

ACCESSION NR: AT4008697

S/2082/63/000/044/0033/0033

AUTHOR: Paushkin, Ya. M.; Panidi, I. S.

TITLE: Synthesis of boron-nitrogen-containing compounds from boric acid

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promy*shlennosti. Trudy*, no. 44, 1963. Neftekhimiya, pererabotka nefi i gaza, 33-38

TOPIC TAGS: nitrogen containing organoboron compound, boric acid, boric acid, nitrogen derivative, boric acid derivative, boric acid.arylamino derivative, boric acid. alkylamino derivative, boronic acid.anilino-. polymer with urea

ABSTRACT: A new class of compounds containing the boron-nitrogen bond, the arylamino-boric acids, has been synthesized by direct condensation of boric acid with arylamines. The course of this reaction was found to depend primarily on the temperature at which zinc chloride is added to the mixture of boric acid and amine, as well as on the quantity of the condensation agent (aniline, p-toluidine, o-toluidine, or p-anisidine). Temperatures ranging from 130-170C were tested to determine which particular arylamino-boric acid would result and whether the end-product would be an adhesive resin. Aliphatic amines did not react, but alkylamino-boric acids could be obtained by an exchange reaction with an arylamino-boric acid. This reaction is very exothermic and, with methylamino, takes

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ACCESSION NR: AT4008698

The starting compounds were α , β -dibromoethylbenzene, 1,2-dibromoheptane and 1,2-dibromononane. After isolation of the yellow to red to brown polymers, they were subjected to infra-red and electron paramagnetic resonance spectroscopy, as well as determinations of the chemical composition, melting point and molecular weight. The polymers which were soluble in benzene had an average molecular weight of about 1000 and a melting point of 260-290C, while the insoluble polymers did not melt even at 400C. The narrow EPR band indicated the presence of paramagnetic particles in the macro-molecule. Orig. art. has: 1 figure, 3 tables and 1 structural formula.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promy*shlennosti, Moscow
(Institute of Petroleum Chemistry and the Gas Industry)

SUBMITTED: 00

DATE ACQ: 16Jan64

ENCL: 00

SUB CODE: CC, MT

NO REF SOV: 007

OTHER: 002

2/2

Card

PAUSHKIN, Ya.M.; POLAK, L.S.; VISHNYAKOVA, T.P.; PATALAKH, I.I.;
MACHUS, F.F.; SOKOLINSKAYA, T.A.

New iron-containing polymers on the basis of ferrocene
and their electrophysical properties. Vysokom. soed.
6 no.3:545-550 Mr'64. (MIRA 17:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy
promyshlennosti imeni Gubkina.

PAUSHKIN, Ya.M.; VISHNYAKOVA, T.P.; SMIRNOV, A.P.

Exothermic catalytic pyrolysis of unsaturated and aromatic hydrocarbons. Neftekhimiia 1 no.4:514-520 J1-Ag '61.
(MIRA 16:11)

1. Institut neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina.

MAZITOVA, F.N.; PAUSHKIN, Ya.M.

Synthesis of nitro derivatives of alkylated phenols. *Izv. AN SSSR Otd.khim.nauk* no.5:943-945 My '63. (MIRA 16:8)

1. Institut organicheskoy khimii AN SSSR, Kazan'.
(Phenol) (Nitro compounds)

ZHOROV, Yu.M.; Mirgaleyev, I.G.; PAUSHIN, Ya.M.

Kinetics of catalytic hydrochlorination of styrene. Neftekhimiya
3 no.3:399-404 My-Je '63. (MIRA 16:9)

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

(Styrene) (Hydrochloric acid)

YUSRI ZAKHRA; PAUSEKIN, Ya.M.

Using cobalt on aluminum oxide as a catalyst for the synthesis
of aromatic hydrocarbons of crude oil. Izv. vys. ucheb. zav.;
neft' i gaz 5 no.7:57-63 '62. (MIRA 16:7)

L. Moskovskiy institut neftekhimicheskoy i gazovoy promysh-
lennosti imeni akademika Gubkina.
(Catalysts) (Hydrocarbons)

PAUSHKIN, Ya.M.; MAZITOVA, F.N.

Synthesis of 2-amino-4-tert-alkylphenols. Izv. AN SSSR. Otd.khim.nauk
no.6:1127-1128 Je '63. (MIRA 16:74)

1. Institut organicheskoy khimii AN SSSR, Kazan'.
(Phenol)

L 16996-63

RM/WJ/JD/JW/MAY

EWP(j)/EPF(c)/EWP(q)/EWT(m)/EDB APTG/ASD PC-4/PT-4

S/204/63/003/002/006/006 77
76AUTHOR: Panahkin, Ya. M., Vishnyakova, T. P., Skolinskaya, T. A., Zhirina, I. I., and Kotova, G. G.TITLE: Alkylation of ferrocene⁷ by olefins in the presence of the compounds boron fluoride and aluminum chloridePERIODICAL: Neftekhimiya, v. 3, no. 2, 1963, 280-284²⁷

TEXT: The number of olefins used for alkylation of ferrocene was expanded, and such catalysts as the strong complex acid $H_3PO_4 \cdot BF_3$ and $BF_3 \cdot O(C_2H_5)_2$, in addition to $AlCl_3$, were used, which allowed the concept on the mechanisms of ferrocene alkylation to be widened and new previously unknown alkylferrocenes to be synthesized. A considerable increase in yields of mono-alkyl derivatives of ferrocene is reported. The mono- and di-isooctylferrocenes were obtained by the direct alkylation of ferrocene by olefins. There are 3 tables and 1 figure. The most important English-language references read as follows: T. I. Kealy, P. L. Pavson, Nature, 168, 1039, 1951; G. Wilkinscn, F. A. Gotton, J. M. Birmingham, J. Inorg. and Nucl. Chem., 2 95, 1956.

Card 1/3/ ASSOCIATION: In Moscow Institute of Petrochemical and Gas Industry imeni I.M. Gubkin.

L 18376-63 EWP(j)/EPF(c)/EWT(m)/EWP(q)/BDS ASD/ESD-3 Pc-4/Pr-4
ACCESSION NR: AP3005447 RM/WH/JD S/0204/63/003/004/0515/0517

78
75

AUTHOR: Paushkin, Ya. M.; Akutin, M. S.; Nizova, S. A.

TITLE: Preparation of polyconjugated systems by the reaction of α , β -dibromides with calcium oxide

SOURCE: Neftekhimiya, v. 3, no. 4, 1963, 515-517

TOPIC TAGS: conjugated polymer, polyvinylene, conjugation, semiconductor, organic semiconductor, dehydrohalogenation, polyphenylacetylene, (1,2-dibromoethyl)benzene, 2,3-dibromopropionitrile, (1,2-dibromoethyl)benzene-2,3-dibromopropionitrile copolymer, copolymer, calcium oxide, EPR, IR, electron paramagnetic resonance, infrared spectrum, α , β -dibromide

ABSTRACT: A method has been proposed for preparing conjugated polymers (polyvinylenes) by dehydrohalogenation of α , β -dibromo organic compounds with metal oxides or hydroxides. The method has been used to synthesize 1) polyphenylacetylene (PPA) from (1,2-dibromoethyl)benzene (I) and 2), evidently for the first time, a copolymer of I and 2,3-dibromopropionitrile (II). Reaction 1 was carried out in the presence of CaO (I/CaO molar ratio, 1/2) at 180, 200, 250,

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L 18376-63

ACCESSION NR: AP3005447

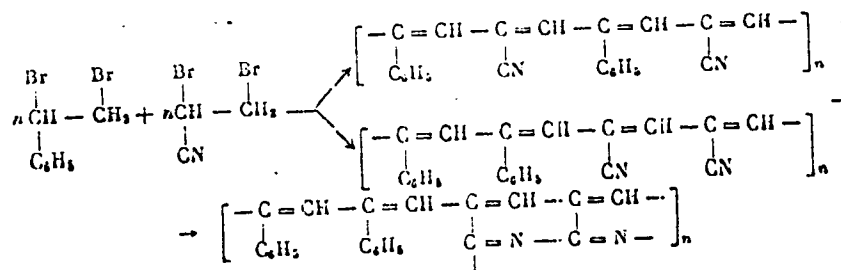
or 300C for 2, 4, or 6 hr; the PPA was purified by multiple reprecipitation. The PPA yield was 66—57%. Polydispersity of the PPA prepared at 200C for 6 hr was determined by fractional precipitation. Four fractions were obtained which were yellow to black in color, softened at 175—182 to 250C, and had molecular weights of 600—1600. The average molecular weight was 1000—1100. Reaction 2 was carried out at 200C for 6 hr, with a I/II molar ratio of 1/1. The copolymer was dark brown, slightly soluble in formamide, and highly soluble in concentrated sulfuric, hydrochloric, or phosphoric acid; its softening point was below 450C. The thermomechanical curve for PPA of molecular weight 1600 showed that it can exist in the glassy or liquid state, but not in the high-elastic state. EPR and IR spectra for PPA and the copolymer confirmed their polyconjugated structure. All the PPA fractions except that having the lowest molecular weight showed a narrow EPR signal with an unpaired-electron concentration of 10^{17} /g; in the copolymer this concentration was 2.7×10^{18} /g. The IR spectrum of PPA was identical with those obtained by Yu. Sh. Moshkovskiy, N. D. Kostrova, and A. A. Berlin. (Vy*sokomol. soyedineniya, 3, 1669, 1961).

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L 18376-63

ACCESSION NR: AP3005447

IR spectra suggest the following course for the copolymerization: 1



It is assumed that by varying the initial dibromo compound, conjugated polymers with various aryl and alkyl side groups can be obtained. Orig. art. has: 2 formulas, 1 table, and 1 figure.

