ZHIVOV, V. I.

36304 ZHIVOV, V. I. I BORISOV, A. V.
Semenovodstvo (Zernovykh) v krasnoufimskom rayone sverdlovskoy o'lasti.
Selektsiya i semenovodstvo, 1949, No. 11, S. 16-21

SO: Letopis' Zhurnal'nykh Statey, No. 49, 1949

ZHIVOV, V.I., agronom

"Valuable local fertilizers" by N.A.Polianskii. Reviewed by V.I. Zhivov. Zemledelie 23 no.10:92-93 O '61. (MIRA 14:9)
(Fertilizers and manures)

ZHIVOV, V.I., agronom

"Agriculture in the Altai Territory" by G.A.Nalivaiko. Reviewed by V.I.Zhivov. Zemledelie 24 no.2:93-95 F '62. (MIRA 15:3)
(Altai Territory--Agriculture) (Nalivaiko, G.A.)

ZHIVOV, V.I., agronom

"Handbook for the sugar beet grower." Reviewed by V.I.Zhivov.
Zemledelie 24 no.6:94-96 Je '62. (MIRA 15:11)
(Sugar beets)

ZHIVOV, V. S., Cand Phys-Math Sci -- (diss) "Motion of combined systems." Moscow, 1960. 5 pp; (Ministry of Education RSFSR, Moscow Oblast Pedagogical Inst im N. K. Krupskaya); 200 copies; price not given; (KL, 26-60, 130)

ZHIVOV, V.S.

Equilibrium of an imperfect thread on a flat curve. Izv.vys. ucheb.zav.; tekh.tekst.prom. no.6:130-135 '62. (MIRA 16:2)

1. Moskovskiy tekstil'nyy institut.
(Yarn--Testing) (Equilibrium)

ACCESSION NR: AP4033967 S/0140/64/000/002/0079/0081

AUTHOR: Zhivov, V. S.

TITLE: Stability of trajectories

SOURCE: IVUZ. Matematika, no. 2, 1964, 79-81

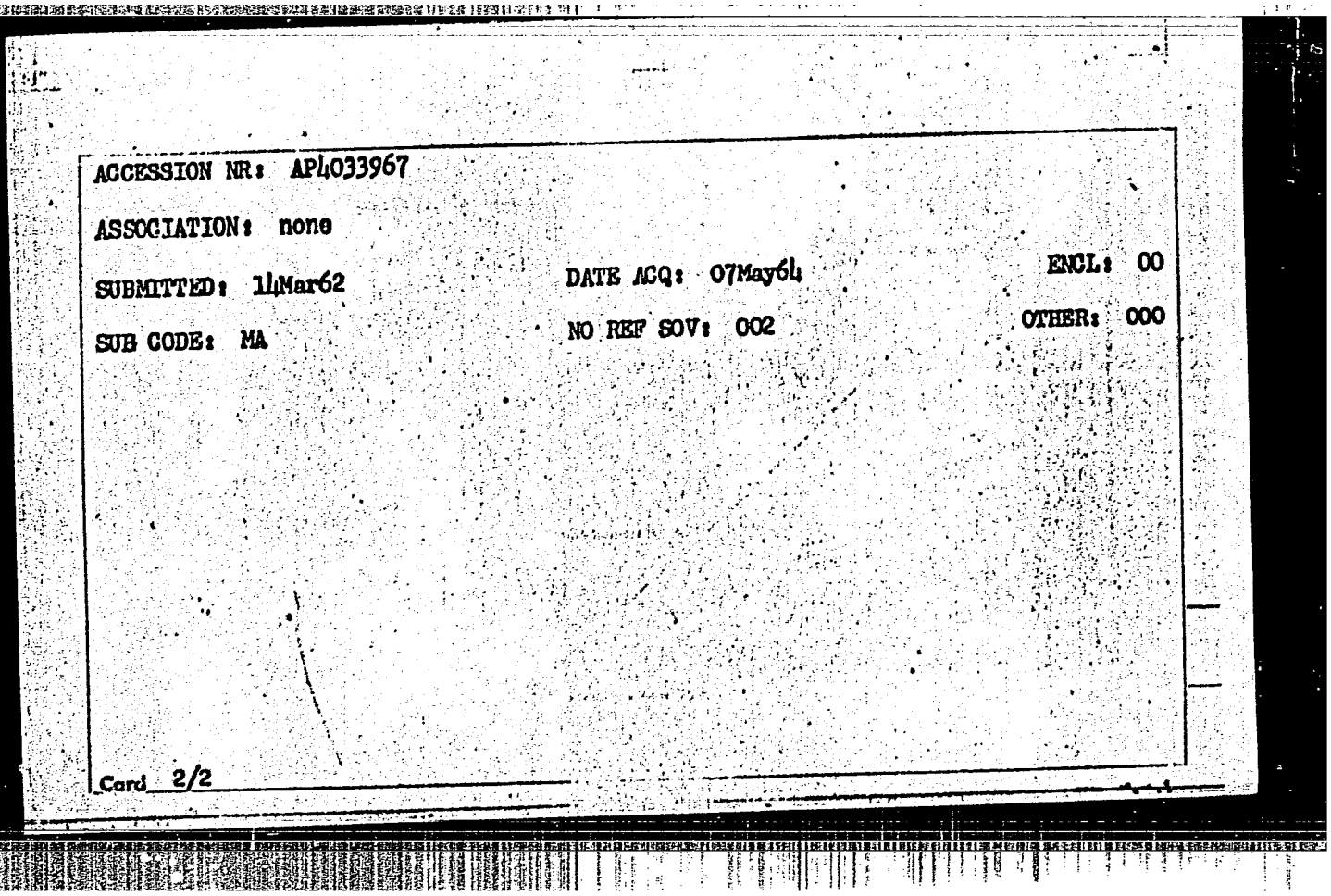
TOPIC TAGS: stable trajectory, asymptotically stable trajectory, Lyapunov zero solution, perturbed integral curve

