mechanism of the reaction is discussed in terms of the initiating reaction.

J. Rovtar Leach

Inst. Chem Phys., AS USSR

MARKEVICH, A. M.

V
CH

The role of freezing in the reaction of methane oxidation and decomposition at high temperature and very high pressures: Yu. N. Ryabinin, A. M. Markevich, and I. I. Tamm. *Doklady Akad. Nauk S.S.S.R.* 91, 1121-4 (1954).— The freezing discussed was the rapid cooling of a reaction mixt. to permit the isolation of the high-temp. intermediate reaction products. A very rapid cooling of the products is essential for the quality of the products obtained, and this was possible with the aid of an available adiabatic app. in which the gas compression and expansion could be performed in exceedingly short time intervals (*C.A.* 47, 3063d). The gaseous mixt. at atm. pressure was compressed to several thousand atms. and expanded back to atm. pressure. The max. pressure increase takes place in only 4×10^{-4} sec. during which time the gas temp. can rise at the rate of 10^4 – 10^7 degrees/sec. Natural gas (94% CH_4 , 3% higher hydrocarbons, 3% N_2), mixed with air, O_2 , or A (86% A , 14% N_2) was studied, and among the different products detected were NH_3 , CH_2O , soot, NO , C_2H_2 , and $HICN$. CH_4 was found stable at temps. below $1700^\circ K$; above $1700^\circ K$, CH_4 begins to decompose with deposition of soot, and forms C_2H_2 . With N_2 -contg. A temps. upwards of $2300^\circ C$. were reached, and $HICN$ was found in the products.

W. M. Stenzenberg

(2)
62

MAKREVIČ, A.M.

Formation of nitric oxide during oxidation
of air mixtures by N₂O reaction A.M. Makrevič
(H I Tamm)

As compared with the...
and then...
tune and the highest...
...

Makrevič

TRANS D-178251, 24/3/57
B 79661

A. F. Markevich, A.M.
Category: USSR/Physical Chemistry--Kinetics. Combustion,
Explosives. Topochemistry. Catalysis

B 9

Abs Jour: Referat Zhur--Khimiya, No 3, 1957, 7515

Author: Markevich, A. M.

Inst: Not given

Title: On the Applicability of the Method of Substitutional Calorimetry Under Conditions of Laminar Gas Flow (as in the Case of the Decomposition Reaction of Ozone)

Orig Pub: Zh. Fiz Khimii 1956, Vol 30, No 4, 735-752

Abstract: The method of substitutional calorimetry (M. L. Bogoyavlenskaya and A. A. K val'skiy. Zh. fiz. khimii, 1946, Vol 20, 3025) has been applied to measurements under conditions of laminar gas flow. The amount of heat (Q) evolved when an electric current is passed through an Ag layer applied to the surface of a glass capillary extending along the axis of a cylindrical reaction vessel (d = 29 mm) and serving as an insulating cover for one of the junctions.

Card: 1/3

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Category: USSR/Physical Chemistry-Kinetics. Combustion.
Explosives. Topochemistry. Catalysis

B 9

Abs Jour: Referat Zhur.-Khimiya, No 3, 1957, 7515

tions of a differential thermocouple for $Re < 100$ practically does not differ from the Q calculated from the temperature rise (ΔT). At $Re = 175$ the error in the calculation of Q from ΔT is 15 percent. A deviation from linearity is observed in the Q vs. ΔT curve at $\Delta T > 4$. It is shown on the basis of the reaction $O_3 \rightarrow 3/2O_2 + 34 \text{ kcal (1)}$ that experiments carried out under static and flow conditions give converging values. The catalytic decomposition of O_3 over barium peroxide with AgO promoter at $40-50^\circ$ proceeds heterogeneously. When reaction (1) is carried out in a clean glass vessel at $127-195^\circ$, a divergence between the theoretical heat balance calculated on the assumption of complete homogeneity of the process and the experimentally recorded values is observed. Experiments with capillaries of different diameter showed that

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Category: USSR/Physical Chemistry-Kinetics. Combustion.
Explosives Topochemistry. Catalysis

B 9

Abs Jour: Referat Zhur--Khimiya, No 3, 1957, 7515

this divergence is due to the occurrence of a strongly endothermic reaction at the glass surface (probably $O_3 \rightarrow O_2 + O - q$) along with the basic exothermic space reaction (1). Assuming that the proportionality coefficient between ΔT and the reaction rate is constant, values for the flow concentration of O_3 and the order of the reaction (2-2.7) as well as for the activation energy (34.5 kcal/mole) have been calculate.

Card 3/3

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MARKEVICH, A. N.

USSR/ Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry.
Catalysis

B-9

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11220

Author : Kleymenov N.A., Antopova I.N., Markovich A.N., Nalbandyan A.B.
Title : Oxidation of Methane by Oxygen Atoms Formed on Thermal Decomposition
of Ozone

Orig Pub : Zh. fiz. khimii, 1956, 30, No 4, 794-797

Abstract : Formation of peroxide on oxidation of CH_4 under conditions of flow (mixture $CH_4 : O_2 = 1:1$, rate of flow 400 cc/minute) in the presence of 1.45% O_3 becomes apparent at the same temperature ($100-110^\circ$) that decomposition of O_3 begins. On this basis the authors consider that initiator action is associated not with the O_3 molecule but with O atoms which are decomposition products of O_3 .

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MARKEVICH, A.M.

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

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26246

Author : N.A. Kleymenov, A.M. Markevich

Inst : Academy of Sciences of USSR

Title : Part Played by Surface in Reaction of Thermal Decomposition of Ozone.

Orig Pub : Dokl. AN SSSR, 1956, 110, No 1, 105-107

Abstract : The decomposition of ozone (O_3) in a flow at atmospheric pressure was studied by the method of divided calorimetric measurements. The decrease of warming up was observed with the increase of the radius of the central capillary containing one of the junctions of the differential thermocouple. In authors' opinion, this suggests that the decomposition of O_3 includes an endothermic stage of O_3 dissociation taking place on the vessel walls. The next stage seems to be a homologous exothermal reaction, in which the atoms produced on the surface take part. The earlier proposed mechanism (RZhKhim, 1955, 36907) consisting in a homologous dissociation of O_3 molecules and a following recombination of O atoms on the vessel surface is rejected.

Card : 1/1

MARKEVICH, A.M.

Distr: nShj

2527. PRODUCTION OF FORMALDEHYDE BY DIRECT OXIDATION OF NATURAL GAS WITH OXYGEN OF THE AIR. Anisovaya, A.G., Gudkov, N.P., Galaktionov, N.B., Kizilovskaya, E.A., Markevich, A.M., Malbrandykh, A.B., and Sigorov, A.V. *USSR. Prog. Chem. Ind., Moscow*, 1977, (No. 52-59).

Pilot plant operation is described for production of formaldehyde by direct oxidation of natural gas by oxygen of the air in a reactor with a catalyst. Plant capacity 150 m³ of gas-air mixture per hour. Reactor filled with single rings 2-54, with stirrer and recirculation 10.0% by volume based on acetone used. Reactor volume 17 litres, reactor filled with Raschig rings pre-treated with gold-chloride catalyst, reactor temperature 600°C. In this case 2.1% gas, 0.1% product, 0.1% formaldehyde formed by scrubbing with formalin at 20°C, product 60% by weight. An industrial plant is being built based on experience with this pilot plant.

G.A.

AM

MARKEVICH, A.M.**AUTHORS:** Markevich, A.M., Filippova, L.P.

