[illegible]

In collection of articles-
Effect of Ionizing Radiation (~~Cont.~~) on Inorgan 790 and Organic Systems, Moscow, Izd-vo AN SSSR, 1958, 416pp. (most works a continuation of Sb rabot po radiat khim, 1955)
3 references of which 1 is Soviet and 2 German.

Vereshchinskiy, I.V., Karpushkin, L.T. Effect of γ-Radiation on the Synthesis of Indophenol 285

The synthesis of indophenol from an irradiated mixture of a-naphthol and n-phenylene diamine was studied. The radiochemical yield of indophenol is 4.7 molecules per 100 ev, and the yield of the leuco form from the dye solution in vacuum is ~ 1.8 molecules per 100 ev. It was shown that the formation of the dye is a two-stage process. The first stage is the formation of the leuco form. It does not require the presence of molecular oxygen. The second stage is the conversion of the leuco form into the dye. This stage occurs only in the presence of molecular oxygen. Irradiation considerably accelerates the conversion of the leuco form. There are 9 figures and 12 references of which 4 are Soviet, 6 German, 1 English, and 1 French.

PART 4. EFFECT OF RADIATION ON POLYMERS

Slovokhotova, N.A. Infrared Spectroscopic Study of Chemical Changes Occurring in Polytetrafluoroethylene (Teflon) Due to Innizing Radiation 295

The infrared spectra of teflon indicated that the conjugate

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68173

5.4500(B)

~~5(4)~~

SOV/20-129-6-41/69

AUTHORS: Slovokhotova, N. A., Koritskiy, A. T., Buben, N. Ya.

TITLE: Double Bonds in Polyethylene Irradiated by Fast Electrons

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 6, pp 1347-1348 (USSR)

ABSTRACT: Polyethylene was irradiated in liquid nitrogen with 23-300 Mrad and the infrared spectrum was recorded at various temperatures (Fig 1). Immediately after irradiation, an absorption band at 966 cm^{-1} may be observed, which confirms that the double bonds of the transvinylene type are formed at the instant of irradiation by stripping off H-atoms in two adjoint methylene groups. The intensity of the band 909 cm^{-1} corresponding to the intensity of the vinyl group depends in a high degree on temperature and on the intensity of irradiation. This is explained by reaction of the vinyl group with free radicals formed by irradiation. Irradiation at temperatures below -100° with 206 Mrad causes the bands 985 cm^{-1} and 944 cm^{-1} to occur in the spectrum (Fig 2). The band 944 cm^{-1} vanishes again with a temperature rise and is probably caused by short-lived radicals.

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68173
SOV/20-129-6-41/69

Double Bonds in Polyethylene Irradiated by Fast Electrons

The 985 cm^{-1} band is believed to be caused by conjugate double bonds. The authors thank Academician V. A. Kargin for his valuable advice. There are 2 figures and 3 references, 2 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physical and Chemical Institute imeni L. Ya. Karpov). Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: July 13, 1959

5 (4), 24 (7) SOV/20-127-4-29/60

AUTHOR: Slovokhotova, N. A.

TITLE: Influence of Ionizing Radiations on the Structure of Polyamides

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 831 - 834 (USSR)

ABSTRACT: The effect of ionizing radiations on the structure of polyamides was investigated by infrared spectroscopy in the present paper. Caprone- and copolymeric caprone-nylon films (the latter two components at a ratio of 1:1) were irradiated by accelerated (200 kv) electrons and by Co^{60}-γ-radiation. The experimental methods are described in the paper (Ref 1). From a comparison of the infrared spectra of the irradiated and not irradiated amides, it could be ascertained: (1) The irradiation effects a variation in the number of methylene groups in the methylene chain of polyamides (the band of deformation vibrations of the CH_2-group becomes weaker, the intensity maximum of these vibrations is shifted toward a range of longer waves). (2) The intermolecular hydrogen bridges are broken (the bands corresponding to the valence vibrations of the NH-bond with

Card 1/3

Influence of Ionizing Radiations on the Structure of Polyamides SOV/20-127-4-29/60

enclosed intermolecular hydrogen bond become weaker). (3) Besides, the destruction of the intermolecular hydrogen bond, intramolecular hydrogen bonds are formed during irradiation. From the stretched β-form of the polyamides, a spiral α-form originates (maximum shift toward the range of valence vibrations of the carbonyl group from 1638 cm^{-1} (this band corresponds to the β-form) to 1650 cm^{-1} (α-form). (4) In the irradiation (as well as in melting) the polyamides pass over into the amorphous phase (comparison of the spectra of irradiated and melted polyamides). By irradiation, spiral polyamides are formed from the stretched ones, which leads to a ring formation and to an inner connection by intramolecular hydrogen bonds. The figures show the individual spectral variations mentioned. The detected conversion of the β-form of the polyamides into the α-form by irradiation is, perhaps, one of the causes of the destruction of normal living conditions of the organism. Finally, the author thanks Academician V. A. Kargin for the discussion of the results obtained and for valuable advice.

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Influence of Ionizing Radiations on the Structure of Polyamides SOV/20-127-4-29/60

There are 3 figures and 13 references, 6 of which are Soviet.

ASSOCIATION: Nauchno issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Physico-chemical Research Institute imeni L. Ya. Karpov)

PRESENTED: April 8, 1959, by V. A. Kargin, Academician

SUBMITTED: April 8, 1959

Card 3/3

PHASE I BOOK EXPLOITATION SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii, Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurasulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. M. Lobanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

Card 1/20

Transactions of the Tashkent (Cont.) SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE: The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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Transactions of the Tashkent (Cont.) SOV/5410

Instruments used, such as au[illegible] [illegible]lators, flowmeters, level gauges, and high-sensi[illegible] [illegible]-relays, are described. No personalities are mentioned. [illegible]rences follow individual articles.

TABLE OF CONTENTS:

RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION IN ENGINEERING AND GEOLOGY

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AVAILABLE: Library of Congress

JA/rsv/[illegible]
11-3-61

15.9120 2205,2109,1526
11.2214

84502
S/190/60/002/004/002/020
B004/B056

AUTHORS: Novikov, A. S., Karpov, V. L., Galil-Ogly, F. A., Slovokhotova, N. A., Dyumayeva, T. N.

19

TITLE: Investigation of the Effect of Ionizing Radiations Upon the Chemical Structure of Rubber-like Fluorine Copolymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 4, pp. 485-491

TEXT: The authors proceed from published data (Refs. 1-5), according to which, unlike what is the case with polytetrafluoroethylene and polytrifluorochloroethylene, in the case of rubber-like copolymers, not destruction but structure formation is caused by ionizing radiation (radiation vulcanization). The authors therefore investigated this process on СКФ -32 (SKF-32) fluorine polymers. As a radiation source, a Co^{60} apparatus with an activity of 1,400 and 21,000 gram-equivalent of radium was used. The intensity of irradiation was $0.54 \cdot 10^6$ r/h; the total dose was $3 - 80 \cdot 10^6$ r. The copolymer films were irradiated in air

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84502

Investigation of the Effect of Ionizing Radiations Upon the Chemical Structure of Rubber-like Fluorine Copolymers

S/190/60/002/004/002/020
B004/B056

or vacuum (10^{-4} torr). The chemical changes occurring as a result of irradiation were examined by infrared spectroscopy. By means of an ИКС-14 (IKS-14) spectrometer, the spectra in the range from 500 to 1450 cm^{-1} were taken on 4µ thick films, and within the range from 1450 - 3500 cm^{-1} on 140 - 150µ thick films. Fig. 1 shows the infrared spectrum of the initial copolymer, which is interpreted by the authors. Irradiation in air leads to considerable changes (Figs. 2,3). The intensity of the absorption bands of oxygen-containing groups and of the $-CF=CF_2$ group increases considerably, while the intensity of the C-H, C-F, C-Cl bond stretching vibrations decreases. Herefrom it is concluded that gaseous compounds containing H, F, or Cl are liberated. Fluorine copolymer irradiated in vacuum shows a different spectrum (Fig. 4). At small doses ($10.10^6 - 20\cdot10^6$ r), the absorption bands 1640 cm^{-1} (-CH=CF-); 1740 cm^{-1} ($-CH=CF_2$ or R-CF=CF-R); and 1840 cm^{-1} occur. The latter band is interpreted by the authors as belonging to the group $-CF=CF_2$. At higher doses, instead of the 1740 and 1840 cm^{-1} bands, a broad band with a maximum at 1800 cm^{-1} occurs. This is explained by the

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84502
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B004/B056

Investigation of the Effect of Ionizing Radiations Upon the Chemical Structure of Rubber-like Fluorine Copolymers

formation of cross links at the expense of the double bonds. The considerably decreasing solubility with increasing radiation dose (Fig. 5) confirms this assumption. An increased content of vinylidenefluoride promotes cross linking (Fig. 6). A linear interrelation between cross links and vinylidenefluoride content was found (Fig. 7). At the same time, however, also destruction occurs, which manifests itself by decreasing viscosity (Fig. 8). The authors draw the conclusion that in the fluorine copolymer the same reactions occur during irradiation as in polyethylene: loosening of C-H bonds accompanied by the formation of free radicals and free hydrogen atoms, which either form compounds with neighboring H, F, or Cl atoms under the formation of double bonds and H_2, HF, or HCl, or take such atoms away from another polymer chain under the formation of a further free radical. The recombination of the free radicals leads to cross linking. With increasing copolymer content, the number of double bonds increases. There are 8 figures and 8 references: 5 Soviet, 1 US, 1 French, and 1 British.

