"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

KOZKOS, M.

(γ-p) reaction on cobalt. M. Rozkoš (Karlova Univ., Prague). *Czechoslov. J. Phys.* 7, 592-5(1957)(in Russian) (English summary); cf. *C.A.* 52, 35555.—Co foil, 2.25 sq. cm. in area, about 4 μ thick, was irradiated with γ-rays from the reaction Li(p,γ). The photoprotons were registered in photographic Agfa K2 plates with a 200-μ thick emulsion. The radiation background was detd. (and subtracted) with Geiger-Müller counter, by using an identical irradiation, but without Co. Measurements of the proton path traces in the emulsion were carried out with a Zeiss stereomicroscope. Registered were only those protons which certainly stemmed from the Co foil. Several proton energy max., corresponding to Poisson distribution, were found: 3.65, 3.96, 4.50, 4.93, 5.42, 6.05, 6.90, and 7.20 e.v., in an approx. agreement with evapn. theory. From the amts. of evapd. electrons it is possible to calc. the temp. of the formed nucleus (in this case, Fe^{56}). It was found to be 0.74 ± 0.16 e.v. The exptl. found angular distribution of the protons can be expressed by an empirical formula only. This fact might be connected with the nucleus structure. E. Ryshkewitch

3-4E3c
4E3d

3

KK

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Rozkoš, M.

771.534

8544. THE DEPENDENCE OF THE DENSITY OF PHOTOGRAPHIC EMULSIONS ON THE ENERGY OF β-RADIATION. M.Rozkoš and V.Petržílka.

Czech. J. Phys., Vol. 6, No. 3, 237-45 (June, 1956). In Russian.

A relation was derived from which it is possible to calculate the density D of photographic emulsions caused by β-radiation, dependent on the period of radiation T, the intensity of the source J and the average energy of the particles. The derivation is based on the assumption that the density is proportional to the energy lost by the particles in the emulsion. This energy has been defined as a product of the number of particles absorbed and their average energy $\bar{E}$. The assumption that this average energy does not vary by absorption was verified experimentally. The range of the product JT, in which the densities caused by two sources of the same isotope are identical if $T_1 : T_2 = J_2 : J_1$, was also experimentally determined. The validity of the relation for D was verified by experiment. By means of three sources S^{35}, P^{33} and $Sr^{90} + Y^{90}$ (composite source both components of which were in equilibrium) the dependence of D on the product JT was determined. The measured values were compared with the theoretical curves calculated for the given source according to the relation for D. The experimental and theoretical values are in good agreement up to the value $JT = 7 \times 10^7$ β-particles, the energies of which lie in the range 0.169 MeV(S^{35}) to 2.35 MeV (Y^{90}). A

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZKOS, M.

Reaction (R,P) to indium. p. 9. (Ceskoslovensky Casopis Pro Fysiku. Vestnik. Vol. 7, no. 1, 1957.)

SO: Monthly List of East European Accession (EEAL) LC, Vol. 6, no. 7, July 1957. Uncl.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZKOS, M.

"Diffraction of Neutrons and Its Use in Technical Practice." p. 188. (MATEMATICKO-PRIRODOVEDECKE ROZHLEDY, Vol. 32, no. 6, 1953, Praha, Czechoslovakia)

So: Monthly List of East European Accessions, LC, Vol. 3, No. 5, May 1954/Unclassified

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Rozkos, Miroslav

Nuclear photoeffect in nickel, copper, and zinc. Zdeněk Dlouhý, Václav Petrželka, and Miroslav Rozkoš (Charles Univ., Prague). *Czechoslov. J. Phys.* 5, 193-200(1955)(in Russian)(English summary).—Effective cross sections were detd. for γ-rays from Li bombarded by protons (E_γ = 17.6 m.e.v.). To detect the photoprotons a foil of the element under investigation was placed between 2 Agfa K2 nuclear emulsion plates in such a way that the foil covered about half the surface of the emulsion. The other half permitted an estimate of the background due to protons produced in the emulsion. To det. the no. of γ-quanta a Geiger-Müller counter was used. For Ni, Cu, and Zn the following cross sections (in 10^{-28} sq. cm.) were obtained: (8 ± 4), (7 ± 4), (4 ± 2). The math. formulas used in the evaluation of the exptl. data are derived in an appendix.

E. Gora

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ROZKOS, MIROSLAV

5

20

The dependence of the developed density of photographic emulsions on the energy of the β radiation used for exposure. Miroslav Rozkoš and Václav Petrželka (Fac. Nuclear Phys., Prague). Czechoslov. J. Phys. 6, 237-45 (1956)(in Russian, English summary).—The developed d. of a photographic emulsion which has been exposed to β radiation depends on the time of irradiation, the intensity of the source, and the av. energy of the particles. A quant. relation is derived on the assumption that the developed d. is proportional to the energy lost by the particles in the emulsion. The validity of this relation has been verified by expts. with 3 radiation sources, S^{35}, P^{32}, and $Sr^{90} + Y^{90}$. The results agree with theoretical prediction up to an exposure of 7×10^7 β particles in the energy range from 0.169 mev. to 2.35 mev. The relation has the form, $D = (D_\infty/2)\cdot(2 - e^{-c/T^2} - e^{-c/T^2})$, where the consts. D_∞ and c are detd. by the nature of the emulsion, and the variable, T, is the time of irradiation. The magnitudes of f_1 and f_2 are related to the av. energy and intensity of the β radiation, by a series of equations which are included in the text.

G. W. Luckey

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19

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ROZKOS, MIROSLAV

Czechoslovakia/Nuclear Physics - Instruments and Installations. Methods of Measurement and Investigation C-2

Abst Journal : Referat Zhur -Fizika, No 12, 1956, 33895

Author : Rozkos, Miroslav and Petrzilka, Vaclav

Institution : Department of Technical and Nuclear Physics, Prague, Czechoslovakia

Title : Dependence of the Blackening of Photographic Emulsions on the Energy of β-Radiation

Original Periodical : Ceskosl. casop. fys., 1956, 6, No 3, 287-295

Abstract : A dependence is derived for the blackening of the photo emulsion on the number and energy of the β particles. The curves obtained are compared with the blackening of P^{32}, S^{35} and $Sr^{90} + Y^{90}$ by β particles.

Card 1/1

ROZKOS, M.

IRMC

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539.172.3

9924. The nuclear photo-effect in nickel, copper and zinc. Z. DLOUHÝ, V. PETRZILKA AND M. ROZKOŠ. *Czech. J. Phys.*, 5, *No.* 2, 193–200 (*April*, 1955) In Russian, with summary in English (½ p.).

Collimated γ-rays from the reaction $Li^7(p, \gamma)$ irradiated a thin foil of the element in question placed between photographic plates which detected the protons. The γ-ray beam intensity was measured by a G.M. counter calibrated by the reaction $Cu^{63}(\gamma, n)$ for which the cross-section is known. The measured total cross-sections were $8 \pm 4 \times 10^{-28}$, $7 \pm 4 \times 10^{-28}$ and $4 \pm 2 \times 10^{-28}$ cm² for Ni, Cu and Zn resp. J. HUGHES

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ROZKOS, MIROSLAV

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The photonuclear effect on Ni, Cu and Zn was investigated by Zdenek Dlouhy, Vaclav Petrzilka, and Miroslav Rozkos in Chekhosl, fiz. Zh., 5, No 2, 193-200, 1955 (abstracted in Referativnyy Zhurnal, Fizika, No 1, 1956, 431). Cross sections of (γ,p) reactions on Ni, Cu, and Zn were measured. The 17.6 Mev gamma rays were proton induced on Li. Photoprotons were detected on nuclear photoemulsion "Agfa-K2" (200μ). A foil of the studied element was inserted between two plates covering about half the emulsion. The other uncovered emulsion part was used for determining the background produced by protons forming in the emulsion. The following values were obtained: $\sigma(\gamma,p)Ni = (8\pm4)\cdot10^{-2}$ barn; $\sigma(\gamma,p)Cu = (7\pm4)\cdot10^{-2}$ barn; $\sigma(\gamma,p)Zn = (4\pm2)\cdot10^{-2}$ barn. The Cu cross sections concur well with the results of Raymond Chastel (Journal de physique et radium, 15, No 4, 240-250, 1954; ibid., 15, No 6, 459-469, 1954), abstracted in Referativnyy Zhurnal, Fizika, 1955, 11002, 13451. The assumption that the Ni nucleus has a closed shell was not experimentally confirm because both cross sections (Ni and Cu) are of the same order. Affiliation of the three authors is given as Charles University, Physics Institute of the Czechoslovak Academy of Sciences, Prague.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZKOSNY, Rudolf (Brno, Kotlarska 2)

Taxonomy of the genus Pherbellia Robineau-Desvoidy (Diptera, Sciomyzidae). Cas entom 61 no.4:384-390 O '64.

1. Chair of Systematic Zoology of the Faculty of Natural Science of the Purkyne University, Brno. Submitted October 7, 1963.

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KOMINEK, J.; ROZKOVCOVA, E.

Possibilities of prevention in stomatology in childhood.
Cesk pediat. 19 no.10:931-935 O '64.