76-12-7/27

TITLE: The Formation of Hydrogen Peroxide in the Oxidation of Formaldehyde
(Obrazovaniye perekisi vodroda pri okislenii formal'degida)**PERIODICAL:** Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 12, pp.2649-2655 (USSR)**ABSTRACT:** It was tried here to identify the peroxides developing with the oxidation of CH_2O . It was stated that under the existing test-conditions, the hydrogen peroxide is the primary peroxide compound, whereas the formation of dioxymethylperoxide represents a secondary process. The latter took place chiefly outside the reaction vessel as a consequence of the interchange of H_2O_2 and CH_2O . The radiation method was applied here. The reaction was investigated in the mixture of CH_2O and air at atmospheric pressure and at a temperature of the order of 500°C . The following results were obtained: the content of peroxide in the reaction products depends to a great extent not only on the temperature and velocity of flow in the vessel, but also on the state of the surface of the reaction vessel. The greatest quantities of peroxide were obtained in the new vessel on the first working day. This holds for reaction vessels of glass and quartz. In some cases the content of peroxide amounted up to 27% of the initial CH_2O . Such an output of

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The Formation of Hydrogen Peroxide in the Oxidation
of Formaldehyde

76-12-7/27

peroxide is unknown in literature. The fresh solution from the absorber showed an insignificant acidity. When the solution was either left or heated, the acidity increased, but the content of peroxides and CH_2O declined. The heating of the solution was accompanied by a precipitation of hydrogen. For completely decomposing the peroxides it was sufficient to boil the solution within 10 to 15 minutes. The nature of the acid developing when boiling the solution was analytically determined after the reaction with ZnO . The investigation of the kinetics of reaction of peroxide compounds with KJ in the acid-medium showed that the velocity of J_2 precipitation depends largely on the time between the obtaining of the solution in the absorber and the moment where KJ is added to the same. That is to say, the solution "ages" in any extent. The keeping of the solution itself at 5°C decelerates the reaction with potassium iodide remarkably. The fact that an aging lasting more than one hour of the solution exercises no noticeable influence on the reduction of the J_2 precipitation is characteristic. Investigation of the role played by hydrogen peroxide at the reaction of CH_2O -oxidation clearly showed that at 105°C and a stay of from 20 to 25 seconds of the gas mixture in the reactor, the reaction fully took place between CH_2O and H_2O_2 . The

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**The Formation of Hydrogen Peroxide in the Oxidation
of Formaldehyde**

76-12-7/27

tests further showed that H_2O_2 , which forms one of the products at the oxidation of formaldehyde, has no effect on the proper reaction of the oxidation within the range of from 130° to 450° C. At lower temperatures of about 100° C most likely a process takes place which has nothing to do with the reaction of oxidation and which leads to forming of $HCOOH$. This work was discussed with professor A.B. Nalbandyan. There are 2 figures, 1 table, and 21 references, 6 of which are Slavic.

ASSOCIATION: AN USSR. Institute of Chemical Physics, Moscow (Akademiya nauk SSSR. Institut khimicheskoy fiziki, Moskva).

SUBMITTED: August 16, 1956

AVAILABLE: Library of Congress

Card 3/3

Markovich, A.M.

USSR/Physical Chemistry - Kinetics, Combustion, Explosions, Topochemistry,
Catalysis.

B-9

Abs Jour: Referat. Zhurnal Khimii, No 2, 1958, 3841.

Author : Yu. N. Ryabinin, A.M. Markovich, I.I. Tamm.

Inst : Academy of Sciences of USSR.

Title : Formation of Nitrogen Oxide by Adiabatic Compression of
Combustible Mixtures.

Orig Pub: Dokl. AN SSSR, 1957, 112, No 2, 283-286.

Abstract: A method to increase NO yield of the diabatic air compression to 9000 kg per sq.cm by rising the temperature at the expense of combustion of gases added to the air is proposed. The methods of carrying out the experiments were described earlier (RZhKhim, 1954, 37431). The maximum NO yield (in %) in mixtures containing 5.5% of CH₄ and 94.5% of air, 5.5% of CH₄, 52.7% of O₂ and 41.8% of N₂, 18.3% of H₂, 45.4% of O₂ and 36.3% of N₂, and 15.6% of CO, 46.1% of O₂ and 38.3% of N₂ was

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-1-

AUTHOR: MARKEVICH, A.M., TAMM, I.I., RYABININ, YU, N. PA - 2776
TITLE: Formation of Hydrocyanic Acid under Strong Adiabatic Compression of
Gas Mixtures. (Obrazovaniye sinil'noy kisloty pri sil'nom adiabaticheskoy
shtatii gazovykh smesey, Russian)
PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 4, pp 856 - 859
(U.S.S.R.)
Received: 6 / 1957
Reviewed: 7 / 1957

ABSTRACT: In the authors' previous works the reaction of the forming of nitrogen oxide was investigated by high adiabatic compression. It was also possible to obtain yields of up to 1% from pure air within some ten thousandths parts of a second, at a compression of up to 700 and a pressure of 8000 - 9000 kg/cm². By dilution of the mixture with argon, by which higher temperatures were attained, or by the addition of fuels (methane, H₂, CO), the authors were able to increase the nitrogen yield up to more than 3% by increasing the temperature by means of combustion. Under these circumstances the production of HCN is also possible and was studied on this occasion. Thermodynamic considerations point to the fact that with a rise of temperature the equilibrium is shifted in the case of this reaction in favor of the formation of HCN, which is similar to what is the case with the formation of NO. Now HCN formation in nitrogen-hydrocarbon mixtures, i.e. methane, and acetylene, was investigated. In the case of methane there was no reaction up to 10 000 kg/cm². Only considerable additions of

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**Formation of Hydrocyanic Acid under Strong Adiabatic
Compression of Gas Mixtures.**

PA - 2776

argon (77°) could make this possible (table 1), and the highest HCN yield amounted to 1 % of the original admixture volume. Much more HCN was obtained from acetylene mixtures. Reaction begins at a pressure of about 1000 kg/cm^2 and the yield is about 3 % HCN (at a pressure of $5000-9000 \text{ kg/cm}^2$). The addition of argon also here leads to an increase of the yield of HCN up to 4 %. The shape of the experimental curves deserves special interest: They are characterized by transition to saturation. Apparently the constant HCN yield is to be explained by the cooling regime, in which connection a sort of "hardening" takes place. Therefore, the HCN quantity, which is actually proved by means of the reaction products, need not correspond to that quantity which was obtained by experiments carried out at maximum temperatures, but it can be much smaller. Cooling of reaction products forms an integral part of the adiabatic cycle. By this it is possible to explain the occurrence of a horizontal section of the curves (illustration 1) at a pressure of about $4000-4500 \text{ kg/cm}^2$. (1 table, 1 drawing, 6 citations from Slav publications).

Institute for Chemical Physics of the Academy of Science of the USSR.
V.N.KONDRAT'YEV
20.11.1956
Library of Congress

Card 2/2

ASSOCIATION:
PRESENTED BY:
SUBMITTED:
AVAILABLE:

ANISONYAN, A.A.; GUDKOV, S.F.; IVANOV, A.K.; YENIKLOPYAN, N.S.;
MARKEVICH, A.M.; NALBANDYAN, A.B.

Results of the operation of an experimental apparatus for
the manufacture of formalin from natural gas. Trudy VNIIGAZ
no.3:130-142 '58. (MIRA 11:8)
(Natural gas) (Formaldehyde)

MARKEVICH, A. M.

AUTHORS: Markevich, A. M., Mezhkina, N. I.,
Pillipova, L. P.

