S/081/61/000/021/067/094
B138/B101

AUTHORS: Panchenkov, G. M., Yang Kuang-Hua

TITLE: Kinetics of coke formation on the alumino-silicate catalyst used when cracking petroleum fractions and hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 401, abstract 21M75 ([Tr.] Groznensk. neft. in-t, sb. 23, 1960, 260-270)

TEXT: In order to study the kinetics of coke formation during the cracking of the kerosene - gas oil fraction (200 - 320°C), the Golovanov-Panchenkov method is used, in which the catalyst is in contact with live vapours from the raw materials during the whole course of the experiment. The dependence of the amount of coke formed, on the cracking period, was studied for the case of the kerosene - gas oil fraction (200 - 320°C) of Komsomol'sk petroleum, hexadecane and decalin. To understand the kinetics and the mechanism of coke formation it is important to know how the coke is precipitated on to the surface of the catalyst. The percentage coating of the catalyst by the coke can be calculated for a monomolecular layer.

Card 1/2

S/081/61/000/021/067/094
B138/B101

Kinetics of coke formation on the ...

It is $(0.866)\ (M/4\sqrt{2}\ Nd)^{2/3}.N/M\cdot10^{-4}C/S)$, where M is the atomic weight of the carbon, N is Avogadro's number, d is the density of the coke, which is about 2.25 g/cm^3, C is the coke concentration on the catalyst, S is the surface of the catalyst, which is 305 m^2/g. Equations are derived for the kinetics of coke deposition on the catalyst during cracking. There are 8 references. [Abstracter's note: Complete translation.]

Card 2/2

PANCHENKOV, G.M.; ZHOROV, Yu.M.

General method of determining effective diffusion coefficients for catalysts used in the petroleum chemical industry. Trudy MINKHiGP no.28:3-9 '60. (MIRA 14:4)
(Petroleum) (Catalysts) (Diffusion)

PANCHENKOV, G.M.; KOLESNIKOV, I.M.

Kinetics of the hydrogenation of unsaturated and aromatic hydrocarbons in a flow. Trudy MINKHiGP no.28:10-25 '60. (MIRA 14:4)
(Hydrocarbons) (Hydrogenation)

S/195/60/001/002/001/010
B004/B067

AUTHORS: Panchenkov, G. M., Baranov, V. Ya.

TITLE: Kinetics of Thermal Cracking of Hydrocarbons and Their Mixtures

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 2, pp. 188 - 196

TEXT: The authors attempted to derive a kinetic equation for the cracking of hydrocarbons. Proceeding from the radical chain reaction $A \rightarrow \nu_1A_1 + \nu_2A_2 + \dots \nu_nA_n$ (a) (A initial substance, A_i reaction products, ν_i stoichiometric coefficients) they write: $W_1 = k[R][A]$ (2) (W_1 reaction rate, [R],[A] concentration of radicals and initial substance) and $W_1 = k_1[A] + k_2[R][A]$ (3). This equation takes into account the possible effect of two processes on the reaction rate: a) decomposition of the initial molecules into free radicals; b) reaction between free radicals and initial molecules. Furthermore, the rate W_2 is derived for the formation of free radicals. The following is assumed: 1) The

Card 1/4

Kinetics of Thermal Cracking of Hydrocarbons and Their Mixtures
S/195/60/001/002/001/010
B004/B067

radicals are formed by collision or by a monomolecular decomposition of the initial molecules; 2) the free radicals are consumed by reaction with the initial molecules. The interaction among the free radicals is negligibly small due to their low concentration. The authors write: $W_2 = k_3[A]^2 + k_1[A] - k_4[A][R]$ (4). Taking account of the steady state they obtain: $[R] = (k_3/k_4)[A] + k_1/k_4$ (5). By substituting (5) in (2) or (3) one obtains $W_1 = k'\{1 + k_3'[A]\}[A]$ (6), where $k' = k \cdot k_1/k_4$, $k_3' = k_3/k_1$ if (5) was substituted in (2), and $k' = (k_1k_4 + k_1k_2)/k_4$, $k_3' = k_2k_3/(k_1k_4 + k_2k_1)$ if (5) was substituted in (3). At low pressure, the collision among the initial molecules does not essentially contribute to the formation of radicals, and equation (6) will be of first order. The following relation is written for thermal cracking in continuous flow and gaseous state, the results of Ref.3 being taken into account: $n_0dx/\varrho dl = k'\{1 + k_3'C_A\}C_A$ (7), and by using the equation for ideal gases, one obtains $C_A = (1 - x)P/(1 + \beta x)RT$ (8). n_0 denotes the

Card 2/4

number of moles of the initial substance entering the reaction zone per unit time; x denotes the amount of initial substance entering into reaction; $\beta = \nu_1 + \nu_2 + \ldots -1$; P total pressure. Substitution of (8) in (7) and integration give $n_0x = -(A/B)n_0\ln(1 - x) - k'PV_r/BR^2T^2$ (9), where $A = (1+\beta)^2/m+n$; $B = \beta^2/n+(\beta/m)(2+\beta-m\beta/n) - (1+\beta)^2n/m(m+n)$; $m = RT + k_3'P$; $n = \beta RT - k_3'P$; V_r = volume of the reaction zone. For the case where cracking takes place under the decomposition of an intermediate product: $A \rightarrow \nu_1A_1 + \nu_2A_2 + \nu_3A_3 \rightarrow \nu_4A_1 + \nu_5A_2$, where A is the initial substance, A_1 gas, A_2 coke, and A_3 gasoline (as intermediate), a similar equation (14) was derived. The authors, however, used equation (9) to evaluate the experiments on the cracking of fractions of paraffin-containing Groznyy and Romashkino petroleum, and calculated the constants of this equation. They observed a pressure and temperature dependence of A/B. With a pressure change between 1 and 50 atm, the rate constant passes through a maximum at approximately 10 atm, which becomes more distinct at increased

√

temperatures. A. V. Frost and A. I. Dintses, A. D. Stepukhovich, M. G. Gonikberg, and V. V. Voyevodskiy are mentioned. There are 2 figures, 1 table, and 9 Soviet references.

√

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina (Moscow Institute of Petrochemical and Gas Industry imeni I. M. Gubkin)

SUBMITTED: December 21, 1959

PANCHENKOV, G.M.; KOLESNIKOV, I.M.; BUDARINA, Ye.P.

Kinetics of the alkylation of benzene by isopropyl alcohol on an aluminosilicate catalyst. Izv.vys.ucheb.zav.; neft' i gaz 3 no.6:89-96 '60. (MIRA 13:7)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad.I.M.Gubkina.
(Benzene) (Alkylation) (Aluminum silicates)

ZHOROV, Yu.M.; PANCHENKOV, G.M.

Relationship between the size of granules of the catalyst and the area where reaction takes place. Izv. vys. ucheb. zav.; neft' i gaz 3 no.7:65-69 '60. (MIRA 15:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika Gubkina. (Catalysts)

PANCHENKOV, G.M.; SKOBLO, V.A.

Corrections regarding the article "Kinetics of the sorption of benzene vapors within a wide temperature range." Izv. vys. ucheb. zav.; neft' i gaz 3 no.8:122 '60. (MIRA 14:4)
(Benzene) (Sorption)

PANCHENKOV, G.M.; BARANOV, V.Ya.

Effect of pressure on the kinetics of thermal cracking. Izv. vys. ucheb. zav.; neft' i gaz 3 no.10:93-98 '60. (MIRA 14:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.
(Cracking process)

87160

S/152/60/000/011/001/005
B024/B076

5.3300

AUTHORS: Panchenkov, G. M., Karryyev, Ch. S.

TITLE: Polymerization of Propylene on a Mixed Nickel Oxide Molybdenum Catalyst on an Aluminum Oxide Carrier

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gas, 1960, No. 11, pp. 71-74
3

X

TEXT: The authors report on their tests concerning polymerization of propylene on a molybdenum oxide and a mixed nickel oxide molybdenum catalyst, respectively. It was ascertained that neither pure aluminum oxide nor a molybdenum oxide catalyst on an aluminum oxide carrier effects a polymerization of propylene, so that mixed catalysts, i.e., with addition of nickel, cobalt, copper oxides, etc. are widely used. Relevant tests made by the authors at 140 - 200°C showed that the optimum conditions for a polymerization of propylene on a mixed nickel oxide molybdenum catalyst on an aluminum oxide carrier under atmospheric pressure are a temperature of 160°C and a moderate (15-20 h^{-1}) rate of gas supply. These test results are graphically shown in Figs. 1, 2, and 3. An increase of temperature and supply rate results in a decrease of the yield of polymerizate fractions.

Card 1/2

PANCHENKOV, G.M.; ZHOROV, Yu.M.; YU.YUY-LIN' [Yu. Yu-lin]

Characteristics of the kinetics of the catalytic cracking of heavy distillates. Khim. i tekh. topl. i masel 5 no. 11:4-8 N '60. (MIRA 13:11)

1. Moskovksiy institut neftekhimicheskoy i gozovoy promyshlennosti im. akad.Gubkina.
(Cracking process)

PANCHENKOV, G.M., MAKAROV, A.V. PECHALIN, L.I.

Separation of boron isotopes by the method of chemical exchange.
Vest. Mosk. un. Ser. 2: khim. 15 no.2:3-12 Mr-Ap '60.
(MIRA 13:6)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Boron--Isotopes)

PANCHENKOV, G.M.

GREAZONOVA, Z.V. [Gryaznova, V.]; PANCENKOV, G.M. [Panchenkov, G.M.]

Catalytic structure and activity of hydrated aluminosillicates. (EEAI 9:11)
Analele chimie 15 no.2:161-187 Ap-Je '60.
(Aluminosilicates) (Hydration) (Catalysts)

PANCHENKOV, G.M.; MAKAROV, A.V.; ROZYNOV, B.V.

Kinetics of the isotopic exchange of boron between boron trifluoride and its anisole complex. Vest.Mosk.un.Ser. 2: Khim. 15 no.3:7-10 My-Je '60. (MIRA 13:8)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Boron--Isotopes) (Boron trifluoride) (Anisole)

PANCHENKOV, G.M.; KUZNETSOVA, Ye.M.; AKSHINSKAYA, N.V.

Polarographic determination of alkali metals in aqueous and alcohol-water solutions without the supporting electrolyte. Zhur.anal. khim. 15 no.4:424-426 Jl-Ag '60. (MIRA 13:9)

1. M.V.Lomonosov Moscow State University.
(Alkali metals)

SEMIOKHIN, I.; PANCHENKOV, G.M.; ZHUROV, Yu.A.

