

Nikolay Sergeevich Akulov (On the Occasion of His 60th Birthday)

S/170/60/003/012/014/015
D019/D056

properties of aerosols and, after graduation, he became Aspirant at the Laboratory of Professor V. K. Arkad'yev. In 1928 he formulated the anisotropy law for ferromagnetic bodies, which is named after him. After having become a docent, he worked in the capacity at the Kafedra fiziki Gor'kovskogo gosudarstvennogo universiteta (Chair of Physics of Gor'kiy State University), where he set up the laboratory of magnetism and established the first Chair of Magnetism in the Soviet Union. Under his supervision, a large number of experts on magnetism were trained (Ye. I. Kondorskiy, N. L. Bryukhatov, K. P. Belov, G. P. D'yakov, D. I. Volkov et al.). In 1940 he was elected Member of the Academy of Sciences of the Belorusskaya SSR and also Secretary of the technical branch of the Academy. He was awarded the Order of the Red Banner of Labor and the Prize imeni M. V. Lomonosov. Among other things, he was also concerned with the physics of combustion processes and the strength of metals. This work was carried out in collaboration with the Fiziko-tekhnicheskiy institut AN BSSR (Institute of Physics and Technology of the AS BSSR). Together with Kunavina, Akimov, Sol'chev and others, he developed a vibration-defectoscope, which is widely in use. There is 1 figure.

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YEROFYEV, B.V.; MITSKEVICH, N.I.; USKOV, I.I.

Conjugated decarboxylation in the autoxidation of isopropylbenzene
in a mixture with butyric acid labeled with C^{14} in the carboxyl
group. Dokl. AN BSSR 4 no. 4:160-163 Ap '60. (MIRA 13:10)

1. Institut fiziko-organicheskoy khimii AN BSSR.
(Carboxyl group) (Benzene)

S/080/60/033/04/26/045

AUTHORS: Yerofeyev, B.V., Soroko, T.I.

TITLE: On the Chemism of the Initiation of Self-Oxidation of Cumene¹ by Manganese Salts

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 4, pp 903 - 910

TEXT: The self-oxidation of cumene in the presence of manganese salts was studied with a view to elucidating the initiating action of these salts. Cumene used in the experiments was synthesized from isopropyl and benzene chloride and had the following physico-chemical constants: boiling point 151.0 - 153.0°C, n_{20}^D 1.4929, d_{20}^{20} 0.86255. It was shown that at 95°C and an oxygen pressure of 590 mm Hg the oxidation of cumene does not take place, and proceeds very slowly in the presence of manganese acetate. The self-oxidation rate increases, however, in the case of the purification of cumene by means of sodium metal. After boiling cumene for 3 hours over sodium metal with subsequent distillation the reaction rate increases 60 times. Kolmakov and Razuvayev [Ref 14] found that the induction period decreases as a result of additions of cumene hydroperoxide or manganese resinate as initiator. The induction period depends on the purification of cumene and the type of initiator. In the presence of manganese

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On the Chemism of the Initiation of Self-Oxidation of Cumene by Manganese Salts

butyrate it is completely absent. The initiator changes during the process of self-oxidation, losing its initiating capacity. At the same time the manganese content in it increases. It has been pointed out that the experimental facts observed do not agree with the initiation theory of several authors, which includes the alternating oxidation and reduction of the initiator by cumene hydroperoxide. The results agree, however, with the initiation theory, according to which the formation of free radicals takes place during reduction of the initiator by hydrocarbon. There are: 7 sets of graphs, 1 diagram and 24 references, 12 of which are Soviet, 7 English, 3 German and 2 American.

SUBMITTED: September 17, 1959

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S/580/61/000/000/001/016
A057/A126

5.3v00

AUTHORS: Yerofeyev, B.V., Chirko, A.I., Uskov, I.I.

TITLE: Investigation of 1-phenylcyclohexene-1 autoxidation kinetics and the products

SOURCE: Yerofeyev, B.V. and I.G. Tishchenko, eds. Zhidkofaznoye okisleniye ne;predel'nykh organicheskikh soedineniy, Minsk, 1961, 3 - 14

TEXT: Products of the autoxidation of 1-phenylcyclohexene-1 have been investigated before by H. Hock, and M. Siebert, but not the kinetics. The latter were studied for the first time in the present paper and a new compound was isolated from the primary autoxidation products. The oxidation was carried out at 50°C during 30 h by an earlier described method. The products of autoxidation were separated and results corresponding to those by Hock and Siebert obtained. The new product was prepared by thermal destruction of the autoxidation product and preliminarily determined as 1-phenylhexene-2-ol-6-on-1 $\text{CH}_2\text{OH}-\text{CH}_2-\text{CH}_2\text{CH}=\text{HC}-\text{CO}-\text{C}_6\text{H}_5$. Experiments on autoxidation kinetics carried out with fresh and stored (2 weeks) samples in the presence of 1% cobalt stearate showed no difference, and a maximum of the autoxidation rate after about 110 min. The influence

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Investigation of 1-phenylcyclohexene-1....

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of 14 different initiators was tested and the greatest effect obtained with cobalt and manganese butyrate and cobalt stearate, which increased the maximum rate of autoxidation by 6 - 9 times. Kaolin, manganese, cobalt, and lead formates showed no effect. The influence of the concentration of the initiator was studied with cobalt stearate, manganese butyrate, and lead dioxide admixtures (0.25 - 4%) and it was observed that the oxidation degree increases to a content of 1% cobalt stearate or 0.5% manganese butyrate respectively, while for lead oxide a steady increase can be observed with the concentration. The dependence of the autoxidation rate on the cobalt stearate concentration can be described by the following equation:

$$V_m = \frac{a [u]}{1 + b[u]}$$

(V_m = rate, a = constant = 0.01042, b = constant = 1.364, $[u]$ = concentration of the initiator). The effect of concentration of 1-phenylcyclohexene-1 on the rate of autoxidation was investigated in benzene solutions containing 0.5% cobalt stearate, and linearity according to $V_m = Kc^{1.63}$ was observed. The influence of temperature was studied at 40, 50, and 60°C in presence of 1% cobalt solution and from the data obtained the activation energy was calculated with 16,400 cal/mole. The relatively high kinetic order of 1.63, is explained by the present authors X

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Investigation of 1-phenylcyclohexene-1...

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with the assumption of complex formation between the hydrocarbon and the initiator. The new product is assumed to be 1-phenylcyclohexene-2-ol-6-on-1 since the formation of carbonyl and hydroxyl groups is observed at destructions of tertiary hydroperoxides. Therefore, the primary formed hydroperoxide could be 6-phenyl-6-hydroperoxide-cyclohexene. Formation of the latter is caused by intermediate isomerization of the phenylcyclohexenyl radical. Thus, further investigations of the products of autoxidation of 1-phenylcyclohexene-1 would be of interest. There are 5 figures and 4 tables.

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X

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36323

3/580/61/000/000/002/016
A057/A126

AUTHORS:

Yerofeyev, B.V., Chirko, A.I., Urbanovich, I.I.