1. Stomatologicke oddeleni fakulty detskeho lekarstvi Karlovy university v Praze (vedouci doc. dr. J. Kominek, CsC,) a II stomatologicka klinika fakulty vseobecneho lekarstvi Karlovy university v Praze, (vedouci doc. dr. J. Kominek, CsC.).

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

KOMINEK, J. MUDr; ROZKOVCOVA, E. MUDr; SRP, L. RNDr

Psychogenic effect of electric irritation of the dental pulp. Cesk. stomat. no. 4-5: 172-176 Jl '55.

1. Z II stomatologicke kliniky Karlovy university, prednosta prof. MUDr. F. Neuwirt. Z II detske kliniky Karlovy university prednosta prof. MUDr J. Houstek.

(DENTAL PULP, physiology
eff. of electric stimulation in child, eff. of suggestion on threshold of sensitivity)
(ELECTRICITY, effects.
on dent. pulp in child, eff. of suggestion on threshold of sensitivity)
(SUGGESTION,
eff. on sensitivity threshold in electric irritation of dent. pulp in child)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

CZECHOSLOVAKIA

SMECKA, V.; ROZKOVCOVA, L.

Dept. of Pharmaceutical Supply, Faculty of Pharmacy, Comenius Univ. (Katedra farmaceutickeho provozu farmaceuticke fakulty University Komenskeho), Bratislava (for both)

Bratislava, Farmaceuticky obzor, No 11 [November] 1966, 505-513

"Study of dispensing in pharmacies. Part 6: Working area."

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

CZECHOSLOVAKIA

SMECKA, V.; ROZKOVCOVA, L.

Chair of Pharmaceutical Supply, Faculty of Pharmacy, Comenius University (Katedra farmaceutickeho provozu FaPUK [Fakultet Farmacie Universita Komenskeho]), Bratislava (for both)

Bratislava, Farmaceuticky obzor, No 1, January 1966, pp 25-30

"Consideration of the possibilities for use of distribution automats in pharmaceutical practice."

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ROZKOWSKA, M.

Some corals from the Crania tuberculata zone found in the region of Sochaczew. p. 241.

ACTA GEOLOGICA POLONICA, Warszawa, Vol. 5, no. 2, 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955, Uncl.

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Rozkowska M.

ROZKOWSKA, Maria

Significance of developmental defects of the ribs in radiodiagnosis of pulmonary diseases. Gruzlica 25 no.8:637-648 Aug 57.

1. Z Zakladu Radiologii Instytutu Gruzlicy Kierownik: doc. K. Ossowska. Dyrektor: prof. J. Misiewicz.

(LUNG DISEASES, diag.
x-ray significance of rib abnorm. (Pol))

(RIBS, abnorm.
significance in x-ray diag. of lung dis. (Pol))

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

GOC, E.; KOTLICKA, G.N.; PALYS, J.; ROZKOWSKI, A.

Preparation techniques of a specific hydrogeological map of the Upper Silesian Coal Basin. Przegl geol 11 no.5: 235-237 My '63.

1. Gornoslaska Stacja Terenowa, Instytut Geologiczny, Sosnowiec.

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ROZKOWSKI, Andrzej

Mineralization of the Tertiary waters and structure of the southwestern part of the Upper Silesian Coal Basin.
Kwartalnik geol 6 no.4:652-661 '62.

1. Gornoslaska Stacja Terenowa, Instytut Geologiczny, Sosnowiec.

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ODODEK, Juliusz, dr; ROZKOWSKI, Andrzej, mgr inz.

Water conditions of the Thuringian Basin. Gosp wodna 23 no.1: 30-32 Ja '63.

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ROZKOWSKI, Andrzej; CEBULAK, Stefan

Geologic and petrographic-facial characteristics of the Helvetian of the Memaliai-Luftinia (Albania) syncline. Rocz geol Krakow 34 no. 1/2:267-305 '64.

1. Upper Silesian Field Station, Geological Institute, Sosnowiec.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZKOWSKI, Andrzej

Hydrogeological conditions in the Tertiary of the Jastrzebie region. Kwartalnik geol 5 no.4:986 '61.

1. Gornoslaska Stacja Terenowa, Instytut Geologiczny, Warszawa.

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ROZKOWSKI, Andrzej

Some hydrochemical problems of the Upper Silesian Tertiary.
Kwartalnik geol 6 no.2:434-435 '62.

1. Gornoslaska Stacja Terenowa, Instytut Geologiczny, Warszawa.

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PALYS, Jan; ROZKOWSKI, Andrzej

Water conditions of the Mars and Flora mines in the light of the geological conditions of that region. Kwartalnik geol 6 no.2:436 '62.

1. Gornoslaska Stacja Terenowa, Instytut Geologiczny, Warszawa.

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KLUGMANN, E.; ROZKWITALSKI, Z.

Time decrease of the reversible permeability in nickel under stress. Acta physica Pol 25 no.2:155-159 F '64

1. Physics Department, High School of Pedagogy, Gdansk, and I Institute of Physics, Technical University, Gdansk.

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

18

CA

PROCESSES AND PROPERTIES INDEX

The conversion of gypsum by solutions of ammonium carbonate. S. Perel'man and V. Rozler. *J. Chem. Ind.* (Moscow) 1935, No. 1, 28-37.—An excess of 5% of $CaSO_4.2H_2O$ is treated with a 40% soln. of $(NH_4)_2CO_3$ at 40-60°. If the reagents are mixed slowly and equally, the ppt. of $CaCO_3$ filters well and requires little washing. The reaction is complete in 1.5-2 hrs. The filtrate contains 0.2% free NH_3, which is neutralized by H_2SO_4. The yields of $CaCO_3$ and $(NH_4)_2SO_4$ are 92-3 and 96-8%, resp. The $CaCO_3$ contains 17-20% H_2O, and when dry gives a fine noncaking powder. If $2CaSO_4.H_2O$ or phosphogypsum is used in the reaction, a poor quality of $CaCO_3$ is obtained.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

BC

B-I-8

Conversion of gypsum by aqueous ammonium sulphate. S. PERELMAN and V. ROZLER (J. Chem. Ind. Russ., 1935, 12, No. 1, 28—37).—[illegible]% conversion of gypsum (I) and [illegible]% utilization of $(NH_4)_2CO_3$ is obtained from powdered (I) ([illegible]-mesh; 5% excess) and 40% aq. $(NH_4)_2CO_3$ (2 hr. at 40—[illegible]). The resulting 40% aq. $(NH_4)_2SO_4$ (II) contains 0·2—0·25% of NH_3, which should be neutralised with H_2SO_4. The ppt. contains $CaCO_3$ 65, (I) 10, mechanical admixtures 4—6, (II) 0·8—1, and H_2O 20%. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CN

15

Reworking of phosphates with nitric acid. V. B. Rozler. *Mineral. Udobreniya i Insektofungisidy* 1, No. 1, 28-42(1935).—Various methods are discussed for the decompn. of rock phosphates with HNO_3 and reworking into fertilizers. Chas. Blanc

COMMON ELEMENTS

COMMON VARIABLES INDEX

MATERIALS INDEX

OPEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

1ST AND 2ND LETTER

2ND LETTER

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Bc

B-I-8

Reworking of phosphates with nitric acid. V. B. Roman (Min. Udobr. Insektofung., 1935, 1, No. 1, 28—42).—Processes for manufacture of P fertilisers from rock phosphates are discussed.

Ch. Abs. (p)

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

CA

2

Vapor pressure of mixtures of vinylidene chloride and vinyl chloride. S. I. Rozlovskaya and M. I. Temkin. *J. Applied Chem.* (U.S.S.R.) 19, 30-4(1946)(English summary).—Vapor pressures were detd. for vinyl chloride between 20° and 60° (the values obtained agreeing well with those of Dana, Burlick, and Jenkins (*C.A.* 22, 339)), vinylidene chloride between 20° and 90° and for mixts. of these between 20° and 80°. The results for the mixts. were satisfactorily close to values calcd. on the basis of Raoult's law. The results are given in graphic and tabular forms. · G. M. Kosolapoff

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Polymers from Halogenated Hydrocarbons

Vapour pressure of mixtures of vinylidene chloride and vinyl chloride. S. I. ROZLOVSKAYA and M. I. TEMKIN (J. Ap. Chem., U.S.S.R., 1946, **19**, 30 4; Chem. Abs., 1946, **40**, 6313).—English summary. Vapour pressures were determined for vinyl chloride between 20 and 60°, vinylidene chloride between 20° and 90°, and for mixtures of these between 20° and 80°. The results for the mixtures were satisfactorily close to values calculated on the basis of Raoult's law. The results are given in graphic and tabular form. 3S2HH

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

KORDECKI, Roman; RFUTT, Henryk; ROZKOWSKI, Krzysztof

Hemodynamic effects of shock doses of histamine and trypan blue during ethyl alcohol intoxication in dogs. Roczn. akad. med. Marchlewski 10:79-89 ' 64.