Card 3/4

L 18376-53

ACCESSION NR: AP3005447

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promy*shlennosti
im. I. M. Gubkina (Moscow Institute of the Petrochemical and Gas Industry);
Nauchno-issledovatel'skiy institut plastmass (Scientific Research Institute of
Plastics)

SUBMITTED: 20Nov62

DATE ACQ: 06Sep53

ENCL: 00

SUB CODE: CH, MA

NO REF SOV: 001

OTHER: 002

Card 4/4

L 18954-63

EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW/MAY

ACCESSION NR: AP3006530

S/0191/53/000/009/0009/0010

AUTHORS: Paushkin, Ya. M.; Nizova, S. A.; Gayevaya, V. S. 69

TITLE: The synthesis of polyvinyl hydrocarbons by means of dehydrohaloid polymerization

SOURCE: Plasticheskiye massy*, no. 9, 1963, 9-10

TOPIC TAGS: polymerization, polyvinyl, dehydrohaloid polymerization, dibromoethylbenzol, dichloroethylbenzol, polyphenylacetylene

ABSTRACT: Authors studied the preparation of polyvinyl compounds by means of dehydrohaloid polymerization of Alpha, Beta-dibromoethylbenzol and Alpha, Beta-dichloroethylbenzol in the presence of oxide salts of metal hydroxides. A new method for the preparation of polyvinyl hydrocarbons by means of interlinking reaction of dehydrohaloid polymerization of the dehalogenized monomeric derivatives has been proposed. Polyphenylacetylene was obtained by the proposed method. Apparently, it is possible to obtain polyhydrocarbons from other haloid and dehalogenized derivatives by the same method.

Card

1/8/

PAUSHKIN, Ya.M.; LUNIN, A.F.

Synthesis of new nitrogen and hydroxy containing polymers with conjugate bonds from sodium carbonate and ammonium chloride.
Dokl. AN SSSR 150 no.4:823-825 Je '63. (MIRA 16:6)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina. Predstavleno akademikom A.V. Topchiyevym.

(Polymers) (Sodium carbonate)
(Ammonium chloride)

PAUSHKIN, YA.M., POLAK, L.S., VISHNYAKOVA, T.P., PATALAKH, I.I.,
MACHUS, F.F., SOKOLINSKAYA, T.A.

New ferrus-containing polymers on the basis of ferrocene and their electrophysical properties.

Report submitted for the International Symposium of Macromolecular chemistry
Paris, 1-5 July 63

L 13086-63 EPF(c)/EWP(j)/BDS/EWT(m) Pr-1/Pc-1 RM/WW
ACCESSION IR: AP3002830 S/0152/63/000/005/0057/0062
64
62

AUTHOR: Prushkin, Ya. M.; Lunin, A. F.; Myrtychan, V. R.

TITLE: The effect of ultraviolet irradiation on the process of isomerization of cyclohexane into methylcyclopentane 1

SOURCE: Izv. Nert' 1 gaz, no. 5, 1963, 57-62

TOPIC TAGS: ultraviolet irradiation, cyclohexane, methylcyclopentane, aluminum chloride, methylcyclopentane, cyclohexane

ABSTRACT: A detailed study of the effect of ultraviolet irradiation on the process of isomerization of cyclohexane into methylcyclopentane is presented. It was shown that when the isomerization reaction is conducted at a temperature of 80C in a liquid phase in the presence of only aluminum chlorides as a catalyst, the rate of attaining equilibrium is almost five times slower than in the case where ultraviolet irradiation is used simultaneously with the catalyst. Isomerization of cyclohexane under the influence of only ultraviolet irradiation proceeds at a very slow rate; however, the temperature does not affect the rate of isomerization. The isomerization of cyclohexane in the vapor phase using aluminum chloride catalyst was also investigated. The optimum conditions in this case are at a temperature of 150C and raw material infeed of 0.05 hr sup-1 with an aluminum chloride
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L-13086-63

ACCESSION NR: AP3002830

content in the catalyst of 5% and simultaneous subjection to ultraviolet irradiation. The isomerized product after the above treatment consisted of 60% methylcyclopentane and 40% of the unreacted cyclohexane. Orig. art. has: 2 tables and 3 figures.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promy'shennosti im. akad. I. M. Gubkina (Moscow Institute of Petrochemical and Gas Industry)

SUBMITTED: 06Dec62

DATE ACQ: 24Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 006

OTHER: 006

Card 2/2

PAUSHKIN, Ya. M.; GALAL, Ibragim

Alkenylation and halcalkylation of benzene by halcallyl
compounds in the presence of a boron fluoride-based catalyst.
Dokl. AN SSSR 147 no.4:853-856 D '62. (MIRA 16:1)

1. Predstavleno akademikom A. V. Topchiyevym.

(Benzene) (Allyl compounds)

L 11109-63

EWP(j)/EPF(c)/EWT(m)/BDS

AFFTC/ASD/ESL-3/RPL Pc-1/Pr-1

RM/BK/WW/JW/MAY/JWD/H

ACCESSION NO: AP3001407

S/0020/63/150/004/0823/0825

78
77

AUTHOR: Paushkin, Ya. M.; Lunin, A. F.

TITLE: Synthesis of new nitrogen- and hydroxy-containing polymers with conjugated bonds from sodium carbonate and ammonium chloride

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 1963, 823-825

TOPIC TAGS: polycyanamide, polycyanic acid, synthesis, decomposition, solubility, polymerization, IR spectrum, EPR spectrum, polymer, conjugated system, polymer semiconductor

ABSTRACT: Polycyanamide $\left[\begin{array}{c} \text{NH}_2 \\ | \\ -\text{C}=\text{N}- \end{array} \right]_n$ and polycyanic acid $\left[\begin{array}{c} \text{OH} \\ | \\ -\text{C}=\text{N}- \end{array} \right]_n$ have been synthesized for the first time, with yields of 48 to 87%, by heating solid NH_4Cl and Na_2CO_3 and NaHCO_3 in the presence of ZnCl_2 for 5 to 30 hr at 250 to 300C and 20 to 25 atm in the absence of oxygen. Polycyanamide, a brown, infusible, fine crystalline powder, decomposes at over 700C. Polycyanic acid is also infusible and has a decomposition temperature of the same order. The polymers are soluble in formamide and dissolve in organic and inorganic acids with liberation of heat. Their solubility drops with an increase in the degree of polymerization. The

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L 11109-63

ACCESSION NR: AP3001407

structure of the polymers was determined by IR spectral analysis and EPR spectra. The intrinsic viscosity of polymer solutions in formamide varied between 0.10 and 0.175. The work was presented by Academician A. V. Topchlyev. Orig. art. has: 2 figures, 2 formulas, and 1 table.

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

SUBMITTED: 25Jun62

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: CH,MA

NO REF SOV: 001

OTHER: 000

Card

rv/gch
2/2

ACCESSION NR: AP3000131

2/0062/63/000/005/0943/0945

AUTHOR: Manitova, P. N.; Pashkin, Ya. M.

TITLE: Synthesis of nitroderivatives of alkylated phenols

SOURCE: AN SSSR. Investiya. Otdeleniye khimicheskikh nauk, no. 5, 1963, 943-945

TOPIC TAGS: aminoalkylphenols, antioxidant additives, 2-nitro-t-alkyl-phenol, 2,6-dinitro-t-alkyl phenols

ABSTRACT: The title compounds are intermediates for the synthesis of aminoalkyl phenols which are effective antioxidant additives. They were prepared by the reaction of p-tert-alkyl phenols in benzene with an excess of a solution of nitric acid ranging from 24.8 to 55.8% in concentration. Three 2-nitro and two 2,6-dinitro-t-alkyl phenols were prepared in 63-74% yields. Physical constants and analyses are given. Orig. art. has: 1 table.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk BSSR, Kazan' (Institute of Organic Chemistry, Academy of Sciences, SSSR)

Card, 1/2

ACCESSION NR: AP3000131

SUBMITTED: 26Dec62

DATE ACQ: 12Jun63

ENCL: 00

SUB CODE: CH

NO REF SOV: 001

OTHER: 003

Card 2/2

2

PAUSHKIN, YA.M., TOPCHIYEV, A.V., MEKHTIYEV, S.D.

Methods of synthesis of vinyl-cyclo-hexane

Report presented at the 12th Conference on high molecular weight compounds, devoted to monomers, Baku, 3-7 April 62

PAUSHKIN, Ya.M.; VISHNYAKOVA, T.P.; PATALAKH, I.I.; SOKOLINSKAYA, T.A.;
MAGHUS, F.F.

Ferrocene-based synthesis of polymers and some of their electro-
physical properties. Dokl. AN SSSR 149 no.4:856-859 Ap '63.
(MIRA 16:3)

1. Institut neftekhimicheskoy i gazovoy promyshlennosti im. I.M.
Gubkina. Predstavleno akademikom A.V.Topchiyevym.
(Polymers) (Ferrocene)

1 11109-63

EWP(j)/EPF(c)/ENT(m)/BDS

AFPTC/ASD/ESD-3/IRPL

Pc-1/Pr-1

RM/BW/WY/JW/MAX/JWD/H

ACCESSION NR: AP3001407

8/0020/63/150/001/0823/0825

78
77

AUTHOR: Paushkin, Ya. M.; Lunin, A. F.