TITLE:

Products and kinetics of autoxidation of phenylcyclopentane

SOURCE:

Yerofeyev, B.V. and I.G. Tishchenko, eds. *Zhidkofaznoye okisleniye nepredel'nykh organicheskikh soedineniy*, Minsk, 1961, 15 - 27

TEXT:

The products and kinetics of the autoxidation of phenylcyclopentane were investigated, and for the first time the primary product of autoxidation -1-hydroperoxide-1-phenylcyclopentane- was separated and specified. Kinetics were studied in the presence of 11 different admixtures. The present investigation was of interest in connection with analogous studies on phenylcyclohexane to determine the effect of its structure on the rate of autoxidation. The physico-chemical characteristics of the phenylcyclopentane used were compared with corresponding data published by S.S. Nametkin, N.D. Zelinskiy, and Ya.I. Denisenko. Repeated distillation showed that an increased purity raises the autoxidation rate of phenylcyclopentane. The effect of the different admixtures was determined by the quantity of oxygen absorbed and the percentage of hydroperoxide formation. The highest activity was shown by manganese and cobalt butyrate and acetate, and

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Products and kinetics

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also cobalt acetate and lead dioxide. The latter showed a considerable difference as initiator in comparison with the other active admixtures, i.e., a greater amount of the hydroperoxide was accumulated in the products of autoxidation in the presence of lead dioxide and, on the other hand, the dependence of the autoxidation rate on the concentration of the initiator showed another character for lead dioxide than for cobalt stearate. At higher concentrations of lead dioxide linearity can be observed, indicating different from the other initiators, that lead dioxide does not participate in processes of chain rupture. Another important observation was made in studying the effect of phenylcyclopentane concentration on the autoxidation rate, which can be expressed by $V_m = KC^{3.5}$ (V_m = rate of autoxidation per 1 liter solution). The relatively high order of kinetics (3.5) is explained by the present authors with complex formation of the initiator and the oxidized hydrocarbon, according to earlier investigations. The equation

$$V_m = \frac{a [u]}{1 + b[u]}$$

(V_m = rate of autoxidation, a and b = constants, [u] = concentration of the initiator), which was stated in earlier studies for other hydrocarbons, is valuable also for the autoxidation of phenylcyclopentane in the presence of cobalt stearate as initiator. The activation energy for the present autoxidation was found to be 16,000 cal/mole. There are 6 figures and 5 tables.

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A057/1126

J. J. 00

AUTHORS:

Yerofeyev, B.V., Dutnyak, N.S.

TITLE:

Autoxidation kinetics of cyclohexadiene-1,3 in benzene solution

SOURCE:

Yerofeyev, B.V. and I.G. Tishchenko, eds. Zhidkofaznoye okisleniye nepredel'nykh organicheskikh soedineniy, Minsk, 1961, 29 - 37

TEXT:

Kinetics of autoxidation of cyclohexadiene was investigated in the presence of cobalt caprylate as initiator, and an original dependence of autoxidation on the concentration of the hydrocarbon was observed. The present study was carried out to compare the kinetics of autoxidation resulting in formation of the endo-peroxide type with those carried out in other investigations resulting in the formation of other types of hydroperoxides. Autoxidation of cyclohexadiene was studied repeatedly before, among others by N.D. Zelinskiy and Titov, A.I. Chirko and K.L. Moyseychuk, or V.A. Cherkasov, but no data on kinetics were published. Cyclohexadiene-1,3 was prepared by the method of B.V. Yerofeyev, S.F. Naumov, and N.P. Yemel'yanov (Sov. patent no. 110964, 1958). Repeated distillation of cyclohexadiene over metallic sodium removed impurities and allowed a high and reproducible rate of autoxidation showing no induction period. The effect of

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4.

Autoxidation kinetics.....

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cyclohexadiene concentration on the rate of autoxidation was studied at concentrations of 2.14, 3.20, 4.27, 5.31, 6.45, 7.41, 8.45, 9.48, and 10.5 mole/liter. Up to about 5 mole/liter an increase of the rate can be observed, attaining a maximum there; it decreases then until the content of 10.5 mole/liter is reached. The order of kinetics for the decreasing part is calculated with -1. Results obtained in single experiments showed on the other hand that with the duration of autoxidation the rate of the process decreases indicating an order of kinetics of +1.5. The existence of two orders of kinetics can be explained by the absence of intermediate and final reaction products in the beginning of autoxidation (order -1), while during autoxidation these products are formed and, when present, influence strongly the reaction, thus changing the order of kinetics (+1.5). It is demonstrated that the activation energy of autoxidation of cyclohexadiene depends upon the concentration of the latter, being for 6.45 mole/l 7,400 cal/mole, and for 10.5 mole/l 9,400 cal/mole. There are 5 figures and 3 tables.

Card 2/2

34873

S/061/62/000/003/017/090

B151/B144

5.3300

AUTHORS: Yerofeyev, B. V., Ariko, N. G.

TITLE: Effect of solvents on the radical-chain process of autooxidation of hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 71, abstract 3E476 (Tr. po khimii i khim.tekhnol. (Gor'kiy), no. I, 1961, 89-94)

TEXT: The oxidation of cyclohexene in the presence of cobalt caprylate at 40-55°C in solvents (n-octane CCl_4 , $\text{C}_6\text{H}_5\text{CH}_3$, CHCl_3 , $\text{C}_6\text{H}_5\text{NO}_2$) is studied.

With increasing polarity of the solvent the kinetic order of the reaction decreases. In n-octane the order of the reaction is approximately 3, in CCl_4 and $\text{C}_6\text{H}_5\text{CH}_3$ <2, in $\text{C}_6\text{H}_5\text{NO}_2$ <1. The authors consider that as a result of the effect of polar solvents decomposition of the complex formed by the initiator and the cyclohexene takes place. The independence of the activation energy on the polarity of the solvent in the autooxidation of cyclohexene in solutions is evidence that ionic processes play no

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Effect of solvents on the...

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significant role in the formation of free radicals. [Abstracter's note:
Complete translation.]

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YEROFEYEV, B.V. [Erafeev, B.V.]; KOMAROV, V.S. [Kamarou, V.S.]

Sergei Mikhailovich Lipatov; obituary. Vestnik AN SSSR Ser. fiz.-tekh.
nav. no. 1:138-140 '61. (MIRA 14:4)
(Lipatov, Sergei Mikhailovich, 1899-1961)

S/786/61/000/009/001/006
I065/I242

AUTHORS: B.V. Verofeyev, S.P. Naumova, V.P. Markykin, I.V. Kulevskaya,
L.G. Tsykalo

TITLE: The dependence of the molecular weight of polyethylene
on the $TiCl_4/Al(iso-C_4H_9)_3$ ratio in the Ziegler catalyst

SOURCE: Akademiya nauk Belorusskoy SSR. Institut fiziko-organi-
cheskoy khimii. Sbornik nauchnykh rabot. no.9. 1961.
Monomery, svoystva i protsessy polucheniya polimerov.
59-62

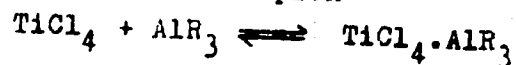
TEXT: In the polymerization of ethylene initiated by a Ziegler
catalyst with excess $TiCl_4$, the molecular weight of the polyethy-
lene obtained increases with decrease of the $[AlR_3]/[TiCl_4]$ ratio.
These findings disagree with the data of Badin (J. Am. Chem. Soc. 80,
6545, 1958). The polymerizations were carried out in a glass ✓
vessel equipped with mechanical stirrer, reflux condenser, gas in-
let tube and a burette for the introduction of the dissolved cata-
lyst components. Molecular weights were determined viscometrically

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The dependence of the molecular ...

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(in decaline, at 135°C). The interpretation of the experimental results is based on the assumption of a very high value for the stability constant (K) of the complex



so that

$$K \gg \frac{1}{[\text{TiCl}_4]_0 + [\text{AlR}_3]_0}$$

where the subscript 0 denotes initial concentrations. Then the concentration (X) of the $\text{TiCl}_4 \cdot \text{AlR}_3$ complex can be represented by the approximate expressions

$$[X] \approx [\text{TiCl}_4]_0 \quad \text{for} \quad [\text{TiCl}_4]_0 < [\text{AlR}_3]_0$$

$$[X] \approx [\text{AlR}_3]_0 \quad \text{for} \quad [\text{AlR}_3]_0 < [\text{TiCl}_4]_0$$

the component at the lower concentration being the limiting parameter. Since the degree of polymerization is inversely proportional to the catalyst concentration ($\overline{DP} \sim [X]^{-1}$), the molecular

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The dependence of the molecular ...

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weight of polyethylene will increase on decreasing the $[AlR_3]/[TiCl_4]$ ratio when $[AlR_3]_0 < [TiCl_4]_0$, or on increasing the $[AlR_3]/[TiCl_4]$ ratio when $[AlR_3]_0 > [TiCl_4]_0$. There are 3 tables.