1. Z Katedry Fizjologii AM w Bialymstoku (Kierownik: doc. dr. med. R. Kordecki). Submitted November 7, 1964.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

SZCZEPANSKI, Jerzy; REUTT, Henryk; ROZKOWSKI, Krzysztof

A contribution to the study of the activation of the process of experimental bone scar formation. Chir. narzad. ruchu ortop. Pol. 30 no.2:131-134 '65

1. Z Zakladu Fizjologii Akademii Medycznej w Bialymstoku (Kierownik: doc. dr. med. R. Kordecki).

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

KERSHANSKIY, I.I.; ROZLOVSKIY, A.A.; SALOMATOV, N.K.; KERSHANSKAYA, L.N.; AFASHAGOV, Yu.M.; KUUR, V.P.

Pilot plant tests in precipitation reduction smelting of antimony concentrates in electric furnaces. TSvet. met. 38 no.5:34-41 My '65. (MIRA 18:6)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

L 32242-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AR5004769 S/0137/64/000/010/G030/G030

SOURCE: Ref. zh. Metallurgiya, Abs. 10G207 13 B

AUTHOR: Rozlovskiy, A. A.

TITLE: The theory of oxidizing refining of antimony from iron with alkaline fluxes 27 27

CITED SOURCE: Uch. zap. Tsentr. n.-t olovyan. prom-sti, no. 1, 1964, 37-39

TOPIC TAGS: antimony, iron, oxidizing, metal refining, alkali, ferrous oxide 16

TRANSLATION: The refining of antimony from iron can be done by chlorine, sulfide, or oxidizing methods. The most suitable method is oxidizing refining with slagging, forming FeO with alkaline fluxes. An experimental test and thermodynamic analysis have demonstrated the possibility of efficient refining of antimony from iron with caustic soda, while the use of soda ash is less effective. With an initial content in the antimony cathode raw material of

Card 1/2

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

L 32242-65

ACCESSION NR: AR5004769

0.11-0.59% iron, 0.11-0.13% sulfur, and 0.005-0.007% arsenic, antimony refined with alkali corresponds in quality to brands SU-0 and SU-1. G. Svodtseva

SUB CODE: MM ENCL: 00

Card 2/2

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

SHEYN, Yakov Petrovich; GUDIMA, Nikolay Vasil'yevich. Prinimal uchastiye ROZLOVSKIY, A.A.; VANYUKOV, A.V., prof.

[A metallurgist's brief handbook on nonferrous metals] Kratkii spravochnik metallurga po tsvetnym metallam. Moskva, Metallurgiia, 1964. 411 p. (MIRA 17:11)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.A.; TIL'GA, V.A.; USTINOV, A.M.

Oxidizing roasting of antimony and mercury and antimony flotation concentrates in a fluidized bed. TSvet. met. 36 no.12:34-37 D '63. (MIRA 17:2)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

LAKHTIN, G.A.; TIL'GA, V.A.; ROZLOVSKIY, A.A.; BOGDANOV, V.A.; AFASHAGOV, Yu.A.

Mercury vapor condensation in apparatuses with internal water cooling. TSvet. met. 35 no.9:44-50 S '62. (MIRA 16:1)
(Mercury--Metallurgy) (Distillation apparatus)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.A.

Methods of hydrodynamic modeling of fluidized bed processes.
Tsvet.met. 35 no.2:37-40 F '62. (MIRA 15:2)
(Fluidization--Models)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.A.; LOMOVSKIY, V.I.

Amalgam methods in nuclear engineering in foreign countries [from "Journal of Metals," no.4, 1960; "Journal of Metals," no. 6, 1960; "W.W. Talanta," no. 3, 1960; "Angewandte Chemie," no. 9, 1960]. TSvet. met. 34 no. 4:94 Ap '61. (MIRA 14:4)
(Nuclear engineering)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

[illegible], A. I.

"Ignition Limits of Ammonia-Oxygen Mixtures."

Zhur. Fiz. Khim., No. 1, 1946.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

CA

1ST AND 2ND ORDERS — 3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

2

The ignition limits of ammonia-oxygen mixtures. A. I. Rozlovskii. *J. Phys. Chem.* (U.S.S.R.) 20, 33-49(1946). Mixts. of NH_3 and O_2 were introduced into a heated quartz vessel 12 cm. long and 2.5 cm. in diam., and the min. temp. T of the vessel was noted at which a flame appeared in the gas. The value of T was very sensitive to the state of the walls; often no ignition took place at any temp. investigated. Cleaning of the vessel with HF, heating at 1200°, etc., did not prevent this fluctuation of results, but ignitions at lower temp. were more reproducible if they took place during a slow cooling of the vessel. The lowest T for every mixt. is considered to be its true value. The following rules are valid for these "true" values. When the pressure P of the gas mixt. increases, e.g., from 40 mm. Hg to 100 mm. Hg, the T decreases from, e.g., 1100° to 1025°. At a given P, T is the lowest for 33% or 50% of NH_3, according to the vessel. Small addns. (e.g., 0.02%) of C_2H_4 affect T slightly but eliminate its irreproducible changes. The min. pressure at which NH_3-O_2 mixts. can be ignited by a spark has a min. at 33% of NH_3. Some results are given for the rate of *combustion* of 33% NH_3 at 695 and 757°. Semenov's equation $\log P/T = (A/T) + B$ reproduces only a part of the above explosion expts.; when it is valid, A seems to be proportional to B. J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

USSR/Physics
Combustion
Flame

Aug 1947

"Conditions Giving Rise to Instability in Normal Combustion," Ya. B. Zel'dovich, Corr Mem, Acad Sci; A. I. Rozlovskiy, Combustion Sec, Inst Phys Chem, Acad Sci USSR, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 4

Landau states that size of fuel supply affects viscosity and this stability of of combustion. Describes experiments conducted to determine reason for phenomenon known as autoturbulency of flame and results obtained. Submitted, 2 Jun 1947.

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

CA

Y

The mechanism of combustion of iron. A. L. Vels and A. I. Rozlovskii (Machine Building Evening Inst., Moscow). *Zhur. Fiz. Khim.* 23, 1305-10(1949).—Cutting Fe by burning in an O stream is considered from the viewpoint of chem. kinetics. Presumably, the rate of reaction is detd. by the diffusion through the oxide film coating the Fe and the flow of this film. The surface temp. of burning Fe is 1550-1600° (optical pyrometer). There is no "ignition temp." of Fe. J. J. Bikerman

ROZLOVSKIY, A. I.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

USSR.

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

USSR/Chemistry - Combustion Kinetics Nov 53

"Thermodynamic Calculations of the State of Products of Combustion in an Enclosed Space." A. I. Rozlovskiy, Yu. Kh. Shaulov, Inst of Phys and Math, Acad Sci Az SSR

Zhur Fiz Khim, Vol 27, No 11, pp 1610-1616

Propose method for calcn of the equil state of products of combustion in an enclosed space on the basis of the partial pressures of components is proposed. This method is preferable to that of Lewis and Elbe because of its relative simplicity and uniformity of mathematical calcns. The new

274T16

method has been applied to problems of the detn of the heat effect of one of the dissocn reactions and of the heat capacities of one of the components of a dissocd mixt. A method for calcg the correction for the explosion pressure on the basis of the temp gradient in the explosion vessel is described.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

USSR/Chemistry - Reaction Kinetics 21 Sep 53

"The Kinetics of the Reaction of a Chlorine-Hydrogen Mixture in the Dark and the Critical Conditions of Its Ignition," A.I. Rozlovskiy, Inst of Phys and Math, Acad Sci Az SSR

DAN SSSR, Vol 92, No 3, pp 621-624

Discusses kinetic data obtained by other workers and compares the specific reaction rate k_w for the reaction $Cl+H_2$ obtained exptly with that obtained by calcn. Compilation of data indicates that HCl, even at large concns, does not have a retarding

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effect on the reaction. Using D.A. Frank-Kamenetskiy's method [Zhur Fiz Khim, Vol 13, 738 (1939)], calcd the conditions [P,T] necessary for the spontaneous ignition of a stoichiometric mixt of Cl_2 and H_2. Presented by Acad N.N. Semenov, 25 Jul 53.

268T7

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

SHAULOV, Yukhanay Khaimovich; ROZLOVSKIY, A.I, redaktor; PEVZNER, M. tekhnicheskiy redaktor.

[Flame propagation through porous media] Rasprostranenie plameni cherez poristye sredy. Baku, Izd-vo Akad. nauk Azerbaidzhanskoi SSR, 1954. 94 p. (MLRA 8:7)
(Flame)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

Kinetics of the dark flame reaction of hydrogen chloride mixtures with additions of oxygen. Izv. AN Azerb. SSR no.5:93-99 My '54. (Chemical reactions) (Hydrochloric acid) (MIRA 8:6)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

USSR

The determination of the energy of activation and its dependence on temperature. A. I. Rozlovskii. *Doklady Akad. Nauk Azerbaidzhan S.S.R.* 10, No. 1, 11-13(1954) (in Russian).—The energy of activation (A) can be regarded as due to properties of individual mols., or as due to the collective effect of all the mols. In the first formulation external conditions cannot change A; in the 2nd, A depends on temp. In terms of actual calcn., the values of A are almost the same by either theory, but since A can be detd only by measurement of the temp. coeff. of the reaction rate, only the 2nd formulation should be used. H. M. L.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Rozlovskiy
Rozolovskiy, A. I.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 147 - 9/26

Authors : Rozlovskiy, A. I.

