general reaction was: $CH_2 = CH-CH_2-NH_2+R_3SiH \longrightarrow R_3Si-CH_2-CH_2-CH_2-NH_2$. The yields of the product were 60 - 70 % for trialkylsilanes and 30% for alkylaryl- and for the triaryl silanes. The reactions of trimethyl- and triethyl- silanes with allyl alcohol, using platinized carbon as the catalyst, gave $R_3Si-O-CH_2-CH_2 = CH_2$ with evolution of H_2. Tributyl- and triphenyl- silanes gave in addition $R_3Si-CH_2-CH_2-CH_2-OH$. The reactions of triphenyl-, triethyl- and tributyl- silanes with unsaturated tertiary alcohols resulted in the attachment of R_3Si- groups to the multiple bonds, no formation of others being observed. The combination of R_3SiH with diallyloxydialkyl(phenyl)silane was carried out, using Pt catalysts. The yield of the product, resulting from the combination with the double bonds of both allyl groups, was found to be higher than that from the combination with the compound containing a single substituted allyl group. The latter was not formed at all in the combination with methylphenyl-diallyloxysilane. The former products are liquids, stable when heated in air at 400°C. Hydrolysis of the products in 10 % HCl gave organic silicon alcohols with the OH group in γ- position. There are 2 figures and 9 tables.

Card 2/2

S/832/62/000/000/004/015
D244/D307

AUTHORS: Topchiyev, A.V. and Nametkin, N.S.

TITLE: Direct synthesis

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR, Moscow, Izd-vo AN SSSR, 1962, 76 - 104

TEXT: Investigation was made of the reactions of methyl-, ethyl-, propyl- and butyl bromides, bromobenzene, methylene dichloride and dichloroethane with silicon, to discover whether alkylbromosilanes can be prepared directly. The effect of catalyst (Si-Cu), temperature, and contact time was studied in relation to the composition and the yield of products. It was shown, for CH_3Br, that the reaction with Si below 320°C proceeds with the formation of a high proportion of trimethylbromosilane (18-20%), (and a small amount of $(CH_3)_4Si$) but above 360°C its quantity decreases to ~ 5%

Card 1/3

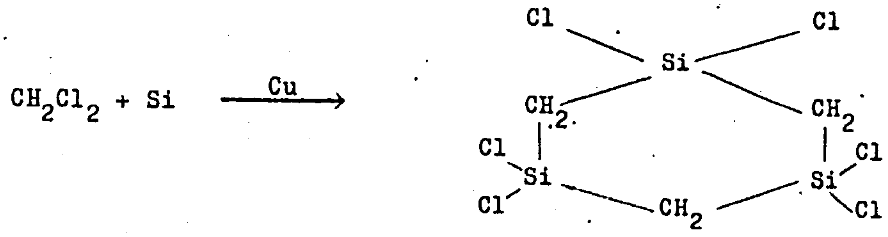
S/832/62/000/000/004/015
D244/D307

Direct synthesis

and the proportion of CH_3SiBr_3 increases up to 20%. The effect of temperature on the reaction between bromobenzene and Si is analogous, but the reaction proceeded satisfactorily only between 400° and 500°C. The yield of the product was constant at 410 - 460°C (46 - 49 %) and decreased to 37 % at 480°C. For the reaction between ethyl bromide and Si, the yields of triethylbromo- and diethyldibromo- silanes are lowered and there is a sharp increase in the formation of ethyltribromosilane (the most stable product at 310 - 360°C). Propyl and butyl bromides give very little alkylbromo- silanes, the main reaction products being tetra- and tribromosilane. It was found that the use of activated Cu as catalyst activated all the reactions with Si. In the case of alkyl bromides, the catalyst was most active 10-12 hrs after the initiation of the reactions. For dihalogeno- derivatives the activation took place in a shorter time. The most active catalyst was formed by the action of alkyl halides on a finely powdered Si and reduced Cu powder, the ratio of Si:Cu being 80:20. The reaction between CH_2Cl_2 and Si with Cu as catalyst proceeds in two directions: 1) with the full utilization of Ch_2Cl_2 molecule:

Direct synthesis

S/832/62/000/000/004/015
D244/D307



, and

2) with a partial utilization of CH_2Cl_2 molecule: $2\ CH_2Cl_2 + Si \xrightarrow{Cu}$ $Cl_3SiCH_2SiCl_3 + C_2H_4$. The maximum yields are obtained at 320 - 360°C, with contact times of the order of 10 hours. For the reaction of Si with 1,2-dichloroethane the maximum yield occurred at 260-280°C, the main product being $Cl_3Si\text{-}CH_2\text{-}CH_2\text{-}SiCl_3$. There are 8 figures and 24 tables.

Card 3/3

42652

S/832/62/000/000/005/015
D244/D307

5,3700

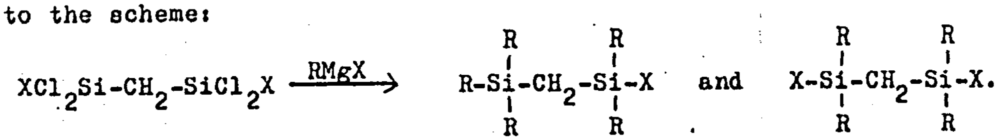
AUTHORS: Nametkin, N.S., Topchiyev, A.V. and Povarov, L.S.

TITLE: Synthesis of organic silicon compounds containing siloxano-carbon linkages

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 105 - 129

X

TEXT: Penta- and tetrachlorodisilylmethane were used to produce compounds with siloxy-carbon links according to the scheme:



$$XCl_2Si\text{-}CH_2\text{-}SiCl_2X \xrightarrow{RMgX} R\text{-}\overset{R}{\underset{R}{Si}}\text{-}CH_2\text{-}\overset{R}{\underset{R}{Si}}\text{-}X \quad \text{and} \quad X\text{-}\overset{R}{\underset{R}{Si}}\text{-}CH_2\text{-}\overset{R}{\underset{R}{Si}}\text{-}X.$$

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Synthesis of organic silicon ...

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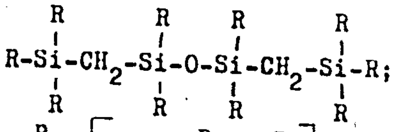
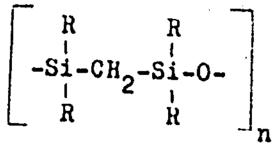
D244/D307

Hydrolysis of the two products gives 1)



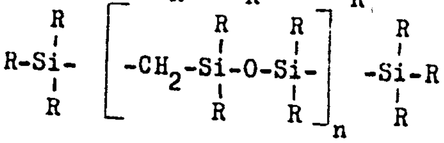
$\mathrm{R{-}\underset{R}{\overset{R}{Si}}{-}CH_2{-}\underset{R}{\overset{R}{Si}}{-}O{-}\underset{R}{\overset{R}{Si}}{-}CH_2{-}\underset{R}{\overset{R}{Si}}{-}R}$;

2)



$\left[\mathrm{-\underset{R}{\overset{R}{Si}}{-}CH_2{-}\underset{R}{\overset{R}{Si}}{-}O-}\right]_n$

; and 3)



$\mathrm{R{-}\underset{R}{\overset{R}{Si}}-}\left[\mathrm{-CH_2{-}\underset{R}{\overset{R}{Si}}{-}O{-}\underset{R}{\overset{R}{Si}}-}\right]_n\mathrm{-\underset{R}{\overset{R}{Si}}{-}R}$

where R is a hydrocarbon radical, X = Cl or H and $n > 2$. The hydrolysis of pentadisilylmethane conducted at room temperature in alcoholic alkali gave pentamethyloxydisilylmethane, with 36% yield. The corresponding tetramethyl compound was obtained with the yield of 62.5% by hydrolysing methyldiethoxydisilylmethane. Beginning with pentaethyloxydisilylmethane, the pentaalkyl- derivatives of disilylmethane are stable compounds which are not condensed by HCl. Their oxydisilylmethane- derivatives are prepared by the action of PCl_5 on alkyldisilylmethane and subsequent hydrolysis. For the siloxy compounds the resistance to condensation

Card 2/3

increases with the size of alkyl groups. Linear and cyclic compounds with siloxy-carbon links were obtained by condensing the alkyloxy derivatives of disilylmethane in the oresence of HCl, HBr or acetic acid. All the compounds prepared, containing siloxy-carbon links, with exception of bis-(tetramethyldisilylmethane) and cyclo-dioxide which was a solid, are colorless oily liquids (b.p. range from 78° to 259°C), soluble in hydrocarbons, ether and partially soluble in ethyl alcohol and acetic acid. For both cyclic and linear compounds the viscosity and its temperature coefficient increase with the increasing size of organic groups. There are 1 figure and 6 tables.