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S/786/61/000/009/002/006
I065/I242

AUTHORS: B.V.Yerofeyev, S.F.Naumova, V.P.Mardykhin, O.D.Yurina,
A.M.Konovalova

TITLE: The polymerization of ethylene in the presence of butyl
lithium and titanium tetrachloride

SOURCE: Akademiya nauk Belorusskoy SSR. Institut fiziko-organiche-
skoy khimii. Sbornik nauchnykh rabot. no.9. 1961. Monomery,
svoystva i protsessy polucheniya polimerov, 63-70

TEXT: Catalyst systems containing lithium organic compounds are
capable of initiating stereospecific polymerizations. Maximum
yields of polyethylene are obtained at a $C_4H_9Li/TiCl_4$ ratio of
about 2. The activity of the catalyst depends on the atmosphere
in which it was formed. Highest activities were achieved in an
ethylene atmosphere, lowest in nitrogen. The purpose of this work
was to study the mechanism of polymerization of ethylene with
 $C_4H_9Li/TiCl_4$ catalysts. A cylindrical double-jacket glass vessel,

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The polymerization of ethylene in ...

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I065/I242

equipped with a mechanical stirrer, reflux condenser and gas inlet tube reaching the bottom was used for the polymerizations. The polymerization reactions were continued for 20 mins. at 30°C. The reaction mixture was poured into excess ethanol, the precipitate was collected, washed, and dried in vacuo at 80°C. Viscosities were determined at 135°C. The properties and molecular weights of the polyethylene samples obtained at different $C_4H_9Li/TiCl_4$ ratios are practically independent of catalyst composition (as long as $C_4H_9Li/TiCl_4 > 1$). The order of addition of the catalyst components is of major importance. Fourfold higher activities are obtained when C_4H_9Li solution is added to the $TiCl_4$ solution. These observations can be explained tentatively by assuming the formation of the very unstable complex $2 C_4H_9Li + TiCl_4$. There are 3 figures and 1 table.

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S/786/61/000/009/003/006
I065/I242

AUTHORS: B.V.Yerofeyev, S.F.Naumova, L.G.Tsykalo

TITLE: The mechanism of thermal polymerization of 1,3-cyclohexadiene

SOURCE: Akademiya nauk Belorusskoy SSR. Institut fiziko-organicheskoy khimii. Sbornik nauchnykh rabot. no.9.1961. Monomery, svoystva i protsessy polucheniya polimerov, 71-79

TEXT: The thermal polymerization of 1,3-cyclohexadiene with the simultaneous formation of the dimer (1,4-ethylene-1,4,5,6,9,10-hexahydronaphthalene) and polymeric materials of unknown molecular weights has been studied by Hoffmann and Damm (Mitteilung Schlesisch.Kohlenforschungsinstitut, 2, 97-146 (1925); Chem.Zentr., 1, 2342-2344 (1926); Chem.Abstr. 22, 1249 (1928)). The purpose of this work was to study the mechanism of this polymerization. 1,3-cyclohexadiene was prepared from cyclohexene hydroperoxide. The monomer was placed in ampules, connected to the vacuum system, ✓

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The mechanism of thermal polymerization..I065/I242 S/786/61/000/009/003/006

degassed and sealed off under vacuum. The sealed ampules were placed in baths thermostated at between 80 and 200°C. The polymer was precipitated by the addition of four volumes of methanol. The precipitate was dissolved in benzene, reprecipitated with methanol and dried to constant weight in vacuo. The dimeric material was isolated after the first precipitation by vacuum distillation of the solvent and monomer. The quantity of trimer formed was evaluated by difference. Polymerization runs were carried out at 200, 180, 160, 130, 100 and 80°C. The dimer and trimer are probably incapable of propagating the polymerization reaction. The pure dimer did not undergo thermal polymerization. The rate of polymerization increased with rise in temperature, but the molecular weights of the polymers formed were practically identical. Longer polymerization times did not change the concentrations of dimer, trimer and polymer formed. The formation of the dimer is thus a parallel reaction and not an intermediate stage in the polymerization. The first stage of polymerization is the formation of an activated dimer molecule which can react in three possible ways (a) it can

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The mechanism of thermal polymerization...

undergo inactivation, giving an inactive dimer as final product, (b) it can react with a monomer to yield benzene and cyclohexane through disproportionation, or (c) it can form an active trimer molecule which can either form a "dead" trimer through inactivation or combine with a monomer and form an active tetramer which will propagate the polymerization with the formation of high polymeric material. There are 5 figures and 2 tables.



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S/786/61/000/009/004/006
I065/I242

AUTHORS: B.V.Yerofeyev, S.F.Naumova, T.P.Maksimova

TITLE: The effect of $TiCl_4$ on the polymerization of 1,3-cyclohexadiene in heptane solution

SOURCE: Akademiya nauk Belorusskoy SSR. Institut fiziko-organicheskoy khimii. Sbornik nauchnykh rabot. no.9.1961. Monomery, svoystva i protsessy polucheniya polimerov, 80-87

TEXT: The yields vary nearly linearly with $\sqrt{[TiCl_4]}$. In all experiments an insoluble polymer (30-50%) was also formed, the quantity being dependent on the conditions of the experiment. The molecular weights of the soluble polymers (determined cryoscopically) were dependent on both monomer and catalyst concentration. Highest molecular weights were observed at intermediate $TiCl_4$ concentrations (0.06-0.105 moles/liter). The molecular weights of the soluble polymers were found to be independent of the temperature of polymerization (temp. range studied: 0 to $-40^\circ C$). All polymer

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The effect of $TiCl_4$...

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samples studied were found to contain about 1 atom chlorine per molecule, indicating the direct participation of $TiCl_4$ in the initiation step. The molecular weights of the polymers formed in heptane solution were of the same order of magnitude as those obtained from polymerizations in other solvents. A polymerization scheme is suggested, based on the formation of a growing radical. Termination takes place by disproportionation of two growing chains. There are 2 figures and 4 tables.

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S/786/61/000/009/005/006
I065/I242

AUTHORS: B.V.Yerofeyev, S.F.Naumova

TITLE: The kinetics of the $TiCl_4$ -initiated polymerization of 1,3-cyclohexadiene in toluene solution

SOURCE: Akademiya nauk Belorosskoy SSR. Institut fiziko-organicheskoy khimii. Sbornik nauchnykh rabot. no.9.1961. Monomery, svoystva i protsessy polucheniya polimerov, 88-95

TEXT: The polymerization of 1,3-cyclohexadiene in different solvents has been studied by Yerofeyev and co-workers [Ref. 1: Dokl. Akad.Nauk BSSR, 3, 95 (1959)]. In all the cases studied, polymers of rather low molecular weights (about one thousand) were obtained. In order to elucidate the reasons for the early termination of chain growth, kinetic studies of the polymerization were carried out at temperatures ranging from -70 to $+20^{\circ}C$ at cyclohexadiene concentrations of 5.7-6.6 moles/liter and $TiCl_4$ concentration of 0.017 to 0.16 moles/liter. Details of the polymerization technique are given in reference 3 [B.V.Yerofeyev, S.F.Naumova, T.P.Maksimova, Card 1/2

S/786/61/000,009/005/006
I065/I242

The kinetics of the $TiCl_4$ -initiated ...

Sb. nauchnikh robot IFOKh, Akad.Nauk BSSR, no.9, 96 (1961)]. The rate of polymerization of 1,3-cyclohexadiene in toluene is approximately first order with respect to monomer (C_6H_8) concentration. The extent of polymerization was proportional to $[TiCl_4]^2$ and independent of the initial monomer concentration. The molecular weights of the polymers obtained in toluene was practically identical to those found for other solvents. There are 4 figures and 4 tables.