Title : The kinetics of dark reaction of a hydrochloride mixture and the critical conditions of its combustion

Periodical : Zhur. fiz. khim. 28/1, 51-59, Jan 1954

Abstract : Experiments showed that the kinetics of dark reaction of a hydrochloride mixture is closely connected with the equilibrium dissociation of the Cl in the mixture. The activation energy for oxygen-free mixtures was calculated. The temperature differences in the center and at the walls of the reaction vessel were measured for oxygen-free tests and the results were found to be in conformity with the reactions kinetics. The critical conditions of hydrochloride combustion were determined by the reaction kinetics. Eight references: 7-USSR and 1-USA (1933-1949). Tables ; graphs.

Institution : Academy of Sciences Azerb-SSR, Institute of Physics and Mathematics, Baku

Submitted : February 21, 1953

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Kozlovskiy, A. I.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 19/45

Authors : Aliev, A. A.; Rozlovskiy, A. I.; and Shaulov, Yu. Kh.

Title : Normal rates of flame of acetylene-oxygen mixtures

Periodical : Dok. AN SSSR 99/4, 559-562, Dec 1, 1954

Abstract : The rate of flame in acetylene-oxygen mixtures was measured at 25°C, an initial pressure of 1 atm and the propagation of the spherical flame in a rigid bomb (cylinder) was photographed on a rotating film. The initial combustion phase, which takes place at a practically constant pressure, was used as a basis for measuring the rate of flame. The results obtained are presented in graphical form. Eleven references: 7-USSR; 2-USA; 1-German and 1-English (1910-1951). Graphs.

Institution : Academy of Sciences Az-SSR, Institute of Physics and Mathematics

Presented by: Academician A. N. Frumkin, October 8, 1954

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

KOZLOVSKIY, A. I.

9

The determination of thermodynamic characteristics by the measurement of explosion pressure in a closed volume. I. G. Kerimov, A. I. Rozlovskii, and Yu. Kh. Shauloy. *Trudy Inst. Fiz. i Mat., Akad. Nauk Azerbaidzhan S. S. R., Ser. Fiz.* 7, 41-9(1955).—Mixts. of H_2 and O_2 were exploded in various ratios in the presence of either N_2 or A also in the presence of N_2 + He. The pressures measured were used in a graphic method to obtain the heat contents of H_2O_{vapor} at various temps., also the amts. of free atoms of O and H and the radical OH produced at 2200, 2400, and 2600°K. The dissocn. heat was 126.00 kcal./mole at 0°K. for the reaction $2H_2O = H_2 + 2OH$. Werner Jacobson

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Kozlovskiy, A. I.

SOV/124-57-5-5293

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 5, p 27 (USSR)

AUTHORS: Karasharly, K. A., Kerimov, I. G., Nasirov, Ya. N., Rozlovskiy, A. I., Shaulov, Yu. Kh.

TITLE: On the Conditions Conducive to the Inception of Instability of Normal Combustion (K voprosu ob usloviyakh vozniknoveniya neustoychivosti normal'nogo goreniya)

PERIODICAL: Dokl. AN AzSSR, 1955, Vol 11, Nr 12, pp 819-823

ABSTRACT: An experimental investigation of flame propagation in methane-oxygen and acetylen-oxygen mixtures aimed at an evaluation of the lower boundary of Reynolds numbers at which the transition zone from normal to detonational combustion begins. The experiments were made in transparent rubber balloons up to 20 liters in volume. No detonation was observed during the combustion of the methane-oxygen mixtures; the beginning of flame acceleration corresponds to Reynolds numbers of the order of 4 to 10 x 10^4. Bibliography: 5 references.

B. V. Raushenbakh

Card 1/1

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

USSR/ Chemistry - Physical chemistry

Card 1/2 Pub. 147 - 1/26

Authors : Rozlovskiy, A. I.

Title : The kinetics of a dark reaction of a hydrogen chloride mixture, Part 2. Separation of chains by oxygen additions

Periodical : Zhur. fiz. khim. 29/1, 3-14, Jan 1955

Abstract : It was established experimentally that the addition of oxygen to an HCl mixture disrupts the equilibrium dissociation of the Cl, thus leading to a drop in the rate of reaction. The laws governing the effect of oxygen additions on the kinetics of Cl-H reaction are cited. Additional data regarding the reaction kinetics were obtained by measuring the temperature differences in a reacter with non-uniform distribution of active centers.

Institution : Acad. of Sc. Azerb SSR, Institute of Physics and Mathematics, Baku.

Submitted : August 10, 1953

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Periodical : Zhur. fiz. khim. 29/1, 3-14, Jan 1955

Card 2/2 Pub. 147 - 1/26

Abstract : The distribution of active centers along the cross section of the reactor was calculated. New information is given on the chain separation under the effect of oxygen additions, and on the spontaneous combustion of the HCl mixture during heterogenous origination of active centers. Eleven references: 9 USSR; 1 USA and German (1933-1954). Table; graphs.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

USSR/Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physicochemical Analysis. Phase Transitions, B-8

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 60998

Author: Kerimov, I. G., Rozlovskiy, A. I., Shaulov, Yu. Kh.

Institution: None

Title: On Determination of Thermodynamic Characteristics by the Method of Measurement of the Pressure of Explosion Within a Closed Space

Original Periodical: Zh. fiz. khimii, 1955, 29, No 6, 1001-1006

Abstract: Illustration of the use of a rational procedure of computation of the state of combustion products, which was described previously (Referat Zhur - Khimiya, 1954, 24984). Determined were enthalpies of steam without utilization of spectral data and heat of dissociation of water to hydroxyl and hydrogen (127.1 kcal/mol).

Card 1/1

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

Rozlovskiy, A. I. -- "The Reaction Kinetics of Certain Gaseous Fueld Mixtures in a Flame and in the Pre-Flame Region, and the Structure of the Flame Front." Min Chemical Industry USSR. Order of Labor Red Banner Sci Res Physicochemical Inst imeni L. Ya. Karpov. Moscow, 1956. (Disseration for the Degree of Doctor in Chemical Sciences).

So: Knizhnaya Letopis', No. 11, 1956, pp 103-114

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Rozlovskiy, A. I.

USSR/Physical Chemistry, Kinetics, Combustion, Explosions, Topochemistry, Catalysis. B-9

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22414.

Author : A. I. Rozlovskiy
Inst : Not given
Title : Combustion of Nitric Oxides Mixtures with Hydrogen. I. Kinetics of a Reaction in Flame.

Orig Pub : Zh. fiz khimii, 1956, No 4, 912-914.

Abstract : Kinetics of H_2+ NO reaction in flame was studied by the size of normal rate of flame u_n in a spheric bomb with central ignition (this rate is determined by the flame's speed in the initial part of the course) and by the calculated combustion temperature T_b. A mixture with α = 0.550 and P > 4 atm $u_n \sim P^{0.482}$, and a mixture with α = 0.338 u_n- does not depend on P. Calculated value of T_b reaches 3400° K and u_n does not exceed 30 cm/sec. Evaluation of activation energy (E) in flame on the basis of the thermal theory and the variation of u_n with T_b where a 0.5 - 0.3 produced a value of E 350 kcal/mole, i-e. a figure which has no real meaning. E, when computed on the basis of the absolute reaction speed calculated by a measured

Card 1/2

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

USSR/Physical Chemistry, Kinetics, Combustion, Explosions, Topochemistry, Catalysis. B-9

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22414.

value of u_n is equal to 49.1-51.6 kcal/mole. Utilizing this value of E and the observed dependence of u_n on P, the author determined the dependence of u_n on P, taking into account the influence of P on dissociation and through it on T_b, i-e. where T_b is constant. This provides the order of the reaction in a flame as between 1.9 and 1.1. Kinetic measurements show that the reaction follows the trimolecular rule.

Card 2/2

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Rozlovskiy, A.L.

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[illegible]6. KINETICS OF THE REA[illegible]N OF SOME INFLAMMABLE GAS MIXTURES IN THE [illegible] PART OF THE [illegible]

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ROZLOVSKIY, A.I.

4

Chem

The absolute values of reaction velocities in flames. A. I. Rozlovski (Inst. Phys. and Math., Baku). *Zhur. Fiz. Khim.* 30, 251-60(1956).—Earlier exptl. data reported in the Russian literature on the abs. flame propagation velocities were recalcd. and the results for the $CO + O_2$ reaction kinetics were found to confirm the Zel'dovich and Frank-Kamenetskiĭ theory (*C.A.* 32, 9502[8]; 42, 5229b). The nitroglycol decompn. kinetics studied by Belyaev, (*C.A.* 35, 4207[4]) cannot be used for comparison of abs. reaction velocities in the flame and pre-flame regions, because the information on the nitroglycol kinetics is inadequate.