X

42653

S/832/62/000/000/006/015
D244/D307

5.3700

AUTHORS: Topchiyev, A.V., Nametkin, N.S. and Povarov, L.S.

TITLE: Synthesis of organic silicon compounds with silazano-carbon and silthiano-carbon linkages

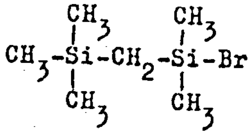
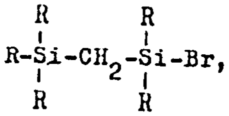
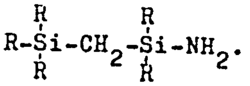
SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 130 - 145

A

TEXT: Reactions leading to the formation of compounds containing $-\overset{|}{\underset{|}{Si}}-N-\overset{|}{\underset{|}{Si}}-$ and $-\overset{|}{\underset{|}{Si}}-S-\overset{|}{\underset{|}{Si}}-$ groups were investigated. The compounds were synthesized from pentaalkylbromo- derivatives of disilylmethane by reaction with gaseous NH_3 in absolute ether or toluene. The compounds with silazano links are not always produced by this reaction, but

Card 1/3

Synthesis of organic silicon ... S/832/62/000/000/006/015
D244/D307

 $CH_3-\overset{CH_3}{\underset{CH_3}{Si}}-CH_2-\overset{CH_3}{\underset{CH_3}{Si}}-Br$ gives bis-(pentamethyldisilylmethane) amine, in 94.5% yield. Similarly,  $R-\overset{R}{\underset{R}{Si}}-CH_2-\overset{R}{\underset{R}{Si}}-Br$, where $R = C_2H_5$, C_3H_7, or C_4H_9, gives  $R-\overset{R}{\underset{R}{Si}}-CH_2-\overset{R}{\underset{R}{Si}}-NH_2$. The combination of the latter with the corresponding alkylbromodisilylmethane, by heating for 15 hours in the presence of NH_3, gave bis-(alkyldisilylmethane)amine compounds, in 50 - 60% yields. All the silazano compounds are colorless liquids, soluble in various organic liquids and insoluble in water. The silthiano compounds were obtained by reacting pentaalkylbromo- derivatives of disilylmethane with H_2S, in the presence of pyridine or NH_3. Pentamethylthiodisilylmethane and bis-(pentamethyldisilylmethane)-sulphide were obtained with 36.4 and 41.9% yields

Card 2/3

S/832/62/000/000/007/015
D244/D307

AUTHORS: Topchiyev, A.V., Nametkin, N.S. and Zetkin, V.I.

TITLE: Alkoxy(aroxy)-derivatives of the reaction products of methylene dichloride and 1,2-dichloroethane with silicon

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 146 - 155

TEXT: The alkoxy-derivatives of disilylmethane and cyclo-trimethylbenzyltrisilane were synthesized to elucidate the influence of various alkoxy- and aroxy- groups on their properties. It was also of interest to establish the dependence of the reaction rate of Cl exchange for the alkoxy residues, on the latter's size and nature. Hexaalkoxy-(aroxy)-

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42654

S/832/62/000/000/008/015
D244/D307

5 3700

AUTHORS: Nametkin, N.S., Topchiyev, A.V. and Primula, N.A.

TITLE: Chloromethylation of organosilicon compounds and synthesis of the organic compounds of silicon from chloromethylated alkylbenzenes

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 156 - 167

TEXT: Chloromethylation of a number of trialkylbenzylsilanes was investigated, the latter being obtained as follows: $C_6H_5CH_2MgCl + R_3SiCl \longrightarrow R_3SiCH_2C_6H_5 + MgClX$, where R = CH_3, C_2H_5, C_3H_7 and C_4H_9. The chloromethylation was conducted in an aqueous medium with 37 % formalin and also in CCl_4 and acetic acid with paraformaldehyde. $ZnCl_2$ was used as a catalyst. The yields decrease

Card 1/3

S/832/62/000/000/008/015
Chloromethylation ... D244/D307

from 54 % to about 10 % on passing from methyl to butyl groups. Saponification of the chloroderivatives of trimethyl- and triethylsilanes, by heating to 100°C in the presence of $CaCO_3$, gave a series of oxygen- containing organic silicon compounds. Reduction of trimethyl- and triethylbenzylsilanes via their organomagnesium compounds gave condensation products $R_3SiCH_2C_6H_4CH_2CH_2C_6H_4CH_2SiR_3$, apart from the corresponding trialkylmethylbenzylsilanes, where R = CH_3 and C_2H_5. The reaction $R_3SiCH_2C_6H_4CH_2MgCl$ with R_3SiX in absolute ether gave $R_3SiCH_2C_6H_4CH_2SiR_3$, where R = CH_3, C_2H_5 and X = Cl or Br. As the chloromethylation of alkylbenzenes gives a mixture of p- and o- chloromethylalkylbenzenes, the proportion of the isomers in the reaction products was determined by their oxidation with CrO_3, whereby only para- isomers are oxidized. The proportion of the para- isomers was found to be 70 %, 75 % and 98 % for the chloromethylation of trimethylbenzyl-, triethylbenzyltripropylbenzy- silanes respectively. Also investigated was the chloromethylation of toluene, ethylbenzene and iso- propylbenzene.

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42655

5 3700

S/832/62/000/000/009/015
D424/D307

AUTHORS: Nametkin, N.S., Topchiyev, A.V., and Durgaryan, S.G.

TITLE: Polymerization of allyl derivatives of silicon with the trialkylaluminum-titanium tetrachloride system

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 168 - 189

TEXT: A comparative study of the polymerization of various allyl silanes under the influence of Ziegler-type catalysts to give polymers containing Si-C bonds. A very extensive review of previous Russian and Western work in this field (using various catalysts) is given, with 88 literature references. All the present experiments were carried out in n-heptane for 8 (or, occasionally, 20)

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Polymerization ... S/832/62/000/000/009/015
D424/D307

hours at atmospheric pressure, varying the content of monomer in solution, the $AlR_3 : TiCl_4$ ratio ($R = C_2H_5$ or iso - C_4H_9), and the amount of catalyst. The yields of liquid, soluble solid, and insoluble solid polymers, their m.p.'s and Si contents, and, in some cases, their molecular weights, contents of double bonds, and ir spectra are given. The following compounds were polymerized: dimethylphenyl- and methyldiphenylallylsilanes, dimethyl- and methylphenyldiallylsilanes, methyl- and phenyltriallylsilanes and tetraallylsilane. The monoallylsilanes gave only solid polymers melting between 230 and 300°C in a maximum yield of 18%, up to about 50% of them having an isotactic structure. The diallylsilanes gave both liquid and solid polymers with maximum total yields of 85 - 90%. The phenyltriallyl compound gave up to 100% of polymers softening at 400 - 500° , while methyltriallylsilane gave only traces of solid polymer or very small amounts of liquid polymer. Tetraallylsilane gave up to 15 % of insoluble solid polymer decomposing above 350° . The copolymerization of propylene with dimethyl- and methylphenyl allylsilanes was also

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Polymerization ...

S/832/62/000/000/009/015
D424/D307

investigated with a $Al(C_2H_5)_3$ / $TiCl_4$ catalyst. The copolymers of propylene with methylphenylallylsilane are distinguished by a relatively high elongation (600 - 700 %). There are 6 figures and 9 tables.

X

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42656

5.3700

S/832/62/000/000/010/015
D424/D307

AUTHORS: Nametkin, N.S., Topchiyev, A.V.