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S/786/61/000/009/006/006
I065/I242

AUTHORS: B.V.Yerofeyev, S.F.Naumova, T.P.Maksimova

TITLE: The polymerization of dialin

SOURCE: Akademiya nauk Belorusskoy SSR. Institut fiziko-organicheskoy khimii. Sbornik nauchnykh rabot. no.9.1961. Monomery, svoystva i protsessy polucheniya polimerov, 96-100

TEXT: In polymerization of cyclohexadiene under widely differing conditions only molecular weights in the range 500-4000 were obtained. In order to find out whether the high rate of chain transfer was caused by the cyclic structure of the cyclohexadiene molecule, dialin (dihydronaphthalene, $C_{10}H_{10}$) containing the cyclohexadiene structure, was chosen. Dialin was prepared by the dehydration of tetralol - 1,2,3,4-tetrahydro- β -naphthol. The polymerizations were carried out in a three-necked flask equipped with stirrer, gas inlet tube, and dropping funnel. The polymerizations were carried out at -75 to $0^{\circ}C$ for 1 to 10 hrs. At the end of each experiment, ✓

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The polymerization of dialin

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the precipitation of the polymer and decomposition of initiation was achieved by the addition of 4 volumes of methanol. The polymer was purified by re-precipitation from benzene solution, and dried in vacuo at 40°C. In the reprecipitated polymer no traces of the catalyst were found. Two polymer fractions were isolated in all experiments: relatively high-mol.wt. fraction comprising 76-88% of the total, and a low-mol.wt. fraction (probably dimer and trimer) comprising 12-24%. The molecular weights were determined cryoscopically (in benzene). High yields (90-100%) were obtained in chloroform, and lower yields in heptane. In both solvents the molecular weights were practically identical (~ 600). The molecular weights obtained with a $\text{TiCl}_4\text{-Al(iso-C}_4\text{H}_9)_3$ complex were higher (~ 1000) than with TiCl_4 alone. The polymers of dialin are white amorphous powders, soluble in aromatic and chlorinated hydrocarbons. They are not oxidized on exposure to air and have a density of $d_{20}^4 = 1.138$. The absence of chlorine in all polydialin preparations and the lower molecular weights (independent of solvent composition) indicate that the mechanism of polymerization is different from that in cyclohexadiene. There is 1 figure and 1 table. ✓

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S/190/61/003/011/012/016
B110/B101AUTHORS: Yarofeyev, B. V., Naumova, S. F., Kulevskaya, I. V., Mardukin,
V. P., Tsykalo, L. G.TITLE: Polymerization of ethylene in the presence of the triethyl
aluminum anisolate and titanium tetrachloride complexPERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 11, 1961, 1705
- 1707

TEXT: Initiators from triethyl aluminum anisolate (A) and $TiCl_4$ (T) for ethylene polymerization have low self-inflammability. The authors studied the properties of polyethylene (PE) produced with them, and the effect of the A:T ratio on its properties. The $Al(C_2H_5)_3 \cdot CH_3OC_6H_5$ was prepared by reaction of bromo ethyl with Mg-Al alloys (40% Al; 60% Mg in anisole). 1.0 mole/liter of A (boiling point $97 - 105^\circ C/4-5$ mm Hg) was dissolved in n-heptane. The $TiCl_4$ concentration in n-heptane was 0.4 moles/liter. Ethylene was pressed into the reaction vessel at 12 liters/hr. At first n-heptane, after this $TiCl_4$ in n-heptane, and then, during 1 min, A in
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Polymerization of ethylene in the...

S/190/61/003/011/012/015
B110/B101

n-heptane were added. After 20 min, PE was precipitated by means of CH_3OH with 3% HCl . The tabulated values were found under atmospheric pressure at 30°C . The density determined in water-alcohol mixture was 0.95 - 0.97. With increasing A:T ratio and constant T, the molecular weight of PE drops. Then, the amount of A determines the number of resulting polymer macromolecule chains. The A:T ratio was < 1 in tests 1 - 5, and 1.6 in test 6. While PE obtained by means of triisobutyl aluminum and TiCl_4 (Ref. 5, see below) had molecular weights of 67,000 - 940,000 and melting temperatures of $116 - 139^\circ\text{C}$, the molecular weights of the authors' PE were 91,000 - 316,000, the melting temperatures $127 - 130^\circ\text{C}$. The decrease of the molecular weight with decreasing Al-compound: TiCl_4 ratio observed in triisobutyl aluminum polymerization is probably due to the high excess of the former. Thus, the TiCl_4 amount determines the number of resulting polymer chains. There are 1 table and 5 non-Soviet references. The two references to English-language publications read as follows: Ref. 2: A. Grosse, J. Mavity, J. Org. Chem., 5, 106, 1940; Ref. 5: E. Badin, J. Amer. Chem. Soc., 80, 6845, 1958.

Card 2/3

Polymerization of ethylene in the...

S/190/61/003/011/012/016
B110/B101

ASSOCIATION: Institut fizikoorganicheskoy khimii AN BSSR (Institute of Physical and Organic Chemistry AS BSSR)

SUBMITTED: December 26, 1960

Table. Ethylene polymerization.

Legend: (1) test no.; (2) amount of initiator components; (3) millimoles; (4) polyethylene yield, g; (5) molecular weight; (6) melting point, °C.

① Опыт, №	② Количество компонентов инициатора			④ Выход полиэтилена, г	⑤ Молекулярный вес	⑥ Т. пл., °C
	③ А, ммоль	Т, ммоль	А/Т			
1	1,23	0,0	0,21	1,37	110 000	128
2	2,47	0,0	0,41	1,98	250 000	130
3	3,70	0,0	0,62	2,60	180 000	127
4	3,51	5,0	0,70	2,34	---	---
5	4,95	0,0	0,82	2,89	91 000	130
6	6,57	4,0	1,64	2,52	91 000	130

Table

Card 3/3

S/844/62/000/000/122/129
D207/D307

AUTHORS: Yerofeyev, B. V. and Protashchik, V. A.

TITLE: Effect of Co^{60} on the rate of decomposition of cobalt formate

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 703-708

TEXT: The effect of introduction of Co^{60} into cobalt formate on the rate of its thermal decomposition at 218°C was investigated manometrically in (initially) $\sim 10^{-5}$ mm Hg vacuum. Tests were carried out after storage periods ranging from 9 to 44 days and the decomposition runs took from 85 to 250 min. At the end of a decomposition test the pressure in the system rose to 0.6 - 0.7 mm Hg. Three samples were used: (1) free of Co^{60} ; (2) containing 0.71 mc of Co^{60} /g, and (3) containing 1.42 mc of Co^{60} /g. The decomposition
Card 1/3

Effect of Co^{60} ...S/844/62/000/000/122/129
D207/D307

curves of the three samples were all S-shaped. The times taken to reach the maximum decomposition velocity (the points of inflexion on the S-curves) practically coincided with the times necessary to decompose half the sample ($\tau_{1/2}$). The times $\tau_{1/2}$ for the samples containing Co^{60} were considerably shorter than for sample 1. The value of $\tau_{1/2}$ for sample 1 increased a little with the duration of storage before tests while $\tau_{1/2}$ for the samples with Co^{60} increased considerably after long storage. Differences in the maximum velocities of the composition between the three samples were considerably smaller than the differences between the values of $\tau_{1/2}$. The following topokinetic equation described the decomposition process:

$$\alpha = 1 - \exp(-kt^n), \quad (1)$$

where α is the decomposed proportion of the sample, t is the time, and n and k are constants (n varied from sample to sample). The

Card 2/3

Effect of Co⁶⁰ ...

S/844/62/000/000/122/129
D207/D307

above equation was obeyed for values of α from 0.07 to 0.95. This equation is discussed in terms of the composition mechanism which occurs via electron transfer from formate ions to electron traps such as anion vacancies. There are 4 figures.

ASSOCIATION: Institut fiziko-organicheskoy khimii AN BSSR (Institute for Physico-Organic Chemistry, AS BSSR)

Card 3/3

YEROFEYEV, B.V.; BEL'SKAYA, R.I.

Experimental methods of dehydrogenation of isopropyl alcohol in
a fluid-bed catalyst. *Kin.i kat.* 3 no.4:550-555 JI-Ag '62.
(MIRA 15:8)

1. Institut fiziko-organicheskoy khimii AN BSSR.
(Isopropyl alcohol) (Dehydrogenation) (Catalysts)

8/250/62/006/005/007/007
1001/1002

AUTHORS: Yerofeyev, B. V., Naumova, S. F. and Tyskalo, L. G.