12-55-11/75

TITLE: Kinetics of the formation of Carbon Monoxide
in the oxidation of formaldehyde (O mekhanizme obrazovaniya
vodoroda (vodorod) pri oksislenii formal'devida)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh
Nauk, 1954, No. 4, pp. 502-502 (USSR)

ABSTRACT: The logical consequences of the oxidation stages of hydrocarbons and the methods of formation of CO₂ have already been discussed in a great number of papers (Halbandyan and Neyman). In connection herewith it was of interest to the authors to check by means of the method of marked atoms these consequences (in the works by Halbandyan and Neyman). The investigations were carried out at atmospheric pressure with a mixture of formaldehyde and air (1:9). The kinetics was investigated only in the initial stage of the reaction. The results of the investigations are shown in figure 1. From it can be seen that the ways to the formation of

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Mechanism of the formation of Carbon
Dioxide in the Oxidation of Formaldehyde

52-58-10-17/32

CO₂ in the oxidation of formaldehyde must not be connected with the reaction of the oxidation of CO. In the opposite case the points for ω_{CO_2} would be displaced upward (i. e. above the line ω_{CO}). It was proved that not more than 3 to 5% CO₂ can form in the oxidation of CO. The main mass of CO₂-(95-97%) is directly formed from formaldehyde.
There are 1 figure and 5 references, all of which are Soviet.

ASSOCIATION: Institut Khimicheskoy Fiziki Akademii nauk SSSR
(Institute For Chemical Physics, AS USSR)

SUBMITTED: October 30, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Carbon dioxide--Formation 2. Formaldehyde oxidation
--Applications

MARKEVICH, A. M.

75-1-17/3-

AUTHORS: Chaykin, A. M., Markevich, A. M.

TITLE: Determination of the Thermal Conductivity Coefficient of Gases and Gaseous Mixtures (Izmenenie koeffitsiyentov teploprovodnosti gazov i gazovyykh smesey)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1956, Vol. 30, Nr 1, pp. 11-12 (USSR)

ABSTRACT: Here, a method for the purpose of determining the thermal conductivity coefficient is given, on occasion of which no contact between gas and metallic surfaces exists. The method for the purpose of determining the thermal conductivity of gases and gaseous mixtures depends upon the measurement of heat currents and voltages within a cylindrical vessel, at the ends of which a pair of opposed construction is mounted. The method makes possible the measurement of the thermal conductivity of a series of active gases and of their mixtures at temperatures, where the components show no chemical interaction. Stable conditions can be obtained on occasion of every experiment by the condition of a stationary flow of heat q , carried off by the radiators: $q = \alpha_1 t_1 + \alpha_2 t_2 + \alpha_3 t_3 + \alpha_4 t_4$, where q , t_1 , t_2 , t_3 and t_4 denote the heat flows, which are determined by the thermal conductivity of the gas, by the convection, by the radiation, and by the heat, respectively, dissipation from the metal capillary. As it

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76-1-17,32

Determination of the Thermal Conductivity Coefficients of Gaseous and Gaseous Mixtures

has shown that, in a furnace 3, the convection component can be neglected on occasion of $\Delta T < 40^\circ\text{C}$ and be disregarded. The same conclusion is followed from the present work. The quantity q_1 was measured immediately in the experiment. q_1 is too trifling (in the range $20-30^\circ\text{C}$) to be neglected. Thus for $q_1 = q - q_2 = \frac{\lambda}{l} \ln \frac{D}{d} (i_2 - i_1)R$, where i_2 and i_1 are the temperatures, viz. on occasion of heating of the medium filling the vessel, respectively. R is the resistance of the preheater. Then the coefficient λ of the thermal conductivity for the gaseous mass is given by

$$\lambda = \frac{q_1}{\pi l \Delta T} \ln \frac{D}{d} = \frac{q_1 (i_2 - i_1) R}{\pi l \Delta T} \ln \frac{D}{d}$$

l - the length of the preheater, D and d - diameter of the vessel and of the preheater.

The values for the coefficients of the thermal conductivity of H_2 , C_2H_4 , Cl_2 , HCl , C_2H_2 , Cl_2 , CO_2 and of $\text{H}_2 + \text{Cl}_2$ -mixtures at 20 , 50 and 100°C , of $\text{H}_2 + \text{Cl}_2$ (1:1) + HCl -mixture at 20 , 50 and 100°C and of $\text{C}_2\text{H}_4 + \text{Cl}_2$ at 20°C were obtained. The coefficients of the thermal conductivity λ_{30° , measured by the authors and others (reference 1-7) are here compared with each other in a diagram.

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76-1-17/32

Determination of the Thermal Conductivity Coefficients of Gases and Gaseous Mixtures

It is shown that the data of the authors are in agreement with those of the other works. The curve also shows the accuracy of the data by about 10 %. There 6 figures, 1 table, and 10 references, 6 of which are Slavic.

ASSOCIATION: AN USSR. Institute of Chemical Physics
(Akademiya nauk SSSR. Institut khimicheskoy fiziki)

SUBMITTED: October 13, 1956

AVAILABLE: Library of Congress

Card 3/3

5(4)

SOV/76-32-10-3/39

AUTHORS:

Markevich, A. M., Tamm, I. I., Ryabinin, Yu. N.

TITLE:

The Formation of the Formaldehyde in an Adiabatic Compression of Methane-Oxygen Mixtures (Obrazovaniye formal'degida pri adiabaticheskoy szhatii metano-kislородnykh smesey)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 10, pp 2242-2246 (USSR)

ABSTRACT:

The authors employed a method suggested already earlier (Ref 1). The methane used contained 1-2% of higher hydrocarbons. The most interesting part of the adiabatic cycle, within which the pressure increases to some hundreds and thousands of kg/cm², lasts only some ten-thousandths of a second. The velocity of the temperature change of the compressed gas is therefore also 10⁶-10⁷ degree/second, so that a rapid drop of temperature in the expansion of chemically active gas mixtures leads to a high degree of hardening (Ref 2); thus, the reaction may be fixed at an intermediate stage. In the paper by M. S. Furman and D. S. Tsiklis (Ref 7) the formation of formaldehyde in an adiabatic compression of methane-oxygen mixtures was qualita-

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SOV/76-32-10-3/39

The Formation of the Formaldehyde in an Adiabatic Compression of Methane-Oxygen Mixtures

tively determined. The present experiments show that the character of the reaction of the mixture depends first of all on the oxygen content. Mixtures with more than 15% O_2 ignite under the deposition of soot. It is characteristic that the ignition does not take place at the maximum pressure but a little later when the mixture has expanded. Only with an oxygen content of less than 15% was it possible to interrupt the reduction in order to obtain an intermediate product. The reaction products of the compression have an unpleasant, sharp smell and contain formaldehyde as well as other intermediate products which form an intense fog with air. At a low compression ($300-350 \text{ kg/cm}^2$) and a low content of formaldehyde this formation of fog is not observed. In mixtures of natural gas and oxygen the formaldehyde formation begins at lower compressions than in pure methane, due to the increase of the oxygen content. The maximum content of formaldehyde (2,2%) is obtained at an oxygen content of 6 and 9%, and at a pressure of about 3000 kg/cm^2 ; it remains constant up to 7000 kg/cm^2 . Mixtures with 12% O_2 have a different re-

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SOV/76-32-10-3/39

The Formation of the Formaldehyde in an Adiabatic Compression of Methane-Oxygen Mixtures

action character. There are 6 figures, 1 table, and 9 references, 9 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki, Moskva
(Moscow, Institute of Chemical Physics, AS USSR)

SUBMITTED: November 28, 1956

Card 3/3

5(-3)

SOV/80-32-4-38/47

AUTHORS: Yenikolopyan, N.S., Kleymentov, N.A., Karmilova, L.V., Markevich, A.M. and Nalbandyan, A.B.