ABSTRACT: The author gives a reasonable definition of stable and asymptotically stable trajectories; intuitively stability of a trajectory means sufficient closeness of a perturbed integral curve to the unperturbed one. He reduces the study of stability of trajectories of system

$$\frac{dq_i}{dt} = Q_i(t, q_1, \ldots, q_n), \quad i = 1, \ldots, n \qquad (1)$$

to the study of stability of the Lyapunov zero solution of a related system of equations, and gives an example. Orig. art. has: 6 formulas.

Card 1/2



ACCESSION NR: AP4033967

ASSOCIATION: none

SUBMITTED: 14Mar62 DATE ACQ: 07May64 ENCL: 00

SUB CODE: MA NO REF SOV: 002 OTHER: 000

Card 2/2

ZHIVOV, V.S., aspirant

Differential equations of the motion of mechanical systems.
Izv.vys.ucheb.zav.; mashinostr. no.5:3-10 '59.
(MIRA 13:4)

1. Moskovskiy avtomekhanicheskiy institut.
(Differential equations) (Mechanical movements)

BOBORYKIN, S.G., inzh.; ZHIVOV, Ye.S., inzh.

Transfer to a seven-hour working day and regulation of wages for workers in enterprises of the shipbuilding industry. Sudostroenie 25 no.7:35-39 Jl '59. (MIRA 12:12)
(Shipbuilding workers) (Wages)

ZHIVOVA, A.

"Warm snow" by O. Romanchenko, Reviewed by A. Zhivova. IUn. nat. no.6:21 Je '61. (MIRA 14:7)
(Uzbekistan—Cotton)
(Romanchenko, O.)

ZHIVOVA, A.

"Miracles from the trees" by Evgenii Mar. Reviewed by A. Zhivova. IUn. nat. no.9:27 S '61. (MIRA 14:8)
(Trees)
(Mar, Evgenii)

ZHIVOVA, A.

"Winged friends" by German Abramov. Reviewed by A. Zhivova. (MIRA 14:4)
IUn.nat. no.5:28 '61.
(Birds--Habits and behavior)
(Abramov, German)

ZHIVOVA, B.M., assistent

Some results of experimental determination of water losses from the soil. Nauch. zap. MIIVKH 19:134-143 '57. (MIRA 15:3)
(Soil moisture)

ZHIVOYINOV,

B

YUGOSLAVIA / Physical Chemistry. Thermodynamics. Thermochemistry. Equilibriums. Physico-chemical Analysis. Phase Transitions.