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84502

Investigation of the Effect of Ionizing Radiations Upon the Chemical Structure of Rubber-like Fluorine Copolymers

S/190/60/002/004/002/020
B004/B056

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: November 26, 1959

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86318

S/190/60/002/012/001/019
B017/B055

The Effect of Metal Oxides on Structural
Changes in Fluorinated Rubber Copolymers
Caused by Ionizing Radiation and High Temperatures

quantities of calcium oxide was found to increase polymer strength. The change in strength after irradiation of polymers containing varying amounts of calcium oxide is shown graphically in Fig. 1. The viscosity of methyl-ethyl ketone solutions of the polymers decreases after irradiation. The infrared spectra of fluorinated polymers type СКФ-32 (SKF-32) before and after irradiation, with and without calcium oxide, are shown in Figs. 5,6, and 7. A considerable number of conjugate double bonds of the type -CH=CCl-, and OH and HF_2^- groups were found to form in the presence of metal oxides. Metal oxides prevent the formation of volatile compounds during irradiation, since they react with these compounds. Calcium and magnesium oxide bind volatile compounds which form on heating fluorinated polymers to 200°C under pressure. The infrared spectra of fluorinated polymers before and after heating under pressure to 200°C, with and without admixture of calcium oxide are given in Fig. 8. In the irradiation of fluorinated polymers, the metal oxides act as acceptors for hydrogen-fluoride and hydrogen-chloride compounds and for fluorine, chlorine, and hydrogen. There are 8 figures, 1 table, and 11 references:

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86318

The Effect of Metal Oxides on Structural Changes in Fluorinated Rubber Copolymers Caused by Ionizing Radiation and High Temperatures

S/190/60/002/012/001/019
B017/B055

5 Soviet, 3 US, and 3 British.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry). Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov) X

SUBMITTED: May 11, 1960

Card 3/3

SLOVOKHOTOVA, N.A., SADOVSKAYA, G. K.

"The Effects of High-Speed Electrons on the Structure of Polyethylene Terephthalate."

Report to be submitted Intl. Symposium Macromolecular Chemistry
Montreal, Canada - 27 July - 1 Aug. '61

Karpov Institute of Physical Chemestry, Moscow, U.S.S.R.

ANISIMOV, K.N.; KUNITSKAYA, G.M.; SLOVOKHOTOVA, N.A.

Unsaturated phosphonic acids. Report No. 22: Addition of phosphorus pentachloride to isopropenylacetylene. Izv. AN SSSR. Otd. khim.nauk no. 1:64-71 Ja '61. (MIRA 14:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Fizikokhimicheskiy institut im. L.Ya. Karpova.
(Butenyne) (Phosphorus chloride)

S/062/61/000/001/006/016
B101/B220

AUTHORS: Slovokhotova, N. A., Anisimov, K. N., Kunitskaya, G. M., and Kolobova, N. Ye.

TITLE: Infra-red spectra of some derivatives of unsaturated phosphinic acids

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, no. 1, 1961, 71-76

TEXT: The purpose of the present paper was to verify the structural formulas of various previously (Ref.1) synthesized derivatives of unsaturated phosphinic acids based on their infra-red spectra, as well as to study the mutual influence of atoms and groups inside their molecules. The spectra were taken by means of a Hilger Д-209 (D-209) infra-red spectrometer. A table indicates those absorption bands from which conclusions were drawn as to the structure of the analyzed substances. In detail, the following has been found: The chlorine atom bound to the C-atom neighboring the C=C bond (ester II) increases the frequency of stretching vibrations of the C=C bond. The absorption bands 870-910 cm^{-1} correspond-

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Infra-red spectra of some derivatives... S/062/61/000/001/006/016
B101/B220

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ing to deformation vibrations of the CH group at the C=C bond confirm the existence of vinyl groups in IV and of vinylidene groups in I, II, III. The shift of these bands in II is also attributed to the neighboring chlorine atom. In relation to IV where the phosphorus group is not conjugated with the C=C group, frequency in V is reduced by 40 cm^{-1}. Since, however, the P=O group, due to its different configuration, cannot be located in the same plane as the C=C group, this effect is attributed to the phosphorus atom. In the esters VII to IX, a similarity with the spectra of pentadiene and isoprene was found in the range 1640-1585 cm^{-1}, which is attributed to the corresponding bands of symmetrical and antisymmetrical vibrations of the conjugate double bonds. The band shift is attributed to the neighboring phosphorus atom. All compounds show intensive bands in the range 1250-1270 cm^{-1}; these bands correspond to the P=O bond, and in the case of acid chlorides, they are shifted by 20 cm^{-1} toward higher frequencies, owing to the action of the chlorine atoms. The intensive doublet bands 1060-1000 cm^{-1} are attributed to vibrations of the O-C bond in the P-O-C groups. There are 3 figures, 1 table, and 10 references: 3 Soviet-bloc and 8 non-Soviet-bloc.

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Infra-red spectra of some derivatives...

S/062/61/000/001/006/016
B101/B220

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov). Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds, Academy of Sciences USSR)

SUBMITTED: July 23, 1959

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Infra-red spectra of some derivatives...

S/062/61/000/001/006/016

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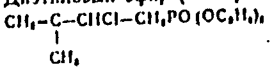
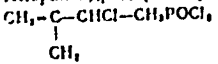
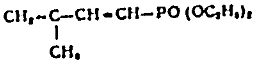
1 Вещество	ν C=C	ν P=O	C—O в группе P—O—C
3 Диэтиловый эфир (2-метилбутил-2)-4 фосфиновой кислоты  $CH_3-\underset{CH_3}{C}-CH_2-CH_2-PO(OC_2H_5)_2$	1650 с	1250 о.н	1050—1025 о.н
4 Диэтиловый эфир (3-хлор-2-метилбутен-2)-4 фосфиновой кислоты  $CH_3-\underset{CH_3}{C}-CHCl-CH_2PO(OC_2H_5)_2$	1660 с	1250 о.н	1000—1020 о.н
5 Хлорангидрид (3-хлор-2-метилбутен-2)-4 фосфиновой кислоты  $CH_3-\underset{CH_3}{C}-CHCl-CH_2POCl_2$	1660 с	1260 о.н	
6 Ди-н.пропиловый эфир (3-хлорбутен-2)-4 фосфиновой кислоты $CH_3-CH-CHCl-CH_2PO(OC_3H_7)_2$	1650 с	1250 о.н	1075—950 о.н
7 Хлорангидрид винилфосфиновой кислоты $CH_2=CHPOCl_2$	1605 м	1270 о.н	
8 Диэтиловый эфир винилфосфиновой кислоты $CH_2=CHPO(OC_2H_5)_2$	1611 с	1250 о.н	1050—1030 о.н
9 Диэтиловый эфир (бутадиен-2,4)-4 фосфиновой кислоты $CH_2=CH-CH=CH-PO(OC_2H_5)_2$	1640 с 1590 н	1250 о.н	1000—1020 о.н
10 Ди-н.пропиловый эфир (бутадиен-2,4)-4 фосфиновой кислоты $CH_2=CH-CH=CH-PO(OC_3H_7)_2$	1640 с 1590 н	1250 о.н	1075—980 о.н
11 Диэтиловый эфир (2-метилбутадиен-2,4)-4 фосфиновой кислоты  $CH_2=\underset{CH_3}{C}-CH=CH-PO(OC_2H_5)_2$	1630 м 1585 н	1250 о.н	1000—1030 о.н

Infra-red spectra of some derivatives...

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ν_{CH} при C–C	ν_{P-C} и ν_{P-O-C}
888 с	790 м, 750 м
872 с	800 м, 725 м
872 с	800 м, 740 м
910 м	750 с
(980 м)**	740 м
Не обнаружены из-за наложения других полос	790 м, 720 с
	790 м, 740 м
	750 с
(864)**	800 м, 750 с

Legend to the table: 1) substance; 2) within the group; 3) diethyl ester of (2-methyl-butyl-2)-4-phosphinic acid; 4) diethyl ester of (3-chlorine 2-methyl-butene-2)-4-phosphinic acid; 5) chloride of (3-chlorine 2-methyl-butene-2)-4-phosphinic acid; 6) di-n-propyl ester of (3-chlorine-butene-2)-4-phosphinic acid; 7) chloride of vinyl phosphinic acid; 8) diethyl ester of vinyl phosphinic acid; 9) diethyl ester of (butadiene-2,4)-4-phosphinic acid; 10) di-n-propyl ester of (butadiene-2,4)-4-phosphinic acid; 11) diethyl ester of (2-methyl butadiene-2,4)-4-phosphinic acid; ОИ = very intensive; И = intensive; С = mean intensity; М = low intensity.

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09586

S/190/61/003/002/004/012
B130/B202

15.8104

AUTHORS: Slovokhotova, N. A., Il'icheva, Z. F., Kargin, V. A.

TITLE: Effect of fast electrons on the structure of polystyrene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 2, 196[illegible] 19[illegible]-197

TEXT: By means of spectroscopic studies the authors attempted to explain the character of the structural changes in polystyrene on irradiation with fast electrons. The polystyrene films were irradiated in the vacuum (10^{-4} mm Hg) at room temperature in a 200 kv electron accelerator tube. The electron spectra and the infrared spectra were taken by means of an СФ-4 (SF-4) spectrometer and an Н-800 (N-800) spectrophotometer, respectively. The authors studied specimens of amorphous polystyrene (I) with a molecular weight of 600,000 and 1,300,000, and isotactic crystalline polystyrene (II). To remove the monomeric and low-molecular fractions, polystyrene was precipitated several times from a toluene solution by means of methyl alcohol. For the complete removal of the solvent the films were dried in high vacuum. The infrared spectrum of non-irradiated (II) essentially differs from that of non-irradiated (I). After the irradiation of (II) changes are observed in

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the spectrum which indicate an amorphization of the crystalline polystyrene. Instead of the doublet in the range 1050-1083 cm^{-1} a band appears at 1070 cm^{-1}, the maximum at 917 cm^{-1} is shifted to 906 cm^{-1}, the maximum at 562 cm^{-1} is shifted towards lower frequencies; besides, the intensity is reduced. Amorphization of isotactic polystyrene on irradiation distinctly appears at the point where the 917 cm^{-1} band is shifted. On irradiation of polystyrene with doses higher than 2500 Mrad the contour of the spectrum strongly changes at the highly intense 700 cm^{-1} band and at the weak 840 cm^{-1} band. This indicates that double bonds of the type $R_2C = CHR$ and cis-$RCH = RHC$ are formed in the polymer. Hence, the process of cross-linking can be explained by the scheme of L. A. Wall and D. W. Brown (see below). According to this scheme the hydrogen released by the rupture of the CH bond of the main chain hydrogenates the neighboring ring of the phenyl molecule under formation of a cyclohexadiene ring with double bonds and cross-linking of the neighboring molecules. Conjugate systems with double bonds are formed in the main chain of polystyrene. Ye. I. Pokrovskiy and M. V. Vol'kenshteyn are mentioned. There are 5 figures, 1 table, and 12 references: 5 Soviet-bloc and 7 non-Soviet-bloc. The 3 references to English language publications read as follows: L. A. Wall, D. W. Brown,

07900

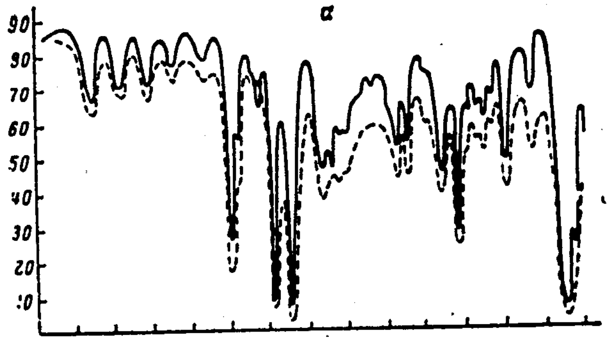
S/190/61/003/002/004/012
B130/B202

Effect of fast electrons ...

