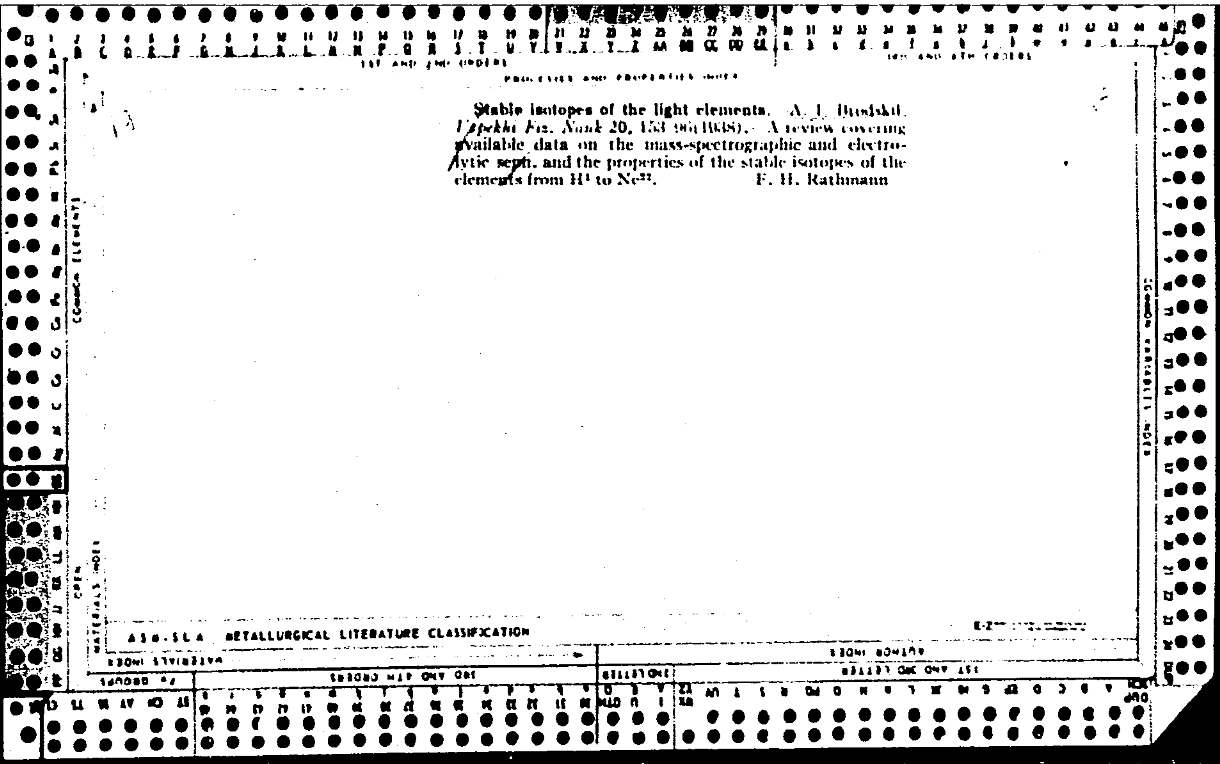


Stable isotopes of the light elements. A. I. Brodskii. *Uspekhi Fiz. Nauk* 20, 153–96 (1938).—A review covering available data on the mass-spectrographic and electrolytic sepn. and the properties of the stable isotopes of the elements from H^1 to Ne^{22}. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

2

Concentration of the heavy isotope of oxygen and the isotopic analysis of water. O. K. Skarre and A. I. Brodskii. *Compt. rend. acad. sci. U. R. S. S.* 20, 565–8 (1938)(in French); cf. *C. A.* 32, 4024⁴.—By continuous distn. of water through a Cu fractionating column contg. rotating and stationary inverted cones, a concn. of H_2O^{18} and D_2O was obtained in the reflux and bottoms. The isotopic compn. of the product was detd. by measuring differences in d. and n between it and the feed water. By removal of D by electrolysis of the water, followed by recombination of the O with H obtained from Zn and H_2SO_4, the difference in n between H_2O^{18} and H_2O^{16} was found to be +0.0007 ± 0.0001. Equations are given connecting sepn. with no. of theoretical plates in the column.

George Ayers

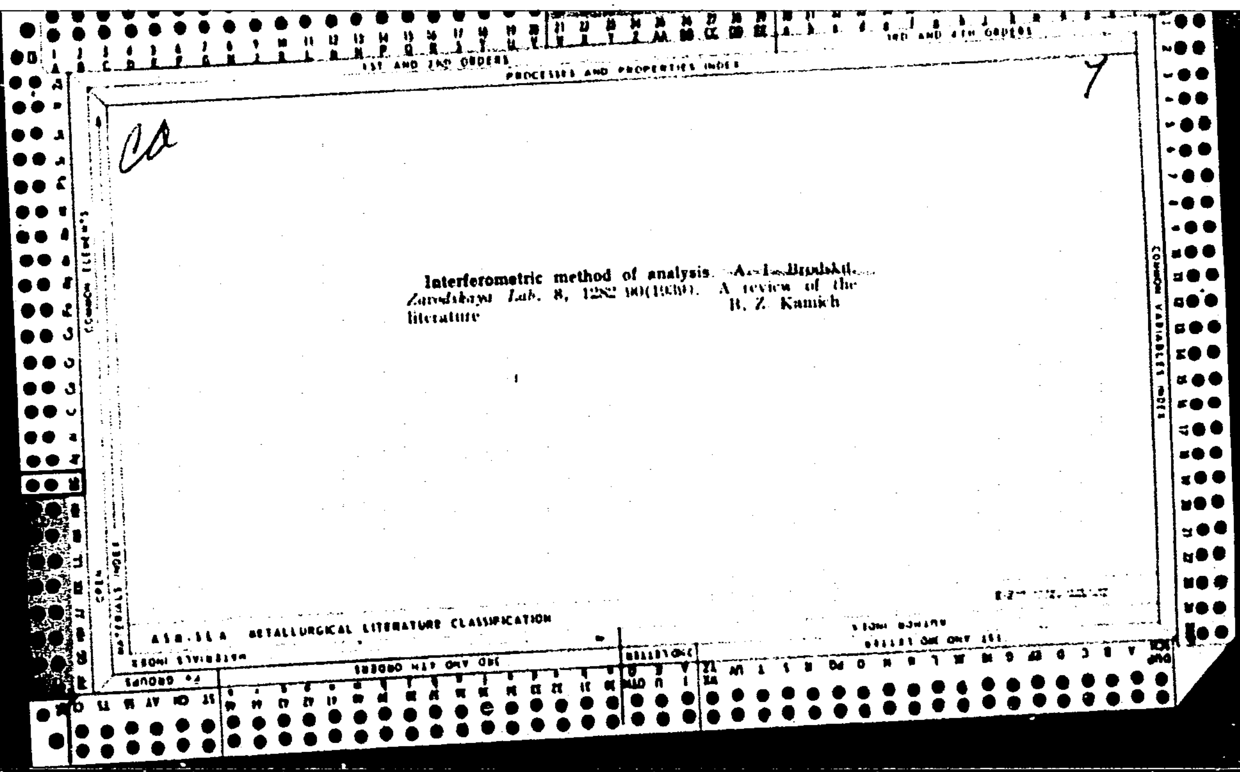
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

CA

7

The use of the interferometer in industrial analysis. A. I. Brodskii. *Trudy Vsesoyuz. Konferentsii Anal. Khim., Akad. Nauk S. S. S. R.* 1, 115-34(1939); *Khim. Referat. Zhur.* 1940, No. 2, 50-7; cf. *C. A.* 34, 5779.—A large gas and portable liquid Haber and Loewe interferometers are described. The accuracy of the gas interferometer is 0.05% of the value of $b = (n - 1) \times 10^6$ (n is the index of refraction) for O_2 and 0.008% for benzene vapors. The accuracy of the liquid interferometer is detd. from the errors of detns. of the concns. of aq. solns.; for concns. of 0.07 *M* it is 7×10^{-6} mol. Methods for calibrating and for making corrections for the nonproportional displacement of the bands relative to the compensator scale, and for the displacement of the zero point in measuring the abs. value of Δn are described. Numerous uses of the interferometer in the analysis of flue, mine and coke gases, of air and of water are described. The interferometer can also be used in volumetric analysis. This is especially true for very dil. solns. The interferometer is very convenient for detg. the content of deuterium in water. W. R. Henn



Ca

7

Interferometric method of analysis. A. I. Brodskii. *Zavodskaya Lab.* 8, 1282-90(1939). A review of the literature. B. Z. Kamich

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

3

Concentration of the heavy oxygen isotope by distillation of water and the isotopic analysis of water. A. I. Brodskii and O. K. Skarre. *Acta Physicochim. U.R.S.S.* 10, 729-52 (1939) (in English); cf. preceding abstr.—A description and discussion of the theory of a 2.5-m., 100-cone, copper fractionating column are given. Equil. was attained after ca. 80 hrs. for both H^2 and O^{18} waters, but the plate efficiency was only ca. half as great for deuterium as for O^{18} (40.70). The enrichment of O^{18} was ca. 60% and of deuterium ca. 500% after 93 hrs. operation at 70°. By electrolyzing the heavy water so obtained, burning the O^{18}-O^{16} mixt. with ordinary hydrogen, and measuring the densities and *n*s, B. and S. calc. from the data obtained that the difference in *n* for H_2O^{16} and H_2O^{18} is 0.015 and for n_D^{20} $(H_2O^{18}\text{-}D_2O) = 0.023$. Of the three species, H_2O^{18} is most deformable.

F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BRODSKIY, A. I.

"The Concentration of the Heavy Isotope of Oxygen with the Distillation of Water & an Isotopic Analysis of the Water"; 13, No. 4, 1939; Chemico-Tech. Insti. Lab. of Physical Chem., Insti. of Physical Chem. imeni. L. V. Pizharevskiy, Acad. of Sci. Ukrainian SSR, Div. of the Chem. of Isotopes, Dnepropetrovsk; Rcd 1 July 1938.

J. phys. Chem. Russ.

Report U-1613, 3 Jan. 1952

C.A. 33, 7662

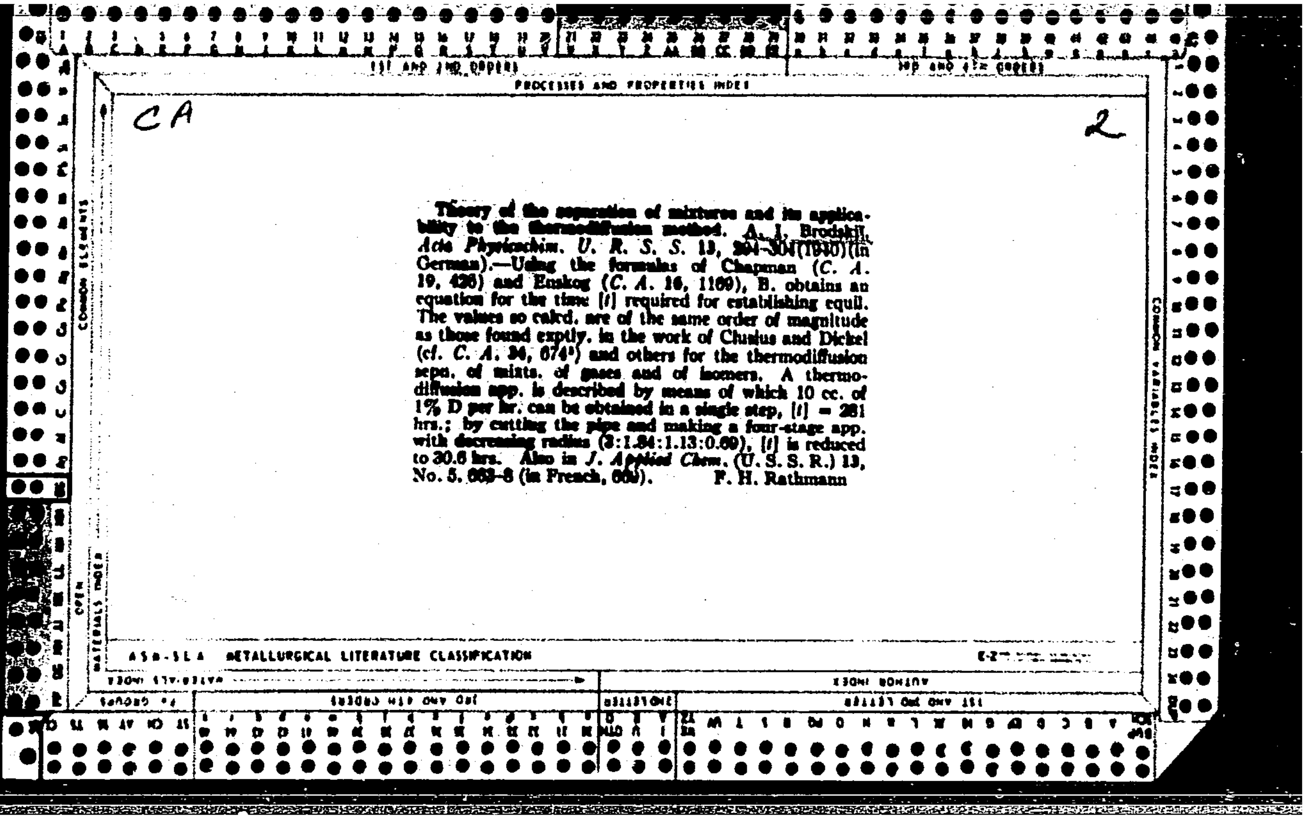
BRODSKIY4A818 600

1. BRODSKIY, A. I.: RADCHENKO, N. P.; SMOLENSKAYA, B. L.

2. USSR (600)

"The Isotopic Composition of Arctic Waters and Ices," Zhur. Fix. Khim, 13, No. 10, 1939.
Dnepropetrovsk, Institute of Physical Chemistry, Academy of Sciences Ukrainian SSR
imeni L. V. Pisarzhevskiy, Department of the Chemistry of Isotopes. Received 15 June 1939.