TITLE: Formation of benzene in thamic polymerization of cyclohexadiene-1,3

PERIODICAL: Akademiya nauk Belaruskay SSR. Doklady, v. 6, no. 5, 1962, 313-315

TEXT: This is a continuation of a previous work on polymerization of cyclohexadiene-1,3 at temperatures 160°-200°C (B. V. Yerofeyev, S. F. Naumova, L. G. Tyskalo, Sb. nauchnykh trudov IFOKh, no. 9, 1961). In the present work the spectrophotometric investigation was applied to monomers obtained in experiments with different degrees of polymerization at various temperatures. It was established, that in the process of the chemical changes of cyclohexadiene-1,3 dimerization and polymerization to higher degrees are accompanied by a disproportionation. A formula is given for calculation of the amount of benzene in the monomeric products. There are 2 figures and 1 table.

ASSOCIATION: Institut fiziko-organicheskoy khimii AN BSSR (Institute of Physical-Organic Chemistry AS BSSR)

SUBMITTED: February 28, 1962

Card 1/1

YEROFEYEV, B.V.; SOROKO, T.I. (Minsk)

New type of dependence of the autooxidation rate of cumene on the initiator concentration. Zhur.fiz.khim. 36 no.8:1717-1722 Ag '62. (MIRA 15:8)

1. Institut fiziko-organicheskoy khimii AN BSSR.
(Cumene) (Oxidation)

S/020/62/147/001/016/022
B106/B101

AUTHORS: Yerofeyev, B. V., Academician, AS BSSR, Naumova, S. F.,
Tsykalo, L. G.

TITLE: Products containing an odd number of monomer links, which
form on the thermal polymerization of cyclohexadiene-1,3

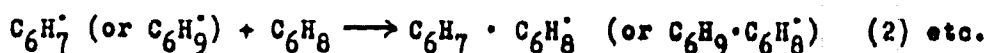
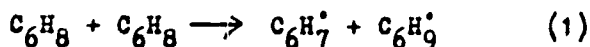
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 1, 1962, 106-107

TEXT: Monomer products contained in the crude polymerizate were spectro-
photometrically studied in order to clarify the mechanism which underlies
thermal polymerization of 1,3-cyclohexadiene. The content of a trimer
product in the liquid portion of the polymerizate was determined. The
monomer products contained $16.1 \pm 3.9\%$ benzene after an 8-hour polymeriza-
tion at 180°C , and $21.8 \pm 5.1\%$ benzene after 10 hrs. After 2, 10, and 40
40 hrs polymerization at 200°C , the monomer products contained 47.1, 40.4,
and 23.5% benzene respectively. At polymerization temperatures of 140,
150, and 160°C no benzene resulted. The molecular weight of the liquid
part of the polymer, separated by methanol, was determined cryoscopically
in order to calculate the amount of trimer in the polymerizate. The
resulting values (160-240) indicate that the liquid part of the polymer
Card 1/3

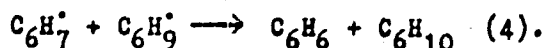
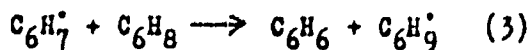
Products containing an odd ...

S/020/62/147/001/016/022
B106/B101

contained only dimer and trimer. The trimer percentage α changes between 0.6% (10-hr polymerization at 140°C) and 11.1% (70-hr polymerization at 160°C). The results show that active monomer radicals form on thermal polymerization of 1,3-cyclohexadiene, which either add to a dimer so as to produce a trimer, or else disproportionate into benzene. The first stages of polymerization are: ✓



Disproportionation may occur simultaneously with reaction 2:



The polymerization mechanism assumed by P. S. Shantorovich and I. A. Shlyapnikova (Vysokomolek. soyed., 4, 1369 (1961)) which first yields dimer biradicals recombining into the polymer, is therefore impossible. There

Card 2/3

Products containing an odd ...

S/020/62/147/001/016/022
B106/B101

is 1 table.

ASSOCIATION: Institut fiziko-organicheskoy khimii Akademii nauk BSSR
(Institute of Organic Physical Chemistry of the Academy of
Sciences BSSR)

SUBMITTED: June 4, 1962

Card 3/3



YEROFEYEV, Boris Vasil'yevich; SOKOLOVA, Natal'ya Dmitriyevna;
KACHEVA, T., red.; ATLAS, A., tekhn. red.

[Tables for calculations involving the topokinetic equation $\alpha = 1 - \exp(-kt^n)$] Tablitsy dlia raschetov po topokineticeskomu uravneniu $\alpha = 1 - \exp(-kt^n)$. Minak, Izd-vo AN BSSR, 1963. 131 p. (MIRA 17:2)

YEROFEYEV, E.V. [Erafecu, B.V.]; ZHAVNERKO, K.A. [Zhaunerka, K.A.]

Kinetics of the initiated liquid-phase oxidation of cyclohexanol.
Vestsi AN BSSR. Ser. fiz.-tekh. nav. no.3:51-58 '63. (MIRA 16:10)

PERIODICAL: Doklady Akademii nauk SSSR, v. 7, no. 3, 1963, 170 - 173

TEXT: The temperature dependence of the compressibilities of polystyrenes of the molecular weights of 1,000, 4,100, 7,300, 23,900, 37,000, 141,000, and 613,900, and of the poly- α -methyl styrenes of the molecular weights of 606,000 and 54,800 was measured by way of reducing the pressure in the range from 400 to 200 kg/cm², as described by M.M. Martynjuk and V.K. Semendchenko (Kolloidnyy zhurnal, v. 25, no. 2, 1963). The monomers were subjected to anionic polymeri-

Card 1/3

Compressibility of polystyrene and

8/25/63/001/003/006/006
A099/1126

weight, and at 260° C for poly- α -methyl polystyrene. Thermal destruction of the polymers was 18% on the average, the structures being completely amorphous according to x-ray data. The three highest-molecular polystyrenes and the poly-

where t is given in °C, and

$$-\left(\frac{\partial v}{\partial p}\right)_T = \frac{1}{M} \left(\frac{\partial V}{\partial p}\right)_T \text{ cm}^3/\text{g-atm},$$

with v being the specific volume and V the volume. The corresponding equation for poly- α -methyl styrene with M in excess of 55,000 and temperatures above

Card 2/3

YEROFEYEV, B.V.; KRAVCHUK, L.S.

Chromatographic determination of hydrogen in binary
mixtures of gases. Dokl. AN BSSR 7 no.4:247-250 Ap '63.
(MIRA 16:11)

PROTASHCHIK, V.A.; YEROFEYEV, B.Y.

Determination of the surface of products of the thermal decomposition of KNO_3 by chemisorption of C^{14}O_2 . Dokl. AN BSSR 7 no.5:326-329 My '63. (MIRA 16:12)

1. Institut fiziko-organicheskoy khimii AN BSSR.

YEROFEYEV, B.V.; NAUMOVA, S.F.; MAKSIMOV, T.P.

Kinetics of $TiCl_4$ - induced polymerization of 1,3-cyclohexadiene
in benzene solution. Vysokom. soed. 6 no.4:716-721 Ap '64.
(MIRA 1786)

1. Institut fiziko-organicheskoy khimii AN BSSR.

KHACHATUROV, A.S.; BAZHENOV, N.M. [deceased]; NAUMOVA, S.F.; TSYKALO, L.G.;
YEROMEYEV, B.V.

Nuclear magnetic resonance spectra and structure of oligomers of
1,3-cyclohexadiene. Dokl. AN BSSR 7 no.7:459-463 J1 '63.
(MIRA 16:10)

1. Institut fiziko-organicheskoy khimii AN BSSR i Institut
vysokomolekulyarnykh soyedineniy AN SSSR.

L 01083-67 BWT(m)/BWP(j)/T LJP(c)
ACC NR: AT6031600

GD/EM
SOURCE CODE: UR/0000/64/000/000/0185/0189

AUTHOR: Yerofeyev, B. V.; Shlyk, V. G.; Kazakevich, V. S.