J. Phys. Chem., 61, 129, 1957; C. J. Liang, S. Krimm, J. Polymer Sci., 27, 241, 1958; H. L. McMurry, V. Thornton, Anal. Chem., 24, 318, 1959.

SUBMITTED: June 14, 1960

Legend to Fig. 1: infrared spectra a) atactic polystyrene (molecular weight 1,300,000, d = 45 μ); δ) isotactic polystyrene, d = 30 μ; в) atactic polystyrene (molecular weight 600,000, d = 45 μ) not irradiated: solid lines, irradiated: dashed lines y) transmissivity of light



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32200

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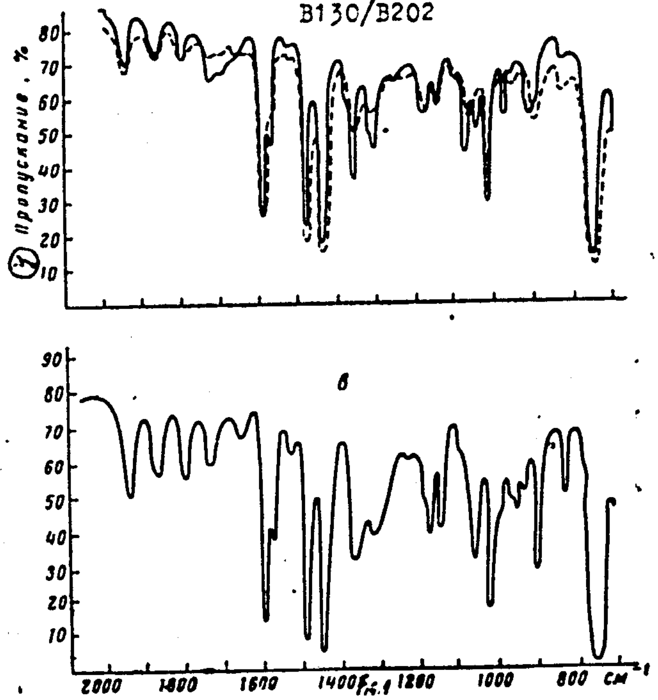
B130/B202

Effect of fast electrons .



Card 4/4

21130
S/190/61/003/004/003/014
B101/B207

5 4300 1273, 1304, 2209

AUTHORS: Slovokhotova, N. A., Sadovskaya, G. K., Kargin, V. A.

TITLE: Effect of fast electrons upon the polyethylene terephthalate structure

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 4, 1961, 515-520

TEXT: It was the aim of the present study to clarify whether, in the case of ionizing irradiation of polyethylene terephthalate (PETP) 1) cross linking (according to A. Charlesby, Nature, 171, 167, 1953); 2) destruction (according to E. Little, Nature, 173, 650, 1954 and A. Todd, Nature, 174, 613, 1954) occur, or if 3) both processes take place. The studies were made on 5-25 μ thick PETP films, orientated by rolling. The sample was irradiated by means of a 200-kv accelerator at 10^{-4} mm Hg, and room temperature. Structural change was recorded by means of an --800 (N-800) infrared spectrophotometer, the electron spectra were recorded by means of an СФ-4 (SF-4) spectrophotometer. Furthermore, the solubility of the irradiated polymer samples was examined in o-chlorophenol. The following papers are discussed: D. Grime,

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21130

S/190/61/003/004/003/014
B101/B207

Effect of

J. Ward (Trans. Faraday Soc., 54, 959, 1959), W. W. Daniels, K. E. Kitson, (J. Polymer Sci., 33, 161, 1958), A. Miyake, (J. Polymer Sci., 38, 479, 1959), and C. Z. Liang, S. Krimm, (J. Molec. Spectroscopy, 3, 554, 1958). From the fact that the broad band with maxima at 1470 and 1445 cm^{-1} of irradiated PETP changes after irradiation, with the 1445 cm^{-1} band intensity increasing, the 1470 cm^{-1} band, however, vanishing, or being greatly weakened, it is concluded that the group $-O-CH_2-CH_2-O-$ passes over from the trans- into the gauche configuration with part of the radiation energy being transformed into oscillation energy. The fact, that, after one hour of heating to 140°C, the intensity of the bands corresponding to the crystalline structure and the trans-configuration increases somewhat, indicates the reversibility of the transformation, and a few cross-linkings. The considerable shift of the boundary of absolute absorption in the electron spectra toward great wave lengths (Fig. 2), as well as the occurrence of characteristic bands in the IR spectrum proves the formation of conjugate polyene systems. The solubility of PETP in o-chlorophenol decreased from [illegible] 15% when the radiation dose was increased from 250 to 500 Mrad. At [illegible] same time, the capability of swelling in o-chlorophenol increased from [illegible] 200%. Accordingly,

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S/190/61/003/004/003/014
B101/B207

Effect of ...

besides cross linking, also destruction processes occur. The energy for these two processes is higher than that required for the cross linking of styrene. The isomerization observed in individual sections of the polymer chain indicates that the energy transfer is accompanied by a deformation wave. There are 2 figures and 12 references: 4 Soviet-bloc and 8 non-Soviet bloc. The references to English language publications are given in the text of abstract.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute im. L. Ya. Karpov)

SUBMITTED: June 30, 1960

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21130

S/190/61/003/004/003/014
B101/B207

Effect of ...

Fig. 2. Electron spectrum of a polyethylene terephthalate film (d = 25 μ).
Legend: 1) unirradiated; 2) irradiated with 2000 Mrad.

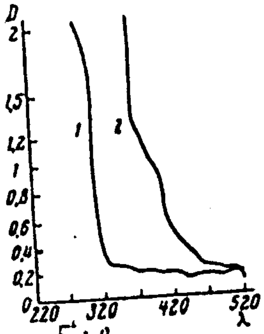

Fig. 2

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12.

SLOVOKHOTOVA, N.A.; ASTAF'YEV, I.V.

Infrared spectra of polymers with conjugated double bond systems. Vysokom.soed. 3 no.10:1607 O '61. (MIRA 14:9)
(Polymers--Spectra)

SLOVOKHOTOVA, N.A.; NIKASHINA, V.A.; SENYAVIN, M.M.

Study of some physicochemical properties of the KU-2 cation exchanger by means of infrared spectroscopy. Zhur.fiz.khim. 35 no.10:2387-2388 O '61. (MIRA 14:11)

1. Akademiya nauk SSSR, Institut geokhimii i analiticheskoy khimii.
(Ion exchange resins--Spectra)

5 3830
5 3700

24052
S/020/61/138/004/013/023
B103/B203

AUTHORS: Gol'dshteyn, I. P., Fayzi, N. Kh., Slovokhotova, N. A., Gur'yanova, Ye. N., Viktorova, I. M., and Kocheshkov, K. A., Corresponding Member AS USSR

TITLE: Complexes of diphenyl ethylene with tin tetrachloride and organo-tin chlorides

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 839-842

TEXT: The authors studied complexes of asymmetric diphenyl ethylene (DPE) with $SnCl_4$, $C_6H_5SnCl_3$, and $(C_6H_5)_2SnCl_2$. The catalytic activity of $SnCl_4$ is explained with the formation of π-complexes with monomers without ever clarifying the nature of these complexes. The authors studied then by (A) infrared spectra, (B) electron spectra, and (C) dielectric polarization. In previous papers (I. P. Gol'dshteyn et al., Ref. 4: DAN. 136, No. 5 (1961)) it had been found by method (C) that the mentioned compounds formed a series according to their capability of forming complexes with dioxane: $SnCl_4 > C_6H_5SnCl_3 \gg (C_6H_5)_2SnCl_2$. The authors tried to find out whether or

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Complexes of diphenyl ethylene with tin...

not this series was also maintained in complexes with monomers. The following systems were studied: (a) $SnCl_4$ + DPE, (b) $C_6H_5SnCl_3$ + DPE, (c) $(C_6H_5)_2SnCl_2$ + DPE, (d) $SnCl_4$ + DPE + DPE-dimer, and (e) $C_6H_5SnCl_3$ + DPE + DPE-dimer. (A) The spectra were taken with a split-beam spectrophotometer H-800 (N-800) with fluorite cuvettes and Teflon insertions (20 μ). The mixtures were prepared in an airtight chamber in dry nitrogen and filled into cuvettes. $SnCl_4$ and $C_6H_5SnCl_3$ in DPE give green solutions with an absorption band 610 mμ and an intensive absorption below 500 mμ. (B) The electron spectra were taken with an СФ-4 (SF-4) spectrophotometer in benzene solution. Results of (A). As compared with the spectra of pure DPE, the spectra of systems (a) and (b) show considerable changes: (1) The bands of the region 1612, 1420 - 1400, and 1335 cm^{-1} disappear, the intensity of the band 1578 cm^{-1} decreases strongly. They are all connected with the double bond in the molecule of diphenyl ethylene. The band 1615 cm^{-1} belongs to the stretching vibrations of the C = C double bond whose frequency is reduced owing to the conjunction with phenyl rings. The bands 1400 and 1330 cm^{-1} belong to the deformation vibrations of the methylene group on the double bond. The band 1578 cm^{-1} belongs to the vibrations of

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B103/B203

Complexes of diphenyl ethylene with tin...