9. [redacted] Report U-1615, 3 Jan. 1952.



CA

2

Theory of the separation of mixtures and its applicability to the thermodiffusion method. A. I. Brodskii. *Acta Physicochim. U. R. S. S.* 13, 294-304(1940)(in German).—Using the formulas of Chapman (*C. A.* 19, 426) and Enskog (*C. A.* 16, 1109), B. obtains an equation for the time [*t*] required for establishing equil. The values so calcd. are of the same order of magnitude as those found exptly. in the work of Clusius and Dickel (cf. *C. A.* 34, 674^{3}) and others for the thermodiffusion sepn. of mixts. of gases and of isomers. A thermodiffusion app. is described by means of which 10 cc. of 1% D per hr. can be obtained in a single step, [*t*] = 281 hrs.; by cutting the pipe and making a four-stage app. with decreasing radius (3:1.84:1.13:0.69), [*t*] is reduced to 30.6 hrs. Also in *J. Applied Chem.* (U. S. S. R.) 13, No. 5, 663-8 (in French, 669). F. H. Rathmann

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

ca

2

A comparison of the methods of preparing heavy water. A. I. Brodskii. *J. Applied Chem.* (U. S. S. R.) 13, 670-5 (in French, 676)(1940); cf. *C. A.* 35, 1679^1.—A review with 12 references. The best and most practical method for D_2O prepn. is electrolysis in successive stages.

A. A. Podgornv

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

BC

a-3

Use of the isotopic method for the study of chemical reactions. I. Mechanism of the Beckmann rearrangement. G. P. Miklochin and A. I. Brodski (J. Gen. Chem. Russ., 1942, 12, 381—388).—The course of the Beckmann rearrangement is studied with the aid of water rich in ^{18}O in place of normal H_2O. The density of H_2O obtained from H_2 of normal isotopic composition, and O derived from the anilide is compared with that of the original H_2O. By this means it is shown that the oxime loses O (as H_2O) in the first stage of the process (action of PCl_5 etc.) and that the anilide is formed by the acquiring of O from the H_2O added. It is proved that no isotopic exchange of O occurs between [illegible] and $H_2{}^{18}O$, whether in presence or absence of PCl_5. The mechanism proposed by Stieglitz is in accordance with this finding but all schemes of direct intra-mol. regrouping and those which exclude intermediate dehydration–hydration are ruled out. G. S. S.

COMMON ELEMENTS

MATERIALS INDEX

OPEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

10

The application of the isotopic method to the investigation of the mechanism of chemical reactions. III. The mechanism of the reaction of acid anhydrides with alcohols. N. I. Dedusenko and A. I. Brodskii. *Acta Physicochim. U.R.S.S.* 17, 314-18(1942)(in English).—See *C.A.* 37, 3418. IV. Reaction of xanthation, reaction of mercerization of cellulose and the structure of alkali cellulose. I. A. Makolkin. *Ibid.* 319-22(in English).—See *C.A.* 37, 3418.
F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

1520

Equilibrium composition of gaseous mixtures under high pressure. A. I. Brodskii (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 36, 237—238).—Theoretical. The activity coeffs. of the components of a compressed gaseous mixture are given by $\log f_1 = 9/128 \cdot \pi/\theta \cdot (1 - 6/\theta^2)$, where π and θ are the reduced pressure and temp. F. J. G.

n/
6

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

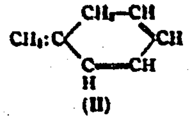
3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

10

Tautomeric transformation of toluene and mesitylene. O. P. Miklukhin and A. I. Brodskii. *Compt. rend. acad. sci. U.R.S.S.* 53, 437-8(1946)(in English).—In order to det. whether or not toluene (I) forms a tautomer of type (II), the method of isotopes was used. If such



(II)

tautomerism could take place in the presence of a D donor (D_2O, EtOD, etc.) addn. of D would be expected, and a partial interchange of H and D from the donor should be observed in the Me group as well as in the ortho and para positions of the nucleus. I was heated with 3% heavy water 60 hrs. at 150-70° in a sealed tube. After sepn. from the water and careful drying and combustion, the D content of the water formed was detd. Under these conditions no entrance of D into I either in the absence or presence of catalysts (3% H_2SO_4 or 2% NaOH) was noted. No interchange of D and H took place when similar mixts. of I and the catalysts were exposed to ultraviolet light 40 hrs. at 40°. When heavy EtOH (contg. 5% D in the HO group) was used, no interchange was noted except in the presence of NaOH or EtONa, but even here not more than 3% of the H atoms in the Me group of I were replaced by D within 60 hrs. at 170°. Very similar results were obtained when analogous reactions were attempted with mesitylene (III). Provided intramol. migration of H from the Me to the nucleus is excluded, the results obtained point to the absence of tautomerization in the case of I and III. Halogenation of I or III presumably cannot be ascribed to addn. of halogens at a double bond. The slight interchange of D and H in I and III may be due to ionization of H in the Me group. In preliminary expts. it was also shown that certain substituting groups in the aromatic nucleus decreased the stability of the C—H bond in the Me group. Thus nitrotoluenes exchange H and D fairly readily. These expts. are not described. L. B. Wise

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

10

Regrouping of the hydrogen in phenols. A. I. Brodskii, O. P. Miklukhin, I. I. Kukhtenko, I. P. Gragerov (Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 57, 463-6(1947); *Chem. Zentr.* (Russian Zone Ed.) 1948, II, 828-9; cf. *C.A.* 43, 5011c.—A study was made of the mechanism of the reactions of aromatic compds. represented by the formulas PhXY, *o*-YC_6H_4XH, and *p*-YC_6H_4XH, in which X = O or NH and Y = OH, NO_2, Me, SO_3H, or allyl. For this purpose, the special case in which X = O and Y = H was investigated. Since this would make the 3 formulas identical, the investigations were carried out with heavy phenols. Phenol with a known content of D in the OH group and in the nucleus was prepd. from ordinary phenol by treatment with heavy water in the cold and in the absence of catalysts. By this treatment, D displaces the H of the OH rapidly but enters the nucleus slowly. When the phenol so prepd. was heated in a closed tube at 200° the reaction PhOD → *o*- or *p*-DC_6H_4OH was observed. Equil. was established in less than 50 hrs. with the D equally distributed in the OH group, the ortho, and the para position. No exchange occurred in the meta position. In order to det. whether the migration of the D occurs within the same mol. or involves 2 mols., PhOD and anisole were heated in a closed tube at 200°. Migration of the D into both the phenol and the anisole nuclei occurred. The same result was observed with phenetole. At first migration of the D from PhOD into the phenol nucleus was more rapid than migration into the anisole nucleus. The conclusions of Ingold, Raisin, and Wilson (cf. *C.A.* 31, 666⁷) served to explain the mechanism of this reaction. When anisole was heated with *3,5-dideuterophenol* at 200° for 20-100 hrs., no D was transferred to the anisole. M. G. Moore

[illegible]

Y

Author: Brodskii, Aleksandr Il'ich

Title: The method os using marked atoms for chemical analysis. A stenographic record of a public lecture delivered in Moscow. (Metod mechenykh atomov v khimii.) 29 p.

City: Moscow
Publisher:
~~Publication~~: Pravda

Date: 1948

Available: Library of Congress

Source: Monthly List of Russian Accessions, v. 3, no. 8, page 522

PROCESSES AND PROPERTIES INDEX

CA

Biedskii, A. I.: Vychislenie Termodinamicheskikh Funktsii Moskovskii Ordena Trudovogo Krasnogo Znameni Inst. Stali im. I. V. Stalina Sbornik 24. Moscow: Metallurgizdat. 1948. R5. Reviewed in Uspekhi Khim. 17, 517(1948).

3

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

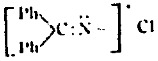
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

10

Investigation of some chemical reaction mechanisms with the aid of isotope exchange. A. I. Brodskii. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1949, 3-12.—(1) As compared with the N—H, O—H, S—H, and Cl—H bonds, exchange of the H atom in a C—H bond is difficult, owing to the absence of electrons not involved in bonding. PhMe and 1,3,5-$C_6H_3Me_3$ do not exchange H for D on prolonged heating with D_2O at 170°, even in the presence of acid or alkali. Nor is there an exchange between D_2O and *m*-BrC_6H_4Me or $BrC_6H_2Me_3$-1,3,5. In the presence of alkali, 1,3,5-$C_6H_3Me_3$ does exchange H in the Me group on heating with C_2D_5OD to the extent of 15% of the equil. in 30 hrs. at 150°; this exchange evidently proceeds by ionization of the Me group, catalyzed by the $C_2D_5O^-$ ion. The following data refer to the temp. of 170°. The exchange between *p*-$NO_2C_6H_4Me$ and D_2O attains 30% of the equil. in 68 hrs. in alk. soln., but does not take place in acid soln.; in the case of 2,4-$(NO_2)_2C_6H_3Me$, the same degree of exchange is attained in the same time in neutral soln., and rises to 60% in alk. soln. Ring H atoms are not exchanged. In the 3 isomeric $NH_2C_6H_4Me$, the 2 H atoms of the NH_2 group are exchanged very rapidly for D; in alk. soln. exchange goes no farther, but in acid soln. there is further exchange of H atoms in the ortho and para positions of the ring, attaining completion in 97 hrs. for *o*-, in 18 hrs. for *p*-, and somewhat slower for *m*-$NH_2C_6H_4Me$. This exchange in the ring is attributed to an electrophilic mechanism, and the difference between nitrotoluenes and toluidines is obviously detd. by the difference of the effects of the NO_2 and NH_2 groups. In *o*- and *p*-MeC_6H_4OH in alk. soln. all H atoms of the OH group and those in para and ortho positions in the ring are exchanged completely in 20 hrs. In $NH_2C_6H_4C_6H_4NH_2$, a very fast exchange of the H atoms of the NH_2 groups is followed by a slow exchange of ring H atoms in ortho position, which is catalyzed by both acids and bases. With acids, it reaches 30% of the equil. in 60 hrs., with bases in 100 hrs. Exchange between D_2O and a 20% soln. of Ph_3CCPh_3 (contg. about 10% free Ph_3C—) in C_6H_6 or Me_2CO was absent in 6 days at 100°, despite the expected exchangeability of the *o*- and *p*-H atoms in Ph_3C. (2) The observation that in the Beckmann rearrangement of $Ph_2C:NOH$ in the presence of PCl_5 and H_2O enriched with O^{18} all the O of the NOH group is exchanged for O^{18} excludes any intramol. mechanism, and is consistent with the Stieglitz, *et al.* (C.A. 8, 3785; 16, 2825), reaction scheme, with the intermediate stage formulated as



$$\left[\begin{matrix}Ph\\Ph\end{matrix}\!\!>\!C:\ddot{N}-\right]^{+}Cl^{-} \rightarrow [Ph-\underset{\cdot}{C}:\ddot{N}\cdot Ph]Cl$$

(3) The absence of an isotopic exchange of ring H atoms in PhMe excludes any mechanism based on a tautomerization $CH_3 < \rightleftharpoons CH_2:<$. That no such tautomerization takes place by an intermol. process follows from the fact that no D is found in the

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

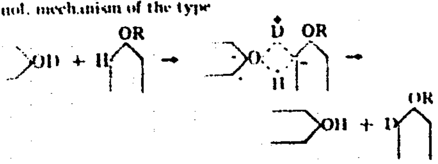
COMMON ELEMENTS

OPEN

MATERIALS INDEX

COMMON VARIABLES INDEX

product remaining after [illegible] removal of the CD_3 group from $PhCD_3$, indicating that D, consequently also H, does not migrate from the Me group into the ring. Similarly, results of H—D exchange expts. exclude other, variously assumed, tautomeric transformations, such as $CHOCHO \rightleftarrows CH(OH){:}CO$, $HCO_2H \rightleftarrows C(OH)_2$, or $Me_2C{:}NOH \rightleftarrows MeC({:}CH_2)NHOH$. (4) Miklukhin's "hydrogen rearrangement," consisting in a migration of the D atom of PhOD into ortho and para positions in the ring, and completed in 50 hrs. at 200°, and the D—H exchange between PhOD and ring H atoms of PhOMe or PhOEt, indicate a bimol. mechanism of the type



where R = H in the rearrangement, and R = Me or Et in the exchange. It accounts for the greater slowness of the exchange as compared with the rearrangement, and for the accelerating effect of H_2SO_4. No exchange takes place between PhOMe and 3,5-$C_6H_3D_2OH$, where D occupies stable meta positions and hence is unable to migrate into the OH group. N. Thon

BRODSKIY, A. I.

