"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

"On the Studies of the Chemical Properties of the Boranes and their Derviatives," a paper submitted at the 16th International Congress of Pure and Applied Chemistry, Paris, 18-24 July 1957.

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ZHIGACH, A.F., doktor khim.nauk, prof.

[redacted]

International classification and marking of hazardous materials. Khim.prom. no.6:368-370 S '57. (MIRA 11:1)

1.Predstavitel' SSSR na soveshchanii ekspertov Mezhdunarodnoy organizatsii truda v avguste 1956 g. v g. Zheneve.
(Chemicals--Safety measures)
(Industrial safety)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

Zhigach, A.F.

AUTHOR: Zhigach, A. F. 64-8-15/19

TITLE: International Congress for Pure and Applied Chemistry (Mezhdunarodnyy kongress chistoy i prikladnoy khimii).

PERIODICAL: Khimicheskaya Promyshlennost', 1957, Nr 8, pp. 51-51 (USSR)

ABSTRACT: The congress took place in Paris from July 18th up to July 25th, 1957. 2200 delegates, among them also Russian ones, took part in it. A short review about the agenda of the congress is given and the most essential themes treated in the reports. The agenda was divided into 3 sections physical chemistry, inorganic chemistry, organic chemistry), with 4 subgroups each. Names and titles of the reports are not mentioned.

AVAILABLE: Library of Congress

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5(1)

AUTHORS: Zhigach, A. F., Antonov, I. S., Kazakova, Ye. B., Frayman, R. S.

SOV/64-59-2-7/23

TITLE: Continuous Method of Obtaining an Equimolecular Mixture of Ethyl-Aluminum Chlorides (Nepreryvnyy metod polucheniya ekvimolekulyarnoy smesi etilalyuminiykhloridov)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 2, pp 123-126 (USSR)

ABSTRACT: In contrast with other methods (Ref 1,a), in the present case the reaction between aluminum and ethylchloride (I) was carried out in a mixture of an equimolecular amount of alkyl aluminum halides with the latter serving as catalysts. The metal (or the aluminum alloy) is introduced into the mixture and reacts with a weak solution of (I) so that the process takes place continuously and without danger. In order to determine the influence exercised by various factors on the course of the reaction, experiments were made in glass ampoules which demonstrated (Table 1) that under the given conditions (5 hours, 50-55°) pure (I) reacts neither with aluminum nor with duralumin (DA). By increasing the addition to the catalyst the reaction is accelerated. In this connection the reaction with (DA) (containing 4% copper) takes place more

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Continuous Method of Obtaining an Equimolecular Mixture of Ethyl-aluminum Chlorides SOV/64-59-2-7/23

rapidly than with Al. Investigations of the technological parameters of the processes showed that it is more favorable to carry out the reaction in the liquid phase than in the gas phase. The experiments with the liquid phase were made in a glass vessel (100 cm^3) (Fig 1) in the laboratory. The (DA) - splinters were introduced into an equimolecular mixture of bromides (6g) and (I) was introduced into the vessel from below. The reaction temperature was controlled by the velocity of passage of (I) and a heating jacket. The experimental results obtained were examined in a larger reaction column (700 cm^3) and compared to each other (Table 2). A reaction column of stainless steel (Fig 2) was used for further experiments in a plant (Fig 3). The reaction product obtained exhibited the following composition: 21,3% Al, 44,1% Cl, 29,0% C_2H_5. The coefficients of efficiency of the test plant are tabulated (Table 3). There are 3 figures, 3 tables, and 3 references.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

SOV/129-59-4-9/17

AUTHORS: Dr. Chem.Sc. Zhigach, A.F., Cand.Tech.Sci. Antonov, I.S., Engineers Pchelkina, M.A., Yukin, G.I., Dobrodeyev, A.S., and Matveyev, V.N.

TITLE: Surface Saturation of Steel with Boron from a Gaseous Medium (Poverkhnostnoye nasyshcheniye stali borom iz gazovoy sredy)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 4, pp 45-47 + 3 plates (USSR)

ABSTRACT: The authors of this paper investigated exhaustively the problem of borating of metallic surfaces by B_2H_6 for the purpose of determining optimal conditions of obtaining layers of high quality. The experiments and the experimental apparatus are briefly described. The possibility was established of borating from the gaseous phase, using as a circulation medium a mixture of B_2H_6 and hydrogen. The best results were obtained with the following regime: borating temperature 800 - 850°C; process duration 4 - 5 hours; ratio of the gas mixture $B_2H_6:H_2$ = 1:75; gas flow rate 75 - 100 litres/hour.

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Surface Saturation of Steel with Boron from a Gaseous Medium

Under such conditions a 200 micron thick borated layer of a high hardness is obtained. The microhardness of the layer at the surface reaches the value of 3000.

There are 9 figures and 6 references, 1 of which is Soviet, 1 German, 4 English.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, A.F.

PHASE I BOOK EXPLOITATION SOV/5227

Samsonov, Grigoriy Valentinovich [Professor, Doctor of Technical Sciences], Lev Yakovlevich Markovskiy [Candidate of Chemical Sciences], Aleksey Fomich Zhigach [Doctor of Chemical Sciences], and Mikhail Georgiyevich Valyashko [Doctor of Chemical Sciences]

Bor, yego soyedineniya i splavy (Boron, Its Compounds and Alloys) Kiyev, Izd-vo AN UkrSSR, 1960. 589 p. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Ed. (Title page): G. V. Samsonov, Professor, Doctor of Technical Sciences; Resp. Ed.: I. N. Frantsevich, Corresponding Member of the Academy of Sciences UkrSSR; Ed. of Publishing House: Z. S. Pokrovskaya; Tech. Ed.: V. Ye. Sklyarova.

PURPOSE: This book is intended for scientific workers and engineers in the metallurgical, machine building, chemical, and electronic industries. It may also be used by advanced students.

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Boron, Its Compounds and Alloys SOV/5227

COVERAGE: The book describes the principles of boron geochemistry, boron stock and its processing, and the properties, production, and use of elementary boron, boron hydrides, and halogens. It also includes data on the properties, production methods, metal science, and crystal chemistry of boron alloys with metals and nonmetals. All known systems with boron are investigated and applications of boron alloys in the manufacture of fireproof alloys, in electronics and radio engineering, machine building, metallurgy, and chemistry are discussed. Corresponding Member A. V. Nikolayev, G. V. Samsonov, and Ya. S. Umanskiy are cited among the contributors to boron research in the Soviet Union. The authors thank the Scientific Council of the Institut metallokeramiki i spetsial'nykh splavov (Institute of Metal Ceramics and Special Alloys), Academy of Sciences, Ukrainskaya SSR. They also thank Professor Yu. V. Morachevskiy. Most of the chapters are accompanied by references.

TABLE OF CONTENTS:

Introduction 3

Ch. I. Geochemistry of Boron (M. G. Valyashko) 7

Ch. II. Boron Stock and Its Processing (M. G. Valyashko) 25

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77388
SOV/79-30-1-49/78

AUTHORS: ~~Zhigach, A. F.,~~ Siryatskaya, V. N., Antonov, I. S., ~~Makayeva~~, S. Z.

TITLE: Concerning the Mechanism of Diborane Reaction With Olefins

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 227-230 (USSR)

ABSTRACT: Diborane reacts with excess olefins, and forms, successively, alkyldiboranes (RB_2H_5; $R_2B_2H_4$; $R_3B_2H_8$; etc.) according to the reactions:

$$B_2H_6 \rightleftarrows 2BH_3 \text{ (IV)},$$
$$B_2H_6 + BH_3 \rightarrow B_3H_9 \text{ (V)},$$
$$B_3H_9 + C_nH_{2n} \rightarrow BH_3 + B_2H_5C_nH_{2n+1} \text{ (VI)},$$
$$B_2H_5C_nH_{2n+1} + BH_3 \rightarrow B_3H_8C_nH_{2n+1} \text{ (VII)},$$
$$B_3H_8C_nH_{2n+1} + C_nH_{2n} \rightarrow BH_3 + B_2H_4(C_nH_{2n+1})_2 \text{ (VIII)}$$
$$B_2H_4(C_nH_{2n+1})_2 + C_nH_{2n} \rightarrow BH_3 + 2B(C_nH_{2n+1})_3 \text{ (IX)}$$

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Concerning the Mechanism of Diborane Reaction With Olefins

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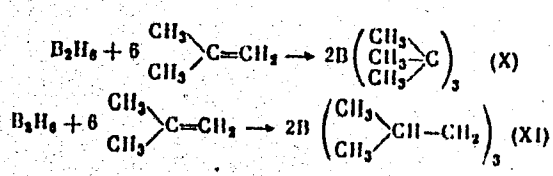
Theoretically, a B atom can join either of the C=C carbon atoms and form isomers. According to D. Hurd, diborane gave with olefins equal amounts of isomers (X) and (XI); for example:



It was also reported (J. Am. Chem. Soc., 1956, Vol 78, p 5694; Chem. Eng. News, 1957, Vol 6, Nr 28) that the olefins, on reduction with sodium borohydride in the presence of $AlCl_3$, gave the corresponding primary alcohols. In view of the contradictory data on the order of diborane addition to olefins, the authors investigated the mechanism of this reaction. Propylene with diborane on heating to 230-250° C gave tripropylboron in 91%

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Concerning the Mechanism of Diborane Reaction With Olefins

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yield. Similarly, tributylboron and (tri-isobutyl) boron were obtained in 94% and 92% yields, respectively. The structure of the above was determined by oxidizing and hydrolyzing the alkylborons to the corresponding alcohols:

$$B(C_nH_{2n+1})_3 + 3H_2O_2 + KOH \rightarrow KBO_2 + 3C_nH_{2n+1}OH + 2H_2O$$

Primary alcohols (main products) were obtained from the three alkylborons; n-propanol, b-butanol, and n-isobutanol. This proved that diborane added to the double bond according to the reaction (XI), that is, contrary to Markownikow rule. There is 1 table; and 8 references, 5 U.S., 3 Soviet. The U.S references are: D. Hurd, J. Am. Chem. Soc., 1948, Vol 70, p 2053; R. Whatley, R. Pease, ibid., 1954, Vol 76, p 835; H. Brown, B. Subba, ibid., 1956, Vol 78, p 5694; H. Shyder, J. Kuck, J. Johnson, ibid., 1938, Vol 60, p 121; Chem Eng. News, 1957, Vol 6, Nr 28.

SUBMITTED: January 24, 1959

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

S/064/61/000/004/002/003
B110/B207

AUTHORS: Zhigach, A. F., Popov, A. F., Vishnevskiy, L. D., Korneyev, N. N.

TITLE: Direct triethyl aluminum synthesis

PERIODICAL: Khimicheskaya promyshlennost', no. 4, 1961, 27-31

TEXT: According to technical and commercial calculations, the direct synthesis: $Al + 1.5\ H_2 + 3\ C_2H_4 \longrightarrow Al(C_2H_5)_3$ was found to be most suitable among all triethyl aluminum syntheses (TEA). The present paper lists the results of studies on the direct synthesis and a two-stage procedure with comparatively low temperatures and pressures. After drying, hydrogen, ethylene, and nitrogen contained 0.004-0.007 g/m^3 moisture, 0.001-0.045% oxygen. Gasoline of the "Калоша" (Kalosha) (ГОСТ 443-56) (GOST 443-56) type was dried with Na. Aluminum powder ПАК-3 (PAK-3) (ГОСТ 5194-50)(GOST 5194-50), activated by means of 50-60 hr grinding on the vibration mills constructed by VNIINSM, proved to be best suited. Per 1 part Al, 2.5-3 parts gasoline, containing 5% TEA were used to

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prepare the suspension. First, the reaction conditions were investigated at low pressure (20-30 atm), then the effect of technological factors upon aluminum conversion and output. A 1.2 l autoclave was charged with 50-80 g of a 10-20 g Al containing aluminum-gasoline suspension and 400 g of a 150-200 g TEA containing gasoline solution. Subsequently, hydrogen was introduced and stirred until hydrogen absorption was finished, cooled to room temperature and, at 70-75°C, ethylene was introduced until ethylene absorption was terminated. Up to 91.5% aluminum was obtained with titanium hydride, containing 3% hydrogen ($TiH_{1.55}$), at a 30-atm hydrogen pressure and 110°C. The aluminum increased from 33.7% to 91.5% with increasing TiH concentration from 0.55 to 3.34%, the output of reaction mass per hour from 4.4 to 14.7 g/kg. Table 2 shows the effect of the TEA:Al ratio. Table 3 shows the effect of the hydrogen pressure upon TEA formation, Table 4 the effect of temperature upon hydrogenation. By increasing the number of revolutions of the stirrer from 300 rpm to 2800 rpm, it was possible to increase the Al output from 30-40% to 81-98%. Table 5 shows the reaction of diethyl aluminum hydride (DEAH) as a function of ethylene pressure. A 95% output could be obtained within

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Direct triethyl aluminum synthesis

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0.75 hr at 20 atm. Only the direct TEA synthesis was performed in the 18 l autoclave with shielded stirring mechanism (Fig.). Aluminum powder was filled into the mixer 2 into which also "Kalosha" gasoline from measuring vessel 1 was introduced. After thorough stirring, the gasoline-aluminum suspension was introduced into vibratory mill 3 together with the concentrated TEA solution from measuring vessel 11. After grinding for 50-60 hr, the suspension entered the collector 4. Then, via measuring vessel 5, it was conducted to reaction vessel 6 into which concentrated TEA solution was introduced from measuring vessel 11. The product was hydrogenated at 110-115°C and 15-25 atm hydrogen pressure, ethylated at 75-80°C and 3-10 atm. The reaction products directed into the collecting vessel 7, were passed into centrifuge 8 to separate fine-disperse aluminum. The purified TEA solution was passed into the measuring vessel 11, via the collecting vessel 10. A higher aluminum percentage (80-98%) than with the laboratory apparatus was obtained, which is due to additional aluminum activation caused by intensive stirring. The following quantities in kg were consumed per 1 kg TEA: aluminum, in practice: 0.27, theoretically: 0.236; ethylene in practice: 0.805, theoretically:

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B110/B207

Direct triethyl aluminum synthesis

0.740; hydrogen, in practice: 0.027, theoretically: 0.024. There are 1 figure, 6 tables, and 19 references: 4 Soviet-bloc and 15 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 13: H. E. Redman, US Patent 2787626, 1957.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, A.F.; POPOV, A.F.; VISHNEVSKIY, L.D.; KORNEYEV, N.N.

Direct synthesis of triethylaluminum. Khim.prom. no.4:249-253 Ap '61. (MIRA 14:4)

(Aluminum)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

S/081/62/000/008/025/057
B160/B101

AUTHORS: Zhigach, A. F., Stasinevich, D. S.

TITLE: Methods of synthesizing organo-aluminum compounds

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 8, 1962, 248, abstract 8Zh281 (Sb. "Reaktsii i metody issled. organ. soyedineniy. book 10. M., Goskhimizdat, 1961, 209 - 374)

TEXT: Survey. 489 references. [Abstracter's note: Complete translation.]

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, A.F.; STASINEVICH, D.C.

Methods of synthesizing aluminum organic compounds. Reakts.org. soed. 10:209-374 '61. (MIRA 14:10)
(Aluminum organic compounds)

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33440
S/064/62/000/001/003/008
B110/B138

11.2223
11.1250 also 2209

AUTHORS: Zhigach, A. F., Popov, A. F., Vishnevskiy, L. D., Antipin, L. M.

TITLE: Direct synthesis of triisobutyl aluminum

PERIODICAL: Khimicheskaya promyshlennost', no. 1, 1962, 24 - 26

TEXT: Triisobutyl aluminum (I) was directly synthesized according to

$$Al + 2Al(i\text{-}C_4H_9)_3 + 1^1/_2H_2 \rightarrow 3AlH(i\text{-}C_4H_9)_2$$
$$3AlH(i\text{-}C_4H_9)_2 + 3CH_2{=}CH(CH_3)_2 \rightarrow 3Al(i\text{-}C_4H_9)_3$$
$$Al + 1^1/_2H_2 + 3CH_2{=}CH(CH_3)_2 \rightarrow Al(i\text{-}C_4H_9)_3$$

As isobutylene hardly reacts with I, the reaction can take place in one stage. It has been achieved by L. I. Zakharkin, O. Yu. Okhlubystin and V. V. Gavrilenko (Ref. 4: Izv. AN SSSR, OKhN, 100, (1957)) at 130 - 140°C and 150 atm with almost quantitative Al conversion and by other investigators at various temperatures and with lower yield. The authors studied the effect of pressure and temperature on Al conversion, output,

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Direct synthesis of triisobutyl... B110/B138

and optimum reaction conditions. They used Al powder type ПАК-3 (PAK-3) (ГОСТ 5194-50 (GOST-5194-50)) ground for 50 hrs in an М-10 (M-10) vibratory mill, isobutylene (II) (0.001% by weight of aldehyde, 0.045% by weight of isobutyl alcohol), and rubber solvent spirit ГОСТ 443-56 (GOST 443-56). An Al solvent spirit suspension, I, and II were synthesized in a rotating (2 rpm) 2.5-liter autoclave at 80 - 165°C with H_2 passing through, until the pressure ceased to drop. Al conversion increased with the temperature. At low temperatures, the synthesis took 1.5 - 3.5 hrs with Al conversion <50%. Al conversion increased from 33.2 to 71.0% with H_2 pressure rising from 31 to 60 atm, reaction time decreased from 10 - 3.3 hrs, and the output increased from 7.4 to 78.3 g/kg·hr. Further pressure increase caused no more changes; so 50 - 60 atm is taken as the optimum. 0.41 - 0.57 kg of finely dispersed, active, ground Al in the solvent, 0.35 - 0.36 kg of I dissolved in 1 - 2 kg of solvent, and 3 - 4 kg of II were put into autoclave 3 and stirred under an H_2 pressure of 40 - 60 atm at 140 - 150°C. Maximum H_2 absorption (4 liter/min) was observed after 1 hr. After absorption, residual H_2 and II were passed through 4, and II was condensed.