TITLE: Synthesis of some silicon-substituted hydrocarbons

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh soyedineniy; sintez i fiziko-khimicheskiye svoystva. Sbornik statey. Inst. neftekhim. sint. AN SSSR. Moscow. Izd-vo AN SSSR, 1962, 190 - 204

TEXT: Sixty silicon-substituted hydrocarbons of the following classes have been synthesized in order to study their physicochemical properties: (1) hexaalkylderivatives of disilylethane, and cyclotrimethylenetrisilane, and (2) alkylarylsilanes -- phenyl-, 4-methylphenyl-, 3,4-dimethylphenyl-, and 4-iso-propylphenylalkylsilanes, including some with a hydrogen atom attached to the silicon. The compounds of class (1) were prepared by the reaction of the appropriate organomagnesium compound with the

X

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appropriate chlorosilane, and those of class (2) by the reaction of the appropriate organomagnesium or organolithium compound with the appropriate chloro- or ethoxysilane. 4-Methylphenyltri-iso-butylsilane could not be obtained by the reaction of the corresponding triethoxy compound with iso-butyllithium, only two of ethoxy groups being replaced by iso-butyl groups. In the preparation of the tri-substituted silanes, trichlorosilane was caused to react with a mixture of an alkylmagnesium bromide and an arylmagnesium bromide, in a 1 : 1.5 : 1.5 ratio, in each case. All the 4 possible compounds were formed, although the yields of triallylsilanes were negligible. By varying the ratio, the relative yields of the different products could be altered. Details of all the syntheses, and the boiling points, densities and refractive indices of all the products, are given in tabular form. There are 9 tables.

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

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

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

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

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

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

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

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

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

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

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

Card 2/3

Viscosity of some ...

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D424/D307

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

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

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

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

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

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

Card 1/3

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

$$\sigma_t = a - bt$$

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

Surface tension ... S/832/62/000/000/012/015
D424/D307

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

Card 3/3

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

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

TITLE: Refractometric investigations of some organosilicon compounds

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

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

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molecular refraction for the D line, have been calculated. As a rule, in any one class of alkylarylsilanes those in which the alkyl group is ethyl have the highest refractive index. The refractive indices of dialkyldiarylsilanes are about 0.05 units higher than those of the aryltrialkylsilanes with the same alkyl and aryl groups. In the case of the phenyltrialkylsilanes, the introduction of a methyl group into the 4- position of the phenyl ring and then a second methyl group into the 3- position increases the refractive index, while the situation is reversed in the case of the aryltrialkylsilanes. The specific dispersions of aryltrialkylsilanes are 15 - 20 % lower than those of the corresponding diaryldialkylsilanes. The refractive indices of the hexaalkyl derivatives of disilylmethane, disilylethane, and disiloxane increase with a rise in the molecular weight, those of the disiloxanes being less than those of the corresponding members of the other classes. On passing from hexamethyldisilylmethane to the corresponding ethane and propane derivatives, the refractive index increases by 0.0025 units per CH_2 group added, while the specific dispersion is decreased. The change in the specific dispersion of the hexaalkyldisiloxanes is anomalous, the ethyl compound having the lowest value. The refractive indices of polyethylsiloxanes increase by 0.007 per diethylsiloxy group and are much higher than those of the corresponding polymethyl compounds. Dialkylsilanes have much higher refractive indices and specific dispersions than the corresponding hydrocarbons. The molecular refractions of all the compounds investigated were calculated by Sauer's method (J.Amer.Chem.Soc., 68, 691 (1946)) from established group and bond values and the results were found to be in good agreement with those calculated from the experimental data. There are 3 tables.

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

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

TITLE: Dielectric constants and dipole moments of some organosilicon compounds

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

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

Card 1/2

S/832/62/000/000/014/015
Dielectric constants ... D424/D307

and checked on toluene and n-hexane. The value of the dielectric constants given in the literature for a few of the compounds (measured in other solvents) agreed well with those obtained in the present work. In the hexaalkyldisilylmethanes and -ethanes, the dielectric constant increases with the molecular weight, while in the hexaalkylsiloxanes the ethyl compound has the highest constant. From the figures for the dielectric constant, the density, and the refractive index in dilute n-hexane solution, the dipole moments of all the above compounds were calculated by Hedestrand's method (Z.phys. Chem., 2, 429 (1929)). All the hexaalkyl derivatives of disilylmethane and disilylethane have practically the same dipole moment of about 0.57 D. In the case of the hexaalkyldisiloxanes, the methyl compound has the highest dipole moment of those investigated. The dipole moments of the polyethylsiloxanes increase regularly as the molecular weight increases, in accordance with the relation

$$\mu = 0.63 \sqrt{n + 1} ,$$

where n+1 is the number of oxygen atoms in the molecule of the polyethylsiloxane. There are 5 tables.
Card 2/2

42657

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

5.3700

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

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

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

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

X

Card 1/3

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

Behavior of some ...

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

Card 2/3

43241
S/844/62/000/000/081/129
D423/D307

AUTHORS: Topchiyev, A. V., Lyashenko, I. N., Nametkin, N. S., Polak, L. S., Teterina, M. P., Fel'dman, A. S. and Chernysheva, T. I.

TITLE: Radiation polymerization of allyl silanes

SOURCE: Trudy II Vsesoyuznogo soveshchaniy po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 477-483

TEXT: A study was made of the radiation polymerization of organosilicon compounds in order to explain the mechanism of the process. Mono-, di- and triallyl silanes were subjected to γ radiation from Co^{60} at an intensity of 3.4×10^6 ev/cm^3.sec at 100°C. A similar series of tests was carried out using benzoyl peroxide as inhibitor. Reactivity of the monomers increased with increasing number of the allyl groups. Ir spectra of polydiallylethylsilanes showed that the Si-H bond was preserved and that polymerization occurred only at the expense of the double bond of the allyl group, in contrast to

Card 1/2

VDOVIN, V.M.; NAMETKIN, N.S.; PUSHCHEVAYA, K.S.; TOPCHIYEV, A.V.

Expansion reaction of a heterocyclic compound having a silicon atom in its cycle. Izv.AN SSSR.Otd.khim.nauk no.6:1127 '62.
(MIRA 15:8)

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

Monomer	Catalyst	Temperature	Time	Yield	Molecular weight	m.p.
$(CH_3)_3SiCH=CH_2$	8%	26°C	8	90%	$2\cdot10^4$	280-300°C
$(CH_3)_2C_6H_5SiCH=CH_2$	8%	25°C	8	85%	$2\cdot10^4$	130°C

There is 1 table.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: June 29, 1962

Card 2/2

NAMETKIN, N. S.; PRITULA, N. A.; TOPCHIYEV, A. V.; CHERNYSHEVA, T. I.

Synthesis of organosilicon compounds having phenylene-carbon links. Neftekhimia 2 no.4:632-638 Jl-Ag '62.
(MIRA 15:10)

1. Institut neftekhimicheskogo sinteza AN SSSR.

(Silicon organic compounds)

NAMETKIN, N.S.; PANOV, V.V.

Production of monomers. Vest.AN SSSR 32 no.7:116-117 Jl '62.
(MIRA 15:7)

1. Chlen-korrespondent Akademii nauk SSSR (for Nametkin).
(Petroleum chemicals)

NAMETKIN, N.S., DURGARYAN, S.G.

"Katalytische und strahlenpolymerisation von alkenyislianen."

Report submitted to the 2nd Dresden Symp. on Organic and Non Silicate Silicon Chemistry.
Dresden, East Germany 26-30 March 1963

NAMETKIN, N.S., TOPICHEV, A.V., Deceased, D~~O~~URGARYAN, S.G.

Un catalyseur efficace pour la polymerization des composes vinylsiliciques.

Report submitted for the International Symposium of Macromolecular chemistry Paris, 1-6 July 63

NAMETKIN, N.S., VDOVIN, V.M.

Procede nouveau pour la preparation des polymeres silaniques constitues par des atomes de carbone et de silicium dans les chaines principales.

Report submitted at the International Symposium of Macromolecular Chemistry Paris, 1-6 July 63

Ye. Sh.

NAMETKIN, N.S., FINKELSHTEYN, ~~Ya. S.H.~~ VDOVIN, V.M. SAVYALOV, V. I.;
PUSHCHEVAYA, K. S.;

"Die alkykierung aromatischer verbindungen mit silico-olefinen."