USSR/Chemistry - Chemical Sciences
Academy of Sciences Jun 49

"In the Department of Chemical Sciences" 6 pp

"Vest Ak Nauk SSSR" No 6

Following reports submitted: A. V. Kirsanov's "Conversion of Carboxylic Acids Into Amides," A. B. Nalbandyan's "Mechanism of Photochemical Oxidation of Ethane Sensitized by Mercury," A. I. Brodskiy's "Mechanism of Allylphenyl Regrouping and the Structure of the Hydrogen Bond in Benzoquinhydrone," and A. V. Trofimov's "Composition of Meteoritic and Earth Sulfurs." Discusses new methods of microelementary analysis developed in Lab of Quantitative Microanal, Inst of Org Chem.

PA 54/49T14

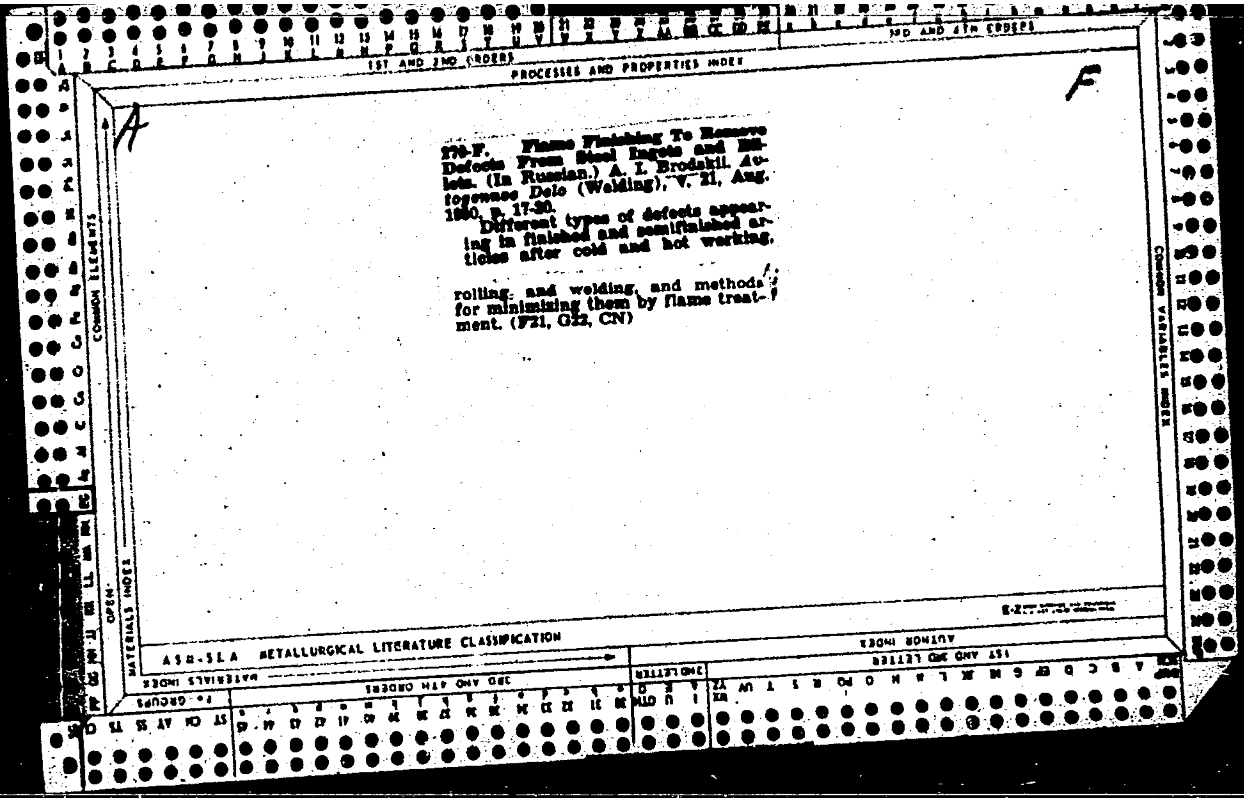
CA

Kinetics of the hydrogen rearrangement in phenol. A. I. Brodskii and I. I. Kukhtenko (L. V. Pisarzhevskii Inst. Phys. Chem., Kiev). *Dopovidi Akad. Nauk Ukrain. R.S.R.* 1950, 279-81(in Ukrainian).—Tagged PhOD (in PhOH with 3.023% D), pure or in tetrahydronaphthalene soln., heated in sealed tubes, undergoes rearrangement to C_6H_4DOH, with D passing from the hydroxyl with equal probability into the 3 possible positions in the ring. Within each expt., the rate is of the 1st order, satisfying $-\ln(1 - y) = kt$, where y = amt. of D in the ring (in fractions of the equil. amt.). If the reaction consisted in intramol. migration of D, and on the assumption that at equil. D is equally distributed between the hydroxyl and the 3 positions in the ring, one should have $k = 4k_0$, where k_0 = true rate const. of the monomol. reaction PhOD → C_6H_4DOH. If, on the other hand, the reaction consists in an exchange between 2 mols., it is actually bimol., PhOD + PhOH → PhOH + C_6H_4DOH, and, in soln., $k = 4P(1 - x_0)k_0$, where P = concn. of (PhOH + PhOD) in mole/l., x_0 = fraction of D in the phenol prior to rearrangement, and k_0 = true bimol. rate const. An expt. at 210°, in soln., gave the data: P = 5.46, 2.62, 0.95; k = 0.0158, 0.00770, 0.00248 hr.$^{-1}$; k/P = 0.00289, 0.00294, 0.00261; hence, k_0 = 0.00070 l. mole^{-1}/hr.$^{-1}$. In pure PhOH, k_0 is twice as great. In the pure-liquid phase, at 190, 200, 210°, k = 0.0121, 0.0274, 0.0591 hr.$^{-1}$, hence the activation energy E = 31.8 kcal./mole, and the preexponential factor = $10^{9.01}$ l./mole^{-1}/sec.$^{-1}$ This value corresponds to an electrophilic substitution mechanism, with a quaternary intermediate complex.

N. Thon

BRODSKIY, A. I. and KHASKIN, I. G.

"Isotopic Change of Hydrogen in Contact with Flint," Dokl. AN SSSR, No.6, 21 Oct 50

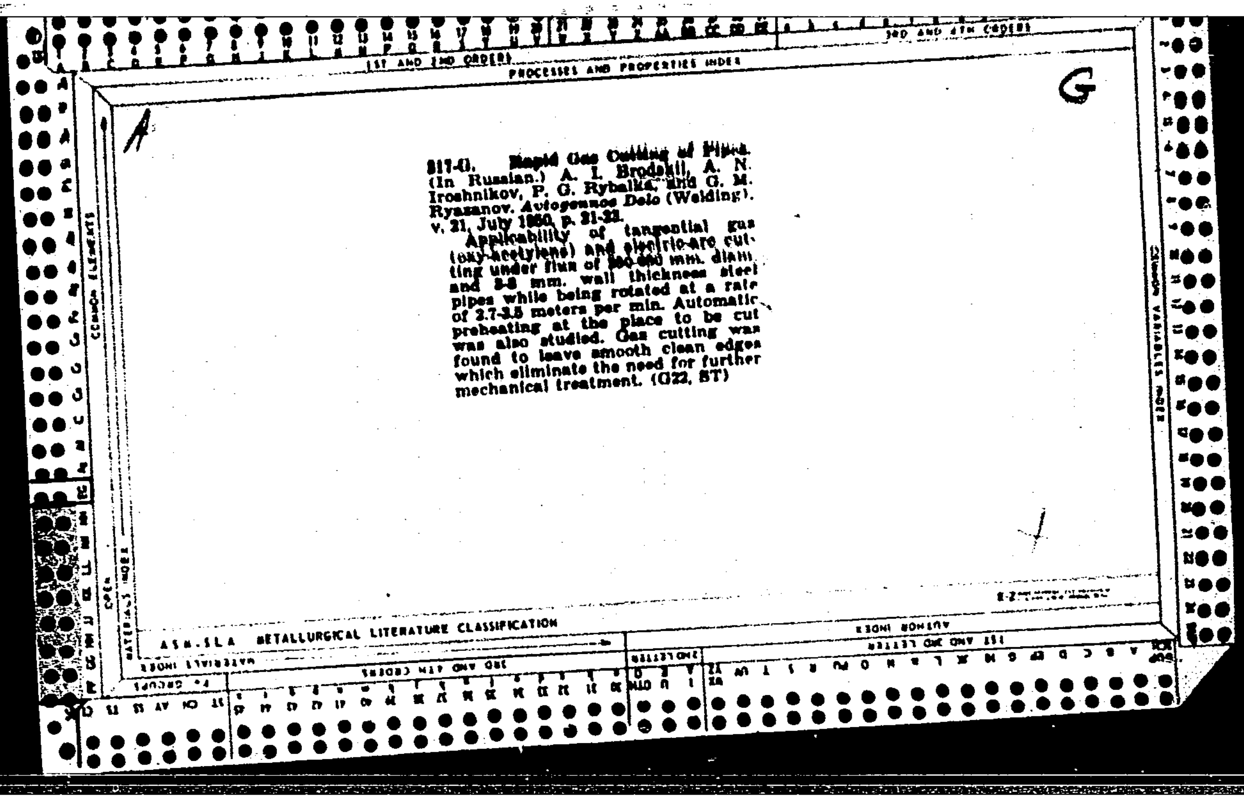


A

F

279-F. Flame Finishing To Remove Defects From Steel Ingots and Billets. (In Russian.) A. I. Brodskii. Avtogennoe Delo (Welding), v. 21, Aug. 1950, p. 17-20.

Different types of defects appearing in finished and semifinished articles after cold and hot working, rolling, and welding, and methods for minimizing them by flame treatment. (F21, G22, CN)



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

G

A

817-G. Rapid Gas Cutting of Pipes. (In Russian.) A. I. Brodskii, A. N. Iroshnikov, P. G. Rybalka, and G. M. Ryazanov. *Avtogennoe Delo* (Welding), v. 21, July 1950, p. 21-23.

Applicability of tangential gas (oxy-acetylene) and electric-arc cutting under flux of 300-600 mm. diam. and 3-8 mm. wall thickness steel pipes while being rotated at a rate of 2.7-3.5 meters per min. Automatic preheating at the place to be cut was also studied. Gas cutting was found to leave smooth clean edges which eliminate the need for further mechanical treatment. (G22, ST)

COMMON ELEMENTS

SUBJECT VARIABLES INDEX

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

1ST AND 2ND LETTER

3RD AND 4TH ORDERS

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

N

3

1215

ISOTOPE EXCHANGE OF HYDROGEN IN HYDROGEN-SILICON BONDS. A. I. Brodskii and I. G. Khaskin. Doklady Akad. Nauk S.S.S.R. 74, 299-301(1950) Sept. 11. (In Russian)

It is known that in groups C-H hydrogen-isotope exchanges are very slow, if not altogether absent. One of the co-authors (Brodskii, Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk, No. 1, 3(1949)) explained this by the absence in the foregoing carbon atom of free electron pairs which would ensure the addition of D before the bond C-H was severed. Observations on analogous bonds N-H and B-H, reported in literature, confirm these views. Since the same structural situation exists in Si-H, a similar quasi-absence of hydrogen-isotope exchanges is to be expected. This was established in a series of equilibrium experiments between D_2O (or C_2H_5OD) and $HSi(C_2H_5)_3$, $HSi(C_6H_5)_3$, and $HSi(OC_2H_5)_3$ under various conditions and in the presence or absence of catalysts.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

MATERIALS INDEX

COMMON VARIABLES INDEX

BRODSKIY, A.I.