W. M. Sternberg

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

The flame-front structure. A. I. Rozlovskii (Fiz. Math. Inst., Acad. Sci. Azerbaidzhan. S.S.R., Baku). *Zhur. Fiz. Khim.* 30, 483-6(1956); cf. *C.A.* 50, 11085e.—Photographic flame-front investigation, and its study with thermocouples is open to a number of objections, and an approximation soln. is proposed based on the integration of the equation in the previous communication (*loc. cit.*). With its aid, the temp., concns., and reaction rates in the reaction zone, and the preheating zone of CO mixts. were found. In combustible mixts. having moderate normal flame velocities, the width of the reaction zone is comparable to the width of the preheating zone, and is of the order of a few tenths mm. W. M. Sternberg

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

Combustion of mixtures of nitric oxide and hydrogen. Part 1. Kinetics of the reaction in the flame (with English summary in insert). Zhur.fiz.khim. 30 no.4:912-921 Apr '56. (MLRA 9:9)

1. Akademiya nauk Azerb. SSR, Institut fiziki i matematiki, Baku. (Flame) (Nitrogen oxides) (Hydrogen)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

4

The kinetics and mechanism for the decomposition of nitric oxide. A. I. Rozlovskii (Inst. Phys. and Math., Acad. Sci. Azerbaidzhan S. S. R., Baku). *Zhur. Fiz. Khim.* 30, 1349-55(1956).—Math. A kinetic equation is derived for the decompn. of NO catalyzed by addns. of O. The rates that were found support the concept that a reaction chain is established and that the initial centers are formed by the equil. dissocn. of O on the reactor walls.

Roytar Leach

Chem

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

Combustion of nitric oxide-hydrogen mixtures. II. 6

Mechanism of the flame reaction. Rozlovskii Inst.

[illegible] the reaction [illegible] quent rapid combustion [illegible] considered and rejected. [illegible] combustion [illegible] the assumption [illegible]

[illegible]

[illegible] value of k_1 [illegible] mixt. with α = 0.300 at 10 atm. the observed flame speed corresponds to an energy of activation of ~61.3 kcal./mole much less than the exptl. value (for decompn.). For a bimol. mechanism the calcd. speed is 1/5th to 1/6th the exptl. value, whereas for a trimol. mechanism the calcd. speed is 25-50% greater than the exptl. value. Thermodynamic calcns give the following compn. of products for combustion of a stoichiometric mixt. at 1 atm. (in mole %): H_2O 35.10, N, 27.69, OH 12.15, H_2 11.96, H, 6.66, O_2 2.88, O 2.29, N 0.12. If the mechanism is trimol., the calcd. value for speed of flame propagation is 1/25th the exptl. value, and on the assumption of a bimol. reaction the calcd. value is about [illegible]% less than that of the exptl. value. J. P. Daneby

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A. I.

G

21 27

The kinetics of the hydrogen-chlorine reaction in the dark. III. Normal combustion of hydrogen-chlorine mixtures. A. I. Rozlovskii (Inst. Phys. and Math., Acad. Sc., Azerbaidzhan. S.S.R., Baku). *Zhur. Fiz. Khim.* 30, 2489-98 (1956); cf. *C.A.* 48, 11887b; 50, 13573g, 16303h. — The spreading of the spherical flame of H_2-Cl_2 mixts. with 50-82.3% Cl_2 in a round-glass 100-ml. flask, at initial pressures of 85-260 mm. was investigated. The flame was photographed on a moving film with no slit. The flame velocity was unaffected by pressure except at the highest Cl_2 concn. used (82.3%), where the rate of the flame propagation (U_n) was reduced by pressure. The max. U_n was obtained with H_2 and Cl_2 in stoichiometric proportion. The apparent activation energy of the reaction in the flame had a const. value of about 34 kcal./mol. for high-Cl_2 mixts., fell to 20 kcal./mol. for the equimol. mixt., and rose to 60 kcal./mol. with 86.6% Cl_2. The combustion rate was abnormally high in H_2-Cl_2 mixts. cntg. an excess of Cl_2 when straight tubes 8.5 mm. diam., 1.1 m. long, were used; this showed that the plane surface produces more turbulence than does a spherical flame. W. M. Sternberg

Chem

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ROZLOVSKIY, A.I.

4E3d, 4E4

27 27

The kinetics of the hydrogen-chlorine reaction in the dark. IV. Kinetics and the reaction mechanism in the flame. A. I. Rozlovskii (Phys. and Math. Inst., Acad. Sci. Azerbaidzhan. S.S.R., Baku). Azer. Fiz. Khim. 30, 2713-23 (1956); cf. C.A. 51, 827f.—The true basic reaction velocity coeff. in the Cl_2-H_2 flame, corrected for the relation of the combustion temp. to the pressure is expressed by an equation of the 1.5 reaction order. With an excess of Cl_2 the temp. coeff. corresponds to the true effective activation energy value A, found for the preflame reaction (34.7 kcal./mol.). With a H_2 excess, A is very nearly equal to the sum of Cl_2 dissocn. energy and the activation energy of the elementary reaction $Cl + H_2$. The temp. coeff. of a stoichiometric reaction is affected by a strong dissocn. of the reaction products. The abs. value of the reaction velocity in a flame with binary mixts. with an excess of Cl_2 agrees well with the values calcd. from the reaction mechanism and from the data of the preflame reaction kinetics, which confirms the equiv. Cl_2 dissocn. in the flame. A uniform formation of an equiv. amt. of Cl in the flame from the reaction mechanism of burning layers and trimol. branches is doubtful. The probable at. Cl formation in the flame is explained by an energetic branching during collisions of Cl_2 mols. with the excited HCl mols. formed in the reaction. W. M. Sternbern

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.

AUTHOR: Rozlovskiy, A. I. 20-4-30/52

TITLE: On the Critical Conditions of Ignition of Hot Gas Mixtures by Means of Heated Solids (O kriticheskikh usloviyakh podzhiganiya goryuchikh gazovykh smesey nagretymi tverdymi telami).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 4, pp. 651-654 (USSR)

ABSTRACT: Ya. B. Zel'dovich (reference 1) obtained an approximate term for the critical condition of the existence of a steady thermal behavior in ignition by an infinite plane wall with the constant temperature T_s. The author here discusses a particular fact which was not noticed earlier. The solution by Zel'dovich describes only that case in which the burning temperature T_b is higher than the temperature T_s of ignition. With $T_b = T_s$ the reaction on the surface is entirely completed, viz. the diffusion of a normal flame is possible. Therefore every heated catalytic inactive body with $T_s > T_b$ must ignite the fuel mixture. However, according to the experiment this is not always the case and ignition follows other rules. The author then investigates various special cases. For investigation the order of reaction, data on the influence of the pressure p on the normal velocity u_n of the flame are applied. Next, the

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20-4-30/52

On the Critical Conditions of Ignition of Hot Gas Mixtures by Means of Heated Solids.

institut sanitarnotekhnicheskogo oborudovaniya).

PRESENTED: June 28, 1957, by V. N. Kondrat'yev, Academician.

SUBMITTED: June 20, 1957

AVAILABLE: Library of Congress

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.; ROYZEN, I.S.; SUSHCHEV, P.G.

Explosion-hazard of combustible gas mixtures caused by friction and impact of metal parts. Shor.trud.NIIST no.2:129-140 '59. (MIRA 13:4)

(Explosions)
(Factories--Heating and ventilation)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

ROZLOVSKIY, A.I.; ROYZEN, I.S.; SUSHCHEV, P.G.

Ignition of inflammable gas mixtures by heated solids and problems involving safety measures. Izv.vys.ucheb.zav.; khim. i khim.tekh. 2 no.6:962-973 '59. (MIRa 13:4)

1. Moskovskiy institut khimicheskogo mashinostroyeniya. Kafedra tekhniki bezopasnosti.
(Inflammable materials) (Gases)
(Chemical engineering--Safety measures)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

SOV/20-125-1-32/67

5(4)

AUTHORS: Kuliyev, A. A., Rozlovskiy, A. I.

