

Polymers

26-58-7-2/48

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR - Leningrad (The Institute of High-Molecular Compounds of the AS USSR - Leningrad)

1. Chemistry--USSR 2. Physics--USSR 3. Polymers--Applications

Card 5/5

Koton, M. M.

AUTHORS:

Adrova, N. A., Koton, M. M., Panov, Yu. N.
Florinskiy, F. S.

48-1-9/20

TITLE:

Efficacy of the Scintillation of Carbo- and Heterocyclic
Compounds in Plastics (Stsintillyatsionnaya effektivnost'
karbo- i geterotsiklicheskikh soyedineniy v plastmassakh).

PERIODICAL:

Izvestiya AN SSSR Seriya Fizicheskaya, 1958, Vol. 22, Nr 1,
pp. 41-43 (USSR).
Received: March 8, 1958

ABSTRACT:

The efficacy of the scintillation of substituted anthracenes, polyphenyls, aryl-derivatives of dienes and an number of heterocyclic compounds (oxazolene, oxydiazolene etc.) on their introduction into a polystyrene-plastic was investigated here. The above-mentioned substances were introduced into the styrene-monomer in quantities corresponding to their maximum efficacy (1-2%) and were polymerized with 0,2% benzoylperoxide at a gradual rise of temperature from 80 to 120°C during 4-5 days until the formation of transparent firm blocks which were then shaped into cylinders. From the obtained data it was possible to determine a connection between the chemical structure of the organic substances and the efficacy of their scintillation. The following compounds

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Compounds in Plastics.

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possess the highest efficacy in plastics: 1,4-di-[2-(5-phenyloxazolyl)]benzene (I) which is designated as PCPOP, quaterphenyl (II), and 9-10-diphenylanthracene (III), i.e. compounds with 4-5 cycles in the molecule and conjugate double bonds. In the series of oxazoles (IV) and oxydiazoles (V) with the same substituents (e.g. phenyl-groups) the oxazole-derivatives have a higher scintillation-activity than the oxydiazole-derivatives. 1,1', 4,4'-tetraarylbutadiene (VI), where R = H, CH₃ and p-terphenyl (VII) also possess a sufficiently high scintillation-activity. Other compounds with 3 cycles in the molecule (anthracene, phenanthrene, acenaphthene, dibenzofuran, dibenzothiophene and others) do not show a high scintillation-efficacy in plastics. Stilbene and tolane which in monocrystal-form possess a high scintillation-efficacy are ineffective on introduction into plastics. 1,4-diphenylbutadiene is little effective in plastics, although it possess sufficient effectiveness in solutions. For increasing the scintillation-efficacy of plastics it is expedient to introduce two organic scintillators simultaneously into polystyrene. One of those, the cheaper and easier one to obtain (terphenyl, diphenyloxazole) plays the part of

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Compounds in Plastics.

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a coactivator (quaterphenyl, POPOP) and is introduced in small quantities but at the same time it considerably increases the total scintillation-efficacy of the plastic. On the basis of the obtained experimental data the authors produced effective scintillation-plastics on a styrene-base of a diameter of from 30 to 150 mm and of a weight up to 3 kg. The effectiveness varies from an order of magnitude of 85% in the stilbene-crystals to 50% in the anthracene-crystal. There are 1 table and 4 references, 2 of which are Slavic.

ASSOCIATION: Institute for High-Molecular Compounds AN USSR (Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR).

AVAILABLE: Library of Congress

1. Plastics 2. Cyclic compounds 3. Polymerization

Card 3/3

KOTON, M. M.

79-1-29/63

AUTHORS: Ivanov, S. S. , Koton, M. M.

TITLE: The Synthesis, Properties and Polymerization of α -Chloracrylamide (Sintez, svoystva i polimerizatsiya α -khlorkhrilamida)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol.28, Nr 1, pp.139-143(USBR)

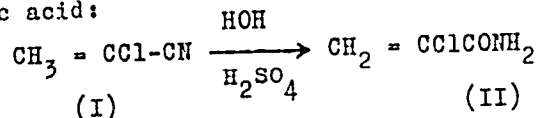
ABSTRACT: The amides of some acrylic acids can generally be synthesized by the influence of an aqueous ammonia solution upon the corresponding esters. In this manner Arcus (reference 1) obtained methacrylamide with a good yield by an excess of concentrated ammonia on a cold way. The synthesis of α -chloracrylamide could, however, not be realized by this method, because simultaneously with the exchange of the methoxyl group for the amido group a splitting off of chlorine takes place. The authors of the only French patent indicate the possibility to obtain α -chloracrylamide by saponification of α -chloracrylnitrile with sulfuric acid. But it is not described there either how it might be possible to obtain this product from the reaction mixture in a pure state. More-

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79-1-29/63

The Synthesis, Properties and Polymerization of α -Chloracrylamide

over no exact characteristic properties are given beside the melting point (93°C). For the purpose of investigating its capability of polymerization the authors also synthesized α -chloracrylamide of α -chloracrylonitrile (formula (I)) with sulfuric acid:



α -chloracrylonitrile was produced by dehydrochlorination of α - β -dichloropropionitrile with sodium acetate and α , β -dichloropropionitrile by chlorination of acrylonitrile in the presence of pyridine. Some properties of α -chloracrylamide and its polymers were characterized. It was shown that under the influence of a concentrated ammonia solution upon α -chloracrylamide at room temperature the reaction takes place under a splitting off of chlorine and the formation of a low-molecular polymer. The polymerization of α -chloracrylamide takes place under the separation of nitrogen and chlorine as well as under the formation of polymers joined in the block

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79-1-29/63

The Synthesis, Properties and Polymerization of α -Chloracrylamide

and in the benzene solution. In an aqueous solution a partially saponified poly- α -hydroxyacrylamide forms which is soluble in water. There are 2 tables, and 5 references, 2 of which are Slavic.

ASSOCIATION: Institute for High-Molecular Compounds AN USSR
(Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR)

SUBMITTED: January 2, 1957

AVAILABLE: Library of Congress

Card 3/3

1. Chemistry 2. Chloracrylamide-Properties 3. Chloracrylamide-Synthesis 4. Chloracrylamide-Polymerization

KOTON M.M.

AUTHORS: Koton, E. M., Sokolova, T. A., Savitskaya, M. M., 79-2-30/64
Kiseleva, T. M.

TITLE: Cases of Polymerization Inhibition of the Monomers From the Aryl-methacrylate Series (Sluchai zatrudnennoy polimerizatsii monomerov ryada arilmetakrilatov).

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 417-421 (USSR).

ABSTRACT: In the polymerization of arylmethacrylates it was found that the aryl-methacrylates, which in the phenyl radical have the substituents in the ortho-position to the acyl radical, polymerize much more slowly than the corresponding para-isomers, independently of the character of the substituents. The polymerization conditions, the obtained results, as well as various methacrylates are shown in the table. The difference in the polymerization velocity between the methacryl ether of thymol and the methacryl ether of menthol is explained by the fact that the carbon atoms of the cyclohexane ring in the menthol ether are not arranged in one plane and thus the whole molecule is not as rigid as that of the thymol ether. In all given cases the polymerization inhibition can be explained by the screening effect of voluminous groups on the double binding. They disturb the access to the double binding of the free radicals of the benzoylperoxide which are volumi-

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Cases of Polymerization Inhibition of the Monomers From the Aryl-methacrylate Series. 79-2-30/64

nous, too. The experimental conditions as well as the properties of the monomers and polymerization data are given. Special data are given for the methacrylethers of p-cresol, guaiacol, p-methoxyphenol, o - oxybenzylphenyl, thymol, and menthol which hitherto have not yet been described in technical literature. There are 1 table, and 2 Slavic references.

ASSOCIATION: Institute for High-molecular Compounds AS USSR (Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR).

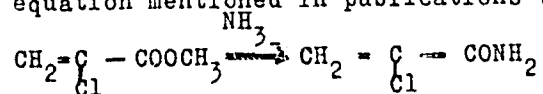
SUBMITTED: January 11, 1957.

AVAILABLE: Library of Congress.

Card 2/2

AUTHORS: Ivanov, S. S., Koton, M. M. 79-28 3-21/61
 TITLE: The Reaction of Ammonia With Methyl- α -Chloro-
 Acrylate (O reaktsii vzaimodeystviya ammiaka s metil- α -
 khlorakrilatom)
 PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 3, pp. 661-664
 (USSR)

ABSTRACT: It could have been expected that the reaction of ammonia with
 α -methyl- α -chloroacrylate would take place according to the follow-
 ing equation mentioned in publications (ref. 1,2,3):



The experiment to synthesize α -chloroacrylamide in this way
 showed, however, that a completely different mechanism of
 reaction is effective here, and the formation of chloro-
 acrylamide does not occur in it. The reaction takes place
 under the splitting off of chlorine in form of ammonium-
 chloride and substituting the alkoxyradical by the amido

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The Reaction of Ammonia With Methyl- α -Chloro-
Acrylate

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group, on which occasion the formed amides polymerize so easily that it was not possible to isolate them from the reaction mixture in the form of monomers. The analysis points at the empiric formula $(C_3H_5ON)_n$ which, judged by its structure, apparently represents a low-molecular poly- α -hydroxyacrylamide (see formulae where $n = 2-7$). The splitting off of chlorine from methyl- α -chloroacrylate possibly takes place in the reaction with aqueous concentrated, as well as with dry gaseous ammonia at room temperature and temperatures below it (from 0 to 25°C), the final polymer of the aqueous solutions being of one and the same composition regardless of the reaction conditions of ammonia. In the formation of polymerization the inhibitors (hydroquinone) do not play any part. The splitting of chlorine also takes place this way with methyl- α, β -dichloropropionate. Instead of the expected α, β dichloropropionamide a low-molecular polymer separates in both cases which is of the same composition as in the reaction of ammonia on methyl- α -chloroacrylate $(C_3H_5O_2N)_n$ (see the reaction process

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Acrylate

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mentioned). The splitting off of chlorine from α -chloroacrylates and α, β -dichloropropionates has hitherto not been described in publications. Obviously it represents a general reaction which is characteristic for the esters of the aliphatic acids having one chlorine atom in the α, β -position. There are 6 references.

ASSOCIATION: Institut vysokomolekulyarnykh soedineniy Akademii nauk
SSSR (Institute for High-Molecular Compounds, AS USSR)

SUBMITTED: April 9, 1957

Card 3/3

AUTHORS: Glukhov, N. A., Koton, M. M.,
Koroлева, Z. A. SOV/79-28-12-26/41

TITLE: Synthesis and Investigation of the Polymerizability of
Halogen-Substituted Styrene Derivatives (Sintez i izucheniye
spособnosti k polimerizatsii galogenzameshchennykh proizvodnykh
stirola) VII. Trichloro Styrenes and Pentachloro Styrene
(VII. Trikhlorostirolы i pentakhlorostirol)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 12, pp 3277-3282
(USSR)

ABSTRACT: Until now only a few patents reported on the synthesis and
polymerization of trichloro styrenes (Ref 1); these papers
pointed to the practical value of these styrenes as non-
conductors and their importance to the synthesis of Buna-S
(Ref 2). Pentachloro styrene has been little investigated
as well (Ref 3). The conditions of synthesis of various
isomers of trichloro styrene as well as the effect of the
structure of polyhalogen styrene monomers upon the polymeriza-
bility and properties of the polymers formed have not been
dealt with as yet, with the exception of a paper published by
Alfrey (Alfrey-Ref 4) where the slowed-down polymerization

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Synthesis and Investigation of the Polymerizability
of Halogen-Substituted Styrene Derivatives. VII.
Trichloro Styrenes and Pentaohloro Styrenes

SOV/79-28-12-26/41

of pentachloro styrene and its cause are pointed to. To fill this gap the authors systematically continued their investigations in the field of substituted styrenes and devised the synthesis of the 2,4,5- and 2,3,4-trichloro styrenes unknown in publications. Furthermore, the conditions of pentachloro styrene synthesis were improved and the process of polymerization of trichloro styrene was investigated. The polymerization was carried out dilatometrically in the block. The yield of polymers was determined by extraction with methanol from the benzene solutions and by bromination. Figure 1 shows that 2,4,5-trichloro styrene polymerizes readily (beginning at 45°). The isomeric 2,3,4-trichloro styrene (Figs 2,3) polymerizes much more difficultly. The comparison of the polymerization rates of the monomers of polyhalogen-substituted styrenes to that of unsubstituted styrene is given in figures 4 and 5. 2,3,4 and 2,4,5-trichloro-phenyl methyl carbinols were synthesized and characterized for the first time. The polymerization of tri- and pentachloro styrenes within the temperature range 45-150° was investigated. The following order is

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Synthesis and Investigation of the Polymerizability
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Trichloro Styrenes and Pentachloro Styrenes

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arranged with respect to the polymerization rate of polyhalogen
styrenes: 2,4,5-trichloro styrene > 1,2,3,4,5-pentachloro
styrene > 2,3,4-trichloro styrene. It was found that the
effect of isomerism of the substituents in the benzene nucleus
of styrene upon the rate of polymerization increases with the
increasing number of chlorine atoms. There are 5 figures and
11 references, 4 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh sovedineniy Akademii nauk SSSR
(Institute of High-Molecular Compounds, Academy of Sciences,
USSR)

SUBMITTED: June 25, 1957

Card 3/3

AUTHORS: Andreyeva, I. V., Koton, M. M.