PA 174T3

USSR/Chemistry - Isotopic Exchange 21 Sep 50

"Delayed Exchange of Hydrogen in Solutions of Ammonia Salts," A. I. Brodskiy, Corr Mem, Acad Sci USSR, L. V. Sulima, Inst Phys Chem imeni L. V. Pisarzhevskiy

"Dok Ak Nauk SSSR" Vol LXXIV, No 3, pp 513-515

Direct exchange of hydrogen of ammonium ion with water is either absent or very slow: Exchange proceeds over free ammonia formed by hydrolysis. Confirms this by detn of rate of exchange in ammonium nitrate, sulfate, and chloride both in presence and absence of acid. Isolated salt at different stages

174T3

174T3

USSR/Chemistry - Isotopic Exchange 21 Sep 50
(Contd)

of exchange by freezing out or pptg with dioxane and det content of deuterium. Draws up eq describing kinetics of process.

174T3

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

N

2

1793

EXCHANGE OF ISOTOPES OF PHOSPHORUS IN THE SYSTEMS H_3PO_3-H_3PO_4 and KH_2PO_4-K_2HPO_3, AND TAUTOMERISM OF HYPOPHOSPHOROUS ACID. A. I. Brodskii, D. N. Strazhesko, and L. L. Chervyatsova. Doklady Akad. Nauk S.S.S.R. 75, 823-5(1950) Dec. 21. (In Russian)

The absence of P isotope exchanges in systems containing phosphoric acid (or its ion), even after a prolonged heating (Ionin et al., Doklady Akad. Nauk S.S.S.R. 67, 463(1949); Lukovnikov et al., ibid. 70, 43(1950)), can be explained, as in other similar cases (Grinberg et al., ibid. 23, 910(1939)), by the coordinational stability of the P atom surrounded symmetrically by four O atoms in the PO_4^{-3} ion. Accordingly, it could be expected that in systems invoving H_3PO_3 and H_3PO_4, or the corresponding ions, isotope exchanges would take place. The experiment did not confirm this expectation. No exchanges were observed in the systems $KH_2P^*O_4$-K_2HPO_3 or $H_3P^*O_4$-H_3PO_2, either at room temperature or at 70°, as shown by the lack of appreciable radioactivity in $BaHPO_3$ precipitates obtained from the solutions after various time intervals. Negative results followed also experiments in which I or KI were added to the mixture of acids, although isotope exchanges do take place in analogous systems, such as $H_3As^*O_3$-H_3AsO_4 in the presence of I. This may throw some light on the question of the tautomerism of H_3PO_2, in analogy with what is known about H_3PO_3 since Arbuzov's investigations (Zhur. Russ. Fiz. Khim. Obshchestva 38, 687(1906) 61, 1833(1929)). There may exist two forms of hypophosphorous acid, the "nonreactive" $OPH_2(OH)$ and the "reactive" $HP(OH)_2$. The oxidation by I, and the following isotope exchange, are preceded by a very slow transformation of the first form into the second, so that the velocity of the whole process is determined by this slow transition.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BRODSKIY, A.I., inzh.

In the welding section of the Central Board of the Scientific Technological Society for the Machinery Industry. Svar.proizv. no.4:44-45 Ap '64.
(MIRA 18:4)

1. Uchenyy sekretar' sektsii svarki TSentral'nogo pravleniya Nauchno-tekhnicheskogo obshchestva mashinostroitel'noy promyshlennosti.

AKHIYEZER, A.N.; BRODSKIY, A.I.

Thermistor bridge circuits with coupled resistance boxes. Izm.tekh.
no.5:44-45 S-O '56. (MLRA 10:2)

(Thermistors)

BRODSKIY A.I.

AUTHORS: Brodskiy, A.I., and Pronenko, V.I. 115-5-28/44

TITLE: Microcalorimeters for Measuring Superhigh Frequency Power in 3-centimeter Range (Mikrokalorimetry dlya izmereniya s.v.ch. moshchnosti v 3-santimetrovom diapazone)

PERIODICAL: "Izmeritel'naya Tekhnika", No 5, Sep-Oct 1957, pp 65-66 (USSR)

ABSTRACT: Generally, only such microcalorimeters are described in the known literature on accurate measuring of superhigh frequency power, in which the measured power produces a change of temperature in the calorimeter system that is proportional to the power change. But since the power of thermal losses is also proportional to the measured temperature difference, such microcalorimeters do measure only a portion of the applied power. The Khar'kov State Institute for Measures and Measuring Devices worked during 1954-55 (on the suggestion of L.D. Bryzzhev) on constant-temperature calorimeters, with which there is practically no temperature drop between the device system and the ambient medium. It is claimed that these calorimeters, also called isothermic microcalorimeters, measure practically the entire applied power. Initially, an ice-microcalorimeter was designed, based on the known physical constants of density and melting temperature, i.e. for de-

Card 1/3

115-5-28/44

Microcalorimeters for Measuring Superhigh Frequency Power in 3-centimeter Range

termining the amount of heat energy conducted into the microcalorimeter by the change of work medium volume. With this experimental instrument, the maximum error in measurements in the 3 cm band does not exceed ± 2% at a power ranging from 100 milliwatt to 10 watt. The isothermic calorimeter (compensation microcalorimeter) which was finally developed, comprises a semi-conductor cooling element for compensation of heat on the principle of the Peltier effect. It consists basically of a calorimetric system, a band-conveying channel, an outer case, and a battery of thermocouples. The maximum error of this instrument is not more than ± 2% in the power range from 30 to 400 milliwatt. The readings of both described micro-calorimeters were compared and at 100 milliwatt the difference was found to be not over ± 2%. Both instruments are described in detail. Comparison of the subject microcalorimeters was also made with the ponderomotive milliwattmeter developed by K.T. Troynikov, (of the Khar'kov State Institute for Measures and Measuring Devices). Work is presently continued with the purpose to extend the range of measure-

Card 2/3

115-5-28/44

Microcalorimeters for Measuring Superhigh Frequency Power in 3-centimeter Range

ments and to decrease the errors, as well as to apply the isothermic microcalorimeters for other frequency ranges. A.I. Samoylovich is referred to as having creatively participated in work on the subject instruments.
The article contains 2 drawings.

AVAILABLE: Library of Congress

Card 3/3

06195

9 (9) SOV/115-59-11-23/36

AUTHOR: Brodskiy, A.I.

TITLE: Measuring SHF Power in the Millimeter Wave Range

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 11, p 52

ABSTRACT: The author discusses microcalorimeters developed by KhGIMIP. These microcalorimeters have a cooling thermoelement and are used for measuring a power of 2-100 milliwatts with an error of not more than ± 1.5% in the 8-12 mm wave range (waveguide 3.4x7.2 mm) and in the 12-18 mm range (waveguide 5.5x11 mm). The design of the microcalorimeters is similar to the device for the 3-cm range, described by A.I. Brodskiy and V.I. Pronenko in /Ref 1/. The principle of functioning of a calorimeter with a cooling thermoelement is based in replacing the s.h.f. power by d.c. power with unchanged temperature of the calorimeter system. The heat liberated within the calorimetric system is absorbed by the thermoelement based on the Peltier effect. An F-16 photo-balancing amplifier is used as a

Card 1/2

06195

SOV/115-59-11-23/36

Measuring SHF Power in the Millimeter Wave Range

galvanometer in the thermocouple battery circuit. The d.c. power is established by measuring the current of the heater by the PPTV potentiometer. The cooler, the heater circuit and the automatic balancing circuits are fed by two 6-volt batteries. A special, two-layer cover was used for reducing the temperature drop by 15-20 times. Data of the KIM-2-8/12 and the KIM-2-12/18 calorimeters are presented in one table. There are 1 table and 1 Soviet reference.

Card 2/2

Card 2/2

30515
S/194/61/000/008/071/092
D201/D304

9.6000 (1013, 1040, 1067, 1154)

AUTHOR: Brodskiy, A.I.

TITLE: A micro-calorimeter for SHF power measurements

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1961, 21, abstract 8 I140 (Tr. In-tov Kom-ta standartov, mer. i izmerit. priborov pri Sov. Min. SSSR, 1960, no. 48 (108), 54-62)

TEXT: The micro-calorimeter was designed at the Khar'kov State Institute of Measures and Measuring Instruments. The calorimeter has a cooling thermo-element and is used for measuring power from 2-100 mW with an error ≤ ± 1.5% and a SWR not worse than 1.16. The process of power measurement is semi-automatic and takes less than 2-3 min. The principle of operation, the calorimeter construction and its separate components are described, the el. circuit diagram is given. 8 references. [Abstracter's note: Complete translation]

X

Card 1/1

BRODSKIY, A.I.

Electroforming of wave-guide devices by a galvanoplastic method. Trudy inst. Kom. stand., mer i izm. prib. no.48:96-106 '60. (MIRA 14:6)

(Wave guides) (Electroforming)

BRODSKIY, A.I.

Prospects for the theory of chemical structure and of reactivity in connection with new technology. Ukr. khim. zhur. 29 no.10:1003-1008 '63. (MIRA 17:1)

BRODSKIY, A.I., inzh.

The Scientific Technological Society to the aid of welding in the construction of machinery for the chemical industry. Svar. proizv. no.2:42 F '64. (MIRA 18:1)

1. Uchenyy sekretar' sektsii svarki TSentral'nogo pravleniya Nauchno-tekhnicheskogo obshchestva mashinostroitel'nov promyshlennosti.

ACCESSION NR: AP4040955 s/0020/64/156/005/1147/1149

AUTHOR: Brodskiy, A. I. (Corresponding member AN SSSR); Fomenko, A. S.; Abramova, T. M.; Furman, Ye. G. Dar'yeva, E. P.; Kukhtenko, I. I.; Galina, A. A.

TITLE: EPR spectra of radicals formed during gamma irradiation of polyamides

SOURCE: AN SSSR. Doklady*, v. 156, no. 5, 1964, 1147-1149

TOPIC TAGS: electron paramagnetic resonance, EPR spectra, EPR radical spectra, polyamide, polyamide gamma irradiation, hexamethylene adipamide, poly-omega-undecane amide, deuterium, caproamide

ABSTRACT: The authors conducted this analysis because the literary data pertaining to the structure of radicals formed under the effects of irradiation are contradictory. The EPR spectra of poly-ε-caproamide were recorded. The irradiation and EPR spectra recording was taken at room temperature. The EPR spectrum of the gamma-irradiated poly-ε-caproamide is an incompletely resolved quintet 1 : 2 : 2 : 2 : 1 with an average width of 74 oersteds between the extreme maxima. The cleavage between the extreme pairs of lines 1-2 and 4-5 is 21 oersteds. This is 1.55 times less than the cleavage between the lines 2-4. This spectrum corresponds to a $-CH_2-CO-NH-CH-CH_2-$ radical in which the unpaired

card 1/3

electron interacts with one α-hydrogen and two equivalent β-hydrogens. The $-CO-CD_2-(CH_2)_3-CD_2-NH-$ sample with deuterium in the two CH_2 groups neighboring the carbonyl and NH groups yields a fully resolved 1 : 2 : 1 triplet with a splitting of $a_\beta = 28$ oersteds, and with a general width of 56 oersteds between the extreme maxima. This spectrum corresponds to a $-CD_2-CO-NH-CD-CH_2-$ radical. The spectra of irradiated polyamides containing 8 and 10 CH_2 groups in the monomer unit show incompletely split 1 : 3 : 3 : 1 quadruplets with identical 21 oersted cleavages. The spectrum for an irradiated completely-crystalline hexamethylene adipamide $COOH-(CH_2)_4-CO-NH-(CH_2)_6-NH_2$ is a satisfactorily resolved 1 : 2 : 2 : 2 : 1 quintet with a general width of 84 oersteds between the extreme maxima and with $a_\beta = 21$ oersteds and $a_\alpha/a_\beta = 2.0$. It corresponds to a radical in which the hydrogen splits off from the CH_2 group in the β-position to the NH, just as in the poly-ϵ-caproamide radical. The irradiated ϵ-caprolactam monomer produces a poorly resolved spectrum. When deuterium is introduced into the methylene groups of the nondeuterated and deuterated caprolactam in the NH group a sharp change in the spectrum shape can be observed. The spectrum of the $CO-CD_2(CH_2)_3CD_2ND$ sample is not as well resolved probably on account of the participation of the NH group hydrogen in the cleavage. This spectrum can evidently also be examined as a quadruplet with intensity ratio of 1 : 1 : 1 : 1. Orig. art. has: 3 figures.