TITLE: A New Method of Investigating Adiabatic Inflammation and Its Application to a Chlorine-hydrogen Mixture (Novaya metodika izucheniya adiabaticheskogo vosplavleniya i yeye primeneniye dlya khloro-vodnorodnoy smesi)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 122-125 (USSR)

ABSTRACT: Ya. T. Gershanik, Ya. B. Zel'dovich and A. I. Rozlovskiy (Ref 1) suggested a new method of adiabatic compression of combustible mixtures by a fast current of gas. The mixture to be studied (which is contained in a unilaterally soldered glass tube at a pressure below atmospheric pressure) is compressed by atmospheric air which flows in as soon as the stopper of the glass-tube breaks off. By employing this method the final pressure of the compression is 1 atmosphere. For the purpose of improving the method the authors suggested a simple device in which the final pressure may be changed in any way up to atmospheric pressure. The compression chamber and the inflammation chamber are interlinked by tearing the separating membrane. The mixture is compressed in a tube

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A New Method of Investigating Adiabatic Inflammation and Its Application to a Chlorine-hydrogen Mixture

1.3 m long and 18.3 mm thick. The experiments were made with a mixture of 70% Cl_2 + 30% H_2. The temperature T_a of the adiabatic compression was measured according to Poisson's equation. The first diagram illustrates the dependence of the critical temperature of inflammation T_k on the final pressure at constant p_0 = 92 torr and at a diameter of Δ = 5.7 mm in the coordinates $\lg(p_a/T_a) \sim 1/T_a$. The second diagram illustrates the dependence of the inflammation temperature T_k on $\lg \Delta^2$ or (in experiments without retardation) on $\lg D^2$ at p_a = 600 torr. A variation of D practically does not affect the critical conditions in the compression by an unretarded flow. Consequently, a "supercompression" does not cause any distortions in this case. In experiments with a retarding tube T_k considerably decreases with increasing cross section of the tube and approaches the value of T_k in the case of an unretarded

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SOV/20-125-1-32/67

A New Method of Investigating Adiabatic Inflammation and Its Application to a Chlorine-hydrogen Mixture

flow. During the retardation the heat losses increase the apparent temperature of inflammation, and the compression approaches the adiabatic compression with increasing Δ. The third diagram illustrates the dependence $T_k(p_o)$ at p_a = 300 torr and Δ = 5.7 mm. Accordingly, even at small p_o values there are deviations from the conditions of adiabatic compression, which decrease with increasing p_o values. The inflammation in a plane-parallel container is then calculated. The authors ascertain the steady distribution of temperature along the tube at given temperature on the walls and along the axis of the container. The approximate solution of the problem is explicitly written down. This solution, which does not take into account the fact that the process is practically unsteady, may be confirmed also by another method of approximation (which is independent of the method under review). There are 3 figures and 16 references, 10 of which are Soviet.

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SOV/2c-125-1-32/67

A New Method of Investigating Adiabatic Inflammation and Its Application to a Chlorine-hydrogen Mixture

ASSOCIATION: Institut fiziki i matematiki Akademii nauk AzerbSSR (Institute of Physics and Mathematics of the Academy of Sciences, Azerbaydzhan SSR)

PRESENTED: November 21, 1958, by Ya. B. Zel'dovich, Academician

SUBMITTED: November 12, 1958

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

S/064/60/000/004/015/021/XX
B013/B063

AUTHORS: Medvedeva, V. S., Rozlovskiy, A. I., Royzen, I. S.

TITLE: Explosiveness of Combustible Mixtures Formed During the Synthesis of Xanthates

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 4, pp. 66-68

TEXT: The authors have studied the limits of applied ignition for air - gas mixtures formed during the synthesis of xanthates. The purpose of the present work was to determine the limits of the permissible explosion-proof dilution of these products with air, and to obtain data on the ignition temperature of liquid reaction products. The limits of applied ignition were determined by means of the device shown in Fig. 1. The mixtures to be tested were ignited in a spherical steel bulb (Fig. 1,1) with a capacity of 6.2 l at a pressure of 1 atm. Ignition took place in the middle of the bulb with the help of an aircraft spark-plug (2) which was screwed into the bulb. The process was visually observed through a slot covered with a plexiglass or glass plate. The bulb could be

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externally heated up to 100°C. It was heated to the temperature required for the tests, after which it was evacuated through valve (5) and purified with air through valve (6). The fuel-water mixture was likewise introduced through (6). Three series of tests were made with fuel mixtures of different compositions. The concentration of carbon disulfide (β) in the test mixtures was varied between 0.5 and 3% by weight. In addition, the mixture contained 62% ethyl alcohol in the first series, 75% n-butyl alcohol in the second, and 75% n-butyl alcohol and 8% benzene in the third. The rest consisted of water. The tests have shown that the minimum explosion-proof concentration of the gaseous components varies from 18 to 33%. The critical concentration of the fuel is hardly affected by carbon disulfide, and in some cases it is even reduced. Thus, it has been found that the gaseous products formed during the synthesis of xanthates permit a dilution with 2-2.5 times the amount of air, allowance being made for a safety margin. A similar behavior of carbon disulfide was observed in other cases. A comparison of the critical compositions indicates that the content of inert components in all mixtures changes only slightly at the limit of applied ignition, i.e., from 64.6 to 67.9%. The coefficients of

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the oxidant excess α_{cr} are therefore comparable. The effect produced by addition of carbon disulfide upon the combustibility of the mixture can be determined from the dependence of α_{cr} on β. It is noted that an increase of β has no appreciable effect on the value of α_{cr}. The ignition temperature of liquid products was determined by means of a device developed by Martens-Penskiy. The results obtained show that the ignition temperature is largely reduced by an increase of the carbon-disulfide content in the text mixture. There are 7 figures and 6 references: 5 Soviet and 1 US.

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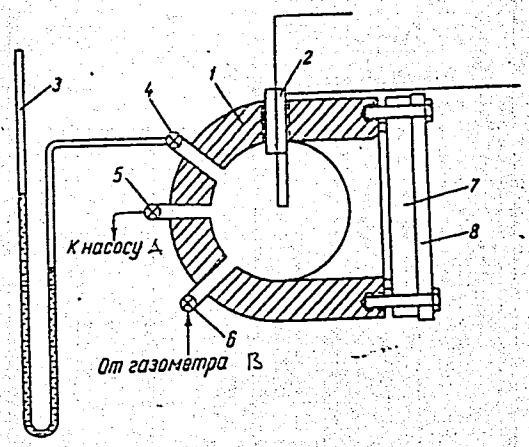
B013/B063



Legend to Fig. 1: 1 - wall; 2 - aircraft spark-plug; 3 - pressure gauge; 4, 5, 6 - valves; 7 - plexiglass or glass plate; 8 - flange; A - to pump; B - from gasometer.

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MEDVEDEVA, V.S.; ROZLOVSKIY, A.I.; ROYZEN, I.S.

Investigating the explosion hazard of combustible misture formed in the synthesis of xanthogenates. Khim.prom. no.4:330-332 Je '60. (MIRA 13:8)
(Xanthates) (Explosions)

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83505

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B015/B058

11.7100

AUTHORS: Brandt, B. B., Matov, L. A., Rozlovskiy, A. I., Khaylov, V. S.

TITLE: Explosion Danger in Mixtures of Nitrogen Oxides With Combustible Gases and Vapors. Mixtures With Nitrous Oxide at Atmospheric Pressure

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 5, pp. 67 - 73

TEXT: The processing of gaseous products developing from nitration and oxidation of various hydrocarbons by means of nitric acid (Table 1) is discussed and it is stated that explosive gas mixtures can develop in this case. It is pointed out that methods applied at present for evaluating the combustibility of gas mixtures containing several components are inadequate, and a method of classifying the combustion properties of gas mixtures with more than 3 components is proposed, in which the dependence of the critical value of the coefficient α of the oxidizing-agent excess on the total content of the inert components is determined, and an "upper" limit of gas ignition is defined. Data supplied by

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83505

Explosion Danger in Mixtures of Nitrogen Oxides With Combustible Gases and Vapors. Mixtures With Nitrous Oxide at Atmospheric Pressure

S/064/60/000/005/007/009
B015/B058

publications on the ignition limit of binary mixtures of some fuels with nitrogen oxide and nitrous oxide are given in Table 2. In the present case, the ignition limit of three-component mixtures from N_2O, N and butane, cyclohexane, p-xylene and carbon monoxide with different nitrogen content and 1 atm pressure was determined in a special apparatus (Fig. 2). The critical values α for the binary mixtures averaged 28 and ≈ 0.3; in the "upper" limit of the gas ignition $\alpha \approx 1$ with N_2 = 75-78%. The publication data for butane-CO mixtures (Refs. 15,17) are too low. It is shown that the true combustibilities of the mixtures investigated, which may be determined under consideration of the difference of the stoichiometric coefficients, practically coincide. The ignition limit of the cyclohexane-N_2O mixtures are not influenced by smaller additions of CO. The CO additions can be neglected when determining the explosion danger of gaseous oxidation- and nitration products. G. N. Grozhan participated in some experiments. There are 10 figures, 2 tables, and 23 references: 7 Soviet, 8 US, 1 British, 3 German, 1 Italian, and 3 Dutch.

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BRANDT, B.B.; MATOV, L.A.; ROZLOVSKIY, A.I.; KHAYLOV, V.S.

Explosion hazard of mixtures of nitrogen oxides with fuel gases and vapors. Khim.prom. no.5:419-425 Jl-Ag '60. (MIRA 13:9)

(Nitrogen oxide) (Gases) (Explosions)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

S/020/60/132/05/43/069
B004/B011

11.1000

AUTHORS: Brandt, B. B., Rozlovskiy, A. I.

