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VYAZANKIN, N.S.

AUTHOR KNUNYANTS, I.L., Member of the Academy, VYAZANKIN, N.S. PA - 2914

TITLE Reduction Dimerization of Derivates of α,β-Unsaturated Acids. (Vosstanovitelnaya dimerizatsiya proizvodnykh α,β-nenasyshchennykh kislot -Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 1, pp 112-115, (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT As already dated, dinitryle of adipine acid forms the main product of the electrochemical reduction of acrylonitryle as it was already mentioned. This work was carried out in order to investigate the dependence of hydrodimerization phenomena on the structure of the compounds to be reduced and on the nature of the amalgams. The investigation showed that one of the factors which influence the formation of hydrodimerigates is the character of the conjugated system of the substance to be reduced. This is by no means unexpected if it is assumed that the formation of the hydrodimerigate is preceded by molecule reduction withits subsequent dimerization. It is known that the non-conjugated ethylene-bindings to amalgam are not reduced. It was found (in the case of stirol and poyvinacetate) that the conjugations of the ethylene binding with the benzol kerml or with one unseparated electron-couple of the oxygen atom are not sufficient even for the reduction of a double-binding to potassium or lithium amalgam. It is rather difficult to reduce amides and diethyl amides of the same acid, they give no hydrodimerisates. Diethylamide and diphenyleamide of cinnamon acid produce, besides the normal products of the reduction, also hydrodi-

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Reduction Dimerization of Derivates of α,β-Unsaturated Acids. PA - 2914

merisates since we have here a conjugation of the π-electrons of the carbonyle groupe, of the ethylene formation and of the benzol nucleus. The connection between the conjugation and the capacity of being hydromerised is also observed in the series of ethers and nitryles of α,β-unsaturated acids. It appears from the results that also other factors can influence the process of reducing dimerization decisevely. Thus, the lacking reduction of the ethylic ether of β,β-dimethylacryl acid in the case of treatment with sodium-and potassium amalgams by screening of the β-position by two methylgroups seems to be explained. From the results it may be concluded that the amalgams differ considerable from one another by their reduction capacity with respect to the derivatives of α, β-unsaturated acids with hydrodimerisateformation. On aluminium-amalgam only the ethers of the maleine- and fumaric acid and the derivatives of cinnamon acid are hydromerized. In the case of the amalgams of alkaline metals reductioncapacity rises from sodium to lithium, i.e. parallel to the increase of the normal potential of these amalgams. (3 tables, 4 literature references)

ASSOCIATION Institute of Element-Organic Compounds of the Academy of Science of the U.S.S.R.

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VYAZANKIN, N. S. Cand Chem Sci -- (diss) "Reducing dimerization of derivative [redacted] alpha, beta-unsaturated acids." Mos, 1957. 8 pp (Inst of Elementoorganic Compounds, Acad Sci USSR), 100 copies (KL, 11-58, 113)

5 (3)

AUTHORS: Korshunov, I. A., Vodzinskiy, Yu. V. Vyazankin, N. S., Kalinin, A. I. SOV/79-29-4-69/77

TITLE: The Reduction of the Derivatives of the α, β-Unsaturated Acids on the Mercury Drop Cathode (Vosstanovleniye na rtutnom kapel'nom katode proizvodnykh α, β-nenasyshchennykh kislot). I) Derivatives of the Fumaric Acid (I. Proizvodnyye fumarovoy kisloty)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1364 - 1370 (USSR)

ABSTRACT: The problem of the influence of the structure of organic compounds on their reducibility on the mercury drop cathode was often discussed in the publications, the views were, however, conflicting (e. g. Refs 1,2). As far as the reactivity of the molecule is determined by the nature of its atoms and the character of the bonds between the atoms, by its polarity and polarization capacity as well as by other factors, it is obvious that only an investigation of all these factors may yield a judgment concerning the easiness of its reduction. Since the problem of the influence of the structure of organic compounds

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The Reduction of the Derivatives of the α, β-Unsaturated Acids on the Mercury Drop Cathode. I) Derivatives of the Fumaric Acid SOV/79-29-4-69/77

on the reducibility is important the authors considered it to be natural to determine the dependence of the half cycle potential of the reduction on the conjugation character in the α, β--unsaturated acids and its derivatives. For this purpose the polarographic reduction of a series of derivatives of fumaric acid was investigated. Many authors (Refs 3-5) dealt with the reduction of the fumaric- and maleinic acid, their esters and salts on the mercury cathode. These authors determined the potential values and the number of the electrons taking part in the reduction. The data of M. I. Bobrova and A. N. Matveyeva (Ref 6) concerning the reduction of dinitrile of fumaric acid at the mercury drop cathode did not agree with those of the authors, since the authors had no pure products. Hitherto unknown derivatives of the fumaric acid were obtained and characterized: amide, dimethyl amide, diethyl amide, dibutyl amide, diphenyl amide, and the nitrile of β-carbethoxyacrylic acid. The dimethyl- and monoethyl ester, the diamide and dinitrile of fumaric acid as well as the given derivatives of β-carbethoxyacrylic acid were subjected to a polarographic investiga-

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tion. Ease of reduction diminishes in the series: diphenyl amide > amide > dimethyl amide > diethyl amide > dibutyl amide of β-carbethoxyacrylic acid which is completely in line with the character of the conjugated system of the π-bonds in these compounds. There are 1 figure, 1 table, and 12 references, 5 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete (Scientific Research Institute of Chemistry of Gor'kiy State University)

SUBMITTED: January 24, 1958

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87777
S/063/60/005/006/012/014
A051/A026

5.3700 2209, 1164, 1273

AUTHORS: Razuvayev, G.A., Vyazankin, N.S., Dergunov, Yu. I., Pinchuk, N.M.

TITLE: The Reaction Between Hexaethyldistannane and Organic Haloid Derivatives

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im. D.I. Mendeleyeva, 1960, Vol. 5, No. 6, pp. 707-708

TEXT: The authors have investigated the reactions of hexaethyldistannane with certain organic haloid derivatives in evacuated ampules at elevated temperatures. It has been shown on the example of bromine- and iodine-benzene, that halogene, bound to the benzene ring, is not detached by the hexaethyldistannane, when heated to 180-190°C for a period of 20-30 hours. In all other cases it was found that the rate and direction of the reaction depends on the nature of the haloid derivative. The hexaethyldistannane was found to react easiest with triphenylchloromethane (4.5 hrs at 100°C) and with n-toluenesulfochloride (13 hrs at 100°C). In the first case the reaction takes place with the formation of triethylstannous chloride (yield 61.7% of the theoretical), and triphenylmethyl radicals. The presence of the latter was proven by the electronic paramagnetic resonance method. Triethyl stannous chloride (yield

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90.8%) and n-tolyltriethylstannylsulfon were formed from the reaction with the n-toluenesulfochloride. Yield of the second-18.7%, melting point 91-92°C (from alcohol). The structure of the sulfon has been verified by a counter synthesis, carried out in a medium of absolute alcohol (for 3 hours, at 78°C) with a yield of 44.2% of the theoretical:

$$n\text{-}CH_3C_6H_4SO_2Na + (C_2H_5)_3SnCl \longrightarrow NaCl + n\text{-}CH_3C_6H_4SO_2Sn(C_2H_5)_3 \quad (1).$$

Under more severe conditions (4 hours at 190-200°C) the hexaethyldistannane reacts with the benzene chloride. The formation of dibenzene (yield 35.4%) in addition to the triethylstannous chloride (yield 73.4%, proves that a reaction with a homologous separation of the σ - links takes place. It is assumed that this type of decomposition of the bonds is characteristic for the $(C_2H_5)Sn_2$ reaction with β-bromoethylbenzene, 1.4-dibromobutane, and 1.5-dibromopentane also, taking place at 200-210°C. In all these cases it was found that, in addition to the main process of triethylstannous bromide (yield 70.5, 72.5 and 82.4%, respectively) formation, the disproportionation of the hexaethyldistannane takes place also: $2(C_2H_5)_6Sn_2 \longrightarrow 3(C_2H_5)_4Sn + Sn$. (2). It is further assumed that reaction (2) is catalyzed by triethylstannous bromide in the

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reactions discussed here, based on previously made assumptions (Ref. 2, the author), that reaction (2) is a catalytic one, just as the disproportionation of the hexaethyldiplumbane is (Ref. 1-3, the author). This assumption was confirmed by the thermostatic action of the mixture hexaethyldistannane and triethylstannous chloride, at 200-210°C (10 hours, molar ratio 1:2). Reaction (2) takes place more energetically in the presence of 3 moles of dichloroethylstannate and 2 moles of hexaethyldistannane (for a period of 1 h, at 200°C). The formed tetraethylstannate reacts with the dichloroethylstannate, forming triethylstannous chloride: $2(C_2H_5)_6Sn_2 + 3(C_2H_5)_2SnCl_2 \rightarrow 6(C_2H_5)_3SnCl + Sn$. (3). It is stressed that equation (2) describes only the final result. The reaction mechanism is thought to be complex from the following indications: during the reaction intensive wine-colored, presumably high-molecular compounds are formed, decomposing toward the end of the process, the stannous chloride is thought to play an important role in equation (2), usually identified when conducting the disproportionation in an excess of dichloroethylstannate. It was established that the $SnCl_2$ can cause changes not only in the hexaethyldistannane, but also in the more stable tetraalkyl

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The Reaction Between Hexaethyldistannane and Organic Haloid Derivatives

derivatives of the tin. The following reaction is given as an example of the thermostatic action of equimolar quantities of tetraethylstannate and $SnCl_2$ (for 10 hours at 230°C): $2(C_2H_5)_4Sn + 2SnCl_2 \rightarrow 2(C_2H_5)_3SnCl + (C_2H_5)_2SnCl_2 + Sn$. (4) also taking place with the formation of dark-red colored intermediary compounds. Another fact proving the complexity of the reaction is given as being the fact that catalytic quantities of $(C_2H_5)_3SnCl$ and $(C_2H_5)_2SnCl_2$ (2% of the weight of hexaethyldistannane) do not bring about its complete conversion according to equation (2). It is pointed out that the interaction of the hexaethyldiplumbane with an excess of triethyl lead chloride triethylstannous chloride or dichlorodiethylstannate, takes place quite differently. In this case the disproportionation reaction is completely suppressed by the complex oxidation- reduction process. In conclusion the authors state that investigations are still being continued in this field. There are 3 Soviet references.