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B110/B138

Direct synthesis of triisobutyl...

The reaction mass was passed into centrifuge 6 via 5. Average Al conversion was 81.9%, and the consumption of raw material somewhat exceeded stoichiometric amounts. There are 2 figures, 3 tables, and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc.

Fig. 1. Flow sheet for triisobutyl aluminum production.
Legend: (1) vibratory mill; (2) and (5) portable vessels; (3) reaction vessel; (4) cooler; (6) centrifuge; (7) collector for triisobutyl aluminum solution; (a) nitrogen; (b) aluminum; (c) benzine; (d) hydrogen; (e) heat-transferring medium; (f) isobutylene; (g) ammonia; (h) slime; (i) isobutylene solution; (k) isobutylene.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

KORNEYEV, N.N.; POPOV, A.F.; ZHIGACH, A.F.

Activation of aluminum for the direct synthesis of triethylaluminum.
Khim.prom. no.9:645-656 S '62. (MIRA 15:11)
(Aluminum)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, A.F., doktor khimicheskikh nauk; POPOV, A.F., kand.tekhn.nauk; BEZUKH, Ye.P.

Continuous synthesis of triethyl-aluminum sesquichloride. Biul.tekh.-ekon.inform.Gos.nauch.i tekh.inform. no.11:39-41 '62. (MIRA 15:11)
(Aluminum, Triethyl)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

S/191/63/000/001/016/017
B117/B180

AUTHORS: Antipin, L. M., Vishnevskiy, L. D., Zhigach, A. F., Popov, A. F.

TITLE: Chemical activation of aluminum powder by triisobutyl aluminum

PERIODICAL: Plasticheskiye massy, no. 1, 1963, 73

TEXT: The effect of activation conditions on the conversion of ПАК-3 (PAK-3) aluminum powder was studied, as also on the productivity of the direct synthesis of triisobutyl aluminum (TIBA). The test conditions were: Al:TIBA 0.45-0.48; activation at 30-40 atm for 3 hrs; synthesis at 150-160°C and 120-80 atm until complete conversion of the aluminum. Maximum productivity of the synthesis was reached at 195°C, the yield decreasing with a further temperature rise up to 230°C. The synthesis is improved by longer activation. The synthesis time depends on the Al:TIBA ratio. Optimum activation conditions are: 160-195°C, 10 hrs, 30 atm, in which case, the synthesis can be carried out at reduced pressure (60-45 atm). The method is simple and requires no special apparatus and can be used to produce reactive aluminum industrially.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

S/064/63/000/002/002/005
B117/B186

AUTHORS: Antipin, L. M., Zhigach, A. F., Larikov, Ye. I., Popov, A. F.

TITLE: Study of the direct one-stage synthesis of triisobutyl aluminum

PERIODICAL: Khimicheskaya promyshlennost', no. 2, 1963, 17 - 20

TEXT: A study was made of how aluminum conversion during the one-stage synthesis of triisobutylaluminum (TIBA) depends on the preceding activation of aluminum as well as on the temperature [illegible] of the process. The following Al powders were used: [illegible]-3 (PAK-3) activated by TIBA, the mechanically and chemically activated [illegible]-4 (PA-4) and non-activated powder obtained by granulation in the inert gas current. [illegible] experiments were made at 50 - 60 atm in a hermetically [illegible] layer [illegible] the mixer. The device has been des[illegible] A. F. Popov, L. D. Vishnevskiy, [illegible] The kinetic curves obtained show that when mechanically activated aluminum is used hydration sets in after an induction period during which the inhibiting admixtures are removed from the Al surface. The activated Al enters the reaction without inhibiting oxide layer. The reaction rate is

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Study of the direct...

very high and the dependence of the aluminum conversion on the duration of the process is almost linear [illegible] further S-shaped course of the [illegible] tion. The total rate of the [illegible]

[illegible]

on the temperature of the process [illegible] A comparison of the linear [illegible] that the amount of aluminum conversion [illegible] (~3 hr) can be used as criterion for [illegible] Aluminum conversion depends on the [illegible] temperatures [illegible] its effect [illegible] at [illegible]. When mechanically and [illegible]

[illegible] synthesis is determined [illegible]

Card 2/3

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The activation energy attains 14.5 kcal/mol. There are 7 figures and 1 table.

Card 3/3

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ANTIPIN, L.M.; ZHIGACH, A.F.; LARIKOV, Ye.I., POPOV, A.F.

Direct single-stage synthesis of triisobutylaluminum. Khim. prom. no.2:97-100 F '63. (MIRA 16:7)

(Aluminum organic compounds)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

KORNEYEV, N. N.; POPOV, A. F.; ZHIGACH, A. F.; VOLKOV, G. I.

Synthesis of diethyl aluminum chloride via triethyl aluminum sesquichloride. Khim. prom. no.3:178-180 Mr '63, (MIRA 16:4)

(Aluminum compounds) (Aluminum chloride)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

LARIKOV, Ye. I.; ZHIGACH, A. F.; POPOV, A. F.; KULIKOVSKAYA, T. N.; VLADYTSKAYA, N. V.

Thermal decomposition of aluminum alkyls. Khim prom no. 3: 171-174 Mr '64. (MIRA 17:5)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGALOV, L.N.

Magnetic variations near the geomagnetic poles.
Arkt. i Antarkt. no.18:68-77 '64. (MIRA 18:3)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

SAKHAROVSKAYA, G.B.; KORNEYEV, N.N.; POPOV, A.F.; LARIKOV, Ye.I.; ZHIGACH, A.F.

Reaction of trialkylaluminum with water. Zhur. ob. khim. 34 no.10: 3435-3438 O '64. (MIRA 17:11)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

KORNEYEV, N.N.; POPOV, A.F.; BRIGACH, A.F.; VOLKOV, G.I.

Reaction of ethyl aluminum sesquichloride with sodium. Plast.massy no.6:29-30 '65. (MIRA 18:8)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 20374-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/JW/JWD/RM

ACC NR: AP6006539 (A) SOURCE CODE: UR/0191/65/000/011/0016/0018

AUTHORS: Akimov, B. A.; Bekasova, N. I.; Zhigach, A. F.; Zamyatina, V. A.; Korshak, V. V.; Sarishvili, I. G.; Sobolevskiy, M. V.

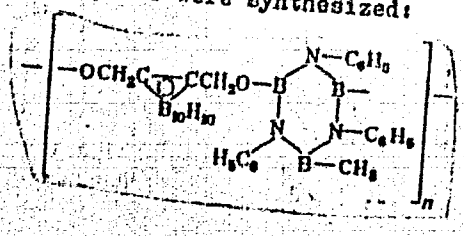
ORG: none

TITLE: Synthesis of thermostable polymers on the basis of borazole and carborane compounds

SOURCE: Plasticheskiye massy, no. 11, 1965, 16-18

TOPIC TAGS: copolymerization, boron compound, organoboron compound, thermal stability, polymer, organic synthetic process, thermomechanical property

ABSTRACT: The following polymers were synthesized:



Card 1/3

UDC: 678.86

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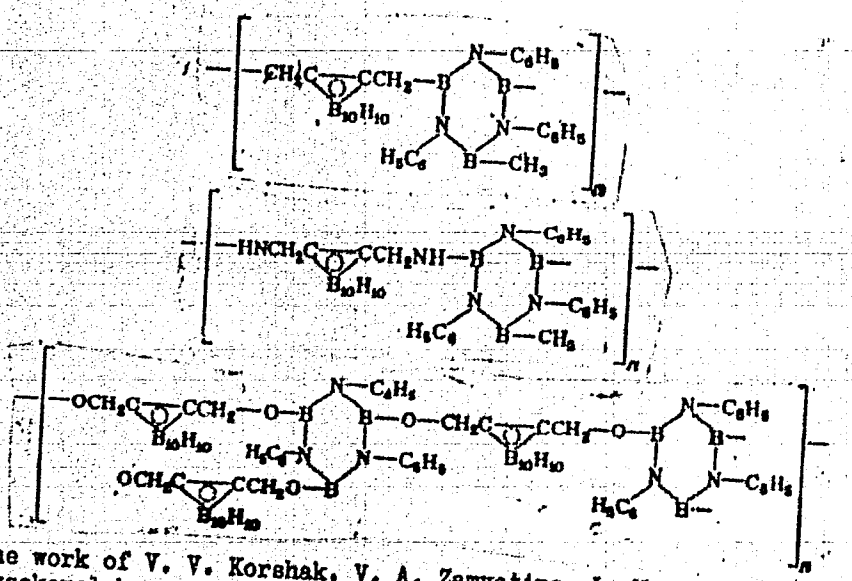
L 20374-66

ACC NR: AP6006539



to extend the work of V. V. Korshak, V. A. Zamyatina, L. M. Chursina, and N. I. Bekasova (Vysokomolek. soyed., 5, No. 8, 1963). The thermomechanical properties and the thermal stability of the synthesized polymers were determined. The experimental

Card 2/3

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 20374-66
ACC NR: AP6006539

results are presented graphically (see Fig. 1).