Separation of carbon isotopes by the bicarbonate method. Vest. Mosk. un. Ser. 2: Khim. 15 no.5:6-12 S-O '60. (MIRA 13:11)

1. Moskovskiy gosudarstvennyy universitet, kafedra fizicheskoy khimii.
(Carbon—Isotopes) (Isotopes—Separation)

S/079/60/030/011/024/026
B001/B055

2209, 1274, 1153

5.1190

AUTHORS: Panchenkov, G. M. and Kolesnikov, I. M.

TITLE: Alkylation of Toluene With Propylene Over an Aluminum-silicate Catalyst

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 11, pp. 3846-3847

TEXT: The authors were able to prepare cymenes in high yields by alkylating toluene in the gaseous state and under atmospheric pressure in a stream of propylene, using an industrial aluminum-silicate catalyst. A special device (Ref. 1) was used for this alkylation. The aluminum-silicate catalyst had the following composition: 14.01 Al_2O_3, 84.66 SiO_2, 0.36 Na_2O, 0.13 Fe_2O_3, and 0.60 CaO, and traces of zinc and MgO. The toluene was chemically pure. Propylene was prepared by dehydration of isopropyl alcohol over aluminum oxide at 380°C. At 300°C, a molar ratio of toluene : propylene of 3 : 1 and an addition rate of 0.45 volumes of toluene per hour with respect to the catalyst volume, the authors obtained cymenes in 77% yield,

Card 1/2

PANCHENKOV, G.M.; KOLESNIKOV, I.M.

Alkylation of isopropylbenzene by propylene in the presence of an aluminosilicate catalyst. Zhur. prikl. khim. 33 no.6:1425-1427 Je '60. (MIRA 13:8)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I.M.Gubkina.
(Benzene) (Propene) (Alkylation)

MAKAROV, A.V.; PANCHENKOV, G.M. (Moscow)

Solubility of boron trifluoride in anisole, phenethole, β,β-dichlorodiethyl ether (chlorex) and sulfuric acid. Zhur. fiz. khim. 34 no.3:639-643 Mr '60. (MIRA 13:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Boron fluoride)

81575

S/076/60/034/06/20/040
B015/B061

5.1190

AUTHORS: Panchenkov, G. M., Gryaznova, Z. V. (Moscow)

TITLE: Deuterium - Hydrogen Exchange and the Cracking Reaction of Cumene on Alumosilicate Catalysts

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 6, pp. 1280-1285

TEXT: Many researchers connect the activity of the alumosilicate catalysts with the presence of proton acids of the Brönsted type. In order to explain the role of the proton in the cracking on alumosilicate catalysts, the hydrogen in the catalyst was exchanged in this case for deuterium, and the cracking of cumene and the isomerization of cyclohexene were examined. The experiments were carried out with deuterium substituted Al_2O_3, SiO_2 and two alumosilicate catalysts. As the results of the tests (Refs. 17, 18) have already been announced at the Conference on the Use of Isotopes for Catalysis (Ref. 19), only basic data are given in this paper. On the alumosilicate catalyst with 190 milliequivalent deuterium

Card 1/3

81575

Deuterium - Hydrogen Exchange and the Cracking Reaction of Cumene on Alumosilicate Catalysts

S/076/60/034/06/20/040
B015/B061

per 100 g catalyst, it was established that the kinetics of the isomerization of cyclohexene obey G. M. Panchenkov's equation (Refs. 20-23). No simple connection between the catalytic conversion and the deuterium - hydrogen exchange could be determined. The action of the temperature and duration of calcination on the separation of water from the catalyst were examined (Table 1, results). A catalyst calcined at 700°C, which contained 0.8-0.9% water, was used for the investigations of cumene cracking and the deuterium - hydrogen exchange. The results (Table 2) show that the activity of the catalyst reaches a maximum at 0.1-0.2% adsorbed water. As the deuterium - hydrogen exchange is most intense on the alumosilicate catalyst, less intense on Al_2O_3, and does not occur at all on SiO_2, it is assumed that the alumosilicate centers play an important part in the exchange. Tests with deuterium dioxide showed that a 100% exchange takes place, whilst only 50% of the hydrogen is exchanged on the structural water of the catalyst by gaseous deuterium (tests

is thanked for mass

S/076/60/034/008/037/039/XX
B015/B063

AUTHOR: Panchenkov, G. M.

TITLE: On the Article "The Corrected Formula of G. M. Panchenkov for Calculating the Viscosity of Fluids" by A. P. Toropov and G. A. Brodskaya

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1883-1884

TEXT: The author notes that Toropov's and Brodskaya's interpretation of the temperature dependence of A' and ε_0 in his equation for calculating the viscosity of fluids is incorrect. He further notes that he has shown in Ref. 2, that A' depends on temperature, as may be seen from the physical significance of this quantity. Thus, the temperature dependence of A' requires no further proof. As the author had assumed in Ref. 2 that A' is constant only within small temperature ranges, Toropov and Brodskaya found certain rules in the divergence between calculation and experiment. It is further pointed out that the assumption of a constant temperature for A' is wrong when calculating ε_0 for different temperatures, since

Card 1/2

88352

S/076/60/034/009/040/041XX
B020/B056

5.5310(1273,1282,1160)

AUTHORS: Kolchin, A. M., Malakhov, V. F., Panchenkov, G. M.

TITLE: Mass Spectrometric Analysis of Boron Isotopes by the Thermionic Emission Method

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, pp. 2124-2125

TEXT: Mention is made in publications that the method mentioned in the title may be used for the isotopic analysis of boron, and offers the following advantages as compared to other methods: 1) Low material consumption, 2) no "memory" effect, 3) a small number of peaks left over due to impurities, and 4) high probability that no secondary processes act upon the analysis results. For the practical use of the method mentioned in the title, the ion current, which, according to published data amounted to 10^{-13} a, had to be measured accurately by means of series mass spectrometers. To solve the problem, the intensity of the ion current must be increased to 10^{-12} a, and its stability must be improved. All measurements were made by means of the mass spectrometer MC-4 (MS-4) with a thermionic source. For heating, 20 mm long,

X

Card 1/3

88352

Mass Spectrometric Analysis of Boron Isotopes S/076/60/034/009/040/041XX
by the Thermionic Emission Method B020/B056

0.8-1.0 mm wide, and 0.05 - 0.1 mm thick bands were used. Borate, metaborate, and a borate-boroxide mixture served as emitters, the first compound being the most favorable one. The intensity of the ion current increases with the reducing properties of the band material (Pt, Ni, W, Ta). From an annealed platinum band, no $Na_2BO_2^+$ ions were emitted.

The ion current emitted from the surface of annealed Ni-, W-, and Ta-bands had an intensity of the order of $6\cdot10^{-14}$ - $5\cdot10^{-19}$ a. Therefore, the attempt was made to increase the intensity of the ion current by addition of pulverulent reduction agents (Al, Mg), of which magnesium was found to be the most effective. When using a mixture of borate powder as emitter, a sufficiently intensive (of the order of 10^{-11} a), constant ion current was obtained, permitting the analysis of boron isotopes with an accuracy of 1%. The optimum working temperature was 700-750°C. The analysis results are given in Table 1. In calculation, no correction was introduced for the content of heavy oxygen isotopes. To explain the "memory" effect, analyses of specimens with highly different isotope compositions were carried out successively on one day. The results are given in Table 2. In contrast to the results

Card 2/3

S/076/60/034/010/007/022
B015/B064

AUTHORS: Panchenkov, G. M., Kazanskaya, A. S., and Pecheykin, V. A.

TITLE: Exchange Capacity of Alumosilicate Cracking Catalysts

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10, pp. 2217 - 2222

TEXT: Alumosilicate catalysts used for the cracking of hydrocarbons have an acid character. The type of acid and the role of the various acids upon the catalytic process have hitherto not been clarified. V. A. Chernov (Ref. 7) showed that in montmorillonite alumina, besides proton exchange, also an exchange of aluminum ions is possible, and that alumina can be regarded as an aluminum salt of alumosilicic acids. The present paper deals with the ion exchange of an alumosilicate catalyst in aqueous salt solutions of alkali metals. A commercial catalyst (14.01% Al_2O_3, 84.66% SiO_2, 0.36% Na_2O, 0.13% Fe_2O_3, 0.60% CaO) with a specific surface of 305 m^2/g was used, and annealed at 550°C for two hours before the experiment. The experiments were

Card 1/3

Exchange Capacity of Alumosilicate Cracking Catalysts

S/076/60/034/010/007/022
B015/B064

conducted with NaCl, LiCl, and sodium acetate solutions of different concentrations. The acidity caused by the exchange of the alkali metal for the proton in the catalyst was determined by a method of V. A. Chernov (Ref. 8). The ion exchange was determined by potentiometric titration of the solutions (after two days' vigorous shaking with the catalyst). The results obtained show that the amount of the exchanged protons is much smaller than that of the aluminum ions. After the exchange reaction, aluminum was detected in the NaCl and LiCl solutions, while this was not the case with the sodium acetate solution. This is due to the fact that aluminum acetate hydrolyzes immediately on the surface of the catalyst where it is deposited as aluminum hydroxide, an equivalent amount of acetic acid being dissolved. Experiment and calculation show that the maximum amount of the hydrogen and aluminum ions of the catalyst exchanged by alkali metal ions is practically independent of the type of the latter (i.e., the values for Li and Na ions are practically equal). For the above reason, the amount of acetic acid forming from the sodium acetate solution during the exchange of the ions of the catalyst for Na ions corresponds to the sum of the equivalents of the exchanged hydrogen and aluminum ions of the catalyst. There are

Card 2/3

S/076/60/034/010/021/022
B015/B064

AUTHORS: Kuznetsova, Ye. M., Panchenkov, G. M., Filippova, R. S., and Malakhov, V. F.

TITLE: A New Method of Separating the Boron Isotopes 19

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10, pp. 2370 - 2371

TEXT: A method of separating boron isotopes by a selective extraction with water and isoamyl alcohol in an apparatus already described (Ref. 16) has been developed. After the distribution of boric acid along the cells of the apparatus the first and last fraction were analyzed for the isotopic composition. The analysis was carried out on a MC-4 (MS-4) mass spectrometer by a method already described (Ref. 17). The results obtained show that together with the distribution of boric acid between water and isoamyl alcohol, a fractionation of the boron isotopes takes place, i.e. in the first fraction a concentration of the light isotope B^{10}, and in the last fraction of the B^{11} isotope. Thus, it is in principle possible to

Card 1/2

A New Method of Separating the Boron Isotopes S/076/60/034/010/021/022
B015/B064

employ the method of an extraction by liquids for the separation of boron isotopes. A calculation of the separation coefficient of a single fractionation yielded $\alpha = 1.0027$. It is assumed that by a combination of the complex formation characteristic of boron and an extraction, the separation coefficient is increased and the method described rendered more economical. There are 1 table and 18 references: 6 Soviet, 6 US, 2 British, 1 Yugoslav, and 1 S.African.