ACCESSION NR: AP4040955

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Posarzhevskogo Akademii nauk UkrSSR (Institute of Physical Chemistry, Academy of Sciences UkrSSR)

SUBMITTED: 09Mar64 ENCL: 00

SUB CODE: NP, OC NO REF SOV: 005 OTHER: 008

Card 3/3

L 32715-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/T/EWP(j)/EWA(1)/EWA(h) Pc-4/Pr-4/
Peb/Pu-4 GG/RM

ACCESSION NR: AP5003833 S/0190/65/007/001/0116/0122

AUTHORS: Brodskiy, A. I.; Fomenko, A. S.; Abramova, T. M.; Dar'yeva, E. P.; Galina, A. A.; Furman, Ye. G.; Kotorlenko, L. A.; Gardenina, A. P.

45
B

TITLE: Study of the radiation oxidation of poly-ε-caproamide 5

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 1, 1965, 116-122

TOPIC TAGS: caproamide, radiolysis, radiation oxidation, 19 IR analysis

ABSTRACT: The nature of the radicals which occur in poly-ε-caproamide (PKA) during γ-radiation, the gaseous products of radiolysis and radiation oxidation, the changes in the IR spectra, changes in viscosity and content of amino end-groups, and the formation of hydroperoxides during radiation of PKA in oxygen were investigated. Films and slivers of PKA obtained by polymerization of ε-caprolactam in N_2 with H_2O as initiator were used. The spectra [illegible] paramagnetic resonance (EPR) showed that the radical [illegible] was formed (A. I. Brodskiy et al, Dokl. AN SSSR, 156, 1147, 1964). Chromatographic analysis of the gaseous products of radiolysis in vacuum and radiation oxidation in O_2 gave the H_2 and CO (with less than 3% CO_2) separation shown in Fig. 1

Card 1/7

L 32715-65

2

ACCESSION NR: AP5003833

on the Enclosure. The IR spectra of a PKA film (see Fig. 2 on the Enclosure) agree well with previous results of N. D. Slovokhotova (Dokl. AN SSSR, 127, 831, 1959). The effects of different radiation regimes on viscosity are shown in Fig. 3 on the Enclosure, the formation of NH_2 and COOH end groups is given in Fig. 4 on the Enclosure, and the formation of peroxides is shown in Fig. 5 on the Enclosure. Orig. art. has: 6 figures.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo AN UkrSSR (Physical Chemistry Institute, AN UkrSSR); Kievskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (Kiev Section of the All-Union Scientific Research Institute of Synthetic Fibers)

SUBMITTED: 20Mar64 ENCL: 05 SUB CODE: OC

NO REF SOV: 004 OTHER: 000

Card 2/7

L 32715-65
ACCESSION NR: AP5003833 ENCLOSURE: 01

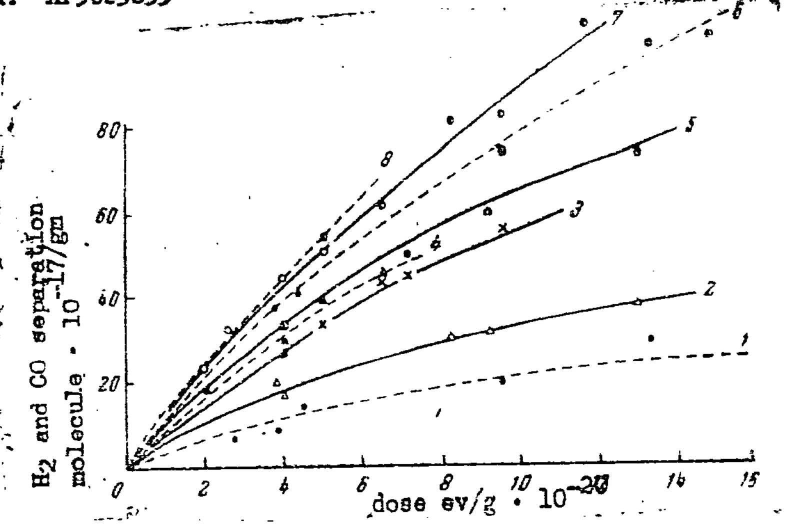


Fig. 1. Separation of H_2 and CO during radiolysis of PKA films. Dashed lines - in vacuum; full lines - radiation oxidation. Dose 0.4 · 10^{18} ev/g min: 1, 2-CO; 5,6 -H_2; dose 0.5 · 10^{19}: 3,4 - CO; 7,8 - H_2

Card 3/7

L 32715-65
ACCESSION NR: AP5003833

ENCLOSURE: 02

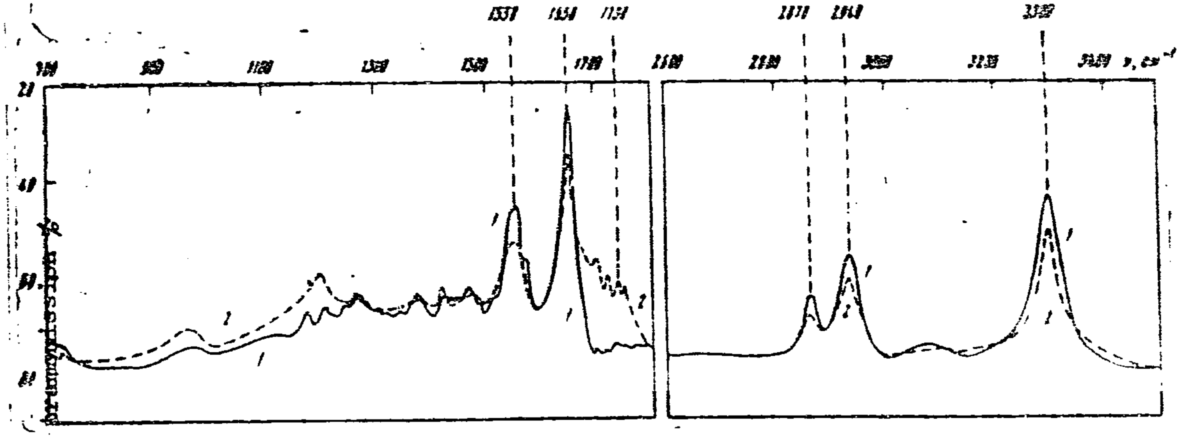


Fig. 2: IF spectra: 1 - before radiation; 2 - after radiation in O_2 (dose $0.4 \cdot 10^{18}$ ev/g min)

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ACCESSION NR: AP5003833

ENCLOSURE: 03

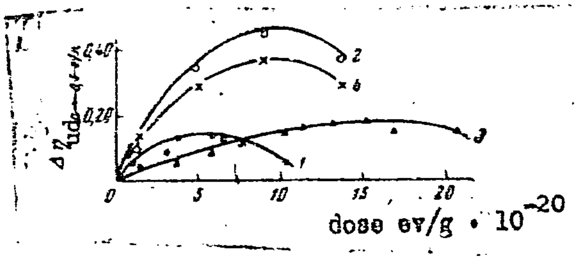

Fig. 3: Specific viscosity of PKA films: $\Delta\eta_{ud} = \Delta\eta_{init} - \Delta\eta_{radiated}$.
Dose $0.4 \cdot 10^{18}$ ev/g min; 1 - in vacuum; 2 - radiation oxidation; 3 - rad. oxid. at $0.6 \cdot 10^{19}$ ev/g min; 4 - same for films stabilized with 0.5% DNFDA at $0.4 \cdot 10^{18}$

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L 32715-65
ACCESSION NR: AP5003833

ENCLOSURE: 02

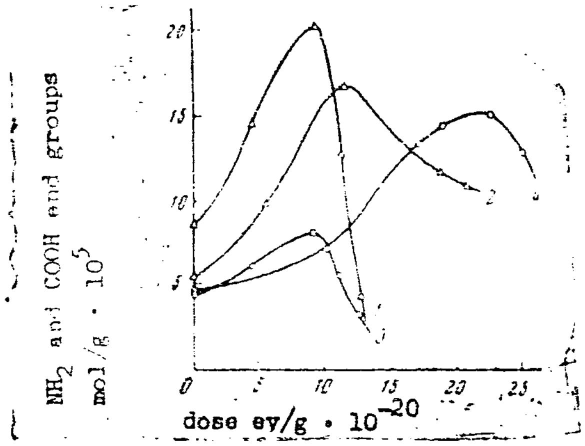


Fig. 4: NH$_2$(1,2) and COOH (3,4) end groups: 1,3 - $0.4 \cdot 10^{18}$ ev/g min;
2,4 - $0.6 \cdot 10^{19}$

Card 6/7

L 52715-65
ACCESSION NR: AP5003833

ENCLOSURE: 05

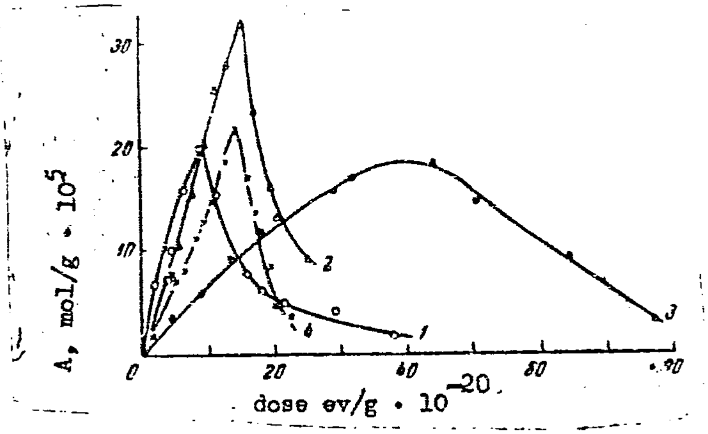


Fig. 5: Peroxide combinations (A) at 30C. Dose 0.4 $\cdot 10^{18}$: 1 - unstabilized film; 3 - stabilized with 0.5% DNFDA; dose 0.6 $\cdot 10^{19}$: 2 - unstabilized; 4 - stablized.

Card 7/7

L 36964-66 EWT(m)/EWP(j) RM

ACC NR: AP6027803 SOURCE CODE: UR/0063/66/011/002/0196/0202

AUTHOR: Brodskiy, A. I. (Corresponding member); Gordiyenko, L. L.; Degtyarev, L. S.

ORG: AN SSSR

TITLE: Effect of substituents on the polarographic potentials and EPR spectra of aromatic anion-radicals

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo. Zhurnal, v. 11, no. 2, 1966, 196-202

TOPIC TAGS: ion radical, EPR spectrum, polarographic analysis, substituent

ABSTRACT: The polarographic reduction and EPR spectra of anion-radicals of a number of alpha- and beta-substituted anthraquinones, phenazines, p-nitrodiphenyls with substituents in the second para position as well as of substituted para-nitrostilbenes were investigated. These works were arranged for the purpose of obtaining data on the effect of substituents on the distribution of the spin densities and on the transmission of the effect of the substituents through the aromatic ring and conjugation chains. The basic results of these works are presented.

In Table 1 is presented the polarographic potentials of $E_{\frac{1}{2}}$ of the first halfwave for the unsubstituted substance and its derivatives with substituent R. From these data it is seen that the nature of the substituent strongly affects the value of $E_{\frac{1}{2}}$, changing it in the expected direction.

UDC: 543.253 + 547.52

Card 1/3

L 36964-66 0

ACC NR: AP6027803

TABLE 1

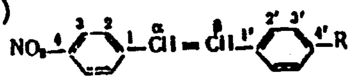
anthraquinones $E^{H}_{1/2} = 0.474$ в		phenazines $E^{H}_{1/2} = 1.246$ в	
substiuent R	$\Delta E_{1/2} = E^{H}_{1/2} - E^{R}_{1/2}$	substituent R	$\Delta E_{1/2} = E^{H}_{1/2} - E^{R}_{1/2}$
β-NH_2	−0.158	β-OCH_3	−0.050
β-CH_3	−0.031	β-CH_3	−0.027
β-C_6H_5	−0.022	β-C_6H_5	+0.065
β-F	+0.041	β-Cl	+0.139
β-Cl	+0.073	β-CHO	+0.202
β-Br	+0.071	β-CN	+0.311
β-$CONH_2$	+0.071	β-NO_2	+0.417
α-NH_2	−0.088	α-OCH_3	−0.038
α-OCH_3	−0.032	α-Cl	+0.009
α-$CONH_2$	+0.034	α-$CONH_2$	+0.227
α-J	+0.046	α-$CONHC_6H_5$	+0.300
α-F	+0.057		
α-Cl	+0.072	α-$CONHC_{10}H_7$	+0.319
α-NO_2	+0.211		
1-NO_2, 2-COOH	+0.110	2-Cl, 6-OCH_3	−0.023
1,2-bezanthraquinone	+0.184	2-CH_3, 7,8-benzphenazine	−0.233

L 36964-66

ACC NR: AP6027803

The comparison of the experimental and calculated polarographic potentials of $E_{\frac{1}{2}}$ and the resolution constants a_N and a_H in the EPR spectra are presented in table 2.