"The alkylation of aromatic compounds with silicoolefins."

Report submitted to the 2nd Dresden Symp. on Organic and Non-Silicate Silicon Chemistry.
Dresden, East Germany 26-30 March 1963

Institute for petrochemical syntheses of the Academy of Science of the USSR, Moscow.

TOPCHIYEV, A.V. [deceased]; NAMETKIN, N.S.; TSYU SYAO-PEY; DURGAR'YAN,
S.G.; ZAV'YALOV, V.I.

Polymerization of monoallyl derivatives of silicon with the catalytic system $(i\text{-}C_4H_9)_9Al$ $TiCl_4$. Izv.AN SSSR.Otd.khim.nauk no.2:269-274 F '63.
(MIRA 16:4)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Silicon organic compounds) (Organometallic compounds)
(Polymerization)

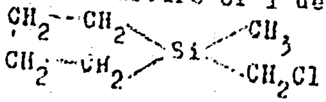
S/062/63/000/002/010/020
B144/B186

AUTHORS: Vdovin, V. M., Nametkin, N. S., Pushchevaya, K. S., and Topchiyev, A. V. (Deceased)

TITLE: Synthesis and conversions of 1-chloro-methyl-1-methyl silico-cyclopentane

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 2, 1963, 274 - 281

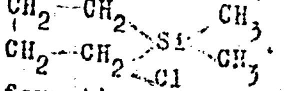
TEXT: 1-chloro-methyl-1-methyl silico-cyclopentane (I) (b.p. 168.5°C, n_D^{20} 1.4738, 1_4^{20} 0.9893) was synthesized from chloro-methyl-methyl-dichloro silane and $BrMg(CH_2)_4MgBr$ in 50% yield. It was used as the initial substance for the synthesis of new derivatives with carbofunctional radicals. The structure of I determined from IR spectra was



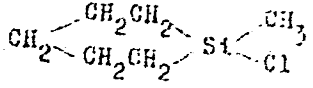
Derivatives were obtained by introducing functional groups into the methyl radical by nucleophilic substitution of Cl. 1-iodo-methyl-1-methyl silico-cyclopentane was synthesized from I, KI and acetone

Card 1/3

by boiling for 24 hrs; b.p. 93.5°C, n_D^{20} 1.5385, d_4^{20} 1.4973, yield 89%. 1-thiocyano-methyl-1-methyl silico-cyclopentane was obtained from I and KSCN; b.p. 108 - 110°C, n_D^{20} 1.5110, d_4^{20} 1.0295, yield 78 %. Reacting I with potassium acetate yielded 1-acetoxy-methyl-1-methyl silico-cyclopentane; b.p. 96 - 97°C, n_D^{20} 1.4550, d_4^{20} 0.9675, yield 64.5%. The differing properties of I and the 1-chloro-methyl-1-methyl silico-cyclopentane obtained from 1,1-dimethyl silico-cyclopentane by R. Fessenden, F. J. Freenor (J. Organ. Chem., 26, 2003 (1961)) are attributed to a different isomeric structure:



. Reaction with $AlCl_3$ produced a widening of the ring with formation of 1-chloro-methyl silico-cyclohexane; b.p. 156.7°C, n_D^{20} 1.4613, n_4^{20} 0.9847, yield 91 %. The structure was established spectrometrically based on the 797, 912, and 1014 cm^{-1} bands characteristic of the silico-cyclohexane ring:



and titration with KOH proved the

Synthesis and conversions of... S/062/63/000/002/010/020
B144/B186

presence of the Si-Cl bond. The widening of an Si-containing heterogeneous ring has been achieved for the first time. Under the effect of H_2SO_4 the ring of I was opened and a disiloxane formed.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: May 17, 1962

Card 3/3

NAMETKIN, N.S.; CHERNYSHOVA, T.I.; KRECHETOVA, K.K.

Synthesis of triisopropylsilane and tri- -naphthylsilane.
Izv. AN SSSR. Ser. khim. no.12:2219 D '63. (MIRA 17:1)

1. Institut neftekhimicheskogo sinteza AN SSSR.

NAMETKIN, N.S.

S/062/63/000/003/004/018
B101/B186

AUTHORS: **Nametkin, N. S.**, Ch'iu, Hsiao-p'ei, and Bel'govskiy, I. M.

TITLE: Determination of the molecular weights of poly-dimethyl-phenyl-allyl-silane and poly-trimethyl-allyl-silane

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 3, 1963, 478 - 481

TEXT: In order to determine the constants of the equation $[\eta] = K \cdot M^{\alpha}$ the refractive index for poly-dimethyl-phenyl-allyl-silane was measured at 4360 Å in decaline solution and the viscosity in decalin was measured. $[\eta]$ was found to be $4.9 \cdot 10^{-6} \bar{M}_w^{0.97}$. $\bar{M}_w$ was 37,800 for the fraction soluble in acetone, 60,000 for the fraction extracted with heptane, and 800,000 for the extraction residue. $\bar{M}_w$ for poly-trimethyl-allyl-silane was calculated by determining the refractive index, and found to be 70,000 for the acetone fraction (55.3% of the polymer), and 1,100,000 for the extraction residue. There are 1 figure and 2 tables.

Card 1/2

S/062/63/000/003/004/018
B101/B186

Determination of the ...

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: May 23, 1962

Card 2/2

L 17099-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW/MAY
S/062/63/000/004/010/022

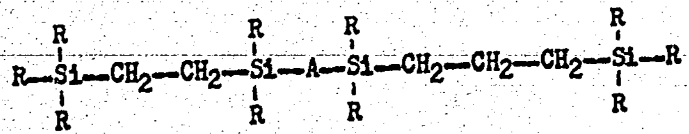
68
67

AUTHOR: Nametkin, N.S., Topchiyev, A. V., Chernysheva, T.I., and Kartasheva, L.I.

TITLE: Some organosilicon compounds containing siloxano-carbon, silthiano-carbon and silazano-carbon chains

PERIODICAL: Akademiya nauk SSSR, Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, 1963, 654-659

TEXT: A description is given of the synthesis of compounds having the following general formula



$$R-\overset{R}{\underset{R}{Si}}-CH_2-CH_2-\overset{R}{\underset{R}{Si}}-A-\overset{R}{\underset{R}{Si}}-CH_2-CH_2-CH_2-\overset{R}{\underset{R}{Si}}-R$$

Card 1/2

L 17C99-63 S/062/63/000/004/010/022

Some organosilicon compounds containing .....

where A = C; NH; S. These compounds were obtained from pentaalkyl (aryl)-chlorodisilylpropanes which in turn were obtained by the addition of various hydridesilanes to allylsilanes, in the presence of chloroplatinic acid. A total of 15 compounds was synthesized. Physical and chemical properties of the compounds are presented in 4 tables.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences USSR)

SUBMITTED: June 4, 1962

Card 2/2

NAMETKIN, N.S.; PAPOK, K.K.

Sixth World Petroleum Congress. Khim. i tekh. topl. i masel 8 no.10:64-67 0 '63. (MIRA 16:11)

L 18755-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD/ESD-3 Pc-4/Pr-4 RM/
WW/MAY
G/0004/63/010/007/0390/0391

(S)

75

73

ACCESSION NR: AP3005759

AUTHOR: Tschernyschewa, T. I.; Nametkin, N. S.; Portula, N. A.; Kartaschewa, L. I.

TITLE: Organic silicon compounds with phenylene and thienylene chain links. (Paper presented at the II. Dresden Symposium for Organic and Non-Silicate Silicon Chemistry held from 26 to 30 March 1963. Translated from the Russian by E. Hassenruck and J. A. Kohler, Leipzig)

SOURCE: Plaste und kautschuk, v. 10, no. 7, 1963, 390-391

TOPIC TAGS: polymer, organic silicon compound, phenylene, thienylene, silane

ABSTRACT: The following compounds were prepared: see Fig. 1 of Enclosure 1. Alkenylsilanes were added to the H-Si-bonds. The synthesis of the dihydridphenylenesilanes resulted from the Mg compounds of the p-dibrombenzene and alkylarylhydrochlorsilanes: see Fig. 2 of Enclosure 1. The bromphenyldialkyl (aryl) silanes as well as the bromthienylalkyl (aryl) silanes were used to prepare p-phenylenevinylhydrosilanes and 2.5-vinylhydrothienylsilanes. Addition of the vinyltrialkylsilanes to both Si-H-bonds of the dihydrophenylenesilanes gave

Card 1/4

L 18755-63
ACCESSION NR: AP3005759 2

yields of 35 to 70%. The properties of the addition products obtained are shown in Table 1 of Enclosure 2. These addition took place in all cases at the last carbon atom. An investigation of the polymerization of p-phenylenehydrovinylsilanes and thienylenehydrovinylsilanes has been initiated by the authors. Orig. art. has: 1 table.