Abs Jour: Ref Zhur-Khimiya, No 21, 1958, 70010.

Author : Yovanovich, Zhivoyinov.
Inst : Un-t Beogradu.
Title : A Correlation Between Pressure and Boiling Temperature and Calculation of the Molecular Entropy of Evaporation.

Orig Pub: Zb. Mash. fac. Un-t Beogradu, 1954-55 (1956), 1 ,/59

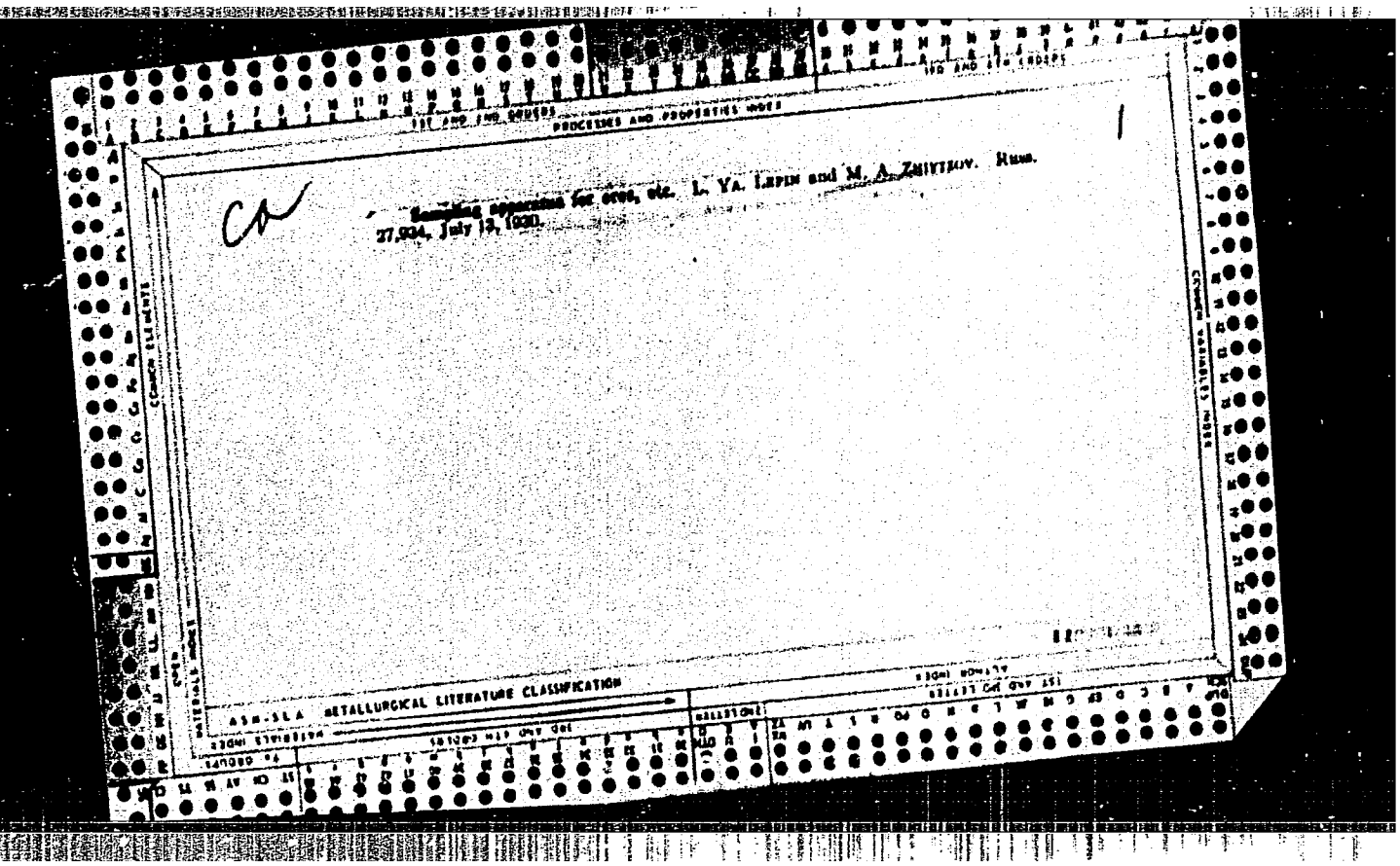
Abstract: See Ref Zhur-Fiz., 1957, 27591.