the phenyl ring. Its intensity increases strongly due to the interaction with the conjugate double bonds. (2) New bands appear in the regions 1376, 1250, and 1220 cm^{-1}. (3) The band 1605 cm^{-1} of the benzene ring vibration is slightly shifted, and its intensity increases. Besides, the authors measured the spectrum of the solution of the DPE dimer in DPE to prove that the above-mentioned changes (1)-(3) are not connected with the appearance of the dimer in the above systems. This spectrum shows two additional bands which are absent in the spectrum of the monomer. The band 1665 cm^{-1} belongs to the stretching vibrations of the $C = C$ bond in the dimer. The band 1285 cm^{-1} possibly belongs to the CH deformation vibrations on the double bond. None of these two bands appears in the spectra of systems (a) and (b). The authors consider this fact as a proof that the changes (1)-(3) in the infrared spectra are not caused by the dimer but by the intermediates of the interaction of DPE with the tin halides. Further spectral data suggest that the dimer also forms complexes with $SnCl_4$ and $C_6H_5SnCl_3$. (C) The authors measured the dipole moment of DPE in benzene solution with excess $SnCl_4$, and obtained the value 1D. Thus, it lies by 0.7-0.8 D higher than the dipole moment in benzene. For these reasons, the

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authors think that the band 480 mµ (contrary to statements made by A. G. Evans et al. (see below)) cannot be explained with carbonium ions. The absorption band in the region 610 mµ may be ascribed to the π-complex. According to A. N. Terenin et al. (Ref. 10: Optika i spektroskopiya, 3, 480 (1957); Izv. AN SSSR, OKhN, 1958, 1100), the frequency of the valency formation decreases by 115-195 cm^{-1} in the complex formation from cyclohexane and $SnCl_4$; besides, absorption bands appear in the region 1400-1340 and 1200 cm^{-1}. The band 1525 cm^{-1} in systems (d) and (e) is ascribed to the reduced (by 140 cm^{-1}) frequency of vibrations of the double bond in the π-complex of the dimer with the tin halides. In contrast to systems (a) and (b), the authors had not found any indications of a formation of π-complexes in system (c). The solutions of the latter in benzene are colorless, and no changes were observed in their infrared spectrum as compared with the spectra of components. Thus, the authors proved that the above-mentioned order was also maintained in the case of complexes with monomers. They conclude that $C_6H_5SnCl_3$ can also be a catalyst for the polymerization of olefins whereas this cannot be expected for $(C_6H_5)_2SnCl_2$. There are 3 figures, 1 table, and 10 references: 5 Soviet-bloc and 5 non-

24052
S/020/61/138/004/013/023
Complexes of diphenyl ethylene with tin... B103/B203

Soviet-bloc. The 4 references to English-language publications read as follows: Ref. 1: P. H. Plesh, Cationic Polimerisation and Related Complexes, London, 1953; Ref. 6: N. Sheppard, D. M. Simpson, Quart. Rev., 6, 1 (1952); Ref. 8: A. G. Evans et al., J. Chem. Soc., 2975, 1957, 105; 1956, 2757; 1955, 1524; Ref. 9: G. E. Coates, L. E. Suncu, J. Chem. Soc., 1942, 567.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute iment L. Ya. Karpov)

SUBMITTED: December 23, 1960

X

Card 5/5

43247
S/844/62/000/000/091/129
D204/D307

AUTHORS: Slovokhotova, N. A., Koritskiy, A. T., Buben, N. Ya., Bibikov, V. V. and Rudnaya, G. V.

TITLE: The action of fast electrons on polyethylene at low temperatures

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 531-535

TEXT: The aim of this work was to determine whether the double bonds found in irradiated polyethylene (PE) form directly during irradiation, or whether they arise from secondary radical interactions. Low- and high-pressure PE was irradiated with 1.6 Mev electrons, in liquid or gaseous N_2, and the specimens were examined by ir spectroscopy. Trans-vinylene-type bonds formed when high-pressure PE was irradiated with a dose of 206 Mrad (966 cm^{-1} band), both at -196 and +50°C, with similar energy yields, showing that

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D204/D307

The action of fast ...

such double bonds form by direct interaction of PE with the electrons. In liquid N_2 irradiation of the same PE with 200 Mrad also increased the proportion of vinyl-type bonds (909 cm^{-1} band), by a factor of 6 in relation to unirradiated PE. The proportion of vinyl bonds in low-pressure PE decreased for doses up to 25 Mrad, and then increased; the development of unsaturation was less pronounced at higher temperatures, Such bonds are both formed (directly) and destroyed in irradiated PE. The destructive process predominates at higher temperatures owing partly to the increased mobility of polymeric chains, but it is also connected with energy transfer processes during irradiation. Both types of PE exhibited a 985 cm^{-1} band when irradiated with doses of 300 Mrad, in liquid N_2, and after warming up to 26, 50 and 120°C over a period of 5 minutes. This band indicates the appearance of conjugated double bonds. The 944 cm^{-1} band, corresponding to allyl radicals, was also observed. This band was only stable below -100°C in high pressure PE and disappeared rapidly on warming to 50°C; in low-pressure PE

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The action of fast ...

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D204/D307

the same band was stable up to 100°C. This difference is explained by the higher crystallinity of low-pressure PE. Additions of benzene or toluene considerably reduced the intensity of this band, owing to the participation of additive molecules in energy transfer processes; the same lowering effect was observed with respect to the conjugated double bonds. There are 4 figures.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR; Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of Chemical Physics, AS USSR; Physico-Chemical Institute im. L. Ya. Karpov)

Card 3/3

S/844/62/000/000/101/129
D204/D307

AUTHORS: Nikashina, V. A., Slovokhotova, N. A. and Senyavin, M. M.

TITLE: Radiochemical stability of some ion-exchange resins

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 596-602

TEXT: The stability of cationites КУ-1, КУ-2, КБ-4, СБС, РФ (KU-1, KU-2, KB-4, SBS, RF) and of anionites ЭДЭ-10, АВ-16 (EDE-10, AV-16) was studied, since previously published data, obtained under differing conditions, are incomplete and sometimes contradictory. The methods were those used earlier (ZhNKh, 3, 104 (1958); Nauchnyye doklady vysshey shkoly, khimiya i khim. tekhnologiya, 4, 76 (1958); Khim. promyshl., 7, 19 (1959)). The present and some previously published results are collected in a table, showing that in general the exchange capacity decreased on irradiation. Ionites containing SO_3H groups were the most and those containing COOH the least stable. The change in exchange capacity in sulfonated cation-

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B204/D307

Radiochemical stability of ....

ites is ascribed to a change in the chemical nature and to the splitting off of SO_3H groups. The main products of the latter process are an unidentified sulfonic acid and H_2SO_4. Sulfuric acid was actually demonstrated by paper chromatographic and ir spectroscopic methods. Changes in the relative swelling capacity on irradiation (evidence for the formation or destruction of bonds) showed that cross-linking was induced mainly in resins containing aromatic groups, whilst aliphatic ionites (the anionites, KB-4 and SBS) underwent breakdown. Thus in KU-2 the swelling capacity was reduced as a result of increased cross-linking; this was demonstrated by ir spectroscopy and tests with KU-2 containing various amounts of divinylbenzene (i.e. cross-linked to various degrees). The mechanism of cross-linking is as yet unknown. It is concluded that sulfonated cationites are relatively the most stable. Cationite KU-2 is recommended for technological utilization. There are 5 figures and 2 tables. The most important English-language reference is: V. A. Nikashina, A. Kh. Breger, M. M. Senyavin and A. V. Gordiyevskiy, Inter. J. Appl. Rad. and Isotopes, 4, 201, (1959).

Card 2/3

S/844/62/000/000/101/129
Radiochemical stability of ... D204/D307

ASSOCIATION: Institut geokhimii i analiticheskoy khimii AN SSSR im. V. I. Vernadskogo; Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of Geochemistry and Analytical Chemistry AS USSR im. V. I. Vernadskiy; Physico-Chemical Institute im. L. Ya. Karpov)

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Card 3/3

41996
S/190/62/004/003/016/023
B124/B101

11.2214
15.9206

AUTHORS: Novikov, A. S., Galil-Ogly, F. A., Slovokhotova, N. A., Dyumayeva, T. N.

TITLE: Structural transformations of rubber-like fluorine-containing copolymers on thermal treatment

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 3, 1962, 423-428

TEXT: Structural changes taking place when the copolymer "Viton A" is molded at a pressure of 270 kg/cm² and 150 to 200°C in the absence of air (stage I), and successively kept in a thermostat in an air current at 150 - 300°C (stage II) have been studied. For this purpose, an -14(IKS-14) infrared spectrometer was used. No changes in the infrared spectra were established on heating up to 150°C in the mold, while, at 200°C, two medium-intensity absorption bands in the region of 1760 and 1725 cm^{-1} corresponding to the groups $R_F-\underset{CF_2}{\overset{}{C}}-R_F$ and $R_FCF=CFR_F$ or $RCH=CF_2$, and one low-intensity band at 1625 cm^{-1} due to conjugated double bonds were ascertained.

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S/190/62/004/003/016/023
B124/B101

Structural transformations ...

which leads to the formation of HF, F_2, H_2 and double bonds both in the central part and at the ends of the chain. Up to 150°C, equilibrium is maintained due to pressure which prevents the removal of gaseous products which is, however, possible at 200°C. When the sample is heated to 150°C after CuO or MgO have been added salts of the types MeF_2 and $MeHF_2$ are formed. This process is intensified by heating to 200°C. Heating in the thermostat is accompanied by a loss in solubility which proves crosslinking. On heating to 150°C in the thermostat, gases formed can be removed which is reflected by spectral data and, at the same time, double bonds are formed. This reaction is catalyzed by the presence of metal oxides in the copolymer. When heating is continued up to 200°C, crosslinking occurs so rapidly that no double-bond absorption bands were found in the copolymer heated in the thermostat. Pressure application retards crosslinking due to a decreased chain mobility. There are 4 figures, 2 tables, and 8 references: 7 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: J. F. Smith, Rubber World 142, 102, 1960.

Card 3/4

Structural transformation ...

S/190/62/004/003/016/025
B124/B101

ASSOCIATION: NII rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry). Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: March 3, 1961

X

Card 4/4

NOVIKOV, A.S.; GALIL-OGLY, F.A.; SLOVOKHOTOVA, N.A.; DYAMAYEVA, T.N.;
KARGIN, V.A.

Vulcanization of fluorine-containing copolymers with polyamines with the use of infrared spectroscopy. Vysokom. soed. 4 no.12:1799-1805 D '62. (MIRA 15:12)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Fluorine compounds)
(Polymers) (Vulcanization)

SLOVOKHOTOVA, N.A.

1

S/020/62/143/002/015/022
B145/B138

11 7V 11

AUTHORS: Kvitko, S. M., Perekalin, V. V., Vasil'yeva, V. N., Bobovich, Ya. S., and Slovokhotova, N. A.