TABLE 2

Substituent R	x	$E_{1/2}$ ob.	$E_{1/2}$ cal	a_N ob.	a_N cal	a_H ob.	a_H cal.
(p-nitrodiphenyls) Пара-нитродифенилы 							
NH_2	—0,3691	1,119	1,119	11,1	10,9	3,6	3,20
CH_3	—0,3596	1,109	1,109	10,6	10,4	3,6	3,20
H	—0,3392	1,096	1,085	9,8	10,3	3,6	3,20
F	—0,3528	1,094	1,102	9,4	9,8	4,0	3,10
Cl		1,062		9,6	10,0	3,3	3,08
Br	—0,3150	1,053	1,057	9,4	10,1	3,3	3,10
$COOC_2H_5$	—0,3284	0,901	0,895	8,9	8,1	3,1	2,53
$COCH_3$	—0,3243	0,888	0,893	8,7	7,8	4,0	2,44
NO_2	—0,2704	0,867	0,866	3,6	3,9	1,3	1,25
						0,3	0,38
(p-nitrostilbenes) Пара-нитростильбены 							
NH_2	—0,3198	1,017	1,011	9,5	9,8	1,6	1.55
H	—0,3101	0,996	1,001	9,2	9,0		1.58
NO_2	—0,2341	0,929	0,929	3,3	3,3	2,2	2,45
						1,2	0,83

Orig. art. has: 7 figures and 3 tables. [JPRS: 36,455]

SUB CODE: 07, 20 / SUBM DATE: none / ORIG REF: 008 / OTH REF: 017

L 45712-66 EWT(m)/EWP(j)/T WW/JW/JWD/RM

ACC NR: AP6024394 SOURCE CODE: UR/0020/66/169/002/0339/0342

AUTHOR: Brodskiy, A. I. (Corresponding member AN SSSR); Pokhodenko, V. D.; Khizhnyy, V. A.; Kalibabchuk, N. N.

34/
33
B

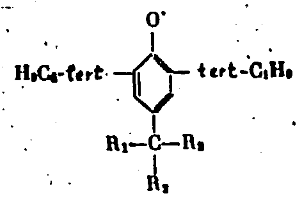
ORG: Institute of Physical Chemistry im. L. V. Pisarzhevskiy, Academy of Sciences, UkrSSR (Institut fizicheskoy khimii Akademii nauk UkrSSR)

TITLE: Mechanism of conversions of para-alkyl-di-ortho-tert-butylphenoxyl radicals

SOURCE: AN SSSR. Doklady, v. 169, no. 2, 1966, 339-342

TOPIC TAGS: free radical, phenol

ABSTRACT: The kinetics of disappearance of radicals (I) and (II)



$R_1=R_2=R_3=H$ (I)

$R_1=R_2=H;\ R_3=CH_3$ (II)

in benzene solutions were studied. The initial phenol solutions were oxidized in a vacuum by means of PbO_2, the oxidizing agent was driven off under vacuum, and the change in the concentration of these radicals with time was determined from ESR spec-

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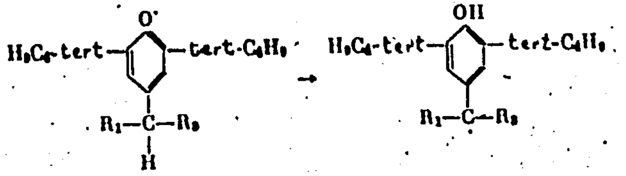
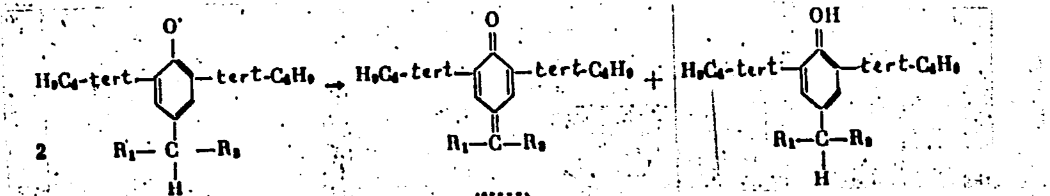
tra. The kinetic curves obtained showed that the rate of disappearance of radical I at 25° and radical II at 21 and 26° follows a first-order kinetic equation corresponding to the conversion



(1)

The disappearance of radical II at 47° obeys a second-order equation in accordance with the reaction



(VIII)

L 45712-66

ACC NR: AP6024394

At the intermediate temperature of 35°, a mixed mechanism is observed. The data indicate that radical II is more stable than radical I. The results of kinetic measurements show that the disappearance of 2,6-di-tert butyl-4-alkylphenoxyl radicals containing α hydrogen atoms in the para-substituents takes place quite rapidly via either mechanism (1) or (2), depending upon the structure of these substituents and the temperature. Orig. art. has: 2 figures, 1 table, and 5 formulas.

SUB CODE: 07/ SUBM DATE: 23Dec65/ ORIG REF: 004/ OTH REF: 008

Card 3/3) LR

L 40099-66 EWT(m)/EWP(j)/T IJP(c) GG/RM

ACC NR: AP6019661 (A) SOURCE CODE: UR/0073/66/032/006/0549/0554 B

AUTHOR: Brodskiy, A. I.; Fomenko, A. S.; Dar'yeva, E. P.; Abramova, T. M.; Galina, A. A.; Furman, ~~Ye. O.~~

ORG: Institute of Physical Chemistry im. L. V. Pisarzhevskiy, AN UkrSSR (Institut fizicheskoy khimii AN UkrSSR)

15

TITLE: Gas evolution during the radiative-oxidative degradation of poly-ε-caproamide

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 32, no. 6, 1966, 549-554

TOPIC TAGS: polyamide, oxidative degradation, hydrogen, carbon monoxide, gamma radiation, radiation effect

19

ABSTRACT: Chromatographic analysis was used to find the radiation yields of hydrogen and carbon monoxide, the main gaseous products of the radiolysis and radiative oxidation of poly-ε-caproamide. G_{H_2} is about 1 mole/100 eV for both processes, and does not change as the dose rate increases from 0.4 to 5.0 x 10^{18} eV/g min. G_{CO} is equal to 0.3 mole/100 eV for radiolysis and to 0.6 mole/100 eV for radiative oxidation, and rises to 0.9 mole/100 eV as the dose rate increases from 0.4 to 5.0 x 10^{18} eV/g min. It was found that the combined action of gamma radiation and increased temperature approximately doubles the values of G_{H_2} and G_{CO} in both the radiolysis and radiative oxidation of poly-ε-caproamide in the case of a low dose rate of gamma radiation, and that the effect of this combined action on G_{H_2} and G_{CO} diminishes with increasing

Card 1/2 UDC: 678.01:54+678.675

L 40099-66

ACC NR: AP6019661

dose rate. It is shown that the stabilization of poly-ϵ-caproamide by the addition of the antioxidant di-β-naphthyl-p-phenylenediamine does not change G_{H_2} during radiolysis and radiative oxidation, but markedly reduces the amount of carbon monoxide formed during radiative oxidation. Orig. art. has: 6 figures and 3 tables.

SUB CODE: 07/ SUBM DATE: 31Jan64/ ORIG REF: 006

Card 2/2

USSR/Medicine - Tuberculosis, Pulmonary Mar/Apr 1948
Medicine - Blood Transfusion

"Experience With Blood Transfusions and Administration of Dry Serum in Pulmonary Tuberculosis," A. L. Brodskiy, Chief Surg, Ivanovo Oblast Tuberculosis Sanatorium No 1, Ivanovo Blood Transfusion Sta, 1½ pp

"Problem Tuberk" No 2

Series of experiments, using blood transfusions and dry serum for treating tuberculosis, was begun in 1946. Dry serum was used since it did not contain fibronogen. Describes case histories and the course of treatment. Both substances helped considerably to decrease the effects of pulmonary tuberculosis where

[redacted] 67T82

USSR/Medicine - Tuberculosis, Pulmonary (Contd) Mar/Apr 1948

heavy blood flow was present. In cases of infectious anemia and distrophy, dry serum greatly decreased the effects of intoxication. Dir, Ivanovo Blood Transfusion Sta: P. M. Maksimov.

[redacted] 67T82

BRODSKIY, A. L.

BRODSKIY, A.L.

BRODSKII, AL., VERKHOVYKH,E.P., VORONOV, A.M.,GALPERIN,A.L., GIRILOVICH,M.A.
and BONDAR,N.I.

"Blood Transfusion in Yreatment of Tuberculosis"

/Probl. Tuberk./ No. 1, 3-14, Jan.-Feb. , 1950. 2 figs.,3 refs.

Much work has veen donr in the Soviet Union to prove that tuberxulous patients ate not allergix to human vlood. It has also been proved that blood transfusions in these cases need not produce any general or local reactions whatsoever. The very severe reactions which were produced by transfusion at the beginning of the experiments have now been eliminated; it has been established that they were die to impurities and to lack of asepsis in the technique of administration. Transfulion cannot be regarded as a basic method of treatmentb but serves a subsidiary purpose: (a) as a stimulator of the connective tissues; (b) as a haemostatic;(c) as substitution therapy after great blood loss. Blood transfusion is also important as a preliminary to surgical interventio and in post-operative treatment. More work should be done on the desensitizing effect of blood transfuson in the presence of plrural rections to treatment with artificial pneumothorax. The use of dry serum is advisable as a haemostatic agent. Blood transfusiond are contraindicated in hopeless cases such as those of acute caseous pneumonia, acute haematogenous spread, and terminal exacerbations.

H.W. Swann

SO: Abstracts of World Medicine. Vol. 8, 1950.

BRODSKIY, A.L.

Twelve year achievements with blood transfusion in combined treatment of pulmonary tuberculosis. Sov. med. 22 no.12:97-102 D '58. (MIRA 12:1)

1. Glavnyy vrach Ivanovskogo oblastnogo tuberkuleznogo sanatoriya No.1.
(TUBERCULOSIS, PULMONARY, ther.
blood transfusion in combined ther. (Rus))
(BLOOD TRANSFUSION, in various dis.
pulm. tuberc., in combined ther. (Rus))

BRODSKIY, A.L.; TSIMMERINOV, Ye.I.

Extrapleural pneumonolysis in cavernous pulmonary tuberculosis.
Probl.tub. 36 no.7:106-108 '58. (MIRA 12:8)

1. Iz Ivanovskogo oblastnogo tuberkuleznogo sanatoriya No.1
(glavnyy vrach A.L.Brodskiy).
(TUBERCULOSIS) (PLEURA--SURGERY)

BRODSKIY, A.I., akademik

Symposium on Stable Isotopes. Vest. AN SSSR 34 no. 2:103-104
F '64. (MIRA 17:5)

1. AN UkrSSSR.

BRODSKIY, A.L.; TSIMMERINOV, Ye.I.

Collapse therapy in pulmonary tuberculosis in old age. Sov.med. 26 no.10:105-108 O '62. (MIRA 15:12)

1. Iz Ivanovskogo oblastnogo tuberkuleznogo santoriya No. 1 (glavnyy vrach - zasluzhennyy vrach RSFSR A.L.Brodskiy).
(LUNGS—COLLAPSE) (TUBERCULOSIS)

BRODSKIY, A.L.

Methods of teaching chemistry in institutions of higher education and secondary schools, Report No.1. Soob.Prim. otd.VKHO no.3:209-236 '57. (MIRA 13:6)

1. Khabarovskiy gosudarstvennyy pedagogicheskiy institut.
(Chemistry--Study and teaching)

BRODSKIY A.M.

ZORIN, D.J.; BRODSKIY, A.M.

Bridge-comparators used for measuring capacitance. Izm. tekh. no.3: 61-64 My-Je '57. (MLRA 10:8)
(Electric capacitance--Measurement) (Wheatstone bridge)

BRODSKIY, A.M., inzhener.

A roll-winding machine for making flexible guides for seeders. Stan.i instr. 18 no.8:28-29 Ag '47. (MLRA 9:1)
(Metalworking machinery)

SOV/115-58-6-22/43

AUTHORS: Gordov, A.N., Brodskiy, A.M., Kayander, M.S., Skragan, A.L.

TITLE: New Apparatus for Checking Thermo-Technical Devices (Novyye ustanovki dlya poverki teplotekhnicheskikh priborov)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 6, pp 51-56 (USSR)

ABSTRACT: The All-Union Scientific Research Institute of Metrology imeni D.I. Mendeleyev has developed special devices for the checking of thermo-technical devices. The apparatus UTT-1 is used for checking thermocouples and resistance thermometers. The circuit diagram is shown in Figure 1. The current may be regulated from 4 to 10 ma. The potentiometer R2-A, which has been developed for this apparatus on the base of the potentiometer R2/1, has 3 measuring limits of 1,500, 150 and 15 mv. The apparatus UVPT-1 is used for checking automatic electronic potentiometers, millivoltmeters, devices operating in rheostat and inductive transducers, etc. The circuit diagram is shown in Figure 2. The apparatus has four measuring circuits. The checking of devices with the newly developed apparatus is simpler and faster due to an

Card 1/2

efficient arrangement of measuring elements and the use of the semi-automatic R2-A potentiometer.
There are 4 diagrams.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D.I. Mendeleyev)

ZORIN, D.I.; BRODSKIY, A.M.