Card 1/1

ZHIVITSA, I.M.; KOLBIKOV, V.S.

Results of the development of oil fields in Krasnodar Territory involving reservoir pressure maintenance. Geol. nefti i gaza 5 no. 5:18-23 My '61. (MIRA 14:4)

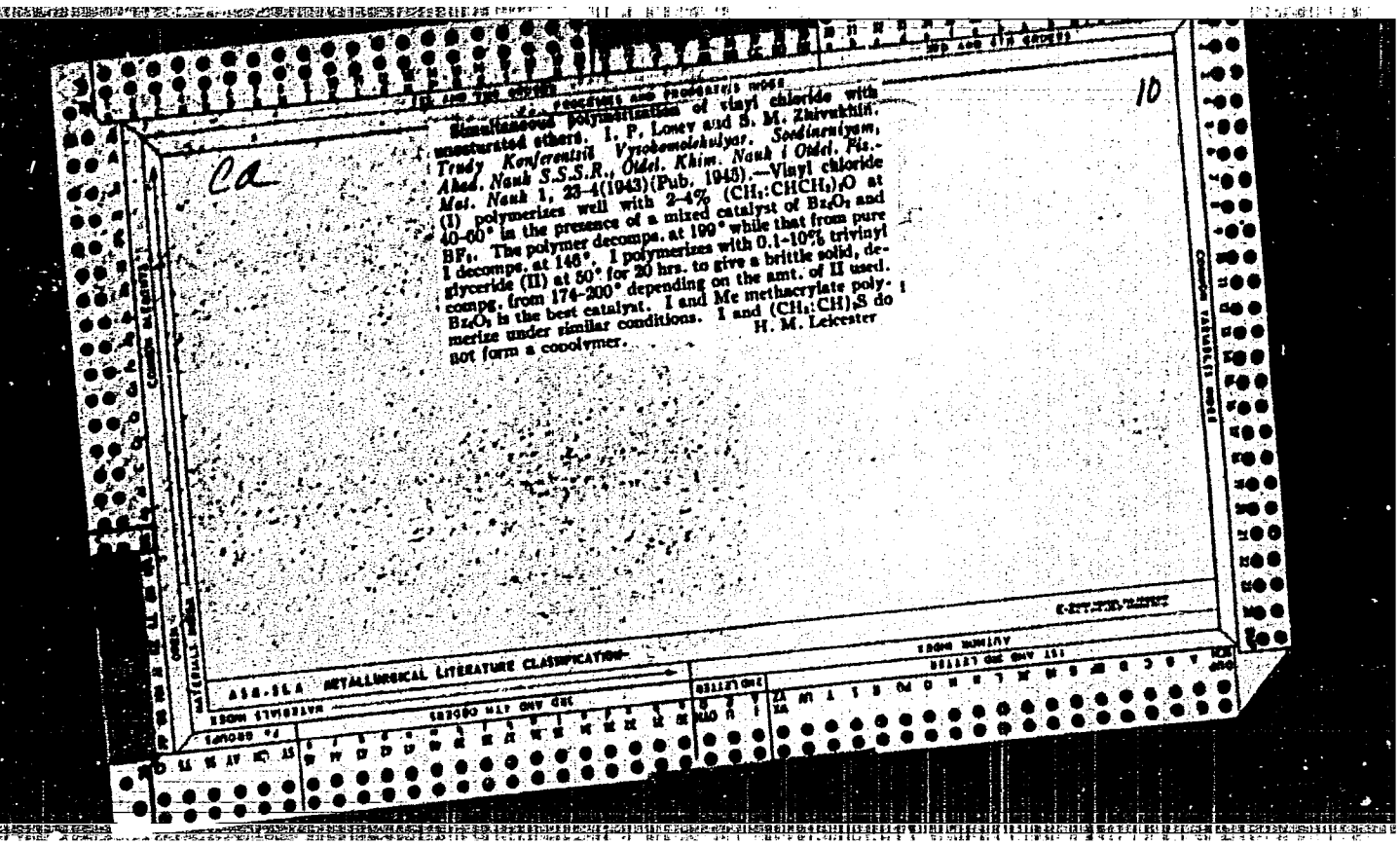
1. Krasnodarskiy filial Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta.
(Krasnodar Territory--Oil fields--Production methods)



DEMIDOV, G.K.; NIKANOROV, A.A.; Prinimali uchastiye: ROZINA, G.D.; ZHIVTSOVA, V.V.