ASSOCIATION: Gor'skovskiy gosudarstvennyy universitet im. N.I. Lobachevskogo (The Gor'kiy State University im. N.L. Lobachevskiy)

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85713

S/079/60/030/008/010/012/XX
B001/B066

5.3700 2209, 1153, 1273

AUTHORS: Razuvayev, G. A., Vyazankin, N. S., and Shchepetkova, O. A.

TITLE: Thermal Decomposition of Lead Tetraethyl, Hexaethyl-diplumbane, and Their Analogs. III. Reactions of the Homolytic Decomposition of Hexaethyl-diplumbane and Hexaethyl-distannane

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 8, pp.2498-2506

TEXT: The authors pointed out in Refs. 1,2 that the thermal decomposition of liquid lead tetraethyl takes place through the formation of less ethylated compounds, such as hexaethyl-diplumbane and lead diethyl:

$(C_2H_5)_4Pb \longrightarrow (C_2H_5)_6Pb_2 \longrightarrow (C_2H_5)_2Pb \longrightarrow Pb$. It is however, very doubtful whether a continuous homolytic cleavage of the σ-bonds takes place in this course of reaction. In order to obtain a complete and well-founded scheme of decomposition, it will be necessary to know the reactions of the homolytic cleavage of lead tetraethyl and of its intermediates formed

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Thermal Decomposition of Lead Tetraethyl, Hexaethyl-diplumbane, and Their Analogs. III. Reactions of the Homolytic Decomposition of Hexaethyl-diplumbane and Hexaethyl-distannane

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during decomposition, as well as the role played by free radicals in these conversions. The investigation of the homolytic cleavage of hexaethyl-diplumbane and its organotin analog (hexaethyl-distannane) is, therefore, highly important. In the smooth reaction of hexaethyl-distannane with dibromo ethane giving rise to tin triethyl-bromide and ethylene (Ref. 3), the reactants had been assumed to form a cyclic transition complex which split in a homopolar way. To study the possible appearance of such ring complexes also in other reactions of hexaethyl-distannane, it was allowed to react with compounds in a benzene solution, which readily decompose into radicals. Hexaethyl-distannane and diplumbane were found to decompose homolytically at the metal-metal bond when treated with labile organic compounds in a benzene solution at a normal temperature. These labile compounds included benzoyl peroxide, acetyl-benzoyl peroxide, cyclohexyl percarbonate, azo-isobutyric acid dinitrile, nitroso-acetanilide, and lead tetraacetate. The reactions are assumed to proceed through the formation

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of homolytically decomposing ring complexes. The solvent participates in the reaction of hexaethyl-stannane with the above compounds in CCl_4, whereby, in addition to other reaction products, also tin triethyl chloride results. The formation of the latter is initiated by the reaction of CCl_4 with the labile compound. Nitroso-acetanilide reacts at a normal temperature with CCl_4, bromo-ethyl, benzyl chloride, and the methyl ester of chloro-acetic acid to give phenyl diazonium chloride and bromide, acetic acid, and trace amounts of diphenyl. There are 13 references: 7 Soviet, 4 US, and 2 British.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete (Scientific Research Institute of Chemistry at Gor'kiy State University)

SUBMITTED: July 21, 1959

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5.3700

78293
SOV/79-30-3-47/69

AUTHORS: Razuvayeva, G. A., Vyazankin, N. S., Vyshinskiy, N. N.

TITLE: Thermal Decomposition of Tetraethyllead and Hexaethyldiplumbane. II. Decomposition of Tetraethyllead, Hexaethyldiplumbane, and Diethyllead Mixtures

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, pp 967-972 (USSR)

ABSTRACT: This is a continuation of the authors' previous study of thermal decomposition of organic lead compounds (ZhOKh, 29, 3662, 1959), where it was shown that the thermal decomposition of tetraethyllead (I) proceeds through the formation of intermediate hexaethyldiplumbane (II), according to:

$$(C_2H_5)_4Pb \longrightarrow (C_2H_5)_6Pb_2 \longrightarrow (C_2H_5)_2Pb \longrightarrow Pb$$

This paper describes the thermal decomposition of I and II, and II and diethyllead (III) mixtures. Since

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Thermal Decomposition of Tetraethyllead and Hexaethyldiplumbane. II

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it was observed previously that the properties of II, prepared according to F. Hein and A. Klein (Ber., 71, 2381, 1938), depend on the conditions of synthesis, the processes which take place in the synthesis of II were also studied. The mixture of I and II was prepared in the receiver of a special apparatus for distilling I in a hydrogen atmosphere under vacuum. The ampoules with the mixture were kept at 135 $\pm$ 0.4° and frozen with liquid nitrogen. Synthesis of II was achieved at 18 $\pm$ 0.2° from a mixture of aluminum powder and triethyllead chloride solution in 2.5N KOH. The time effect of synthesis is shown in Fig. 2. Thermal decomposition of II and other results of the experiments are given in Figs. 3, 4, and 5. The data obtained confirm the previous conclusion that the thermal decomposition of I proceeds through the formation of an intermediate II, and thermal decomposition of II proceeds through the formation of III. It is suggested that metallic lead formed in the process of decomposition acts as a

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Thermal Decomposition of Tetraethyllead and Hexaethyldiplumbane. II

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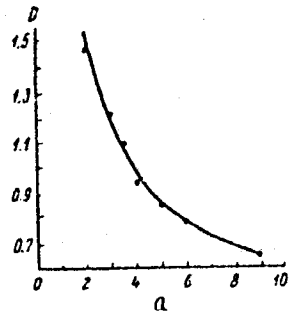

Fig. 2. Change of optical density of hexaethyldiplumbane in process of its synthesis. Thickness of absorption layer d = 0.020 mm; wavelength $\lambda = 400$ mμ.

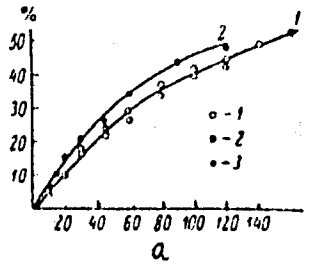

Fig. 3. Decomposition curves of pure tetraethyllead (1); mixture of 2.3% hexamethyldiplumbane and 97.7% tetraethyllead (2); mixture of 19.5% hexaethyldiplumbane and 80.5% tetraethyllead (3).

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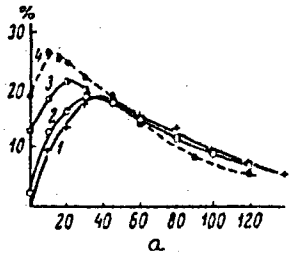

Fig. 4. Change of hexaethyldiplumbane concentration in tetraethyllead in thermal decomposition of the latter (1) and its mixture with hexaethyldiplumbane. Starting concentrations of $(C_2H_5)_6Pb_2$ in mixtures (in % by weight): 2.3 (2); 13.7 (3); 19.5 (4).

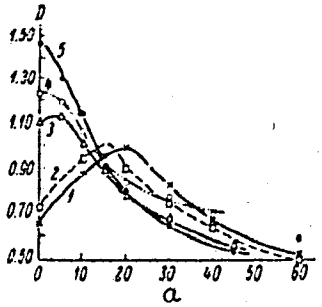

Fig. 5. Curves of optical density (d = 0.020 mm; λ = 400 m μ) change in thermal decomposition of hexaethyldiplumbane and diethyllead mixtures. Mixtures were obtained according to Hein and Klein by keeping reagents at a steady temperature for (hr): 9(1), 6(2), 3.5 (3), 3(4), 2(5).

Thermal Decomposition of Tetraethyllead and Hexaethyldiplumbane. II

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catalyst. It was shown that synthesis according to Hein and Klein leads to the formation of a mixture of diethyllead and hexaethyldiplumbane. There are 5 figures; and 4 references, 1 German, 3 Soviet.

SUBMITTED: March 14, 1959

Card 5/5

80763

S/079/60/030/04/60/080
B001/B011

5.3700B

AUTHORS: Razuvayev, G. A., Vyazankin, N. S., Dergunov, Yu. I.