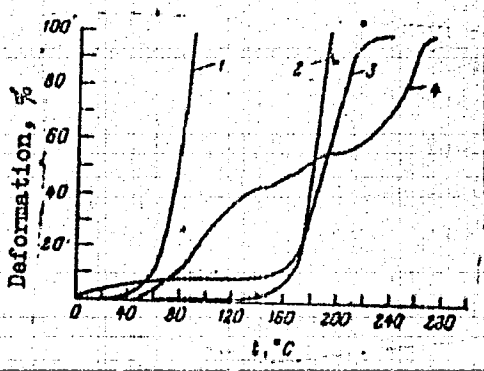


Fig. 1. Thermomechanical curves for the polymers obtained by the polymerization of: 1 - B-methyl-N-triphenylborazole and dichlorodimethylcarborane; 2 - B-methyl-N-triphenylborazole and bishydroxymethylcarborane; 3 - N-triphenylborazole and bishydroxymethylcarborane; 4 - B-methyl-N-triphenylborazole and diaminodimethylcarborane.

It was found that polymers synthesized from N-triphenyl and B-methyl-N-triphenylborazoles and di-(oxymethyl)-carborane possessed the highest thermal stability. It is suggested that the increased stability is due to the presence of the highly stable B-O bond in the molecule. Orig. art. has: 2 graphs and 4 equations.

SUB CODE: 07,11/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 001

Card 3/3 vmb

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 14612-66 EWT(m)/T/EWP(j) WW/JW/RM

ACC NR: AP6001497 (A) SOURCE CODE: UR/0191/65/000/012/0019/0021

AUTHORS: Shapatin, A. S.; Golubtsov, S. A.; Solov'yev, A. A.; Zhigach, A. F.; Siryatskaya, V. N. 37 B

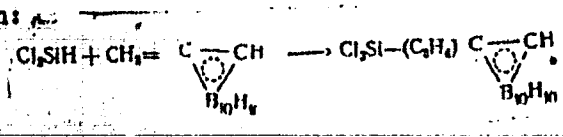
ORG: none

TITLE: Addition of hydrides of silicon chlorides to alkenyl carboranes 7,14,15

SOURCE: Plasticheskiye massy, no. 12, 1965, 19-21

TOPIC TAGS: silane, organic synthetic process, catalysis, silicon compound, catalyst, ferric chloride

ABSTRACT: A simplified method for synthesizing carborane siliconorganic monomers 7 is offered. It consists of adding chlorosilicon hydrides to alkenyl carboranes, according to the equation:



The following reactions were studied: methyldichlorosilane with carborane derivatives containing vinyl, isopropenyl, propenyl, or butenyl groups; trichlorosilane and dimethyl chlorosilane with vinyl and isopropenyl carborane; ethyl dichlorosilane and phenyldichlorosilane with isopropenylcarborane. Elementary analysis and

Card 1/2 UDC: 678.84

2

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 14612-66

ACC NR: AP6001497

physical properties of the resulting 10 compounds are reported. In the absence of the catalyst the reaction occurs only above 200C and results in very low yields. The yields increase to 80% and more, and the required temperatures are lowered by the addition of chloroplatinic acid or ferric chloride as catalysts. Orig. art. has: 2 tables and 1 equation.

SUB CODE: 07/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ASSOCIATION: none

SUBMITTED: 02Feb62 ENCL: 00 SUB CODE: MA

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

POTAPOVA, T.V.; SVITSYN, R.A.; ZHIGACH, A.F.; LAPTEV, V.T.; PERSIANOVA, I.V.; SOROKIN, P.Z.

Effect of a carborane ring on the properties of some C-derivatives of the carborane (2, 10) series. Zhur. neorg. khim. 10 no.9:2080-2083 S '65. (MIRA 18:10)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ANTIPIN, L.M.; ZHIGACH, A.F.; LARIKOV, Ye.I.; POPOV, A.F.

Investigating the direct synthesis of triisobutylaluminum. Khim.prom. 41 no.4:14-15 Ap '65. (MIRA 18:8)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 13357-66 (A) EWT(m)/EWP(j)/T/EWA(c) RPL WW/JW/JWD/RM

ACC NR: AP6002477 SOURCE CODE: UR/0191/66/000/001/0021/0022

AUTHORS: Sobolevskiy, M. V.; Zhigach, A. F.; Grinevich, K. P.; Sarishvili, I. G.; Siryatskaya, V. N.; Kozyreva, Ya. M.

ORG: none

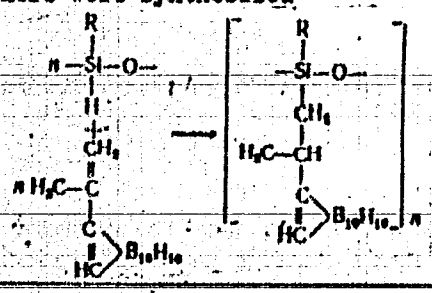
53
B

TITLE: Synthesis of polyalkylcarboranesiloxanes 44,55

SOURCE: Plasticheskiye massy, no. 1, 1966, 21-22

TOPIC TAGS: polymer, boron compound, borane, organosilicon compound, organoboron compound

ABSTRACT: To extend the available data on the properties of carboranesiloxane polymers described in J. Polymer Sci., 2 No. 1 (1964); 2 No. 7 (1964), the following polyalkylcarboranesiloxane polymers were synthesized



Card 1/2 UDC: 678.84

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 13357-66

ACC NR: AP6002477

where $R: CH_3, C_2H_5, C_6H_5$

The effects of pressure, temperature, and reaction time on the degree of reaction were studied. The weight loss of the polymers at 140C and 210C was determined as a function of time, and the results are shown graphically in Fig. 1.

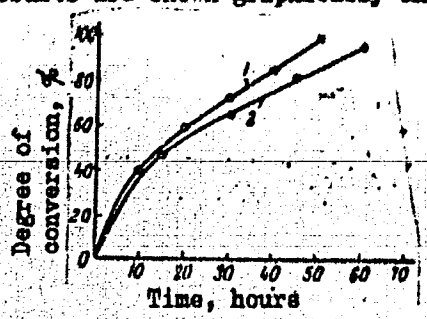

Fig. 1. Dependence of the degree of conversion on the reaction time for the reaction between polyethylhydrosiloxane and isopropenylcarborane at 250C. 1 - polyethylhydropolyethylcarboranesiloxane; 2 - polyethylcarboranesiloxane.

It is noted that polyethylcarboranesiloxane has a greater thermal stability than polyethylhydropolyethylcarboranesiloxane and the initial polyethylhydrosiloxane. Orig. art. has: 4 graphs and 2 equations.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 003

Card 2/2

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AP6006312 SOURCE CODE: UR/[illegible]

AUTHOR: Korneyev, N.N.; Zhigach, A.F.; Kost, M. Ye.; Korotkov, Ye. N.

ORG: none

29

TITLE: Method of preparing triethylaluminum 7,44,55

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no.2, 1966, 27
Class 12, No. 177884

TOPIC TAGS: organic chemistry, cerium, neodymium, catalyst specific reaction

ABSTRACT: A method of preparing triethylaluminum by direct synthesis via formation of diethylaluminum hydride in the presence of a hydrogenation catalyst is presented; it is distinguished by the use of lanthanides, such as lanthanum, cerium, neodymium, or their hydrides as catalysts, for the purpose of increasing the rate of hydrogenation and the efficiency of the process. [11]

SUB CODE: 07 / SUBM DATE: 22May63 / ATD PRESS: 4210

Card 1/1 mst UDC: 547.212'256.2.05

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 44590-66 EWT(m)/EWP(j) WW/JW/JWD/RM

ACC NR: AP6015678 (A) SOURCE CODE: UR/0413/66/000/009/0077/0077

INVENTOR: Sobolevskiy, M. V.; Grinevich, K. P.; Zhigach, A. F.; Sarishvili, I. G.