TITLE: Synthesis of new nitrogen- and hydroxy-containing polymers with conjugated bonds from sodium carbonate and ammonium chloride

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 1963, 823-825

TOPIC TAGS: polycyanamide, polycyanic acid, synthesis, decomposition, solubility, polymerization, IR spectra, EPR spectrum, polymer, conjugated system, polymer semiconductor

ABSTRACT: Polycyanamide $\left[- \overset{\text{NH}_2}{\text{C}} = \text{N} - \right]_n$ and polycyanic acid $\left[- \overset{\text{OH}}{\text{C}} = \text{N} - \right]_n$ have been synthesized for the first time, with yields of 48 to 87%, by heating solid NH_4Cl and Na_2CO_3 and NaHCO_3 in the presence of ZnCl_2 for 5 to 30 hr at 250 to 300C and 20 to 25 atm in the absence of oxygen. Polycyanamide, a brown, infusible, fine crystalline powder, decomposes at over 700C. Polycyanic acid is also infusible and has a decomposition temperature of the same order. The polymers are soluble in formamide and dissolve in organic and inorganic acids with liberation of heat. Their solubility drops with an increase in the degree of polymerization. The

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L 11109-63

ACCESSION NR: AP3001467

structure of the polymers was determined by IR spectral analysis and EPR spectra. The intrinsic viscosity of polymer solutions in formamide varied between 0.10 and 0.175. The work was presented by Academician A. V. Topchiyev. Orig. art. has: 2 figures, 2 formulas, and 1 table.

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

SUBMITTED: 25Jun62

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: CH,MA

NO REF SOV: 001

OTHER: 000

Card

Yb/gch
2/2

PAUSHKIN, Ya.M.; MIRGALEYEV, I.G.

Alkylation of α - chloroethylbenzene with propylene. *Neftekhimika*
2 no.5:784-787 S-0 '62. (MIRA 16:1)

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

12
PAUSHKIN, Ya.M.; VISHNYAKOVA, T.P.; CHERNUKHINA, V.G.

Catalytic reforming of naphthenic hydrocarbons of gasoline fractions into aromatic hydrocarbons on a catalyst with 0.1-0.3% of nickel. Izv. vys. ucheb. zav.; neft' i gaz 4 no.5:69-73 '61. (MIRA 15:2)

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

(Hydrocarbons) (Cracking process) (Catalysts, Nickel)

PAUSHKIN, Ya.M.; MIRGALEYEV, I.G.

Kinetics of the alkylation of benzene by propylene and the effect
of certain physical factors. *Izv.vys.ucheb.zav.; neft' i gaz*
5 no.2:77-80 '62. (MIRA 15:7)

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

PAUSHKIN, Ya.M.; LUNIN, A.P.; MKHUYCHAN, V.R.

Influence of ultraviolet rays on the isomerization of cyclohexane to methylcyclopentane. Izv. vys. ucheb. zav.; neft' i gaz. 6 no.5:57-62 '63 (MIRA 17:7)

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

L 16381-65 EWI(m)/EPF(c)/EPR/EWP(j) Pc-l/Pr-l/Ps-l/Pi-l RPL WW/JW/RM
ACCESSION NR: AP4043278 5/0065/64/000/008/0005/0008

AUTHOR: Paushkin, Ya. M.; Vishnyakova, T. P.; Smirnov, A. P.

TITLE: Evolution of heat on intensive dissociation of hydrocarbons 1 B

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 8, 1964, 5-8

TOPIC TAGS: hydrocarbon dissociation, aliphatic hydrocarbon, olefinic hydrocarbon, aromatic hydrocarbon, dissociation reaction, conversion

ABSTRACT: The heat effects in the dissociation of a variety of hydrocarbons to CH_4 and C, and H_2 and C were investigated. Values for the heat effects for these dissociations were calculated for several aliphatic olefinic, and aromatic hydrocarbons; the calculated thermodynamic potentials, at 25C, confirmed the possibility of the dissociation reactions. These compounds were subjected to a fluidized bed cracking process in the presence of a nickel catalyst at 300-650C to form C, H_2 , CH_4 and traces of gaseous olefins. All the hydrocarbons were cracked; the conversion of the unsaturated compounds was the highest (and their thermal effect

Card 1/2

L 16381-65
ACCESSION NR: AP4043278

2

was the highest). Increasing the reaction temperature caused a decrease in the CH_4 and an increase in the H_2 content in the conversion products, and lowered the heat effect. It was concluded CH_4 was formed first, and the H_2 formation was due to the breakdown of CH_4 . In the 500-600C range the heat effect decreased due to CH_4 dissociation. The reaction for paraffinics is exothermic only if the reaction proceeded to CH_4 and C (400-450C), at higher temperatures the reaction is endothermic. The conventional cracking process, which results in the formation of a complex mixture of hydrocarbons, is an endothermic reaction. The heat effect of cracking dienes, aromatic and olefinic hydrocarbons compares and in some cases exceeds, the heat of combustion and detonation processes. Orig. art. has: 1 figures and 3 tables.

ASSOCIATION: MINKh and GP

SUBMITTED: 00

ENCL: 00

SUB CODE: GC, TD

NO REF SOV: 001

OTHER: 000

Card 2/2

PAUSHKIN, Ya.M.; LUNIN, A.F.; OMAROV, O.Yu.

Polymers with conjugated bonds from ammonium carbonate and bicarbonate. Vysokom. soed. b no.4:734-736 Ap '64.

(MIRA 17:6)

1. Institut neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina.

PAUSHKIN, Ya.M.; YUZVYAK, A.G.; RUBINSHTEYN, A.I.

Synthesis of dimethylcyclohexadiene and vinylcyclohexene by the
dimerization of butadiene. Dokl.AN SSSR 144 no.3:581-584 My
162. (MIRA 15:5)

1. Institut neftekhimicheskoy i gazovoy promyshlennosti im.
I.M.Gubkina. Predstavleno akademikom A.V.Topchiyevym.
(Butadiene) (Cyclohexadiene) (Cyclohexene)

S/020/62/147/004/019/027
B101/B186

AUTHORS: Paushkin, Ya. M., Galal, Ibragim

TITLE: Study of the alkenylation and halogen alkenylation of benzene with allyl halides and a catalyst based on boron fluoride

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 4, 1962, 853-856

TEXT: This is a study on the reaction of benzene with allyl chloride or bromide with a complex compound of BF_3 and ortho-phosphoric acid as catalyst at atmospheric pressure and $25 - 70^\circ\text{C}$. The catalyst addition was 20 - 40%, the benzene : allyl halide ratio was varied between 0.5 : 1 and 3 : 1. The optimum temperature was 50°C ; at 70°C , the amount of resin-like by-products increased. The reaction product was extracted with ether and fractionated in vacuo. (A) With allyl chloride the following fractions were obtained: (1) b.p. $86-87^\circ\text{C}/3$ mm Hg, corresponding to β -chloro-isopropyl benzene. The optimum yield of 32.9% was reached at 50°C , a catalyst addition of 20%, and a ratio of $\text{C}_6\text{H}_6 : \text{C}_3\text{H}_5\text{Cl} = 2 : 1$;

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S/020/62/147/004/019/027
B101/B186

Study of the alkenylation and ...

(2) b.p. 117-119°C/3 mm Hg corresponding to 1,2-diphenyl propane;

(3) b.p. 145-175°C, $d_4^{20} = 1.0509$, $n_D^{20} = 1.5627$, mean molecular weight

233, content of unsaturated compounds 4.3% and of Cl 20.44%. This fraction is an inseparable mixture of secondary reaction products.

1,2-dichloro propane was also found in amounts which increased when the reaction mixture contained an insufficient amount of C_6H_6 . (B) With allyl

bromide, the following fractions were obtained: (1) b.p. 41-45°C/3 mm Hg, corresponding to 1,2-dibromo propane; (2) b.p. 95-97°C/3 mm Hg corresponding to β -bromo-isopropyl benzene. An optimum yield of 56.2% was reached at 50°C, 20% catalyst, and a ratio of $C_6H_6 : C_3H_5Br = 2 : 1$; (3) b.p.

110-140°C/3 mm Hg, a mixture of β -bromo-isopropyl benzene and 1,2-diphenyl propane; (4) b.p. 170-195°C/3 mm Hg, $d_4^{20} = 1.2141$, $n_D^{20} = 1.5743$, mean

molecular weight 280, content of unsaturated compounds 38%, Br 27.4%. The yield of this fraction increases when there is no benzene excess. β -chloro-isopropyl and β -bromo-isopropyl benzenes were identified by dehydrohalogenation yielding α -methyl styrene. Oxidation with $KMnO_4$

Card 2/4

Study of the alkenylation and ...

S/020/62/147/004/019/027
B101/3186

1,2-dibromo propane yield of 12.8-22.7% obtained by reaction with allyl bromide, is explained by the readiness of HBr to separate. There are 3 figures and 3 tables.

PRESENTED: April 28, 1962, by A.V. Topchiyev, Academician

SUBMITTED: April 28, 1962

Card 4/4

FRENKIN, E.I.; PRLKHOROVA, A.A.; PAUSHKIN, Ya.M.; TOPCHIYEV, A.V.

Preparation of phenylboron dibromide by direct synthesis. Izv.
AN SSSR Otd.khim.nauk no.8:1507-1508 Ag '60. (MIRA 15:5)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Boron organic compounds)

PAUSHKIN, Ya.M.; PANIDI, I.S.; PLATONOVA, L.A.

Synthesis of semisymmetrical tris-amides of boric acid.
Dokl. AN SSSR 159 no.3:612-614 N '64 (MIRA 18:1)

1. Institut neftekhimicheskoy i gazovoy promyshlennosti imeni
I.M. Qubkina. Predstavlena akademikom A.N. Nesmeyanovym .

PAUSHKIN, Ya.M.; YUZVYAK, A.G.

Production of vinylcyclohexene by cyclopolymerization of butadiene.
Izv. vys. ucheb. zav.; nef't' i gaz 4 no.2:6--74 '61.
(MIRA 15:5)

1. Moskovskiy institut nef'tekhimicheskoy i gazovoy promyshlennosti
imeni akademika Gubkina.

(Butadiene) (Cyclohexene)

L 36241-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AT5006932 S/2982/64/000/051/0054/0059

AUTHOR: Nizova, S.A.; Galal, I. Kh.; Paushkin, Ya.M.