TITLE: The Preparation of Formaldehyde in a Jet Apparatus by Means of the Oxidation of Methane Catalyzed by Nitrogen Oxides (Polucheniye formal'degida na struyevoy ustanovke putem okisleniya metana, katalizirovannogo okislami azota)

PERIODICAL: Zhurnal prikladnoy Khimii, 1959, Vol 32, Nr 4, pp 913-919 (USSR)

ABSTRACT: The problem of methane oxidation, very important in view of chemical utilization of natural gases, was dealt with in many investigations, including those of Medvedev [Refs 25, 26] and D.M. Rudkovskiy. The present article describes some results of laboratory studies in obtaining formaldehyde by means of methane oxidation catalyzed by nitrogen oxides. The following research workers of the VNIIGAZ MNP participated in individual phases of these studies: S.A. Anisonyan, S.Ya. Beyder, and N.I. Vinnikova, and of the Giprokauchuk MKhP: A.S.Zhadayev, N.F. Chernov and M.N. Shendrik. The methane oxidation was carried out under jet conditions at a pressure of the gas mixture near the atmospheric one and at temperatures of 600 to 800°C. Various conditions of experimentation were tried out in order to find the optimum ones, and the results were as follows: 1. The treatment of the inner surface of

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SOV/80-32-4-38/47

The Preparation of Formaldehyde in a Jet Apparatus by Means of the Oxidation of Methane Catalyzed by Nitrogen Oxides

a vessel, in which reactions take place, with $K_2B_4O_7$ increases and stabilizes the yield of formaldehyde and reduces the reaction temperature by 80 or 100°C; 2. The relative yield of formaldehyde ($CH_2O : NO$) amounts to 10 to 12 molecules per one molecule of the catalyst; 3. The optimum composition of the methane-air mixture was found to be 1 : 2; 4. The optimum temperature of the reaction is about 100°C; 5. The stable run of the reaction is possible in metal vessels; 6. The laboratory results were confirmed by experiments carried out in a pilot installation with a capacity of 13 m³/hr of gas-air mixture. There are 7 graphs and 35 references, 16 of which are Soviet, 14 English, 2 German, 1 Swiss, 1 French and 1 Japanese.

SUBMITTED: September 30, 1957

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5(3)

SOV/80-32-5-35/52

AUTHORS: Yenikolopyan, N.S., Kleymenov, N.A., Karmilova, L.V., Markevich, A.M.
Nalbandyan, A.B.

TITLE: The Preparation of Formaldehyde by Methane Oxidation Reaction Catalyzed
by Nitrogen Oxides

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1132-1135 (USSR)

ABSTRACT: The preparation of formaldehyde in reaction vessels installed in line
and also by the method of recirculation is investigated here. In one
series, the gas-air mixture of 33.3% CH₄, 66.6% air and 0.1% NO was
passed through reaction vessels. The formaldehyde was separated by water
in absorbers. It has been shown that under these conditions 7.4% of
methane is oxidized to formaldehyde and 9 - 12% to carbon monoxide. In
the closed circulation method the mixture was passed many times through
the reaction vessel. After 8 cycles 18.5% of methane is oxidized to
formaldehyde and 19.7% to carbon monoxide. An additional supply of air
or oxygen increases the yield to 32%. The yield of formaldehyde per
1 molecule of NO is 20 and even 30 molecules at 550 and 590°C. In the
continuous circulation method the mixture is continuously supplied with
fresh gas. The temperature varies from 565 - 680°C. NO was supplied

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The Preparation of Formaldehyde by Methane Oxidation Reaction Catalyzed by Nitrogen Oxides

SOV/80-32-5-35/52

to keep the concentration at 0.1 volume %. After 10 circulations 21% of methane is converted to formaldehyde. The losses of NO due to absorption in the absorber amount to 2-16%. It has been found that NO is not consumed in the reaction. There are 3 graphs, 1 table and 2 Soviet references.

SUBMITTED: September 30, 1957

Card 2/2

5(4)

SOV/76-33-3-9/41

AUTHORS:

Markevich, A. M., Tamm, I. I., Ryabinin, Yu. N.

TITLE:

The Role of Chilling in the Reaction of the Synthesis of Nitrogen Oxide I (Rol'zakalki v reaktsii sinteza okisi azota. I)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 3, pp 559 - 565 (USSR)

ABSTRACT:

The physical importance of chilling is shown by the example of the synthesis of nitrogen oxide and the role of chilling rate of the combustion products is pointed out. In the reaction $O_2 + N_2 \rightleftharpoons 2 NO - 43 \text{ kcal (1)}$ in the presence of an excess quantity of oxygen a temperature rise will favor the reaction (in the first phase) towards the right, whereas in the case of chilling (in the second phase) the decomposition reaction is favored. If in the case of high temperatures the reaction rate (RR) is sufficiently high, the NO-concentration approaches the equilibrium value. Chilling in the second phase of the process (Fig 1) will lead to a still greater deviation of the NO-concentration from the equilibrium value in order to remain constant at a temperature T_1 . In publications this

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The Role of Chilling in the Reaction of the Synthesis
of Nitrogen Oxide I

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phenomenon is called chilling. In order to obtain a precise explanation of the conditions of cooling the connection between the (RR) of the NO-decomposition and the rate of variation of the equilibrium concentration are taken into account at different stages of cooling, and the two entirely different processes of reaction are determined. The transition from one reaction are determined. The transition from one reaction phase into the other is denoted by several critical values of chilling rate and determines the phase of chilling. There are 3 figures and 2 Soviet references.

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

SUBMITTED: April 24, 1957

Card 2/2

5(4)

AUTHORS:

SOV/76-33-4-3/32
Markevich, A. M., Tamm, I. I., Ryabinin, Yu. N.

TITLE:

The Part Played by Quenching in the Reaction of the Synthesis of the Nitrogen Oxides.II.(Rol' zakalki v reaktsii sinteza okisi azota.II)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 4, pp 764-770 (USSR)

ABSTRACT:

In continuation of a previous paper (Ref 1) a number of data from publications on investigations of the nitrogen oxide synthesis under various experimental conditions is explained in this paper. The paper which contains the corresponding diagrams and tables is divided into the following chapters: natural cooling of the reaction products in closed reaction vessels. Experiments in apparatus with an intensive cooling. Experiments in adiabatic apparatus. Determinations in flow apparatus. It was found that all data which were obtained under most different conditions may be considered from one viewpoint and therefore determinations may be made with experimental data from two completely different conditions of reaction. In one case the rate of the direct synthesis reaction is insufficient, in the other, the rate of cooling of the reaction products is low. In the experimental data investigated the

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SOV/76-33-4-3/32

The Part Played by Quenching in the Reaction of the Synthesis of the Nitrogen Oxides II

NO-yield is determined mainly by the rate of cooling. Experiments which took place under an intensive cooling were successful only in two cases: in the method of membrane destruction (Ref 12) and in experiments on an adiabatic apparatus (Ref 15) where a strong increase of the rate of cooling and a corresponding increase in the NO-yield was attained. There are 5 figures, 2 tables, and 19 references, 13 of which are Soviet.