TITLE: Reaction of Hexaethyl Diplumbane With Alkyl Halides

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1310-1316

TEXT: The reactions of the compounds of type R_6Pb_2 with alkyl halides are still insufficiently investigated. Paper of Ref. 3 along with some others allows the conclusion that a mixture of compounds PbX_2, R_2PbX_2, and R_3PbX results as the end product of the reaction, with R being an organic radical and X a halogen. Moreover, one must in certain cases add compounds of the type R_4Pb to the reaction products (at least according to the patent of Ref. 4). The following was ascertained: 1) In the case of reaction of equimolecular amounts of alkyl halide and hexaethyl diplumbane several reactions occur giving rise to many different products. 2) In the presence of catalytic amounts of alkyl halides there occurs a strong decrease in stability of hexaethyl diplumbane and its disproportionation according to scheme (I)

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Reaction of Hexaethyl Diplumbane With Alkyl Halides

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$2(C_2H_5)_6Pb_2 \longrightarrow 3(C_2H_5)_4Pb + Pb$. Investigation results are given in Table 1. They include reactions of hexaethyl diplumbane with equimolecular amounts of ethyl bromide, 1,2-dibromo ethane and 1,2-dibromo propane. Such reactions yield tetraethyl lead, lead bromide, triethyl lead bromide, dibromo diethyl lead, and metallic lead. A reaction scheme was suggested. Furthermore, the authors investigated the reaction of hexaethyl distannane with 1,2-dibromo ethane, with triethyl tin bromide and ethylene resulting as the main products. It was found that, apart from the thermal decomposition reaction $(C_2H_5)_6Pb_2 \longrightarrow (C_2H_5)_4Pb + Pb + 2C_2H_5$, also a disproportionation of hexaethyl diplumbane takes place: $2(C_2H_5)_6Pb_2 \longrightarrow 3(C_2H_5)_4Pb + Pb$, which is brought about by the aid of catalysts. The catalysts used were metal chlorides of type $AlCl_3$, mixed organometallic compounds and products reacting with hexaethyl diplumbane under formation of the above catalysts (e.g. dibromo ethane). The authors refer to a paper by Ya. K. Syrkin (Ref. 5). There are 2 tables and 12 references, 6 of which are Soviet.

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)
SUBMITTED: May 7, 1959

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80486

S/020/60/132/02/33/067
B011/B002

5.3700(B)

AUTHORS: Razuvayev, G. A., Corresponding Member AS USSR, Vyazankin, N. S., Dergunov, Yu. I., D'yachkovskaya, O. S.

TITLE: Some Cases of Reactions for the Redistribution of Radicals in Organic Lead, Tin, and Silicon Compounds

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 364-366

TEXT: Heating of an asymmetric organometallic compound of type $R_3R'Pb$ with catalytic amounts of aluminum chloride, causes the redistribution of the radicals (Ref. 1). A dynamic equilibrium, and a mixture of all possible combinations of tetraalkyl derivatives of the concerned metal develop. The authors intended to investigate such cases of the above reaction in which the equilibrium is disturbed, thus causing a clear deviation of the interrelations between the reaction products from those occurring in general. The authors found out that hexaethyl dimetals are asymmetric, as for instance $(C_2H_5)_3SnR$, R being $(C_2H_5)_3Sn$. Assuming that the two radicals readily take part in their redistribution, the following mixture necessarily must develop (according to publications):

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$(C_2H_5)_4Sn$ (I), $(C_2H_5)_3SnR$ (II), $(C_2H_5)_2SnR_2$ (III), $C_2H_5SnR_3$ (IV), and SnR_4 (V). However, there will be no equilibrium in the developing mixture since (III), (IV), and (V) are no "symmetrical" compounds. Theoretically it is therefore probable that (III) - (V) will enter into side reactions during the redistribution of radicals, and besides tetraethyl tin will develop a series of substances with chains of metal atoms still longer and more ramified. Due to the decomposition of molecules, there will be no equilibrium in the mixture (I) - (V). In agreement with the above theory, the authors found out that 2-3 weight% of aluminum chloride or other catalysts of the radical redistribution, rapidly reduce the stability of hexaethyl diplumbane and hexaethyl distannane, also altering its decomposition mechanism (equations (B) and (V)). It was spectroscopically proven however, that the decomposition of these two compounds takes place according to equation (B) developing an intermediate product of diethyl lead, and diethyl tin respectively. During the disproportionation of hexaethyl distannane (but not of hexaethyl diplumbane) however, highly-molecular intermediate products develop between 70°-75° under the influence of $AlCl_3$. This is in agreement with the above-mentioned reaction mechanism. In this case the equilibrium is disturbed by the participation of reaction products in

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side processes. This causes the formation of unstable products. The authors give further examples of publications on their statement (Refs. 3-8). The reaction between isopropylchloride and tetraethyl lead was not successful. Table 1 gives a summary of the authors' experiments. There are 1 table and 8 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N. I. Lobachevskogo (Scientific Research Institute of Chemistry of the Gor'kiy State University imeni N. I. Lobachevskiy)

SUBMITTED: February 15, 1960

Card 3/3

S/079/60/030/012/025/027
B001/B064

AUTHORS: Razuvayev, G. A., Vyazankin, N. S., and Vyshinskiy, N. N.

TITLE: Thermal Decomposition of Lead Tetraethyl, Hexaethyl Diplumbane and Their Analogues. IV. Effect of Precipitating Lead, the Walls of the Vessel and Other Factors Upon the Decomposition Process

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 12, pp.4099-4104

TEXT: The authors showed previously (Ref.1) that the thermal decomposition of lead tetraethyl in the liquid phase is a complex chain process proceeding under the formation of less ethylated compounds, hexaethyl diplumbane and lead diethyl:
$(C_2H_5)_4Pb \longrightarrow (C_2H_5)_6Pb_2 \longrightarrow (C_2H_5)_2Pb \longrightarrow Pb$ (I). The formation of a solid phase, metallic lead, is characteristic of this reaction. Previous findings on the decomposition kinetics of binary mixtures of lead tetraethyl and hexaethyl diplumbane (Ref.6) were used to study the role played by this metal in the complicated thermal decomposition processes. Fig.1 shows that the concentration of hexaethyl diplumbane reaches a limit

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Thermal Decomposition of Lead Tetraethyl, Hexaethyl Diplumbane and Their Analogues. IV. Effect of Precipitating Lead, the Walls of the Vessel and Other Factors Upon the Decomposition Process

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B001/B064

characteristic of the given temperature in the decomposition of pure lead tetraethyl, and that it drops subsequently. It was expected in the decomposition of a specially prepared mixture consisting of $(C_2H_5)_4Pb$ and $(C_2H_5)_6Pb_2$, with a concentration of the second component being close to the limit concentration, that the kinetic curve consist of the descending branch only. Also in this case, however, the concentration of hexaethyl diplumbane increases. These findings are in favor of the fact that lead acts as a catalyst in the splitting of the decomposition intermediates, since in its absence a concentration of hexaethyl diplumbane is observed, and in the presence of considerable amounts of highly disperse metal the $(C_2H_5)_6Pb_2$ concentration is reduced. It was found that in the decomposition of lead tetraethyl the final product, the highly disperse metallic lead, catalyzes the decomposition intermediates (hexaethyl diplumbane and lead diethyl), so that this thermal decomposition may be regarded as an autocatalytic process. The wall of the vessel has no essential effect upon the decomposition process of lead

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Thermal Decomposition of Lead Tetraethyl, Hexaethyl Diplumbane and Their Analogues. IV. Effect of Precipitating Lead, the Walls of the Vessel and Other Factors Upon the Decomposition Process

S/079/60/030/012/025/027
B001/B064

tetraethyl and hexaethyl diplumbane. In the presence of atmospheric oxygen the oxidation of lead tetraethyl suppresses the thermal decomposition reaction completely. Traces of atmospheric oxygen and products of the incomplete oxidation of lead tetraethyl inhibit the thermal decomposition process considerably. Stronger inhibitors of the thermal decomposition reaction of lead tetraethyl are small quantities of dibromo ethane and other alkyl halides. Fig.3 shows the effect of atmospheric oxygen upon the decomposition of lead tetraethyl at $135 \pm 0.3^{\circ}C$. Table 1 shows that the separation of lead from the reaction mixture leads to a concentration of the decomposition intermediate product of hexaethyl diplumbane. Yu. I. Dergunov took part in some of the experiments. There are 3 figures, 3 tables, and 7 references: 5 Soviet, 1 American, and 1 German.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete (Scientific Research Institute of Chemistry of Gor'kiy State University)

SUBMITTED: January 8, 1960

Card 3/3

VYAZANKIN, N.S.; SHCHEPETKOVA, O.A.

Reactions of nitrosoacetanilide with certain acid chlorides. Zhur. ob.khim. 30 no.10:3417-3421 O '61. (MIRA 14:4)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete.
(Acetanilide) (Chlorides)

RAZUVAYEV, G.A.; DERGUNOV, Yu.I.; VYAZANKIN, N.S.

Reaction of tetraethyllead with halogenated hydrocarbons. Zhur. ob. khim. 31 no.3:998-1003 Mr '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N. I. Lobachevskogo.
(Lead) (Hydrocarbons)

20952

S/079/61/031/004/006/006
B118/B208

15.8114 2209, 1372, 1407

AUTHORS: Razuvayev, G.A., Shchepetkova, O.A., and Vyazankin, N.S.