TITLE: Dehydrohalopolymerization of the dibromo derivatives of allyl-aromatic compounds

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 54-59

TOPIC TAGS: allylaromatic compound, dehydrohalopolymerization, polyconjugated system, infrared spectrum, polydimethylbenzylacetylene

ABSTRACT: γ , β -Dibromopropyl aromatic compounds were used to prepare a series of polyconjugated systems of high thermal stability by means of the dehydrohalopolymerization reaction. The dibromopropyl monomers were obtained by brominating allyl aromatic derivatives. The physicochemical properties of these monomers and of the products of their bromination are tabulated, as are the conditions of the dehydrohalopolymerization and the properties of the polymers obtained. Infrared spectra of some of these polymers were taken, and the number of paramagnetic parts per gram of substance and fundamental absorption bands in these spectra are

Card 1/2

L 36241-64

ACCESSION NR: AT5006932

3
tabulated. The infrared spectrum and X-ray diffraction pattern of polydimethyl-
benzylacetylene are shown. The polymers obtained were amorphous powders having
molecular weights of 1,000 to 3,000; the number of unpaired electrons per gram of
substance was about 10^{17} . Orig. art. has: 2 figures and 4 tables.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow
(Petrochemical and gas industry institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: 00

NO REF SOV: 001

OTHEB: 000

Card

2/2

10

L 36242-65 ENT(m)/EPF(c)/EPR/ENP(j)/ENA(h) Ps-4/Pr-4/Ps-4 RPL WW/JW/RM

ACCESSION NR: AT5006934

S/2982/64/000/051/0066/0069

AUTHOR: Pauskin, Ya. M.; Panidi, I. S.; Korosteleva, A. I.TITLE: Exchange reaction of the trisamides of boric acid 7

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 66-69

TOPIC TAGS: heteroorganic compound, organoboron compound, boric acid amide, aliphatic amine, dialkylaminoforine, exchange reaction, neutron absorption 19

ABSTRACT: The synthesis of semisymmetrical trisamides of boric acid is based on an exchange reaction between symmetrical trisamides of boric acid and primary and secondary aliphatic amines. The trisamides used were tris(diethylamino)borine and tris(diethylamino)borine, and the amines were n-propylamine, isobutylamine, isoamylamine, n-hexylamine, and di-n-butylamine. The physicochemical properties of the semisymmetrical trisamides obtained are tabulated. The boron content of the synthesized products was determined by the neutron absorptiometric method developed by the authors in cooperation with the A. A. Skochinskiy Institute and based on the tendency of atoms of the B10 isotope to capture neutrons and thus

Card 1/2

L 36242-65
ACCESSION NR: AT5006934

attenuate the primary flux of thermal neutrons passing through the sample. A diagram of the device used for the determination of boron is given. Six tris-amides belonging to a new class of semisymmetrical trisamides of boric acid were obtained. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow
(Petrochemical and gas industry institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: 00

NO REF SOV: 002

OTHER: 002

Card 2/2 *lo*

L 36243-65 EWT(m)/EPF(c)/EPR/EMP(j)T Pc-4/Pr-4/Ps-4 IJP(c)/RPL WW/RM

ACCESSION NR: AT5006935 B/2982/64/000/051/0084/0087

AUTHOR: Panidi, I. S.; Paushkin, Ya. M.; Voronina, M. A.

TITLE: Boron-containing detectors of thermal neutrons

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 84-87.

TOPIC TAGS: neutron detector, neutron absorption, boron analysis, thermal neutron, polyester resin, organoboron compound

ABSTRACT: The object of the work was to study the possibility of preparing sufficiently efficient detectors for use in neutron-absorptiometric analysis, with particular reference to analysis for boron. The preparation of a polyester resin (the boron-containing component) from ethylene glycol and boric acid is described. The phosphor is prepared by mixing zinc sulfide with the melt of this resin. When ethylene glycol is employed, the viscosity of the melt is lowered and the introduction of zinc sulfide is facilitated. The method should not be used for the preparation of continuous detectors. A tabulation of the characteristics of boron-containing detectors is given. Orig. art. has: 2 figures, 2
Card 1/2

36
35
B+1

L 36243-65
ACCESSION NR: AT5006935

tables, and 1 formula.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow
(Petrochemical and gas industry institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: . NP, IC

NO REY SOV: 001

OTHER: 001

Card

2/2 *ko*

L 36240-65 EWT(m)/EPF(c)/EPF(r)-2/EWP(t)/EWP(b) IJP(c) /U-4 JI/AM 30
ACCESSION NR: AT5006936 S/2982/64/000/081/0088/0095 29

AUTHOR: Galal, I.; Kuznetsova, L. P.; Paushkin, Ya. M.

TITLE: Alkylation of aromatic compounds with allyl alcohol in the presence of zinc chloride

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 88-95

TOPIC TAGS: alkylation, allyl alcohol, zinc chloride catalyst, infrared absorption, spectrum, toluene, xylene, alkylaromatic compound

ABSTRACT: The authors give the results of alkylation of toluene, m-xylene, isopropylbenzene and chlorobenzene with allyl alcohol in the presence of fused zinc chloride. In the alkylation of m-xylene, the effect of the amount and activity of the zinc chloride catalyst on the yield and composition of the reaction products (allyl-m-xylene and diallyl-m-xylene) was studied. Infrared absorption spectra of these products and of allylisopropylbenzene and allylchlorobenzene are illustrated and discussed. The physicochemical properties of the allyl derivatives and their dibromo derivatives are tabulated. Zinc chloride was found to

Card 1/2

L 36240-65

ACCESSION NR: AT5006936

retain its catalytic activity after repeated use, and the yields of the allyl and diallyl derivatives reached 85% of the theoretical. Orig. art. has: 4 figures, 4 tables and 2 formulas.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow
(Petrochemical and gas industry institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: 00

NO REF SOV: 002

OTHER: 004

Card 2/2

PAUSHKIN, Ya.M.; POLAK, L.S.; LUNIN, A.F.; KATALAKH, I.I.

New method of synthesizing nitrogen-containing polymers with conjugate bonds and their electrophysical properties. Izv. AN SSSR 164 no.5:1065-1068 0 '65. (MIRA 18:10)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I.M.Gubkina i Institut neftekhimicheskogo sinteza im. A.V. Topchiyeva AN SSSR. Submitted March 18, 1965.

LANSHAN, Wu. No. Y. 1973.

no. 44:27-33 163.

PAUSEKIN YALMO; PANI... ..

Synthesis of boron-substituted compounds containing
boric acid. Trudy KHEMIGP no. 14:32-39, 1963.

PAUSHKIN, Ye. I.; KONIN, G. I.; GIL'BERG, M. V.; ZAKHAROV, V. I.

isomerization of cyclonexane in methyl cyclopentane. Izv. Akad. Nauk SSSR Ser. Khim. 1963, 163.

PAUSHKIN, Ya.M.; MIRGAL'D, I.S.

Alkylation reaction of 4-chlorobenzylbenzene in a ...
Trudy MINKHIGP no. 74:80-81 1963.

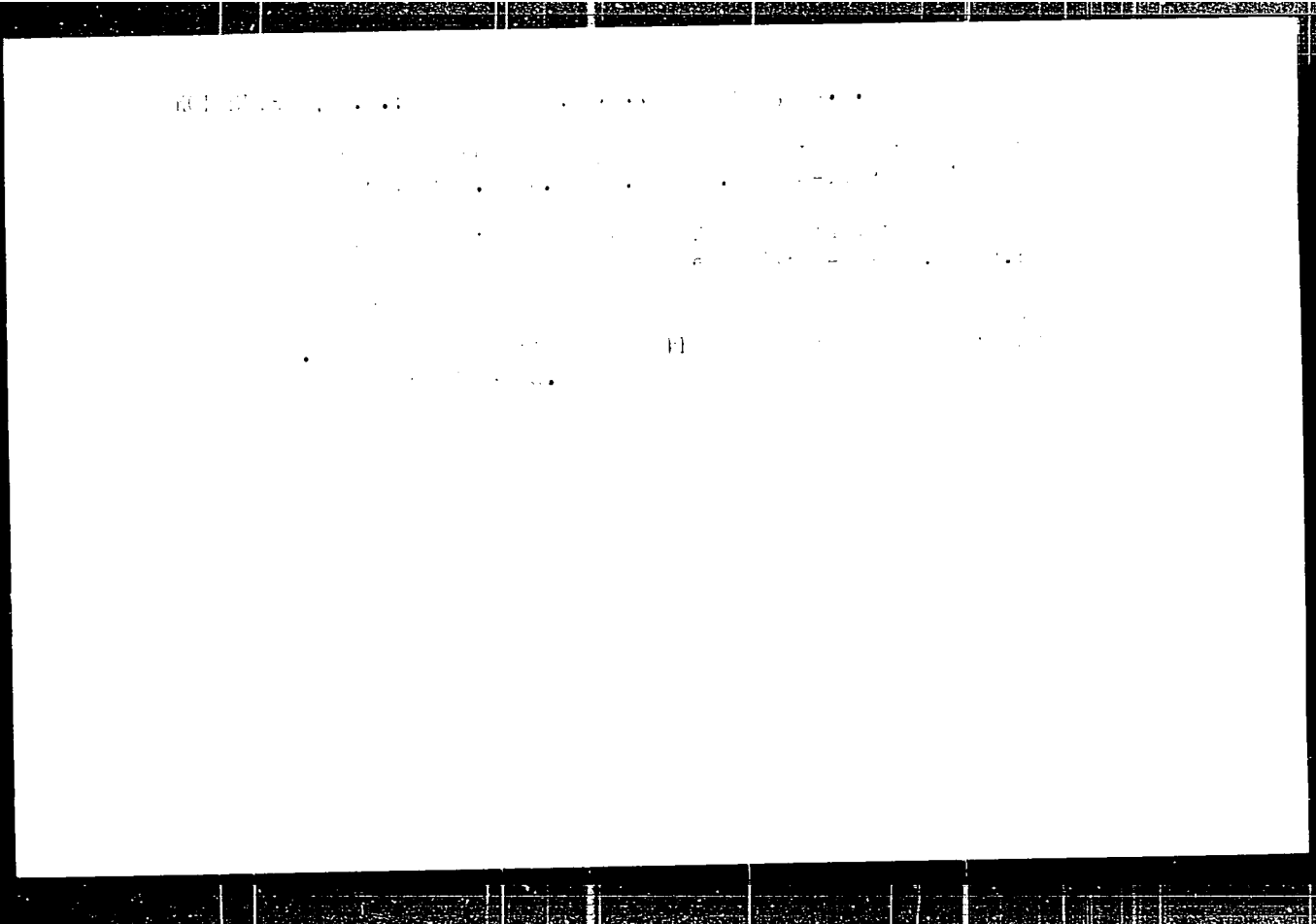
YUSKI ZAKHRA; PAUSHKIN, Ya.M.