ASSOCIATION: Institut fur Petrochemische Synthese der Akademie der Wissenschaffen der UdSSR, Moscow (Institute for Petrochemical Synthesis of the Academy of Sciences of the USSR, Moscow)

SUBMITTED: 00 DATE ACQ: 14 Aug 63 ENCL: 02

SUB CODE: CH NO REF SOV: 000 OTHER: 000

Card 2/4

NAMETKIN, N.S.; VDOVIN, V.M.; PUSHCHEVAYA, K.S.

Catalytic reactions involved in the formation of 1,1-dimethylsilicocyclopentane. Dokl. AN SSSR 150 no.3:562-565 My '63.
(MIRA 16:6)

1. Institut neftekhimicheskogo sinteza AN SSSR. 2. Chlen-korrespondent AN SSSR (for Nametkin).
(Silicon organic compounds)
(Catalysis)

L 13007-63 EPF(c)/EWP(j)/EWT(m)/BDS AFFTC/ASD Pc-4/Pr-4
PM/WW/MAY
ACCESSION NR: AP3001403 S/0020/63/150/004/0799/0801

AUTHOR: Vdovin, V. M.; Nametkin, N. S. (Corresponding Member of Academy of Sciences, SSSR); Grinberg, P. L.

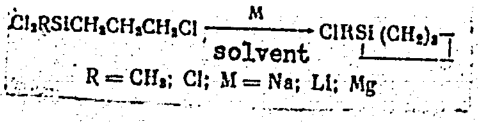
66
65

TITLE: Cyclobutanesilicates. The synthesis of 1,1-substituted cyclobutanesilicates

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 1963, 799-801

TOPIC TAGS: Synthesis of 1-chlor-1-methylcyclobutanesilicate, synthesis of 1-methyl-1-benzylcyclobutanesilicate, 1-ethyl-1-methylcyclobutanesilicate

ABSTRACT: The study of metaloorganic reactions of γ-chloropropyl silicate derivatives of the type



$$Cl_2RSiCH_2CH_2CH_2Cl \xrightarrow[\text{solvent}]{M} ClRSi(CH_2)_3$$

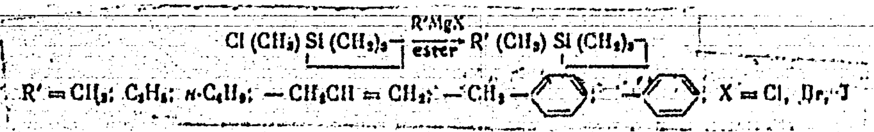
$$R = CH_3;\ Cl;\ M = Na;\ Li;\ Mg$$

showed that the reaction with the non-activated magnesium in ether resulted in very low yields of cyclobutylsilicates (10%). However, good yields of cyclobutylsilicates were obtained when using magnesium activated with iodine vapors. Further

Card 1/2

L 13007-63
ACCESSION NR: AP3001403

preparations of cyclobutylsilicates were made using alkyl, aryl, alkenyl and alkylaryl substitutions on the silica:



The synthesis of 1-chlor-1-methyl-cyclobutanesilicate, 1-methyl-1-bensylcyclobutanesilicate, and 1-ethyl-1-methylcyclobutanesilicate was obtained from hydrosilanes and alyl chlorides with the use of H_2PtCl_6 catalyst. Orig. art. has: 2 tables.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences, SSSR)

SUBMITTED: 12Feb63 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 008 OTHER: 006

Card 2/2

NAMETKIN, N.S., otv. red.; PANOV, V.V., kand. tekhn. nauk, otv. red.; MIYESSEROV, K.G., red.

[Synthesis and properties of monomers] Sintez i svoistva monometrov. Moskva, Nauka, 1964. 300 p. (MIRA 17:10)

1. Akademiya nauk SSSR. Institut neftekhimicheskogo sinteza. 2. Chlen-korrespondent AN SSSR (for Nametkin).

VINOGRADOV, G. V.; NAMETKIN, N. S.; NOSOV, M. I.

"Antiwear and antifriction properties of polyorganosiloxanes and their mixtures with hydrocarbons."

report presented at the Intl Lubrication Conf, Washington, D.C., 13-16 Oct 64.

Inst of Petrochemical Synthesis, AS USSR, Moscow.

[illegible] organosilicon compounds [illegible]

SOURCE: AN SSSR. Institut neftekhimicheskogo sinteza. [illegible] (The synthesis and properties of monomers). Moscow, Izd-vo Nauka, [illegible]

[illegible]

L 22593-65
ACCESSION NR: AT5002116

ASSOCIATION: None

SUBMITTED: 30Jun64 ENCL: 00 SUB CODE: OC, [illegible]

NO REF SOV: 003 OTHER: 005

NAMETKIN, N.S.; VDOVIN, V.M.; ZAV'YALOV, V.I.

Silicocyclobutane polymerization catalysts. Izv.AN SSSR. Ser.khim. no.1:203 Ja '64. (MIRA 17:4)

1. Institut neftekhimicheskogo sinteza im. A.V.Topchiyeva AN SSSR.

VDOVIN, V.M.; NAMETKIN, N.S.; FINKEL'SHTEYN, Ye.Sh.; OPPENGEYM, V.D.

Conversion of vinylbenzyl derivatives of silicon in the presence of alkylation catalysts. Izv. AN SSSR. Ser.khim. no.3:458-464 Mr '64. (MIRA 17:4)

1. Institut neftekhimicheskogo sinteza im. A.V.Topchiyeva AN SSSR.

ZNAMENSKAYA, E.N.; NAMETKIN, N.S.; PRITULA, N.A.; OPPENGEYM, V.D.;
CHERNYSHEVA, T.I.

Synthesis and properties of vinylhydride-p-phenyldisilanes.
Neftekhimia 4 no.3:487-493 My-Je '64. (MIRA 18:2)

1. Institut neftekhimicheskogo sinteza AN SSSR im. A.V.Topchiyeva.

VINOGRADOV, G.V.; NAMETKIN, N.S.; NOSOV, M.I.

Effect of oxygen and an oxidation initiator (hydroperoxide) on the anti-wear and anti-frictional properties of polysiloxanes. Neftekhimia 4 no.3:510-517 My-Je '64. (MIRA 18:2)

1. Institut neftekhimicheskogo sinteza AN SSSR im. A.V.Topchiyeva.

[illegible] EWA(...)/EWA(...) [illegible]

[illegible]

[illegible] Polak, L. S. [illegible]

TITLE: Radiation polymerization [illegible] anes

[illegible]

Card 1/2

L 22840-65
ACCESSION NR AP5000485

Orig. art. has 1 formula.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchieva [illegible] of Sc[illegible]

SUBMITTED: [illegible] May64 [illegible]

[illegible]

Card 2/2

NAMETKIN, N.S.; SHUIKOVA, N. Ya.; BEREZKIN, V.G.

Gas-liquid chromatography of some unsaturated organosilicon compounds. Izv. AN SSSR Ser. khim. no.11:2080-2082 N '64
(MIRA 18:1)

1. Institut neftekhimicheskogo sinteza im. A.V. Topchiyeva AN SSSR.

[illegible]

36
34

[illegible]

Card 1/2

L 25272-65

ACCESS[illegible]

[illegible]

ASSOCIATION: [illegible]

Card 2/2

NAMETKIN, N.S.; BEREZKIN, V.G.; VANYUKOVA, N.Ya.; VDOVIN, V.M.