ORG: none

TITLE: Method of obtaining polyorganoborosiloxane polymers. Class 39, No. 181299

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 77

TOPIC TAGS: polymer chemical, organosilison compound, polyorganoborosiloxane

ABSTRACT: An Author Certificate has been issued for a method of obtaining polyorganoborosiloxane polymers by the interaction of bishydroxymethylcarborane with organosilicon compounds upon heating. To expand the variety of initial compounds, an epoxypropoxyphopyltriethoxysilane is suggested as the organosilicon compound. [Translation] [NT]

SUB CODE: 11/ SUBM DATE: 24Feb65/

Card 1/1 UDC: 678.84'86.27

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AR6033145 SOURCE CODE: UR/0064/66/000/010/0020/0022

AUTHOR: Bezukh, Ye. P.; Zhigach, A. F.; Larikov, Ye. I.; Popov, A. F.

ORG: none

53
52
B

TITLE: Synthesis of methylaluminum sesquichloride and trimethylaluminum 27

SOURCE: Khimicheskaya promyshlennost', no. 10, 1966, 740-742

TOPIC TAGS: methylaluminum sesquioxide, trimethylaluminum, ~~one-step process~~, CHEMICAL synthesis, propellant, ALUMINUM COMPOUND, CHLORIDE

ABSTRACT: Direct one-step preparative methods for methylaluminum sesquichloride (a mixture of $Al(CH_3)_2Cl$ and $AlCH_3Cl_2$) and trimethylaluminum are described. Methylaluminum sesquichloride was synthesized in a sealed reactor (Popov, A. F. and N. N. Korneyev, Author Certificate 168691. 1962, Byul. izobr, no. 5, 1965) from iodine-activated PA-4 aluminum powder or ASD-T aluminum powder and methyl chloride in cyclohexane solution at a 2/3/4.65 constant initial molar ratio. The optimum preparative conditions were determined (see Table 1) to be 50—70C for 6—7 hr. The process was tested on a previously developed continuous reactor for ethylaluminum sesquioxide (Zhigach, A. F., A. F. Popov, and Ye. P. Bezukh Byulleten' tekhn.-ekonom. informatsii GOSINTI, v. 2, 1962, p. 39). Trimethylaluminum was synthesized as follows:
$2Al + 3Mg + 6CH_3Cl \rightarrow 2Al(CH_3)_3 + 3MgCl_2$ from AST-D aluminum powder PMF-4 magnesium

Card 1/3 UDC: 547.256.2

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AR6033145

Table. 1. Effect of temperature and reaction time on the methylaluminum sesquioxide yield and reaction rate

Reaction time	Temperature, °C	Composition of the reaction products, %		Overall yield of reactions based on Al, %	Average reaction rate, mol/g-atom-hr)
		$Al(CH_3)_2Cl$	$AlCH_3Cl_2$		
ASD-T aluminum powder					
20	30	51,2	48,7	15,9	0,001
20	50	54,2	45,8	66,5	0,0166
20	50	54,8	45,2	99,0	0,0247
20	70	54,8	45,1	99,1	0,0246
20	90	50,0	50,0	99,5	0,0248
20	110	46,0	54,0	95,0	0,0238
20	130	29,0	71,0	65,0	0,0163
20	140	10,0	90,0	45,0	0,0113
20	150	8,0	92,0	22,0	0,0055
2,5	55	48,0	52,0	39,2	0,078
5	55	48,9	51,1	76,5	0,066
6	55	50,4	49,6	97,3	0,081
10	55	50,0	50,0	99,0	0,046
15	55	50,5	49,5	98,1	0,033
20	55	49,8	50,2	98,0	0,024
PA-4 aluminum powder					
10	70	—	—	—	0
5	70	52,30	47,70	71,0	0,071
7	70	57,00	43,00	88,0	0,062
10	70	56,44	43,56	89,0	0,044

Card 2/3

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

L 02995-67
ACC NR: AR6033145

and methyl chloride in cyclohexane solution at a constant 2/3/6/3 initial molar ratio. The optimum preparative conditions were determined (see Table 2) to be 120C for 5 hr.

Table 2. Effect of temperature on trimethylaluminum yield and reaction rate (Reaction time, 5 hr)

Temperature, °C	Composition of the reaction products		Overall yield of reaction products based on Al, %	Average reaction rate, mol/(g-atom-hr)
	$Al(CH_3)_3$	$Al(CH_3)_2Cl$		
100	68,6	31,4	83,2	0,167
105	67,8	32,2	86,5	0,173
120	72,7	27,3	97,5	0,195
130	69,5	30,5	85,0	0,170
150	65,8	34,2	47,3	0,095

The drop of $Al(CH_3)_3$ yield and reaction rate at higher temperatures was explained as its thermal decomposition catalyzed by titanium contaminating the aluminum. Orig. art. has: 2 tables.

SUB CODE: 07, 19/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 030/ ATD PRESS: 5099

Card 3/3 awm

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AP7001492 SOURCE CODE: UR/0192/66/007/006/0883/0885

AUTHOR: Vilkov, L. V.; Mastryukov, V. S.; Zhigach, A. F.; Siryatskaya, V. N.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Electron diffraction study of the neocarborane molecule

SOURCE: Zhurnal strukturnoy khimii, v. 7, no. 6, 1966, 883-885

TOPIC TAGS: neocarborane, molecular structure, electron diffraction, icosahedron, icosahedral model, electron diffraction analysis, isomerization

ABSTRACT: The structure of the neocarborane molecule $B_{10}C_2H_{12}$ has been studied by the electron diffraction method in the gaseous phase. Neocarborane was prepared by thermal isomerization of ortho-carborane at 480C for 30 hr. Experimental curves of the molecular scattering component sM(s) and of the radial distribution f(r), and a table of the positions of maxima on the f(r) curve are given in the source. Experimental data were compared with the respective data for a model of a regular icosahedron with carbon atoms meta to each other. This model was in accordance with earlier assumptions on the structure of neocarborane, and the chemical and physical properties of the compound.

Card 1/2 UDC: 539.27

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AP7001492

It was shown that this icosahedral model is in complete agreement with electron diffraction data. The basic parameters of the neocarborane molecule are: r(BB) = r(BC) = 1.77$_5$ ± 0.01 Å; r(BH) = 1.21 ± 0.03 Å; [r(CH) = 1.10 Å]. Orig. art. has: 2 figures and 1 table. [W. A. 77] [BO]

SUB CODE: 07, 21/ SUBM DATE: 16Mar66/ ORIG REF: 005/ OTH REF: 012

Card 2/2

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AP6035823 (N) SOURCE CODE: UR/0413/66/000/020/0030/0030

INVENTOR: Antipin, L. M.; Bondarevskaya, L. B.; Vladytskaya, N. V.; Danilov, S. I.; Zhigach, A. F.; Larikov, Ye. I.; Snyakin, A. P.

ORG: none

TITLE: Method of synthesizing lithium-aluminum hydride. Class 12, No. 186983

SOURCE: Izobreteniya, promyshlenyye obraztsy, tovarnyye znaki, no. 20, 1966, 30

TOPIC TAGS: lithium aluminum hydride, chemical synthesis

ABSTRACT: This Author Certificate introduces a method of synthesizing lithium-aluminum hydride by a reaction of sodium-aluminum hydride with lithium chloride in diethyl ether. To accelerate the process, it is carried out with additions of aluminum trialkyls. In a variant of the synthesizing process, aluminum-trialkyls are added in a quantity of 1—7%.

SUB CODE: 07 / SUBM DATE: 22Oct64/

Card 1/1 UDC: 661.968.546'621'34'11

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ACC NR: AP7002544 (A,N) SOURCE CODE: UR/0413/66/000/023/0019/0019

INVENTOR: Popov, A. F.; Korneyev, N. N.; Korotkov, Ye. N.; Zhigach, A. F.; Rybakova, L. A.; Zakharov, G. S.; Kuritsyn, V. A.; Krol', V. A.; Lebedev, S. I.; Rabotnov, V. V.; Solov'yev, V. V.

ORG: none

TITLE: Preparative method for alkylaluminums. Class 12, No. 188973

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 23, 1966, 19

TOPIC TAGS: alkylaluminum, chemical synthesis, aluminum compound, HYDROCARBON

ABSTRACT: An Author Certificate has been issued for a method of preparing alkylaluminums. The method involves the reaction of aluminum with hydrogen and olefins in the presence of trialkylaluminum and of a halide of a group IV or V metal. [W. A. 77] [BO]

SUB CODE: 07/ SUBM DATE: 18Apr64

Card 1/1 UDC: 547.256.2.07

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F.; FINKEL'SHTEYN, M.Z.; TIMOKHIN, I.M.