ORG: none

TITLE: Similarity of the initiating action of salts of metals capable of assuming several valences, in autocatalytic oxidation and polymerization. 1. Comparison of the efficiency of carboxylates differing in the hydrocarbon chain length

SOURCE: Geterogennyye reaktsii i reaktsionnaya sposobnost' (Heterogeneous reactions and reactivity). Minsk, Izd-vo Vysshaya shkol, 1964, 185-189

TOPIC TAGS: chemical initiation, polymerization rate, autocatalytic oxidation, cobalt, carboxylate, manganese stearate, lead, stearate, styrene, tetralin hydroperoxide, autocatalysis, chemical valence

ABSTRACT: A study has been made of the effect of carboxylates of metals capable of assuming several valences on the polymerization rate of styrene in the presence of tetralin hydroperoxide. The experiments were conducted with several cobalt carboxylates (formate, acetate, butyrate, caprylate, and stearate), and with manganese or lead stearates. The dependence of the polymerization rate on the hydroperoxide

Card 1/2

L 01083-67
ACC NR: AT6031600

and carboxylate concentration was studied. It was shown that the polymerization rate of styrene, in the presence of hydroperoxide-carboxylate systems, depends both on the nature of the metal and of the anion. The initiating efficiency of the carboxylates increased with the hydrocarbon chain length, that of the metals increased in the order: cobalt < manganese < lead. Thus, the initiating action of the carboxylates considered in polymerization is similar to that in autocatalytic oxidation. A scheme is proposed which explains the initiating action of carboxylates as a result of the substitution of hydroperoxide for acid radicals. Orig. art. has: 3 figures. [B0]

SUB CODE: 07/ SUBM DATE: 12Dec 64/ ORIG REF: 007

Card 2/2 *mt*

L C1082-67 EWP(m)/T/EWP(j) IJP(c) GD/RM

ACC NR: AT6031601

SOURCE CODE: UR/0000/64/000/000/0190/0194

AUTHOR: Yerofeyev, B. V.; Shlyk, V. G.; Bachevskaya, N. P.

JF

ORG: none

B+1

TITLE: Similarity of the initiating action of salts of metals capable of assuming several valences, in autocatalytic oxidation and polymerization. 2. Dependence of the polymerization rate on monomer concentration in the presence of cobalt formate or stearate

SOURCE: Geterogennyye reaktsii i reaktsionnaya sposobnost' (Heterogeneous reactions and reactivity). Minsk, Izd-vo Vysshaya shkola, 1964, 190-194

TOPIC TAGS: ^{chemical} initiation, polymerization, ^{rate} styrene, tetralin hydroperoxide, cobalt stearate

ABSTRACT: A study has been made of the dependence of the polymerization rate of styrene in benzene solutions in the presence of cobalt stearate (formate) on the monomer concentration. The experiments were conducted in the absence of initiators, or in the presence of tetralin hydroperoxide or of the system hydroperoxide-cobalt stearate (or formate). The polymerization rate increased with an increase in the monomer concentration, and to a certain limit with an increase in the stearate concentration. The formate increased the polymerization rate to a lesser degree. It was shown that polymerization of styrene, in the absence of initiators, and in the presence of hydroperoxide alone is a first order reaction. In the presence of the

Card 1/2

L 01082-67

ACC NR: AT6031601

system hydroperoxide—stearate, polymerization was a second order reaction, proving that, in this case, styrene reacted with the stearate rather than with the hydroperoxide. Orig. art. has: 3 figures. [B0]

SUB CODE: 07/ SUBM DATE: 12Dec64/ ORIG REF: 002/ OTH REF: 001.

Card 2/2 vlr

YEROFEYEV, B.V.; PROTASHCHIK, V.A.

New relationship in topokinetic reactions. Dokl. AN BSSR 8
no. 1:39-40 Ja '64. (MIRA 17:5)

1. Institut fiziko-organicheskoy khimii AN BSSR.

NAUMOVA, S.F.; MAKOVETSKIY, M.I.; YEROFEYEV, B.V.

Sulfoacid cation exchanger based on 1,3-polycyclohexadiene.
Dokl. AN BSSR 8 no. 3:161-164 Mr '64. (MIRA 17:5)

1. Institut fiziko-organicheskoy khimii AN BSSR.

YEROFEYEV, B.V., akade. ik; PROTASHCHIK, V.A.

Compensation relation between n and K in topokinetic reactions.
Dokl. AN SSSR 155 no. 3:647-650 Mr '64. (MIRA 17:5)

1. Institut fiziko-organicheskoy khimii AN BSSR. 2. AN BSSR
(for Yerofeyev).

MACHIONIS, Z.A. [Macionis, Z]; **YEROFEYEV, B.V.**

Ratio of Huggins constants for monodisperse and heterodisperse solutions of polystyrene and poly-*d*-methylstyrene. Dokl. AN BSSR 8 no.4:237-240 Ap '64. (MIRA 17:6)

1. Vil'nyusskiy gosudarstvennyy universitet imeni V. Kapsukasa i Belerusskiy gosudarstvennyy universitet imeni Lenina.

YEROFEYEV, B.V. [Erafeev, B.V.]; SHLYK, V.G. [Shlyk, V.H.]; KARASIK, A.S.

Analogy between the initiating action of salts of metals of variable valency in the reactions of oxidation and polymerization. Part 3; Reaction rate as a function of initiator concentration.

Vestsi AN BSSR, Ser. fiz.-tekh. nav. no.3:75-79 '64.

(MIRA 18:2)

YEROFEYEV, B.V. [Erafecu, B.V.]; NAUKOVA, S.F. [Navukava, S.F.]; MAKOVETSKIY,
M.I. [Makavetski, M.I.]

Study of the thermal stability of the IFOKh-1 sulfonated cation
exchanger. Vestsi AN BSSR. Ser. fiz.-tekh. nav. no.4:48-52 '64.
(MIRA 18:3)

IVAN'KOVICH, Ye.F. [Ivan'kovich, I.A.F.]; ZARETSKIY, M.V. [Zar'etski, M.V.];
YEROFSEYEV, B.V. [Erafesou, B.V.]

Spinels as carriers of catalysts for n-hexane aromatization.

Vestnik AN BSSR, Ser. khim. nav. no. 2:5-9 '65.

(MIRA 18:12)

NAUMOVA, S.F. [Navumava, S.F.]; SLOBOECHIKOVA, L.K. [Slabodchykava, L.K.];
YEROPEYEV, B.V. [Erafeeu, B.V.]

Epoxy resin based on poly-1,3-cyclohexadiene. Vestsi AN BSSR.
Ser.khim.nav. no.2:10-15 '65.

(KIRA 18:12)

YEROFEYEV, B.V.; NIKIFOROVA, N.V.; IVAN'KOVICH, Ye.F.; NIKOLAI, Ye.S.

Stability of copper and chromium atoms on carbon, and their catalytic activity. Vestnik AN BSSR. Ser. khim. nauk, no. 2:1966-1967, 165. (MIAS 28412)

YEROFEYEV, B.V., akademik; NAUMOVA, S.F.; TSYKALO, L.G.

Chromatographic separation of 1,3-cyclohexadiene oligomers. Dokl.
AN SSSR 163 no.4:882-886 Ag '65. (MIRA 18:8)

1. Institut fiziko-organicheskoy khimii AN BSSR. 2. AN BSSR (for
Yerofeyev).

KRAVCHUK, L.S.; POZNYAK, A.L.; YEROFEYEV, B.V.

Electron paramagnetic resonance signal in a bright blue modification of anhydrous copper formiate. Zhur. strukt. khim. 6
no. 4:3645-647 J1-Ag '65 (MIRA 19:1)

1. Institut fiziko-organicheskoy khimii AN BSSR i Belorusskiy gosudarstvennyy universitet imeni V. I. Lenina, Minsk. Submitted December 7, 1964.

MACHIONIS, Z.A.; YEROFEYEV, B.V.

Viscosity of solutions of two-component mixtures of polymer homologs (as exemplified by polystyrene and poly-~~p~~-methylstyrene homologs. Dokl. AN BSSR 8 no.10:657-660 0 '64.