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

SUBMITTED: March 31, 1960

Card 2/2

S/076/60/034/011/011/024
B004/B064

AUTHORS: Panchenkov, G. M., Makarov, A. V., and Pechalin, L. I.
(Moscow)

TITLE: Separation of Boron Isotopes by Chemical Exchange. II. The Complex Compound of Boron Trifluoride With β, β'-Dichloro Diethyl Ether (Chlorex)

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 11, pp. 2489-2494

TEXT: This paper deals with the exchange of the boron isotopes between BF_3 and its complex with Chlorex. The following reaction equation is written: $B^{10}F_3 + B^{11}F_3(C_2H_4Cl)_2O \rightleftharpoons B^{11}F_3 + B^{10}F_3(C_2H_4Cl)_2O$ (1). BF_3 was prepared by the reaction $6NH_4BF_4+B_2O_3+6H_2SO_4 = 8BF_3+6NH_4HSO_4+3H_2O$ (2) in an apparatus described in Ref. 5. A new apparatus (Fig. 1) was used to separate the boron isotopes. The process is described. 6 l of Chlorex are poured into the vessel 15 through the funnel 10 and the stop cock 11,

Card 1/6

Separation of Boron Isotopes by Chemical Exchange. II. The Complex Compound of Boron Trifluoride With β, β'-Dichloro Diethyl Ether (Chlorex)

S/076/60/034/011/011/024
B004/B064

conveyed into the lower vessel 23 through the stop cocks 12 and 33 by means of a rubber ball, and 15 is filled again with 6 l of Chlorex. The BF_3 formed in the generator is conveyed into the vessel 23 through the stop cocks 22 and 33, and after saturation of the Chlorex contained therein, it is passed into the vessel through stop cock 17. Stop cocks 16 and 21, and balls 9 and 20 prevent Chlorex from being sucked opposite to the flow direction of BF_3. A complete and a partially saturated complex $BF_3(C_2H_4Cl)_2O$ are obtained in vessel 23 and 15, respectively. From 23 the complex is sucked into the vessel 29 by the rubber ball and the stop cocks 19 and 31; then, it is lifted into vessel 8 by compressed air. The half-saturated complex 15 is passed into vessel 23, and 15 is filled with fresh Chlorex. From vessel 8 the complex is sucked into the electromagnetic regulator 3 through glass filter 5 and stop cock 8; the regulator is controlled by the time relays 2. Regulator and magnetic coil are water- and air-cooled since otherwise the complex would decompose. The flow rate through the column filled with passivated nichrome is controlled by

Card 2/6

Separation of Boron Isotopes by Chemical Exchange. II. The Complex Compound of Boron Trifluoride With β,β'-Dichloro Diethyl Ether (Chlorex)

S/076/60/034/011/011/024
B004/B064

dropper 38. The column is in a thermostat whose temperature is varied between 20 - 60°C. After having passed through the column, the complex is heated to 175°C in the desorber 35 filled with glass pipe pieces and heated with the oil of thermostat 36. The liberated BF$_3$ is conveyed back into the column through the reflux condenser 39, and Chlorex is collected in vessel 25. BF$_3$ samples are taken in a complex form through stop cock 37 and as a gas through cock 41, Chlorex being frozen out in test glass 46 by an acetone-ice mixture. The isotopic analysis was made with an МС-3 (MS-3) mass spectrometer on the basis of the peaks 10 and 11. The following results were obtained: In the exchange reaction between BF$_3$ and Chlorex, an isotopic separation occurs, B^{10} concentrating in the liquid phase. The separation factor increases from 20 to 60°C when the temperature of the column rises, and amounts to 1.015±0.005 at 60°C. S. I. Babkov and N. M. Zhavoronkov are mentioned. There are 3 figures and 17 references: 5 Soviet, 5 US, 1 British, 2 Dutch, 2 French, 1 Swedish, and 1 Swiss.

Card 3/6

GORSHKOV, V.I.; SHABANOV, A.A.; PANCHENKO, G.M.

Electrochromatographic separation on a cation exchanger. Zhur. fiz. khim. 34 no. 11:2530-2533 N '60. (MIRA 14:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Base-exchanging compounds) (Chromatographic analysis)
(Electrophoresis)

5(4)

S/020/60/130/06/028/059
B004/B007

AUTHORS: Panchenkov, G. M., Zhorov, Yu. M.

TITLE: A Method of Determining the Kinetic Constants and Ranges of the Course of Chemical Reactions Carried out in a Flow

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 6, pp 1280 - 1283 (USSR)

ABSTRACT: In reference 1 the first-named author set up general equations for the kinetics of homogeneous and heterogeneous-catalytic reactions in the flow process at constant total pressure. As, however, in many cases the form of the kinetic equation and the reaction mechanism are not known in advance, the authors developed a graphical method by using experimental data, which makes possible a direct determination of the reaction rates expressed by the variables x and n_o (x = quantity of substance entering into reaction, n_o = rate at which raw material is supplied). The equations given in reference 1 are modified accordingly. The method is demonstrated by using the example of cumol cracking. Table 1 gives the experimental data for cumol cracking. Figure 1 shows the experimental curve of the

Card 1/2

9.3120

68996
S/020/60/131/02/042/071
B004/B007

AUTHORS: Panchenkov, G. M., Kolchin, A. M.

TITLE: The Part Played by Chemical Reactions in Thermionic Emission

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 2, pp 357 - 359 (USSR)

ABSTRACT: The authors give a report on their experiments concerning the interaction of an ion-emitter with a metal base acting as a heater. The investigations were carried out by means of a mass spectrometer of the type MS-4. The ion exchanger $Al_2O_3 \cdot 4SiO_2 \cdot xH_2O$, which was impregnated with a CsCl solution, was used as emitter. Applied to a carefully cleaned platinum base in form of a thin coating, no ions were emitted by the emitter. Applied onto a tantalum base, it emitted Cs^+-ions. On a platinum base, which was, however, mixed with tantalum powder, the emitter gave the same ion current as on the tantalum base. The following investigations were carried out for the purpose of determining the influence of the chemical activity exerted by the metal powder admixed to the emitter upon the ion current. The effect of Cu, W, Ta, Zr, Al, and graphite was investigated. The ion current increased with the activity of the metal. Graphite powder yielded

Card 1/3

68994

The Part Played by Chemical Reactions in Thermionic Emission

S/020/60/131/02/042/071
B004/B007

the same emission as tantalum. Also platinum, which was repeatedly exposed to the flame of a gas burner, may cause an ion current, probably because of the absorption of impurities, chiefly of carbon. Further experiments concerned the emission of Cs^+ during heating up to 1500° without addition of metals to the emitter, the following temperature decrease to 600° also resulting in an ion current, probably as a result of the thermal dissociation of the emitter by the previous high temperature. Addition of MnO_2 led to an initially considerable decrease of the ion current, which increased, however, again in the further course of the experiment. From all these results, the authors draw conclusions as to a chemical interaction between emitter and base, the formation of Cs-atoms, and their ionization on the surface. They carry out a calculation of ΔZ_T^o and show in figure 1 that the logarithm of the ion current of Cs^+ at 655° depends linearly on ΔZ_1^o. They refer to papers by M. A. Yeremeyev (Refs 1,2). Finally, the authors thank Z. F. Kolchina for her great help in this investigation. There are 1 figure and 5 references, 4 of which are Soviet.

Card 2/3

4

S/020/60/132/04/27/064
B011/B003

5.3200

AUTHORS: Kazanskiy, B. A., Academician, Panchenkov, G. M., Lazarev, V. I.

TITLE: Hydrogenation of 2-Methyl-butene-1 in the Presence of Platinum Black in Deuterated Alcohol

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 4, pp. 832-835

TEXT: In the article under review, the authors intend to clarify the problem as to whether the hydrogen of alcohol hydroxyl directly participates in the reaction of catalytic hydrogenation. For this purpose they studied the hydrogenation mentioned in the title. The rectified ethanol which served as medium contained 3.3 per cent of deuterium in the hydroxyl. The hydrocarbon formed was analyzed on a mass spectrometer in order to determine the deuterium content. Results listed in Table 1 demonstrate that isopentane with a content of about 2.3 per cent of monodeuteroisopentane forms in hydrogenation. No dideuteroisopentanes

4

Card 1/4

Hydrogenation of 2-Methyl-butene-1
in the Presence of Platinum Black in
Deuterated Alcohol

S/020/60/132/04/27/064
B011/B003

alcohol yields hydrogen with a content of 3.4 per cent of HD, whereas isopentane formed by hydrogenation contains only 2.3 per cent of monodeuteroisopentane. The authors explain this fact by the different rates of exchange reactions of C_2H_5OD for H_2 as well as by olefin hydrogenation on the surface of the catalyst. Hence it results that the hydroxyl hydrogen of the alcohol solvent does not directly participate in the reaction of hydrogenation. The hydroxyl hydrogen is exchanged for the hydrogen sorbed on the surface of the catalyst. If, however, an olefin is present in the system, it reacts with the sorbed H_2 and HD in such a way that it is also sorbed on platinum. Thus, the two possible reactions of isotopic exchange between the olefin and hydrogen and the alcohol as well as the reaction of hydrogenation of the olefin have a limiting stage in common, i.e., the sorption of hydrogen on platinum. If all these processes take place simultaneously, the exchange reactions are retarded, whereas the exchange of the olefin for alcohol is completely surpressed. The authors thank L. N. Gorokhov, Z. V. Gryaznova, and I. V. Gostunskaya for their assistance. There are 2 tables and 17 references,

Card 3/4

86842

S/020/60/135/005/033/043
B004/B075

5.4300(1273, 1320, 1242)

AUTHORS: Panchenkov, G. M. and Zhorov, Yu. M.

TITLE: Method of Determining the Rates and Kinetic Constants of Complicated Chemical Reactions in a Flow

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, pp. 1172-1175

TEXT: In a previous paper (Ref. 1) it was shown that reaction rates can be determined from experimental data of the conversion of the initial substance as a function of its feeding, without the kinetic equation of the process being known. In the present paper, this method is applied to reactions producing a stable intermediate. The following relation is written for catalytic cracking:

$$\begin{tikzcd} A \arrow[r, "(W_1)"] & \nu_1 B \arrow[d, "(W_2)"] & + \nu_2 D + \nu_3 C \\ & \nu_4 D + \nu_5 C & \end{tikzcd}$$

where A is the initial substance; B is the intermediate; C and D are the

Card 1/3

86842

Method of Determining the Rates and Kinetic Constants of Complicated Chemical Reactions in a Flow

S/020/60/135/005/033/043
B004/B075

$W_i = (\nu^i/\nu_1^i) n_{oA_1} dz_i/S_o dl$ is obtained for the product B_1^i with the yield z_i. In homogeneous reactions, the cross section ρ of the reaction vessel is substituted for S_o. There are 1 figure and 2 Soviet references.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina (Moscow Institute of Petrochemical and Gaseous Industry imeni I. M. Gubkin)

PRESENTED: June 21, 1960, by A. V. Topchiyev, Academician

SUBMITTED: June 18, 1960

PANCHENKOV, G.M., TOLMACHEV, A.M.