76-32-5-4/47

TITLE: The Influence of the Structure of Monomers on the Polymerizability in the Series of Vinyl Derivatives of Furan (Vliyaniye stroyeniya monomerov na sposobnost' k polimerizatsii v ryadu vinil'nykh proizvodnykh furana)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp. 991-994 (USSR)

ABSTRACT: The influence of the increase in number of condensed benzene rings in the initial monomers on the polymerizability and on some other properties was investigated; for this purpose 2-vinylfuran, 2-vinylbenzofuran and 2-vinyldibenzofuran were synthesized. In the determination of the polymerization kinetics in the block close to the benzoylperoxide a modified mercury dilatometer according to L.I. Yefimov was used, while in using ionic catalysts a catalyst according to Schlenk was taken. The characteristic viscosity and heat resistance of the investigated polymers were determined by the IFL instrument and are given on Table 2, together with the obtained values of activation energies. From the experimental results obtained can be seen that the velocity of polymerization in the series

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The Influence of the Structure of Monomers on the
Polymerizability in the Series of Vinyl Derivatives of Furan

76-32-5-4/47

of 2-vinyldibenzofuran- 2-vinylbenzofuran- 2-vinylfuran in-
creases which is in agreement with the obtained values for the
activation energies; it was also observed in the case of
using an ionic catalyst. In the same order also an increase of
the molecular weight and of the heat resistance of the corres-
ponding polymers was observed, as well as an improvement of the
dielectric properties, which corresponds to the data of refer-
ences and to the data obtained. There are 6 figures, 2 tables,
and 5 references, 3 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut vysokomolekulyarnykh soyedineniy
(Institute of High-Molecular Compounds, AS USSR)

SUBMITTED: June 19, 1956

1. Furan derivatives---Polymerization 2 Vinyl compounds
(Polymerized) 3. Vinyl compounds---Chemical reactions

Card 2/2

AUTHORS: Andreyeva, I. V., Koton, M. M. SOV/76-32-8-19/37

TITLE: The Effect of the Monomer Structure on the Polymerizability of Vinyl Derivatives of Thiophene (Vliyaniye stroyeniya monomerov na sposobnost' k polimerizatsii vinil'nykh proizvodnykh tiofena)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 8, pp. 1847-1850 (USSR)

ABSTRACT: According to data in publications the derivatives mentioned above are capable of forming polymers having dielectric properties similar to those of polystyrene and having a higher softening temperature. An investigation of these compounds is also interesting as the influence exerted by the type of different substituted heterocycles in the ethylene molecule may be investigated with respect to the polymerizability and the properties of the compounds obtained. In the present paper the number of condensed benzene rings in the initial monomer was increased, and therefore 2-vinyl thiophene and 2-vinyl dibenzothiophene were synthesized. The polymerizability was investigated according to the dilatometric method, viz., in the first solution with 0,5 mole% of benzoyl peroxide (in block and solution), and in the second in solution at 80, 90 and 100°.

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The Effect of the Monomer Structure on the Polymerizability of Vinyl
Derivatives of Thiophene

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The operation technique has already been described. It was found that analogous to the furfuran series the introduction of condensed aromatic rings into the ethylene molecule increases the rate of polymerization. Besides the heat resistance increased to more than the double and the dielectric properties also improved on the occasion of the transition from 2-vinyl thiophene to 2-vinyl dibenzo thiophene. A comparison of the polymers obtained with those of the furane series shows that the latter exhibit worse properties. There are 5 figures and 10 references, 3 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut vysokomolekulyarnykh soyedineniy
(AS USSR, Institute of High-Molecular Compounds)

SUBMITTED: March 21, 1957

Card 2/2

CLASS I BOOK EXPLOITATION

SOV/4055

Koton, Mikhail Mikhailovich

Novyye polimery v narodnom khozyaystve (New Polymers in the National Economy) Kiyev, Izd-vo AN USSR, 1959. 37 p. 5,000 copies printed.

Resp. Ed.: K.A. Kornev, Doctor of Chemistry; Ed.: N.M. Killerog; Tech. Ed.: A.M. Lisovets.

NOTE: This book is intended for engineers, production innovators, teachers, students, and also laymen interested in the development of polymeric materials by modern science and industry.

ABSTRACT: The book describes polymeric materials prepared from petroleum and coal distillation byproducts (polyethylene, polypropylene, polystyrene, and their derivatives) and discusses the structure, properties, fields of application, and prospects for fullest development of the production of new polymeric materials produced in the United States, e.g., epoxy resins, Delrin, (DuPont), Penton (Hercules Powder Company), Lexan (General Electric Company), etc. There are no references. No personalities are mentioned.

Card 1/2

AUTHOR: Koton, M.M.

SOV/80-59-1-2/48

TITLE: New Polymers, Their Properties and Fields of Practical Application (Novyye polimernye materialy, ikh svoystva i oblasti prakticheskogo ispol'zovaniya)

PERIODICAL: Zhurnal prikladnoy khimii, 1989. Nr 1, pp 6-21 (USSR)

ABSTRACT: This article sets forth the task of acquainting industrial personnel with the properties of new polymers with the aim of their speediest introduction into national economy. Individual polymers, their properties and methods of production are described, and the fields of their possible or already existing practical application are outlined. Among the class of unsaturated hydrocarbons the following polymers are described: polyethylene and its derivatives, such as "Hypalon-S-2"; polypropylene; new varieties of synthetic rubber, such as "isotactic" polymer and "syndiotactic" polymer of butadiene-1,2; polymer of 1,4-cis-butadiene, 1,4-trans-polyisoprene; polystyrene and its derivatives obtained by the new methods of polymerization such as mechanochemistry, etc; polyparaxylilene, and polymers of fluorine-containing compounds, such as fluoplastics-3 and 4. Among the polymers of oxygen-containing compounds the following are described: polyformaldehyde; polymers of ethylene oxide; poly-3,3-bischloromethylloxacyclobutane; polycarbonates, and reinforced polymer materials. Besides these, new

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SOV/80-59-1-2/10

New Polymers, Their Properties and Fields of Practical Application

Kinds of polymers are being developed, such as silico-organic compounds, including those containing metals and possessing a high thermal resistance; non-combustible plastics, which possess this property due to the introduction into their molecule of phosphorus atoms; polymers containing titanium, etc.

There are 2 tables and 67 references, 15 of which are Soviet, 37 English, 11 German, 5 French and 1 Belgian.

SUBMITTED: October 14, 1958

Card 2/2

CHEFYRKINA, G.M.; SOKOLOVA, T.A.; KOTON, M.M.

Polymerization of N-Carboxy- and N-carbalkoxyphenylmethacryl-
amides. Vysokom.soed. 1 no.2:248-253 F '59.
(MIRA 12:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Polymerization) (Amides)

BRESLER, S.Ye.; KOTON, M.M.; OS'MINSKAYA, A.T.; POPOV, A.G.; SAVITSKAYA, M.N.

Increasing polymer thermostability by cyclization in macromolecular chains with partial decomposition. *Vysokom.soed.* 1 no.7:1070-1073
Jl '59. (MIRA 12:11)

1. Institut vysokomolekulyarnykh sovedineniy AN SSSR.
(Polymers--Thermal properties)

DOKUKINA, A.F.; KOTON, M.M.

Relationship between structure and the tendency to polymerization of substituted styrenes. Part 2: Polymerization of tri- and tetrasubstituted halomethylstyrenes. Vysokom. soed. 1 no.8:1129-1132 Ag '59. (MIRA 13:2)

1. Leningradskiy politekhnicheskii institut.
(Styrene) (Polymerization)

YEL'TSOVA, P.A.; KOTON, M.M.; MINEYEVA, O.K.; SURNINA, O.K.

Polymerization of vinyl derivatives of biphenyl, diphenyl ether and
phenyl sulfide. Vysokom. soed. 1 no.9:1369-1373 S '59.

(MIRA 13:3)

(Biphenyl) (Phenyl ether) (Phenyl sulfide)

5(3)

AUTHORS:

Sheremeteva, T. V.,
Zhenevskaya, M. G., Koton, M. M.

SOV/62-59-3-22/37

TITLE:

Synthesis and Polymerization of p-Butyl- and p-Butyrophenyl
Methacrylic Esters (Sintez i polimerizatsiya p-butyl- i
p-butirofenilmetakrilovykh efirov). Communication 2
(Soobshcheniye 2)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 3, pp 528-534 (USSR)

ABSTRACT:

In the present paper various isomers of the p-butyl- and p-butyrophenyl methacrylic esters which have hitherto not been described were synthesized in order to investigate the effect of the branching of the alkyl substituents in the phenyl nucleus of the monomers on the properties of the polymers obtained from these esters. The synthesis was carried out in two stages: 1) Production of p-butyl- and p-butyrophenols, 2) production of p-butyl- and p-butyrophenyl methacrylates. In the course of the investigation of the properties of the polymers obtained from different isomeric butylphenyl methacrylates their different behaviour towards the solvents was observed. Products in which the butyl group is connected

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APPROVED FOR RELEASE: 08/23/2000

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SOV/62-59-3-22/37

Synthesis and Polymerization of p-Butyl- and
p-Butyrophenyl Methacrylic Esters. Communication 2

with the phenyl nucleus by means of a quaternary or tertiary carbon proved to be soluble. In these cases in which the linking by the secondary carbon atom is brought about by the carbonyl group, the polymers are only partly soluble. The insolubility of the polymer is due to the branching of the polymer chain with subsequent cross-linking which leads to the formation of three-dimensional structures. Since the soluble and the insoluble polymers are formed due to the polymerization of the isomeric butylphenyl esters of the methacrylic acid of the chain which causes the branching of the cross-linking probably does not take place in the main chain but in the alkyl substituent and depends on its structure. The different structure of the substituents contained in the benzene nucleus of the synthesized esters causes the different vitrification temperatures of the polymers obtained from these esters. The strongest branching of the substituents causes a higher vitrification temperature. This temperature fluctuates in the case of various isomers between 47 and 144°. The substitution of the CH₂-group in the benzene residue by the CO-group i.e. the transition from one alkyl into an acyl substituent

Card 2/3

5(3)

AUTHORS:

Andreyeva, I. V., Koton, M. M.

SOV/62-59-3-28/37

TITLE:

On the Polymerization of α -Methyl Styrene in Solid (Frozen) State
(O polimerizatsii α -metilstirola v tverdom (zamorozhenom)
sostoyanii)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 3, pp 552-553 (USSR)

ABSTRACT:

This is a brief communication on the polymerization of styrene in the block with gaseous BF_3 in solid state at -80° (freezing point of styrene -23°) in an atmosphere as dry and free from oxygen as possible. Under the same conditions α -methyl styrene was polymerized in a yield of 85 %. The polymer is soluble in organic solvents (benzene, toluene, chloroform, etc) and is precipitated from methyl or ethyl alcohol. The data on the polymerization kinetics of α -methyl styrene are given on a figure. As may be seen from it, the pressure of gaseous BF_3 in a block (without cracks) exercises only an unimportant influence on the polymerization of styrene. From the data mentioned in the table it may be seen the the yield of polymers, their molecular weight and the melting temperatures increase with the decrease of the polymerization temperature.

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On the Polymerization of α -Methyl Styrene in Solid
(Frozen) State

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There are 1 figure, 1 table, and 1 reference.

ASSOCIATION:

Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of
Sciences, USSR)

SUBMITTED:

July 18, 1958

Card 2/2

5(3)

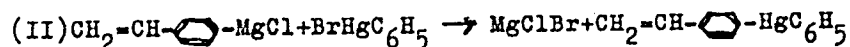
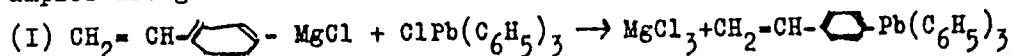
SOV/62-59-5-37/40

AUTHORS: Koton, M. M., Kiseleva, T. M., Florinskiy, F. S.

TITLE: Letters to the Editor (Pis'ma redaktoru)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 5, p 948 (USSR)

ABSTRACT: The authors of this letter inform the editor that for the first time they synthesized several metalliferous styrenes. The synthesis of these metalliferous styrenes was carried out at reaction conditions of Leebrick and Ramsden (Ref 1) under the action of paravinylphenyl magnesium chloride in tetrahydrofuran upon halides of the phenyl derivatives of mercury, lead antimony, bismuth, and phosphorus and upon the alkyl derivatives of tin. For the corresponding reaction equations the following two examples are given:



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The monomers obtained are crystalline or liquid substances, they polymerize and copolymerize easily with the vinyl monomers in

Letters to the Editor

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forming transparent plastic masses. The properties of the monomers as well as of the poly- and copolymeric substances are further investigated by the authors. There is 1 reference.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences, USSR)

SUBMITTED: January 17, 1959

Card 2/2

24(4), 5(3)

SOV/51-7-1-5/27

AUTHORS: Panov, Yu.N., Adrova, N.A. and Koton, M.M.