TITLE: Structure of some organo-tin polymers

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 4, 1961, 1401

TEXT: It was previously found (Ref. 2: ZhOKh., 30, 2498 (1960)) that benzoyl peroxide cleft the Sn bond in hexaethyl distannane even under mild conditions:
$(C_6H_5COO)_2+(C_2H_5)_3Sn-Sn(C_2H_5)_3 \longrightarrow 2(C_2H_5)_3SnOCOC_6H_5$. This reaction could be applied to the structural analysis of organo-tin compounds. This reaction takes place even at room temperature without separation of CO_2 and gaseous hydrocarbons. This indicates the absence of side reactions, so that only the Sn-Sn bond in the polymer, and the O-O bond in the peroxide are cleft. The authors of the present paper isolated the benzoate of triethyl tin (I) and the dibenzoate of diethyl tin (II) (melting point 122-123°C) by reacting the peroxide with the polymer. Besides, metallic

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20952

S/079/61/031/004/006/006
B118/B208

Structure of some organo-tin ...

tin and the tribenzoate of ethyl tin (III) (melting point 185-188°C under decomposition) were separated. If the polymer were of the linear type $(C_2H_5)_3Sn-[Sn(C_2H_5)_2]_n-Sn(C_2H_5)_3$, only the formation of compounds (I) (from primary tin atoms) and (II) (from secondary tin atoms) would have to be expected, provided that no disproportionation of compound (II) to (I) and (III) takes place. It was found from the quantitative ratio of the reaction products that 23.6 % of the tin atoms have primary, 19.9 % secondary, and 27.6 % tertiary character. 28.8 % of the metal atoms in the polymer mass were in the elementary state. It is possible that metallic tin is formed from quaternary atoms. The results obtained correspond to earlier concepts on the branching of chains in intermediates of disproportionations of hexaethyl distannane (Ref. 1: DAN SSSR, 132, 364 (1960)), and of hexaethyl diplumbane (Ref. 3: ZhOKh, 30, 1310 (1960)). There are 3 Soviet-bloc references.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N.I. Lobachevskogo (Scientific Research Institute of Chemistry Gor'kiy State University imeni N.I. Lobachevskiy)

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20952

S/079/61/031/004/006/006
B118/B208

Structure of some organo-tin ...

SUBMITTED: November 4, 1960

Card 3/3

RAZUZAYEV, G.A.; VYAZANKIN, N.S.; DERGUNOV, Yu.I.; VYSHINSKIY, N.N.

Thermal decomposition of tetraethyllead, hexaethylplumbane, and their analogs. Part 5: Reactions of decomposition and disproportionation of hexaethyldistannane. Zhur.ob.khim. 31 no.5:1712-1717 My '61. (MIRA 14:5)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N.I.Lobachevskogo.
(Tin organic compounds)

RAZUVAYEV, G.A.; VYAZANKIN, N.S.; SHCHEPETKOVA, O.A.

Mechanism of the reaction of hexaethyldistannane disproportionation. Zhur. ob. khim. 31 no. 11:3762-3768 N '61. (MIRA 14:11)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N.I. Lobachevskogo.
(Tin compounds)

VYAZANKIN, N.S.

31196

5-3700

S/079/61/031/012/010/011
D204/D301

AUTHORS: Razuvayev, G. A., Vyazankin, N. S., D'yachkovskaya, O.S., Kiseleva, I. G., and Dergunov, Yu. I.

TITLE: Certain reactions of the organometallic compounds of Group IV elements, catalyzed by aluminum chloride

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 12, 1961, 4056

TEXT: A continuation of previous work, in which it has been shown that $(Et)_3SiCl$ and $(Et)_3SnCl$ could be obtained in high yields by the action of iso-C_3H_7Cl n $(Et)_4Si$ and $(Et)_4Sn$ in presence of $AlCl_3$. This reaction has been used in the present work to synthesize $(Et)_5Si_2Br$ and compounds $(Et)_3MX$, where M = Si, Ge, Sn and X = Cl, Br, in 60-90% yields. These were prepared by the dropwise addition of equimolar quantities of iso-C_3H_7X to $(Et)_4M$ containing ~2% $AlCl_3$ and heating until the gaseous products were evolved (~4

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D204/D301

Certain reactions of the ...

hours). $(Et)_5Si_2Br$ was converted to decaethyl tetrasilane (b.p. 164-170°C/1 mm Hg, n_D^{20} = 1.5160) by the action of highly dispersed fused Na, in 20.2% yield. It was also established that compounds of type $(Et)_6M_2$, where M = Si, [redacted] disproportionate to $(Et)_4M$ and M, on heating to 235°C in the presence of 3 - 5% $AlCl_3$. There are 1 table and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Gilman, R. K. Ingham and A. G. Smith, J. Org. Ch., 18, 1743, (1953).

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'-kovskom gosudarstvennom universitete imeni N. I. Lo-bacheskogo (Scientific Research Institute of Chemistry, Gor'kiy State University im. N. I. Lobacheskiy)

SUBMITTED: July 3, 1961

Card 2/2

21570

S/020/61/137/003/022/030
B103/B208

5.3700 2209

AUTHORS: Razuvayev, G. A., Corresponding Member AS USSR, D'yachkovskaya, O. S., Vyazankin, N. S., and Shchepetkova, O. A.

TITLE: Reactions of acyl peroxides with organic derivatives of lead, tin, and silicon

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 618-621

TEXT: The authors discuss and compare the reactions of benzoyl peroxide (BP) and acetylbenzoyl peroxide (ABP) with organic derivatives of tin, lead, and silicon without solvent and under exclusion of atmospheric oxygen. They believe that the σ-bond may be ruptured at the same time according to two mechanisms in the case of the organotin compound: 1) via formation of an active complex, 2) via formation of kinetically independent particles. In this way, the number of end products increases. As the reactions discussed (Table 1) take place only at elevated temperatures, the authors assume that these reactions may be due to decomposition of peroxides: $C_6H_5COOCOR \rightarrow C_6H_5COO\cdot + RCOO\cdot$ (1), where $R = C_6H_5$ or CH_3;

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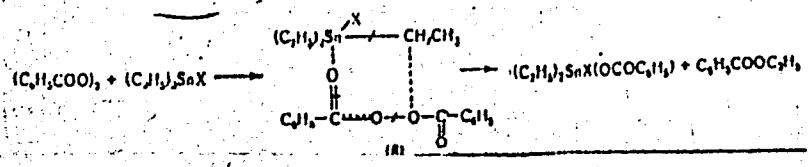
$C_6H_5COO\cdot \rightarrow C_6H_5\cdot + CO_2$ (2). The latter, however, is of minor importance. The resultant free benzoyloxy radicals react with organotin compounds, with substitution of benzoate radicals for the ethyl radicals in the latter: $C_6H_5COO\cdot + (C_2H_5)_3SnX \rightarrow (C_2H_5)_2SnX(OCOC_6H_5) + C_2H_5\cdot$ (3). Here and henceforward, X = C_2H_5, Cl, Br, C_6H_5COO. The results of experiments 1-4 indicate that the nature of X affects the course of (3) only little. In the case X = Cl and Br, the authors isolated only diethyl tin dibenzoate and diethyl tin dihalide, apparently owing to disproportionation: $2(C_2H_5)_2SnX(OCOC_6H_5) \rightarrow (C_2H_5)_2SnX_2 + (C_2H_5)Sn(OCOC_6H_5)_2$ (4). The free ethyl radicals resulting in (3) disproportionate and are slightly dimerized: $2C_2H_5\cdot \rightarrow C_2H_6 + C_2H_4$ (5); $2C_2H_5\cdot \rightarrow n\text{-}C_4H_{10}$ (6). The low total amount of gaseous hydrocarbons (less than 1 mole per mole of decomposed peroxide; experiments 1-4) suggests that the ethyl radicals initiate PB decomposition and give ethyl benzoate (experiment 4). In this way, the authors explain the formation of all products confirmed on the basis of a scheme of free-radical interaction. As, however,

ethylbenzoate may likewise be formed by a reaction with the active complex



(8),

the authors studied the interaction of ABP with tetraethyl tin and triethyl tin chloride (experiments 5 and 6). They conclude from the resultant reaction products that in this case the afore-mentioned modes (1 and 2) of homolytic rupture of the covalent bond occurred. The reaction of BP with tetraethyl lead (experiment 7) does not essentially differ from the one discussed above. Here, (2) is almost insignificant. The reaction of acyl peroxides with tetraethyl silane (experiments 6 and 9) proceeds quite differently; here, processes of the kind of (3) and (8) are missing, the Si-C bond being obviously stable to homolytic rupture. The initial stage of these reactions is assumed to be based upon decomposition of acyl peroxides according to (1), (2), and $CH_3COO\cdot \longrightarrow CH_3\cdot + CO_2$ (9).

The resultant free radicals remove the hydrogen from the tetraethyl silane molecules to give benzoic acid, benzene, and methane. Complex organosilicon compounds with two or more silicon atoms in the molecule are formed by recombination of the secondary radicals. They will be later described. $C_{16}H_{38}Si_2$ is given as an example. The reactions of similar organotin and organosilicon compounds with peroxides being considerably different, the authors studied the interaction of BP with the organotin analog of trimethyl-phenyl silane (experiment 10). No gaseous hydrocarbons were formed in this case and CO_2 yield was low. The authors conclude from this that (2) is only a side reaction, and that no CH_3 radicals are displaced by benzoate radicals in this case. Trimethyl tin benzoate, on the other hand, is obtained in a high yield: $(CH_3)_3SnOH + C_6H_5COOH \rightarrow$ $\rightarrow (CH_3)_3SnOCOC_6H_5 + H_2O$ (10). This indicates that the σ bond between the benzene ring and the metal atom in the trimethyl-phenyl tin molecule is most strongly subjected to homolytic cleavage. Since only 0.1 mole of diphenyl per mole of decomposed peroxide is formed, no analogy with the interactions between BP and trimethyl silane has been

21570

S/020/61/137/003/022/030
B103/B208

Reactions of acyl peroxides ...

established. In the reaction of BP with triethyl silane (experiment 11), mainly the Si-H bond is cleft, giving triethyl silicon benzoate as the most important silicon-containing product. In this case, apparently also processes take place which remind of (3), since small quantities of ethane, ethylene, and butane result. The authors continue their studies. There are 1 table and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 1, L. Jaffe, E. J. Prosen, M. Szwarc, J. Chem. Phys., 27, 416 (1957).