"Zur Trennung der Isotope des Sauerstoffs mit Hilfe organischer Komplex Verbindungen des Kobalts."

Report presented at the 2nd Conf. on Stable Isotopes.
East German Academy of Sciences, Inst. for Applied Physical Material
Leipzig, GDR, 30 Oct-4 Nov '61.

PANCHENKOV, G. M., KOROVKIN, V. K. and SEMIOKHIN, I. A.

"Zur Trennung der Isotope des Sauerstoffs bei der Elektrosynthese des Ozons."

Report presented at the 2nd Conf. on Stable Isotopes.
East German Academy of Sciences, Inst. of Applied Physical Material
Leipzig, GDR, 30 Oct - 4 Nov 1961

2

PANCHENKOV, G.M., MARKOV, A.V. AND PECHALIN, L.I.

"Zur Trennung der Isotope des Bors durch chemischen Austausch."

Report presented at the 2nd Conf. on Stable Isotopes.
East German Academy of Sciences, Inst. for Applied Physical Material
Leipzig, GDR 30 Oct- 4 Nov 1961.

PANCHENKOV, Georgiy Mitrofanovich; LEBEDEV, Vladimir Petrovich; GOL'DENBERG, G.S., red.; YERMAKOV, M.S., tekhn. red.

[Chemical kinetics and catalysis] Khimicheskaia kinetika i kataliz. Moskva, Izd-vo Mosk. univ., 1961. 550 p. (MIRA 14:8)
(Chemical reaction, Rate of) (Catalysis)

PANCHENKOV, G.M.

report to be submitted for the IUPAC 21st Conference and 18th Intl. Congress of Pure and Applied Chemistry, Montreal, Canada, 2-12 August 1961

GORODISKIY, G. V., Academy of Sciences UkSSR, Kiev - "The oscillographic investi-
gation of the electrochemical kinetics in fused salts" (Section A.3,e.2 - Session
I, 11 Aug 61, afternoon)
GURVICH, L. V., Academy of Sciences USSR, Moscow - "The calculation of thermodynamic
functions of gases in a wide temperature range" (Section A.3,c,(1), Session II -
8 Aug 61, afternoon)
KARGIN, V. A., Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "Vitrification
phenomena in crystallin polymers" (Section B.4 - 7 Aug 61, afternoon)
KISELEV, A. V., Moscow State University imeni M. V. Lomonosov - "The influence of
surface heterogeneity and adsorbate-adsorbate interaction on the adsorption
properties of solid surfaces" (Joint Session, Sections A.2 and B.1 - 8 Aug 61,
morning)
KONDRAT'YEV, V. N., Institute of Chemical Physics, Academy of Sciences USSR, Moscow -
"The HO_2 radical" (Section A.1, Session I - 11 Aug 61, morning) (Also, Section
A.1, Chairman, Session I - 8 Aug 61, morning)
KUZNETSOV, V. I., Institute of Geochemistry and Analytical Chemistry imeni V. I.
Vernadskiy, Academy of Sciences USSR - "A novelty in the use of organic co-
precipitants for concentration of small amounts of the elements" (To be presented
in Russian) (Section C.2 - 11 Aug 61, morning)
LAVRUKHINA, A. K., RAKOVSKIY, E. E., and MOSKALEVA, L. P., Institute of Geochemistry
and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "New
data on radiochemical investigations of the processes of fission and fragmentation
induced by high energy protons" (Section A.4 - 8 Aug 61, afternoon)
LOVACHEV, L. A., Academy of Sciences USSR, Moscow - "Determination of rate constants
of elementary processes from flame velocities as a function of temperature,
pressure, and molecular transfer coefficients" (Section A.3,b,(2) - 7 Aug 61,
afternoon)
MUSDIATH, S. (Probably MUDYACH, S.) and GERASIMOV, Y. I., Moscow State University
imeni M. V. Lomonosov - "Study of the thermodynamic properties of the system
iron-latinum" (Section A.3,c,(3), Session II(A) - 11 Aug 61, morning)
PANCHENKOV, G. M., KOLCHIN, A. M., MALAKOV, V. F., and SHEYKH, Ya., Moscow State
University imeni M. V. Lomonosov - "Emission of complex ions in solid-phase
reactions" (Joint Session, Sections A.2 and B.1, 8 Aug 61, morning)
SEMENOV, N. N., Institute of Chemical Physics, Academy of Sciences USSR, Moscow -
"Certain chemical reactions at reduced temperatures and related problems of energy
transfer" (To be presented in Russian) (Plenary lecture - Saturday, 12 Aug 61)
SHILOV, Ye. A., Academy of Sciences UkSSR, Kiev - "The active agents and the inter-
mediary complexes in the heterolytic reactions of halogenation of the organic
compounds" (Section A.1, Session II - 11 Aug 61, morning)
SMIRNOV, M. V., Electrochemistry Institute, Sverdlovsk - "The equilibrium between
the titanium subgroup metals and the salt melts" (Section B.3 - 7 Aug 61, afternoon)
TAL'ROZE, V. L., Institute of Chemical Physics, Academy of Sciences USSR - "Reactions
of ions and molecules in the gas phase" (Section A.1, Session I - 9 Aug 61,
afternoon)
TERENIN, Aleksandr N., Leningrad State University imeni A. A. Zhdanov - (Section A.1,
Chairman, Session I - 8 Aug 61, afternoon Session) (Also on program for Section
A.1, Session I - 9 Aug 61, afternoon)
TERENIN, Aleksandr N., VILESOV, F. I., KURBATOV, B. L., and DODONOVA, N. Ya. Leningrad
State University imeni A. A. Zhdanov - "Mass-spectrometry and luminescence of
radicals in the photodissociation and photoionization of molecules by vacuum
ultra-violet radiation" (Section A.1, Session I - 9 Aug 61 - afternoon)
TUNITSKIY, N. N., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov-
"On the dissociation of molecules on electron impact and the early states of
radiation-chemical processes" (Section A.1, Session I - 8 Aug 61, afternoon)
YANISHEVSKIY, Emmanuil Ye., and KOROLEV, V. V., Institute of Geochemistry and
Analytical Chemistry imeni V. I. Vernadskiy, Moscow - "The plasma generator and
its use for spectral analysis of alloys and rocks" (Section C.1 - 8 Aug 61, morning)
VINOGRADOV, A. P., LAVRUKHINA, A. K., and REVINA, L. D., Institute of Geochemistry
and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "The
study of nuclear reactions in iron meteorites under the action of high energy
protons" (Section A.4 - 8 Aug 61, afternoon)
YAKOVLEV, Yu. V., and ALIMARIN, I. P., Institute of Geochemistry and Analytical
Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "The determination
of trace impurities in some materials for semiconductor techniques by radio-
activation analysis" (To be presented in Russian) (Section C.1 - 8 Aug 61, afternoon)

YEROFEYEV, Boris V., Institute of Physical-Organic Chemistry, Minsk - "The effect
of donor and acceptor admixtures on the decomposition rate of solids" (Section
A.2 - 8 Aug 61, afternoon)

S/661/61/000/006/057/081
D267/D302

AUTHORS: Gundyrev, A. A., Topchiyev, A. V., Panchenkov, G. M., Nametkin, N. S. and Ku Ch'ang-ling

TITLE: Dependence of the viscosity and density of some classes of organosilicon compounds on temperature, and the relation between the interaction energies of molecules of these compounds and their structure

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soyedineniy; trudy konferentsii, no. 6: Doklady, diskussii, resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958. Leningrad, Izd-vo, AN SSSR, 1961, 239-240

TEXT: A discussion relating to a minor detail of the above paper (this publication, no. 3, p. 80), in which Ya. I. Vabel' (Moscow) took part. One of the authors stated that viscosity of mixtures of polysiloxane liquids had not been calculated, and that viscosities at temperatures below 0°C had not been measured.

Card 1/2

38589
S/081/62/000/010/072/085
B168/B180

15.8061

AUTHORS: Panchenkov, G. M., Karryyev, Ch. S., Hsia Tze-chih

TITLE: Polymerization of the propane-propylene fraction in the presence of an aluminosilicate catalyst with chromic oxide added

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1962, 598, abstract 10P20 (Izv. AN TurkmSSR. Ser. fiz.-tekhn., khim. i geol. n., no. 3, 1961, 97 - 104)

TEXT: The process of polymerization of the propane-propylene fraction was investigated at atmospheric pressure, a temperature of 150 - 210°C and with gas supplied at a weight flow of 0.1 - 0.4 hr^{-1} in the presence of an aluminosilicate catalyst with Cr_2O_3 added. It was found that an addition of 0.05% Cr_2O_3 to the catalyst will increase the yield of the polymer by 25 - 30% (calculated on the basis of pure propylene). The maximum yield of polymer (85.7% on the basis of pure propylene) and also of the trimeric fraction, occurs at 190°C. If the temperature is raised to 210°C the

Card 1/2

S/081/62/000/010/072/085
B168/B180

Polymerization of the...

yield of the dimeric fraction increases, but if it falls to 170°C it is the yield of the tetrameric fraction which increases. The physical and chemical properties of the products of polymerization were studied. It was found that all fractions consist of unsaturated hydrocarbons. [Abstracter's note: Complete translation.]

Card 2/2

30690
S/152/61/000/012/002/002
B126/B101

11.0130

AUTHORS: Panchenkov, G. M., Yakovlev, V. I., Kozlov, L. L., Zhuravlev, G. I., Gol'din, V. A., Ryabukhin Yu. S.

TITLE: Radiation thermal cracking of gas-oil from Romashki petroleum

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 12, 1961, 99 - 101

TEXT: The effect of gamma radiation on the cracking of gas-oil, F. B. P. 300 - 345°C, from Romashki petroleum has been studied. For the experiments a gamma unit, К-18000 (K-18000), was used, and the dose was maintained constant at 100 r/sec.; the temperatures were 400 and 425°C, the maximum dose was 5 Mr, and the experiment took 14 hr. It was established that Co^{60} gamma rays intensifies the cracking process considerably, and that the feed is converted twice as rapidly as in thermal cracking. The yield of the lightest fraction, I. B. P 200°C, exceeds that of all other fractions from a dose of 3.5 Mr upward and reaches 30 to 35% of the feed at a dose of 5 Mr. However, the olefin content of this fraction is lower than that of the corresponding fraction in thermal cracking. There are 6 figures and

Card 1/2

PANCHENKOV, G.M.; ZHOROV, Yu.M.