TITLE: Explosive Decomposition of Nitrous Oxide

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 5, pp. 1129-1131

TEXT: Proceeding from papers by D. A. Frank-Kamenetskiy (Ref. 1) and Ya. B. Zel'dovich and V. I. Yakovlev (Ref. 2), the authors discuss the propagation of a flame in cold N_2O as dependent on the critical velocity u_{crit} of the flame and on the critical pressure p_{crit}. $p_{crit} = 1.2$ atm abs was found from the equation for the velocity u_{fl} of the flame. The experimental determination of the critical conditions for inflammation took place in a cylindrical bomb. Ignition was brought about by burning out a copper wire by transformer short circuit. Experiments revealed that cold N_2O is actually inflammable. In the case of a bomb standing vertically and ignition at the lower end, the well reproducible value of

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001445720010-7

Explosive Decomposition of Nitrous Oxide

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B004/B011

1.60 ± 0.08 atm abs was measured for p_{crit}. A nitrogen addition increases the value of p_{crit}. On an ignition from the top, p_{crit} rose to 10 atm abs. The reason why the calculated value of p_{crit} is too low could not be clarified. The authors point out that N_2O is prepared for medical purposes, and is liquefied without any precautionary measure although there is always the possibility of an inflammation by discharges of static electricity, heating, etc. Combustion processes in X18H9T (Kh18N9T) steel tubes allowed the conclusion of the maximum explosion pressure being in the range of 1000-4000 atm. The NO_2 yield was determined potentiometrically and spectroscopically (Fig. 1). It depends on the initial pressure, amounts to 2.7% at 1.6 atm abs, and drops adiabatically with rising pressure. There are 1 figure and 13 references: 7 Soviet and 6 British.

ASSOCIATION: Institut azotnoy promyshlennosti i produktov organicheskogo sinteza (Institute of the Nitrogen Industry and Products of Organic Synthesis)

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20512

S/064/61/000/003/007/009
B101/B203

11.1180

AUTHORS: Brandt, B. B., Rozlovskiy, A. I., Khaylov, V. S.

TITLE: Explosion hazard of mixtures of nitric oxides with combustible gases or vapors. Mixtures of nitric oxide and nitrogen peroxide at atmospheric pressure

PERIODICAL: Khimicheskaya promyshlennost', no. 3, 1961, 56-62

TEXT: To eliminate the explosion hazard in the nitration and oxidation of hydrocarbons by means of nitric acid, the authors studied the flash points of mixtures of hydrocarbons and nitric oxides. An earlier paper (Ref. 1: B. B. Brandt et al. Khim.prom.No.5,412 (1960)) had already reported on the flash points of mixtures with N_2O. In the present investigation, the authors studied mixtures containing NO, $NO+N_2O$, or NO_2 by the same method. To characterize the inflammation properties they determined, as indicated in Ref. 1, the coefficient α of the excess oxidizing agent and the percentage $[N_2]$ of the inert component. All inert components were

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20512

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B101/B203

Explosion hazard of mixtures ...

regarded as nitrogen. 1) The experimental data for mixtures of n-butane, cyclohexane, p-xylene, and benzene with NO are shown in Fig. 5. This figure also contains data obtained by other researchers (o): 1) Methane, 2) n-butane, 3) CO. The narrower inflammation ranges found by other researchers are explained by too weak intensity of ignition. Fig. 6 shows that the inflammation range of NO is narrower than that of N_2O, but that there is no basic difference between the two oxides. 2) When determining the flash points of cyclohexane in a mixture with NO + N_2O, the molar fraction β of NO was kept constant, and the critical value of α determined at different $[N_2]$. Fig. 9 compiles the results. Fig. 10 shows the extinguishing value $[N_2]_{crit}$ as a function of β. It is concluded that a summational determination of nitric oxides is sufficient for judging the explosion hazard. Since N_2O + NO are not inflamed as easily as mixtures containing only one of these components, a certain margin of safety is available. 3) When studying the inflammability of mixtures with NO_2, reference is made to papers by E. B. Hodge (Ref. 7: Ind.Eng.Chem.,

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B101/B203

Explosion hazard of mixtures ...

30,1393, (1938)) and N. M. Emanuel' (Ref. 8: Izv.AN SSSR, OKhN,No.7,764 (1956)). To facilitate the interpretation of data, full dissociation of N_2O_4 was assumed. The authors studied the inflammability of the mixtures $NO_2+C_6H_{12}+N_2$ and NO_2+CO+N_2. The dosing of components was made by measuring their partial pressure by means of a mercury manometer. The Hg surface was protected by Vaseline oil. The CO stored above water was dried by bubbling with 65% H_2SO_4. The mixtures still contained about 0.1% of water vapor. Electric ignition of the mixtures with NO_2 did not lead to high pressure rise. The limits of inflammability were indistinct. This peculiarity is explained by a formation of N_2O_5 and O_3 under the action of electric current. Data are compiled in Fig. 13. The fact that α_{crit} for $C_6H_{12} + NO_2$ is smaller than for the mixture $C_6H_{12} + NO$ cannot be explained by endothermic dissociation of N_2O_4, since the latter changes the heat effect by 10% only. Gradual deoxidation of NO_2 is assumed:

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B101/B203

Explosion hazard of mixtures ...

$2NO_2 \longrightarrow 2NO + O_2$; $2NO \longrightarrow N_2 + O_2$. Therefore, the final stage is the reaction of C_6H_{12} with NO. L. A. Matov assisted in the experiments. Ya. N. Nasirov is mentioned. There are 13 figures and 12 references: 6 Soviet-bloc and 6 non-Soviet-bloc.

Legend to Fig. 5: 1) n-butane. 2) Cyclohexane. 3) p-xylene. 4) Benzene.

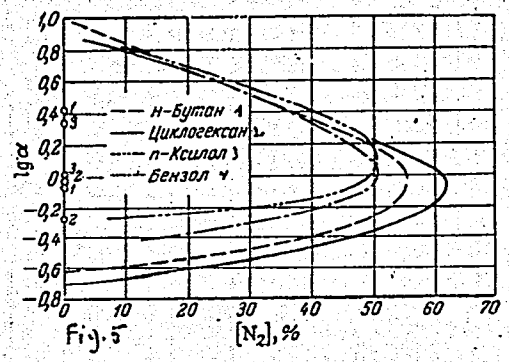

Fig. 5

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BRANDT, B.B; ROZLOVSKIY, A.I.; KHAYLOV, V.S.; Prinimal uchastiye: MATOV, L.A.

Explosiveness of mixtures of nitrogen oxides with combustible gases and vapors. Khim.prom. no.3:204-210 Mr '61. (MIRA 14:3)
(Nitrogen oxide)

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31239
S/195/61/002/006/001/002
E040/E585

54300

AUTHOR: Rozlovskiy, A.I.

TITLE: Formation of nitric oxide in the decomposition flame of nitrous oxide

PERIODICAL: Kinetika i kataliz, v.2, no.6, 1961, 809-815

TEXT: A detailed review of previously published work on nitric oxide formation in the decomposition flame of nitrous oxide is followed by a critical assessment of the experimental results obtained for the velocity constant and activation energy of the controlling stage of the reaction system: 1) $N_2O \rightarrow N_2 + O$; 2) $O + N_2O \rightarrow N_2 + O_2$; 3) $O + N_2O \rightarrow 2NO$; (controlling stage); 4) $O + NO + M \rightarrow NO_2 + M$ and 5) $O + \text{wall} \rightarrow 1/2\ O_2$. Because considerable discrepancies exist in the previously reported values of the velocity constant and activation energy of stage 3 of the above reaction system, an effort was made to re-examine the problem using a technique commonly employed in high-temperature combustion studies. Experimental values of yields of NO obtained in stage 3 are compared with the yields calculated theoretically with due

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31239

Formation of nitric oxide in ... S/195/61/002/006/001/002
E040/E585

account being taken of temperature distribution in the N_2O flame front concentration of atomic oxygen in the flame and of its concentration and transport conditions in the reaction medium. It is shown that the equilibrium of atomic oxygen is unaffected to any significant extent by the transport processes associated with the flow and diffusion of the reacting gases, or the recombination and progressive using up of atomic oxygen in the reaction with N_2O. The studies confirmed that the velocity constant for the controlling stage of the reaction was reported correctly by C. P. Fenimore and G. W. Jones (Ref.5: J.Phys.Chem., 62, 178, 1958) and is $k_3 = 2 \cdot 10^{14} e^{-32000/RT}$ $cm^3 \cdot mol^{-1} \cdot sec^{-1}$. The activation energy of the reaction was found to be A = 15.5 kcal/mol, as compared with A = 32 kcal/mol reported by Fenimore and Jones. Derivation is made of all the expressions used in the calculation of the yield of NO and the data obtained under various conditions of temperature distribution, concentration and reaction velocities in N_2O flames are fully reported. There are 2 figures and 24 references: 6 Soviet-bloc and 18 non-Soviet-bloc. The

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Formation of nitric oxide in ... 31239
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E040/E585

four latest English-language references read as follows: Ref.13: C. R. Kretschmer, H.L. Peterson, J.Chem.Phys., 33, 948, 1960; Ref.14: R. R. Reeves, G. Mannella, P. Harteck, J.Chem. Phys., 32, 632, 1960; Ref.15: S. Krongelb, M. W.P. Strandberg, J.Chem.Phys., 31, 1198, 1959; Ref.16: J. E. Morgan, L. Elias, H. I. Schiff, J.Chem.Phys., 33, 930, 1960.

ASSOCIATION: Gosudarstvennyy institut azotnoy promyshlennosti (State Institute of the Nitric Industry)

SUBMITTED: February 11, 1961

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11,7200

AUTHOR: Rozlovskiy, A. I.