Using new catalysts for the catalytic reforming of n-
substances to obtain aromatic hydrocarbons. Trudy Khimicheskoy
no.44:148-155 '63. MIRA 3:50

VISHNYAKOVA, T.P.; PAUSHKIN, Ya.M.; KLIMENKO, M.Ya.; MAR'YASHKIN, N.Ya.

Oxidation of η -butylenes to methyl ethyl ketone in the presence of a palladium chloride catalyst. *Izv.vys.ucheb.zav.; khim.i khim.tekh.* 7 no.6:989-992 '64. (MIRA 18:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni Gubkina, kafedra neftekhimicheskogo sinteza.



FAUSHKIN, Ya.M.; OMAROV, G.Yu.

Preparation of polyphenylenes from phenols. Vysokom. soed. " (MIRA 18:6)
no.4:710-712 Ap '65.

1. Moskovskiy institut nefte-khimicheskoy i gazovoy promyshlennosti
imeni Gubkina.

VISHNYAKOVA, T.I.; GOLITSINA, I.A.; PALCHENKO, YA.M.

Synthesis and study of polyphenylene sulfide. *Vysokomol. Soedin.*
1964, 6, 13-16. (Ap. 1964)

1. Moskovskiy institut nefte-khimiyeskoy i gazovoy promyshlennosti. Izv. inst. khim. 1964.

KOLESNIKOV, L.M.; MERGANIV, I.G.; PAUSHKIN, Ya.M.

Regularities of the liquid phase alkylation of benzene with
cyclohexene. Izv. Akad. Nauk SSSR Ser. Khim. 1964, no. 6: 1458-1463. J. Chem. Soc. (MIRA 18:11)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti
imeni Gubkina. Submitted April 30, 1964.

ACC NR: AP6032841

(A, N)

SOURCE CODE: UR/0065/66/000/010/0001/0005

AUTHOR: Kolesnikov, I. M.; Mirgaleyev, I. G.; Paushkin, Ya. M.

ORG: MINKh; GP

TITLE: Alkylation of benzene with propylene by means of a silica-alumina catalyst promoted with boron trifluoride

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 10, 1966, 1-5

TOPIC TAGS: alkyl benzene, aromatic hydrocarbon, alkylation, petroleum product

ABSTRACT: Alkylation of benzene with propylene was studied by percolating gaseous propylene (0.5-1.5 mol/l) at 25-75°C for 0-120 min through a glass column (28 mm in diameter and 650 mm high) containing 226 g of catalyst (silica-alumina promoted with 15.5-18.1 wt % BF_3) and 156 g of benzene. The object of the work was to define optimal alkylation conditions. It was found that the yield of the alkylbenzenes was directly proportional to the BF_3 content in the catalyst. It was concluded that the BF_3 was present in two forms: physically absorbed on the silica-alumina surface and as a strong coordination compound with aluminum. Increase in the temperature was found to have a rather slight effect on the yields of both mono- and di-propylbenzenes. The content of di- and poly-propylbenzenes in the reaction product was found to be proportional to the molar ratio of propylene to benzene used. The catalyst activity was found to de-

UDC: 66.095.25:547.532

Card 1/2

Card 2/2

PHASE I BOOK EXPLOITATION

SOV/6088

Paushkin, Yaroslav Mikhaylovich

Khimiya reaktivnykh topliv; topliva dlya vozdušno-reaktivnykh
i raketnykh dvigateley (Chemistry of Jet Fuels; Fuels for
Jet and Rocket Engines) Moscow, Izd-vo AN SSSR, 1962.
435 p. Errata slip inserted. 4000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut neftekhimicheskogo
sinteza.

Resp. Ed.: A. V. Topchiyev, Academician; Ed.: E. S. Dragunov;
Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for aeronautical engineers,
rocket technicians, chemists, and other persons interested
in jet fuels and rocket propellants.

Card 1/6

2

ACCESSION NR: AP4043785

S/0190/64/006/008/1467/1470

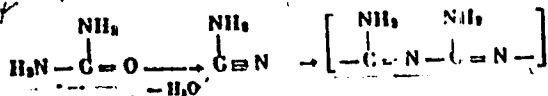
AUTHOR: Lunin, A. F.; Paushkin, Ya. M.

TITLE: Homopolycondensation of urea to polycyanamide — a nitrogen-containing polymer with conjugated double bonds

SOURCE: Vysshomolekulyarnyye soyedineniya, v. 6, no. 8, 1964, 1467-1470

TOPIC TAGS: polycyanamide, polycyanamide preparation, urea, zinc chloride, organic semiconductor, semiconducting polymer

ABSTRACT: A new preparative method for conjugated polymers containing heteroatoms in the backbone has been used to prepare polycyanamide. The presence of nitrogen atoms both in the conjugated backbone and in the side chain was expected to have a desirable effect on the electrical properties of the polymer. The method involves the newly discovered polycondensation of urea, which is assumed to proceed as follows:



Card 1/2

L 8767-65 EWT(m)/EPP(c)/EWP(j)/T Pc-4/Pr-4 WE/RM

ACCESSION NR: AT4008695

8/2982/63/000/044/0015/0028

B

AUTHOR: Pavshin, Ya. M., Vishnyakova, T. P., Sokolinskaya, T. A., Patalakh, I. I.,
Machus, F. F., Kurasheva, I. D.

TITLE: New iron-containing monomers and polymers of five-membered ring naphthenes

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promy*shlennosti. Trudy*, no. 44, 1963. Neftekhimiya, pererabotka nefli i gaza, 15-26

TOPIC TAGS: cyclopentadiene, ferrocene, iron dicyclopentadieny^l-, iron containing polymer, antiknock additive, manganese, (cyclopentadienyl) tricarbonyl-, five-membered ring naphthene, five-membered ring cyclane, epoxy resin, ferrocene derivative, ferrocene alkyl-, ferrocene acetyl-, ferrocene polymer, naphthene, cyclane, antiknock compound, knock inhibitor, monomer, manganese compound

ABSTRACT: The production of cyclopentadiene and its homologs is of great importance since it is used as a basis for the production of the following products: ferrocene and its homologs, iron-containing polymers, a new antiknock compound - cyclopentadienylicarbonyl manganese, epoxy resins, polymerized plastics, additives for copolymerization and high activity chemical poisons. Cyclopentadiene can be produced by the

Card 1/3

L 8767-65

ACCESSION NR: AT4008695

dehydrogenation of five-membered ring naphthenic petroleum. The metallo-organic compound ferrocene, based on cyclopentadiene, is obtained by the widely used amine method which guarantees a yield of 84-83%. The physical and chemical properties of ferrocene are discussed in detail. The preparation of ferrocene polymers and derivatives as described in the literature is presented. The alkylation of ferrocene by different olefins (iso- C_4H_8 , iso- C_5H_{10} , and iso- C_6H_{12}) in the presence of 25% $H_3PO_4 \cdot BF_3$ at the optimum conditions of 60C and a 5-hr. agitation period, is compared. With an increase in olefin molecular weight, there is a decrease in alkylate yield and ferrocene conversion accompanied by an increase of monoalkylferrocene content. The physical-chemical properties of the prepared alkylferrocenes are listed. Ferrocene and alkylferrocene were then used to obtain ferrocenyl-containing polymers by the polyrecombination reaction which consists of peroxide treatment at 170-200C. The joint polyrecombination of ferrocene with paradichlorobenzene, diphenol, α -bromonaphthalene and quinoline was also investigated and the data are tabulated. Soluble polymers were obtained by the polycondensation of ferrocene with acetone in the presence of $ZnCl_2 + HCl$. The preparation of polyferrocenylvinylene from acetylferrocene is described. All the iron-containing polymers give a single component signal in the

Card 2/3

L 8767-65

ACCESSION NR: AT4008695

EPR spectra, which indicates the presence of π -unpaired electrons. The electro-physical properties of iron-containing polymers are discussed. The structure of all the investigated polymers was confirmed by infrared spectroscopy. Orig. art. has: 5 tables and 4 formulas.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow (Institute of the Petroleum Chemistry and Gas Industry)

SUBMITTED: 00

ENCL: 00

SUB CODE: FP

NO REF SOV: 021

OTHER: 010

Card 3/3

L 51396-65 EWI(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 EM
ACCESSION NR: AP5011253 UR/0190/65/007/004/0710/0712

AUTHORS: Pavshkin, Ya. M.; Omarov, O. Yu.

TITLE: Synthesis of polyphenylenes from phenols

SOURCE: Vysockomolekulyarnyye soyedineniya, v. 7, no. 4, 1955, 710-712

TOPIC TAGS: organic synthesis, IR absorption spectrum, temperature dependence, catalyst

ABSTRACT: The authors prepared polyphenylene by dehydration of phenol in the presence of zinc chloride. The ratio of monomer to catalyst is important in yield of polymer product. At phenol/ZnCl₂ ratios of 1:3 and 1:4, the yield is nearly twice that at either higher or lower ratios (32% as against 18-19% for 6 hours of reaction at 350°C). Best yield was obtained at 350°C, half again as much as at 300 or 400°C. Polyphenylene forms a black powder, partially soluble in dimethylformamide. The soluble fraction melts at about 120°C; the insoluble part is infusible below 500°C. The IR absorption spectrum shows that the benzene rings are combined chiefly in the ortho position, only in small part in the para position. It appears that the polymer reaction takes place through the formation of oxines. That is, ligroin forms as an intermediate stage in the transformation of phenol. Orig. art. has: 1 table.