Method for determining the rates, activation energy, and zones of simple and complex reactions in a stream. Neftekhimiia 1 no.2:172-181 Mr-Ap '61. (MIRA 15:2)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina.
(Chemical reactions)

KOLESNIKOV, I.M.; PANCHENKOV, G.M.

Derivation of a kinetic equation for gas phase reaction of the type $2A - 2A_1 - A_2$, proceeding in a flow under homogeneous conditions. Kin. i kat. 2 no.1:9-13 Ja-F '61. (MIRA 14:3)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina.

(Chemical reaction, Rate of)

PANCHENKOV, G.M.; GORSHKOV, V.I.

Swelling of cation-exchange resins in mixed solvents. Vysokom. soed, 3 no.2:177-183 F '61. (MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova.
(Base exchanging compounds)
(Resins, Synthetic)

S/152/61/000/001/003/007
B023/B064

AUTHORS: Panchenkov, G. M., Skoblo, V. A., Zhorov, Yu. M.

TITLE: Determination of the effective diffusion coefficients in porous sorbents

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, vol.4, no. 1, 1961, 73-77

TEXT: The authors studied the sorption process basing on the spherical grain of sorbent of the radius R_{gr}. They assumed that 1) the concentration of the sorbed substance on the surface of the grain remains constant and equal to C_0; 2) the concentration decrease of the sorbed substance within the grain is linear (D. P. Timofeyev, Ref. 3). When describing the sorption process, the authors used the model of the so-called quasi-homogeneous grain according to Pshezhetskiy (Ref. 4). Since sorption proceeds more quickly than diffusion, in each point of the grain an equilibrium is established between the sorbed substance in the gaseous phase and on the surface, i.e., in agreement with the form of the iso-

Card 1/5

thermal line of sorption. The following is assumed: After the time τ since the beginning of sorption has expired, the front of the sorption zone reaches the layer r in the grain. The concentration of the sorbed substance decreases from C_0 on the surface of the grain to zero on the spherical surface with the radius r. The concentration C_s and the pressure p_s may be determined for any layer s between R_{gr} and r by the following equations: $C_s = (s-r)C_0/(R_{gr}-r)$ (1) and $p_s = (s-r)p_0/(R_{gr}-r)$ (2). The sorbed substance in the interior of the grain in the layer R_{gr} - r is contained on the surface of the sorbent in a quantity a_{ads} and in the volume of the grain in a quantity a_{vol}, therefore $a_\tau = a_{ads}+a_{vol}$ (7). The amount of the substance sorbed in the layer (between the radius s and s + ds), is equal to: $da_{ads} = 4\pi s^2\sigma_s(a_\infty/\sigma_0)ds$ (8), where a_∞ is the amount of the substance per unit of the sorbent volume in the case of complete filling, which corresponds to the pressure of the sorbed substance in the gaseous phase p_0; σ_s is that part of the occupied surface which is determined by the isothermal line of sorption at the pressure p_0 of the sorbed substance. From equation (8) it is possible to find the total amount of the sorbed substance:

$$a_{ads} = 4\pi \frac{a_\infty}{\sigma_0} \int_r^{R_{gr}} \sigma_s s^2 ds \quad (9).$$

The amount which is in the layer between the limits of the radius s and s + ds, is: $da_{vol} = \alpha \frac{p_s}{R\,T} 4\pi s^2 ds$ (10), where α is the fraction of the free volume in the interior of the grain. From (10) the total amount of the sorbed substance which is in the interior of the grain in the gaseous phase, is determined. The following is written down as the final form:

$$R_{gr}^2 D_{eff} C_0 \tau = \int_r^{h_{gr}} \left(R_{gr} - r\right) \int_r^{R_{gr}} \frac{\partial\left(\frac{a_\infty}{\sigma_0}\sigma_s + \frac{\alpha}{RT} p_s\right) s^2}{\partial r} ds \cdot dr \quad (15).$$

√

Card 3/5

graphically
giving a number of

C

values for a_{ads} the values r and τ are found which correspond to the same value a_{ads}. The quantity D_{eff} is found by introducing r and τ into equation (16). The equations mentioned describe, as is emphasized by the authors, only the first stage when the front of the sorption moves toward the center of the grain. There are 3 figures and 6 references: 4 Soviet-bloc.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I. M. Gubkina (Moscow Institute of the Petrochemical and Gas Industry imeni Academician I. M. Gubkin)

SUBMITTED: June 30, 1960

✓

22281

S/152/61/000/004/002/009
B126/B219

11.1210

AUTHORS: Panchenkov, G. M., Bazilevich, V. V., Boyeva, R. S., Zlotchenko, V. N., Nikolov, N. I.

TITLE: Investigation of the influence of the catalyst composition on the hydrocarbon content of gasolines from catalytic cracking

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, 4/no. 4, 1961, 57-62

TEXT: The above investigation was carried out in view of the growing importance of petroleum as a raw material for chemical synthesis. The combined method of B. A. Kazanskiy and G. S. Landsberg for detailed examination of gasolines served as a basis, (Ref.3: Landsberg G. S., Kazanskiy B. A., Bazhulin P. A., Bulanova T. F., Liberman A. L., Mikhaylova Ye. A., Plate A. F., Sterin Kh. Ye., Sushchinskiy M. M., Tarasova G. A., Ukholin S. A. "Opredeleniye individual'nogo uglevodorodnogo sostava benzinov pryamoy gonki kombinirovannym metodom" ("Determination of the individual hydrocarbon content in straight-run gasolines by a

Card 1/3

22281
S/152/61/000/004/002/009
B126/B219

Investigation of the influence...

combined method"), Izd-vo AN SSSR, 1959; Ref. 4: Landsberg G. S., Bazhulin P. A., Sushchinskiy M. M. "Osnovnyye parametry spektrov kombinatsionnogo rasseyaniya uglevodorodov" ("Basic parameters of the spectra of Raman scattering from hydrocarbons"), Izd-vo AN SSSR, 1956). A distillate with a boiling interval at 300-400°C was used as initial raw material. Cracking was brought about in the laboratory at a temperature of 475°C and a feed rate of the raw material of 0.7 ml/hr, and lasted for 1 hr. The experiment was carried out under the same conditions in two equal apparatuses with aluminum silicate catalysts of various Al_2O_3 content, viz. a commercial aluminum silicate catalyst consisting of 12.8% Al_2O_3, 85.1% SiO_2, 0.2% Fe_2O_3, 0.05% Cr_2O_3, and a synthetic aluminum silicate catalyst with 30% Al_2O_3 and 70% SiO_2. The fractions 55-95 and 95-122°C were subjected to chromatographic adsorption, the losses being far less through use of the method of A. V. Topchiyev and collaborators (Ref. 6: "Khimiya i tekhnologiya topliva i masel", no. 11, 1957). In the determination of the individual composition of the narrow-band fractions, the method of the Raman spectra was used. The results of the investigation showed that the catalyst with the higher Al_2O_3 content

Card 2/3

24656
S/076/61/035/006/008/013
B110/B220

21.2400

AUTHORS: Panchenkov, G. M., Makarov, A. V., and Romanov, G. V. (Moscow)

TITLE: Separation of boron isotopes by the chemical exchange method. III. Production of $B^{11}F_3$ concentrate

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 6, 1961, 1315 - 1320

TEXT: Since the effective capture cross section of thermal neutrons amounts to 0.05 barn for B^{11}, it may be used in form of zirconium and yttrium boride, etc. as heat-resisting material in reactor construction. The present paper deals with a chemical exchange method for the separation of B^{10} and B^{11} isotopes according to:

$$B^{10}F_3 + B^{11}F_3 \cdot C_6H_5OCH_3 \rightleftharpoons B^{11}F_3 + B^{10}F_3 \cdot C_6H_5OCH_3 \quad (1).$$

Phase transformation is obtained:

$$BF_3 \cdot C_6H_5OCH_3 \underset{\text{absorber } 20^\circ C}{\overset{\text{desorber } 150^\circ C}{\rightleftharpoons}} BF_3 + C_6H_5OCH_3 \quad (2).$$

The liquid $BF_3 \cdot C_6H_5OCH_3$ passes from the "infinitely large" tank 1 (Fig. 1)

Card 1/5

24656
S/076/61/035/006/008/013
B110/B220

Separation of boron...

with constant velocity into the desorber heated to ~150°C by anisole. From 2 BF_3 enters the bottom part of column 3, the liquid anisole passing the pump system 6 enters the absorber 4, where also BF_3 enters after having passed the column. Here, the complex compound BF_3-anisole is formed again. Samples were taken periodically by means of 5. By means of 4, 5, 8 (Fig.2) 6 l. anisole were filled into the 15 l. glass vessel 1. The electromagnetic ЭМИБ (EMIB) agitator 2 was started and then BF_3 introduced. The water cooling of absorber 26 and coolers 14, 24, 44 was put into operation, the thermostats 19, 42 connected and the temperature of column 41 and desorber 18 adjusted. The boron complex passed through a rubber bulb and 10 into the siphon preceding the dosing device 12-17. By means of electromagnet and impulse transmitter a copperplated iron bar fitted in the glass tube 12 was moved up and down rhythmically as desired (2-12 imp/min). Then the complex passes the water-cooled elbow 14, the buffer vessel 15 filled with a glass spiral, and the dropper 16 and enters the desorber 18. The best results were obtained with the mechanical pulse transmitter with,

Card 2/9

24656

S/076/61/035/006/008/013
B110/B220

Separation of boron...