New design of the extruder head. Kauch.i rez. 20 no.7:43-46 Jl '61. (MIRA 14:6)

1. Yaroslavskiy shinnyy zavod. (Rubber machinery)



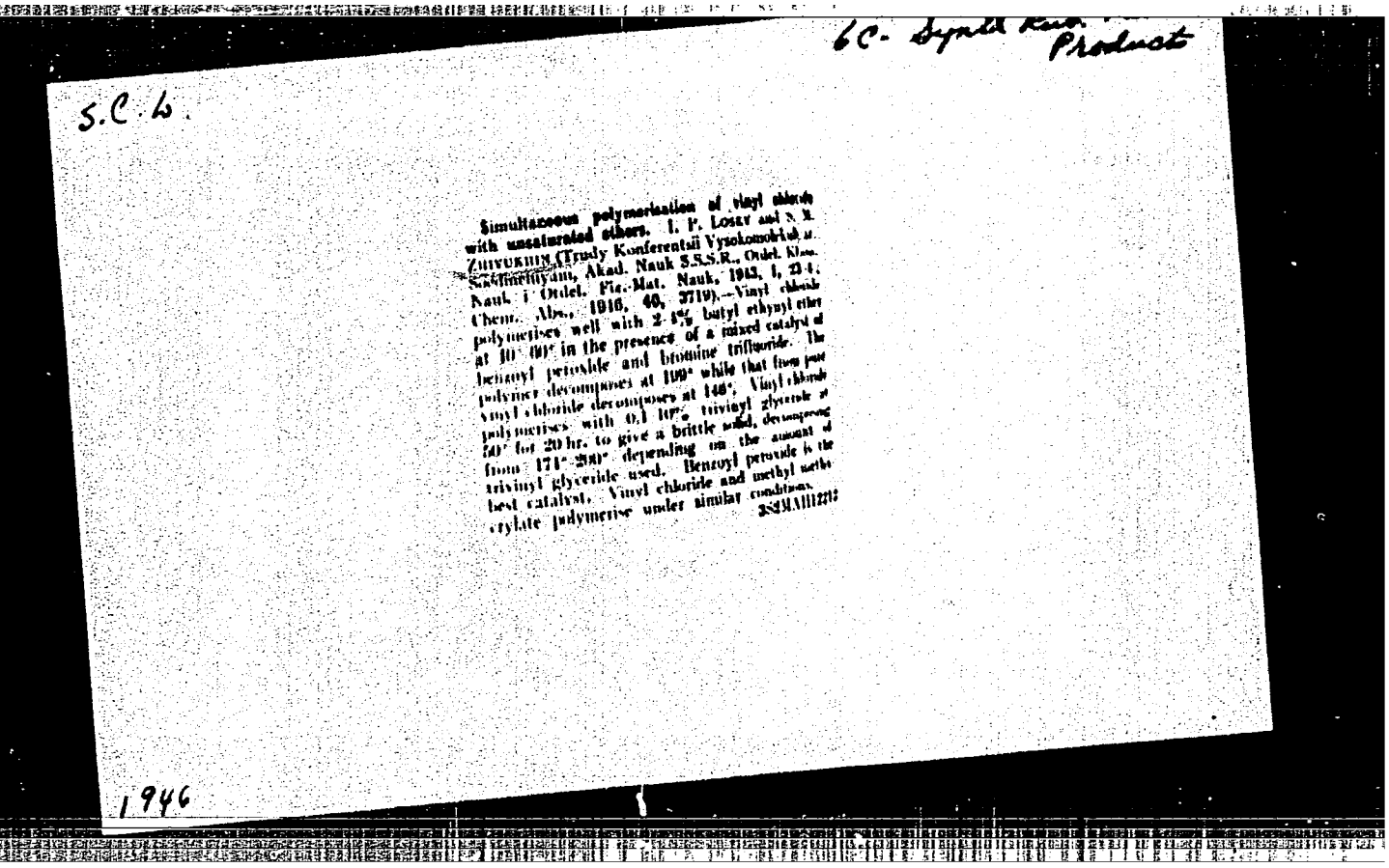
Ca

10

Simultaneous polymerization of vinyl chloride with unsaturated ethers. I. P. Lowy and S. M. Zhivukhin. *Trudy Konferentsii Vysokomolekulyar. Soedinenii, Akad. Nauk S.S.S.R., Otdel. Khim. Nauk i Otdel. Fiz.-Mat. Nauk* 1, 23-4(1943)(Pub. 1945).—Vinyl chloride (I) polymerizes well with 2-4% $(CH_2{:}CHCH_2)_2O$ at 40-60° in the presence of a mixed catalyst of Bz_2O_2 and BF_3. The polymer decomps. at 190° while that from pure I decomps. at 146°. I polymerizes with 0.1-10% trivinyl glyceride (II) at 50° for 20 hrs. to give a brittle solid, decomps. from 174-200° depending on the amt. of II used. Bz_2O_2 is the best catalyst. I and Me methacrylate polymerize under similar conditions. I and $(CH_2{:}CH)_2S$ do not form a copolymer.

H. M. Leicester

A58-61A METALLURGICAL LITERATURE CLASSIFICATION