Card 1/2

27
26
B

L 51396-65
ACCESSION NR: AP5011253 /
ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina (Moscow Institute of the Petrochemical and Gas Industry)
SUBMITTED: 29 Jun 64 ENCL: 00 SUB CODE: 00, 00
NO REF SOV: 000 OTHER: 003

Card 2/2

24353

S/026/61/000/008/002/004
T051/D113

//.1000

AUTHOR: Paushkin, Ya.M., Professor

TITLE: Chemistry and space flights

PERIODICAL: Priroda, no. 8, 1961, 16-20

TEXT: A survey of present trends in the selection of suitable liquid and solid rocket fuels is given. The article is interspersed with remarks on the history of rocket fuels and comparable materials. As a rule, rocket fuels consist of a combustible material and an oxidizer, and whereas many chemical substances can be successfully used as combustible material, the variety of substances used as oxidizers is much less considerable. Liquid oxygen, which is used for mid-range and long-range rocket fuels, is the most easily accessible oxidizer. The combustible components of such fuels may be hydrocarbons alcohols or nitrogen-containing compounds such as ammonia, hydrazine, and dimethyl hydrazine. A fuel based on aircraft kerosene has a high calorimetric value. Individual hydrocarbons of the naphthenic type are used because of their good coking capacity. As compared to hydrocarbons, nitrogen-containing compounds such as dimethyl hydrazine proved to be the best combustibles in combination with oxygen. The fuel prepared on this basis, however, is more
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24353

S/026/61/000/008/002/004
D051/D113

X
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Chemistry and space flights

expensive. The use of ozone in hydrocarbon fuels guarantees a calorimetric value of 2820 kcal/kg as compared to 2260 kcal/kg when using oxygen. However, its endothermic properties, its instability and explosiveness do not recommend it as an oxidizer. Fuels based on fluorine and some of its compounds (in particular ClF_3 , F_2O , and FClO_2) are characterized by a high specific thrust. The toxicity and corrosive activity of fluorine speak in disfavor of its use as an oxidizer, but these difficulties can be overcome by collecting toxic HF during tests and using fluorine-based fuels for the second and subsequent stages of the rocket. In this way the atmosphere at the launching site will not be poisoned. Together with fluorine, combustibles such as hydrazine, ammonia, and asymmetric dimethyl hydrazine are used. The use of red fuming nitric acid containing 20-30% nitrogen oxides as an oxidizing agent dispenses with the need to fuel the rocket immediately before launching. During storage, concentrated HNO_3 liberates oxygen, which causes increased pressure in the sealed containers. If some HF or H_3PO_4 is added to mixtures of nitrogen oxides and HNO_3 , then these mixtures will be chemically stable and also less corrosive. As combustible components of HNO_3

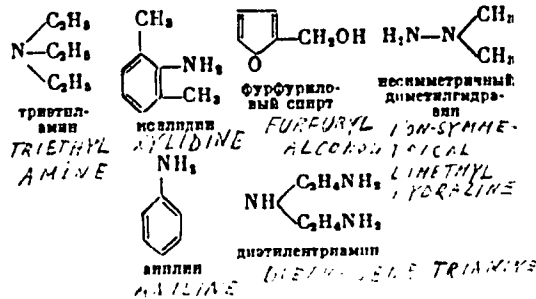
Card 2/4

24353

S/026/61/000/008/002/004
D051/D113

Chemistry and space flights

fuels, synthetic organic components reacting with HNO₃ with self-ignition or combustible organic substances are used. Self-igniting combustibles at present employed are as follows:



Card 3/4

X

Chemistry and space flights

24353

S/026/61/000/008/002/004
D051/D113

Together with these synthetic materials petroleum products play a role in conjunction with HNO_3 . They are cheap and easily available, but in contrast to synthetic compounds they react slowly and without self-ignition. Their slow reaction hinders the combustion process, which is particularly important when repeated ignition of the thrust-chamber during flight is required. In using solid fuels, special materials for the walls of the thrust chamber are necessary. The following two types of solid fuels are used at present: (1) homogeneous fuels based on nitrocellulose, nitroglycerine or diglycol dinitrate, with additions of stabilizers, and (2) fuels representing mixtures of powderlike oxidizers with combustibles which are also binders and plasticizers for the entire system. The oxidizers for solid fuels are NH_4ClO_4 , NH_4NO_3 , and KClO_4 . They represent 70-80% of the mixture. Natural and synthetic rubbers and resins which vulcanize after mixing and fueling are used as binders, and in some cases, explosives such as nitrocellulose can also be used for this purpose. The chief advantage of solid fuel rockets is that they do not require circumstantial filling processes and are ready for use at any time. There are 2 figures.

Card 4/4

23479
S/123/61/000/009/021/027
A004/A104

11.7100

AUTHORS: Paushkin, Ya. M.; Sychev, R. V.; Vishnyakova, T. P., and Shomov, A. K.

TITLE: The effect of the chemical composition and of additives on the fuel combustion in jet engines

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 9, 1961, 20, abstract 9I160 ("Sb. tr. Mezhevuz. soveshchaniya po khimii nefti, 1956", Moscow, Mosk. un-t, 1960, 293-314)

TEXT: The authors investigated in a laboratory combustion chamber with a fuel consumption of 1 gram/sec the effect of the chemical composition and additives on the fuel combustion in ram jet engines. The completeness of combustion (up to a value of 97-98%) and of the vaporized fuel exceed that of atomized fuel by 2-4% and grows with an increased content of aromatic hydrocarbons and with a decreased coefficient of air excess. When additives in quantities of 1-2% (the composition is not given) are used the scale formation is reduced from 2.5-3.5 to 1-2 m^2 /gram. Under pulsating combustion conditions an addition of 1% triethylaluminum cuts down the combustion time from 7-7.4 to 3.5-4 msec. The

X

Card 1/2

The effect of the chemical composition ...

23479
S/123/61/000/009/021/027
A004/A104

temperature and ignition delay of organic substances with nitric acid were investigated on a special installation. It is shown that the delay increases with a decrease in temperature. In the vapors of nitric acid spontaneously inflammable fuels (triethylamine, cyclohexane, etc.) ignite at lower temperatures and lower ignition delay than hydrocarbons, which do not ignite spontaneously with liquid nitric acid. There are 12 references.

X

I. Barskiy

[Abstractor's note. Complete translation]

*Moscow Petroleum Inst
in Lubkin*

Card 2/2

PAUSHKIN, YAROSLAV MIKHAYLOVICH

PHASE I BOOK EXPLORATION

608

Paushkin, Yaroslav Mikhaylovich

Khimicheskiy sostav i svoystva reaktivnykh topliv (Chemical Composition and Properties of Jet and Rocket Fuel) Moscow, Izd-vo AN SSSR, 1958. 37 p.
6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut nefti.

Resp. Ed.: Topchiyev, A. V., Academician; Ed. of Publishing House: Loktev, S. M.;
Tech. Ed.: Kiseleva, A. A.

PURPOSE: This book is planned as a comprehensive work and is meant for specialists and engineers in the field of jet and rocket fuels.

COVERAGE: The author gives a summary presentation of progress in the field of jet propulsion in the Soviet Union and abroad. He discusses the various types of conventional and high-energy fuels, their composition, thermodynamic characteristics and application in various jet and rocket engines. One chapter is devoted to the problem of lubricants used in turbojet engines. The positive viscothermal properties of synthetic lubricants of the silicon and fluorine type are mentioned. According to the author of this chapter, V. V. Panov, organosilicon lubricants were studied by A. D. Petrov and V. S. Chugunov. The nonhydrocarbon fuels are thoroughly discussed. All possible exotic-fuel components and fuel additives are mentioned, e.g. beryllium in the form of $Be(EH)_2$. The intro-

Card 1/2

Chemical Composition and Properties of Jet (Cont.)

648

duction contains a brief review of Soviet contributions to the field. In 1954 F. A. Tsander was named head of a research group for the study of jet propulsion. This group developed the liquid-fuel rocket engine OR-2. M. K. Tikhonravov designed and constructed the first Soviet liquid-fuel rocket. Others mentioned are: Yu. V. Koniratyuk, V. P., Glushko, D. D., Sevruk, A. M., Isayev, S. P. Pobedonostsev, and N. G. Chernyshev. The theory of thermal autoignition and flame propagation was developed by N. N. Semenov, O. M. Todes, and D. A. Frank-Kamenetskiy. Ya. B. Zel'dovich developed the chain-reaction theory of detonation in gases. The theory of the combustion and detonation of liquid and solid systems was developed by Yu. B. Khariton, Ya. B. Zel'dovich, A. F. Belyayev, and K. K. Andreyev. The theoretical aspects of the physics of combustion were studied by A. S. Predvoditelev and his school. There are 205 figures, and 164 tables. References are given at the end of each chapter.