СД-2 (SD-2) synchronous motor, РКС (RKS) relay: 4 imp/min. The optimum flow velocity was 2 ml/min. The electronic pulse transmitter with, ДГЦ-26 (DGTs-26) rectifier, СГ2С (SG2S) tube, РСМ-1 (RSM-1) and РН-90 (RN-90) relays gave a large number of pulses (3-30 imp/min) with low consumption of liquid. The complex was decomposed in the glass-packed desorber 18 (length = 50 cm, interior diameter = 20 mm) which was heated by warm oil from the ТС-24 (TS-24) thermostat 19. BF_3 passed through the return condenser 44 into column 41. The anisole contaminated by resin entered the evaporator 21. It flowed through the inner tube and then over the glass beads, where it was evaporated. The resin was evacuated by 20. 21, 22, and 23 were it was heated by a nichrome coil, The anisole vapors passed into the columns 22 and 23 consisting of 3 glass tubes telescoped into each other. Anisole vapors passed through the inner tube (diameter = 1 cm), the nichrome spiral was wound around the intermediate (diameter = 2 cm), the outer (diameter = 4 cm) served as heat insulation. The temperature of the column was regulated by means of a rheostat and controlled with a Cr-Al thermocouple. Anisole for spraying the absorber 26 packed with glass rings was supplied by the cooler 24. 25 served for evacuating the CH_3F presumably formed. The complex subject to isotopic exchange in

Card 3/9

24656

S/076/61/035/006/008/013
B110/B220

Separation of boron...

column 41 was formed in the absorber. The column consisted of a tube (length = 1.5-2.2 m, diameter = 18 mm) in the outer jacket of which water coming from the TC-15 (TS-15) thermostat circulated. The inset consisting of Fenske glass rings etched with HF + NH_4F occupied a space of 3·3·0.6 mm. The sampling system 27-39 was evacuated through 38 in a prevacuum. Then 26, 32, and 33 were cooled with liquid nitrogen by means of Dewar vessels, 31 and 35 closed. A certain quantity of gas tapped from the column through 29, 25 being closed for this period, was frozen in 36 by means of a Dewar vessel and further cooled in 32 and 33. 32 and 33 were unsoldered. The analysis was made by a MC-3 (MS-3) mass spectroscope, the sample obtained in test 3 was converted to borax and analyzed by means of MC-4 (MS-4) according to A. M. Kolchin. In the first test (I) (length of column = 2.20 m, of absorber = 6 cm) a part of the BF_3 was not absorbed by anisole and escaped, thus the low coefficient of separation: 1.05. Also in the second test (II) (column = 1.5 m; absorber = 50 cm) BF_3 escaped. Only in the third test (III) (dimensions as for (II)) BF_3 was absorbed quantitatively. A coefficient of separation of 1.42 was attained after 32 hr.

Card 4/9

24656
S/076/61/035/006/008/013
B110/B220

Separation of boron...

With too high (A) or too low (B) temperatures in the column either complex formation occurs in the column and sampling is impossible (A) or a part of BF_3 escapes (B). Consequently, the temperature of the column has to be such that the complex of given composition is saturated. This was obtained in the following way: the temperature was slowly increased until BF_3 vapors left 25 and then reduced by 2-3°C. It was found that the red color of the anisole complex is due to products of resinification formed under the influence of atmospheric humidity. The complex is colorless in the column. The plant may serve for any complexes whatsoever, provided that the temperatures in desorber and pump system are changed. The production of $B^{10}F_3$ concentrate requires charging into the top part of the column. A. M. Kolchin and V. F. Malakhov are thanked for their assistance in the experiments. There are 3 figures, 1 table, and 15 references: 10 Soviet-bloc and 5 non-Soviet-bloc. The most recent references to English-language publications read as follows: S. V. Ribnicar, G. A. Bootsma, Bull. Inst. nuclear sci. "B. Kidrich" (Belgrade), 9, 91, 1959. A. L. Conn, I. E. Wofl, Ind. Eng. Chem., 50, 1231, 1958.

Card 5/9

24656
S/076/61/035/006/008/013
B110/B220

Separation of boron...

A. A. Palko, Ind. Eng. Chem., 51, 121, 1959.

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

SUBMITTED: September 28, 1959

Card 6/9

PANCHENKOV, G.M.; PECHALIN, L.I.

Determination of the single-stage separation factors of sulfur isotopes. Complex compounds of SO_2. Zhur. fiz. khim. 35 no.7:1643-1644 Jl '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Sulfur--Isotopes)

S/076/61/035/007/018/019
B124/B231

AUTHORS: Korovkin, V. K., Semiokhin, I. A., Panchenkov, G. M., Jui Shih-chuag

TITLE: Separation of oxygen isotopes in the electrosynthesis of ozone

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 7, 1961, 1648 - 1650

TEXT: It has been discussed by the authors at an earlier occasion (Ref. 1: I. A. Semiokhin, G. M. Panchenkov, V. K. Korovkin, A. V. Borisov, Zh. fiz. khimii, 33, 1933, 1959) that the steady state in the separation of oxygen isotopes sets in long before the equilibrium ozone concentration is attained. The concentration turned out to be about equal to that found as a result of investigations carried out under different conditions (different values of the specific energy U/v, different dimensions of ozonizers, different methods of ozone accumulation and sampling), and showed to be independent of the concentration of the ozone obtained. The present work engages in changing the conditions so as to attain the isotope equilibrium and the concentration coefficient at changed pressure- and temperature ratios in the system. The investigation was carried out in a

Card 1/5

S/076/61/035/007/018/019
B124/B231

Separation of oxygen isotopes in...

device described in Ref. 1, that is, in a reactor of 600 mm length provided with a 1 mm wide spark gap. The discharge power was determined from the volt-ampere characteristic with the aid of the equation $U = V_c(I_{av} - I_{cr})$ derived by Yu. V. Filippov and Yu. M. Yemel'yanov (Ref. 2: Zh. fiz. khimii, 31, 896, 1957; 33, 1042, 1959), where I_{av} is the mean value of the current flowing through the ozonizer, I_{cr} the mean value of the current in case of a critical terminal potential in the ozonizer, and V_c the amplitude value of the ignition voltage discharge. The effect of pressure was studied in the range 300 - 900 mm Hg with the walls of the ozonizer exhibiting a temperature of 20°C. The mean concentration coefficient was constant within the test errors, and is computed from the equation $S_{mean} = 1.100 \pm 0.013$, where 0.013 is the mean error; in more than 75% of the tests, the mean error was smaller and equal to 0.010. The steady state in the process of isotopic exchange would be attained if the values of U/v were close to one which corresponds, in our case, to a duration of the gas in the discharge of 1 - 2 seconds. The

Card 2/5

S/076/61/035/007/018/019
B124/B231

Separation of oxygen isotopes in ...

equilibrium ozone concentration will be attained only in case that the U/v-values exhibit an energy of 5 -8 watts/l.hr and increases when pressure is raised (Fig. 2). Five series of tests were carried out at a wall temperature varying between -19 and +92°C and constant pressure of 760 mm Hg. The results obtained showed that a rise in temperature causes the concentration coefficient to increase (Fig. 3). A temperature rise in the reactor causes a considerable drop of the ozone concentration. The data obtained indicate that the separation of oxygen isotopes in the electrosynthesis of ozone is not determined by the exchange of oxygen isotopes between oxygen and synthesized ozone, but directly by the formation of ozone from oxygen. Indicative of this is the independence of the distribution coefficient S on the duration of oxygen in the discharge zone and the relatively high experimental value of S (about 1.10 at room-temperature) as compared with the equilibrium values of S for the exchange reaction (S = 1.03), for the computation of which the method of statistical thermodynamics was applied. There are 3 figures, 1 table, and 2 Soviet-bloc references.

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

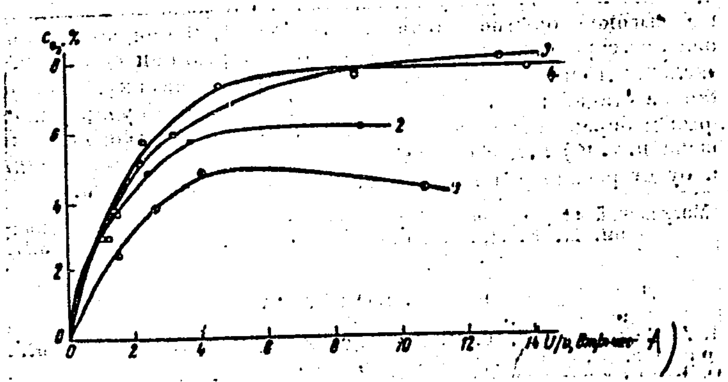
Card 3/5

S/076/61/035/007/018/019
B124/B?31

Separation of oxygen isotopes in ...

SUBMITTED: February 3, 1961

Fig. 2: Kinetic curves for the electrosynthesis of ozone at 20°C and pressures of: (1) 300; (2) 500; (3) 760; (4) 800 mm Hg. Legend: (A) U/v, watts/l·hr.



Card 4/5

SEMIOKHIN, I.A.; KOROVKIN, V.K.; PANCHENKOV, G.M.; ZHUY SHI-CHZHUAN
[Jui Shih-chuang]

Separation of oxygen isotopes by the exchange CO_2 - H_2O in an electric discharge. Zhur.fiz.khim. 35 no.8:1881-1883 Ag '61. (MIRA 14:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Oxygen--Isotopes)
(Carbon dioxide)
(Water)

27686
S/076/ 1/035/009/009/015
B106/B110

21.4200

AUTHORS: Panchenkov, G. M., Makarov, A. V., and Pechalin, L. I.

TITLE: Separation of boron isotopes through chemical exchange. IV. Complex compound of boron trifluoride with phenetole

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 2110

TEXT: In previous papers (Ref. 1: G. M. Panchenkov, V. D. Moiseyev i A. V. Makarov, Dokl. AN SSSR, 112, 659, 1957; Ref. 2: same authors, Zh. fiz. khimii, 31, 1851, 1957; Ref. 3: G. M. Panchenkov, A. V. Makarov i L. I. Pechalin, Vestn. Moskovsk. un-ta, seriya "Khimiya", No. 2, 3, 1960; Ref. 4: same authors, Zh. fiz. khimii, 34, 2489, 1960; Ref. 5: G. M. Panchenkov, A. V. Makarov i G. V. Romanov, Zh. fiz. khimii, 35, 1315, 1961), the authors had reported on using isotope exchange between boron trifluoride and its complexes with anisole and Chlorex for separating boron isotopes. In one of these studies (Ref. 2), the possibility was mentioned of using the isotope exchange between boron trifluoride and its complex with phenetole for separating the boron isotopes:

$$B^{10}F_3 + B^{11}F_3 \cdot C_6H_5OC_2H_5 \rightleftarrows B^{11}F_3 + B^{10}F_3 \cdot C_6H_5OC_2H_5$$

Card 1/3

27686
S/076/61/035/009/009/015
B106/B110

Separation of boron isotopes through ...