TITLE: Optical Properties of Compounds of the Oxazole, Oxydiazole and Furan Series (Opticheskiye kharakteristiki soyedineniy ryadov oksazola, oksidiazola i furana)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 1, pp 29-34 (USSR)

ABSTRACT: The paper was presented at the Second Conference for Coordination of Work on Application and Preparation of Scintillators, which was held in Khar'kov in November, 1957. To find the relationship between the chemical structure and scintillation properties of organic compounds the authors studied optical properties of benzene solutions of 2,5-aryl derivatives of oxazoles, oxydiazoles and furan. For this purpose the following compounds were synthesized and studied:

- 2,5-diphenyl-1,3-oxazole (PPO);
- 2- α -naphthyl-5-phenyl-1,3-oxazole (NPO);
- 2- σ -styryl-5-phenyl-1,3-oxazole (SPO);
- 2-phenyl-5-(4-biphenyl)-1,3-oxazole (PBO);
- 2- α -furyl-5-phenyl-1,3-oxazole (FPO);

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Optical Properties of Compounds of the Oxazole, Oxydiazole and Furan Series

1,4-di-[2-(5-phenyloxazolyl)] benzene (POPOP);
2,5-diphenyloxidiazole (PPD);
2-~~o~~-styryl-5-phenyl-1,3,4-oxydiazole (SPD);
2- α -furyl-5-phenyl-1,3,4-oxydiazole (FPD);
1,4-di-[2-(5-phenyloxidiazolyl)] benzene (PDPDP);
2,5-diphenylfuran (PPF);
3-acetyl-2,5-diphenylfuran;
n-terphenyl;
anthracene;

(the data on anthracene and terphenyl are given for the sake of comparison). The authors obtained absorption and luminescence spectra, luminescence quantum yields and scintillation light yields of all the compounds listed above. The absorption spectra were recorded by means of a spectrophotometer SF-4. The luminescence spectra were obtained by means of an assembly in which a spectrophotometer SF-11 was used as the monochromator. The absorption and luminescence spectra were corrected for the spectral sensitivity of the apparatus used to record them and for re-absorption. The luminescence quantum yields were found by comparing the energy radiated by a given substance and that by a solution of anthracene in benzene (1 mg/cm^3) under the conditions of

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SOV/51-7-1-5/27

Optical Properties of Compounds of the Oxazole, Oxydiazole and Furan Series

total absorption of the excitation energy. The quantum yields of all the compounds were extrapolated approximately to the conditions of infinite dilution. The scintillation light yields (i.e. the maximum scintillation amplitudes) were determined by the method described earlier by Adrova et al. (Ref 6). The absorption and luminescence maxima, the quantum and light yields are listed for some of the oxazoles in Table 1 (this table includes also data on terphenyl and anthracene). The same properties of several oxydiazoles are listed in Table 2. The absorption and luminescence spectra of some oxazoles and oxydiazoles are shown in Figs 1-4. It was found that in the oxazole and oxydiazole series the luminescence quantum yield decreased and the absorption and luminescence spectra were displaced towards longer wavelengths on decrease of the number of hetero-atoms of nitrogen (Tables 3 and 4). In each series the spectra were displaced towards longer wavelengths and

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SOV/51-7-1-5/27

Optical Properties of Compounds of the Oxazole, Oxydiazole and Furan Series

the luminescence quantum yield fell on transition from phenyl to styryl radicals. Acknowledgment is made to Ye.V. Anufriyeva for her help in this work. There are 4 figures, 4 tables and 6 references, 4 of which are Soviet and 2 English.

SUBMITTED: August 2, 1958

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24(4)

SOV/51-7-1-24/27

AUTHORS: Adrova, N.A., Andreyev, V.N., Koton, M.M., Panov, Yu.N. and Musalev, N.S.

TITLE: Optical and Scintillation Properties of the Oxydiazole-Series Compounds
(Opticheskiye i stsintillyatsionnyye kharakteristiki soyedineniy ryada oksidiazola)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 1, pp 128-129 (USSR)

ABSTRACT: The authors studied plastic scintillators with (I) 2- α -naphthyl-5-(n-biphenyl)-1,3,4-oxydiazole (abbreviated to α -NED) and (II) 2-phenyl-5-(n-biphenyl)-1,3,4-oxydiazole (PBD). Their properties were compared with earlier results (Ref 1) on (III) 2,5-diphenyloxydiazole (PFD) and (IV) n-terphenyl. Compounds I and II were prepared as described earlier (Ref 2). Plastic scintillators were prepared by low-temperature polymerization. The scintillation quantum yield was determined using apparatus described earlier (Ref 4). For the purpose of these measurements the scintillation yield of a sample containing 2% by weight of terphenyl in polystyrene was taken to be 100%. Scintillations were excited with γ -rays from Co^{60} . The absorption spectra of compounds I and II (Figs 1a, 2a) were recorded using a spectrophotometer SF-4. Fig 3a shows the absorption spectrum of PFD. The luminescence spectra of compounds I and II (Figs 1b and 2b) were obtained by means of a

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SOV/51-7-1-24/27

Optical and Scintillation Properties of the Oxydiazole-Series Compounds

quartz monochromator and a photomultiplier PDU-19; they were excited with light of 313 m μ wavelength. Fig 3b shows the luminescence spectrum of PPD. The quantum yields of luminescence were determined relative to the yield of a 1 mg/cm³ solution of anthracene in benzene; these quantum yields were extrapolated to infinite dilutions. The results are summarized in a table on p 129. This table shows that the scintillation yields of α -NBD and PPD are considerably higher (125%) than the scintillation yield of n-terphenyl. Reasons for this are discussed briefly. There are 3 figures, 1 table and 4 references, 3 of which are Soviet and 1 English.

SUBMITTED: January 30, 1959

Card 2/2

5 (3)
AUTHORS: Dokukina, A. F., Koton, M. M. SOV/79-29-7-22/83

TITLE: Synthesis of Chlorine-substituted Dimethyl Styrenes (Sintez khlorzameshchennykh dimetilstirolov)

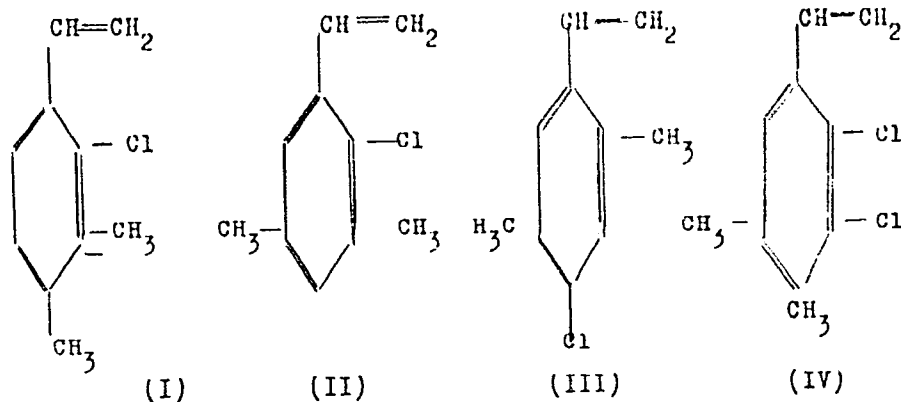
PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 7, pp 2201-2204 (USSR)

ABSTRACT: Until recently the tri- and tetrasubstituted styrenes have been little investigated. Only the data from patents concerning the polymerization of trichloro styrenes and tetrachloro styrenes are known (Ref 1) without a precise description of their methods of synthesis. For this reason the authors were interested in synthesizing the halogen-substituted vinyl xylenes. Formerly they had synthesized the styrene derivatives which simultaneously contained halogen atoms and the methyl group in the benzene cycle (Ref 2). In the present paper the following chlorine-substituted styrenes were synthesized: 2-chloro-3,4-dimethylstyrene (I), 2-chloro-3,5-dimethylstyrene (II), 4-chloro-2,5-dimethyl styrene (III), and 2,3-dichloro-4,5-dimethyl styrene (IV):

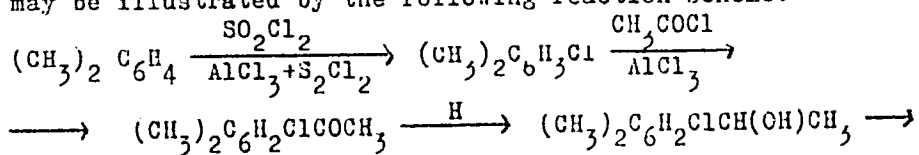
Card 1/3

Synthesis of Chlorine-substituted Dimethyl Styrenes

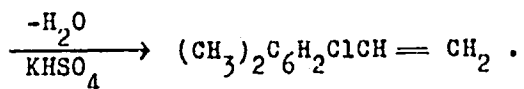
SOV/79-29-7-22/83



The synthesis of the chlorine-substituted dimethyl styrenes may be illustrated by the following reaction scheme:



Synthesis of Chlorine-substituted Dimethyl Styrenes SOV/79-29-7-22/83



All dimethyl styrenes were synthesized according to O. Silberrad (Ref 3) (Precise prescriptions for the synthesis are given in the experimental part). There are 3 references, 1 of which is Soviet.

ASSOCIATION: Leningradskiy politekhnicheskii institut (Leningrad Polytechnic Institute)

SUBMITTED: April 14, 1958

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30V/79-29-9-19/76

5(3)

AUTHORS:

Zapevalova, N. P., Koton, M. M.

TITLE:

Synthesis and Polymerization of Styrenes Methoxy-substituted in the Ring. III. Synthesis and Polymerization of Trimethoxy Styrenes

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol. 29, Nr 9, pp 2900-2905(USSR)

ABSTRACT:

Together with the systematic investigation of the influence exerted by the introduction of methoxy groups in the styrene ring on polymerizability and properties of the resulting polymers (Ref 1), an investigation of the hitherto undescribed trimethoxy styrenes was made by synthesizing 2,3,4- and 2,4,6-trimethoxy styrenes, with pyrogallol and phloroglucin being used as initial products. The syntheses of these trimethoxy styrenes took place according to the general scheme 1, by using pyrogallol as initial product. The hitherto unknown carbinols (IV), (VI), (V) were obtained and characterized according to this scheme. The attempt of dehydrating compound (VI) resulted in the cleavage of acetaldehyde and the formation of compound (VII) (Scheme 2). The reduction of trimethoxy acetophenone (III) according to Meerwein and Ponndorf (Ref 2) yielded carbinol (IV) and its ether, thus preventing pure trimethoxy styrene (V) from being formed. Compound (V) is poly-

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SOV/79-29-9-19/76

Synthesis and Polymerization of Styrenes Methoxy-substituted in the Ring.

III. Synthesis and Polymerization of Trimethoxy Styrenes

merized on standing and heating, under formation of transparent colorless thermoplastic masses. To ascertain the influence exerted by the accumulation of methoxy groups in the styrene ring on polymerizability, the authors polymerized 2,3,4-trimethoxy styrene in the absence of an initiator and according to the dilatometric method in a special apparatus (Ref 1). For a comparison, the figure shows the polymerization data of mono- and di-methoxy styrenes as well as those of the non-substituted styrenes. This polymerization made at 100° revealed that the easiness by which 2,3,4-trimethoxy styrene is polymerized, is due to the presence of a methoxy group in ortho-position to the vinyl group of the substituted styrene. There are 1 figure, 1 table, and 9 references, 2 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences, USSR)

SUBMITTED: April 9, 1958

Card 2/2

KOTON, H.M.

New polymers, their properties and areas of practical application. Zhur.prikl.khim. 32 no.1:6-21 Ja '59. (MIRA 12:4)
(Polymers)

5(2,3)

AUTHORS:

Koton, M. M., Kiseleva, T. M.,
~~Paribok, V. A.~~

SOV/20-125-6-24/61

TITLE:

The Synthesis of the Polymerizing Methacrylates of
Trialkyl-(aryl) Tin (Sintez polimerizuyushchikhsya metakrilatov
trialkil(aril)olova)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6, pp 1263-1264
(USSR)

ABSTRACT:

Data have been lacking on the production of methacrylates of the alkyl- and aryl derivatives of tin (except Ref 1) in most recent time. The authors synthesized for the first time the derivatives mentioned in the title:

1) $\text{CH}_2 = \text{C}(\text{CH}_3)\text{COOSn}(\text{CH}_3)_3$; 3) $\text{CH}_2 = \text{C}(\text{CH}_3)\text{COOSn}(\text{C}_4\text{H}_9)_3$ and2) $\text{CH}_2 = \text{C}(\text{CH}_3)\text{COOSn}(\text{C}_2\text{H}_5)_3$; 4) $\text{CH}_2 = \text{C}(\text{CH}_3)\text{COOSn}(\text{C}_6\text{H}_5)_3$.

This synthesis was obtained by the interaction of the corresponding hydroxides of trialkyl-(aryl) tin and of methacrylic acid solved in acetone. The substances produced are white crystalline compounds which are easily soluble in organic solvents. They polymerize readily as solids as well as in the

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The Synthesis of the Polymerizing Methacrylates
of Trialkyl-(aryl) Tin

SOV/20-125-6-24/61

solution. Furthermore, a copolymerization with vinyl monomers takes place under the formation of colorless synthetic products. The hitherto solid polymers are transformed into transparent colorless elastic gel (methacrylate of tributyl tin) by prolonging the alkyl radical in tin-containing methacrylates (e.g. during the transition of trimethyl-(ethyl) tin). The usual data are given in an experimental part. Finally, products are discussed which are formed during the interaction between the products mentioned in the title and alcoholic HCl and KOH. The investigation of the properties of the polymers is continued. There are 3 references, 1 of which is Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences USSR) Politekhniicheskiy institut im. M. I. Kalinina (Polytechnic Institute imeni M. I. Kalinin)

PRESENTED: February 9, 1959, by A. N. Nesmeyanov, Academician

SUBMITTED: January 26, 1959
Card 2/2

KOTON, M. M.