Bridge for measurement of small capacitances at radio frequencies. Trudy VNIIM no.38:40-44 '59. (MIRA 13:4)
(Electric measurements) (Bridge circuits)

BRODSKIY, Abram Moiseyevich, inzh.; MIKHEYEV, N.I., red.; DURASOVA, V.M., tekhn. red.

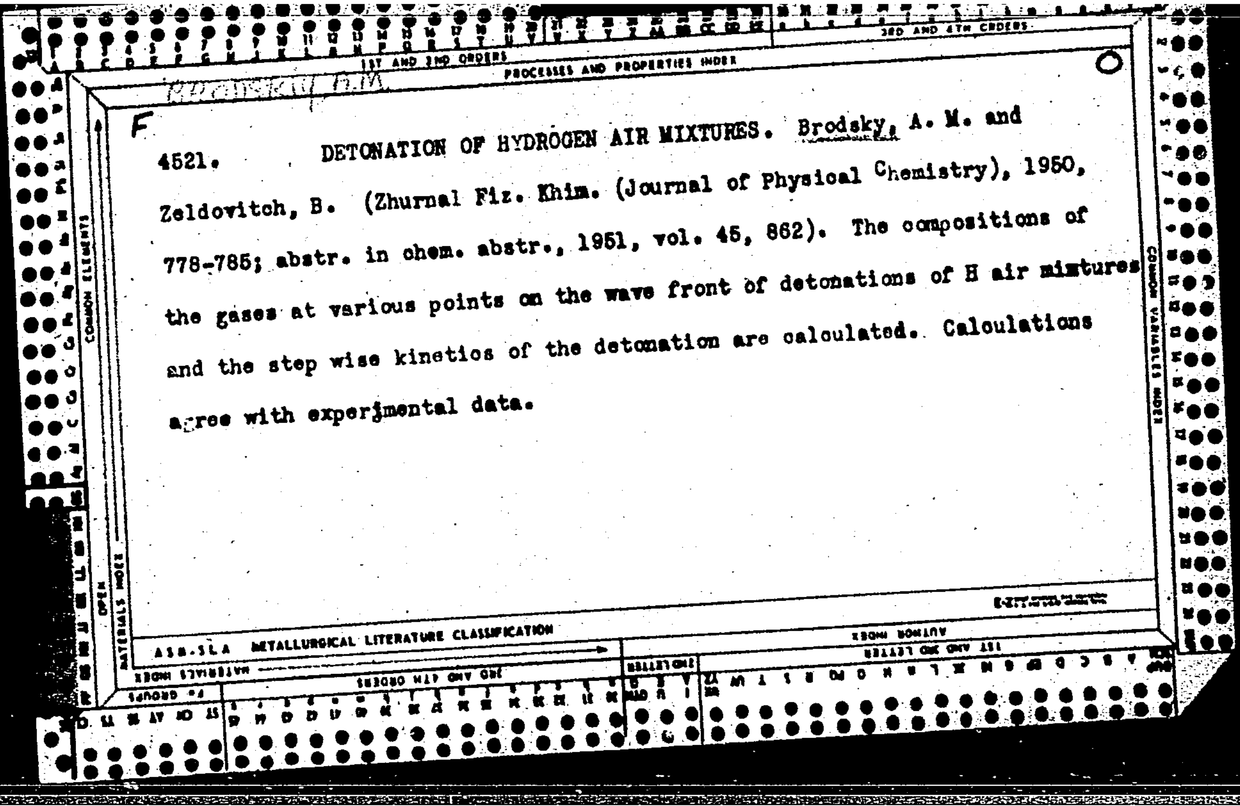
[Small hard-alloy cutting tools] Malogabaritnyi tverdosplavnyi rezhushchii instrument. Kuibyshev, Kuibyshevskoe knizhnoe izd-vo, 1962. 48 p. (MIRA 16:4)

1. Zavod imeni Maslennikova (for Brodskiy).
(Metal-cutting tools)

LAVROVSKIY, K. P.; BRODSKIY, A. M.; GARUNOV, G. A.

"High-Speed Cracking of Liquid Hydrocarbons," (Vysokoskorostnoi Kreking Zhidkikh Uglevodorodov), Dok AN SSSR, Vol. 92, No. 5 pp 967-970, 1935.

Translation ATIC 156121AA, F-TS-8333/V



BRODSKIY A.M.

F

4521. DETONATION OF HYDROGEN AIR MIXTURES. Brodsky, A. M. and Zeldovitch, B. (Zhurnal Fiz. Khim. (Journal of Physical Chemistry), 1950, 778-785; abstr. in chem. abstr., 1951, vol. 45, 862). The compositions of the gases at various points on the wave front of detonations of H air mixtures and the step wise kinetics of the detonation are calculated. Calculations agree with experimental data.

CA

21

Cracking of ethane and of propane under conditions of rapid heat exchange. K. P. Lavrovskii and A. M. Brodskii. *Doklady Akad. Nauk S.S.S.R.* 72, 745-8(1950).—Achievement of satisfactory yields of C_2H_4 from C_2H_6 and of C_3H_6 from C_3H_8 requires rapid heating up of the gas followed by rapid cooling. These conditions are realized technologically, under approx. atm. pressure, by passing the gas through a column of preliminary heated diabase sand or corundum of 0.05 cm. effective grain diam., and cooling the outgoing gas by injection of water. Expts. were run in vertical quartz tubes of 3.2 cm. diam., filled with corundum, 120 g./1-2 g. C_2H_6, at 850 and at 1000°, with the contact times τ varied from 0.02 to 0.2 sec. (at 850°) and 0.005-0.03 sec. (at 1000°): the products were analyzed for H_2, C_nH_{2n}, CH_4, C_nH_{2n+2}, and C. The yield of C_nH_{2n} from C_2H_6 and from C_3H_8 at 850° passes through a flat max. in the range $\tau \sim 0.05$-0.07; from C_3H_8 at 1000°, there is a more pronounced max., at about τ = 0.015 sec. With C_3H_8, the ratio of the vol. % of the gas absorbed in 93% H_2SO_4 and the % of C_2H_4 was const., 0.05 at 850° and 0.065 at 1000°. With C_3H_8 at 850°, the vol. ratio C_3H_6/C_2H_4 decreases with increasing τ, rapidly from τ = 0.02 to 0.05, much slower with further increasing τ. The amts. of C_2H_2 and C_4H_6 were insignificant and fell with increasing τ. Liquid products amounted to not over 5% at long τ and fell to 2% at $\tau \sim 0.01$ sec. The results prove that the dehydrogenation reactions $C_2H_6 \rightarrow C_2H_4 + H_2$ and $C_3H_8 \rightarrow C_3H_6 + H_2$ take place more rapidly than the C—C bond rupture reactions, $C_2H_6 \rightarrow CH_4 + \frac{1}{2}C_2H_4$ ($\rightarrow 2C + 3\ H_2$) and $C_3H_8 \rightarrow C_2H_4 + CH_4$ ($\rightarrow 3C + 4H_2$), even though the latter are favored energetically. This is in conflict with the Rice-Herzfeld chain mechanism (*C.A.* 28, 1655⁹). In the temp. range 800-1300°, the amt. of olefins formed varies with the temp. according to a law of the type $A \times 10^{-B/T}$; for C_2H_4, $B = 7.5 \times 10^3$ (°C.), A = 230 in wt. %. The C (coke) formed is not a primary product of direct decompn. into the elements, but is of secondary origin. This is confirmed by the fact that the coke always contains some 4-6% H_2, and that significant amts. of coke are formed also when C_2H_4 is passed under the same conditions.

N. Thon

BRODSKIY, A.M.

4

The problem of the rectification of hydrocarbon gas. K. P. Lavrovskii, A. M. Brodskii, and E. L. Zaltseva. *Doklady Akad. Nauk S.S.S.R.* 90, 75-8(1953).—The kinetics of the desorption from activated C of ethylene, propylene, and a mixt. of butylenes and ethylene-propylene mixts. have been studied to see if the difference in desorption rates could be used in the sepn. of the cracking gas C_2-C_4 fraction. N at 395 ± 5° was passed through a U tube contg. activated C satd. with the particular olefin. The amt. of desorbed gas was measured by weighing and analyzing the exit gas. The rate of N flow (approx. 20 m./sec.) was such that the time required for the adsorbed gas to attain the N temp. was small compared to the desorption time. It was found that ethylene is desorbed much faster than propylene or butylene. By using kinetic considerations the equation $a = \Gamma c + (A_0 - \Gamma c)e^{-\beta t/\Gamma}$ is derived. Here Γ is the const. from the Freundlich adsorption isotherm ($a = \Gamma y^{1/n}$), n is the no. of components in the system, n_0 and c are consts. of the system, t is time, β is the kinetic coeff., and a is the concn. in the adsorbed phase. With this equation it is possible to calc. the amt. of gas desorbed for a given time under given conditions. From the exptl. data the values found for β/Γ are: ethylene 2.9 sec.$^{-1}$, propylene 0.573^{-1} sec., and butylene^{-1} 0.52 sec.

Joseph D. Levy

2135. RAPID CRACKING OF LIQUID HYDROCARBONS. Lavrovskii, K.P., [illegible] A.M. and Garunov, G.A. (Dokl. Akad. Nauk SSSR (Rep. Acad. [illegible] U.S.S.R., 11 Oct. 195[illegible]), vol. 92, (5), 957-[illegible]). [illegible] of (1) destruction of raw feed with format[illegible] [illegible] with shorter [illegible] sec. The [illegible] yield is obtained by [illegible] by increasing the [illegible] short reaction times and recirculation. [illegible] higher proportion of unsaturated and aromatic [illegible] heat by direct contact with heat carrying particles [illegible] walls. Dilution of the raw [illegible] coke and increases liquid yield. The best temperature [illegible] is about 700°C with a contact time of 0.1 sec. Experimental results are tabulated. (L).

LAVROVSKIY, K.P.; BRODSKIY, A.M.

Reprocessing of gaseous paraffins under conditions of high-speed cracking. Trudy Inst.nefti 4:176-198 '54. (MLRA 8:1)

1. Chlen-korrespondent Akademii nauk SSSR (for Lavrovskiy)
(Paraffins) (Cracking process)

Lavrovskii, K. P. and Brodskii, A. M.: Fiziko-khimiches
[illegible]
[illegible] of High Speed Cracking [illegible]
[illegible]

Physicochemical investigation of high-speed catalytic cracking. K. P. Lavrovskii and A. M. Brodskii. *Repts. 4th World Petroleum Congr., Rome* 1955, 5-14(in Russian, Engl. translation 15-23).—In the cracking of high-mol. compds. such as heavy crude oils and low-boiling hydrocarbons, products contg. more olefins and less aromatic hydrocarbons would be obtained if condensation reactions with resulting asphalt and coke formation could be controlled. Since the rate of coke formation is slow compared with the rate of the destructive reactions, advantage can be taken of the temp. effect on the rate of coke formation. By selecting short residence times in the heating zone and by recycling, it is possible to raise the reaction temp. which greatly increases the reaction rate and lowers coke yield. At 750-850° in the case of high-mol. paraffins and 1000-1200° for lower paraffins, the max. reaction time needed for max. yields drops to 0.01 sec. and continues to fall exponentially as the temp. rises. The time required for max. yields for heavy feedstocks was found to be 0.1 sec., and for the cracking of C_2H_4 at 1000° was 0.012 sec. These conditions can be met by the use of a powd. heat-transfer medium. The reaction time is a function of the diam. of the particles of the heat-transfer medium which provides a means of reaction control. J. E. Morrissey

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gm

BRODSKIY, A.M.

62

1218. **Kinetics of the coking of petroleum asphaltenes.** A. M. Brodskii, K. P. Lavrovskii, and E. D. Filatova. *Izvest. Akad. Nauk. S.S.S.R., Otdel. Tekh. Nauk.* 1955, (1), 141-4.—Asphaltic residue (25%) obtained by C_3H_8 de-asphalting of 50% bottoms from Romashinsk crude was purified by twice re-precipitating (with intermediate soln in C_6H_6) from C_7H_{16}, yielding material with C.R. (Con) 67·5%. This was dissolved (20 and 37 p.p.m., concn determined by optical density) in thiophene-free C_6H_6 (verified to be inert under test conditions). Soln was passed through quartz tube at *ca* 700° C and asphaltene content of condensate measured. Results indicate that gas-phase coking of asphaltenes is bimolecular reaction, reaction rate increased by 1·7 times on temp rise from 715° to 765° C. Mol. wt. of 1300 was assumed; activation energy of reaction calc as *ca* 21 k.cal/mol. V. B.