The first results obtained for this system are described. The separation of boron isotopes was carried out in an installation designed for the preparation of the isotope B^{11}. Design and mode of operation of this installation had been described previously (Ref. 5). The only alteration consisted in a more effective attachment made of 1Х18Н9Т (1Kh18N9T) stainless steel in the form of three-faced 2 by 2 mm spirals of 0.2 mm diameter wire instead of the glass attachment used previously. Phenetole "p. a." without additional purification was used. The experiments with the phenetole complex showed that this complex foams at a slight temperature increase. This greatly complicated the operation of the siphon through which the complex entered the column. The column temperature during the experiment was 30°C, that of the desorber ∿170°C. The complex was admitted at a rate of ∿1 ml/min. After 14 hr of operation a gas sample for the isotope analysis was taken from the absorber. Mass spectrometric analyses conducted by A. M. Kolchin's method using borax ions as emitters (Ref. 6: A. M. Kolchin, V. F. Malakhov i G. M. Panchenkov, Zh. fiz. khimii, 34, 2124, 1960) showed that the isotope ratio B^{11}/B^{10} in the specimen had the value 5.18 ± 0.13 (for the reference specimen the ratio was 4.09 ± 0.06). This result corresponds to a total separation coefficient of 1.26. As in

Card 2/3

27686
S/076/61/035/009/009/015
B106/B110

Separation of boron isotopes through ...

other, previously studied complexes, the lighter boron isotope is enriched in the liquid phase also in this exchange. The authors thank A. M. Kolchin and V. F. Malakhov for conducting the mass spectrometric analyses. There are 6 Soviet references. [Abstracter's note: Complete translation]

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova Khimicheskiy f-t (Moscow State University imeni M. V. Lomonosov, Chemical Division)

SUBMITTED: December 26, 1959

X

Card 3/3

KUZNETSOVA, Ye.M.; MAKAROV, A.V.; PANCHENKOV, G.M.

Application of the multistage experiment formula for devising the scheme of an ideal cascade. Zhur.fiz.khim. 35 no.9:2116-2119 '61. (MIRA 14:10)
(Isotope separation)

27689
S/076/61/035/009/014/015
B124/B101

21. 4200

AUTHORS: Makarov, A. V., and Panchenkov, G. M.

TITLE: Separation of boron isotopes by the chemical exchange method. V. Dependence of the separation coefficient of the column on temperature and load

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 2147-2150

TEXT: With regard to the importance of an appropriate choice of optimum conditions in the packed countercurrent column used to effect separation of boron isotopes by two systems (BF_3 - $BF_3 \cdot C_6H_5OCH_3$ and BF_3 - $BF_3 \cdot (C_2H_4Cl)_2O$) with different packing materials (glass rings and coils made of Nichrome), particularly regarding temperature and load, the dependence of the separation coefficient of the column on temperature and feeding rate of the complex to a column 2 m high was studied. The boron samples recovered were analyzed with a mass spectrometer either in the form of BF_3 or of $Na_2B_4O_7$. With respect to the considerable deviation of data on the dependence of the separation coefficient of the column on its time of operation established

X

Card 1/4

27689
S/076/61/035/009/014/015
B124/B101

Separation of boron isotopes ...

by 32 experiments, these data were treated using the least squares method, and the empirical equation $S - 1 = (S_{equ} - 1)\ t/(t_{1/2} + t)$ is used for correction; here S is the separation coefficient corresponding to the time t, S_{equ} the equilibrium value of this coefficient (for $t = \infty$), and $t_{1/2}$ the time necessary to attain the value $(S_{equ} - 1)/2$. This equation is much simpler than the equation derived by S. I. Babkov and N. M. Zhavoronkov (Ref. 6: Dokl. AN SSSR 106, 877, 1956). The temperature dependence of S_{equ} for the anisole complex is highly complex (Fig. 2) which is probably mainly due to the isotopic effect of desorption. From the curve for the dependence of the separation coefficient S_{equ} on the feeding rate of the complex (Fig. 3), it is evident that the latter has only a small effect on the separation coefficient, except for cases when S_{equ} sharply decreases at low rates. Calculated optimum conditions are: column temperature somewhat higher than room temperature (about 40°C for the anisole complex, and about 60°C for the complex of BF_3 with chlorex), sufficiently high rate of feeding, and use of packing materials having maximum specific surface.

Card 2/4

PANCHENKOV, G.M.

Dynamics of unsteady physicochemical processes in a flow under conditions of the bimolecular process-rate law. Dokl. AN SSSR 140 no.2:412-415 S '61. (MIRA 14:9)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I.M.Gubkina. Predstavleno akademikom A.V.Topchiyevym.
(Chemistry, Physical and theoretical)

BALANDIN, A.A., akademik, red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., zam. red.; MAL'TSEV, A.N., zam. red.; AGRONOMOV, A.Ye., dots., zam. red.; TOPCHIYEVA, K.V., prof., red.; YUR'YEV, Yu.K., prof., red. PANCHENKOV, G.M., prof., red.; SOKOL'SKIY, D.V., akademik, red.; VOL'KENSHTEYN, F.F., prof., red.;LAZAREVA, L.V., tekhn. red.

[Catalysis in the institutions of higher learning; papers of the First Interuniversity Conference on Catalysis]Kataliz v vysshei shkole; trudy. Moskva, Izd-vo Mosk. univ. No.1. Pt.2. 1962. 325 p. (MIRA 15:10)

1. Mezhvuzovskoye soveshchaniye po katalizu. 1st, 1958. 2. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy). 3. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (for Yur'yev).
(Catalysis)

S/832/62/000/000/011/015
D424/D307

AUTHORS: Gundyrev, A.A., Nametkin, N.S., Panchenkov, G.M. and Topchiyev, A.V.

TITLE: Viscosity of some liquid organosilicon compounds and the energy of interaction of the molecules of these compounds

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 205 - 218

TEXT: With the object of establishing general laws relating their physical properties to their structure, the densities and viscosities of 43 organosilicon compounds have been measured over the temperature range from 10 to 85°C, at 15° intervals, measurements for three of them being carried out also between -60° and 0°C (at 20° intervals). The compounds are:

Card 1/3

Viscosity of some ... S/832/62/000/000/011/015
D424/D307

hexaalkyl derivatives of disilylmethane, -ethane, and propane, and of disiloxane, trialkyl derivatives of phenyl-, 4-methylphenyl-, and 3,4-dimethylphenylsilanes, and dialkyl derivatives of diphenyl-, bis-4-methylphenyl-, and bis-3,4-dimethylphenylsilanes. The densities, measured in a weight dilatometer to an accuracy of 0.0001 g/ml, were found to obey the linear relation

$$d^T = a + bT ,$$

where d^T is the density at absolute temperature T, and a and b are constants. The viscosities, η , measured in a modified Ostwald viscometer to an accuracy of 0.00001 poise, were found to agree well with Panchenkov's formula

$$\eta = Ad^{4/3} T^{1/2} e^{\varepsilon_0/RT} (1 - e^{-\varepsilon_0/RT})$$

where ε_0 is the energy of bond formation between molecules, per mole,

Card 2/3

S/832/62/000/000/011/015
D424/D307

Viscosity of some ...

R the universal gas constant, and A a magnitude which can be considered constant over a relatively narrow range of temperature. The formula was used to calculate ε_0. Replacing an alkyl radical in aryltrialkylsilanes by an aryl radical leads to a considerable increase in η and ε_0. T - dependence of η of the hexaalkyl derivatives of disiloxane is lower than that of the corresponding derivatives of disilylmethane and disilylethane. In the hexaalkyl derivatives of disilylmethane and disilylethane, the increase in ε_0 as the main chain is increased by one CH_2 group averages 295 cal/mole, as compared with 209 cal/mole for the n-alkanes. The intermolecular bond energies for the polymethylsiloxanes and the polyethylsiloxanes increase with a rise in the molecular weight, those for the former being higher than those for the latter. There are 10 figures and 4 tables.

Card 3/3

S/832/62/000/000/012/015
D424/D307

AUTHORS: Alexandrova, Z.A., Gundyrev, A.A., Nametkin, N.S., Panchenkov, G.M. and Topchiyev, A.V.

TITLE: Surface tension of organosilicon compounds of a number of classes

SOURCE: Issledovaniya v oblasti krmeniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 219 - 226

TEXT: The investigation was designed to supply information in the little-studied field of the dependence of the surface tension of organosilicon compounds on the temperature. The surface tension at an air boundary of 39 organosilicon compounds of 12 different classes was measured over the range from 20 to 50°C, at 10° intervals. The measurements were carried out in an air-bubble viscometer as proposed by Sugden

Card 1/3

S/832/62/000/000/012/015
D424/D307

Surface tension ...

(J.Chem.Soc., 121, 857 (1922)) [Abstractor's note: reference corrected], improved by Quale and Smart (J.Amer.Chem.Soc., 66, 935 (1944)), and further improved by the present authors. The constant of the viscometer was determined with benzene and checked with *n*-heptane and water. The following classes of compounds were investigated: hexaalkyldisilylmethanes, -ethanes, and propanes, hexaalkyldisiloxanes, phenyl-, 4-methylphenyl- and 3,4-dimethylphenyltrialkylsilanes, diphenyl-, bis-4-methylphenyl-, and bis-3,4-dimethylphenyldialkylsilanes, and linear and cyclic polyethoxysiloxanes. In all cases the surface tensions were found to obey the linear relation

$$\sigma_t = a - bt$$

where σ_t is the surface tension in dynes/cm at t°C, and a and b are constants for a given compound. The surface tensions of hexaalkyldisiloxanes are 2-3 dyne/cm less than those of the corresponding hexaalkyldisilylmethanes or -ethanes. The transition

Card 2/3

S/832/62/000/000/012/015
D424/D307

Surface tension ...

from hexamethyldisilylmethane to the corresponding disilylethane and disilylpropane derivatives is accompanied by a regular increase in σ_t. Lengthening the polyethylsiloxane chain by successive diethylsiloxy units is also accompanied by a regular increase in σ_t. In addition, the following pairs of analogous compounds were investigated: diethylsilane-*n*-pentane, dipropylsilane-*n*-heptane, dibutylsilane-*n*-nonane, phenylmethylsilane-ethylbenzene, and phenyldimethylsilane-*iso*-propylbenzene. The surface tensions of the alkylsilanes were close to those of the corresponding hydrocarbons, while the surface tensions of the alkylarylsilanes were 1.5-2 dyne/cm higher than those of the corresponding hydrocarbons. There are 5 tables.

Card 3/3

S/832/62/000/000/013/015
D424/D307

AUTHORS: Gar, P.P., Gur'yrev, A.A., Nametkin, N.S., Panchenkov, G.M. and Topchiyev, A.V.