TITLE: Synthesis and structure of nitrobutadiene derivatives

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 2, 1962, 345 - 347

TEXT: Some nitrobutadiene and nitraminobutadiene derivatives were synthesized, and their structure was examined, in order to establish the effect of the chemical structure of nitralkenes and nitralkenedienes upon their polymerizability. The reaction scheme indicates the synthesis course as well as the products obtained. This is the first case of a C-chain condensation with malonic acid aldehyde. A ketimino - enamino tautomerism can be dismissed for products of the Knoevenagel condensation. It was not possible to alkylate nor to acylate the amino and nitraminobutadienes. The spatial structure of compounds II to X (see diagram) was examined by Raman spectra and by measuring the dipole moments. III and IV (compound IV is not indicated in the diagram; its structure is the same as that of

X

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S/020/62/143/002/015/022
B125/B138

Synthesis and structure ...

VII - IX, except that there is $=CC_6H_5$ instead of $=CH'$) exhibit intramolecular H bonds; the nitro group is in cis-position with respect to the amino group. Compounds V - VIII do not possess a plane structure. The nitro group (at the C-N bond) as well as the vinylidene residue (at the C-C bond of the butadiene grouping) are deflected here. The H bonds are also weakened thereby, which results in a displacement of the fully symmetric vibration band of the nitro group toward shorter wavelengths (ν = 1350). IX exhibits a high dipole moment (7.5 D), which is explained by assuming a structure in which the dipole moments of the two nitrile groups add. A characteristic of the Raman spectra of nitraminobutadienes was found to be the splitting of the fully symmetric vibration of the nitro group, which may be caused by the intramolecular H bonds or the Fermi resonance. When examining the concentration dependence no redistribution of intensities was observed. Hence, the splitting cannot be caused by intermolecular H bonds. The intensity of the nitro-group bands is considerably higher in aromatic derivatives (IV : 140) than in aliphatic ones (VI : 12). This circumstance indicates the inclusion of an aromatic ring in the conjugation through the amino group. The low intensity of double bond

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Synt[illegible] structure ...

S/020/62/143/002/015/022
B145/B138

vibration is explained by the weakening effect of the H ring upon the double bond. The vibrational intensities in double bond and antisymmetric $-C_6H_5$ are relatively high for IX and X (IX: 90 and 80, X: 20 and 75 ÷ 45, respectively). Evidently, a conjugation in IX, that involves all [illegible] π - electrons, is of greater advantage from the energy viewpoint than would be a conjugation, wherein only the H ring participates. In X, by contrast, the possibility that an H ring may form is lacking altogether. There are 1 table and 5 references: 4 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: D. Hathuay, M. Fleft, Trans. Farad. Soc., 45, 818 (1949).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: September 13, 1961, by M. I. Kabachnik, Academician

SUBMITTED: September 11, 1961

Card 3/3

GOL'DSHTEYN, I.P.; IL'ICHEVA, Z.F.; SLOVOKHOTOVA, N.A.; GUR'YANOVA, Ye.N.;
KOCHESHKOV, K.A.

Spectroscopic investigation of complexes formed by thiophane and thiopene with tin tetrachloride. Dokl.AN SSSR 144 no.4: 788-791 Je '62. (MIRA 15:5)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova. 2. Chlen-korrespondent AN SSSR (for Kocheshkov).
(Thiophene--Spectra) (Tin chlorides)

S/020/62/146/004/011/015
B101/B186

Study of the thermal destruction ...

V = content of $RCH=CH_2$, %

VI = content of $R_2C=CH_2$, %

LPE initial	-	0.8	25	57	17
360	4	2.5	34	58	8
360	6	4.0	41	48	11
415	3	19.8	50	30	20
RPE initial	-	0.5	38	20	42
360	4	3.1	30	49	21

When 1 % TiO_2 was added to HPE, the same amount of trans-vinylene bonds was obtained as with pure HPE, whereas the content of vinyl and vinylidene bonds was not increased by pyrolysis. The increase in content of trans-vinylene bonds during pyrolysis is explained by the disappearance of unsaturated end groups owing to polymerization processes, by the formation of double bonds in the middle of the chain owing to H_2 separation, and by cleavage of CH bonds neighboring the double bonds. The consequent formation of conjugate double bonds was proved by the 1595 cm^{-1} band which disappears on bromination. The 1135 - 1150, 1030, 845, 806 - 820, and 770 cm^{-1} bands observed indicate the formation of benzene derivatives, polyphenylenes, and polyenes, more concentrated in the high-molecular parts

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S/190/63/005/004/015/020
B101/B220

AUTHORS: Slovokhotova, N. A., Koritskiy, A. T., Kargin, V. A., Buben, N. Ya., Bibikov, V. V., Il'icheva, Z. F., Rudnaya, G. V.

TITLE: Effect of fast electrons on polyethylene at low temperatures. I. Double bonds in irradiated polyethylene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, 1963, 568-574

TEXT: High-density polyethylene (PE),,low-density PE, and PE obtained by radiation polymerization, were irradiated with 1.6 Mev electrons in liquid or gaseous N_2. The dose was varied from 25 to 300 Mrad. The IR spectra were studied from -196 to + 50°C. The intensity of the 966 cm^{-1} band proved to be independent of the nature of the PE and of the temperature. Hence it is concluded that the trans-vinylene bonds form in the primary irradiation act. On the contrary, the 909 cm^{-1} band characteristic of vinyl bonds was with 200 Mrad and at -196°C six times as large and at -50°C only 2.5 times as large as in nonirradiated PE. With doses below 25 Mrad the initial concentration of vinyl groups decreased, whereas with

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S/190/63/005/004/015/020
Effect of fast electrons on.... B101/B220

higher doses it increased. Thus irradiation induces the formation as well as the disappearance of vinyl double bonds, the disappearance being favored by higher temperatures. From the experimental fact that the N_{tv}/N_v ratio of the trans-vinylene to the vinyl groups is 18 for PE obtained by radiation polymerization, but 14 with high-density PE, it is assumed that the most probable process is a migration of energy and the formation of vinyl groups by the H atoms splitting off from two neighboring C atoms at the end of the molecular chain. There are 3 figures and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: October 11, 1961

Card 2/2

S/190/63/005/004/016/020
B101/B220

AUTHORS: Slovokhotova, N. A., Koritskiy, A. T., Kargin, V. A., Buben, N. Ya., Il'icheva, Z. P.

TITLE: Effect of fast electrons on polyethylene at low temperatures. II. Conjugated double bonds and allyl radicals in irradiated polyethylene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, 1963, 575-580

TEXT: The IR and epr spectra of irradiated polyethylene were studied. Results: (1) Irradiation with more than 50 Mrad induces the formation of conjugated double bonds which are characterized by the 985 cm^{-1} band. (2) At low temperatures allyl groups form which are characterized by the 944 cm^{-1} band detected also in the epr spectrum. (3) When benzene or toluene were admixed to the polyethylene the yield in allyl radicals and conjugated bonds was reduced. A protective action of the benzene ring owing to charge migration is assumed. There are 4 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

Card 1/2

SLOVOKHOTOVA, N.A.; FAYZI, N.A.; ZEMLYANSKIY, N.N.; PANOV, Ye.M.;
KOCHESHKOV, K.A.

Structure of some organotin salts of carboxylic acids. Zhur. ob. khim. 33 no.8:2610-2613 Ag '63. (MIRA 16:11)

S/020/63/149/002/015/028
B108/B186

AUTHORS: Zemlyanskiy, N. N., Panov, Ye. M., Slovokhotova, N. A., Shamagina, O. P., Kocheshkov, K. A., Corresponding Member AS USSR

TITLE: Stepwise formation of compounds with a stannoxane bond and reactive end groups

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 2, 1963, 312 - 315

TEXT: It was found in earlier work (K. A. Kocheshkov et al. Izv. AN SSSR, OKhN, 1961, no. 12, 2255) that the hydrolysis of the tin salts of organic acids with a definite quantity of water in the presence of diazo alkanes proceeds according to the equation

$$2R_2Sn(OOCCH_3)_2 + 2CH_2N_2 + H_2O \longrightarrow CH_3COO\cdot Sn(R)_2OSn(R)_2OOCCH_3 + 2CH_3COOCH_3 + 2N_2$$

This process makes it possible to obtain linear compounds with active end groups. It is shown here how, by varying the quantity of water and diazo methane, it is possible to terminate the progression of reactions monomer ⟶ dimer ⟶ tetramer ⟶ octamer ⟶ hexadecamer at any stage.

Card 1/2

S/020/63/149/002/015/028
B108/B186

Stepwise formation of compounds...

The infrared spectra of the compounds with a stannoxane bond were examined, the molecular weight, the temperatures of boiling, melting, and decomposition were determined. At slightly increased temperatures (40 - 45° C) it is possible to obtain stannoxanes also of higher molecular weight. There are 1 figure and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: November 22, 1962

Card 2/2

SLOVOKHOTOVA, N.A.; IL'YICHEVA, Z.F.; VASIL'YEV, L.A.; KARGIN, V.A.

Effect of ionized radiation on the structure of polypropylene.
Vysokom. soed. 6 no.4:608-611 Ap '64. (MIRA 17:6)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni
L.Ya. Karpova.

L 19608-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 BSD/AFWL/SSD/
APGC(b)/ESD(gs)/ESD(t)/RPL RM/WW/MLK

ACCESSION NR: AT4049856 S/0000/64/000/000/0160/0165

AUTHOR: Novikov, A. S.; Galil-Ogly*, F. A.; Slovokhotova, N. A.; Dyumayeva, T. N.