PNASB I BOOK EXPLOITATION SOV/A350
Sovetskoye gos. khimicheskoye nauchnoye izdatel'stvo
Moskva, 1957

Dizayn, tekhnologiya i primeneniye protivodnykh piperidina i
khinolina: materialy obozneniya khimicheskoy tekhnologii
i dizayna piperidina i khinolina. Khimicheskoye nauchnoye
izdatel'stvo SSSR, Moskva, 1950. 299 p. Karta slip inserted. 1,000 copies
printed.

Sponsoring Agencies: Akademiyu nauk Latvyskoy SSR, Institut
Khimii, Vsesoyuznoye khimicheskoye obshchestvo.

Ed.: S. Babanova, Tech. Ed.: A. Plyutina; Editorial
Board: Yu. A. Bankovskiy, Candidate of Chemistry, E. V.
Yanega, Candidate of Chemistry (Resp. Ed.), L. F. Zaitseva,
Doctor of Chemistry, and N. N. Kargin'.

Purpose: This book is intended for organic chemists and
chemical engineers.

CONTENTS: The collection contains 33 articles on methods
of synthesizing or producing piperidine, quinoline and
their derivatives from natural sources. No personal files
are mentioned. Figures, tables, and references accompany
the articles.

II. SYNTHETIC MEANS OF PREPARING PIPRIDINE AND
QUINOLINES

Sajkov, A. S., and O. S. Gerasimov. [Sindetsatsiya
Soyuznogo khimicheskogo nauchnoye izdatel'stvo
Akad. Nauk Latvyskoy SSR, Institut Khimii, Sverdlovskaya
St. 13, Leningrad, 1950]. Synthetic Studies
111

Shchegolev, B. P., Khimicheskoye nauchnoye
izdatel'stvo SSSR, Moskva, 1950. [Sindetsatsiya
Soyuznogo khimicheskogo nauchnoye izdatel'stvo
Akad. Nauk Latvyskoy SSR, Institut Khimii, Sverdlovskaya
St. 13, Leningrad, 1950]. Synthesis of
119

Yanega, E. V. [Institute of Organic Synthesis of the
Latvian SSR (Institute of Organic Synthesis of the
Academy of Sciences of the Latvian SSR). The Transition
from 1,3-Transition to Piperidine Derivatives
111

Kotom, M. M. [Institute of Organic Synthesis of the
Latvian SSR (Institute of Organic Synthesis of the
Academy of Sciences of the Latvian SSR). Synthesis and
Quinoline of Quaternary Compounds of the Piperidine and Quinoline
119

Lebedev, S. I. [Moscow State University, Institute
of Chemistry, Moscow, 1950]. Synthesis of
127

Kotom, M. M. [Primarily natural sources of piperidine
from agricultural materials, piperidine, quinoline and
quinolines. Russkaya Akademiya Nauk i Akademii
131

Shchegolev, B. P. [Moscow State University] Preparation of
Quaternary Compounds of Piperidine and Quinoline
139

Mikhaylov, S. I. [Vsesoyuznyy nauchno-issledovatel'skiy
institut khimicheskoy reaktivnykh (All-Union Scientific
Institute for Chemical Reagents)]. Study of the
Research Institute for Chemical Reagents. Study of the
Reaction of Quinoline with Sulfuric Acid. Synthesis of Quinoline
145

Tetov, E. A. [Moscow State University] Synthesis of
Quinoline and Quinoline N-Arylepidine Salts
151

Kotom, M. M. [Moscow State University] Catalytic Con-
densation of Acetone with Piperidine
171

KOTON, M.M.

507/4982

International symposium on macromolecular chemistry, Moscow, 1960.
Mekhanicheskoye slozheniye po makromolekulyarnykh khimii SSSR, Moscow, 14-18
Iyunya 1960 6:1 doklady i referaty, Sektory I. (International symposium
on macromolecular chemistry held in Moscow, June 14-18, 1960; Reports and
Abstracts, Section I.) (Moscow, Izdat Ak SSSR, 1960) 266 p. 5,500 copies
printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry,
Commission on Macromolecular Chemistry
Tech. Ed.: I. V. Polyakov.

PURPOSE: This collection of articles is intended for chemists and researchers
interested in macromolecular chemistry.

COVERAGE: This is Section I of a multivolume work containing scientific papers
on macromolecular chemistry in Moscow. The material includes data on the
synthesis and properties of polymers, and on the processes of polymerization,
copolymerization, polycondensation, and polydegradation. Each text is
presented in full or summarized in French, English, and Russian. There are
47 papers, 28 of which were presented by Soviet, Russian, Hungarian, and
Czechoslovakian scientists. No personal files are mentioned. References
concerning individual articles.

Thompson, T. I., B. A. Pollock, T. G. Dunphy, R. M. Kesteven, and
J. R. H. Hunt (UK) The Synthesis of Cis- and Trans-Isomers Polymers
on Chloroacetylene and a Study of Their Structure and Properties 13

Kotelnikova, G. V. (USSR) Synthesis and
Polymerization of Aromatic Polycrylates 47

Polynskiy, M. I., M. V. Shchegolev, and I. Sverdlov (Czechoslovakia).
The Structure of Hardened Unsaturated Polyesters 58

Zilberman, Ya. M., A. Ya. Kulikova, and R. M. Teplov (USSR). New
Method of Preparation of Polyesters and Their Oligomers 64

Kobzarev, M., and A. Sornschuss (Czechoslovakia). Analysis of Cross-
Linked Polymers 72

Labarede, J. A., J. P. Lefebvre, W. G. Kirkpatrick, L. J. Koberger,
and G. A. DiMarzio (USSR) On the Mechanisms and Properties of Crystalline
Like Polymers of the Type of Poly-p-xylylene and Polyphenyleneacetylene 90

Makrina, S. A. (USSR). Cyclic Polymerization and Copolymerization of
Vinylpyridine and N-Vinylcarbazole with Maleic Anhydride and
Methyl Methacrylate 101

Kotelnikova, G. V., A. I. Parshina, A. V. Topolovskiy, and B. A. Kozlovskiy
(USSR). Synthesis of Crystalline Polycrylatepolyacrylates
(USSR). Synthesis of Crystalline Polycrylatepolyacrylates 118

Abramova, I. A., and Ya. S. Kozlovskiy (USSR). Polymerization of Poly-
functional Compounds 124

Solov'ev, G. P., P. Dignola, R. Jahnke, and M. Tzamal (Romania).
Polymerization of Methyl Methacrylate in the Presence of Butyllithium and
Titanium Chloride Type Catalysts 131

Korshak, V. V., S. L. Solov', and Y. P. Akhmetova (USSR). On the Pre-
ference of the New Types of Alkyl Polymers by the Reaction of Polymer-
combustion 144

Frenkel, M. S., A. V. Zolotarev, and S. G. Dvornik (USSR). The
Synthesis of Crystalline Polymers on a Complex Catalyst (C₂H₅)₂AlCl, 152

Kolomoyskiy, G. S., G. L. Davydov, and M. V. Klimentova (USSR). Carbazone-
Containing Polymers 156

Shostakovskiy, N. P., G. P. Kallina, V. M. Kozlovskiy, D. A. Koshkin,
A. I. Kuznetsov, L. V. Lerna, A. I. Borshov, and V. V. Borshov (USSR).
Organotin Polymers 160

Kotelnikova, G. V., M. V. Shchegolev, and P. S. Porshakov (USSR). The Effect
of Chemical Structure on the Polymerization Activity of the Unsaturated
Organosulfonate Compounds 167

Volkovskiy, M. Y. (USSR). Competitive Processes in the Polymerization-
tion of Bipolymers 202

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49

S/191/60/000/002/010/012
B027/B058

AUTHORS: Koton, M. M., Sivograkova, K. A., Tolstikova, Z. D.,
Yeremina, E. N.

TITLE: Production of Large Scintillometers From Plastics

PERIODICAL: Plasticheskiye massy, 1960, No. 2, pp. 48-52

TEXT: The authors developed a method for the production of scintillometers on polystyrene basis with additions of active materials. The apparatus were made either as cylindrical blocks (10 kg weight, 220 mm diameter, 300 mm height) or as a film of a thickness of about 100 μ . After various experiments, the accelerated polymerization at 200°C, i.e., a temperature higher than the hardening temperature of the polymer, proved to be the best method for the manufacture of block-shaped scintillometers. The scintillating film was produced by means of rod presses and hot drawn. The material was composed according to the formula:
styrene(basis)
n-terphenyl (scintillating additions) 2% per weight related to styrene, ✓

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Production of Large Scintillometers From
Plastics

S/191/60/000/002/010/012
B027/B058

1,4-di-2,5 phenyl oxazolyl benzene 0.02% per weight related to styrene. The polymerization of products of up to 1 kg was carried out in glass molds; steel molds provided with an inner coat of polytetrafluoro ethylene were used for larger devices. Siloxane liquid No. 5 which is stable was used as heat carrier and proved to be satisfactory. The basic condition for the process is a high purity of the styrene which is washed twice or three times with a 5% caustic soda solution after rectification in order to remove hydroquinone. The purification is controlled according to the styrene color. N. V. Fadeyeva, L. A. Klinkovskaya, L. M. Kirichenko, G. S. Smirnov, and A. V. Matveyev participated in the experiments. There are 3 figures and 12 references: 2 Soviet, 1 British, 1 German, 2 Canadian, and 6 US. ✓

Card 2/2

S/629/60/000/003/007/011
D202/D305AUTHOR: Koton, M. M.

TITLE: Methods of producing heat-resistant polymers

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleeva. Uspekhi khimii i tekhnologii polimerov, sb.3, Moscow, Goskhimizdat, 1960, 107-129

TEXT: A review of recent investigations in the field of heat resistant plastics, based both on Western and Soviet-bloc literature. The author describes and discusses the properties of the following classes of polymers, giving their preparation and chemical formulae: 1) Olefin polymers and their derivatives, 2) polymers with rings in their side-chains, 3) polymers with rings in the main chain, 4) polymers obtained by the fission of heterocyclic rings, 5) polymers formed by polyadditive reactions, 6) polymers containing in their chains metallic complexes with different organic groups, 7) organometallic compounds, 8) inorganic polymers. This class is believed to be very promising for preparing materials with

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Methods of producing ...

S/629/60/000/003/007/011
D202/D305

a high resistance to heat. There are 81 references; 20 Soviet-bloc and 61 non-Soviet-bloc. The 4 most recent references to the English language publications read as follows: T. Campbell and A. Haven, J. Appl. Pol. Sci., 1, 73, (1959); F. Bergmann, A. Kalmus and E. Brenner, J. Am. Chem. Soc., 80, 4540, (1958); G. Marvel and I. Stille, J. Am. Chem. Soc., 80, 1740, (1958); Rubber and Plast Age, 40, 870 (1959).

Card 2/2

81584

S/190/60/000/03/00/014
B020/B066

5.3831

AUTHORS: Adrova, N. A., Koton, M. M.TITLE: Synthesis and Polymerization of 3-Vinyl-2,5-Diphenyl FuranPERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 3,
pp. 408-410

TEXT: As was previously shown by one of the authors (Ref. 1), many vinyl derivatives of the furan series have a high softening point and good dielectric properties. It was the purpose of the present paper to continue the investigation of the influence exercised by the accumulation of a number of cyclic groups in the vinyl furan molecule upon the polymerizability and some properties of polymers. First, 3-vinyl-2,5-diphenyl furan was synthesized, and its polymerizability investigated. As starting material for the synthesis of 3-vinyl-2,5-diphenyl furan the authors used 2,5-diphenyl furan which is obtained by reduction of trans-dibenzoyl ethylene with stannous dichloride in a mixture of hydrochloric acid and acetic acid under simultaneous cyclization (Ref. 2). The

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81584

Synthesis and Polymerization of
3-Vinyl-2,5-Diphenyl Furan

S/190/60/002/05/00/014
B020/B066

content of active hydrogen in the intermediate methyl-(2,5-diphenyl-furyl) carbinol was determined according to Tserevitinov. The polymerization and copolymerization of 3-vinyl-2,5-diphenyl furan was investigated in bulk and solution in the presence of 0.5 mole% benzoyl peroxide and azo-isobutyric acid dinitrile in the temperature range 60-120°. The resultant polymers had a specific viscosity (η) of 0.91 and a thermal stability (according to ИФП (IFP)) of 175 - 182°, while the copolymer of 3-vinyl-2,5-diphenyl furan with styrene (in the ratio 1:1) had a specific viscosity of 0.9 and a thermal stability of 126° (according to IFP).
Fig. 1 graphically illustrates the polymerization kinetics of 3-vinyl-2,5-diphenyl furan (1 M solution in toluene) in the presence of 0.5 mole% benzoyl peroxide, and Fig. 2 shows log k as a function of 1/T for 3-vinyl-2,5-diphenyl furan. A comparison between the polymerization rates of the vinyl derivatives of the furan series (1 M solution in toluene) in the presence of 0.5 mole% benzoyl peroxide at 100° (Fig. 3) shows that accumulation of benzene rings in the monomer molecule causes a considerable increase of the polymerization rate. The presence of benzene rings in the 2,5-position in the molecule of polyvinyl furan

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Synthesis and Polymerization of
3-Vinyl-2,5-Diphenyl Furan

S/190/60/002/05/00/014
B020/B066

also effects a considerable increase of the softening point of the polymer. There are 3 figures and 2 references: 1 Soviet and 1 US.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds AS USSR)

SUBMITTED: December 14, 1959

Card 3/3

MITIN, Yu.V.; SAZANOV, Yu.N.; VLASOV, G.P.; KOTOM, M.M.