Card 2/²~~10~~

L 23290-65 EW(1)/EW(m)/EPF(c)/EP(j)/EC(t)/T Po -h/Pr-h/Is-h/PeB IJP(o)/
 ACCESSION NR: AP5000915RFL W/RM S/0020/64/159/004/0831/0834 43
 41 B

AUTHOR: Belov, V.F.; Vishnyakova, T.P.; Makarov, Ya. F.; Pausshkin, Ya.; M., Sokol'skaya, T.A.; Shukan, R.A.; Trukhtanov, V.A.; Gol'danskiy, V.I. (corresponding member AN SSSR)

TITLE: The study of ferrocene copolymers by means of the Moessbauer effect

SOURCE: AN SSSR. Doklady, v. 158, no. 4, 1964, 831-834

TOPIC TAGS: ferrocene copolymers, ferroorganic polymer, Moessbauer effect, polymer crosslinking, gamma absorption spectrum

ABSTRACT: The electronic structure of iron in ferrocene polymers and the crosslinking of such polymers was studied from Moessbauer spectra, measuring the dependence of the resonant absorption of γ -ray quanta on the relative velocities of source and absorber. Cobalt-57 served as the source, and the polymers used as absorbers included soluble and insoluble polyferrocenes, polyvinylferrocenes, and copolymers of ferrocene with acetone, naphthalene, alpha-bromonaphthalene, p-dichlorobenzene, salicylaldehyde, benzaldehyde, and phthalaldehyde. All soluble polymers gave spectra at 80K similar to those of ferrocene and its derivatives, with doublets and approximately 10% Moessbauer effects. At room temperature, the Moessbauer effect of such polymers was smaller than for ferrocene,

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indicating the high movability of ferrocenyl radicals in the polymeric structure. Insoluble polymers showed a marked decrease in quadrupole scattering as compared with ferrocene derivatives or soluble polymers. The spectra showed characteristics observed for ferricene salts and the formation of ferricene cations by electron detachment from iron. Moessbauer effects at room temperature were significantly higher than the effects measured for the soluble polymers. The difference is ascribed to the crosslinked structure and rigidity of molecules in the insoluble polymers. The presence of two doublets in the 80K spectra of insoluble polymers corresponds to the electronic structures of iron in conjugated three-dimensional links and in ordinary ferrocenyl links of the linear polymer fraction. Thus, the Moessbauer spectra can be evaluated to estimate the degree of crosslinking in polymers of ferrocene. By accounting for the concentration of iron in the polymers and for the dimensions of absorbers, the measured values can be reduced to the absolute probability of Moessbauer effects in ferrocene polymers, Γ_a . The degree of crosslinking is defined by the relation

$$\xi = \frac{\Gamma_a'}{\Gamma_a' + \Gamma_a} \cdot 100\%$$

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2

where a_1 refers to linear and a_2 to crosslinked fractions of the polymer. Orig. art. has: 1 table, 1 figure and 2 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Chemical physics institute, Academy of Sciences, SSSR); Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni I. M. Gubkina (Moscow Institute of the Petrochemical and gas Industry)

SUBMITTED: 22Jul64

ENCL: 00

SUB CODE: OC

NO REF SO: 006

OTHER: 001

Card 3/3

L 24830-45 /EPT(m)/EPT(o)/EIR/EMP(j) Po-L/Pr-L/Ps-L RPL RM/WH

ACCESSION NR: AP4049924

S/0920/64/159/003/0612/0614

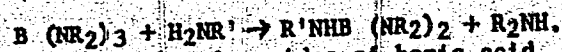
AUTHOR: Faushkin, Ya. M.; Panidi, I. S.; Platonova, L. A.; Nesmeyanov, A.N.
(Academician)

TITLE: Synthesis of semisymmetrical tris-amides of boric acid

SOURCE: AN SSSR. Doklady*, v. 159, no. 3, 1964, 612-614

TOPIC TAGS: boric acid, bororganic compound, boric acid amide

ABSTRACT: The authors give the name "semisymmetrical" tris-amides of boric acid to compounds of the type $R_2N^+B-NR_2$, in which one of the amino groups differs from the two others (accordingly, tris-amides in which all the amino groups are different may be called unsymmetrical tris-amides of boric acid). The authors used the reaction



to synthesize semisymmetrical tris-amides of boric acid, and tabulated their physicochemical properties. Data from the elementary analysis are also tabulated. The relatively low yields of semisymmetrical tris-amides of boric acid are explained by the formation of products of double displacement and of polymers remaining after the vacuum distillation. The procedures used in the preparation of n-propylamino-bis(diethylamino)borina, phenylamino-bis(diethylamino)borina, and

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ACCESSION NR: AP4049924

diethylamino-bis(o-methylphenylamino)borane are described; those used for the first two compounds were applied to the preparation of all the semisymmetrical tris-amides of boric acid. "A. I. Korosteleva took part in the experimental work." Orig. art. has: 2 tables and 2 chemical equations. 2

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina (Institute of the Petrochemical and Gas Industry)

SUBMITTED: 01Jun64

ENCL: 00

SUB CODE: DC

NO REF SOV: 002

OTHER: 004

Card 2/3

L 33538-65 EPA(B)-2/EWT(m)/EPP(c)/EPR/EWP(j)/T/EWA(c) Pc-4/Pr-4/Ps-4/Pt-10

RPL WW/RM

ACCESSION NR: AT5006930

S/2982/64/000/051/0043/0047

AUTHOR: Paushkin, Ya. M.; Lunin, A. F.; Karpov, A. A.

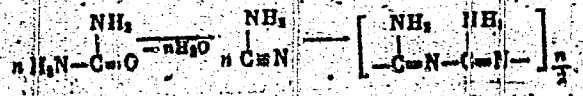
45
44
B+

TITLE: Homopolycondensation of urea to polycyanamide

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51, 1964. Neftekhimiya; neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 43-47

TOPIC TAGS: polycyanamide synthesis, urea polymerization, homopolycondensation reaction, zinc chloride catalyst

ABSTRACT: A semiconducting, thermally stable, polycyanamide was prepared from urea by the reaction



which proceeded in a single step during heating of urea at 300-500C with zinc chloride. Equimolar amounts of urea and ZnCl₂ gave optimum yields; the yield increased with reaction time and the viscosity of the polymers in sulfuric acid solution increased with

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ACCESSION NR: AT5006930

condensation temperatures. The polymers were dark brown, non-fusible powders, soluble in formic or sulfuric acid but insoluble in organic solvents. The proposed structure was confirmed by determination of the amine number, by diazotization and volumetric determination of amino nitrogen, and by elemental and infrared analysis. EPR spectroscopy indicated the presence of delocalized electrons as expected. Orig. art. has: 4 figures, 1 table and 4 formulas.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow (Petro-chemical and gas industry institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: OC, GC

NO REF BOX: 004

OTHER: 002

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2/2

L 31339-65 EPA(s)-2/EWT(m)/EPP(c)/EWP(j)/T/EWA(c) Pc-4/Pr-4/Pt-10 RM
S/2982/64/000/351/0038/0042

ACCESSION NR: AT5006929

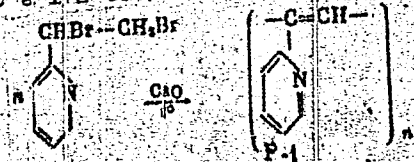
AUTHOR: Pshutkin, Ya. M.; Nizova, S. A.; Stytsenko, V. D.

TITLE: Synthesis of polyethynylpyridines by dehydrohalopolymerization

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 38-42

TOPIC TAGS: organic semiconductor, semiconducting polymer, polyethynylpyridine, heat resistant polymer, conjugated polymer

ABSTRACT: Polyethynylpyridines have been prepared for the first time by dehydrohalopolymerization of the (1,2-dibromoethyl) pyridines. This work was done to determine the effect of a nitrogen atom in different positions in a side group on the properties of the polymer. Dehydrohalopolymerization was carried out at 200C in the presence of CaO, at a 1/2 CaO/dibromoethylpyridine molar ratio:



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ACCESSION NR: AT5006929

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Three poly(2-methylpyridines) were obtained, P-1, P-2, and P-3, in which the point of attachment of the pyridine ring to the backbone was 2, 3, and 4, respectively. The polymers were dark-brown powders insoluble in benzene, acetone, chloroform, or heptane. P-1 and P-2 were readily soluble in the lower alcohols, phenol, dimethylformamide, pyridine, or dilute acids. P-2 was only partly soluble in alcohols and dilute acids. The softening points were 300-320, 400-420, and 200-220C, respectively (above 500C for the insoluble fraction of P-2). The insolubility and greater heat resistance of P-2 was attributed to "cross-linking" via the active hydrogen atom of the methyl group. Structures were confirmed by IR and EPR spectroscopy, and elemental analysis. Unpaired spin concentration decreased with increasing distance from the N atom to the conjugated backbone. Orig. art. has: 3 figures, 1 table, and 4 formulas. [SM]

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow
 (Institute of the Petrochemical and Gas Industry)

SUBMITTED: 00

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 005

OTHER: 001

ATD PRESS: 3201

Card 2/2

PAUSHKIN, Yaroslav Mikhaylovich, prof.; TOPCHIYEV, A.V., akademik,
stv. red.; DRAGUNOV, E.S., red.; POLYAKOVA, T.V., tekhn. nauk.

[Chemistry of jet propellants; fuels for ramjet and rocket
engines] Khimiia reaktivnykh topliv; topliva dlia vozdushno-
reaktivnykh i raketnykh dvigatelei. Moskva, Izd-vo Akad. nauk
SSSR, 1962. 435 p. (MIRA 15:7)

(Jet propulsion)

L 33535-65 EPA(s)-2/ENT(m)/EPF(c)/EWP(j)/T Pc-l/Pr-l/Pt-10 EM

ACCESSION NR: AT5006931

S/2982/64/000/051/0048/0053

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54
B+1

AUTHOR: Belash, P. M. (Professor); Paushkin, Ya. M.; Belov, V. F.; Vishnyakova, T. P.; Noshushkin, A. M.; Sokolinskaya, T. A.; Machus, F. F.