TITLE: Investigation of the vulcanization of fluorocopolymers with Schiff bases by the method of infrared spectroscopy

SOURCE: Khimicheskiye svoystva i modifikatsiya polimerov (Chemical properties and the modification of polymers); sbornik statey. Moscow, Izd-vo Nauka, 1964, 160-165

TOPIC TAGS: fluorocopolymer, vulcanization, infrared spectroscopy, vulcanizing agent, rubber aging, Schiff base, hexafluoropropylene copolymer, vinylidene fluoride copolymer

ABSTRACT: Structural changes in a copolymer of hexafluoropropylene and vinylidene fluoride during vulcanization with Schiff bases were investigated by the method of infrared spectroscopy. The copolymer was press-vulcanized at 100-200C for 30 min. In addition, rubbers were aged in a thermostat with air circulation at 200C for 48 hrs. The nature of the structural changes was judged from changes in the infrared absorption spectra, measured with an IKS-14 instrument using NaCl and LiF prisms. The vulcanizing agent was bis-benzalhexamethylenediamine. Vulcanization at 70-120C was accompanied by a decrease in intensity of absorption at 1655 cm^{-1}, which is characteristic for valence oscillations of the >C=N-bonds, and by an increase

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ACCESSION NR: AT4049856

2

in intensity of absorption at 1705 cm^{-1}. After vulcanization, there were no absorption bands characteristic for >C=N-bonds, while absorption at 1705 cm^{-1} was much more intensive. Addition of MgO during vulcanization at 150C does not change the nature of the spectrum in the range of 1500-1800 cm^{-1}; however, at 200C, a broad intensive band was observed in the region of 1620-1640 cm^{-1}, which pertains to conjugated double bonds. The following vulcanization mechanism is suggested: 1) Partial hydrolysis of the Schiff base under the influence of moisture; 2) Reaction of hexamethylenediamine with the fluorocopolymer with the formation of double bonds in the polymer; 3) Addition of the Schiff base to the double bonds of the fluorocopolymer, which leads to the cross-linking of the polymer chains along two possible paths: (a) addition of bis-benzalhexamethylenediamine to individual double bonds in the copolymer, or (b) addition of bis-benzalhexamethylenediamine to the system of conjugated double bonds in the chain. The increased stability of rubbers vulcanized with Schiff bases, compared with hexamethylenediamine, is explained by the greater thermostability of transverse bonds of the C-N type in comparison with C=N. Orig. art. has: 3 figures, 1 table and 4 chemical equations.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute)

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L 19608-65

ACCESSION NR: AT4049856

SUBMITTED: 16Oct62 ENCL: 00 SUB CODE: OC, MT

NO REF SOV: 002 OTHER: 005

Card 3/3

L 19759-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10 SSD/BSD/
AFWL/APGC(b)/ESD(gs)/ESD(t) WW/RM/MLK
ACCESSION NR: AT4049863 S/0000/64/000/000/0237/0242

AUTHOR: Slovokhotova, N. A., Magrupov, M. A., Kargin, V. A. 15 15 Bt 1

TITLE: A study of the thermal degradation of polypropylene

SOURCE: Khimicheskiye svoystva i modifikatsiya polimerov (Chemical properties and the modification of polymers); sbornik statey. Moscow, Izd-vo Nauka, 1964, 237-242

TOPIC TAGS: polypropylene, polypropylene thermal degradation, infrared spectroscopy, disproportionation, free radical

ABSTRACT: Infrared spectroscopy of the decomposition products of isotactic and amorphous commercial polypropylene at temperatures up to 415C in sealed vessels or under continuous removal and recovery of the volatile products indicated that the initial decomposition involves the formation of vinyl groups and of propyl radicals on the terminals of chain segments, with disproportionation of the free radicals formed during the structural breakdown. Secondary reactions between the polymer and its products also occurred in the sealed tubes, characterized by the appearance of numerous conjugated double bond systems. X-ray analysis of the first (heavy) fraction of volatile decomposition products showed characteristics related to the α-modification of crystalline polypropylene. Thus, the thermal process does not destroy the stereoregular and spiral

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ACCESSION NR: AT4049863

2

configurations completely. The first fraction, obtained in 45 min. at 405C, comprised of all the volatile products of the amorphous polymer and 71% of all volatile products of the isotactic polymer. Intensive bands at 1156 and 975 cm^{-1}, which are characteristics of the spiral configuration of the polymer chain, were detected in the first fraction, as well as in the second of three fractions obtained in increasing order of volatility. The results indicate that a single turn of the spiral chain may produce the 1156 and 975 cm^{-1} bands. "The authors thank Yu. A. Zubov for preparing the roentgenograms." Orig. art. has: 1 table, 2 figures and 2 chemical equations.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 25Feb63 ENCL: 00 SUB CODE: MT, OC

NO REF SOV: 002 OTHER: 013

Card 2/2

L 55209-65 EWG(j)/EWT(1)/EWT(m)/EWG(v)/EWP(j)/EEC(t)/T/EED(b)-3/EWA(h)/
EWA(1) Pc-4/Pe-5/Peb/Pl-4 IJP(c) RM
ACCESSION NR: AR5012259 UR/0058/65/000/003/D035/D035

51
B

SOURCE: Ref. zh. Fizika, Abs. 3D258

AUTHOR: Sadovskaya, G. K.; Slovokhotova, N. A.; Vasil'yev, L. A.; Kargin, V. A.

21

TITLE: Use of infrared spectroscopy to study the effect of fast electrons on polyamides

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 483-487

TOPIC TAGS: molecular spectroscopy, electron paramagnetic resonance, electron bombardment, polyamide

TRANSLATION: Kapron, enant, pelargon and undecane were bombarded with fast electrons and their infrared spectra studied. Changes were observed in the confirmation of the chains and the formation of double bonds in the 980 cm^{-1} band and of ion radicals in the 2150 cm^{-1} band were also observed. The data was compared with measurements from the electron paramagnetic resonance spectra. The mechanism for processes that occur in the irradiation of polyamides is proposed.

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L 64695-65 EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/EWA(h)/EWA(1) GG/RM

ACCESSION NR: AR5012288 UR/0058/65/000/003/D075/D075

55 B
54

SOURCE: Ref. zh. Fizika, Abs. 3D607

AUTHOR: Yegorova, Z. S.; Slovokhotova, N. A.; Leshchenko, S. S.; Karpov, V. L.; Finkel', E. E.; Mitrofanova, L. V.

TITLE: Spectral investigation of changes caused by ionizing radiation in polyethylene stabilized by tin dibutyl maleate

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 503-510

TOPIC TAGS: polyethylene, antioxidant additive, spectrographic analysis, ionizing irradiation, ir spectrum

TRANSLATION: It is found that the addition of tin dibutyl maleate reduces the oxidation rate of polyethylene during thermal aging and when it is subjected to ionizing radiation in air. A shift in the carboxyl ion band in the infrared spectrum from 1615 cm^{-1} for untreated polyethylene with tin dibutyl maleate to 1595 cm^{-1} after irradiation in a vacuum indicates that the polymer radical is joined to the tin atom to form a trialkyl tin salt. This is used as a basis to explain the antioxi-

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L 64695-65

ACCESSION NR: AR5012288

dative effect of tin dibutyl maleate as an additive to polyethylene during thermal aging and irradiation in air.

SUB CODE: GC, MT ENCL: 00

Card 2/2

L 41766-65 EPF(c)/EPF(n)-2/EWG(j)/EWA(h)/EWP(j)/EWT(m)/T/EWA(1) Pc-4/Pr-4/Pu-4/
Peb GG/RM

ACCESSION NR: AP4032561 51 47 B S/0190/64/006/004/0608/0614

AUTHORS: Slovokhotova, N. A.; Il'icheva, Z. F.; Vasil'yev, L. A.; Kargin, V. A.

TITLE: Effect of ionizing radiation 15 on the structure of polypropylene 6

SOURCE: Vysokomolek. soyedin., v. 6, no. 4, 1964, 608-614 19

TOPIC TAGS: polypropylene, irradiation, polymer, IR absorption, spectrophotometer / N 800 spectrophotometer

ABSTRACT: 14 Films of isotactic and 10 commercial amorphous polypropylene were prepared by hot pressing. They were irradiated in a vacuum (10^{-4} mm) at 25 and -196°C by fast electrons from an acceleration tube (voltage of accelerating field = 200 kv) and by Co^{60} gamma rays. Infrared spectra of the initial and irradiated specimens were recorded on an N-800 spectrophotometer. Absorption bands at 890 and 910 cm^{-1} for irradiated specimens correspond to the double bands $\overset{R}{\underset{R'}{>}}C{=}CH_2$ and $RCH{=}CH_2$. These bands are due to degradation of polypropylene through radiation. Bands in the 815-855 region and at 1665 cm^{-1} correspond to $\overset{R}{\underset{R'}{>}}C{=}CHR$ bonds in the

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L 41766-65
ACCESSION NR: AP4032561

2

irradiated polypropylene. The degradation of polypropylene during irradiation involves simultaneous rupture of the C-C and C-H bonds, with the formation of molecules containing propyl and vinylidene. The number of vinylidene double bonds observed in the spectrum depends markedly on the phase of the polymer and on the temperature of irradiation. The number in specimens irradiated at room temperature may be 2.5 times the number in specimens irradiated at -196C. The number in amorphous polypropylene may be 2.7 times the number for isotactic polypropylene (other factors being the same). Electron paramagnetic resonance spectra show that heating irradiated specimens above 80C gives rise to free polyene radicals, and this indicates that the double bond may migrate along the polymer chain. The crosslinking of two double bonds leads to the appearance of lower frequency bands in the spectrum. Crosslinking with an unpaired electron probably lowers the oscillation frequency of the double bond also. Increase in absorption in the 1645 cm^{-1} region may take place by double bond absorption in the allyl radical, the oscillation frequency of which is lowered because of the crosslinking of π-electrons of the double bond with an unpaired electron of the radical. Orig. art. has: 2 figures, 1 table, and 2 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Physico-chemical Institute)

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0

L 41766-65
ACCESSION NR: AP4032561

SUBMITTED: 08Apr63	ENCL: 00	SUB CODE: OC
NO REF SOV: 003	OTHER: 006	

CC
Card 3/3

L 15172-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10/Pa-4
WW/RM S/0190/64/006/011/1974/1979
ACCESSION NR: AP4049151

AUTHOR: Slovokhotova, N. A.; Magrupov, M. A.; Kargin, V. A.