Polymerization of dialdehydes. Vysokom.soced. 2 no.5:716-718;
My '60. (aldehydes) (Polymers) (MIRA 13:8)

83825

S/190/60/002/005/015/015
B004/B067

17.41312

15.8114 *do* 2209

11.2219

AUTHORS:

Glukhov, N. A., Koton, M. M., Mitin, Yu. V.

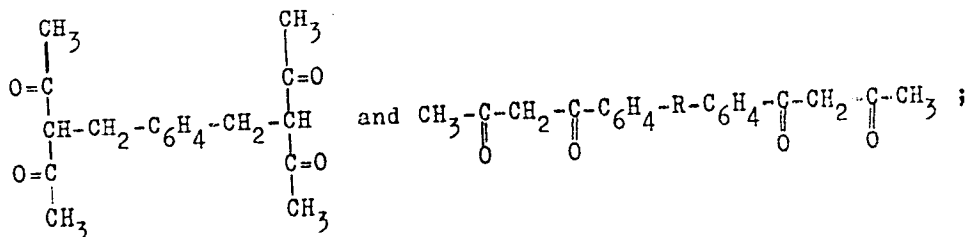
TITLE:

Production of Chelate Polymers

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 5,
pp. 791-792

TEXT: The authors produced chelate polymers in the interface by adding solutions of tetraketones in chloroform to aqueous solutions of metal salts. The tetraketones had the following structure:



Card 1/2

Production of Chelate Polymers

83825
S/190/60/002/005/015/015
B004/B067

(R = O or CH₂). The mixture was emulsified, and the aqueous solution of a base was added (e.g., piperidine), for 1 - 2 hours it was mixed at 50-60°C; the chloroform was then poured off, and the polymer was precipitated by means of alcohol. The resulting polymers did not differ from the chelate polymers which had been obtained earlier (Ref. 2) by polycondensation at a high temperature. Most of the polymers were soluble in pyridine and dimethylformamide. The melting point of the chelate polymers depended on the atomic number of the metal (Fig.). The polymers with beryllium and barium showed the highest thermal stability, while the lowest one was found in polymers with copper and zinc, which lost 25 - 35% of their weight after five hours' heating to 300°C. There are 1 figure and 2 references: 1 Soviet and 1 US.

ASSOCIATION:

Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds of the AS USSR)

SUBMITTED:

February 6, 1960

Card 2/2

VOIKOVA, A.I.; KOTON, M.M.; SAVITSKAYA, M.N.

Effect of the chemical structure of some unsaturated esters on
their polymerization capacity. Vysokom.soed. 2 no.5:802-805
My '60. (MIRA 13:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Esters) (Polymerization)

86296

S/190/60/002/008/008/017
B004/B054

15.8105

2209

AUTHORS: Chetyrkina, G. M., Sokolova, T. A., Koton, M. M.

TITLE: Polymerization of Substituted N-Phenyl Methacrylamides. II

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 8, pp. 1207-1212

TEXT: The authors studied the effect of the structure of monomers on their capability of polymerization. Five new derivatives of methacrylic acid were synthesized for this purpose: p-carbamino-, p-methyl-carbamino-, p-cyano-phenyl methacrylamide, as well as p- and o-carbethoxy-phenyl methacrylate. Besides, the known phenyl methacrylate was produced for comparison. The synthesis was carried out by reaction of the corresponding aromatic amines with methacrylic chloride in the presence of dimethyl aniline. The method had been described in Ref. 3. Polymerization was conducted in dimethyl formamide in the presence of 0.3% benzoyl peroxide at 75°C. The results are as follows: 1) An introduction of electrophilic substituents into the phenyl radical of the methacrylamide accelerates polymerization. According to their accelerating effect, the substituents

Card 1/2

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000825410011-86296

Polymerization of Substituted N-Phenyl
Methacrylamides. II

S/190/60/002/008/008/017
B004/B054

form the following order: $-\text{COOH} > -\text{COOC}_2\text{H}_5 > -\text{CN} > -\text{CONHCH}_3 > -\text{CONH}_2 > -\text{H}$.

2) Phenyl methacrylamines polymerize faster than phenyl methacrylates. Thus, the substitution of the $-\text{NH}-\text{CO}-$ group by $-\text{O}-\text{CO}-$ reduces the polymerization rate. 3) p-carbethoxy-phenyl methacrylate polymerizes faster than its ortho-isomer. An introduction of polar groups such as CN, CONH_2 , CONHCH_3 into the phenyl radical of the methacrylamide produces an increase in the softening temperature (up to 300°C) and in brittleness. The vitrification temperature of substituted polymeric N-phenyl methacrylamides is higher than that of analogous polyphenyl methacrylates. There are 1 figure, 2 tables, and 17 references: 6 Soviet, 2 US, 8 German, and 1 French.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: March 26, 1960

Card 2/2

DOKUKINA, A.F.; SMIRNOVA, Z.A.; KOTON, M.M.

Copolymerization of dichlorostyrenes and chloromethylstyrenes
with styrene. Vysokom. soed. 2 no.8:1249-1254 Ag '60.

(MIRA 13:9)

1. Leningradskiy politekhnicheskii institut im. M.I.Kalinina
(Styrene) (Polymerization)

85413

15.8114

11.2219

S/190/60/002/011/008/027
B004/B060AUTHORS: Koton, M. M., Kiseleva, T. M., Florinskiy, F. S.TITLE: Synthesis and Polymerization of Unsaturated Metal-containing CompoundsPERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 11,
pp. 1639 - 1644

TEXT: The authors report on the synthesis, made for the first time, of polymers of styrene, acrylic and methacrylic acid, containing tin, lead, or mercury. The kinetics of polymerization was studied in a 0.3 molar solution in toluene at 65°, 80°, and 105°C. The metal-containing styrene polymers polymerize at a faster rate than nonsubstituted styrene; tri-phenyl stannyl styrene > triphenyl plumbyl styrene > styrene. Activation energy in triphenyl stannyl styrene was (13.4±0.5)kcal/mole, and in triphenyl plumbyl styrene (15.0±0.8)kcal/mole. Disproportionation occurs in the polymerization of p-phenyl mercuryl styrene. Diphenyl mercury and bis(p-vinyl phenyl)mercury are formed. The latter polymerizes readily on heating to form three-dimensional polymers which are stable up to

Card 1/3

85413

Synthesis and Polymerization of Unsaturated
Metal-containing Compounds

S/190/60/002/011/008/027
B004/B060

240 - 250°C. Cross linked polymers are formed on copolymerization with styrene. In metal-containing methacrylates the polymerization rate follows the succession: phenyl mercury methacrylate > triphenyl stannomethacrylate > triphenyl plumbomethacrylate > methyl methacrylate. The ability of these compounds to polymerize is explained by the fact that there is either a benzene ring or the polar carboxyl group between the metal atom and the vinyl group. Tin- and lead compounds, in which there is a direct bond between the metal and the vinyl group, do not polymerize. Methacrylates and acrylates were produced by reaction of equimolecular mixtures of metal aryl hydroxides with the respective acids. Triphenyl plumbomethacrylate was prepared from triphenyl plumbohydroxide by heating with methacrylic acid in ethanol; yield 87.9%. Polymerization at 120°C in the mass. The same for triphenyl plumboacrylate, yield 76.4%. Polymerization in decalin at 180 - 190°C. Metallic lead separates on heating above 250°C. Phenyl mercuromethacrylate, production like the lead compound, 81.8% yield, phenyl mercuroacrylate, yield 90%. Mercury compounds irritate the skin. Triphenyl stannacrylate (80.5% yield) polymerizes in block at 170°C, the methacryl compound (melting point 85-86°C) polymerizes in block or in solution in the presence of azoisobutyric acid-dinitrile.

Card 2/3

85413

Synthesis and Polymerization of Unsaturated Metal-containing Compounds S/190/60/002/011/008/027
B004/B060

The metal-containing styrenes were synthesized in accordance with L. Leebrick, H. Ramsden (Ref. 8): p-phenyl mercury styrene (35% yield), bis(p-vinyl phenyl)-mercury (30% yield), p-triphenyl plumbyl styrene (21% yield, melting point 87-89°C), p-triphenyl stannyl styrene (84% yield). The copolymer from 96% styrene and 4% bis(p-vinyl phenyl)mercury contained 1.44% Hg and 3 cross links per 100 chain links. I. L. Arkhipova, A. N. Gromtseva, and S. V. Troitskiy took part in the experiments. There are 2 figures and 10 references: 7 Soviet, 2 US, and 2 British.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Compounds of the AS USSR)

SUBMITTED: April 28, 1960

Card 3/3

5.3700

77377
S07773-30-1-32/76

AUTHORS: Koton, M. M., Kiseleva, T. M., Zapevalova, N. P.

TITLE: Reactivity of Unsaturated Compounds of Tin and Lead

PERIODICAL: Zhurnal obshchey khimii, Vol 30, No 1, pp 130-140 (USSR), 1960

ABSTRACT: The following compounds were synthesized: allyltriphenyllead (by the method of P. Austin [J. Am. Chem. Soc., 53, 3514 (1931)]); allyltrimethyltin [Petrov, A. D., Mironov, V. F., Dolgiy, I. Ye., Izvest. Akad. nauk SSSR. Otdel. Khim. nauk, 1956, 11467]; vinyltrimethyltin [Seyferth, D., J. Am. Chem. Soc., 79, 515, 2133 (1957)]; divinylidiphenyltin [Ibid.]; vinyltriphenyltin [Ibid.]; tetraallyltin [Ibid.]. Experiments with thermal decomposition (which resulted in formation of alkylmetal compound, followed by precipitation of metal) were performed by heating 1 g of compound in a sealed ampule at 100-300°. It was found that: (1) vinyl compounds of tin are more stable toward heating than the allyl compounds, which in turn

Card 1/7

APPROVED FOR RELEASE: 08/23/2000

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Reactivity of Unsaturated Compounds of
Tin and Lead77377
S07773-30-1-32/76

are more stable than the allyl compounds of lead; and (2) thermal stability decreases with increasing number of vinyl groups in the molecule of organometallic compound. The stability of vinyl derivatives of tin decreases in the order vinyltrimethyltin (stable up to 250°) > vinyltriphenyltin > divinylidiphenyltin > tetraallyltin (which begins to decompose at 170°). In respect to their reactivity the investigated radicals can be arranged: allyl > phenyl > vinyl. In reactions of allyltriphenyl lead with HCl (performed in an ampule connected to a gas burette the evolved propylene was absorbed in bromine-CCl₄ solution and the resulting solution was titrated with Na₂S₂O₂), the allyl radical is eliminated first, forming propylene:

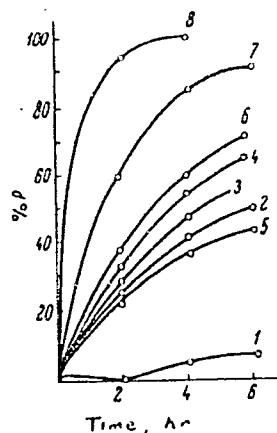
Card 2/7

Reactivity of Unsaturated Compounds of
Tin and Lead

77377
SOV/79-30-1-38/78

120° in benzene solution) of styrene and, especially,
methyl methacrylate (see Figs. 1 and 2).

Fig. 1. Polymerization of methyl methacrylate at 120° in presence of 5 weight % of unsaturated compounds of tin: (1) tetraallyltin; (2) allyltrimethyltin; (3) diallyldiphenyltin; (4) allyltriphenyltin; (5) tetravinyltin; (6) vinyltrimethyltin; (7) vinyltriphenyltin; (8) pure methyl methacrylate.



Card 4/7

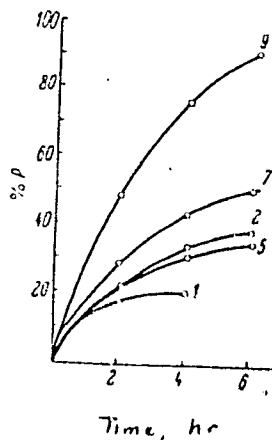
APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000825410011-9

Reactivity of Unsaturated Compounds of
Tin and Lead

77377
SOV/79-30-1-38/78

Fig. 2. Polymerization of styrene at 120° in presence of 5% by weight of unsaturated compounds of tin: (1) tetraallyltin; (2) allyltrimethyltin; (5) tetravinyltin; (7) vinyltriphenyltin; (9) pure styrene.