Effect of a low molecular preparation and gel-type fraction of the carboxymethyl cellulose on the stabilizing property of carboxymethyl esters of cellulose in drilling muds. Izv. vys. ucheb. zav.; neft' i gaz 2 no.6:27-31 '59. (MIRA 12:10)

1.Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I.M. Gubkina.
(Cellulose) (Oil well drilling fluids)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

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ZHIGACH, K.

CA

23

Physicochemical properties of sulfite lye and lignosulfonic acids. I. S. A. Averbakh and K. Zhigach. *Lesokhim. Prom.* 9, No. 9, 14-17; No. 1[illegible], 23-6(1936).—As shown by electrophoresis, the colloid of sulfite lye is negatively charged. The ppt. formed during the electrophoresis contained up to 60% $Ca(OH)_2$. An org. portion of the lye was adsorbed by animal charcoal and was not adsorbed by kieselguhr. A decrease of elec. cond. of the soln. after adsorption with animal charcoal and kieselguhr was caused by partial adsorption of volatile acids. An org. portion of dialyzed lye was also adsorbed only by charcoal; its sp. elec. cond. in all cases changed but slightly. After adsorption with charcoal and kieselguhr p_H of the dialyzed lye sharply increased; in the case of charcoal adsorption p_H increased from 3.08 to 6.08 and in the case of kieselguhr from 3.08 to 6.7. The lye (dialyzed) changed in color after adsorption with charcoal and kieselguhr from light yellow to brown. The increase of p_H is explained (a) by adsorption of AcOH, H_2SO_3, H_2SO_4 and other acids which were not removed by dialysis and (b) by adsorption of easily split-off SO_2. The p_H cannot be detd. in the undialyzed lye with H or quinhydrone electrodes, because of poisoning. The salting-out effect of lignosulfonic acids with NaCl increased with a decrease of p_H. In alk. medium the depolymerization of lignosulfonic acids proceeded slowly; therefore the percentage of salted-out acids decreased with time. In acid medium the lignosulfonic acids did not change in degree of dispersion. The thermal treatment of sulfite lye, especially in the acid soln., decreased the dispersion of lignosulfonic acids and doubled the percentage of salted-out acids (with NaCl). The acids having av. dispersion mainly underwent polymerization during thermal treatment. Evapn. of the lye did not increase the percentage of salted-out acids. An investigation of diffusion properties of lyes and salted-out fraction and ultramicroscopic observation confirmed the deductions from the salting-out results. Data are tabulated.

A. A. Podgoray

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

PROCESSES AND PROPERTIES INDEX

Methods of determining surface tension and their practical application. K. V. Zhigach. *Zavodskaya Lab.* 6, 699-700(1937).—A discussion of literature with 10 references. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

CA

2

Effect of surface-active substances on structure formation in gelatin sols. K. E. Zhigach, P. A. Rebinder and G. G. Edel'man. *Compt. rend. acad. sci. U. R. S. S.* 21, 392-6(1938) (in English).—Surface-active colloids, such as albumin, the sol. part of tragacanth and saponin, do not form gels in very low concen. (0.1, 0.5 and 1.5%, resp.) in water, whereas the surface-inactive colloids such as starch (0.1% in water), agar-agar and the slightly active gelatin (1% in water) do. In surface-inactive colloids the polar and nonpolar groups are apparently arranged symmetrically. Structure formation (e. g., gel formation) is more difficult the higher the concen. of surface-active fraction in a given sol, and the basis of gel formation is strong vol. solvation. Surface-active substances, such as EtOH, PrOH, BuOH and urea, when present in 0.5% and 0.75% gelatin sols decrease gel formation, as shown by viscosities taken at intervals up to 90 hrs., by union of their polar groups with the polar groups of the micelles. George Ayers

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CN

13

Application of aluminum chloride as a softener of mineral strata in a cable drilling. L. A. Shreiner and K. P. Zhigach. *Gornyi Zhur.* 114, No. 8-9, 26-31(1938).—Drilling of quartzite is accelerated 80% by using 0.5-0.75% soln. of $AlCl_3$. Data are tabulated. Eighteen references. A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

LEONIDOV, V.I.; ZHIGACH, K.F.; MUKHIN, L.K.

Drilling wells for oil under the complex geological conditions of Turkmenia. Izv. vys. ucheb. zav.; neft' i gaz 4 no.12:37-41 '61. (MIRA 16:12)

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

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F.; REBINDER, P.A.

"The Surface Activity of Hydrophilic Colloids"; Zhur. Fiz. Khim., 12, No. 1, 1939. Colloido-Electro-chemical Institute, Academy of Sciences USSR, Division of the Physico-chemistry of Dispersion Systems, Moscow. Rcd 21 May 1938.

[redacted] Report U-1613, 3 Jan. 1952.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

1ST AND 2ND ORDER

PROCESSES AND PROPERTIES INDEX

Surface activity of hydrophilic colloids. K. F. Zhigach and P. A. Rebinder. *J. Phys. Chem.* (U. S. S. R.) 13, 94-108(1939).—Expt. data on the formation of surface layers in gelatin, albumin, saponin, tragacanth, starch and agar agar sols at 20 and 35° are given in the form of surface-tension-time, σ-τ, curves. The $\log(\sigma_1-\sigma_2) - \tau$ functions for albumin are linear for concns. from 0.05 to 4.0%. The velocity consts. for the unimol. reactions vary with the temp. and with the colloid concn. F. H. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

14

Boring holes with flushing in conjunction with agents for decreasing the hardness of rocks. L. A. Shreiner and K. F. Zhigach.—*Akad. Nauk S. S. S. R., Kolloido-Elektrokhim. Inst.* 1943, 63 pp. (Separate).—The rate of boring holes in rocks during mining, etc., can be increased by 20-60% and tool wear decreased by 10-35% through use of 0.05-0.25% of various agents added to the water used in wet drilling to cool the drill and to flush the disintegrated rock from the hole. The kind and amt. of agent required for optimum results depend on the type of rock. The following recommendations are made. Quartziferous rocks. (*a*) Quartz, sandstone bonded with silica, volcanic rocks of high silica content—$AlCl_3$ 0.02-0.1%, NaCl, $MgCl_2$ or KCl 0.1-0.5%, naphthenic acid soap or similar materials, e.g., ordinary soap, petroleum sulfonate 0.25-0.5%, (*b*) sandstone with argillaceous bonding material—NaCl 0.25%, (*c*) sandstone with calcareous-argillaceous bonding material—NaCl 0.25% together with Na_2CO_3 0.25%, (*d*) sandstone with calcareous bonding material—Na_2CO_3 0.25%, lime 0.05-0.07%. Silicate rocks, such as granites and other rocks with a high content of silicate minerals and limited quartz content—naphthenate soap 0.25-0.5% together with Na_2CO_3 0.25%. Calcareous rocks. (*a*) Limestones and dolomites—Na_2CO_3 0.25%, Na_2PO_4 0.1%, Na_2SiO_3 0.025%, (*b*) calcareous rocks contg. considerable silica—same as for other calcareous rocks but with addn. of 0.25% NaCl. Ores. (*a*) Martite, hematite, magnetite, pyrite—$AlCl_3$ 0.1%, $FeCl_3$ 0.1%, NaCl 0.1-0.25%, (*b*) siderite—Na_2CO_3 0.25%, CaO 0.05-0.07%. Argillaceous rocks. (*a*) Schists and argillite—NaCl 0.25-0.5%, (*b*) argillaceous rocks contg. considerable free silica NaCl 0.25%, (*c*) argillaceous calcareous rocks NaCl 0.25% together with Na_2CO_3 0.1-0.25%. The results of field tests are tabulated. The agents recommended are thought to act by increasing the ability of water to penetrate and remain in tiny surface cracks in the rock; this prevents such cracks from closing again by "self-healing." In soft rocks such agents are important only for boring deep holes or as an aid in preventing sticking of the drill. The agents recommended are not effective when used in boring calcareous rocks contg. bitumen, as such rocks are wetted with great difficulty. The prepn. and analysis of solns. of the agents are discussed. Equipment for prepg., distributing and utilizing the solns. in mining operations is described. Methods for testing the effectiveness of agents used in boring are reviewed.

J. W. Perry

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F.

a50/2480 (Hardness reducers in drilling. A physicochemical method of facilitating the mechanical destruction of rocks during drilling) Poniziteli Tverdosti v Burenii. Fiziko-Khimicheskii Metod Oblegcheniia Mekhanicheskogo Razrusheniia Tverdykh Gornykh Porod pri Burenii, Moscow-Leningrad, 1944. 199 pages.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K. F.