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N. I. Lobachevskogo (Scientific Research Institute of Chemistry, Gor'kiy State University imeni N. I. Lobachevskiy)

SUBMITTED: November 9, 1960

Card 5/8

S/062/62/000/011/008/021
B101/B144

AUTHORS: Vyazankin, N. S., Razuvayev, G. A., and Kruglaya, O. A. (Shchepetkova)

TITLE: Reactions of peroxides with hexaethyl distannane and hexaethyl disilane

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1962, 2008 - 2014

TEXT: The chromatographic analysis of the products of the reaction of hexaethyl distannane with tert-butyl peroxide at 130-135°C yielded (in moles per mole of decomposed peroxide): 0.54 ethane, 0.87 ethylene, 0.02 methane, 0.03 butane, 0.87 tert-butanol, 0.94 triethyl-(tert-butoxy) tin, and 0.43 of a fraction corresponding to decaethyl tetrastannane by molecular weight. Thus hexaethyl distannane reacts with tert-butyl peroxide without cleavage of the Sn-Sn bond, which had been observed in the reaction with acyl peroxides. A free radical mechanism according to the following reactions is suggested: $(CH_3)_3COOC(CH_3)_3 \longrightarrow 2(CH_3)_3CO^{\cdot}$; $(CH_3)_3CO^{\cdot} \longrightarrow CH_3^{\cdot} + CH_3COCH_3$; $(CH_3)_3CO^{\cdot} + (C_2H_5)_3Sn\text{-}Sn(C_2H_5)_3 \longrightarrow (C_2H_5)_3Sn\text{-}Sn(C_2H_5)_2OC(CH_3)_3$

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$+ C_2H_5^{\cdot}$; $R^{\cdot} + (C_2H_5)_3Sn\text{-}Sn(C_2H_5)_3 \rightarrow RH + (C_2H_5)_3Sn\text{-}\underset{B}{Sn}(C_2H_5)_2C_2^{\cdot}H_4$; where $R = (CH_3)_3CO$, CH_3, or C_2H_5. Since equimolecular amounts of tert-butanol and triethyl-(tert-butoxy) tin were formed, disproportionation of the compound A and decomposition of the compound B are assumed, the ethylene found being also formed from compound B: $(C_2H_5)_3Sn\text{-}Sn(C_2H_5)_2C_2^{\cdot}H_4 \rightarrow (C_2H_5)_3Sn\text{-}Sn^{\cdot}(C_2H_5)_2 + C_2H_4$; another reaction gives decaethyl tetrastannane: $(C_2H_5)_3Sn\text{-}Sn^{\cdot}(C_2H_5)_2 + (C_2H_5)_6Sn_2 \rightarrow (C_2H_5)_{10}Sn_4 + C_2H_5^{\cdot}$. It was found that tetraethyl tin, after irradiation with UV light, was converted to higher organo-tin compounds. These react with $AlCl_3$, with separation of metallic tin. Non-irradiated tetraethyl tin didnot react with $AlCl_3$, even at 150°C. For the homologs of hexaethyl distannane of the general formula $(C_2H_5)_3Sn\text{-}[Sn(C_2H_5)_2]_n\text{-}Sn(C_2H_5)_3$ it is assumed that, under the action of $AlCl_3$, they react similarly to hexaethyl distannane: $2(C_2H_5)_6Sn_2 \rightarrow 3(C_2H_5)_4Sn + Sn$, and decaethyl tetrastannane: $2(C_2H_5)_{10}Sn_4 \rightarrow 5(C_2H_5)_4Sn$

+ 3Sn. This reaction allowed the molecular weight of the higher organo-tin compounds to be estimated from the amount of released tin; and it was proven that, in the reaction of hexaethyl distannane with tert-butyl peroxide, other organo-tin compounds with higher molecular weights were formed besides decaethyl tetrastannane. The reaction of hexaethyl disilane with peroxides proceeds by a free radical mechanism, irrespective of the structure of the peroxide (benzoyl- or tert-butyl peroxide). It starts only at the decomposition temperature of the peroxide. The resulting free radicals tear hydrogen atoms away from the disilane, and the organo-silicon radicals keep on dimerizing on the α-carbon atoms of the ethyl group:

$$2(C_2H_5)_3Si\text{-}Si(C_2H_5)_2\dot{C}_2H_4 \longrightarrow \begin{matrix}(C_2H_5)_3Si\text{-}Si(C_2H_5)_2C_2H_4\\ |\\ (C_2H_5)_3Si\text{-}Si(C_2H_5)_2C_2H_4\end{matrix}.$$

The Si-Si and the Si-C bonds of hexaethyl disilane proved stable to homolytic cleaving. There are 2 figures. The most important English-language reference is: A. B. Burg, J. R. Spielman, J. Amer. Chem. Soc., 83, 2667 (1961).

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet im. N. I. Lobachevskogo (Gor'kiy State University imeni N. I. Lobachevskiy)

Reactions of peroxides with...

S/062/62/000/011/008/021
B101/B144

SUBMITTED: April 3, 1962

Card 4/4

S/081/62/000/022/027/088
B144/B101

AUTHORS: Vyazankin, N. S., Razuvayev, G. A., Dergunov, Yu. I.

TITLE: Effect of metallic lead and hexaethyldiplumbane on the decomposition of stabilized tetraethyl lead

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1962, 228, abstract 22Zh244 (Tr. po khimii i khim. tekhnol. [Gor'kiy], no. 3, 1961, 652-655)

TEXT: A mixture of tetraethyl lead (III) and highly dispersed Pb was obtained from $(C_2H_5)_3PbPb(C_2H_5)_3$ (I) under the effect of 2-3% by weight of C_2H_4Br (II) (~20°C, 24 hrs). Decanted III, with an admixture of II (5-10% by weight of the initial amount) in another case a nonseparated mixture of II, III and Pb, was kept 4 hrs at 135°C, all contact between the reaction mixture and the air moisture being prevented. It has been found that II prevents the thermal decomposition of III, but that Pb weakens this effect considerably. For this reason additions of I to a mixture of III and II (% by weight of I and II: 3.1-8.6; 1.8-2.1,

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respectively) caused III to decompose (135°C). The decomposition of III under the action of Pb is not accompanied by an accumulation of I as intermediate. [Abstracter's note: Complete translation.]

RAZUVAYEV, G.A.; SHCHEIETKOVA, O.A.; VYAZANKIN, N.S.

Synthesis and properties of diethyltin dibenzoate. Zhur.ob.khim. 32 no.7:2152-2154 Jl '62. (MIRA 15:7)
(Tin organic compounds) (Benzoic acid)

RAZUVAYEV, G.A.; VYAZANKIN, N.S.; GLADYSHEV, Ye.N.; BORODAVKO, I.A.

Photochemical reactions of organotin compounds with some halo derivatives. Zhur.ob.khim. 32 no.7:2154-2160 Jl '62. (MIRA 15:7)

(Tin organic compounds) (Halogen compounds) (Photochemistry)

RAZUVAYEV, G.A.; VYAZANKIN, N.S.; D'YACHKOVSKAYA, O.S.

Reactions of peroxide compounds with organic derivatives of silicon, tin, and lead. Zhur.ob.khim. 32 no.7:2161-2169 Jl '62. (MIRA 15:7)

(Peroxides) (Silicon organic compounds)
(Organometallic compounds)

RAZUVAYEV, G.A.; DERGUNOV, Yu.I.; VYAZANKIN, N.S.

Reaction of hexaethyldistannane with halo derivatives. Zhur.ob.-khim. 32 no.8:2515-2520 Ag '62. (MIRA 15:9)
(Tin organic compounds) (Halides)

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; D'YACHKOVSKAYA, O.S.; SHCHEPETKOVA, O.A.

Reaction of benzoyl peroxide with triethylalkoxytin compounds. Dokl. AN SSSR 143 no.6:1348-1350 Ap '62. (MIRA 15:4)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N.I.Lobachevskogo. 2. Chlen-korrespondent AN SSSR (for Razuvayev).
(Benzoyl peroxide) (Tin organic compounds)

RAZUVAYEV, G.A.; MITROFANOVA, Ye.V.; VYAZANKIN, N.S.

Reactions of acyl peroxides with diethylmercury. Dokl.AN SSSR 144 no.1:132-134 My '62. (MIRA 15:5)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitet im. N.I.Lobachevskogo. 2. Chlen-korrespondent AN SSSR (for Razuvayev).
(Peroxides) (Mercury)

S/020/62/145/002/012/018
B106/B101

AUTHORS: Razuvayev, G. A., Corresponding Member AS USSR, Dergunov, Yu. I., and Vyazankin, N. S.