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Reactivity of Unsaturated Compounds of
Tin and Lead

77377

SOV/79-30-1-38/78

By arranging the compounds shown in Figs. 1 and 2 in order of decreasing inhibiting action: tetraallyltin >> tetravinyltin > allyltrimethyltin > diallyldiphenyltin > allyltriphenyltin > vinyltriphenyltin > vinyltrimethyltin, it can be seen that the least stable compounds are the most active inhibitors. There are 2 figures; 2 tables; and 9 references, 2 Soviet, 1 German, 1 U.K., 5 U.S. The 5 most recent U.K. and U.S. references are: J. Brydson, *Plastics*, 1957, 384; H. Gilman, *J. Eisch, J. Org. Ch.*, 20, 763 (1955), *J. Am. Chem. Soc.*, 55, 4689 (1933); D. Seyferth, *J. Am. Chem. Soc.*, 79, 515, 2133 (1957), *J. Org. Ch.*, 22, 478 (1957); S. Rosenberg, A. Gibbons, H. Ramsder, *J. Am. Chem. Soc.*, 79, 2137 (1957); G. Gilman, *J. Am. Chem. Soc.*, 61, 735 (1939).

Card 6/7

5.3400

78284

SOV/73-30-3-38/69

AUTHORS: Yel'tsova, P. A., Koton, M. M., Mineyeva, O. K.,
Surnina, O. K.

TITLE: Synthesis of Vinyl Derivatives of Biphenyl, Biphenyl
Ether and Biphenyl Sulfide

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, pp 933-
934 (USSR)

ABSTRACT: The effect of substituents phenyl, phenoxy, and phenyl-
mercapto) on the capacity of compounds to undergo
polymerization, and on properties of resulting polymers
was studied. Addition of ethylene oxide to biphenyl and
diphenyl ether in the presence of anhydrous aluminum
chloride, with subsequent dehydrogenation of obtained
carbinols, yields o-vinylbiphenyl (yield 47%), bp 112-
113° (0.5 mm), n_D^{20} 1.6190; p-vinylbiphenyl, bp 124-126°
(2 mm), mp 118-119°; o-vinyldiphenyl ether (yield 70%),
mp 38-39°; p-vinyldiphenyl ether, bp 106° (1 mm), n_D^{20}

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Synthesis of Vinyl Derivatives of
Biphenyl, Biphenyl Ether and
Biphenyl Sulfide

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SOV/79-30-3-38/69

1.6014; p-vinyldiphenyl sulfide (yield 56%), bp 137°
(1 mm), n_D^{20} 1.6495. There are 8 references, 5 U.S.
2 French, 1 German. The U.S. references are: Frank,
R., Adams, C., J. Am. Chem. Soc., 68, 1365 (1946);
Chem. Abst., 47, 7826 (1953); Bradsher, Ch., Wert,
R., J. Am. Chem. Soc., 62, 2806 (1940); Huber, F.,
Renoll, M., Possow, A., Mowry, D., J. Am. Chem. Soc.,
68, 1109 (1946); Mowry, D., Renoll, M., Huber, F., J.
Am. Chem. Soc., 68, 1105 (1946).

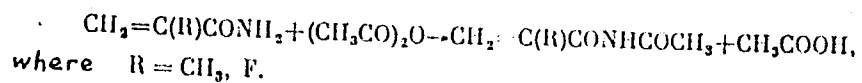
SUBMITTED: April 28, 1959

Card 2/2

5.3610

78294
SOV/79-30-3-48/69

AUTHORS: Sleptsova, O. M., Koton, M. M.
TITLE: Synthesis and Polymerization of N-Acylamides of the Acrylic Series
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, pp 972-975 (USSR)
ABSTRACT: Synthesis and polymerization of N-acetylmethacrylamide (I) and N-acetyl- α -fluoroacrylamide (II) were studied. I and II were obtained as follows:



The reaction takes place at 142-145° in the presence of catalyst acetyl chloride. To prevent polymerization, small amounts of pyrogallol and copper drillings are added. I is a colorless liquid, bp 82° (2 mm), 47%

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Synthesis and Polymerization of N-Acylamides
of the Acrylic Series

78294

SOV/79-30-3-48/69

yield, d_4^{20} 1.0819, n_D^{20} 1.4830. These data do not agree with those obtained by R. Dunbar and G. White (J. Org. Ch., 23, 915, 1958), who stated that they obtained N-acetylmethacrylamide which "decomposes at 300°". II (33%) is in the form of white crystals, mp 70°. I and II easily polymerize in the presence of initiators of the radical type to form soluble thermoplastics. Polymerization of I was conducted in the presence of benzoyl peroxide and dinitrile of azoisobutyric acid as initiators. The glass ampoules filled with the reaction mixture were sealed under 1 mm residual pressure, and were heated at different temperatures for different periods of time. Determination was made of the residual monomer in the polymer obtained. It was shown that 1.83, 1.09% of the monomer remains unchanged when benzoyl peroxide is used; and 3.75, 3.94% when the dinitrile of azoisobutyric acid is used. Block polymer of I is a transparent colorless glass; sp. gr. at 20° is 1.260. II readily polymerizes at its mp, without initiators. The polymer was separated in the form of white curd (67%). Thermomechanical properties

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Synthesis and Polymerization of N-Acrylamides
of the Acrylic Series

78294

SOV/79-30-3-48/69

are shown in Figs. 1 and 2. There are 2 figures; and
4 references, 2 U.S., 1 German, 1 Dutch. The U.S.
references are: R. Dunbar, G. White, J. Org. Ch., 23,
915 (1958); D. Davidson, R. Skovronnek, J. Am. Chem.,
80, 376 (1958).

SUBMITTED:

March 16, 1959

Card 3/5

Synthesis and Polymerization of N-Acylamides
of the Acrylic Series

78294
SOV/79-30-3-48/69

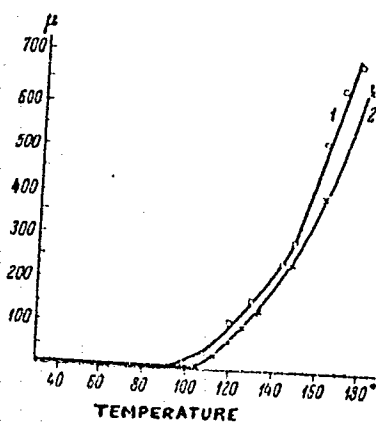


Fig. 1. Correlation between deformation and temperature of poly(N-acetylmethacrylamide). (1) Block; (2) extracted.

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5.3830

77523

SOV/80-33-1-32/49

AUTHORS: Koton, M. M., Glukhov, N. A., Baburina, A. N.,
Shcherbakova, L. M.

TITLE: Synthesis and Polymerization of 3,3'-Bis(chloromethyl)
oxacyclobutane

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 182-
185 (USSR)

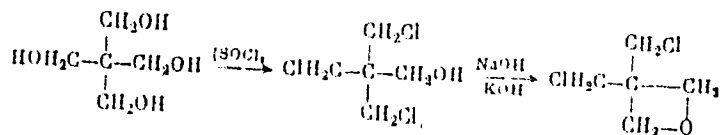
ABSTRACT: This is the first paper of a series on synthesis and
polymerization of 3,3'-bis(chloromethyl)oxacyclobutane
(I). Polymerization of (I) in ethyl chloride or dichloro-
ethane solution in the presence of boron trifluoride and
water under the conditions of cationic polymerization
at -20° was studied. A short review of the properties
and preparation of (I) and its polymers ("Penton," pro-
duced by Hercules Powder Co., U.S.A.) are given. (I)
was obtained from pentaerythritol according to the
A. Moradien and J. B. Cloke, and also the A. Farthing
methods (see references).

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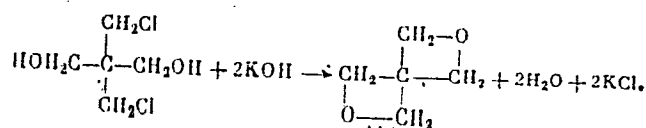
Synthesis and Polymerization of 3,3'-Bis
(chloromethyl)oxacyclobutane

77523

SOV/80-33-1-32/49



(I) was purified using a 50-60 theoretical-plate column to remove the traces of dioxaspiroheptane (II), which is also formed in the reaction



Removal of (II) is important since its presence leads to the formation of nonmelting, insoluble polymers. Effect of the temperature on the yield and the characteristic viscosity of the (I) polymers is given in Table 1. Effect of concentration of I in the reaction mixture on

Card 2/6

Synthesis and Polymerization of 3,3'-Bis
(chloromethyl)oxacyclobutane

77523

801/80-33-1-32/49

Table 1. Key to Dependence of yield and characteristic viscosity on temperature: (a) experiment Nr; (b) temperature (in °C); (c) polymerization time (in min); (d) yield of polymer (in %).

(a)	(b)	(c)	(d)	(e)
18	-10	480	82	0.18
17	-20	480	44	0.50
23	-40	480	7	0.2

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Synthesis and Polymerization of 3,3'-BIs
(chloromethyl)oxacyclobutane

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the yield of polymer is given in Table 2. Ionic polymerization of (I) in the presence of BF_3 and water in a solution of ethyl chloride and dichloroethane was conducted in a glass apparatus, shown in Fig. A. The prepared polymer of (I) is a white powder, insoluble in the usual solvents, soluble in cyclohexanone and o-dichlorobenzene at 50-80°. Yield under optimal conditions, 82-85%, mp 175-176°, specific viscosity $[\eta]$ 1.1-1.25. The experimental part was conducted with participation of I. P. Morozova. There is 1 figure; 2 tables; and 7 references, 4 U.S., 2 U.K., 1 Japanese. The 5 most recent U.S. and U.K. references are: A. Farthing, J. Appl. Chem., 8, 186 (1958); E. Cronin, Mod. Plastics, 34, 150 (1957); E. Cronin, Rubber World, 135, 571 (1957); Plastics, 127 (1957); A. Moradien, J. B. Cloke, J. Am. Chem. Soc., 67, 942 (1945).
July 2, 1959

SUBMITTED:

Card 4/6

Synthesis and Polymerization of 3,3'-Bis
(chloromethyl)oxacyclobutane

77523

SOV/80-33-1-32/49

Table 2. Key to Dependence of polymer yield on the concentration of monomer: (a) experiment Nr; (b) temperature (in °C); (c) polymerization time (in min); (d) concentration of monomer (in mole/liter); (e) yield of polymer (in %).

(a)	(b)	(c)	(d)	(e)	(η)
24	-20	480	1.0	26	0.3
36	-20	480	1.2	38	0.45
38	-20	480	1.43	54	0.85
32	-20	480	2.21	82	1.05
40	-20	480	2.83	80	1.10

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Synthesis and Polymerization of 3,3'-Bis
(chloromethyl)oxacyclobutane

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SOV/80-33-1-32/49

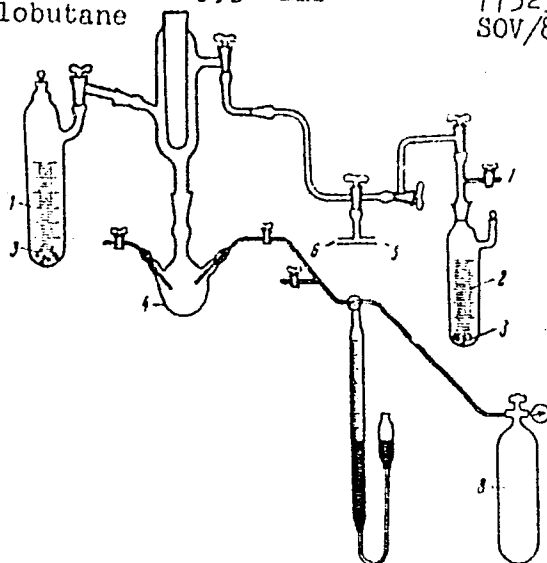


Fig. A. Installation scheme: (1) vessel for monomer; (2) vessel for solvent; (3) calcium hydride; (4) reactor; (5) to the pump; (6) to the MacLeod gage; (7) dry air supply; (8) cylinder with BF_3 .

Card 6/6

5(3) 5.3700(c)

AUTHORS: Koton, M. M., Kiseleva, T. M.

67932
SOV/20-130-1-23/69

TITLE: Synthesis of Polyorganostannoxanes 1

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 1, pp 86-87 (USSR)

ABSTRACT: As besides patents there were no publication data to be found on polyorganostannoxanes with a group ---Sn---O---Sn--- in the principal chain, the authors tried to synthesize these compounds. For this purpose they used the reaction of polycondensation (K. A. Andrianov, Ref 3; Ref 4). The authors investigated the reaction of the diacetates of n- and i-butyl-tin with tetraethoxy-tin. The bond ---Sn---O---Sn was formed by the interaction of the acetate- with the ethoxyl group (see Scheme). The polymer (I) was isolated as a bright-yellow powder with a softening temperature of 70-75° for $(i\text{-C}_4\text{H}_9)_2\text{Sn(OAc)}_2$, or 60-70° for $(n\text{-C}_4\text{H}_9)_2\text{Sn(OAc)}_2$. The molecular weight of the polymer (I) was 1890-1990 (that of the tetramer was 1936). Thus, a linear, low-molecular (n=4) polyorganostannoxane develops

Card 1/2

Synthesis of Polyorganostannoxanes

67853

S07/20-130-1-23/69

under the conditions of the experiment. The polymer can be hydrolyzed by heating with water. The ethoxyl- and acetate groups are separated, and an insoluble and nonfusible compound (II) is formed (see Scheme). There are 5 references, 1 of which is Soviet. ✓

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences, USSR)

PRESENTED: June 20, 1959, by A. N. Nesmeyanov, Academician

SUBMITTED: June 14, 1959

Card 2/2

5.3700(c)
AUTHORS: Koton, M. M., Kiseleva, T. M.