TITLE: The magnetic properties of ferrocene-containing polymers

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 48-53

TOPIC TAGS: ferrocene, polymer magnetic property, electron paramagnetic resonance, bromonaphthalene polymer, dichlorobenzene polymer, acetylferrocene, hydroxylamine

ABSTRACT: The electron paramagnetic resonance, magnetic susceptibility and magnetization of ferrocene-containing polymers was determined. The study covered previously described polymers (Dokl. Akad. Nauk v. 149, no. 4, 1963) obtained by the tert.-butyl peroxide initiated reaction of ferrocene with *l*-bromonaphthalene in 2:1 (I) and 1:1 (II) molar ratios or of 1:1 molar amounts of ferrocene and *p*-dichlorobenzene (III); and polymers obtained by polycondensation of ferrocene, acetylferrocene and hydroxylamine

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ACCESSION NR: AT5006931

hydrochloride (IV) or of acetylferrocene and hydroxylamine hydrochloride (V) in the presence of zinc chloride. The EPR spectra (see Fig. 1 of the Enclosure) show high intensity and width, ΔH , indicating the presence of strong internal fields. The magnetic susceptibility was measured by a published technique and values for specific magnetic susceptibility and g factor are tabulated. The temperature dependence of the magnetic susceptibility of II indicated onset of decomposition at 400C. The g factor values, 1.950-2.0004, indicate that the ferromagnetic properties of the studied polymers are based on the organic structure, but the presence of stabilized iron oxides is not ruled out. Orig. art. has: 6 figures, 1 table and 2 formulas.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow (Petrochemical and gas industry institute)

SUBMITTED: 00

ENCL: 01

SUB CODE: OC, EM

NO REF SOV: 005

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Card 2/3

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ACCESSION NR: AT5003931

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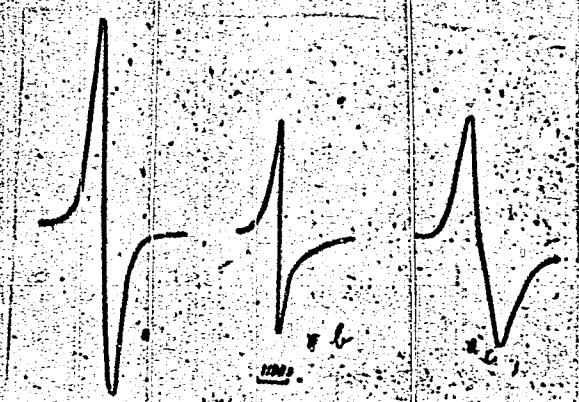


Fig. 1. EPR Spectra. a-polymer II; b-polymer IV; c-polymer V.

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L 31340-65 EPA(s)-2/EWT(m)/EPF(c)/ENP(j)/T Pt-4/Pt-4/Pt-10 RM

ACCESSION NR: M5006933

S/2982/64/000/051/0060/0065

AUTHOR: Lunin, A. F.; Pauskin, Ya. M.; Aleksandrova, V. A.

TITLE: Heteropolycondensation of ammonium bicarbonate with acetaldehyde to form conjugated polymeric systems

SOURCE: Moscow, Institut neftekhimicheskoy i gazovoy promyshlennosti, Trudy, no. 51, 1964. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 60-65

TOPIC TAGS: organic semiconductor, semiconducting polymer, polycondensation, ammonium bicarbonate, acetaldehyde

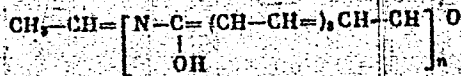
ABSTRACT: A study has shown the feasibility of polycondensation of ammonium bicarbonate with acetaldehyde. The aim was to prepare a copolymer having an irregular structure, which would not be poorly soluble in organic solvents, infusible, and stiff like polycyanic acid and the acetaldehyde homopolycondensation product, and therefore would not be difficult to process. Polycondensation was carried out in the presence of $ZnCl_2$ and in the absence of O_2 at 300--400C. The polymers, which were obtained in 19--38% yield, were dark-brown powders melting at 200--230C, soluble in most organic solvents including methanol, and precipitated by heptane and ethyl ether. A high-molecular-weight fraction was insoluble in organic solvents.

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L 31340-65

ACCESSION NR: AT5006933

but readily soluble in concentrated sulfuric and formic acids. On the basis of elemental analysis and IR spectroscopy, the following structure was assigned to the polymers:



The polymers show a narrow EPR signal characteristic of conjugated polymers. Their electrical properties are being studied. Orig. art. has: 2 tables, 4 figures, and 6 formulas [SM]

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow (Institute of the Petrochemical and Gas Industry)

SUBMITTED: 00

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 002

OTHER: 001

ATD PRESS: 3201

Card 2/2

L 8890-65 EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/T/EWR(q)/EWP(b)
PC-4/PE-4/PS-4/PT-10/PU-4 AFNL/ASD(a)-5/ESD(t)/ESD(dp)/RAEM(t) JD/

JG/AT/TM/WH

ACCESSION NR: AP4045015

8/0191/64/000/009/0003/0005

AUTHOR: Pauskin, Ya. G.; Bocharov, B. V.; Smirnov, A. P.;
Vishnyakova, T. P.; Naclius, P. P.; Pandidi, I. S. B

TITLE: Preparation of polyvinylene compounds by the reaction of
calcium carbide with carbonyl compounds

SOURCE: Plasticheskiye massy²⁷, no. 9, 1964, 3-5

TOPIC TAGS: organic semiconductor, semiconducting polymer, poly-
vinylene, carbonyl compound, calcium carbide D

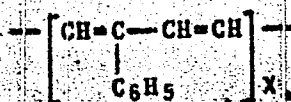
ABSTRACT: A new route has been found for the preparation of conju-
gated polymers: the reaction of carbonyl compounds with calcium
carbide. In addition to its simplicity, an advantage of this
method is that one of the reactants is carbide dust, a waste pro-
duct of calcium carbide production. The method is based upon the
principle that calcium carbide removes water from carbonyl compounds,
and is thereby hydrolyzed and liberates acetylene; acetylene can
then react with the carbonyl compounds or intermediates to form

Card 1/3

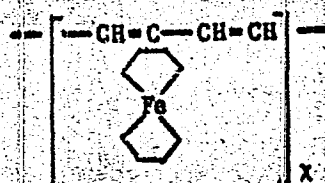
L 8890.65

ACCESSION NR: AP4045016

conjugated polymers. The carbonyl compounds—acetone, acetophenone, acetaldehyde, and acetylferrocene—reacted with calcium carbide in molar ratios of 1/0.5 to 1/1 at 150—200C. The polymers produced were only partly soluble in organic solvents. The soluble fraction, whose yield was 13.3—38%, was studied by cryoscopic molecular weight determination and by elemental analysis. All of the polymers were also studied by EPR and IR spectroscopy. The polymer structures were assumed to be of the type



A polymer of the type



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L 8890-65

ACCESSION NR: AP4045016

was synthesized for the first time. Most of the soluble polymers were black or orange powders, except for the polymer from acetone, which was a viscous resin. Melting points varied from 50 to 500C. The acetylferrocene polymer melted at 500C and had a molecular weight of 2405; its yield was 38%. Solutions of all the polymers formed strong films with high adhesion to metal, wood, or porcelain substrates. Orig. art. has: 2 tables, 1 figure, and 4 formulas.

ASSOCIATION: none

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ATD PRESS: 3109

ENCL: 00

SUB CODE: MT

NO REF SOV: 002

OTHER: 003

Card 3/3

ACCESSION NR: AP4032575

S/0190/64/006/004/0734/0736

AUTHOR: Paushkin, Ya. M.; Lunin, A. F.; Omarov, O. Yu.

TITLE: Polymers with conjugated bonds from ammonium carbonate or bicarbonate

SOURCE: Vy*sokomolek. soedin., v. 6, no. 4, 1964, 734-736

TOPIC TAGS: organic semiconductor, semiconducting polymer, polycyanamide, poly(cyanic acid), semiconducting polymer preparation

ABSTRACT: Conjugated polymers—polycyanamide and poly(cyanic acid)

having the structures $\left[\begin{array}{c} \text{NH}_2 \\ | \\ -\text{C}-\text{N}- \end{array} \right]_n$ $\left[\begin{array}{c} \text{OH} \\ | \\ -\text{C}-\text{N}- \end{array} \right]_n$ —have been synthesized

at the Institute of the Petrochemical and Gas Industry imeni I. M. Gubkin. They were prepared in 10—50% yields by heating solid ammonium carbonate or bicarbonate with solid zinc chloride at 250—350°C in the absence of oxygen at 20—45 atm(abs) for 5—30 hr. The polymers are fine, crystalline, infusible, brown powders which decompose at above 600C. They are insoluble in organic solvents and partly soluble in

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ACCESSION NR: AP4032575

96—98% sulfuric acid and 85% formic acid. With increasing degrees of polymerization, they become completely insoluble. Their structures were confirmed by IR and EPR spectra and elemental analysis and, in the case of polycyanamide, also by NH_2 group determination. Orig. art. has: 6 formulas.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina (Institute of the petrochemical and gas industry)

SUBMITTED: 29May63

DATE ACQ: 11May64

ENCL: 00

SUB CODE: CH,PH

NO REF SOV: 002

OTHER: 001

Card 2/2

KOLESNIKOV, I. M.; MIRGALEYEV, I. G.; PAUSHKIN, Ya. M.

Kinetics of the gas-liquid alkylation of benzol by propylene and
butylene. Khim prom no. 3:174-179 Mr '64. (MIRA '7:5)

YUZVYAK, A.G.; PAUSHKIN, Ye.M.

Trends in the dehydrogenation reaction of vinylcyclohexene. Izv.
vys.ucheb.zav.; neft' i gaz 5 no.8:85-89 '62. (MIRA 17:3)

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

NIZOVA, S.A.; PATALAKH, I.I.; PAUSHKIN, Ya.M.

New polyconjugate systems and their electrophysical properties. Dokl. AN SSSR 153 no.1:144-146 N '63.

(MIRA 17:1)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut neftekhimicheskoy i gazovoy promyshlennosti im. I.M. Gubkina. Predstavleno akademikom A.P. Vinogradovyn.