TITLE: Homolytic reactions of organotin compounds with alkyl halides initiated by peroxides

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 2, 1962, 347-350

TEXT: The reaction of small amounts of benzoyl peroxide with binary systems from an organotin compound (tetraethyl tin, dimethyl-diethyl tin, hexaethyl distannane, triethyl tin chloride) and an alkyl halide (carbon tetrachloride, n-propyl bromide) in the absence of oxygen, was studied to prove that peroxides may initiate the reaction of organotin compounds with alkyl halides. In all cases, radical chain reaction set in at 75-80°C initiated by decomposition of benzoyl peroxide. The reaction of peroxide with the system tetraethyl tin - CCl_4, which mainly yields triethyl tin chloride, ethylene, and chloroform, was studied in detail:

$$R^{\cdot} + (C_2H_5)_4Sn \longrightarrow RH + (C_2H_5)_3SnC_2H_4 \quad (R = C_6H_5COO,\ C_6H_5) \quad (1);$$

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$(C_2H_5)_3Sn\dot{C}_2H_4 \rightarrow (C_2H_5)_3Sn^{\cdot} + C_2H_4$ (2); $(C_2H_5)_3Sn^{\cdot} + CCl_4 \rightarrow (C_2H_5)_3SnCl + CCl_3^{\cdot}$ (3); $CCl_3^{\cdot} + (C_2H_5)_4Sn \rightarrow CHCl_3 + (C_2H_5)_3Sn\dot{C}_2H_4$ etc. (4); or: $CCl_3^{\cdot} + (C_2H_5)_4Sn \rightarrow CH_3CH_2CCl_3 + (C_2H_5)_3Sn^{\cdot}$ (5). Reaction (5) is of minor importance as the $C_2H_5CCl_3$ yield is small. The reaction mixture also contains ethane and traces of butane formed by disproportionation and dimerization of ethyl radicals which result from the reaction $C_6H_5COO^{\cdot} + (C_2H_5)_4Sn \rightarrow (C_2H_5)_3SnOCOC_6H_5 + C_2H_5^{\cdot}$ (6). Reactions (6) and (1) take place together. Hexachloro ethane traces form by recombination of CCl_3 radicals (chain rupture). Triethyl tin chloride may be converted in the same way as initial tetraethyl tin since diethyl tin dichloride was also isolated from the reaction mixture. This was confirmed by the reaction between benzoyl peroxide and the system $(C_2H_5)_3SnCl - CCl_4$. Peroxide caused no chain reaction with the tetramethyl tin - CCl_4 mixture. The reaction of hexaethyl distannane with CCl_4 initiated by peroxide was

complicated and yielded great amounts of chloroform and ethylene. The ethyl groups of hexaethyl distannane are affected by the trichloromethyl radicals and triethyl tin chloride and diethyl tin dichloride are formed. The tin-tin bond in $(C_2H_5)_6Sn_2$ is ruptured; it has still to be found out whether this process is homolytic or not. Reactions (1), (2), and (6) take place when benzoyl peroxide reacts with the system tetraethyl tin - n-propyl bromide. Reaction (3) is completely analogous to them (with C_3H_7Br instead of CCl_4). The resulting propyl and ethyl radicals of Eq. (6) disproportionate according to the chain reaction $R^\bullet + (C_2H_5)_4Sn \longrightarrow RH + (C_2H_5)_3Sn^\bullet + CH_2{=}CH_2$ (9); $R^\bullet + CH_3CH_2CH_2Br \longrightarrow RH + CH_3\dot{C}HCH_2Br$ (10); $CH_3\dot{C}HCH_2Br \longrightarrow CH_3{-}CH{=}CH_2 + Br^\bullet$ (11) ($R = C_2H_5$, C_3H_7). Studies of the decomposition of peroxide compounds in propyl bromide to confirm the courses of reactions (10) and (11) are described in a separate paper. There is 1 table.

S/020/62/145/002/012/018
B106/B101

Homolytic reactions of organotin ...

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N. I. Lobachevskogo (Scientific Research Institute of Chemistry at the Gor'kiy State University imeni N. I. Lobachevskiy)

SUBMITTED: April 17, 1962

Card 4/4

ACCESSION NR: AT4028345 S/0000/63/000/000/0283/0290

AUTHOR: Razuvayev, G. A.; Vyazankin, N. S.

TITLE: Reactions of peroxide compounds with ethyl derivatives of tin, silicon, and mercury

SOURCE: Soveshchaniye po khimii perekisny*kh soyedineniy. Second, Moscow, 1961. Khimiya perekisny*kh soyedineniy (chemistry of peroxide compounds); Doklady* soveshchaniy. Moscow, Izd-vo AN SSSR, 1963, 283-290

TOPIC TAGS: peroxide compound, tin, silicon, mercury, ethyl derivative, organic compound, hydrogen, oxygen, silicon silicon bond, silicon carbon bond

ABSTRACT: The investigation of processes which occur in the reaction of organic derivative elements of the IV group with peroxides in the absence of oxygen has shown that their character is determined to a considerable degree by the nature of the central atom of the element-organic compound. It is assumed that radicals obtained in the homologous decay of peroxides detach hydrogen from the α-carbon atom in tetraethylsilicon and hexaethyldisilane. The silicon silicon bond, as well as the silicon carbon bond, are found to be resistant to homologous disintegration. It is shown in a table that during the reaction of tetraethylsilicon and hexaethyl-

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ACCESSION NR: AT4028345

disilane with peroxide compounds the nature of the latter does not influence the structure of silicon containing products. This certifies the free radical mechanism of the reactions. Peroxide reactions with diethyl-mercury are characterized by the slight precipitation of metallic mercury, the insignificant precipitation of carbon dioxide, and the formation of isomer ethylbenzoin acids during the reaction. In the investigation of reactions of element-organic compounds with peroxides, one has to deal with the diversity free radical, as well as processes occurring in the reaction complexes. It seems that the investigation in this region in the future can render valuable material in the study of the mechanisms of chemical processes. Orig. art. has: 31 formulas and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii pri gor'kovskom gosudarstvennom universitete im. N. I. Lobachevskogo (Scientific Research Institute of Chemistry at Gorky State University)

SUBMITTED: 13Dec63 DATE ACQ: 06Apr64 ENCL: 00

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

Card 2/2

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; D'YACHKOVSKAYA, O.S.

Reaction of tetraethylsilane and its analogs with alkyl halides. Zhur.ob.khim. 33 no.2:613-617 F '63. (MIRA 16:2)

1. Gor'kovskiy gosudarstvennyy universitet imeri N.I. Lobachevskogo.

(Silane) (Alkyl halides)

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; KORNEVA, S.P.

Reducing properties of triethyl tin hydride. Zhur.ob.khim. 33 no.3:1041-1042 Mr '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N.I. Lobachevskogo.
(Tin organic compounds) (Reduction (Chemistry))

L 18961-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS Ps-4/Pc-4/Pr-4 RM/WW/MAY/JFW/
JXT(IJP)
ACCESSION NR: AP3006592 S/0020/63/151/006/1326/1328

77
73

AUTHORS: Vyazankin, N. S.; Mem., AS, SSSR, Razuvayev, G. A.; Gladyshev, Ye. N.

TITLE: Bis-(Triethylgermyl)-Mercury, the first organogermanium compound of mercury, ethane

SOURCE: AN SSSR. Doklady*, v. 151, no. 6, 1963, 1326-1328

TOPIC TAGS: benzene peroxide, germanium, mercury, organogermanium compound, bromobenzol

ABSTRACT: Authors formed bis-(triethylgermyl)-mercury and ethane with a yield of 66.5 and 96.8%, respectively, by reacting diethyl mercury with triethyl germanium in a molal ratio of 1:2 in the absence of air at 100 to 120C. Bis-(triethylgermyl)-mercury is a lemon-colored, thermally-stable liquid which can be distilled in nitrogen atmosphere at a lowbred pressure. It is very reactive and, upon contact with oxygen, immediately begins to release mercury. Bis-(Triethylgermyl)-mercury releases heat when reacted with benzene peroxide. It is sensitive to light. The photolysis of bis-(triethylgermyl)-mercury with

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L 18961-63
ACCESSION NR: AP3006592

4

carbon tetrachloride and bromobenzol are also described. This product may be found to be a model substance in the study of the free-radical chain processes initiating the decomposition of organo-elemental compounds. The orig. art. has: 5 formulas.

ASSOCIATION: Nauchno-Issledovatel'skiy institut khimii Pri Gor'kovskom Gosudarstvennom Universitete im. N. I. Lobachevskogo (Scientific research institute of chemistry, State University)

SUMITTED: 4Jul63 DATE ACQ: 27Sep63 ENCL: 00

SUB CODE: CH NO REF SOV: 007 OTHER: 006

2/2
Card

VYAZANKIN, N.S.; GLADYSHEV, Ye.N.; RAZUVAYEV, G.A.

Homolytic reactions of tetraethylgermane. Dokl. AN SSSR 153 no.1:104-106 N '63. (MIRA 17:1)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N.I. Lobachevskogo. 2. Chlen-korrespondent AN SSSR (for Razuvayev).

chloride

Vysokomolekul. soyedineniya. Khim. svoystva i modifik.

Card 1/3

in their presence the relative reduction in the rate of [illegible]

RAZUVAYEV, G.A.; VYAZANKIN, N.S.; MITROFANOVA, Ye.V.

Reactions of benzoyl peroxide with organomercury compounds. Zhur.ob. khim. 34 no.2:675-679 F '64. (MIRA 17:3)

1. Nauchno-issledovatel'skiy institut pri Gor'kovskom gosudarstvennom universitete imeni N.I.Lobachevskogo.

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; BREVNOVA, T.N.

Reactions of tetrapropyl-and tetraisopropyltin with benzoyl peroxide. Zhur. ob. khim. 34 no. 3:1005-1009 Mr '64. (MIRA 17:6)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N.I.Lobachevskogo.

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; KORNEVA, S.P.

Interaction of triethyltin hydride with organic derivatives of tin, mercury, and bismuth. Zhur. ob. khim. 34 no.8:2787-2791 Ag '64. (MIRA 17:9)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N.I. Lobachevskogo.

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; GLADYSHEV, Ye.N.

Homolytic reactions of organogermanium and organosilicon compounds of mercury. Dokl. AN SSSR 155 no. 4:830-832 Ap '64. (MIRA 17:5)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N.I.Lobachevskogo. 2. Chlen-korrespondent AN SSSR (for Razuvayev)

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; GLADYSHEV, Ye.N.; GURIKOVA, T.G.

First metallo-organic compounds with Si-Si-Hg and Si-Hg-Ge groups. Dokl. AN SSSR 155 no. 5:1108-1110 Ap '64. (MIRA 17:5)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete im. N.I.Lobachevskogo. 2. Chlen-korrespondent AN SSSR (for Razuvayev).