(MIRA 18:3)

1. Vil'nyusskiy gosudarstvennyy universitet im. V.Kapsukaca i Belorusskiy gosudarstvennyy universitet im. V.I.Lenina.

YEROFEYEV, B.V.; OSIPENKO, I.F.; DOROSHKEVICH, M.N.; ARAPOVA, L.D.;
BIRUL'CHIK, T.N.; ROZENBERG, A.Ya.; ZERNOVA, N.M.; ZVIZZHOV,
V.V.; KATSEVA, N.N.

Antiblock composition for cellophane. Khim. volok. no.4:64-66
'64 (MIRA 18:4)

1. Institut fiziko-organicheskoy khimii AN BSSR (for Yerofeyev,
Osipenko, Doroshkevich, Arapova, Birul'chik). 2. Mogilevskiy
zavod iskusstvennogo volokna (for Rozenberg, Zarnova, Zvizzhov,
Katseva).

YEROFEYEV, B.V.; YEMEL'YANOV, N.P.; BEL'SKAYA, R.I.; LARYUTINA, E.A.

Two new methods of preparing 1-cyclohexen-3-one. Dokl. AN BSSR
8 no.11:720-722 N '64. (MIRA 18:3)

1. Institut fiziko-organicheskoy khimii AN BSSR.

5
18.3100A

S/136/61/000/001/002/010
E193/E583

AUTHORS: Parfanovich, B. V., Gnedin, I. I. and Terofeyev, D. I.

10
TITLE: Methods of Suspension of Continuous Self-Baking
Electrodes in Cells for Electrolytic Extraction of
Aluminium

PERIODICAL: Tsvetnyyo metally, 1961, No. 1, pp. 48-52

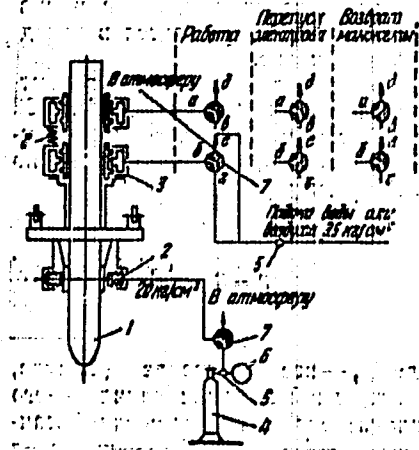
15
20
25
30
TEXT: For the last 25 years, the most widely used system of
suspension of self-baking electrodes, has been the "Wisdom" system,
based on the application of a band-brake mechanism. In addition to
other short-comings, this system is manually operated and, as such,
does not lend itself to automation. A system, developed recently
both in the Soviet Union ("Gipronikel" and "Giprostal" Institutes)
and in Germany (Demag), and based on the application of pneumatic-
ally operated, split steel bushings with rubber-coated working
surfaces, is free from these disadvantages. The principle of this
system is illustrated in the figure reproduced below which shows:
1 - electrode; 2 - bellows-operated clamps of the current leads;
3 - split bushings with pressurized rubber tyres; 4 - air cylinder;
5 - pressure regulator; 6 - pressure gauge; 7 - 3-way valves;
8 - springs. (The insert in the right-hand corner of the illustra-
Card 1/4

S/136/61/000/001/002/010
E193-E583

Methods of Suspension of Continuous Self-Baking Electrodes in Cells for Electrolytic Extraction of Aluminium

illustration shows the position of the 3-way valves (1) when the electrode is stationary, (2) when it is being lowered down, and (3) when the top split bushing is being returned to its original position).

Fig. 2



Card 2/4

S/136/61/000/001/002/010
E193/E583

Methods of Suspension of Continuous Self-Baking Electrodes in Cells for Electrolytic Extraction of Aluminium

During normal operation of the cell, the electrode is stationary, being held in position by the two split bushings, pressed firmly against the upper part of the electrode shell by the action of the pressurized rubber tyres. In order to lower the electrode into the bath, pressure in the bottom tyre is released and the electrode, gripped by the upper bushing only, slides down under its own weight until its movement is arrested by stops incorporated in the bottom bushing. The lower bushing is then made to grip the electrode by applying pressure to its tyre, pressure in the tyre of the upper bushing is released, and the upper bushing is returned by the action of the springs to its initial position, preparatory to the next lowering operation. An empirical formula for the force, required to grip the electrode of a given size, has been derived by the present authors, and a table has been compiled, giving the main characteristics (dimensions of the split bushings, pressure in the rubber tyres and bellows, etc.) of the mechanism discussed for electrodes ranging in size from 650 to 1400 mm

Card 3/4

S/136/61/000/001/002/010
E193/E583

Methods of Suspension of Continuous Self-Baking Electrodes in Cells
for Electrolytic Extraction of Aluminium

in diameter. There are 2 figures, 1 table and 3 references:
2 Soviet (1 a translation) and 1 non-Soviet.

ASSOCIATION: VAMI, Gipronikel'

Card 4/4

PARFANOVICH, B.V.; GNEDIN, I.I.; YEROFEYEV, D.I.

Self-baking electrode suspension systems. TSvet. mat. 34 no.1:
48-52 Ja '61. (MIRA 17:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy allyuminiyavo-magniyevyy
institut i Nauchno-issledovatel'skiy i proyektnyy institut "Gipro-
nikel".

YEROFEEV, G. N.

③ Fuel

Fuel Abst.
Vol. 14 No. 4
Oct. 1953
Natural Solid
Fuels: Winning

2854 Work of Uka-Tum Machines in Chistoe Peat Works During Season. Lempert, E. N. and Erofeev, G. N. (Torf. Prom. (Peat Ind., Moscow), Apr. 1952, 4-8; abstr. in Peat Abstr., 1 Feb. 1953, n.s.8, 14). Figures are given for the collection and drying of hydro-peat.

YEROFEYEV, I.

"Countries of the world; concise economics manual." Reviewed by
I. Erofeev. Geog. v shkole 26 no.1:92-93 Ja-F '63.
(MIRA 16:5)

YEROFEYEV, Igor' Aleksandrovich; SARKISOV, M.A., red.; SAFRONOVA, I.M.,
tekhn. red.

[Blood transfusion in a polyclinic; practices of the Leningrad
City Blood Transfusion Station] Perelivanie krovi v usloviakh
polikliniki; opyt Leningradskoi gorodskoi stantsii perelivaniia
krovi. Leningrad, Medgiz, 1962. 50 p. (MIRA 16:2)
(BLOOD--TRANSFUSION)

ACCESSION NR: AP4012528

J/0056/64/046/001/0099/0105

AUTHORS: Trebukhovskiy, Yu. V.; Yerofeyev, I. A.; Tikhomirov, G. D.

TITLE: Investigation of inelastic collisions between 2.8 BeV/c negative pions and protons

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 99-105

TOPIC TAGS: pion proton interaction, pion proton collision, inelastic pion proton collision, Rho meson, mass deficit, residual mass, momentum transfer

ABSTRACT: The reaction $\pi^- + p \rightarrow p + \pi^- + \pi^0$ with 2.8 BeV/c pions on hydrogen was investigated in a 17-liter propane-xenon bubble chamber. The production of a ρ meson is demonstrated, with a cross section $\sigma = 0.30 \pm 0.07$ mb in the momentum-transfer region 0.2--0.4 BeV/c. The distribution relative to the residual masses shows a peak at $M_x = 1.00 \pm 0.01$ BeV with a half width 60 ± 20 MeV, cor-

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ACCESSION NR: AP4012528

responding to a final state π^- , π^0 , π^0 . The isospin of this state is $T \geq 1$ and the cross section is $\sigma = 0.16 \pm 0.05$ mb in the range of momentum transfer to the proton 0.2--0.4 BeV/c. "The authors are grateful to the operating crew of the ITEP accelerator and to the scanning crew of the ITEP for collaboration in the work; to Academician A. I. Alikhanov for suggesting the problem and for critical analysis of the results; to V. V. Vladimirskiy and B. L. Ioffe for a discussion of the results and for critical remarks; to V. A. Kolkunov for calculation of the phase curves; to V. V. Barmin, Yu. S. Krestnikov, A. G. Meshkovskiy, A. G. Dolgolenko, and V. A. Shebanov for help with the work and for a discussion of the results." Orig. art. has: 7 figures and 3 formulas.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki
(Institute of Theoretical and Experimental Physics)

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YEROFEYEV, I.A.