TITLE: Definition of the solution to the equation for heat conduction in a flame

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 5, 1961, 1150-1153

TEXT: It was the aim of the author to define the theory set up by Ya. B. Zel'dovich and D. A. Frank-Kamenetskiy (Refs. 1,2) of the normal combustion of gases, in which specific heat and heat conduction of the gas mixture are assumed to be constant. According to Refs. 1,2, the following is valid for the one-dimensional process of the spreading of the flame along the x-coordinate: $y dy/dz + my - \varphi(z) = 0$ (1) for the boundary conditions $y(0,1) = 0$; $y'(0,1) = 0$. m is the dimensionless parameter proportional to the rate of combustion; $z = (T_b - T)/(T_b - T_o)$, T being the temperature in the plane x. The dimensionless variable $y = dT/dx$; the subscript b is related to the combustion products; 0 is the initial state; $\varphi = \Phi(a,T)/\Phi(a_c,T_b)$; Φ is the reaction rate; and a is the reduced con-

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centration of the missing component of the mixture in g per 1 g mixture. (1) was solved by two approximations. The first approximation yields

$m = \left[2 \int_0^1 f\,dz\right]^{1/2}$ (2). The second approximation consists in the integration of (2) by series expansion on the assumption that

$\Phi = \text{const.} a^s \exp(-A/RT)$ (3). s is the order of the reaction related to the missing component. The reduced concentration a is replaced by the absolute concentration ρa (ρ = density), and the following is obtained:

$f(z) = (zT_b/T)^s \exp \kappa \exp\left[-\kappa/(1-\omega z)\right] = (\exp \kappa/\omega^s)\left[1/(1-\omega z)-1\right]^s \exp\left[-\kappa/(1-\omega z)\right]$

(4), where $\kappa = A/RT_b$; $\omega = (T_b - T_o)/T_b$. $1/(1-z\omega) - 1$ is set equal to p, where $f(p) = (1/\omega^s) p^s \exp(-\kappa p)$ (5);

$\int_0^1 f(z)\,dz = (1/\omega^{s+1}) \int_0^{\omega/(1-\omega)} p^s \exp(-\kappa p)\,dp/(1+p)^2 \approx (1/\omega^{s+1}) \int_0^\infty p^s \exp(-\kappa p)\,dp/(1+p)^2$

(6) because $\omega/(1-\omega) = (T_b - T_o)/T_o \gg 1$; $\kappa \gg 1$. Considering that $f \neq 0$

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only for $z \ll 1$, from which it follows that $p \ll 1$, one obtains $1/(1+p)^2 \sim 1 - 2p$ and $\int_0^1 \varphi\, dz \approx (1/\omega^{s+1}) \int_0^\infty p^s(1-2p)\exp(-\kappa p)\,dp = (1/\omega^{s+1}) \left[\Gamma(s+1) - (2/\kappa)\Gamma(s+2)\right]$ (7). The error of the expression (2) is estimated by introducing the function $y_0(z) > y(z)$, which obeys to the condition: $y_0 dy_0/dz = \varphi(z)$; $y_0(z) = \left[2\int_0^z \varphi\, dz\right]^{1/2}$ (9). Substituting the greater value y_0 for y in equation (1) results in: $dy/dz > \varphi/y_0 - m - dy_0/dz - m = dy_1/dz$ (10); $y_1 = y_0 - mz + C_1$ (10'). C_1 is the integration constant. $y(z)$ determines the lower limit of y. The upper limit y_2 is found through substitution of y in (1) by y_1: $dy/dz < \varphi/y_1 - m = dy_2/dz = \varphi/(y_0 - mz) - m$ (11). $mz < y_0$ in the range of considerable reaction rates. If this condition is not satisfied,

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$f/(y_0 - mz)$ becomes ≈ 0 and $1/(y_0 - mz) \approx 1/y_0 + mz/y_0^2$ is valid. Thence

$$m_{max} = \frac{y_0}{1 - \int_0^1 \frac{1}{y_0} \frac{dy_1}{dz} z\, dz} = \frac{y_0}{1 - \int_0^1 \frac{1}{y_0^2} \varphi(z)\, z\, dz} =$$

$$= \left[2 \int_0^1 \varphi(v)\, dv \right]^{1/3} \Bigg/ \left[1 - \int_0^1 \frac{\varphi(z)\, z\, dz}{2 \int_0^z \varphi(v)\, dv} \right]. \qquad (13)$$

is found for the upper value m_{max} through integration of the equation $dy_2/dz = dy_0/dz + (m/y_0)(dy_0/dz)z - m$ (12).

$m_{min} = y_0(1) = \left[2 \int_0^1 f(z)\, dz \right]^{1/2}$ (14) is found for m_{min} from (10'). The error of equation (14) is estimated by determining the value of the

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integral $I = \int_0^1 \left[\varphi(z)\,z\,dz/2 \int_0^z \varphi(\nu)\,d\nu \right]$. Using (4) and (5), the following is written: $\int_0^z \varphi(\nu)\,d\nu = (1/\omega^{s+1}) \int_0^{z\omega/(1-z\omega)} p^s \exp(-\varkappa p)\,dp/(1+p)^2$

$\approx (1/\omega^{s+1}) \int_0^{z\omega} p^s \exp(-\varkappa p)\,dp$ (15); and for s = 1, s = 2,

$s = 1$

$$I = \frac{\varkappa\omega^2 e^{\varkappa}}{2} \int_0^1 \frac{z^2 e^{-\varkappa/(1-z\omega)}\,dz}{[1-(1+z\omega)\,e^{-\varkappa\omega z}]\,(1-z\omega)} \approx \frac{\varkappa\omega^2}{2} \int_0^1 \frac{z^2 dz}{e^{\varkappa\omega z} - 1 - \omega z}; \quad (16)$$

$s = 2$

$$I = \frac{\varkappa\omega^3 e^{\varkappa}}{2} \int_0^1 \frac{z^3 e^{-\varkappa/(1-\omega z)}\,dz}{(1-z\omega)^2\,[2/\varkappa^2 - e^{-\varkappa\omega z}\,(2/\varkappa^2 + 2\omega z/\varkappa + \omega^2 z^2)]} \approx$$

$$\approx \frac{\varkappa\omega^3}{2} \int_0^1 \frac{z^3 dz}{\frac{2}{\varkappa^2}(e^{\varkappa\omega z} - 1) - \frac{2\omega z}{\varkappa} - \omega^2 z^2} \quad (17)$$

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Таблица 1

x	ω=1		ω=0,85	
	s=1	s=2	s=1	s=2
5	0,425	0,763	0,478	0,845
10	0,228	0,423	0,264	0,494
20	0,111	0,214	—	—

is obtained. The calculated values are given in Table 1. The rate of the flame spreading as a function of temperature, pressure, and composition thus follows the approximate equations. Considerable deviations set in at s = 2. Consideration of the temperature dependence of heat conduction also reduces the error of the approximate equation.

$(d/dx)(\lambda/c)(dH/dx) - u\rho(dH/dx) + h\Phi = 0$ (18) is written. (λ = heat conduction, c = heat capacity, h = thermal effect of the reaction, $H = \int_0^T c\,dT$). $(\lambda/c)(dH/dx)$ is set equal to n; and

$ndn/dz + u\rho(H_b - H_o)n - h(H_b - H_o)(\lambda/c)\Phi = 0$ (19) is obtained. This

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equation differs from (1) (for which φ was defined by (4)) by a stronger temperature dependence of the free link, which is equivalent to the increase of the actual value of the parameter K. There are 5 references: 3 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza (State Scientific Research and Planning Institute of the Nitrogen Industry and Products of Organic Synthesis)

PRESENTED: August 19, 1960, by Ya. B. Zel'dovich, Academician

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L 34524-65 EWT(m)/EPF(c)/T Pr-4 WE

ACCESSION NR: AP5005900 S/0020/65/160/003/0654/0657

AUTHOR: Ponizko, T.A.; Rozlovskiy, A.I.

17
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TITLE: The low temperature ignition of fuel gas mixtures

SOURCE: AN SSSR. Doklady, v. 160, no. 3, 1965, 654-657

TOPIC TAGS: fuel gas, gas mixture ignition, low temperature ignition, gas combustion, ignition temperature

ABSTRACT: The ignition temperature of mixtures of air with organic gases or vapors was studied experimentally to determine the possibility of decreasing the ignition temperature T_s under conditions of free convection, as well as its dependence on chemical composition. The study covered air mixtures of methane, hydrogen, gasoline B-70, acetylene, carbon disulfide, ethyl ether and ethyleneglycol diethylether, ignited at initial gas temperatures of 50-70C and selected vapor pressures by incandescent glass lamps (a) or heaters sealed in spiral (b) or U-shaped (c) steel tubes of quartz tubes (d). Gas and igniters were placed into 17-liter or 73-liter steel chambers, and the ignition temperature was measured by thermocouples on the outer wall of the 10.5-61 mm diameter igniters. The results are shown in terms of the dependence of T_s upon the logarithmic excess coefficient of the oxidant, α, as shown in Fig. 1 and 2 of the Enclosure.

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