TITLE: Bis-(triethylgermyl)-cadmium. Synthesis and properties

decomposed

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961320014-4"

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; KORNEVA, S.F.; KRUGLAYA, O.A.; GALIULINA, R.F.

Reaction of triethyl tin hydride and its analogs with diethylzinc. Dokl. AN SSSR 158 no.4:884-887 O '64.

(MIRA 17:11)

1. Laboratoriya stabilizatsii polimerov AN SSSR, Gor'kiy. 2. Chlen-korrespondent AN SSSR (for Razuvayev).

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; BYCHKOV, V.T.

New reactions of bis(triethylgermyl)cadmium. Izv. AN SSSR. Ser. khim. no.9:1665-1667 '65. (MIRA 18:9)

1. Laboratoriya stabilizatsii polimerov AN SSSR, Gor'kiy.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961320014-4"

Card 1/2

ACCESSION NR AP[illegible]

VYAZANKIN, N.S.; BYCHKOV, V.T.

Certain reactions of organotin hydrides. Zhur. ob. khim. 35 no.4: 684-687 Ap '65.

Reactions of dibutyltin with alkyl halides. Ibid.:687-689 (MIRA 18:5)

1. Gor'kovskiy gosudarstvennyy universitet imeni N.I. Lobachevskogo.

VYAZANKIN, N.S.; RAZUVAYEV, G.A.; BREVNOVA, T.N.

Synthesis and properties of tert-butyl ester of β-(trimethylsilyl)-perpropionic acid. Dokl. AN SSSR 163 no.6:1389-1392 Ag '65. (MIRA 18:8)

1. Laboratoriya stabilizatsii polimerov AN SSSR, Gor'kiy.
2. Chlen-korrespondent AN SSSR (for Razuvayev).

L 10602-67 EWT(m)/EWP(j) WW/RM
ACC NR: AP7003492

SOURCE CODE: UR/0074/66/035/008/1388/1403

AUTHOR: Vyazankin, N. S.; Kruglaya, O. A.

ORG: Laboratory of Polymer stabilization, AN SSSR, Gor'kiy (Laboratoriya stabilizatsii polimerov)

TITLE: Covalent bi-elementorganic compounds

SOURCE: Uspekhi khimii, v. 35, no. 8, 1966, 1388-1403

TOPIC TAGS: organometallic compound, thermal decomposition, photochemistry, organic synthetic process

ABSTRACT: The authors survey recent advances in the field of bi-elementorganic compounds, which they define as compounds containing not only the ordinary organogens (C,H,O,N,Cl, etc.), but also two element-nonorganogens. In cases in which these are metals, the compounds are referred to as biorganometallic. The survey covers methods of synthesis and study of the reactivity of bi-element-organic compounds with a covalent bond between the elementnonorganogen atoms, covering the literature up to May 1965 (95 references, predominantly Western). Methods of preparation, including reactions of R_3SiLi and analogous compounds with inorganic or elementorganic halides and the reaction of elementorganic hydrides of group IV with organometallic compounds, are covered. The dis-

Card 1/2

UDC: 547.1'13

0926 0017

L 10802-67
ACC NR: AP7003492

cussion of the properties of compounds of the type $(R_3M)_nM'$, where M = Si and its analogs; M' = Hg, Cd, Sb, etc., includes thermal and photochemical decomposition, reactions with atmospheric oxygen and peroxides, reactions with halo-derivatives, and reactions with metals and their salts. Properties of compounds of the R_3M-$M'R_3$-type, where M and M' are elements of group IVB, are also discussed. Orig. art. has: 14 formulas. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: none / ORIG REF: 022 / OTH REF: 073

Card 2/2

L 10370-67 EWP(j)/EWT(m) RM

ACC NR: AP7003056 SOURCE CODE: UR/0079/66/036/005/0952/0953

AUTHOR: Vyazankin, N. S.; Gladyshev, Yo. N.; Razuvayev, G. A.; Korneva, S. P. 25

ORG: none

TITLE: Synthesis and reactions of triethylgermyllithium

SOURCE: Zhurnal obshchey khimii, v. 36, no. 5, 1966, 952-953

TOPIC TAGS: organogermanium compound, organolithium compound, silane

ABSTRACT: Triethylgermyllithium was prepared by reaction of bis(triethylgermyl)mercury or tris(triethylgermyl)thallium with lithium in tetrahydrofuran in the absence of atmospheric oxygen in up to 94% yield. Triethylgermyllithium was not isolated from the reaction mixture; its formation was confirmed by reactions with $SiHCl_3$ and $(C_6H_5)_2SiCl_2$, yielding tris(triethylgermyl)silane and bis(triethylgermyl)diphenylsilane, respectively. Triethylsilane and its analogs react with triethylgermyllithium according to the reaction $(C_2H_5)_3GeLi + (C_2H_5)_3MH \rightarrow (C_2H_5)_3GeM(C_2H_5)_3 + LiH$, where M represents Si, Ge, or Sn. Triethylstannyltriethylgermane and triethylsilyltriethylgermane (under more rigorous conditions) were prepared by this method. Orig. art. has: 4 formulas. [JPRS]

SUB CODE: 07 / SUBM DATE: 29Oct65 / ORIG REF: 003 / OTH REF: 001

Card 1/1 0985 1995

L 07163-67 EWP(j)/EWT(m) RM/FDN/JW

ACC NR: AP6028170 SOURCE CODE: UR/0079/66/036/006/1154/1155

AUTHOR: Vyazankin, N. S.; Bochkarev, M. N.; Sanina, L. P.

ORG: Polymer Stabilization Laboratory, Academy of Sciences, SSSR, Gor'kiy (Laboratoriya stabilizatsii polimerov Akademii nauk SSSR)

TITLE: Unsymmetrical bi- and trimetal-organic compounds

SOURCE: Zhurnal obshchey khimii, v. 36, no. 6, 1966, 1154-1155

TOPIC TAGS: organotellurium compound, organotin compound, organogermanium compound, organosilicon compound

ABSTRACT: New ways of synthesizing unsymmetrical organometallic compounds with Si-Te-C-, Si-Te-Sn- and similar groups have been developed. When triethylsilane or triethylgermane is heated with diethyltellurium, a gradual replacement of ethyl groups takes place:

$$(C_2H_5)_2Te \xrightarrow[(M=Si,\ Ge)]{(C_2H_5)_3MH} \underset{(I)}{(C_2H_5)_3MTeC_2H_5} \xrightarrow[(M'=Si,\ Ge,\ Sn)]{(C_2H_5)_3M'H} \underset{(II)}{(C_2H_5)_3MTeM'(C_2H_5)_3}$$

In addition to the symmetrical compounds (II) (M=M'=Si or Ge), compounds (I)(M=Si) and (II) (M=Ge) are formed in 11.5 and 28% yield respectively. When compounds (I) are reacted with triethyltin hydride, the compounds (II) (M=Si, M'=Sn) and (II) (M=Ge, M'=Sn) are formed in 91% and 62% yield respectively. Diethyltellurium reacts with triethyl-

Card 1/2 UDC: 546.289

L 07168-67

ACC NR: AP6028170

tin hydride to give ethane and (II) (M=M'=Sn) in 91% yield; the unsymmetrical product (I) (M=Sn) is not observed. Unsymmetrical compounds are also formed by the reactions

$$(C_2H_5)_3GeH + X \longrightarrow \underset{(III)}{(C_2H_5)_3GeXH}$$

$$(C_2H_5)_3GeXH + (C_2H_5)_3SnH \longrightarrow H_2 + \underset{(IV)}{(C_2H_5)_3GeXSn(C_2H_5)_3}$$

X = S or Se.

SUB CODE: 07/ SUBM DATE: 25Dec65

Card 2/2 mfe

ACC NR: AP7012419 SOURCE CODE: UR/0079/66/036/011/2025/2026

AUTHOR: Vyazankin, N. S.; Gladyshev, Ye. N.; Korneva, S. P.; Razuvayev, G. A.

ORG: Laboratory of Polymer Stabilization, AN SSSR, Gor'kiy (Laboritoriya stabilizatsii polimerov AN SSSR)

TITLE: Reaction of triethylsilyl- and triethylgermyllithium with ethylenic hydrocarbons

SOURCE: Zhurnal obshchey khimii, v. 36, no. 11, 1966, 2025-2026

TOPIC TAGS: lithium compound, hydrocarbon resin, silane

SUB CODE: 07

ABSTRACT: A convenient method of synthesizing triethylgermyllithium and triethylsilyllithium by the reaction of lithium with triethylgermylmercury or triethylsilylmercury in tetrahydrofuran or benzene medium was developed. Triethylgermyllithium and triethylsilyllithium are highly reactive, adding readily to unactivated multiple bonds in benzene medium. Reactions were conducted between triethylsilyllithium and ethylene and propylene, yielding tetraethylsilane and triethylpropylsilane, respectively. Triethyl-n-hexylsilane and triethyl-n-hexylgermane were produced by reaction of the lithium salts with hexene-1. (The reaction of the germyl salt required more rigorous conditions.) Triethylsilyllithium and triethylgermyllithium react with

 UDC: 547.245+547.246

0932 1354

ACC NR: AP7012419

styrene exothermally, yielding triethyl(beta-phenethyl) silane and its germanium analog, along with an admixture of telomerization products of styrene containing $(C_2H_5)_3Si$- or $(C_2H_5)_3Ge$- residues. Orig. art. has: 2 formulas. [JPRS: 40,422]

2/2

L 31880-66 EWT(m)/ETC(f)/EWP(j)/T DS/WW/RM

ACC NR: AP6012534 SOURCE CODE: UR/0062/66/000/003/0562/0564

AUTHOR: Vyazankin, N. S.; Razuvayev, G. A.; Bychkov, V. T.; Zyezdin, V. L. 33

ORG: Laboratory for Stabilization of Polymers, Academy of Sciences SSSR (Laboratoriya stabilizatsii polimerov Akademii nauk SSSR) B

TITLE: Reactions of bis(triethylgermyl) cadmium

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1966, 562-564

TOPIC TAGS: organic synthesis, cadmium compound

ABSTRACT: Two types of reactions are known for the bimetal organic compound, containing Ge-Me bond with monobromo derivatives

$$(R_3Ge)_nM + nR'Br \rightarrow \begin{cases} nR_3GeBr + R'_nM & (1) \\ nR_3GeR' + MBr_n & (2) \end{cases}$$

Equation (1) is followed in photoreaction of bis(triethylgermyl)-mercury and tris (triethylgermyl)-antimony under the action of heat. Reaction (2) is characteristic for triethylgermyl potassium, triphenylgermyl lithium and related compounds.