Gas-liquid chromatography of certain silica hydrocarbons and paraffins. Neftekhimiia 4 no.1:137-141 Ja-F'64 (MIRA 17:6)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni A.V. Topchiyeva.

ACCESSION NO: AP4024413 S/0204/64/004/001/0170/0175

AUTHOR: Vinogradov, G. V.; Nametkin, N. S.; Nosov, M. I.

TITLE: Synergetic lubricating action of polysiloxanes and hydrocarbons

SOURCE: Neftekhimiya, v. 4, no. 1, 1964, 170-175

TOPIC TAGS: lubrication, synergism, polysiloxanes, hydrocarbons, antiwear lubricant, antifriction lubricant, antiwear test, antifriction test, petroleum product lubricant, silicon lubricants

ABSTRACT: The previously reported synergism in lubricant mixtures of polysiloxanes with some petroleum lubricants enriched with aromatic hydrocarbons has been further investigated by determining antiwear and antifriction properties of the following individual hydrocarbons and mixtures of them with polyethylsiloxanol liquid: diphenylmethane (isomeric mixture) (I), di-o-xylylmethane (II), 4,4'-diisopropyldiphenylmethane (III), 1,1-di-o-xylylethane (IV), 4-mono-isopropyldiphenyl (V), cumene (VI), and 2,6-di-tert.-butylmethyl benzene (VII). The tests were carried out on the four-ball MT-4 friction apparatus at

Card 1/2

ACCESSION NO: AP4024413

50C and a sliding speed of 23 cm/sec. The results (shown graphically) indicate that low-molecular-weight aromatic hydrocarbons (such as III and VI), which are readily oxidized to form hydroperoxides, possess high antiwear and antifriction lubricating properties. Sharp synergism was observed for the mixtures of III and VI with the polyethylsiloxanol liquid over a wide range of concentration of components. The role of atomic oxygen in the improvement of the lubricating properties of hydrocarbon lubricants and the role of hydroperoxides in transporting molecular oxygen to the metal surface is discussed in detail. The effectiveness of molecular oxygen as an additive to lubricants depends on the nature of the hydrocarbons which constitute the lubricant and on the ability of the hydrocarbons to form hydroperoxides. Orig. art. has: 4 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR im. A. V. Topchiyeva (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 27Jun63 DATE ACQ: 17Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 011 OTHER: 001

Card 2/2

ACCESSION NR. AP4032519 S/0204/64/004/002/0345/0350

AUTHOR: Vinogradov, G. V.; Nametkin, N. S.; Nosov, M. I.

TITLE: Effect of the nature of polysiloxanes on their function as additives to hydrocarbon lubricants

SOURCE: Neftekhimiya, v. 4, no. 2, 1964, 345-350

TOPIC TAGS: lubrication, synergism, polysiloxane lubricant additive, hydrocarbon lubricant, antiwear lubricant, antifriction lubricant, silicon lubricant, antiwear, antifriction, polysiloxanes, hydrocarbon

ABSTRACT: This is the third article in a series on synergism in polysiloxane-hydrocarbon lubricant mixtures. Previous studies showed that the antiwear and antifriction properties of polysiloxane-hydrocarbon lubricants depend on the nature of the hydrocarbon. In the present article, experimental data are presented on the effect of the nature of polysiloxanes on the synergism in polysiloxane-hydrocarbon lubricants. Tests were made of the antiwear and antifriction properties of mixtures of 1,1-di-xylylethane with

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ACCESSION NR. AP4032519

polymethylsiloxane (I), polyethylsiloxane (II), and polymethylphenylsiloxane liquids with an average content of phenyl groups, called polymer 1 (III), and with a high content of phenyl groups, called polymer 2 (IV). The results (expressed in graphs and diagrams) showed that the synergetic action of polysiloxanes in the lubricating mixtures is greatly dependent on the nature of the polysiloxane. Effectiveness of the latter as hydrocarbon lubricating oil additives decreased in the order II>I>III>IV. This decrease is attributed to the increasing thermo-oxidative stability in the polysiloxane series on substitution of the side ethyl groups in the polysiloxane chain for methyl and phenyl groups. The synergism was observed not only in the mutually soluble mixtures of polysiloxanes and hydrocarbons, but also in polysiloxane-hydrocarbon emulsions. Orig. art. has: 1 table and 4 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR im. A. V. Topchiyeva(Institut of Petrochemical Synthesis, AN SSSR)

Card 2/4

ACCESSION NR: AP4040604 S/0204/64/004/003/0487/0493

AUTHOR: Znamenskaya, E. N.; Nametkin, N. S.; Pritula, N. A.; Oppengeym, V. D.; Cherny*sheva, T. I.

TITLE: Synthesis and properties of 1-silyl-4-(vinylsilyl)benzenes

SOURCE: Neftekhimiya, v. 4, no. 3, 1964, 487-493

TOPIC TAGS: organosilicon polymer, phenylene bridge, heat transfer agent, lubricating oil

ABSTRACT: Two new 1-silyl-4-(vinlysilyl)benzenes, 1-(diethylsilyl)-4-(diethylvinylsilyl)benzene (I) and 1-(methylphenylsilyl)-4-(methylphenylvinylsilyl)benzene (II), have been synthesized, their physical constants determined, and their polymerization studied. Organosilicon compounds with phenyl groups in the backbone were of interest as thermally stable substances suitable for such applications as lubricating oils and heat-transfer agents. Synthesis was carried out in two steps: 1) condensation of p-bromophenylmagnesium bromide with the appropriate dialkyl- or diaryl-chlorosilane to form the

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ACCESSION NR: AP4040604

1-bromo-4-(dialkyl)- or 1-bromo-4-(diarylsilyl)-benzene and 2) reaction of the Grignard reagent from the latter with the appropriate alkyl- or aryl-chlorovinylsilane to form I or II in 28.4 and 35.0% yields, respectively. Polymerization of II (taken as an example) at 300C in the presence of Pt on C or at 280C without a catalyst formed straight-chain soluble polymers with $-\overset{|}{\underset{|}{Si}}C_6H_4\overset{|}{\underset{|}{Si}}CH_2CH-$ repeat units in the backbone in 82.3 and 68.4% yield and softening at 142—150C and 87—93C, respectively. The structure of the polymers was confirmed by IR spectroscopy. This work was done at the Institute of Petrochemical Synthesis, Academy of Sciences SSSR. Orig. art. has: 8 formulas, 2 tables, and 3 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR im. A. V. Topchiyeva (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 10Sep63 DATE ACQ: 06Jul64 ENCL: 00

SUB CODE: OC,GC NO REF SOV: 006 OTHER: 007

Card 2/2

ACCESSION NR: AP4040605 S/0204/64/004/003/0510/0517

AUTHOR: Vinogradov, G. V.; Nametkin, N. S.; Nosov, M. I.

TITLE: Effect of oxygen and oxidation initiators (hydroperoxides) on the antiwear and antifriction properties of polysiloxanes

SOURCE: Neftekhimiya, v. 4, no. 3, 1964, 510-517

TOPIC TAGS: lubricant, polysiloxane, polysiloxane lubricant, antiwear property, antifriction property, oxidation, polyethylsiloxane, polymethylphenylsiloxane, methane, 4.4'diisopropyl-, hydroperoxide, oxidation initiator, isopropylbenzene hydroperoxide, seizing, friction coefficient

ABSTRACT: The effect of the oxidative activity of the ambient gas phase and the agents which intensify the oxidation on the antiwear and antifriction properties of polysiloxane fluids under heavy loads was studied at the Institute of Petrochemical Synthesis imeni A. V. Topchiyev, AS USSR. A polymethylsiloxane, a polyethylsiloxane, and two polymethylphenylsiloxanes with a medium and a high content of phenyl groups in the molecule, designated Polymer 1 and Polymer 2

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ACCESSION NR: AP4040605

respectively, were used; in some experiments 4,4'-diisopropyldiphenylmethane was added to the polysiloxane fluids to determine the effect of the presence of an easily oxidizable hydrocarbon. The experiments were conducted on a four-ball machine. Variations in the oxidative activity of the ambient gas phase were achieved by conducting the experiments in vacuum, in the air, and by blowing oxygen at the rate of 12 l/hr through the lubricant in the four-ball chamber. In some experiments, varying amounts (0.5—3%) of isopropylbenzene hydroperoxide were added to the lubricating fluids as the oxidation initiator. The dependence of the wear on the load, friction-vs.-time diagrams, and dependence of the friction coefficients on the load were obtained for temperatures of 50, 120, and 200C. It was found that the oxidizing agents and easily oxidizable hydrocarbons exert the same effect in polysiloxane fluids as in hydrocarbon lubricants, namely, a decrease in seizing, which becomes degenerated and is terminated. This effect on the lubricating properties of polysiloxanes increases with the decrease of the thermoxidative stability of the latter, e.g., in the sequence:

polyethylsiloxane → Polymer 1 → Polymer 2.