Construction of ~~an optical~~ system for clear channel operation.
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MUZAFAROV, Valay Galayevich; YEROFEYEV, I. A., red.; NATAL'OV, M. I., tekhn. red.

[Guide to minerals and rocks; manual for students in pedagogical institutes] *Opređitel' mineralov i gornykh porod; posobie dlia studentov pedagogicheskikh institutov. Izd. 3. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. BSFSR, 1952. 172 p. (MIRA 11:7)*
(Mineralogy--Classification)
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HAGORNYY, B.A.; YEROFYEV, I.A., red.; FEDOTOVA, A.F., tekhn. red.;
POKMANOVA, A.A., tekhn. red.

[Interesting questions in geography, manual for extra-curricular work.] Zanimatel'nye voprosy po geografii; posobie dlia vnsklassnoi raboty. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1958. 149 p. (MIRA 11:10)

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tekhn.red.

[The Chinese People's Republic; from practice in preparing
geography lessons for the 8th grade] Kitaisknaia Narodnaia
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BOGOYAVLENSKIY, Georgiy Pavlovich; YEROPHEEV, I.A., red.; DRANNIKOVA,
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I. A. red.; TULYAKOVA, N.I., red.kart; TSYPO, R.V.,
to.kn.red.

[Countries of southwestern Asia and North Africa; economic-
geographical survey. Textbook for teachers] Strany Iugo-
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red.; DRANNIKOVA, M.S., tekhn. red.

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KOZLOV, Mikhail Vasil'yevich; SMIRNOVA, N.P., red.; YEROFEEV, I.A., red.; ZAYTSEVA, K.F., red. kart; KARPOVA, T.V., tekhn. red.

[Economic geography; concise textbook for teachers] Ekonomicheskaya geografiya; kratkoe posobie dlia uchitelia. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1961. 238 p. (MIRA 14:8)

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MINTS, Aleksey Aleksandrovich; MALAYEVA, S.L.; RYAZANTSEV, S.N., otv. red.; YEROFEYEV, I.A., red.; KONOVALYUK, I.K., mladshiy red.; GOLITSYN, A.V., red. kart; VILENSKAYA, E.N., tekhn. red.

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OVDIYENKO, Ivan Kharitonovich; ZAYCHIKOV, V.T., doktor geogr. nauk,
prof., retsenzent; YEROFEYEV, I.A., red.; BORISKINA, V.I.,
red. kart; KARPOVA, T.V., tekhn. red.

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BANDMAN, M.K.; BUYANTUYEV, B.R.; POMUS, M.I.; RADNAYEV, G.Sh.;
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V.G.; TIKHONOV, A.V.; NEDESHEV, A.A.; SIMANOVSKIY, G.M.;
SHAKHUNOVA, P.A.; SHOTSKIY, V.P.; YEROFEYEV, I.A., red.;
POLOZHENTSEVA, T.S., mladshiy red.; GOLITSIN, A.B., red.
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Achievements of the national economy of the U.S.S.R. during
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YEROFYEV, I.

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TREBUKHOVSKIY, Yu.V.; YEROFFEYEV, I.A.; TIKHOMIROV, G.D.

Study of inelastic interactions in collisions between 2.8 Bev./c.
 γ^- -mesons and protons. Zhur. ekaper. i teor. fiz. 46 no.1:
99-105 Ja'64. (MIRA 17:2)

1. Institut teoreticheskoy i eksperimental'noy fiziki.

ACCESSION NR: AP4043608

S/0056/64/047/002/0400/0403

AUTHORS: Grigor'yev, V. K.; Grishin, A. P.; Vladimirskiy, V. V.;
Trostina, K. A.; Yerofeyev, I. A.; Tikhomirov, G. D.

TITLE: Investigation of the reaction $\pi^+ + p \rightarrow p + \pi^- + \pi^+ + \pi^-$ at
2.8 BeV energy

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 400-403

TOPIC TAGS: pi meson product, negative pi meson, positive pi meson,
pion scattering, scattering cross section, resonance scattering

ABSTRACT: The experimental material used by Yu. V. Trebukhovskiy
et al. (Phys. Lett., v. 6, 190, 1963) to investigate the reaction
 $\pi^- + p \rightarrow p + \pi^- + \pi^0 + \pi^0$ (1) at a primary pion momentum 2.8 BeV/c,
was used by the authors to analyze the analogous reaction with charged
pions in the final state, namely $\pi^- + p \rightarrow p + \pi^- + \pi^+ + \pi^-$ (2).
About 70% of the photographs (total 30,000) obtained in the earlier

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ACCESSION NR: AP4043608

investigation were used, and 550 events were selected to check the distribution of the latter reaction relative to the three pion mass. The selection criteria are briefly described. The value obtained for the ratio of the cross sections of reaction (2) to that of (1) (0.8 ± 0.4) offers evidence that these reactions are more likely to proceed via three-pion resonance than via formation of ρ and Δ resonances (ρ meson and Δ isobar). The irregularity in the three-pion-mass distribution in the vicinity $0.9\text{--}1.0 \text{ BeV}/c^2$ indicates that three-pion resonance can exist with $T = 1$ or $T = 2$ (T -- isotopic spin). "The authors are grateful to V. A. Shebanov, Yu. S. Krestnikov, and V. V. Barmin for supplying the material, to Yu. V. Trebukhovskiy for participating in the work during its earlier stage and for useful discussion, Ye. M. Lapidus, V. M. Polyakova, and V. N. Lyakhovitskiy for guidance of the mathematical reduction of the measurement data, to the accelerator crew, and to the computer crew for collaboration. Orig. art. has: 4 figures and 8 formulas.

Card 2/5

ACCESSION NR: AP4043608

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki
(Institute of Theoretical and Experimental Physics)

SUBMITTED: 29Jan64

ENCL: 02

SUB CODE: NP

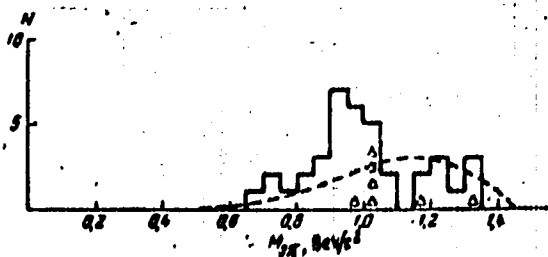
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ACCESSION NR: AP4043608

ENCLOSURE: 01

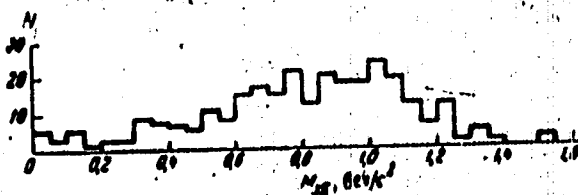


Distribution of events relative to the three-pion mass for the interval between 2.75 and 2.90 BeV. The triangles denote events satisfying the hypothesis $\pi^- + p \rightarrow \Delta^0 + \pi^0 \rightarrow p + \pi^- + \pi^+ + \pi^-$

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ACCESSION NR: AP4043608

ENCLOSURE: 02



Three-pion mass distribution for total energy
larger than 2.90 BeV

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YEROFEYEV I.M.

694. Deposition of High-Speed Steel on a Cutting Tool, (In Russian) I. M. Yefreyev, *Stanki i Instrumenty* (Machine Tools and Equipment), v. 20, Sept. 1949, p. 18-20.

Method applicable to cutting tools of large cross section, formers, and milling cutters. Deposition is accomplished by use of an oxyacetylene flame with different degrees of reducibility. Optimum dimensions of cutting edge and optimum deposition conditions. (124, 78)

METALLURGICAL LITERATURE CLASSIFICATION