TITLE: Thermal degradation 15 of polyethylene 15 13

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 11, 1964, 1974-1979

TOPIC TAGS: polyethylene, low pressure polyethylene, high pressure polyethylene, polyethylene thermal degradation, polyethylene pyrolysis, thermal degradation mechanism

ABSTRACT: To resolve a controversy over the mechanism of the pyrolysis of polyethylene, thermal degradation of high- and low-pressure polyethylene (HPPE and LPPE) at 325—415C was investigated under vacuum in a closed system, and with the removal of volatiles from the reaction space. The method of pyrolysis was described previously. The molecular weights of the starting and end products were calculated; those of the volatile fractions were determined cryoscopically. An IR spectral analysis of the degradation products showed that when the reaction is carried out in the closed system at 360C and higher, secondary reactions

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L 15172-65
ACCESSION NR: AP4049151

between the pyrolysis products leading to an increase in trans-vinylene and a decrease in vinyl unsaturation become important. The increase in the relative number of trans-vinylene double bonds in the PE pyrolysis products is not in accord with the scheme of formation of such bonds in the degradation of the polymeric chain at the free-radical center close to the branching node of the chain. It is suggested that trans-vinylene double bonds are formed as a result of the migration of end double bonds to the middle of the chain, and also of the intra-molecular encounter of two free-radical centers. It was found that in PE, inorganic impurities acting as catalysts of migration of the double bond and of the radical center affect the distribution of the unsaturation in its thermal degradation products. The reason for the higher thermal resistance of LPPE as compared to HPPE is discussed. Orig. art. has: 3 tables and 4 formulas.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute)

SUBMITTED: 07Jan64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 004 OTHER: 005 ATD PRESS: 3139

Card 2/2

ZEMLYANSKIY, N. N.; GOL'DSHTEYN, I. P.; GUR'YANOVA, Ye. N.; PANOV, Ye. M.; SLOVOKHOTOVA, N. A.; KOCHESHKOV, K. A.

Structure of compounds with a stannoxane bond studied by means of dipole moments and infrared spectra. Dokl. AN SSSR 156 no. 1:131-134 My '64. (MIRA 17:5)

1. Fiziko-khimicheskiy institut im. L. Ya. Karpova. 2. Chlen-korrespondent AN SSSR (for Kocheskhov).

KLAUZEN, N.A.; SIMELOVA, L.F.; SLOVOKHOTOVA, N.A., red.

[Atlas of the infrared spectra of rubbers and of some ingredients of rubber compounds] Atlas infrakrasnykh spektrov kauchukov i nekotorykh ingredientov rezinovykh smesei. Moskva, Khimiia, 1965. 127 p. (MIRA 18:9)

3

L 2265-66 EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/EWA(h)/EWA(1) GG/RM
ACCESSION NR: AP5022220 UR/0191/65/000/009/0008/0012
678.742.2.01:539.12.04:678.048

AUTHOR: Gladkova, G. I.; Yegorova, Z. S.; Karpov, V. L.; Leshchenko, S. S.; Mitrofanova, L. V.; Slovokhotova, N. A.; Finkel', E. E.; Cherntsov, S. M.

TITLE: Thermal stabilization of irradiated polyethylene by industrial antioxidants

SOURCE: Plasticheskiye massy, no. 9, 1965, 8-12

TOPIC TAGS: antioxidant additive, polyethylene, antirad additive, gamma radiation, radiation effect

ABSTRACT: The following industrial antioxidants were introduced into polyethylene in amounts of 2, 5, and 10%: 2,2'-methylenebis(4-methyl-6-tert-butylphenol); 4,4'-methylenebis(2-methyl-6-tert-butylphenol); 2,2'-methylenebis(4-ethyl-6-tert-butylphenol); N-isopropyl-N'-phenyl-p-phenylenediamine (nonox ZA); 4,4'-thiobis(6-tert-butyl-m-cresol); 4,4'-thiobis(2-tert-butyl-m-cresol); phosphite of P-24 (P-24 being a phenol-styrene condensation product); and di-β-naphthyl-p-phenylenediamine. The polyethylene samples were then irradiated, kept in air thermostated at 150 and 200C for various periods of time, and tested for relative elongation and tensile strength. The compounds were found to have a stabilizing effect if

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L 58477-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(1) Pc-4/Pr-4/
Peb/Pu-4 GG/RM

ACCESSION NR: AP5014687 UR/0191/65/000/006/0018/0023
678.674.028:621.039.83 41
40
B

AUTHOR: Yegorova, Z. S.; Slovokhotova, N. A.; Karpov, V. L.; Kiselev, B. A.; Bodrova, V. V.

TITLE: Study of processes taking place in the course of radiation-induced hardening of various types of unsaturated condensation resins

SOURCE: Plasticheskiye massy, no. 6, 1965, 18-23

TOPIC TAGS: radiation hardening, 14 unsaturated resin, resin structure, polymer structure, thermal hardening

ABSTRACT: A number of various unsaturated resins were hardened by exposure to radiation from a Co^{60} source. Doses of 0.5—50 Mrad were used. The irradiation was conducted in air. Parallel hardening by thermal treatment was undertaken for comparison purposes. All the resins investigated can be divided into two categories: those which are hardened by relatively small doses of radiation (0.5—8 Mrad), and those which are not. The first category consists of unsaturated polyester resins, 15 such as diethylene glycol maleinate phthalate and polyesters with terminal methacrylate groups, and the second category, of such resins as ethyleneglycol maleinate, epoxy resins, phenol-formaldehyde resin, and epoxy-phenolic resin. The structure of

Card 1/2 15

L 58477-65

ACCESSION NR: AP5014687

the hardened samples was studied by observing their infrared absorption spectra. Conclusions made were based on measurements of IR bands associated with carbon—carbon double bonds, eneone groups, ether and ester functions, carbonyl, and other groups. It was found that unsaturated polyester resins harden most easily under the influence of radiation. Both thermal and radiation-induced hardening of unsaturated polyester resins depend on the reaction of double bonds in the resin. While irradiation of the phenol-formaldehyde resin (novolac type) solution in furfurol involves a reaction of furfurol with the diene function of the resin, thermal hardening of the same resin probably depends on the reaction of furfurol with carbonyl groups and concurrent polymerization of furfurol. Orig. art. has: 7 figures. [VS]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, NP

NO REF SOV: 004 OTHER: 007 ATD PRESS: 4019

Card 2/2

USHAKOV, V.D.; MATVEYEVA, A.V.; SLOVOKHOTOVA, N.A.; KHOMIKOVSKIY, P.M.;
ABKIN, A.D.

Radiation polymerization of diketone in the solid and liquid states.
Vysokom.soed. 7 no.7:1165-1170 Jl '65.
(MIRA 18:8)

1. Fiziko-khimicheskiy institut imeni Karpova.

L 64767-65 EPF(c)/EPF(n)-2/EWP(j)/EWA(h)/EWT(m)/T/EWA(1) GG/RM

ACCESSION NR: AP5020962 UR/0190/65/007/008/1306/1309
678.01:535.34

AUTHOR: Slovokhotova, N. A.; 44,55 Sadovskaya, G. K.; 44,55 Vasil'yev, L. A.; Kargin, V. A. 44,55

TITLE: Investigation of the effect of fast electrons on the structure of 44,55 poly(vinyl chloride) 15,44,55

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 8, 1965, 1306-1309

50
47
B

TOPIC TAGS: polyvinyl chloride, conjugated polymer, IR analysis, ionizing radiation, polymer structure

ABSTRACT: The 14,44,55 effect of ionizing radiation 15 on the structure of poly(vinyl chloride) has been studied ~~by IR spectroscopy.~~ Irradiation was carried out in vacuum at 20C or -196C with fast electrons from an electron accelerator source with 400—800 Mrad doses. It was found that irradiation caused: 1) dehydrochlorination to form isolated or conjugated vinylene double bonds, 2) break of the backbone to form end-group double bonds and methyl groups, and 3) aromatic system formation. The nature of the structural changes depended on the irradiation temperature. For example, irradiation [illegible]

[illegible] figure [illegible]

[illegible] (Physicochemic[illegible]

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L 64767-65

ACCESSION NR: AP5020962

with 800 Mrad at 20C caused an increase in the conjugated double bond concentration and the appearance of aromatic systems. Orig. art. has: 1 figure and 2 formulas. [SM]

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute) 44,55

SUBMITTED: 01Aug64

ENCL: 00

SUB CODE: GC, OP

NO REF SOV: 000

OTHER: 011

ATD PRESS: 4080

Card 2/2

POLYANSKIY, N.G.; TULUPOV, P.Ye.; [illegible], [illegible]; SLOVOKHOTOVA, N.A.

Mechanism of thermal desulfuration of the hydrogen form of ion exchanger KU-2 in hydrocarbon media. Zhur. prikl. khim. 38 no.4: 910-918 Ap '65. (MIRA 18:6)

1. Novokuybyshevskiy filial Nauchno-issledovatel'skogo instituta sinteticheskikh spirtov i organicheskikh produktov i Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni Karpova, Moskva.

[illegible], N.M.; [illegible]; [illegible], Ye.N.;
[illegible], N.[illegible]; KOCHESHKOV, [illegible]

[illegible] of a new type. Dokl. [illegible] 163
[illegible] '65. (MIRA 18:8)

1. [illegible]SR (for Kocheshkov).

L 33067-66 EWT(m)/EWP(j) IJP(c) RM
ACC NR: AP6024159 SOURCE CODE: UR/0020/65/164/003/0581/0583

57
B

AUTHOR: Il'icheva, Z. F.; Kharlamova, Ye. N.; Slovokhotova, N. A.

ORG: Physical Chemistry Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut)

TITLE: Spectroscopic investigations of a complex/of natural rubber[15] with titanium tetrachloride

SOURCE: AN SSSR. Doklady, v. 164, no. 3, 1965, 581-583

TOPIC TAGS: spectroscopy, natural rubber, titanium compound, cyclization, spectrophotometer, ir spectrum, chloride

ABSTRACT: It is known that under the effect of titanium tetrachloride cyclization of rubbers takes place. The present study was undertaken to elucidate the nature of the intermediate products in this process. Natural rubber (NR) was used for the investigations, treated with boiling acetone for 24 hours, and then reprecipitated with methanol from a benzene solution. For measurement of infrared spectra a NR film 0.004 cm thick was prepared from benzene solution in the center of a KBr disc. After careful drying of the film under high vacuum, several drops of $TiCl_4$ were deposited on it. The bright-orange product then formed was covered with a second KBr disc, after which its infrared spectrum was immediately measured on a UR-10 spectrophotometer. All the operations with $TiCl_4$ and the filling of cuvettes were carried out in a hermetic chamber in dry argon. Infrared spectra of the NR / $TiCl_4$ system differed substantially from

Card 1/2

0915 1746

SLOVOKHOTOVA, N.P.

Eclipsing variables SW Cygni and TW Draconi and regularity in the fluctuation of their periods. Per.zvezdy 10 no.1:21-35 Ja '54. (MLRA 8:2)

1. Gosudarstvennyy astronomicheskiy institut imeni P.K.Shternberga.
(Stars, Double)

[illegible], N F

PHASE I BOOK EXPLOITATION SOV/5574

Akademiya nauk SSSR. Astronomicheskiy sovet.