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

SUBMITTED: July 23, 1957

Card 2/2

3 (4)

AUTHORS:

Anisonyan, A. A., Beyder, S. Ya., SOV/76-33-8-4/39
Markevich, A. M., Nalbandyan, A. B. (Moscow)

TITLE:

A Study of the Oxidation and Decomposition Reactions of
Formaldehyde at High Temperatures

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1695-1700 (USSR)

ABSTRACT:

In order to develop the technology of a methane oxidation to formaldehyde (I) it was necessary to study the stability of (I) in the reaction gas (Refs 1-2). Since the corresponding data found in publications refer to relatively low temperatures and longer contact times, and thus did not suffice for the desired purposes, special experiments were carried out in the present case. The oxidation and decomposition reactions of (I) were studied within the temperature range of 500-850° at a contact time of 0.3 seconds and atmospheric pressure. The studies were carried out in a flow unit (Fig 1). The (I) concentration in the initial gas mixtures was 1 % by volume throughout. The oxidation reaction was studied with a mixture air: (I) = 99 : 1 in an empty reaction vessel as well as in one filled with packing. It was found that the oxidation rate largely depends on the surface properties of the walls of the reaction vessel as well as on the S/V value. Washing

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A Study of the Oxidation and Decomposition Reactions of SOV/76-33-8-4/39
Formaldehyde at High Temperatures

out the reaction vessel with a 2 % $K_2B_4O_7$ -solution, and filling it with packings, resulted in a considerable retardation of the oxidation reaction of (I). NO additions (0.1 %) to the initial gas mixture greatly accelerates the reaction in the presence of oxygen. The decomposition reaction of (I) was studied in mixtures CH_4 : (I) = 99 : 1 in the absence of oxygen, and it was found that there is no dependence of the decomposition rate (DR) upon the properties of the surface of the reaction vessel wall, or the S/V value. NO additions (up to 0.8 %) did not show any marked effect upon the (DR) either. There are 7 figures and 6 references, 4 of which are Soviet.

SUBMITTED: August 1, 1957

Card 2/2

5 (4)

AUTHORS:

Markevich, A. M., Filippova, L. F.

05819

SOV/76-33-10-17/45

TITLE:

The Part Played by Heterogeneous Factors in the Oxidation of Formaldehyde

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2214 - 2221 (USSR)

ABSTRACT:

Publications on formaldehyde oxidation indicate the insufficient investigation of this reaction. Comparison of the values of activation energy obtained so far (Table 1) shows that the results are unsatisfactorily reproducible, which obviously is due to the effect of heterogeneous factors. The latter and especially the effect of the surface condition of the reaction vessel were investigated here. Experiments were made under dynamic (Ref 1) and static conditions, and for some series of experiment the authors also used the method of separate calorimetric measurement (Ref 11). The first experiments by the latter method showed that the reaction rate was greatly dependent on the surface condition (Fig 1). Strong catalytic effects were produced by coating the glass surface of the reaction vessel with PbO, while oxidation was inhibited by treatment with

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Oxidation of Formaldehyde

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$K_2B_4O_7$, KCl, or CsCl. No H_2O_2 was detected in the reaction products (which otherwise was formed) after the surface had been treated with $K_2B_4O_7$. In vessels treated with 2% $K_2B_4O_7$ solution formaldehyde is oxidized without self-acceleration, CO_2 , H_2O and CO being the main products. Kinetic curves obtained at 377-550 C under static and dynamic experimental conditions had no period of induction (Figs 3,4). The activation energy calculated from the data listed in table 2 amounted to 50 kcal. Experiments made with nontreated glass- and quartz vessels showed a distinct period of induction together with the formation of new reaction products: H_2O_2 , $(CH_2OH)_2O_2$, HCOOH and H_2 . Activation energy was here 26 kcal, which is in accordance with publications. The surface of the reaction vessel consequently determines the reaction rate and the composition of the reaction products. In conclusion, the authors thank Professor A. B. Nalbandyan for a discussion. There are 8 figures, 2 tables, and 18 references, 7 of which are Soviet.

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The Part Played by Heterogeneous Factors in the
Oxidation of Formaldehyde

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ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki, Moskva
(Academy of Sciences, USSR, Institute of Chemical Physics,
Moscow)

SUBMITTED: March 17, 1958

Card 3/3

SOKOLOVA, N.A.; MARKEVICH, A.M.; NALBANDYAN, A.B. (Moskva)

Initiating stage in the oxidation of acetaldehyde. Zhur. fiz.
khim. 35 no. 4:850-857 Ap '61. (MIRA 14:5)

1. Akademiya nauk SSSR, Institut khimicheskoy fiziki.
(Acetaldehyde) (Oxidation)

S/076/61/035/007/003/019
B127/B208

AUTHORS: Markevich A. M., Pecherskaya Yu. I.

TITLE: Hydrogen peroxide in the oxidation of formaldehyde

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 7, 1961, 1418- 1424

TEXT: The authors studied the kinetics of oxidation of formaldehyde at 330 - 420°C in the presence of H₂O₂. First, at 330 - 390°C the following

reactions took place: $\text{CH}_2\text{O} + \text{O}_2 \rightarrow \text{H}_2\text{O}_2 + \text{CO}$ and $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \frac{1}{2} \text{O}_2$.

The temperature coefficients of the reaction rates were different in each case. The observable reaction acceleration was found to be due to catalysis by hydrogen peroxide. Also the effect of H₂O₂ on the inflammation limit of an air-formaldehyde mixture was studied. The experiments showed that it is lowered by an addition of H₂O₂. All of the CO was oxidized to

CO₂. Further reactions were: $\text{CH}_2\text{O} + \text{O}_2 \rightarrow \text{H}\overset{\cdot}{\text{C}}\text{O} + \text{H}\overset{\cdot}{\text{O}}_2$, (3)

$\text{H}\overset{\cdot}{\text{C}}\text{O} + \text{O}_2 \rightarrow \text{CO} + \text{H}\overset{\cdot}{\text{O}}_2$, (4)

$\text{H}\overset{\cdot}{\text{O}}_2 + \text{CH}_2\text{O} \rightarrow \text{H}_2\text{O}_2 + \text{H}\overset{\cdot}{\text{C}}\text{O}$. (5)

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Hydrogen peroxide in the ...

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B127/B208

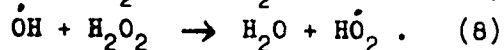
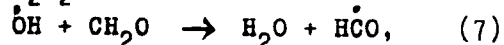
Reaction (3) stimulates the other ones in an increasing manner since it leads to formation of H_2O_2 . Two types of interaction of hydrogen peroxide are assumed to occur. According to the one, it would act directly upon formaldehyde, especially at low temperatures (up to $100^\circ C$)
 $2 CH_2O + H_2O_2 \rightarrow (CH_2OH)_2O_2$. Furthermore, formic acid would be formed.

At more than $300^\circ C$, however, the acid was not detectable. At higher temperatures the following process is assumed to take place:

$CH_2O + H_2O_2 \rightarrow 2 H_2O + CO$, which increases the oxidation rate. According

to the other variant, H_2O_2 is assumed to decompose into its radicals:

$H_2O_2 \rightarrow 2\dot{O}H$ (6) which lead to the following reactions:



The total reaction rate may be expressed by $d CH_2O/dt = w_3 \sqrt{v} + w_6 \sqrt{v}$. w_3 , w_6 are the rates of the reactions (3) and (6), \sqrt{v} denotes the length of the chain. At temperatures from $460 - 500^\circ C$ the reaction rate may increase up
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Hydrogen peroxide in the ...

S/076/61/035/007/003/019
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to explosion, when hydrogen peroxide is introduced into the reaction, even in the case of low formaldehyde concentrations. The bond energies obtained were: H-CHO 79 kcal, H-OO- 47 kcal, HO-OH- 48 kcal. w_3 and w_6 were determined to be

$w_3 = 10^{-10} [\text{CH}_2\text{O}] [\text{O}_2] e^{-32000/\text{RT}}$, $w_6 = 10^{13} [\text{H}_2\text{O}_2] e^{-48000/\text{RT}}$. The surface condition of the reaction vessel seems to have a certain importance, as the radical HO_2 probably reacts with it. V. V. Voyevodskiy and A. B. Nalbandyan have found that $\text{K}_2\text{B}_4\text{O}_7$ coating of the surface stimulates the decomposition of HO_2 . N. N. Semenov is mentioned. There are 5 figures and 9 references: 8 Soviet and 1 non-Soviet. The reference to English-language publications reads as follows: G. M. Eisenberg, Ind. a. Engin. Chem. Analytical edition, 15, 327, 1943.