69995

S/020/60/131/05/024/069
B011/B117

TITLE: The Synthesis of Polymerizable Unsaturated Organomercury Compounds 7

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1072-1073 (USSR)

TEXT: No data on the polymerizability of the compounds mentioned in the title have been hitherto published. A vinyl derivative of mercury diphenyl which could be both polymerized and copolymerized was synthesized by the authors (Ref 10) for the first time. Thus, if para-vinyl phenyl magnesium bromide is reacted with phenyl mercury bromide in hydrofuran solution, crystalline phenyl-p-vinyl phenyl mercury (I) (see equation) is obtained. (I) is easily polymerized or copolymerized without initiators or in the presence of isobutyro-azodi-nitrile. Benzoyl peroxide, catalysts of cationic polymerization, and complex catalysts cannot be used, since all of these enter into chemical reactions with the monomer (I). (I) is disproportionated during polymerization with the formation of diphenyl mercury and of a new unsaturated compound, i.e. bis-para-vinyl phenyl mercury (II) (see equation). (II) can very easily be polymerized. Thereby, an insoluble and infusible cross-linked polymer (III) is formed. (III) is decomposed above 250° with the separation of metallic mercury. In order to prove the correctness of their assumptions, the authors synthesized bis-p-vinyl phenyl mercury by reaction of p-vinyl phenyl magnesium chloride in tetrahydrofuran with mercury

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The Synthesis of Polymerizable Unsaturated
Organomercury Compounds

69995
S/020/60/131/05/024/069
B011/B117

bromide in form of a crystalline substance (see scheme). The monomer (II) can be easily polymerized to give a polymer having the same structure as (III) such as the product of disproportionation of phenyl-p-vinyl phenyl mercury. (I) and (II) give copolymers with styrene. These copolymers are transparent, colorless, and insoluble substances. There are 10 references, 4 of which are Soviet. 4

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences,
USSR)

PRESENTED: January 20, 1960, by A. N. Nesmeyanov, Academician

SUBMITTED: December 14, 1959

Card 2/2

S/030/61/000/001/002/017
B105/B206

AUTHOR: Koton, M. M., Corresponding Member AS USSR
TITLE: Synthesis of high-molecular compounds with predetermined properties
PERIODICAL: Vestnik Akademii nauk SSSR, no. 1, 1961, 19-26

TEXT: This study shows the great number of difficult problems which must be solved for the modification of existing polymeric substances and the elaboration of new methods of polymerization and condensation, in order to produce polymers with predetermined properties. In recent years, methods were developed for producing macromolecules chemically bonded with each other. Thus it was possible to combine in one substance the properties of various compounds. Such substances are called grafted polymers. By such a chemical grafting, the brittleness of a substance may for instance be reduced and its elastic properties increased. Stereoregular polymers can be produced at present by new polymerization methods. By using new catalytic systems containing organometallic compounds and salts of various metals, isotactic and syndiotactic crystalline polymers showing fusing

Card 1/4

Synthesis of high-molecular ...

S/030/61/000/001/002/017
B105/B206

temperatures of from 230 to 240°C can be produced. The study of isotactic polybutadiene and copolymers ethylene-propylene, ethylene-butylene as well as ethylene-propylene-butylene is described as being promising. Modern industry has an ever increasing demand for heat-resistant materials of high elasticity and strength, which are only slightly subject to aging. These are the so-called fluorine-containing polymers, on the basis of which the new fluorine-containing fiber Ftorlon is produced. Among the fluorine-containing plastic masses, teflon-100-X shows the highest heat resistance. The stereospecific polymerization of the "channel type" (polymerization within the thiourea molecule) is described as being an interesting example for new polymerization methods. Olefins, dienes and epoxides are polymerized by means of this method, crystalline rubbers, plastic and fibers with valuable properties being formed. Crystalline 1,4-trans-polydimethylbutadiene, 1,4-trans-polydichlorobutadiene, polyisobutylene, polycyclohexadiene and polyvinylidenechloride were produced in such a way. The new method of heterophase polycondensation permits the production of polyesters, polyamides, polyurethans and other materials of high molecular weight, which is impossible with the customary methods of polycondensation. The

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Synthesis of high-molecular ...

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speed of the method, absence of reversible processes, high molecular weight, and high fusing temperature of polycondensation products constitutes the peculiarities of this method. Among the synthetic polymers with cyclic groups, polystyrene is described as being the most valuable one, but its low heat resistance (80°C) restricts its field of application. Its heat resistance could be increased to 180 to 200°C by introducing various substitutes (halogens, the methyl group, cyanogen etc). Its heat resistance is raised to 220 to 240°C when introducing fluorine atoms into the vinyl group of styrene. In order to improve the physical properties of polystyrene and its derivatives, the methods of copolymerization and grafted copolymerization are used. Polymers with a conjugate double-bond system, i. e. a structure of the main chain $\sim\text{CH}=\text{CH}-\text{CH}=\text{CH}\sim$, constitutes a new class of high-molecular compounds. The copolymerization of various derivatives of acetylene in the presence of catalysts of the ion- and stereoregular polymerization, respectively, serves as promising production method for polymers of this type. The study of the synthesis of new polymeric materials with high chemical stability against aggressive media is described as being an important scientific-technical task. The method of ring cleavage of heterocyclic compounds, specially oxygen-containing compounds (α - and β - oxides) serves

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15.8100

21720
S/064/61/000/006/001/003
B110/B206

AUTHOR: Koton, M. M.

TITLE: Synthesis and polymerization of nucleus-substituted
styrenes and properties of their polymers

PERIODICAL: Khimicheskaya promyshlennost, no. 6, 1961, ³⁷¹⁻³⁷⁶~~4-6~~

TEXT: An endeavor is made to raise the resistance to heat of polystyrene by introducing substituents. It was the author's aim to investigate the dependence of polymer properties on the chemical monomer structure. The following methods of synthesis were applied: (1) CH_3MgI substituted benzaldehydes, dehydration of the substituted phenyl-methyl carbinols by means of KHSO_4 or Al_2O_3 (yield 40-60%); (2) interaction of halogen benzenes with Mg, reaction with acetaldehyde, dehydration of the carbinols (yield 50-65%); (3) acetylation of substituted benzenes according to Friedel-Crafts, reduction by means of Al alcoholate according to Meerwein-Ponndorf, dehydration (yield 50-75%); (4) oxidation of substituted

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toluenes according to Étard, condensation with malonic acid, decarboxylation (yield 40-50%). 15 new and 25 known substituted styrenes were prepared. The following were polymerized at 75, 100, and 125°C: monohalogen styrenes (MHS) at a higher polymerization rate than styrene, dependent on type and position. o-MHS had greatest rate, molecular weight and dipole moment; o-monochloro styrene (o-MCS): $1.57 \cdot 10^{18} \text{D}$; o-monobromo styrene (o-MBS): $1.48 \cdot 10^{18} \text{D}$. Activation energies (kcal/mole): styrene: 21.5 ± 0.7 ; p-MBS: 15.3 ± 0.5 ; p-moniodo styrene (p-MIS): 14.6 ± 0.4 ; p-cyano styrene: 8.2 ± 0.2 . Transparent, colorless, thermoplastic polymers (PMHS), soluble in aromatics and chlorinated hydrocarbons. Softening temperature of poly(monofluoro styrene (PMFS) < PMIS. $\tan \delta = 4-8 \cdot 10^{-4}$ at $500-10^6$ cps and 20°C; at $t > 20^\circ \text{C}$, $4 \cdot 10^{-4}-2 \cdot 10^{-3}$, dielectric penetrability (20°C) = 2.58-2.90. Dihalogen styrenes (DHS) polymerize 3-4 times faster. The molecular weights are: poly-2,5-dichloro styrene (P-2,5-DCS): 63,700; P-2,4-DCS: 27,800. P-3,4-DCS: 30,000; poly-2,5-dibromo styrene

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(P-2,5-DBS): 40,000; P-3,4-DBS: 20,000. Activation energies (kcal/mole): 2,5-DCS: 17 ± 0.5 ; 2,4-DCS: 15.5 ± 0.5 ; 3,4-DCS: 15.6 ± 0.6 . The properties correspond to the PMHS. Softening temperatures of the poly-dihalogen styrenes (PDHS) > PMHS, those of PDBS > PDCS. Resistance to heat for P-2,5-DCS: 120°C ; P-3,4-DCS: 105°C . $\tan \delta = 2 \cdot 10^{-4}$ for P-2,5-DCS and P-2,5-DBS, during temperature increase = $2 \cdot 10^{-3}$. P-3,4-DCS and P-3,4-DBS are polar. $\tan \delta = 3 \cdot 10^{-3} - 1.8 \cdot 10^{-2}$. Trichloro styrenes (TCS) and pentachloro styrenes (PCS) polymerized at 45, 60, 75, 100, 125, and 150°C showed, after 3 hr, polymer formation of:
2,4,5-TCS = 45 % (75°C); 2,3,4-TCS (125°C) = 6 %, and (150°C) = 20 - 22 %; PCS (125°C) = 16.3 %. PTCS- and poly-PCS (PPCS) properties correspond to the PMHS. Softening temperatures rise with the number of Cl atoms up to TCS. Resistance to heat: 105°C ; PTCS: $160-190^{\circ}\text{C}$; PPCS: 101°C . $\tan \delta \sim 2-4 \cdot 10^{-4}$ for PTCS at $10^5-5 \cdot 10^6$ cps (20°C) and $1 \cdot 10^{-3}-3 \cdot 10^{-2}$ at $120-150^{\circ}\text{C}$. o-, m-, and p-monomethyl styrenes (MMS) polymerized faster than

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styrenes at 80, 100, and 120°C. The following polymerized at 100°C in 3 hr: o-MMS: 10.2%; m-MMS: 12.2%; p-MMS: 10.7%; 2,5-dimethyl styrene (DMS): 9.4%; 3,4-DMS: 6.9%. Steric hindrance through CH₃ group increase lowered the velocity. 2,4,6-trimethyl styrene (TMS) produced low-molecular polymer only with BF₃ etherate. Molecular weight of poly-2,5-DMS (P-2,5-DMS): 190,000. Activation energies (kcal/mole): p-MMS: 16 ± 0.5; 2,5-DMS: 15 ± 0.8; 2,4-DMS: 17.5 ± 0.6; 3,4-DMS: 17 ± 1. Colorless, transparent, thermoplastic polymers, soluble in C₆H₆, CHCl₃, and CCl₄. Resistance to heat (according to Vicat) of P-2,5-DMS: 148°C, tan δ = 2-4·10⁻⁴ at 10²-7·10⁶ cps. The author therefore recommends 2,4- and 2,5-DMS as heat-resistant high-frequency dielectrics for electrical and radio engineering. o-halogen polarizes the vinyl bond and increases the polymerization rate (temperatures: 80, 100, and 120°C) of monohalogen methyl styrenes (MHMS). Colorless, transparent, thermoplastic polymers

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(PMHMS), soluble in C_6H_6 and $CHCl_3$. Intrinsic viscosity $[\eta]$ in C_6H_6 :
poly-2-monochloro-5-methyl styrene (P-2,5-MC-5-MS): 0.91 (PMHMS: 0.49-0.32)
It had the highest molecular weight and best dielectric characteristics.
The following were synthesized: 2-MC-3,4-DMS; 2-MC-3,5-DMS,
4-MC-2,5-DMS, and 2,3-dichloro-4,5-DMS (2,3-DC-4,5-DMS). The Cl atoms of
2,3-DC-4,5-DMS polarize the vinyl group ($\mu = 2.22D$); (MCDMS: $\mu = 1.55-1.84D$).
Transparent, colorless, thermoplastic polymers, soluble in aromatics
and chlorinated hydrocarbons. Resistance to heat according to the
WPT (IFP) method: polymonochloro dimethyl styrene (PMCDMS): 154-157°C;
polymonobromo-DMS: 157-166°C, and P-2,3-DC-4,5-DMS: 175-180°C.
 $[\eta]$: 0.45-0.82. P-4-MC-2,5-DMS had the highest value. Polyhalogen-DMS
had: dielectric penetrability $\sim 3-3.5$; $\tan \delta$:
 $4-8 \cdot 10^{-4}$ between $-60^\circ C$ and $120^\circ C$. Table 5 shows heat-resistant copoly-
mers. o-, m-, and p-monomethoxy styrenes (MMOS); 2,5- and 3,4-dimethoxy
styrene (DMOS) and 2,3,4-trimethoxy styrene (TMOS) were polymerized at
100, 110, and 125°C.

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Rates: o-MMOS > p-MMOS > m-MMOS; MS > MOS. o-isomers of monosubstituted styrenes polymerize faster at higher molecular weights and softening temperatures, 2,5-derivatives fast at lowest activation energy, high softening temperature, molecular weight and good dielectric characteristics. 3 halogen atoms cause an increase in polymerizability. The position to the vinyl group is of importance. CH₃ introduction causes steric hindrance. The substituents affect the rate: CN > I > Cl > Br > F > CH₃ > OCH₃

especially in o- or 2,5-position. Substituents of first order (except CH₃O) increase the polymerizability, lower the activation energy, and in o-; 2,5-; 2,4,5-position produce fast polymerizing, high-molecular, heat-resistant polymers of good dielectric characteristics. There are 6 tables, and 22 references: 12 Soviet-bloc and 10 non-Soviet-bloc. The most recent references to English-language publications read as follows: Ref. 1: J. Millan, Brit. Plast., 26, 220 (1953). Ref. 14: J. Dixon, K. Saunders, Ind. Eng. Chem., 46, 652 (1954). Ref. 15: J. Melchore, Mod. Plast., 33, 163 (1956).