Byulleten' stantsiy opticheskogo nablyudeniya iskusstvennykh sputnikov Zemli. no. 7 (17) (Bulletin of the Stations for Optical Observation of Artificial Earth Satellites. No. 7 (17) Moscow, 1960. 16 p. 500 copies printed.

Sponsoring Agency: Astronomicheskiy sovet Akademii nauk SSSR.

Resp. Ed.: G. A. Leykin; Ed.: D. Ye. Shchegolev; Secretary: O. A. Severnaya.

PURPOSE : This bulletin is intended for scientists and engineers concerned with optical tracking of artificial satellites.

COVERAGE: The bulletin contains four articles concerned with the orbital elements of the Soviet artificial satellites 1958 δ_1 and 1958 δ_2 (Sputnik III and its carrier rocket). No personalities are mentioned. There are 6 references: 4 Soviet and 2 English.

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Bulletin of the Stations (Cont.) SOV/5574

Card 2/3

GINDIN, Ye.Z.; LEYKIN, G.A.; LOZINSKIY, A.M.; LUR'YE, M.A.; MASEVICH, A.G.; SEVERNAYA, O.A.; SENTSOVA, Yu.Ye.; SLOVOKHOTOVA, N.P.; TOL'SKAYA, V.A.; TSITOVICH, V.V.

Brief report of the Astronomical Council of the Academy of Sciences of the U.S.S.R. on visual and photographic observations of artifical earth satellites in 1957-1959. Biul. sta. opt. nabl. isk. sput. Zem. no. 6:1-33 '60. (MIRA 14:2)
(Artificial satellites--Tracking)

SLOVOKHOTOVA, N.P.

Comparison of different systems of orbital elements of the third Soviet artificial earth satellite (1958δ 2). Biul. sta. opt. nabl. isk. sput. Zem. no. 7:14-[28] '60.
(MIRA 14:2)

1. Astronomicheskiy sovet AN SSSR.
(Atrificial satellites—Tracking)

85541

S/026/60/000/009/006/010
A166/A029

3,2300

AUTHOR: Slovokhotova, N.P.

TITLE: The Fourth Artificial Satellite in Flight

PERIODICAL: Priroda, 1960, No. 9, p. 14

TEXT: The USSR has a network of about 90 optical stations and observatories for keeping track of sputniks. Visual observation is effected with the AT-1 (AT-1) astronomical telescope fitted with a 5-cm diameter lens with an 11° field of vision. Some stations use the Kiev or Zorkiy lumen camera. Accurate photographic observation is effected with the special НАФА-3с/25 (NAFA-3s/25) camera fitted with a 10-cm diameter 1 : 2.5 lens. This is presently used at 29 observation stations. The Astronomicheskiy sovet AN SSSR (Astronomic Council of the Academy of Sciences, USSR) maintains close liaison with observation stations abroad. Observation stations in the satellite countries receive free equipment from the Akademiya nauk SSR (Academy of Sciences of the USSR) and in return send the results of their observations to "Kosmos" and the Astronomic Council. The results of the observations are then published in the bulletin "Rezul'taty nablyudeniya sovetskikh ISZ" (Results of Observation of Soviet Artificial Earth Satel-

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85541

The Fourth Artificial Satellite in Flight

S/026/60/000/009/006/010
A166/A029

lites). More than 25,000 observations from Soviet, and 14,000 from foreign stations were received on the third Soviet sputnik. Up to July 1, 4,000 observations from Soviet, and 2,000 from foreign stations had been received on the fourth sputnik. The results are processed at a computing center and used for scientific research and to forecast the visibility of the sputniks. The change in the sputnik's orbit is used to estimate the flattening of the earth, its gravitational field and the density of the upper layers of the atmosphere. Observations show that the density of the atmosphere is probably linked to the solar activity and to whether or not the atmosphere is at that time illuminated. From May 19, successful observations have been made of the fourth sputnik, its carrier rocket and hermetic cabin. Up to 6 other weaker objects, connected with the detachment of the hermetic cabin, have also been observed. On July 18 the space ship completed 1,000 orbits of the earth. On July 17 the carrier rocket of the fourth sputnik entered the denser layers of the earth's atmosphere during its 1019th orbit and burnt up. The fourth sputnik and its cabin continue to orbit.

ASSOCIATION: Astronomicheskiy sovet Akademii nauk SSSR (Astronomic Council of the Academy of Sciences of the USSR)

Card 2/2

SLOVOKHOTOVA, N.P.

Processing and publication of the results of optical observations of artificial earth satellites in the U.S.S.R. Geofiz.biul. no.12: 125-127 '62. (MIRA 16:5)

(Artificial satellites--Optical observations)

SLOVOKHOTOVA, N.P.

Conference of representatives of socialist countries on problems involving the observation of artificial earth satellites. Vest. AN SSSR 34 no.5:126-127 My '64. (MIRA 17:6)

L 25254-65 EWT(1)/EEC(a)/EWP(m)/FS(v)-3/EEC(j)/EEC(r)/EWG(v)/EWA(d)/
EEC-4/EEC(t) Po-4/Pe-5/Pq-4/Pg-4 GW

S/3126/63/000/002/0003/0009

ACCESSION NR: AT5004153

49
B+1

AUTHOR: Slowochotowa, N. P. (Slovokhotova, N. P.)

TITLE: Study of the correlation between the orbit evolution 12 and solar activity 12

SOURCE: Nablyudeniye iskusstvennykh sputnikov Zemli, no. 2, 1963. Warsaw, PAN, 1963, 3-9

TOPIC TAGS: correlation field, satellite acceleration, solar radiation

ABSTRACT: The dependence between solar activity and acceleration of four satellites (1957β, 1958 $_1$, 1958 $_2$ and 1958) is investigated. For this purpose fields of correlation are plotted between satellites accelerations P and characteristics of solar activity /K_p- indices and intensities of solar radiation S on = 10.7 cm/. The dependence P - K_p appears to be clearer, especially for the periods when perigee is in the shadow. The connection between the values P - S is almost innoticeable.

ASSOCIATION: none

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L 25254-65

ACCESSION NR: AT5004153

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SUBMITTED: 00

ENCL: 00

SUB CODE: AA, SV

NO REF SOV: 001

OTHER: 011

Card 2/2

L 32664-65 FSS-2/FSF(h)/FBD/EWT(d)/EEO-2/EWT(l)/FS(v)-3/EEC(k)-2/EWA(d)/EWG(v)/
T/EEC(c)-2/EED-2/EWA(c)/EED(b)-3 Pn-4/Po-4/Pac-4/Pq-4/Pe-5/Pae-2/Pg-4/Pl-4/
Pk-4/Pl-4 IJP(c) TT/GW/WR

ACCESSION NR: AT5004175

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BH

AUTHORS: Masevich, A. G.; Slovokhotova, N. P.

TITLE: The third conference of representatives of the Committee on Multilateral Collaboration among the Academies of Sciences of socialistic countries for the problem of "Optical Observation of Artificial Earth Satellites," Moscow, 21 December 1963 19

SOURCE: Nablyudeniya iskusstvennykh sputnikov Zemli, no. 2, 1963. Warsaw, PAN, 1963, 158-163

TOPIC TAGS: artificial satellite, satellite tracking 9, Echo I satellite 17, Explorer IX satellite, Alouette satellite, NAFA 3s/25 camera 30

ABSTRACT: Countries participating were Bulgaria, Hungary, East Germany, Poland, Rumania, SSSR, and Czechoslovakia. A number of papers were presented in keeping with the recommendation of the previous two conferences (Leningrad, Warsaw) to seek solutions of geodetic and geophysical problems by information on satellites. The Kosmos computing center handled data on 77500 observations of 70 satellites and rockets during the period from 1 October 1962 to 1 October 1963. In 1963, 21 stations situated throughout the socialist countries participated in simultaneous observations of the low satellites in order to determine perigee height for studying

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ACCESSION NR: AT5004175

3

short-period changes in atmospheric density. This was the INTEROBS program, with Dr. Ill of Hungary as coordinator. Results were not ideal, the number of synchronous pairs not being as great as desired, but the possibilities of geodetic application appear favorable. It was recommended that the INTEROBS program be continued, that the Kosmos center furnish monthly forecasts of satellite visibility, that each station observe satellites during the first five seconds of each half minute, that other stations, in both eastern and western Europe, be invited to participate in the program of satellite observation. It was recommended that synchronous photographic observation be continued, particularly of Echo II, that the number of stations be increased to world-wide coverage in order to improve geodetic data. It was urged that the time service from radio station OMA in Czechoslovakia be used for timing of satellite observation in eastern Europe. More stations are being equipped with modified NAFA-3s/25 cameras. The Zeiss company has developed improved cameras for satellite observation. The first number of "Observations of Artificial Earth Satellites" has been published, giving the results of observation during 1957-62. The second number (1963) is being prepared by the Polish Academy. The German Academy will be responsible for the third number (1964), and the Czechoslovakian Academy for the fourth (1965). Numbers for 1966 and 1967 are being planned. A bibliography on satellite observations is being prepared. In the main, the conference recommended continued, improved, and expanded work of the kind the member

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ACCESSION NR: AT5004175

stations are now performing.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: SV, DC

NO REF SOV: 000 OTHER: 000

L 31758-65 EWT(1)/EEC(a)/EWP(m)/FS(v)-3/EEC(j)/EEC(r)/EWG(v)/FCC/EWA(d)/EEC-4/
EEC(t)/EWA(h) Po-4/Pe-5/Pq-4/Pg-4/Pae-2/Peb/Pi-4 GW

ACCESSION NR: AR5005729 S/0313/64/000/010/0011/0011

SOURCE: Ref. zh. Issl. kosm. prostr. Otd. vyp., Abs. 10.62.89

AUTHOR: Slovokhotova, N. P.

67
B

TITLE: Concerning the evolution of orbits of artificial satellites in connection with the solar activity

CITED SOURCE: Byul. st. optich. nablyudeniya iskusstv. sputnikov Zemli, no. 35, 1962(1963), 21-30

TOPIC TAGS: artificial earth satellite, solar activity, upper atmosphere, satellite orbit, satellite acceleration, solar radio emission

TRANSLATION: An attempt is made to explain the character of the dependence of the connection between the change in the periods (acceleration) of an artificial satellite (meaning also the density of

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