ASSOCIATION: Akademiya nauk SSSR Institut khimicheskoy fiziki (Academy of Sciences USSR, Physicochemical Institute) ✓

SUBMITTED: March 13, 1959
Card 3/3

VOLOKHONOVICH, I.Ye.; MARKEVICH, A.M.; MASTEROVOY, I.F.; AZATYAN, V.V.

Nonisothermal processes. Thermal cracking of methane. Dokl.
AN SSSR 146 no.2:387-390 S '62. (MIRA 15:9)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom
N.N. Semenovym.
(Methane) (Cracking process)

MARKEVICI, A.M. [Markevich, A.M.]; AZATIAN, V.V. [Azatyan, V.V.]; SOKOLOVA, N.A.

Adiabatic compression as a research method of the chemical process
in nonstationary conditions. *Analele chimie* 18 no.2:105-113 Ap-Je
'63.

L 22443-66 FWT(m)/EWP(j) IJP(a) WW/RM
ACC NR: AP6006360 (A) SOURCE CODE: UR/0413/66/000/002/0095/0095

AUTHOR: Pashchenko, D. I.; Vtorygin, S. M.; Klaymenov, N. A.;
Markovich, A. M.; Volokhonovich, I. Ye.; Nosov, E. F.; Zorina, L. B. 36

ORG: none

TITLE: Preparation of polytetrafluoroethylene, Class 39, No. 178104
[announced by Institute of Chemical Physics, AN SSSR (Institut
khimicheskiy fiziki AN SSSR)] 15

SOURCE: Izobreteniya, promyshlennyye obrastay, tovarnyye znaki, no. 2,
1966, 95

TOPIC TAGS: polytetrafluoroethylene, polymerization, polymerization
initiator

ABSTRACT: A method of preparing polytetrafluoroethylene through poly-
merization of tetrafluoroethylene under ultraviolet light in the
presence of initiators is described. In order to obtain polymers with
an extensive surface area, perhalogenated fraons are proposed for use
as initiators. [LD]

SUB CODE: 071

SUBM DATE: 22Feb65/

Card 1/1 *HW*

UDC: 678.743.41.002.2

L 00827-67 EWT(m)/EWP(j)/T IJP(c) WW/RM

ACC NR: AP8027766 (A) SOURCE CODE: UR/0190/66/008/008/1330/1335

AUTHOR: Nobov, E. F.; Kleymenov, N. A.; Markevich, A. M.

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

TITLE: Tetrafluoroethylene polymerization in aqueous solutions

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 8, 1966, 1330-1335

TOPIC TAGS: tetrafluoroethylene, polymerization kinetics, polymerization initiator, activation energy, polymerization rate, polymerization degree, copolymer, copolymerization

ABSTRACT: A study was made of the kinetics of tetrafluoroethylene polymerization in aqueous solutions initiated by $(NH_4)_2S_2O_8$ at 40-70C, with pressures below 1 atm. The effect of O_2 on the reaction was analyzed. The reaction rate is proportional to the tetrafluoroethylene concentration and the square root of the concentration of the initiator (at low concentrations). The activation energy is 17.3 ccals/mol. The polymerization rate depends on pH and reaches its maximum

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UDC: 66.095.26+678.743

L' 00827-67

ACC NR: AP6027766

at pH = 5—5.5. The ratio of propagation constants to the square root of the termination constant was calculated and the average polymerization rate was determined. Two to three percent O₂ admixtures in tetrafluoroethylene decrease the polymerization rate 40 times. Higher O₂ concentrations do not affect the polymerization rate. The ratio of tetrafluoroethylene to O₂ is close to 1:1 with more than 10% of O₂. The mechanism of CO₂ and HF formation is proposed in the copolymerization of tetrafluoroethylene with O₂. It is shown that the copolymer and the tetrafluoroethylene polymer obtained at a high initiator concentration contain fractions which are thermally unstable at 160—180C. Orig. art. has: 8 figures and 6 formulas. [Based on authors' abstract] [NT]

SUB CODE: 07/ SUBM DATE: 16Apr65/ ORIG REF: 004/ OTH REF: 005/

Card 2/2

fv

GORENKO, V.G.; PRONIN, IU.A. [Pronin, Yu.A.]; MARKEVICH, A.P.

Determining linear speed of metal pouring. Ratsionalizatsia 13 no.
12:18 '63.

MARSHVICH, A. P.

"The Origin and Evolution of Parasitic Fauna in Domestic Animals and in Man" (page 1-7)
by Marshvich, A. P. (Kiev)

SO: Advances in Modern Biology (Uspekhi Sovremennoi Biologii), Vol. 18, 1974, No. 1

MARKELICH, Aleksandr Iroksievich, 1909

Parasitic fauna of fresh-water fish of the Ukrainian SSR Kiev, Izd-vo Akad. nauk Ukr. SSR, 1951. 375 p. (55-40912)

SH175.M28

1. MARKEVICH, A.P.
2. USSR (600)
4. Medicine
7. Human diseases whose source is the fish. Kiev., izd. Kievskogo universiteta, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March, 1953. Unclassified.

MARKEVICH, A.P.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 23440, 29 Feb - 3 Apr 1954)

<u>Name</u>	<u>Title of Work</u>	<u>Nominated by</u>
Markevich, A.P.	"Parasitic Fauna of Freshwater Fish of the Ukrainian SSR"	Academy of Sciences Ukrainian SSR

SC: W-30004, July 1954

MARKEVICH, A.P.; KORNEYEV, A.P.

In memory of Vladimir Mikhailevich Artebelevskii. Nauk.sop.Kiev.un.
12 no.7:213-217 '53. (MIRA 9:10)
(Artebelevskii, Vladimir Mikhailevich, 1874-1952)

MARKEVICH, A. P., AND KORNEYEV, A. P.

In Memory of Vladimir Mikhailovich Artobolevskiy

V. M. Artobolevskiy (1874-1952) was a zoologist and zoogeographer, and director of the Zoological Museum of the Kiev State University. (RZhGeol, No. 4, 1955) Tr. biol.--pochv. fak. Kiyevsk. un-ta, No. 9, 1953, 213-217.

SO: Sum. No. 744, 8 Dec 55 - Supplementary Survey of Soviet Scientific Abstracts (17)

MARKEVICH, A. P.

5427. *Opredeletel' presnovodnykh ryb USSR. (V pomoshch' uchitelyu). Kiyev, "Rad. shkola", 1954. 308 s. s ill.: 8 l. ill. 22 sm. 10,000 eks. 5 r. 65k. V per. — (55-185) 597 (47.71) (012) + (016.3)*

SO: *Knizynaya Letopis'*, Vol. 1, 1955

MARKEVICH, A.P.; BILOKIN', I.P.

Fraternal friendship between Russian and Ukrainian biologists.
Nauk.sop.Kiev.un. 13 no.6:5-12 '54. (MLRA 9:10)

(BIOLOGY)

PIDOPLICHKO, Ivan Grigor'yevich; MAKEYEV, Pavel Semenovich; MARKVICH, A.P.,
otvetstvennyy redaktor; **GRUDZINSKAYA, O.S.,** redaktor izdatel'stva;
SIVACHENKO, Ye.K., tekhnicheskiy redaktor

[Climates and landscapes of past ages] O klimatakh i landshaftakh
proshlogo. Kiev, Izd-vo Akademii nauk USSR. No.2. 1955. 172 p.
(MLBA 9:10)

1. Chlen-korrespondent AN USSR (for Markovich)
(Paleogeography) (Climatology)

MARKEVICH, Aleksandr Prokof'yevich, doktor biologicheskikh nauk, professor;
BRITUNOV, O.M., redaktor; STAROSTENKOVA, redaktor; ISLENT'YEVA, P.G.,
tekhnicheskij redaktor.