②

BRODSKIY, A.M.

2926. ABSORPTION ANALYSIS METHOD AND SEPARATION OF HYDROCARBON GASES. Brodskii, A.M., Kalinenko, R.A. and Lavrovskii, K.P. (Khim. Tekhnol. Topliva (Chem. Technol. Fuel, Moscow), Aug. 1956, 10-[illegible]).

3

BRODSKIY A.M.

LAVROVSKIY, K.P.; BRODSKIY, A.M., kandidat khimicheskikh nauk.

Improtance of thermal contact cracking for the development of the chemical processing of oil. Khim. nauka i prom. 2 no.2:189-196 '57. (MIRA 10:6)

1. Chlen-korrespondent Akademii nauk SSSR.

(Cracking process) (Petroleum products)

BRODSKIY, A.M.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Natural Gases and Petroleum. Motor and Jet Fuels. Lubricants. I-8

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2545

Author : Lavrovskiy, K.P., Brodskiy, A.M.

Inst : -

Title : The Importance of Thermocontact Processes in the Furtherance and Chemization of Petroleum Processing.

Orig Pub : Khim. nauka i prom-st', 1957, 2, No 2, 189-196

Abstract : Description of the composition of outflowing gases and of the quality of liquid products obtained on high-speed contact cracking (SCC) of various petroleum products, in an enlarged laboratory unit. As the heat transfer agent were utilized petroleum coke particles 300-500μ in size. SCC was conducted using as the raw material Romashkinskiy mazut, the temperature of the added coke being 940°, the temperature at the egress from the reactor 640° and the raw

Card 1/2

BRODSKIY, A.M.

AUTHORS: Brodskiy, A. M., Kalinenko, R. A., Lavrovskiy, K. P., Corresponding Member AN USSR, and Titov, V. B. 20-5-19/48

TITLE: Kinetic Laws in the High-Temperature Cracking of Ethane (O kineticheskick zakonomernostyakh vysokotemperaturnogo krekinga etana)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 5, pp. 789 - 792 (USSR)

ABSTRACT: In this paper the investigation of the total kinetics of this cracking between 800 and 900^{0} is described. The increase of temperature and the corresponding rapid shortening of the reaction period from 0,5 to 0,005 seconds demand a special experimental method. The experiment was divided into 2 parts: 1.) the cracking itslef and 2.) analysis of the products. In the case of the latter a chromatographical method worked out by the authors was used (reference 3), where this method failed because of the small quantity of the single gases (e.g. isobutane), the method of radioactive indicators was used. In addition to that, a small quantity of methane, marked with C^{14}, was added to the initial ethane. Figure 1 gives the arrangement of the basic elements of the experimental device. During the experiments a "boiling layer" (reference 2) was produced in the reactor. After a quick cooling of the cracking products after the output from the boiling layer CO_2 of room temperature and in

Card 1/3

20-5-19/48

Kinetic Laws in the High-Temperature Cracking of Ethane

a weight relation of 3 : 12 to the reaction mixture was introduced into the reactor from above. The basic composition of the waste gas at 3 temperatures is given by table 1. The given reaction duration $t = \frac{V\varepsilon}{vF}$, V = the volume of the boiling layer, v = the average linear velocity of the current with regard to temperature extension, ε = the share of the free volume, and F = the cross section of the reactor. The conservation equation (1) for ethane is transcribed in the following way which is easy for the graphic reproduction

$$y = \frac{/C_2H_6/}{/C_2H_6/} = 1 + kt \qquad (2)$$

Table 2 gives the dependence y(t) for all 3 investigated temperatures. The value k was at 770° 0,54, 7 at 838°, and 31 at 890°. The precision of the K value is very high as it is shown by figure 2. In table 3 the dependence $\ell n\ k$ on $\frac{1}{T}$ is given. This shows that the value $E = \frac{d \ell n\ k}{d\ 1/T}$ does not remain constant with the increase of T and increases from 68 Cal obtained at lower temperatures to 82,0 ± 3 Cal. This proves on the one hand the alteration of the reaction mechanism, in which the share of the chain process obviously decreases (reference 5); on the other hand the found value is approximated to the value of the cracking energy of the C - C - binding in the ethane which was

Kinetic Laws in the High-Temperature Cracking of Ethane 20-5-19/48

measured in the previous paper (reference 6). By means of the authors' method it was found that in the ethane cracking products in tenth % quantities divinyl, butylene, and only traces of isobutane, finally propylene and propane, a fact which was never defined exactly in the references. Figure 2 furthermore shows that the known self-inhibition effect is not expressed up to high degrees of transformation. This can be explained by the connection between the self-inhibition at lower temperature and the influence of the walls. There are 3 figures, 1 table, and 7 references, 4 of which are Slavic.

ASSOCIATION: Petroleum Institute AN USSR
(Institut nefti Akademii nauk SSSR)

SUBMITTED: May 25, 1957

AVAILABLE: Library of Congress

Card 3/3

BRODSKIY, A.M.

AUTHORS: Brodskiy, A. M., Kalinenko, R. A., Lavrovskiy, 20-6-26/47 K. P., Corresponding Member of the AN USSR, Titov, V. B.

TITLE: The Significance of Chain Reactions in the High-Temperature Cracking of Ethane (O znachenii tsepnykh reaktsiy pri vysokotemperaturnom krekinge etana)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 6, pp. 1013-1016 (USSR)

ABSTRACT: The present paper investigates the portion of chain reactions in the cracking of ethane in the temperature interval 770-900°C. This problem is at present intensively investigated for low temperatures (references 1, 2, 3, 8). But the mechanism of the cracking and of the pyrolyses is not to be considered as finally determined, especially not at the high temperatures used in engineering. For solving this problem the authors made measurements of the activities of the different products obtained in the cracking of a mixture of ethane with methane (labelled with C^{14}). The method of these tests was already described in an earlier work (reference 5). The data obtained for the temperatures 770, 840 and 890°C are illustraded in a diagram. The tests discussed here were performed in the case of complete or almost complete intermixture in the "boiling" layer, which permits the reduction of the problem under review

Card 1/2

The Significance of Chain Reactions in the High-Temperature Cracking of Ethane 20-6-26/47

to the solution of a system of algebraic equations. The author additionally includes 5 elementary processes in the examination. Then the expressions for the dependence of the concentrations of the various active products on time, obtained due to a special analysis, are given. A provisional estimation already shows that the portion of chain reactions in the total process of cracking within the frame of the generally used scheme in the case investigated here is very small. Detailed numerical data on this are given. There are 1 table, and 9 references, 5 of which are Slavic.

ASSOCIATION: Petroleum Institute AN USSR (Institut nefti Akademii nauk SSSR)

SUBMITTED: July 18, 1957

AVAILABLE: Library of Congress

Card 2/2

BRODSKIY, A. M.

AUTHORS: Lavrovskiy, K. P. and Brodskiy, A. M. 65-1-13/14

TITLE: On the High Velocity Process of Thermal Conversion of Hydrocarbons. (K voprosu o vysokoskorostnom protsesse termicheskoy pererabotki uglevodorodov).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958,Nr.1.pp.64-68. (USSR).

ABSTRACT: Reply to a criticism by P. I. Luk'yanov which was published in this journal (1957, No.9, p.53) on a previous publication by the authors in DAN SSSR, 1953, vol.92, No.5, in Izd.AN SSSR, 1955 and the 4th World Petroleum Congress, Section III, Rome, 1955.

The authors defend the correctness of their formula for the evaluation of the order of time required for the heating up of a moving layer of vapours on contact with a heat transfer medium under conditions of high velocity cracking. They also criticise the form of publication of the criticism of their paper by the Editorial Office. There is 1 figure and 8 references.

Card 1/2

The editorial office of the journal, in an Editorial Notice (p.68) explains that in view of the refusal of

On the High Velocity Process of Thermal Conversion of Hydrocarbons.

the original authors to acknowledge errors, their paper was sent to a specialist in the field of design of reactors for chemical processes.

Pp.69-71. Comments by A. N. Planovskiy and D. I. Orochko on the paper of K. P. Lavrovskiy and A. M. Brodskiy, and criticism of the mathematical treatment of the problem. There are 7 References: 6 Russian, 1 English.

AVAILABLE. Library of Congress.

Card 2/2

BRODSKIY, A.M.

KAMINSKAYA, O.V.; LAVROVSKIY, K.P.; BRODSKIY, A.M.

Obtaining acetylene by high-speed catalytic cracking of propane.
Khim i tekh. topl. i masel 3 no.3:1-7 Mr '58. (MIRA 11:3)

1. Institut nefti AN SSSR.
(Acetylene) (Propane) (Cracking process)

5(4)

AUTHORS: Brodskiy, A. M., Kolbanovskiy, Yu. A., Filatova, Ye. D., Chernysheva, A. S. SOV/20-122-6-22/49

TITLE: On the Radiolysis of Heptane (O radiolize geptana)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 6, pp 1035-1038 (USSR)

ABSTRACT: The present paper investigates the γ-radiolysis of normal heptane in the liquid phase and the radiolysis of a solution of dibenzyl-sulfide in heptane. These investigations were carried out mainly for the following purposes: Determination of the exact kinetics of radiolysis in the initial ranges, determination of the influence of an interruption of irradiation, and determination of the exact composition and yield of the gas within a wide dose-interval (extending over more than 3 orders of magnitude). Dibenzyl-sulfide ($5.011 \cdot 10^{-4}$M)* was added to the heptane for the purpose of clearing up the particular feature of the behavior of aromatic sulphur compounds in the radiation field and for the purpose of determining the influence exercised by the presence of similar additions upon paraffin radiolysis. In the case of small doses, the X-ray

PECHKOVSKAYA, K.A.; PAVLOVA, I.P.; BRODSKIY, G.I.; DMITRUKHA, V.S.

Effect of carbon black on the wear resistance of vulcanizates.
Kauch. i rez. 22 no.10:28-32 O '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

BRODSKIY, G.I.

In the rubber section of the Central Administration of the "D.I. Mendeleev" All-Union Chemical Society. Kauch. i rez. 23 no.6:58 Je '64. (MIRA 17:9)

BRODSKIY, G.N.; TSUKKERMAN, V.I.

Zones of the primary use of railroad and truck transportation in handling small quantities of petroleum. Transp. i khran. nefti i nefteprod. no.12:16-18 '64. (MIRA 18:2)

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SOV/2o-122-6-22/49

On the Radiolysis of Heptane

apparatus РУП-3, and for larger doses Co^{60} were used as radiation sources. In the case of small doses, direct proportionality between the gas yield and the duration of radiation was observed. Interruption of irradiation caused a synchronous interruption of gas separation. Otherwise, no "radiation hysteresis" with respect to gas separation was observed, an assertion, which is strictly true. A diagram shows the dependence of the hydrogen- and methane yield on the dose for pure heptane and for a dibenzyl-sulfide solution. Dibenzyl-sulfide reduces heptane radiolysis. Next, the fraction of C_2-C_5 gas is investigated; the results of the gas analysis are shown in a table. There follow some comments on the results obtained: 1) The nonlinear effects begin with integral doses of eV/ml and occur in all components. 2) The direct disruption of C-C bonds is of particular importance in the radiolysis of alkanes. 3) The presence of acetylene in the gaseous products of radiolysis is pointed out. 4) Also the great variety of gaseous products of radiolysis is of essential importance (among them there are comparatively many isomeric structures). 5) The gaseous products of a dibenzyl-sulfide solution contain no hydrogen sulfide. In this case the protective effect is due to a transmission of the excitation.

Card 2/3

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On the Radiolysis of Heptane

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ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute of the Academy of Sciences, USSR)

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Card 3/3

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Report submitted ~~at~~ for the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York.

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Khim. i tekh.topl. i masel 4 no.3:30-32 Mr '59. (MIRA 12:4)

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AUTHORS: Brodskiy, A. M., Kalinenko, R. A., Lavrovskiy, K. P., Titov, V. B.

TITLE: On the Mechanism of High-temperature Cracking of Ethane

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 11, pp 2457-2466 (USSR)

ABSTRACT: The reaction mechanism of the cracking of hydrocarbon gases at 770-890° was studied, as in general the industrial pyrolysis of these gases takes place at these high temperatures. A special experimental method was developed by which tracer atoms and ethane are used to which approximately 2% of marked $C^{14}H_4$ methane was added. The experiments were made in a continuously working apparatus (Fig 1) at approximately 90 mm Hg. The quartz reactor was filled with corundum acting as heat carrier, and the temperature was recorded by means of an EPP-09 electronic potentiometer. The results obtained (Tables 1-3) showed that at these temperatures the maximum participation of the chain-reaction process in the conversion of ethane into ethylene is 5%, and that the inherent inhibition

Card 1/2