PA 46/49T4

USSR/Academy of Sciences Mar 49
Mineral Dressing
Flotation

"In Honor of Academician P. A. Rebinder," Prof K. F. Zhigach, 2 pp
"Vest Ak Nauk SSSR" No 3

Report emphasizes Rebinder's work in setting up new field of physicochemical mechanics of solids. His work has developed new possibilities for intensifying and improving technological processes of metalworking, mine drilling, and grinding of solid materials. His later work on investigation of thixotrophy and structural-mechanical characteristics of colloidal-dispersed systems is closely related to this field. His work on flotation dressing of ores has proved valuable to the mining industry.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

CA.

Coaxial-type rotation viscometer. K. F. Zhigach and D. B. Zlotnik (Gubkin Petroleum Inst., Moscow). Zavodskaya Lab. 15, 542-7(1949).—Detailed description is given of a viscometer suitable for rates of shear from 0.1 to 1000 sec.$^{-1}$ with the speed of rotation of the outer cone accurately variable from 0 to 80 r.p.m. For liquids with a viscosity η of the order of 0.01 poise, proportionality between the moment and the speed of rotation, up to 1000 sec.$^{-1}$, obtains with a clearance between the inner and the outer cone, d = 0.2-1.0 mm.; with liquids with $\eta \sim 0.04$, the crit. d of turbulence is 2 mm., and with high-η liquids (0.2 poise) the proportionality holds at any d. The app. needs to be calibrated for a given d with a liquid of known η. Measurements are carried out by increasing continuously

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the speed of rotation at a given max. d, then repeating it at ever smaller d. The cot of the linear portions of the speed of rotation (ω)-angle of torsion (α) curves, gives the plastic viscosity. The Bingham shearing stress is given by the intercepts detd. by extrapolation of the linear portions. The apparent effective viscosity is given by $\eta = K\alpha/\omega$, where K is a const. of the app. at the given d. The dynamic limiting shearing stress is $\Phi_0 = \alpha N/SR$, where N = modulus of torsion of the wire, S = lateral surface area of the suspended cone, R = its effective radius.

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BCS

Chemistry & Physics

606. The rate of deformation and mechanical properties of the structures in clay slips.—K. F. Zhigach and E. O. Kister (*Dok. Akad. Nauk.*, U.S.S.R., 67, No. 6, 813, 1949). It is shown that the thixotropic structure that develops in aged clay slips can be broken down stepwise, if the rate of deformation of the slip is sufficiently slow. Some results of this "pulsation" are given for bentonite slips. (3 figs.)

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2

EA

Rate of deformation and mechanical properties of structures in clay suspensions. K. P. Zhigach and R. G. Kister. *Doklady Akad. Nauk S.S.S.R.* 69, 813-15(1949). — In investigations in the app. of Veller-Rebinder (*C.A.* 40, 5063[8]), stress-strain diagrams of clay suspensions show an initial elastic portion of rapidly ascending stress P, followed by a linear fall of P corresponding to destruction of structure, and ending in the horizontal viscous-flow branch. This latter portion is the most variable, depending on the conditions of application of the stress, the age, and the nature of the system. The strength of the structures, expressed by the limiting static shearing stress θ, also varies within very wide limits depending on the nature of the clay; the strength of montmorillonite structures is about 10-100 times as great as that of kaolinite structures. It increases with a power of the concn. of the suspension, e.g. with its 3rd power in the case of Turkmen bentonite. The strength of this clay, in 12.2% suspension, on standing 1 month, increased by a factor of 6-7, with θ attaining 5430 dynes/sq. cm. Destruction of the structure of clays is generally of the brittle type; plastic destruction is proper only to weak structures. Increased rate of deformation causes only a slight increase of the modulus of elasticity. The effect of the rate on θ is much more pronounced. At any concn., θ first increases linearly with the rate, then becomes independent of it. This invariance apparently is due to the rate of relaxation being much slower than the rate of deformation. In some very dense suspensions, θ increases again at very high rates. With a sensitive dynamometer, the viscous-flow branch shows characteristic pulsations, particularly marked at low rates of deformation. The max. rate at which the pulsations are still noticeable was higher in more concd. and riper suspensions.

N. Thon

1957

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

CA

2

Structural viscous properties of colloidal clay suspensions. K. P. Zhigach and D. R. Zlotnik (All-Union Petroleum Research Inst.). *Doklady Akad. Nauk S.S.S.R.* 72, 527-30(1950).—Curves of the speed of rotation (r.p.m.) against the angle of torsion detd. with thixotropic low-concn. (3-7%) aq. suspensions of bentonitic and subbentonitic clays, in a conical-type rotation viscometer with different (0.20-0.02 cm.) clearances Δr between the outer and the inner cone, pass through a common point M_1 on the axis of abscissas, not through the origin. The plots are curvilinear at low speeds of rotation, becoming rectilinear at greater speeds. Retrapolation of the rectilinear portions to intersection with the axis of abscissas gives an intercept M_2 proportional to Bingham's shearing stress θ. The intercept detd. by the intersection of the axis of abscissas and the perpendicular at the point of beginning linearity, gives Houwink's upper limit M_3. Contrary to the theoretically predicted decrease of M_3-M_2 with decreasing Δr, that difference actually increases with Δr decreasing from 0.20 to 0.02 cm. Consequently, of the 3 magnitudes M_1, M_2, and M_3, only the lowermost, M_2, the only one to be independent of Δr, has real significance as characteristic of the structured liquid. This parameter termed the dynamic limiting shearing stress θ_d expresses the strength of the residual structure at which viscous flow begins, or of the structure almost instantaneously restored after perturbation. On the other hand, the strength of the thixotropic structure, characterized by the static shearing stress θ_s, depends on the length of the rest period. The dynamic θ_d is equal to the min. θ_s corresponding to an infinitely short rest period; under any conditions, θ_d is not greater than θ_s. The simple Bingham-Goodeve equation $\varphi_0 = \varphi_0 + \theta/\dot{s}$ (where $\dot{s} = ds/d\tau$) is applicable only in the range of low $\dot{s}$ up to 50 sec.$^{-1}$; at high rates of shear, up to 1000 sec.$^{-1}$, θ and φ_0 are no longer const., but θ increases and φ_0 decreases with decreasing Δr and increasing $\dot{s}$. However, in contrast to the plastic viscosity φ_0 and to θ, the effective viscosity φ_0, detd. at different Δr, remains nearly const. in a wide range of $\dot{s}$, approx. from 200 sec.$^{-1}$ upwards (up to about 1000 sec.$^{-1}$). That limiting const. φ_0 at high $\dot{s}$ is an important characteristic of the flow of a structured liquid. In a capillary viscometer, θ decreases with increasing diam. of the capillary; φ_0 increases, i.e. the variation with the diam. is analogous to the variation with Δr in a rotation viscometer.

N. Thon

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Chem A

2

Clay preparations for drilling. [illegible] Zhigach, R. G. Kister, and D. R. Zlotnik. *Doklady Akad. Nauk S.S.S.R.* 72, 1103-6(1950).—Air-dried briquets were made from mixts. of subbentonite clay, caustic soda, and alk. [illegible] humates. The briquets were used alone or as admixts. to increase colloidal characteristics of local clays. The briquets are dispersed well within 30-50 min. in a clay mixer. Use of briquets reduced clay consumption to 30-35 tons per well and increased speed of drilling. In drilling sulfate and carbonate rocks with alk. clay briquets, there are formed natural limestone-gypsum-clay fluids with good structural-mech. characteristics but with a somewhat high water yield which can be reduced by addn. of stabilizers. B. Z. K.

1907

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F.; KURYSHEV, D.D.

Using the adsorption method to desalt sea water for preparing drilling fluids. Trudy MNI no.11:203-210 '51. (MLRA 10:3)
(Oil well drilling fluids) (Sulfocarbon)
(Sea water)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F.

ZHIGACH, K.F., professor, redaktor; STEPANYANTS, A.K., professor, redaktor; TIKHOMIROV, A.A., kandidat ekonomicheskikh nauk, redaktor; KARAPETYAN, R.O., kandidat filosoficheskikh nauk, redaktor; CHERNOZHUKOV, N.I., professor; YERSHOV, P.R., redaktor; GUREVICH, V.M., redaktor; MURAV'YEV, I.M., professor, redaktor; SHCHELKACHEV, V.N., professor, redaktor; CHARYGIN, M.M., professor, redaktor; DUNAYEV, F.F., professor, redaktor; KUZMAK, Ye.M., professor, redaktor; POLOSINA, A.S., tekhnicheskiy redaktor.