[Origin and development of the animal world] Proiskhozhdenie i ras-
vitiie zhivotnogo mira. Moskva, Izd-vo "Znanie", 1956. 63 p. (Vsesoius-
nee obshchestvo po rasprostraneniю politicheskikh i nauchnykh znanii.
Ser. 3, nos. 17/18) (MLSA 9:6)
(Life--Origin) (Zoology)

MARKEVICH, Aleksandr Prokofievich; KAS'YANENKO, V.G., akademik
in USSR, redaktor; PIDOPLICHKO, I.G., doktor biologicheskikh
nauk, redaktor; BELANOVSKIY, I.D., doktor biologicheskikh nauk,
redaktor; BOSHKO, G.V., kandidat biologicheskikh nauk, redaktor;
SEMERNYA, I.M., redaktor izdatel'stva; ROZENTSVEYG, Ye.N.
tekhredaktor

[Parasitic copepods of fishes of the U.S.S.R.] Paraziticheskie
veslonogie ryb SSSR. Kiev, Izd-vo Akad. nauk USSR, 1956.
258 p. (MLRA 10:4)

(Copepoda) (Parasites--Fishes)

Translation from: Referativnyy zhurnal, Geografiya, 1957, nr 7,
pp 145-146 (USSR) 14-57-7-15084

AUTHOR: Markevich, A. P.

TITLE: Historical Studies of the Fauna in Transcarpathian
Oblast (Materialy k istorii faunisticheskikh issle-
dovaniy na territorii Zakarpatskoy oblasti)

PERIODICAL: Nauchn. zap. Uzhgorodsk. un-t, 1956, Vol 21, pp 5-29

ABSTRACT: Bibliographic entry
Card 1/1

~~MARKEVICH, Aleksandr Prokof'evich~~, professor; FEDOTOV, D.M., professor,
otvetstvennyy redaktor; SHUL'MAN, I.F., redaktor; KHOKHANOVSKAYA,
T.I., tekhnredaktor

[Development of the animal world] Razvitie zhivotnogo mira. Kiev,
Izd-vo Kievskogo gos. univ. im. T.G. Shevchenko. Pt. 1. [History of
research on the origin and development of the animal world] Istoriiia
issledovaniia po probleme proiskhozhdeniia i razvitiia zhivotnogo
mira. 1957. 114 p. (MLBA 10:5)
(Zoology--History)

MARKEVICH, A.P., akademik, otvetstvennyy redaktor; GRUDZINSKAYA, O.S.,
redaktor izdatel'stva; MERUSH, A.I., redaktor izdatel'stva;
SIVACHENKO, Ye.K. tekhnicheskiy redaktor

[Methods of studying a parasitological situation and the
control of parasites of domestic animals] Metody izucheniia
parazitologicheskoi situatsii i bor'ba s parazitozami
sel'skokhoziaistvennykh zhiivotnykh. Kiev, 1957. 207 p. (MLRA 10:4)

1. Akademiya nauk URSS, Kiyev. Instytut zoologii. 2. Akademiya
nauk AN USSR. (for Markevich)
(Parasites--Domestic animals)

BALABAY, P.P.; MARKEVICH, A.P., akademik, otv.red.; BRAGINSKIY, L.I., red.
isd-va; TORONTSKIY, V.I., tekhn.red.

[Metamorphosis of the lamprey] Metamorfoz minogi. Kiev, Isd-vo
Akad.nauk USSR, 1958. 60 p. (MIRA 12:4)

1. AN USSR (for Markevich).
(Lampreys)

MARKEVICH, A.P.

"Parasitic Copepods of Fishes in the USSR and the Peculiarities of their
Distribution."

paper presented at the 15th Intl Congress of Zoology, London, 16-23 July 1958.

MARKEVICH, A.P. [Markevych, O.P.]

Present state of the vertebrate fauna of the Ukrainian
S.S.R. and problems in the conservation of rare and useful
species. Mat.pro.okhor.pryr.na Ukr. no.1:72-85 '58.
(MIRA 13:3)

(Ukraine--Wildlife, Conservation of)

PIDOPLICHKO, Ivan Grigor'yevich; MAKEYEV, Pavel Semenovich; MARKEVICH,
A.P., akademik, otv.red.; GRUDZINSKAYA, O.S., red.izd-va;
MATVEYCHUK, A.A., tekhn.red.

[Climates and land forms of the past] O klimatakh i land-
shaftakh proshlogo. Kiev, Izd-vo Akad.nauk USSR. No.3.
1959. 140 p. (MIRA 12:8)

1. AN USSR (for Markevich).
(Paleogeography)

MARKEVICH, A.P.; SHCHERBINA, A.K.

State and problems of the study of fish diseases in inland waters
of the Ukrainian S.S.R. Trudy sov.Ikht.kom. no.9:149-152 '59.
(MIRA 13:5)

1. Institut zoologii AN USSR i Nauchno-issledovatel'skiy institut
prudovogo i ozerno-rechnogo rybnogo khozyaystva USSR.
(Ukraine--Fishes--Diseases and pests)

MARKEVICH, A.P. [Markevych, O.P.]

Parasitological research in the Ukraine under the Soviet
regime and current objectives in parasitology. Pratsi
Inst.zool.AN URSR 15:3-21 '59. (MIRA 13:7)
(Ukraine--Parasitology)

MARKEVICH, A. P.

D.M. Fedotov's phylogenetic investigations. Trudy Inst. morf.
shiv. no.27:13-19 '59. (MIRA 13:2)
(Fedotov, Dmitrii Mikhailovich, 1888-) (Phylogeny)
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MARKEVICH, A.P., akademik

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30 no.11:128-131 N '60. (MIRA 13:11)

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(Carpathian Mountains--Biology)

MARKEVICH, A. P., akademik; CHOPIK, V. I., kandidat na biol. nauki

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(CARPATHIAN MOUNTAIN REGION--BOTANICAL RESEARCH)

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tekh. red.

[Problems of cytology, morphology, biology, and phylogeny
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1. Akademiya nauk Ukrainskoy SSR (for Markevich).
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Phylogenetic relations in Copepoda parasitica.

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Washington, D.C., 20-27 Aug 63

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Determining the linear speed of metal pouring. Lit. proizv.
no.8:34 Ag '63. (MIRA 16:10)

MARKEVICH, Aleksandr Prokof'yevich [Markevych, O.P.]; ANDRIICHUK,
M.D., red.; DAKHNO, Yu.B., tekhn. red.

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Trudy Ukr. resp. nauch. ob'va'paraz. no. 2:3-19 '63' (MIRA 17:3)

MARKEVICH, A.P.

Phylogenetic interrelationships of Copepoda parasitica.
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MARKEVICH, A. P.

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report submitted for 1st Intl Cong, Parasitology, Rome, 21-26 Sep 1964.

Inst of Zoology, Dept of Parasitology, Kiev.

MARKEVICH, A.V.; LAKSHANOV, V.Z.; DOBYCHIN, S.L.

Use of hydrogen as gas carrier in discharge detectors. Zhur.
prikl. khim. 38 no.11:2459-2464 N '65.

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1. Gosudarstvennyy institut prikladnoy khimii. Submitted
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MARKEVICH, E., insh.

The Van-10t - type hoist. Avt. transp. 37 no.12:53 D '59.
(MIRA 13:3)

(Hoisting machinery)

MARKEVICH, E.A.