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The effect is weaker than that observed in hydrocarbon lubricants. The antifriction properties of the polisiloxanes are more susceptible than their antiwear properties to the effect of the ambient gas phase and the composition of the lubricating medium. Orig. art. has: 5 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR im. A. V. Topchiyeva (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 25Jun63 DATE ACQ: 06Jul64 ENCL: 00

SUB CODE: FP,GC NO REF SOV: 010 OTHER: 007

Card 3/3

phenylenesiloxane groups and their thermoanalysis

SOURCE: Neftekhimiya, v. 4, no. 4, 1964, 650-657

[illegible] benzene [illegible]

where A is [illegible] or $(CH_2)_n$ with n = [illegible], R and R' are CH_3, or A is [illegible] their possible use as lubricants, heat-transfer agents and fluids for vacuum diffusion pumps. The structure of the compounds was confirmed by IR [illegible] comparison of the [illegible]

[illegible]

analysis are given in Table [illegible] of the enclosure. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva AN SSSR (Institute of Petrochemical Synthesis, AN SSSR)

SUB CODE: GC, OC NO REF SOV: 004 OTHER: 007

2/3

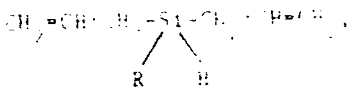
Compound

[illegible]

L 16027-65 EWG(j)/EWT(m)/EPF(c)/EPR(n)-2/EWP(j)/T/EWA(h)/EWA(1) Pc-4/Pr-4/Peb

[illegible]

ACCESSION NR: AP4049152



$CH_2{=}CH{-}CH_2{-}\underset{R\quad R}{Si}{-}CH_2{-}CH{=}CH_2$, in which 1) R=CH[illegible]

2) R=C_2H_5

3) R=[illegible]

Polymerization was carried out in [illegible] glass ampules, [illegible]

[illegible]

[illegible] following [illegible]

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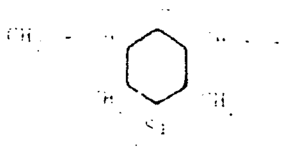
ACCESSION NR: AP4049152



ORIG. ART. HAS: [illegible] figures and [illegible]

[illegible]

SUBMITTED: 2[illegible]Jan64 ENCL: [illegible] SUB CODE: [illegible]

NO REF SOV: 005 OTHER: 005 ATD PRESS: 3141

Card 3/3

NAMETKIN, N.S.; PANOV, V.V., kand.tekhn.nauk

Sixth World Petroleum Congress. Vest. AN SSSR 34 no. 2:79-81
F '64. (MIRA 17:5)

1. Chlen-korrespondent AN SSSR (for Nametkin).

[illegible]

AUTHOR: [illegible], [illegible]; [illegible]; [illegible]

TITLE: [illegible] ferrocene [illegible]

SOURCE: Zhurnal obshchey khimii, v. 34, no. 7, 1964, 2258-2262

TOPIC TAGS: organosilicone, ferrocene, dialkylsilyl ferrocene, Si H bond, Si H bond [illegible] addition reaction, [illegible] methylethylsilyl ferrocene [illegible] catalyst, infrared spectrum, triethylsilyl ferrocene

ABSTRACT: Dialkylsilyl ferrocenes were obtained by the interaction of methylethyl- diethyl[illegible]silane with lithium ferrocene in a tetrahydrofuran medium according

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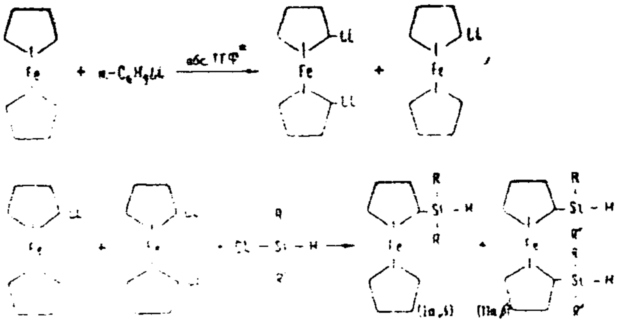
L 6647-65

ACCESSION NR: AP4042747



(Ia) R = CH_3, R' = C_2H_5 (Iб) R = R' = C_2H_5; (IIa) R = CH_3, R' = C_2H_5; (IIб) R = R' = C_2H_5.

[illegible] eated with the [illegible] as well as [illegible]

[illegible] AP[illegible]747

[illegible]

SUBMITTED: [illegible]May6[illegible]

ENCL: 00

Card 3/3

ACCESSION NR: AP4012090 S/0020/64/154/002/0383/0386

AUTHORS: Nametkin, N.S. (Corresponding member); Vdovin, V.M.;
Finkel'shteyn, Ye. Sh.; Arkhipova, T.N.; Oppengeym, V.D.

TITLE: Synthesis of 3,4-benzosilicocyclopentanes

SOURCE: AN SSSR. Doklady*, v. 154, no. 2, 1964, 383-386

TOPIC TAGS: 3,4-benzosilicocyclopentane, infra-red spectrum, ultraviolet spectrum, chloromethylbenzyldichlorsilane cyclization, 3,4-benzosilicocyclopentane synthesis, silicon containing indane

ABSTRACT: The silicon-containing analog of indane, 3,4-benzosilicocyclopentane and some of its derivatives were synthesized and characterized by their IR and u.v. spectra and physical properties. Chloromethylbenzyldichlorsilane was cyclized with $AlCl_3$ in benzene

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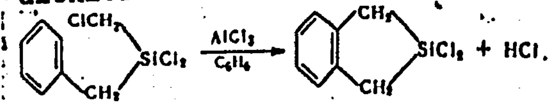
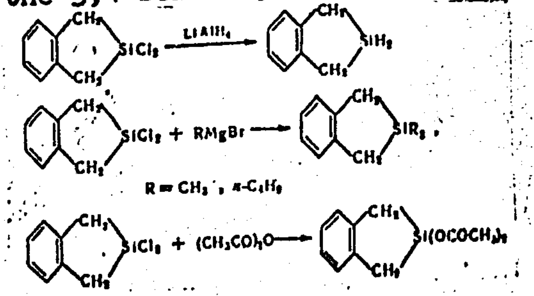
ACCESSION NR: AP4012090

to the 3,4-benzo-1,1-dichlorosilicocyclopentane:



The latter was reduced with $LiAlH_4$ to 3,4-benzo-1,1-dihydrosilicocyclopentane, alkylated with RMgBr to the corresponding 1,1-dimethyl- and 1,1-dibutyl-derivatives, and reacted with acetic anhydride to form the 3,4-benzo-1,1-diacetosilicocyclopentane.



ACCESSION NR: AP4012090

Orig. art. has: 3 figures, 1 table, 2 equations and 2 formulas.

ASSOCIATION: Institut neftekhimicheskogo sinteza, Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences SSSR)

SUBMITTED: 28Sep63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: CH NO REF SOV: 005 OTHER: 001

Card 3/3

ACCESSION NR: AP4030784 S/0020/64/155/004/0849/0852

AUTHOR: Nametkin, N. S. (Corresponding member); Vdovin, V. M.; Grinberg. P. L.

TITLE: Silicacyclobutanes. Strength of the Si-C bond of the silicacyclobutane ring and synthesis of new derivatives of silicacyclobutanes.