[Ninth scientific and technological conference of 1954]Deviataia nauchno-tekhnicheskaia konferentsiia 1954. g. Moskva, Gos. nauchno-tekhn.izd-vo neftianoi i gorno-toplivnoi lit-ry. 1955. 205 p. [Microfilm] (MLRA 8:9)

1. Moscow. Moskovskiy neftianoy institut. Nauchnoye studencheskoye obshchestvo.
(Geology) (Petroleum)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F., professor, otvetstvennyy redaktor; MURAV'YEV, I.M., professor, redaktor; TIKHOMIROV, A.A., kandidat ekonomicheskikh nauk, redaktor; YEGOROV, V.I., kandidat ekonomicheskikh nauk, redaktor; CHARYGIN, M.M., professor, redaktor; DUNAYEV, F.F., professor, redaktor; NAMETKIN, N.S., dotsent, redaktor; BIRYUKOV, V.I., dotsent, redaktor; YEGOROV, A.F., dotsent, redaktor; CHARNYY, I.A., professor, redaktor; CHERNOZHUKOV, P.I., professor, redaktor; KUZMAK, Ye.M., professor, redaktor; DOKHNOV, V.N., professor, redaktor; PANCHENKOV, G.M., professor, redaktor; ALMAZOV, N.A., dotsent, redaktor; TAGIYEV, E.I., redaktor; GUREVICH, redaktor; ZHIGACH, K.F., redaktor; DAYEV, G.A., vedushchiy redaktor; GENNAD'YEVA, I.M., tekhnicheskiy redaktor

[The tenth scientific and technical conference, 1955] Desiataia nauchno-tekhnicheskaia konferentsiia, 1955 g. Leningrad, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, Leningradskoe otd-nie, 1956. 167 p. (MIRA 9:7)

1. Moscow. Moskovskiy neftyanoy institut. Nauchnoye studencheskoye obshchestvo
(Petroleum engineering) (Petroleum geology)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

Zhigach [redacted] K F

Viscosity reducers for weighted clay suspensions. K. F. Zhigach, I. B. Adel and [illegible] Zagorinistr. Vodyanoe Khoz. 34, No. 3, [illegible] (1958). [illegible] and willow extr. and nutanes [illegible] drilling fluids [illegible] and aromatic hydrocarbons [illegible] linked by CH_2 groups. Tannin ext. and sintane were found most effective for lowering the viscosity at min. hematite requirements for sp. gr. adjustment. The viscosity regulators were also found effective as emulsion stabilizers, especially in the presence of some alkali. W. M. S.

3

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K.F.; ADEL', I.B.; MUKHIN, L.K.; DEMISHEV, V.N.; GONCHAROV, N.N.

Oil-base drilling fluids for revealing the productive strata and for drilling under complex conditions. Neft.khoz.34 no.8:9-14 Ag '56. (MLRA 9:10)
(Oil well drilling fluids)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064730002-7

ZHIGACH, K. F.

Finkel'shteyn, M. Z., K. F. Zhigach, Ye. M. Mogilevskiy, T. A. Tibilova, and A. I. Malinina. "Carboxymethyl Ethers of Cellulose and Their Use in Industry"

Zhigach, K. F., and D. D. KURYSHEV. "Development of a Method of Softening Sea Water for Use in the Preparation of Heavy Weight Drilling Mud"

Zhigach, K. F, Mukhin, L. K. and Demishev, V. N., "Physico-Chemical Basis in the Preparation of Anhydrous Solutions."

Problems of Petroleum Production and Petroleum Engineering, Moscow, Neftyanoy institut, Gostpptekhizdat, 1957, 393pp. (Trudy vyp. 20)
This book is a collection of articles written by professors and faculty members of the Petroleum Inst. im I. M. Gubkin.

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ZHIGACH, K.F., doktor khimicheskikh nauk; FINKEL'SHTEYN, M.Z., kandidat khimicheskikh nauk; MOGILEVSKIY, Ye.M., kandidat tekhnicheskikh nauk.

Production and use of cellulose carboxymethyl ether in the national economy. Khim.nauka i prom. 2 no.1:76-80 '57. (MLRA 10:4)
(Cellulose)

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ZHIGACH, K.F.; PAUS, K.F.

Effect of drilling muds on the permeability of cores. Neft. khoz. 35 no.11:62-67 N '57. (MIRA 10:11)
(Oil well drilling fluids) (Rocks--Permeability)

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KUZMAK, Ye.M., prof. doktor tekhn. nauk, red.; TARAN, V.D., prof., doktor tekhn. nauk, red.; ZHIGACH, K.F., prof., red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A., kand. ekon. nauk, red.; YEGOROV, V.I., kand. ekon. nauk, red.; CHARYGIN, M.M., prof., red.; DUNAYEV, F.F., prof., red.; CHERNOZHUKOV, N.I., prof., red.; CHARNYY, I.A., prof., red.; PANCHENKOV, G.M., prof., red.; DAKHNOV, V.N., prof., NAMETKIN, N.S., doktor khim. nauk, red.; ALMAZOV, N.A., dots., VINOGRADOV, V.N., kand. tekhn. nauk, red.; BIRYUKOV, V.I., kand. tekhn. nauk, red.; TAGIYEV, E.I., red.; GUREVICH, V.M., red.; GOR'KOVA, A.A., ved. red.; FEDOTOVA, I.G., tekhn. red.

[Proceedings of the conference of technical schools on the problems of new equipment for the petroleum industry] Mezhvuzovskoe soveshchanie po voprosam novoi tekhniki v neftianoi promyshlennosti. 1958. materialy... Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry. Vol. 3. [Manufacture of petroleum industry equipment] Neftianoe mashinostroenie. 1958. 222 p. (MIRA 11:11)
(Petroleum industry--Equipment and supplies)

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CHERNOZHUKOV, N.I., prof., doktor tekhn.nauk, red.; ZHIGACH, K.F., prof., otvetstvennyy red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A., kand.ekon.nauk, red.; YEGOROV, V.I., kand.ekon.nauk, red.; CHARYGIN, M.M., prof., red.; DUNAYEV, F.F., prof., red.; KUZMAK, Ye.M., prof., red.; CHARNYY, I.A., prof., red.; PANCHENKOV, G.M., prof., red.; DAKHNOV, V.N., prof., red.; NAMETKIN, N.S., doktor khim.nauk, red.; ALMAZOV, N.A., dots., red.; VINOGRADOV, V.N., kand.tekhn.nauk, red.; BIRYUKOV, V.I., kand.tekhn.nauk, red.; TAGIYEV, E.I., red.; GUREVICH, V.M., red.; ZAMARAYEVA, K.M., vedushchiy red.; MUKHINA, E.A., tekhn. red.

[Materials of the Interuniversity Conference on Problems of New Practices in the Petroleum Industry] Materialy mezhvuzovskogo soveshchaniya po voprosam novoy tekhniki v neftyanoy promyshlennosti. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry. Vol.2. [Petroleum refining] Pererabotka nefti. 1958. 289 p. (MIRA 11:6)

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ZHIGACH, K.F.; FINKEL'SHTEYN, M.Z.; TIBILOVA, T.A.

Developing special cabozylmethyl cellulose varieties for better drilling muds and improving production techniques. Izv. vys. ucheb. zav.; neft' i gaz no.6:31-38 '58. (MIRA 11:9)

1. Moskovskiy neftyanoy institut im. akad. I.M. Gubkina.
(Cellulose) (Oil well drilling muds)

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ZHIGACH, K. F., MURAVYOV, I. M., SUKHANOV, G. M., GAZHAYEV, S. D.

"Higher and Secondary Petroleum Education in the Soviet Union."

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

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ZHIGACH, K. F., REBINDER, P. A., SERB-SERBINA, N. N., ADEL, I. N., MUKHIN, L. K., FINKELSNTEYN, M. Z., DEMISHEV, V. N., KISTER, E. G., (SECTION II)

"Phsico-Chemical and Technological Investigations of Mud Fluids Used for Drilling Wells."

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ZHIGACH, K.F.; FINKEL'SHTEYN, M.Z.; TIMOKHIN, I.M.; MOGILEVSKIY, Ye.M.

Obtaining fractions and low polymer preparations from carboxymethylcellulose and studying their physicochemical properties. Trudy MINKHiGP no.24:257-268 '59. (MIRA 13:3)
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LOPATIN, V.A.; MUKHIN, L.K.; ZHIGACH, K.F.

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1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika Gubkina.

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GORODNOV, V.D.; ADEL', I.B.; ZHIGACH, K.F. [deceased]; MOROZOVA, Ye.V.

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1. Moskovskiy ordena Trudovogo Krasnogo Znameni instituta neftekhimicheskoy i gazovoy promyshlennosti im. akad. Gubkina.

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