Treatment of acute and chronic bacillary dysentery with Parmelia.
Voen.-med.zhur. no.9:86 S '61. (MIRA 15:10)
(DYSENTERY) (LICHENS--THERAPEUTIC USE)

MARKEVICH, F.F.

Application of electronics in storage management. Elek. i tepl.
tiaga 9 no.11:14-15 N '65. (MIRA 19:1)

1. Nachal'nik lokomotivnogo otdela Georgiu-Dezhskogo otdeleniya.

**YANKELOVICH, A.A.; MARKOVICH, B.B.; RAU, N.I., redaktor; MEL'NIKOVA, N.V.,
tekhnicheskij redaktor**

[Model output standards and indexes in sawmill work for enterprises equipped with single-stage two-rod saw frames with intermittent feed] Tipovye normy: Vyrabotki i normativy po lesopil'nomu proizvodstvu dlia predpriiati. osnovnykh odnostashnykh dvukhshtunnymi lesopil'nymi ramami s tolchkovoi podachei. Izd. 2-oe, Moskva, Gos. izd-vo mestnoi promyshlennosti BSPSR, 1956. 57 p. (MIRA 10:1)

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2. Normativno-issledovatel'skaya stantsiya Leningradskogo oblmestprom. (for Yankelovich)
3. Mashal'nik Normativno-issledovatel'skoy stantsii Leningradskogo oblmestprom (for Markovich)
(Sawmills)

MARKEVICH, G.I.

Shortcomings in the design of beer rectification apparatuses.
Spir. prom. 25 no.5,38-39 '59. (MIRA 12:10)
(Distillation apparatus)

MARKEVICH, G.I.

Processing of crude alcohol in a beer still. Fern. 1
spirt. prom. 31 no.7:42 '65. (MIRA 18:11)

1. Chemerskiy spirtozavod.

MARKEVICH, G.I.

Characteristic of the composition of flood water deposits of
the rivers of the northern slope of the Zailiyskiy Ala-Tau.
Izv. AN Kazakh. SSR. Ser. energ. no.2:112-118 '61. (MIRA 14:12)
(Zailiyskiy Ala-Tau--Rivers)

M. J. ...
...

arm. The percentage of O taken up (from 7.5 to 9.4) was
but slightly affected by the temp. or pressure. Treatment
with 100 mg/ml resulted in additional adsorption of O. The
conclusion of Gal' is that 36 mg/ml is the maximum amount
of O that can be adsorbed by the material.

...sponges of pure platinum, prepared with various degrees of
...cent from that of metallic Pt and was the same within the
...range $PtO_{1.2}$ - $PtO_{1.4}$. Pt sponge with 10.2% O was heated
...at 450° under reduced pressures, and the process was
...followed by x-ray analyses and d. detn. The results led to
...the conclusion that O in excess of $PtO_{1.2}$ was adsorbed and

MARKEVICH, G.S.

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15:2220

S/078/60/005/008/005/018
B004/B052 82325

AUTHORS:

Markevich, G. S., Kondrashev, Yu. D., Markovskiy, L. Ya.

TITLE:

A New Boride Phase in the System Beryllium¹ - Boron¹

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 8,
pp. 1783-1787

TEXT: In 1955 the authors published data on the phase composition of beryllium borides (Refs. 1, 2). Besides the cubic α -phase (Be_2B), β -phase BeB_2 , and γ -phase BeB_6 , they had also determined a new δ -phase richer

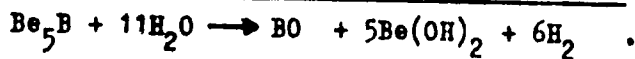
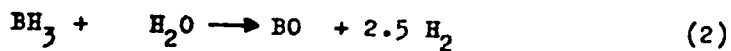
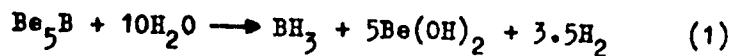
in Be which develops at 1000°C during the sintering of a mixture of pulverized boron and pulverized beryllium containing more than 70 atom% of Be. The present paper reports on the investigation of composition and properties of this δ -phase. Mixtures of B- and Be powder were produced in the following ratios: Be ; B ranging from 9 : 1 to 2 : 1, and they were radiographically examined (Table 1). Single crystals of the δ -phase (Fig.) were obtained after 100 h of continuous heating in evacuated quartz ampuls. Data of the radiographic investigation of these crystals are given

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A New Boride Phase in the System
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in Table 2. The new boride corresponds to the formula Be_5B , and its crystals are tetragons with the lattice constants $a = 3.362 \pm 0.002 \text{ kX}$, $c = 7.036 \pm 0.005 \text{ kX}$, $c/a = 2.093$. The specific gravity d_{20}^4 , pycnometrically determined, is $2.06 - 2.14 \text{ g/cm}^3$. The specific electric resistance does not differ from that of the α -phase. The hydrolytic decomposition of Be_5B into 8 N of HCl was investigated, and the liberated hydrogen, the developing boranes^{||}, and the dissolving boron suboxides BO were determined (Tables 3, 4). On the basis of these data, the following reaction equations are given:



It is assumed that primary BH_3 develops, and the formation of di- and

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A New Boride Phase in the System
Beryllium - Boron

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tetraboranes is only caused by the polymerization of BH_3 . Since the reaction between BH_3 and water is intensive, no more than 8% of borane develop, calculated with respect to the total amount of boron. Be_5B still is the boride yielding the maximum amounts of borane, since Be_2B only develops 2% of boranes. There are 4 figures, 1 table, and 6 Soviet references. X

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii
(State Institute of Applied Chemistry)

SUBMITTED: May 4, 1959

Card 3/3

80605

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5.2100C

AUTHORS: Markevich, G.S., Markovskiy, L.Ya.TITLE: On the Chemical Resistance of Beryllium Borides in Relation
to Oxygen, Nitrogen and Carbon at High Temperatures

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, No 5, pp 1008 - 1012

TEXT: The following beryllium borides¹ are described in [Refs 1 - 4]: Be_5B , Be_2B , BeB_2 , BeB_4 , BeB_6 and BeB_9 . Their chemical resistance against oxygen, nitrogen, and carbon is investigated here. The samples were placed on BeO plates and heated in a Silit furnace at 1,000 and 1,200°C with free access of air. Borides which are rich in beryllium (Be_5B , Be_2B) are the least resistant against scale formation; borides rich in boron (BeB_2 , BeB_4 , BeB_6) are the most resistant. The structure of the phases which are rich in boron is not yet deciphered, but it can be assumed that complex three-dimensional boron skeletons are present in them, like those in hexaborides of the MeB_6 type. These boron skeletons apparently cause the high chemical resistance of beryllium borides with high boron content. The beryllium borides with the highest chemical resistance, however, are inferior in this

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On the Chemical Resistance of Beryllium Borides in Relation to Oxygen,
Nitrogen and Carbon at High Temperatures

respect to the borides of other metals. The Be borides were also treated with nitrogen containing less than 0.01% O₂. A complete analogy with the action of oxygen can be observed, i.e., the chemical resistance of Be borides increases with the boron content in them. During nitration beryllium nitride is formed. At temperatures of up to 1,200°C boron nitride could not be discovered by roentgenographic analysis. For studying the interaction of beryllium borides with carbon, boride powders were mixed with 25 weight % of carbon and heated in briquetted form in an argon atmosphere. At temperatures of 900 - 1,300°C Be₂C is formed which proves that the affinity of beryllium to carbon is greater than to boron. There are: 4 graphs, 2 tables and 7 references: 6 Soviet and 1 English.

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii (State Institute of Applied Chemistry)

SUBMITTED: October 12, 1959

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