Card 1/2 UDC: 547.1'3 + 541.14

L 31880-66

ACC NR: AP6012534

Bis(triethylgermyl)-cadmium reacts in the same manner with alkyl bromide. Continuing the work in this field the authors found that bromobenzene (in contrast to alkyl bromides) does not react with bis(triethylgermyl)-cadmium even where the latter decomposes into hexaethyldigermane and metallic cadmium. On the contrary, the photochemical reaction (1) proceeds very easily under ultraviolet light with bromobenzene, and produces triethylbromogermane, triethylphenylgermane, diphenyl cadmium and cadmium bromide. It was found that bis(triethylgermyl)-cadmium and bis(triethylgermyl)-mercury react with Li(Na) in tetrahydrofurane with the formation of triethylgermyl lithium (sodium) derivative.

SUB CODE: 07/ SUBM DATE: 23Jul65/ ORIG REF: 004/ OTH REF: 007

Card 2/2

L 16085-66 EPF(n)-2/EWP(j)/EWT(m)/EWP(t) IJP(c) RM/WW/JD/JG

ACC NR: AP6005934 SOURCE CODE: UR/0079/66/036/001/0160/0160

AUTHOR: Vyazankin, N. S.; Mitrofanova, Ye. V.; Kruglaya, O. A.; Razuvayev, G. A.

ORG: Laboratory of Polymer Stabilization, Academy of Sciences SSSR, Gor'kiy (Laboratoriya stabilizatsii polimerov Akademii nauk SSSR)

TITLE: Tris(triethylgermyl)thallium

SOURCE: Zhurnal obshchey khimii, v. 36, no. 1, 1966, 160

TOPIC TAGS: organogermanium compound, thallium compound, organomercury compound

ABSTRACT: Heating of triethylgermane with triethylthallium for 2 hr at 100° produced ethane and tris(triethylgermyl)thallium (I) in high yields. Compound (I) decomposes at 170° into thallium and hexaethyldigermane with quantitative yields. Its reaction with excess dibromoethane is exothermic and ends after 5-7 min at room temperature:

$$\underset{(I)}{[(C_2H_5)_3Ge]_3Tl} + 2C_2H_4Br_2 \rightarrow 2C_2H_4 + TlBr + 3(C_2H_5)_3GeBr$$

(I) reacts with benzoyl peroxide in 2-3 min at 20° to form triethylbenzoyloxygermane

UDC: 547.13 + 546.683

Card 1/2

L 16085-66

ACC NR: AP6005934

(63%); C_6H_5COOTl is also formed (92%). (I) reacts with mercury as follows:

$$\underset{(I)}{2[(C_2H_5)_3Ge]_3Tl} + 3Hg \rightarrow 2Tl + 3[(C_2H_5)_3Ge]_2Hg$$

All the reactions were carried out in evacuated and sealed ampoules from which atmospheric oxygen had been thoroughly removed.

SUB CODE: 07/ SUBM DATE: 17Jul65/ ORIG REF: 000/ OTH REF: 000

Card 2/2

VYAZANKIN, N.S.; KRUGLAYA, O.A.; RAZUVAYEV, G.A.; SEMCHIKOVA, G.S.

Tris-(triethylsilyl)-antimony and its analogs. Dokl. AN SSSR 166 no.1:99-102 Ja '66. (MIRA 19:1)

1. Laboratoriya stabilizatsii polimerov AN SSSR, Gor'kiy.
2. Chlen-korrespondent AN SSSR (for Razuvayev). Submitted April 19, 1965.

L 5061-66 EWT(m)/EPF(c)/EWP(j)/T/EWA(c) RM

ACCESSION NR: AP5025511 UR/0062/65/000/009/1665/1667

542.91+547.17

44,55 44.55 44,55 36 33 B

AUTHOR: Vyazankin, N. S.; Razuvayev, G. A; Bychkov, V. T.

TITLE: New reactions of bis(triethylgermyl)cadmium 44,55

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 9, 1965, 1665-1667

TOPIC TAGS: organogermanium compound, organocadmium compound, organomercury compound, organotin compound, organosilicon compound

ABSTRACT: Bis(triethylgermyl)cadmium (I) was synthesized by reacting triethylgermane with diethylcadmium. Reaction of (I) with acetic acid gave triethylacetoxygermane; with n-propyl alcohol, triethylgermane and triethylpropoxygermane were produced; with triethyltin hydride, triethylgermane and hexaethyldistannane were obtained. Reaction of (I) with triethyltin gave triethylgermane; with mercuric chloride, triethylchlorogermane; and with mercury, bis(triethylgermyl)mercury. From bis(triethylsilyl)cadmium and mercury, bis(triethylsilyl)mercury was obtained, and the reaction of diethylcadmium with mercury yielded diethylmercury.

Card 1/2

09010234

L 5061-66

ACCESSION NR: AP5025511

ASSOCIATION: Laboratoriya stabilizatsii polimerov Akademii nauk SSSR, Gor'kiy (Polymer Stabilization Laboratory, Academy of Sciences, SSSR)

SUBMITTED: 25Dec64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 007 OTHER: 004

ard 2/2

VYAZANKINA, MA.

AID Nr. 980-17 31 May

EFFECT OF IONIZING RADIATION ON THE STRUCTURAL CHANGES IN RUBBER-PLASTIC SYSTEMS (USSR)

Blokh, G. A., V. A. Zhurko, M. A. Vyazankina, M. A. Vas'kovskaya, A. P. Meleshevich, F. V. Bronshteyn, and E. V. Tsipenyuk. Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, Apr 1963, 605-613.

S/190/63/005/004/019/020

Structural changes produced by ionizing radiation in doses of 1 to 100 Mr in rubber-plastic systems have been studied at the Dnepropetrovsk Institute of Chemical Technology. The changes in properties were evaluated from thermomechanical curves in the range from about 60 to 220°C and from swelling data. The experiments were conducted with systems of sodium butadiene (СКБ), butadiene-styrene (СКС-30), or natural rubber and low- or high-pressure polyethylene or polystyrene (rubber:plastic ratios, 80:20, 50:50, and 20:80) irradiated in air without heating. The thermomechanical curves of individual nonirradiated and irradiated systems differ sharply from one another.

Card 1/2

AID Nr. 980-17 31 May

EFFECT OF IONIZING RADIATION [Cont'd] S/190/63/005/004/019/020

At a given temperature and radiation dose, network structure formation, indicated by a loss of deformability and by the absence of viscous flow, was shown to be induced by irradiation. The density of cross links in individual systems, determined by Flory's swelling method, was shown to increase with an increase of the dose and to depend on the nature of the rubber and the rubber-to-plastic ratio. In polymers containing phenyl groups radiation-induced structural changes proceeded slower and required higher radiation doses. Analysis of the results of the study indicates that ionizing radiation apparently causes a covulcanization of the rubber and the plastic and is accompanied by a change in the physical and mechanical properties of the system: a sharp decrease in plasticity, a decrease in swelling, and increases in hardness, tensile strength, and wear resistance. It is concluded that irradiation of combinations of rubbers and plastics in predetermined ratios makes possible the production of materials with the desired improved properties. [BAO]

Card 2/2

BLOKH, G.A.; ZHURKO, V.A.; VYAZANKINA, M.A.; VAS'KOVSKAYA, M.A.; MELESHEVICH, A.P.; BRONSHTEYN, F.V.; TSIPENYUK, E.V.

Effect of ionizing radiation on structural changes in the systems: rubber - polyethylene, rubber - polystyrene. Vysokom.soed. 5 no.4:605-613 Ap '63. (MIRA 16:5)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.
(Rubber, Synthetic) (Plastics) (Radiation)

Vyazankina, M.A.

(5)

S/081/63/000/004/049/051
B156/B180

AUTHORS: Blokh, G. A., Zhurko, V. A., Zayonchkovskiy, A. D., Kiriyenko, N. V., Karpov, V. L., Breger, A. Kh., Tsiponyuk, E. V., Vyazankina, M. A., Bronshteyn, F. V., Bernshteyn, M. Kh., Yabko, Ya. M.

TITLE: The radiation vulcanization of rubbers and reclaimed rubbers together with plastics

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1963, 648 - 649, abstract 4T349 (Kozhevenno-obuvn. prom-st', no. 5, 1962, 17 - 20)

TEXT: The effects of exposure to radiation were studied on the physical, mechanical and chemical properties of the following combined systems of polymers: rubber СКС-30 (SKS-30), СКБ (SKB), НК(NK) - thermoplastics (low and high)molecular-weight polyethylene, and polystyrene); ratios of thermoplastics to rubber of 0 - 100 % were used. The radiation dose (Co^{60}) was 1 - 100 Mrad. The plasticity, hardness, wear-resistance, strength, percentage, elongation, permanent set etc. were determined, and

Card 1/2