TITLE: Refractometric investigations of some organosilicon compounds

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 228 - 234

TEXT: The refractive indices at 20°C for the C and F lines of hydrogen (for the first time) and for the D line of sodium have been measured for 46 compounds of the following classes: the hexaalkyl derivatives of disilylmethane, disilylethane, and disilylpropane, and of disiloxane, aryltrialkylsilanes, diaryldialkylsilanes, and linear and cyclic polyethoxysilanes. From the results, the individual, mean and specific dispersions, and the

Card 1/3

molecular refraction for the D line, have been calculated. As a rule, in any one class of alkylarylsilanes those in which the alkyl group is ethyl have the highest refractive index. The refractive indices of dialkyldiarylsilanes are about 0.05 units higher than those of the aryltrialkylsilanes with the same alkyl and aryl groups. In the case of the phenyltrialkylsilanes, the introduction of a methyl group into the 4- position of the phenyl ring and then a second methyl group into the 3- position increases the refractive index, while the situation is reversed in the case of the aryltrialkylsilanes. The specific dispersions of aryltrialkylsilanes are 15 - 20 % lower than those of the corresponding diaryldialkylsilanes. The refractive indices of the hexaalkyl derivatives of disilylmethane, disilylethane, and disiloxane increase with a rise in the molecular weight, those of the disiloxanes being less than those of the corresponding members of the other classes. On passing from hexamethyldisilylmethane to the corresponding ethane and propane derivatives, the refractive index increases by 0.0025 units per CH_2 group added, while the specific dispersion is decreased. The change in the specific

S/832/62/000/000/014/015
D424/D307

AUTHORS: Gundyrev, A.A., Nametkin, N.S., Panchenkov, G.M. and Topchiyev, A.V.

TITLE: Dielectric constants and dipole moments of some organosilicon compounds

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 235 - 242

TEXT: The dielectric constants of 16 organosilicon compounds of the following types have been investigated: hexaalkyl derivatives of disilylmethane, disilylethane, and disiloxane, and polyethylsiloxanes, most of them for the first time. The dielectric constants were measured at 25° in *n*-hexane at a frequency of 7.95×10^5 cps by the method of beats, with an accuracy of 0.02 %. The apparatus was calibrated with benzene

Card 1/2

42657

S/832/62/000/000/015/015
D424/D307

5.3700

AUTHORS: Kolesnikov, I.M., Gundyrev, A.A., Nametkin, N.S., Panchenkov, G.M. and Topchiyev, A.V.

TITLE: Behavior of some organosilicon compounds in the region of the solidification temperature

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 243-253

TEXT: The solidification behavior of 31 organosilicon compounds has been investigated in order to determine their true melting points and purity, and the conditions under which glasses are formed. The compounds were of the following types: hexaalkyl derivatives of disilylmethane, -ethane, and -propane, and of disiloxane, phenyl-, 4-methylphenyl-, and 3, 4-dimethylphenyltrialkylsilanes, diphenyl-, bis-4-methylphenyl-, and bis-3,4-dimethylphenyldialkylsilanes, linear and cyclic polyethylsiloxanes,

X

Card 1/3

dialkylsilanes, and an aryldialkylsilane. The main feature of the apparatus used is that the sample was contained in a double-walled glass vessel immersed in liquid nitrogen, the rate of cooling being controlled by the degree of evacuation of the space between the walls. Many of the compounds underwent pronounced supercooling and others did not crystallize but formed glasses. Where a glass was not formed, the m.p. of the material as such and the true m.p. of its main constituent were determined graphically by Rossini's method (J. Res. Nat. Bureau Standards, 32, 197 (1944)). In the series of phenyltrialkylsilanes, the methyl and propyl compounds supercool only slightly and then crystallize spontaneously, while the ethyl compound crystallizes only after the deeply supercooled liquid is seeded, and the butyl compound forms a glass. Somewhat similar behavior is found with other series of compounds, the following also forming glasses on cooling: 3,4-dimethylphenyltripropyl- and -tributylsilanes, diphenyldiethyl- and -dibutylsilanes, bis-4-methylphenyldimethyl- and -dipropylsilanes, bis-3,4-dimethyldiethylsilane, hexapropyldisilylmethane and -ethane, and the polyethylsiloxanes containing 5, 6, 7 and 8 oxygen atoms. The viscosities

Behavior of some ...

S/832/62/000/000/015/015
D424/D307

of the compounds are also given, together with the intermolecular bond energies calculated from the temperature dependence of the viscosities by Pachenkov's formula (Zh. fiz. khim. 24, 1930 (1950)). These show that, in general, compounds with intermolecular bond energies less than about 4000 cal/mole crystallize on cooling, while compounds with a greater intermolecular bond energy form glasses. There are 8 figures and 1 table.

Card 3/3

L 12296-63

S/081/63/000/005/053/075

AUTHOR: Panchenkov, G. M. and Guankhua, Ya. 44

TITLE: The kinetics of coking on alumo-silicate catalysts in cracking of petroleum fractions and hydrocarbons

PERIODICAL: Referativnyy zhurnal, Khimiya, no. 5, 1963, 501, abstract 5P159 (Kataliz. v. vyssh. shkole. Tr. I. Mezhvuz. soveschaniya po katalizu., no. 1, part I, 1962, 285-289)

TEXT: The amount of coke collected on alumo-sillicate catalyst was determined (content: Al_2O_3 14.01%, SiO_2 84.66%; surface 305 m^2/g) at various intervals of time (1 - 300 min) in the cracking of kerosene gas oil fractions, cetane and decalin in the 430-500° C interval. According to experimental data, a kinetic equation was developed for coke formation, by means of which it was possible to calculate the active area of the surface of the catalysts. The latter appeared to be dependent on the nature of the converted molecules and the temperature and was found to be equal to 9.7, 6.8 and 4.1% of the total surface at 450° C for the indicated substances. M. Mishchenko.

/Abstractor's note: Complete translation7

Card 1/1

GOLUBEV, V.S.; PANCHENKOV, G.M.

Layer method for approximate calculation of the dynamics of equilibrium sorption and chromatography. Izv. Sib. otd. AN SSSR no.3:45-53 '62. (MIRA 17:7)

1. Moskovskiy gosudarstvennyy universitet.

PANCHENKOV, G.M.

43781

G/025/62/000/004-5/002/005
I041/I241

11.1125

AUTHORS: Semiochin, I.A., Panchenkov, G.M., and Korovkin, V.K.

TITLE: The separation of oxygen isotopes during the electrosynthesis of Ozone

PERIODICAL: Kernenergie, no.4-5, 1962, 300-303

TEXT: The isotope feactionation of oxygen isotopes between oxygen and ozone during rhe electrosynthesis of ozone was investigated as a function of the flow velocity, the length of the ozonizing tube, the gas pressure and wall temperature, with a view of utilizing the electric discharge conditions for the rapid attainment of isotopic equilibrium between species for the purpose of isotope production. Stationary isotopic fractionation was established much faster than the attainment of stationary ozone concentration; the isotope fractionating factor between ozone and oxygen was found to increase from

Card 1/2

40926

S/189/62/000/005/001/006
D204/D307

14
5.2410

AUTHORS: Panchenkov, G. M., Makarov, A. V., D'yachenko, V. Ya., and Moiseyev, V. D.

TITLE: The viscosity of boron trifluoride

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II, Khimiya, no. 5, 1962, 11-13

TEXT: The viscosity of BF_3 (η_{BF_3}) was measured to determine its dependence, as such data are necessary for thermodynamical calculations associated with thermal diffusion columns involving gas. The apparatus (Fig. 1) was made of Mo glass and quartz. For a determination, container 2 (20 l) was filled with CO_2 at atm. pressure, keeping taps 15 - 18 closed; Hg was then pumped into 14 to just cover the top Pt lead (21, 23 and 24 closed). Tap 24 was then opened, and the time of fall of Hg between the upper two leads and 14 was measured (= time required by the CO_2

Card 1/2

PANCHENKOV, G.M.; ZHOROV, Yu.M.

Kinetics of the catalytic cracking of light gas oils. Trudy MINKHiGP no.37:3-12 '62.

Kinetics of catalytic cracking on aluminosilicates retarded by an external diffusion at the catalyst surface. Ibid.:12-18

Relationship between the pre-exponential factor and activation energy in cumene cracking on aluminosilicates. Ibid.:19-23

PANCHENKOV, G.M.; KOLESNIKOV, I.M.; KOLESNIKOV, G.M.

Thermodynamic calculations of the realkylation reaction of benzene with diisopropyl-benzene in the gas phase. Trudy MINKHiGP no.37:24-29 '62.

Studying the kinetics of the realkylation reaction of benzene with diisopropyl-benzenes in the presence of an aluminosilicate catalyst. Ibid.:29-38 '62.

Kinetics of the reaction of benzene realkylation with diisopropylbenzenes on aluminosilicate catalyst. Ibid.:39-51

Thermodynamic calculation of the dealkylation reaction of diisopropyl-benzenes in the gas phase. Ibid.:56-62

Kinetics of the dealkylation of diisopropyl-benzene in the presence of an aluminosilicate catalyst. Ibid.:63-76

Kinetics of coking on an aluminosilicate catalyst in the dealkylation of diisopropyl-benzenes. Ibid.:77-79 (MIRA 17:3)

L 12370-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW
S/081/63/000/005/004/075
68

AUTHOR: Panchenkov, G. M., Kolesnikov, I. M. and Tsagaankhuu, B.

TITLE: Kinetics of dealkylation reactions of di-isoprolylbenzenes in the presence of aluminum silicate catalysts

PERIODICAL: Referativnyy zhurnal Khimiya, no. 5, 1963, 68, abstract 5B491, (Tr. Mosk, in-t. neftekhim. i gaz. prom-sti, 1962, no. 37, 63 - 76)

TEXT: The kinetics of dealkylation of di-isopropylbenzenes (I) and calculations on the heats of formation of isopropylbenzene on the basis of thermodynaimc data showed that isopropylbenzene may be produced as a result of dealkylation of I, as well as a result of dismutation of I. Upon contact of I with aluminum silicate catalysts, in addition dealkylation processes of I and dismutations, redistribution of H_2, polymerization and hydrogenation of propylene take place. The optimum conditions for carrying through this process on the basis of experimental data (if the reaction is conducted for the purpose of obtaining isopropylbenzene) is at a temperature of 360° C and a molecular speed of delivery of $5 \cdot 10^{-3}$ moles of I per 1 cm^3 per hour. Author's abstract.

[Abstractor's note: Complete translation]

Card 1/1

KOLESNIKOV, I.M.; PANCHENKOV, G.M.

Kinetics of the reaction of benzene alkylation with propylene in the gas phase in the presence of a catalyst applied as a film to the inert carrier. Trudy MINKHiGP no.37:85-93 '62.

Method for calculating the rates of chemical reactions in nonisothermal flow. Ibid.:93-103 (MIRA 17:3)

PANCHENKOV, G.M.; BARANOV, V.Ya.

Determining the order of the homogenous gas reactions in flow.
Trudy MINKHiGP no.37:103-109 '62. (MIRA 17:3)