SOURCE: AN SSSR. Doklady*, v. 155, no. 4, 1964, 849-852

TOPIC TAGS: silicacyclobutane, silicacyclopentane, silicacyclohexane, silicon carbon bond strength, silicacyclobutane derivative, synthesis, alkoxysilicacyclobutane, acetoxysilicacylcobutane, aminosilicacyclobutane

ABSTRACT: The investigation included an examination of the strength of the Si-C bond of the silicacyclobutane ring, of the specificity of reactions for the silicacyclobutane ring, and of the synthesis of new silicacyclobutane derivatives. Reaction was attempted between 1,1-dimethylsilicacyclobutane and heptyl alcohol, acetic acid, acetic anhydride, hydrochloric acid, hydrogen chloride gas, water and diethylamine. Reactions with acids, alcohol, and water proceeded according to the equation

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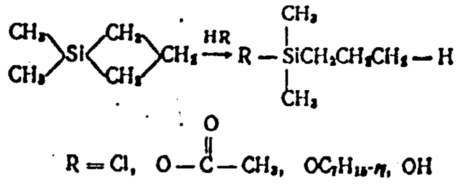
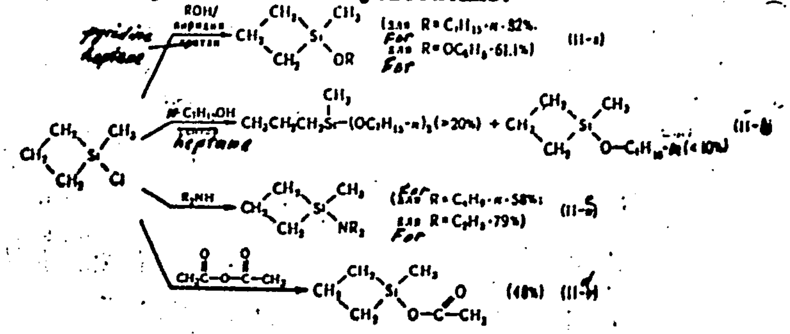
ACCESSION NR: AP4030784



$R = Cl,\ O-\overset{O}{\overset{\|}{C}}-CH_3,\ OC_7H_{15}\text{-}n,\ OH$

These reactions are specific for the Si-C bond of the silicacyclobutane ring; they will not proceed with the 1,1-dimethylsilicacyclopentane or -hexane. Reactions were attempted with methylchlorosilicacyclobutane:



Card 2/3

ACCESSION NR: AP4030784

Reactions IIa, IIc, and IId are a means of synthesizing previously unknown alkoxy-, acetoxy-, and aminosilicacyclobutanes. Orig. art. has: 2 tables and 2 equations.

ASSOCIATION: Institut neftekhimicheskogo sinteza. Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences,SSSR)

SUBMITTED: 26Oct63 DATE ACQ: 30Apr64 ENCL: 00

SUB CODE: OC NO REF SOV: 001 OTHER: 005

Card 3/3

NAMETKIN, N.S.; CHERNYSHEVA, T.I.; PRITULA, N.A.; GEVENYAN, M.I.

Bromo- and acetoxy derivatives of dihydrideparaphenylenedisilanes. Dokl. AN SSSR 155 no. 5:1126-1129 Ap '64. (MIRA 17:5)

1. Institut neftekhimicheskogo sinteza AN SSSR. 2. Chlen-korrespondent AN SSSR (for Nametkin).

ACCESSION NR: AP4038524 S/0020/64/156/003/0608/0611

AUTHOR: Nametkin, N. S. (Corresponding member); Cherny*sheva, T. I.; Kartasheva, L. I.

TITLE: Organosilicon compounds with thienylene and hydrocarbon links

SOURCE: AN SSSR. Doklady*, v. 156, no. 3, 1964, 608-611

TOPIC TAGS: silane, thiophene, thiophene derivative, silane derivative

ABSTRACT: The study of the addition of silanes to unsaturated compounds has been continued and organosilicon compounds containing thienylene and hydrocarbon links in the backbone have been synthesized. This work was done at the Institute of Petrochemical Synthesis imeni A. V. Topchiyev, Academy of Sciences SSSR. 2,5-Bis(methylphenylsibyl)- (I; b_2, 200—205C) and 2,5-bis(ethylphenylsilyl)-thiophene (II; b_2, 228—230C) were synthesized by reacting 2,5-thiophenedimagnesium dibromide with the appropriate

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ACCESSION NR: AP4038524

alkylphenylchlorosilane in yields of 33.0—55.6%, respectively. From I or II and the appropriate trialkylalkenylsilane (1/3 molar ratio) in the presence of chloroplatinic acid catalyst at atmospheric pressure and 70—200C, the following thick oils were synthesized in 50.3—77% yields: 2,5-bis[(trimethyl- and 2,5-bis[(triethylsilylethyl)methylphenylsilyl]thiophene; 2,5-bis[(trimethylsilylpropyl)methyl- and 2,5-bis[(trimethylsilylpropyl)ethyl-phenylsilyl]thiophene; and 2,5-bis[(triethylsilylpropyl)phenylethyl)thiophene (b_2, 258—260, 307—310, 277—280, 280—285, and 325—330C, respectively). Structures were confirmed by IR spectroscopy. Orig. art. has: 2 tables and 3 formulas.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences SSSR)

SUBMITTED: 04Jan64 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: OC NO REF SOV: 001 OTHER: 000

Card 2/2

L 16150-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RPL JW/RM

ACCESSION NR: AP[illegible] S/0020/64/158/002/0404/0407

AUTHOR: Nametkin, N. S. (Corresponding member AN SSSR); Perchenko, V. N.; Grushevenko, I. A.

TITLE: [illegible] organo-silicone [illegible] hydrocarbon radical

SOURCE: AN SSSR. Doklady*, v. 158, no. 2, 1964, 404-407

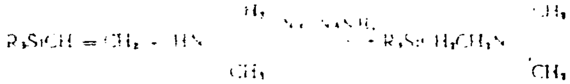
TOPIC TAGS: organo silicone, ethyleneimine, alkenylsilane, addition [illegible] alkenylsilane reactivity, ethyleneimine heterocycle, electrophilic agent, nucleophilic [illegible]

ABSTRACT: Considerations on polarization of the short carbon-carbon bond in alkenylsilanes and their behavior in addition reactions with [illegible], etc. led to investigations of the reactivity of alkenyl- [illegible]

Card 1/2

L 16150-65
ACCESSION NR: AP4045634

reactions with diethylamine and ethyleneimine. The latter proved highly reactive. Catalysts (Na, NaNH$_2$), their quantity, reaction temperature and duration influenced the yield which is tabulated. The reaction proceeded apparently according to the following scheme (β position in respect to Si)



$$R_3SiCH=CH_2 + HN\begin{matrix}CH_2\\ \\ CH_2\end{matrix} \xrightarrow{Na,\ NaNH_2} R_3SiCH_2CH_2N\begin{matrix}CH_2\\ \\ CH_2\end{matrix}$$

The i.r. spectrum of dimethylphenyl-β-(N-ethyleneimine)-ethylsilane [illegible] The reaction is re- [illegible] [illegible] class of nucleophilic reactions. The latter possibility is being investigated. Orig. art. has: 2 tables, 1 figure and 1 formula.

ASSOCIATION: None

SUBMITTED: 19May64 ENCL: 00

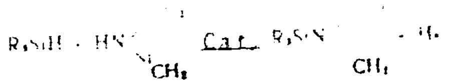
SUB CODE: GC, OC, MT NR REF SOV: 001 OTHER: 005

Card 2/2

AUTHOR: Nametkin, N. [illegible] (Corresponding member AN SSSR);
Perchenko, V. N.; Batalova, [illegible]

[illegible]

TOPIC TAGS: [illegible]silane, ethyleniminosilane, dehydrocondensation,
ethylenimine



$R_3SiH + HN \ldots CH_2 \xrightarrow{Cat.} R_3SiN \ldots CH_2 + H_2$

The reaction proceeded quantitatively (on evolving hydrogen) at 40—50C in the presence of lithium catalyst. The yield of the nine [illegible] —%. Preservation of the

Card 1/2

[illegible]

[illegible]

[illegible] table, and 2 formulas.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. [illegible] [illegible]

[illegible]

SUBMITTED: 19May64 ENCL: 00 SUB CODE: OC, IC

NO REF SOV: 001 OTHER: 005

Card 2/2