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Synthesis and polymerization...

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ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds AS USSR)

Table 5: Resistance to heat and intrinsic viscosity of some copolymers. (1) Copolymer composition; (2) resistance to heat according to the IPF method, °C; (3) $[\eta]$ in benzene at 20°C; (4) 2,5-DCS (44.08%)+styrene (S) (55.92%); (5) 3,4-DCS (52.56%)+S(47.43%); (6) 2-MC-5-MS (55.36%)+S(44.63%); (7) 2-MC-3,4-DMS (20.91%)+S (79.08%); (8) 2-MC-3,5-DMS (47.57%)+S (52.42%); (9) 2,3-DC-4,5-DMS (54.20%)+S (45.79%)

Таблица 5

Теплостойкость и характеристическая вязкость некоторых сополимеров

① Состав сополимера	② Теплостойкость по методу ИФП °C	③ $[\eta]$ в бензоле при 20°
④ 2,5-Дихлорстирол (44,08%) + стирол (55,92%)	126	1,09
⑤ 3,4-Дихлорстирол (52,56%) + стирол (47,43%)	89	0,42
⑥ 2-Хлор-5-метилстирол (55,36%) + стирол (44,63%)	114	0,49
⑦ 2-Хлор-3,4-диметилстирол (20,91%) + стирол (79,08%)	122	—
⑧ 2-Хлор-3,5-диметилстирол (47,57%) + стирол (52,42%)	138	0,58
⑨ 2,3-Дихлор-4,5-диметилстирол (54,20%) + стирол (45,79%)	147	0,56

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15.8150

25270

S/062/61/000/010/005/018
B117/B101

AUTHORS: Koton, M. M., and Kiseleva, T. M.

TITLE: Synthesis and investigation of the reactivity of polymerizing organometallic derivatives of p-vinylbenzoic acid

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 10, 1961, 1783 - 1788

TEXT: A number of organometallic derivatives of p-vinylbenzoic acid and benzoic acid were synthesized, and their reactivity studied under comparable conditions. For this purpose, the following organometallic compounds were synthesized for the first time: 1) triphenyl-stannyl-p-vinylbenzoate, $(C_6H_5)_3SnOCOC_6H_4CH=CH_2$, melting point 81 - 83°C; 2) triphenyl-stannyl benzoate, $(C_6H_5)_3SnOCOC_6H_5$, melting point 70 - 72°C; 3) triphenyl-plumbyl-p-vinylbenzoate, $(C_6H_5)_3PbOCOC_6H_4CH=CH_2$, melting point 136 - 138°C; 4) triphenyl-plumbyl benzoate, $(C_6H_5)_3PbOCOC_6H_5$, melting point 117 - 120°C; 5) diphenyl stibine-p-vinylbenzoate, $(C_6H_5)_2SbOCOC_6H_4CH=CH_2$, melting

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point 78 - 80°C; 6) diphenyl-stibine benzoate, $(C_6H_5)_2SbOCOC_6H_5$, melting point 121 - 122°C; 7) phenylmercury-p-vinylbenzoate, $(C_6H_5)HgOCOC_6H_4CH=CH_2$, melting point 117 - 118°C; 8) phenylmercury benzoate, $C_6H_5HgOCOC_6H_5$, melting point 97 - 98°C. In reactions of mercury and lead compounds with alcoholic HCl solution the C_6H_5COO radical was found to be more reactive than $CH_2=CH_6H_4COO$ under comparable conditions (-5 - -10°C). When phenyl groups accumulate in the molecule of the organometallic compound, the difference in the reactivities of these radicals becomes insignificant. The reactivity of organometallic derivatives of p-vinylbenzoic acid was studied by a dilatometric investigation of the kinetics of radical polymerization in toluene in the presence of 0.25% by weight of azoisobutyronitrile at 80, 90, and 100°C. The polymerization rate can be increased by introducing organometallic substituents into the molecule of p-vinylbenzoic acid, according to the nature of the metal: $Hg > Sn > Pb > Sb$. The thermal stability of polymers of organometallic derivatives of p-vinylbenzoic acid was studied on the basis of their destruction at 150, 200,

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and 250°C. The results obtained were compared with data on the thermal decomposition of benzoates of phenylated Hg, Pb, Sn, and Sb derivatives, and regularities were found to be the same. It was shown that the thermal stability depends on the nature of the metal contained in the compound in question: Sn>Sb>Pb>Hg, i. e., organic tin compounds are most resistant to heat. There are 1 figure, 2 tables, and 6 references: 3 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: R. Sasin, G. Sasin, J. Organ. Chem. 20, 770 (1955); E. Bashman, J. Amer. chem. Soc. 73, 1964 (1951); G. Gilman, J. Amer. Chem. Soc., 51, 3112 (1929).

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences USSR)

SUBMITTED: March 6, 1961

X

Card 3/3

IVANOV, S.S.; KOTON, M.M.

Polymerization of α -acylaminoacrylic acids. Vysokom. soed, 3
no.2:248-254 F '61. (MIRA 14:5)

1. Institut vysokomolekulyarnykh soedineniy AN SSSR.
(Acrylic acid)
(Polymerization)

158150

25267

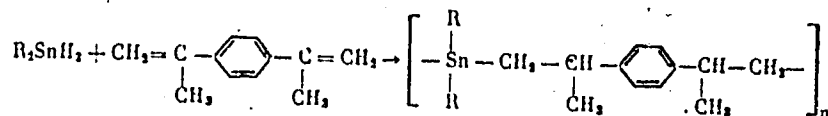
S/190/61/003/007/011/021
B102/3220

AUTHORS: Adrova, N. A., Koton, M. M., Klages, V. A.

TITLE: Synthesis of new organotin compounds

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 7, 1961,
1041-1043

TEXT: The present paper is based on studies by J. Curry, K. Kojima, E. Pear (see below) with regard to the synthesis of compounds with direct Si-CH₂ or Sn-CH₂ bond in the chain effected by the migration of the H atom from the disubstituted silane (or stannane) to the double bond of the hydrocarbon. The authors studied this reaction on the interaction of diphenyl or di-n-butyl stannane with di-isopropenyl benzene. The following equation was obtained for this reaction:



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Synthesis of new organotin compounds

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B102/B220

where R = C₆H₅; C₄H₉. The diphenyl stannane (I) was obtained by reduction of diphenyl tin with lithium aluminum hydroxide in ether free of water and peroxides with a yield of 75%. Di-n-butyl stannane (II) was synthesized by reduction of di-n-butyl tin dichloride (yield 65%) and distillation at 69-70°C and 10-12 mm Hg. The stannanes and di-isopropenyl benzene (III) were made to interact for 5 days in equimolecular ratio in ampullae in nitrogen atmosphere, the temperature being increased gradually from 80 to 120°C. Azoisobutyro-dinitrile, methylphenyl anthracene, and irradiation with UV light were used as initiators. By using azoisobutyro-dinitrile, there were obtained: from I and III viscous liquids having a maximum polymerization coefficient of 19-20 and a molecular weight of 8500; from II and III solid polymers, melting point 55-60°C, polymerization coefficient 6-7, molecular weight 2000-2760. Polymerization does not occur for III alone under the experimental conditions indicated. The structure of the organotin polymers was traced by their decomposition by means of alcoholic solution of HCl. The polymer from I and III was decomposed within 30-40 min at room temperature; the polymer from II and III only after heating to 100°C within 48 hr. In both cases, the corresponding insoluble

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Synthesis of new organotin compounds ²⁵²⁶⁷

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B102/B220

and infusible R_2SnO compounds resulted. There are 1 table and 8 references: 2 Soviet-bloc and 6 non-Soviet-bloc. The 3 most important references to English-language publications read as follows: J. Curry, G. Harrison, J.org. Chem., 23, 1219, 1958; K. Kojima, Bull. Chem. Soc. Japan, 31, 663, 1958; E. Pear, J. Polymer Sci., 40, 273, 1959.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds, AS USSR)

SUBMITTED: October 1, 1960

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15.8114

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23853

S/020/61/137/006/012/020
B103/B217

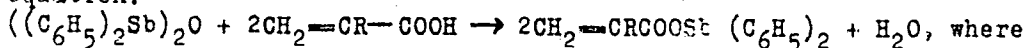
AUTHORS: Koton, M. M., Corresponding Member AS USSR and Florinskiy, F. S.

TITLE: Synthesis of polymerizable organo-antimony acrylates and methacrylates

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 6, 1961, 1368-1369

TEXT: The authors continued their studies on the synthesis of acrylic and methacrylic acid derivatives with metal atoms (Pb, Sn, and Ge). For the first time they synthesized derivatives containing antimony, i.e.: diphenylstibine acrylate $\text{CH}_2=\text{CHCOOSb}(\text{C}_6\text{H}_5)_2$ and diphenylstibine methacrylate

$\text{CH}_2=\text{C}(\text{CH}_3)\text{COOSb}(\text{C}_6\text{H}_5)_2$. The unsaturated organo-antimony compounds were synthesized by interaction of diphenylstibine oxide with acrylic- (and methacrylic acid, respectively), in methanol solution according to the following equation:



R = H, CH_3 . Both substances are colorless, crystalline, and soluble in

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23853

Synthesis of polymerizable...

S/020/61/137/006/012/020
B103/B217

2 non-Soviet-bloc. The most recent reference to English-language publication reads as follows: Ref. 3: J. Monterroso, T. Andrews, L. Marinelli, J. Polym. Sci. 32, 523, (1958).

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High-molecular Compounds of the Academy of Sciences, USSR)

SUBMITTED: January 1, 1961

X

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28650

214280 also 1496

S/O20/61/139/006/017/022
B103/B101

AUTHORS: Koton, M. M., Corresponding Member AS USSR, Andreyeva, I. V.,
Andreyev, P. F., and Rogozina, E. M.

TITLE: Complexes of polyacrolein with heavy-metal salts

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 6, 1961, 1372-1374 X

TEXT: It is noted that samples of polyacrolein powder obtained under different conditions differ in their ability to form coordination complexes with heavy-metal salts. The strongest ability to cause such reactions has uranyl nitrate. In the pH range investigated salts of Pb, Co, Mn, Cu, Ni, and Fe are not able to form stable complexes with polyacrolein. Concerning the extraction of heavy-metal salts with organic compounds, the authors refer to papers by V. M. Vdovenko (Khimiya urana i transuranovykh elementov (Chemistry of uranium and transuranic elements) Izd. AN SSSR, 1960) and V. I. Kuznetsov (Usp. khim., 23, v. 6, 654 (1954)). The maximum quantity of uranium ($2305 \cdot 10^{-6}$ g/g) was extracted from aqueous solutions by means of polyacrolein samples obtained by polymerization of acrolein in

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Complexes of polyacrolein with heavy-... aqueous solutions under the action of the redox system $K_2S_2O_8 + AgNO_3$ which is somewhat more effective than the system $K_2S_2O_8 +$ Mohr's salt. Disacryl and polyacrolein obtained under the action of $K_2S_2O_8 + Na_2S_2O_3$ are less effective. The poorest extracting agents are samples of polymers obtained at low temperatures in the presence of boron trifluoride or by means of lithium butyl. The authors established a relationship between the content of aldehyde groups which are able to form oximes and the ability to extract uranium from aqueous solutions. Uranium can be extracted in the range of pH3 - pH4. Outside this range the percentage of extracted uranium drops quickly. The distribution coefficients for different samples of polyacrolein differ by a factor of ten (from 0.005025 to 0.04803). Uranium absorbed by polyacrolein can be quantitatively dissolved by dilute HCl. There are 2 figures, 2 tables, 4 Soviet and 6 non-Soviet references. The reference to English-language publications reads as follows: J. S. Anderson, Nature, 134, No. 165 (1950).

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S/O20/61/139/006/017/022

Complexes of polyacrolein with heavy-... B103/B101

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk
SSSR (Institute of High-molecular Compounds, Academy of
Sciences USSR) ✓

SUBMITTED: April 8, 1961

Card 3/3

KISELEVA, T.M.; KOTON, M.M.; CHETYRKINA, G.M.

Synthesis of polymerizing organometallic compounds of phthalic acid
N-vinyl amide and N-(o,p-carboxyphenyl)acryl (methacryl)amides. Izv.
AN SSSR.Otd.khim.nauk no.10:1798-1804 0 '62. (MIRA 15:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Organometallic compounds) (Phthalamide) (Acrylamide)

ADROVA, N.A.; KOTON, M.M.; MOSKVINA, Ye.M.

Synthesis and ploymerization of some new derivatives of biphenyl.
Izv. AN SSSR.Otd.khim.nauk no.10:1804-1807 0 '62. (MIRA 15:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Butadiene) (Polymerization)

ANDREYKVA, I.V.; KOTON, M.M.; KOVALEVA, K.A.

Polymerization of styrene derivatives in the solid (frozen) state.
Izv. AN SSSR.Otd.khim.nauk no.10:1890-1891 0 '62. (MIRA 15:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Styrene) (Polymerization)