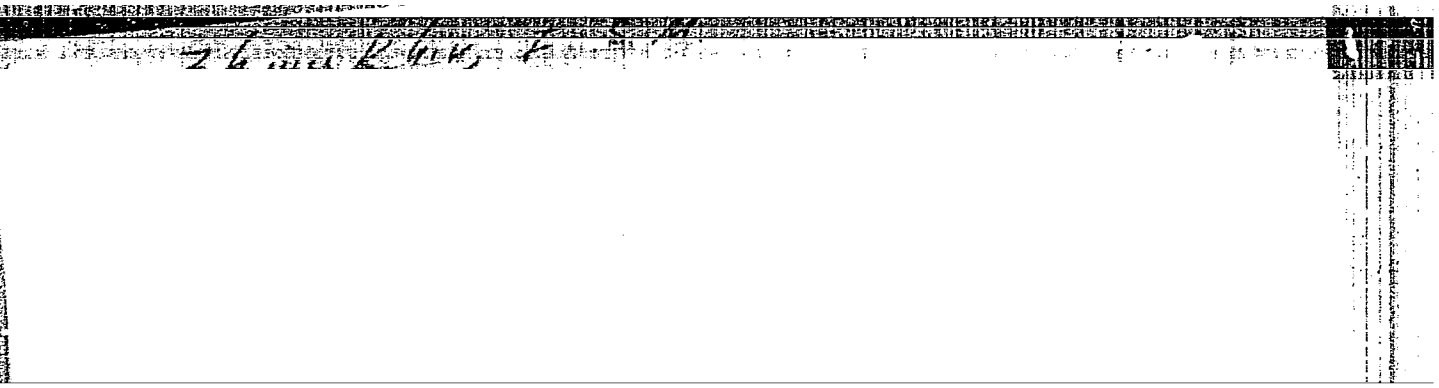
6C- Synth Resin Products

S.C.L.

Simultaneous polymerization of vinyl chloride with unsaturated ethers. I. P. Losev and N. N. Zhivukhin (Trudy Konferentsii Vysokomolekul. Soedinenii, Akad. Nauk S.S.S.R., Otdel. Khim. Nauk i Otdel. Fiz.-Mat. Nauk, 1943, 1, 23-4; Chem. Abs., 1946, 40, 3719).—Vinyl chloride polymerizes well with 2-15% butyl ethynyl ether at 40°-60° in the presence of a mixed catalyst of benzoyl peroxide and bromine trifluoride. The polymer decomposes at 190° while that from pure vinyl chloride decomposes at 148°. Vinyl chloride polymerizes with 0.1 to 5% trivinyl glyceride at 50° for 20 hr. to give a brittle solid, decomposing from 171°-200° depending on the amount of trivinyl glyceride used. Benzoyl peroxide is the best catalyst. Vinyl chloride and methyl methacrylate polymerize under similar conditions.

3:591.1111221

1946



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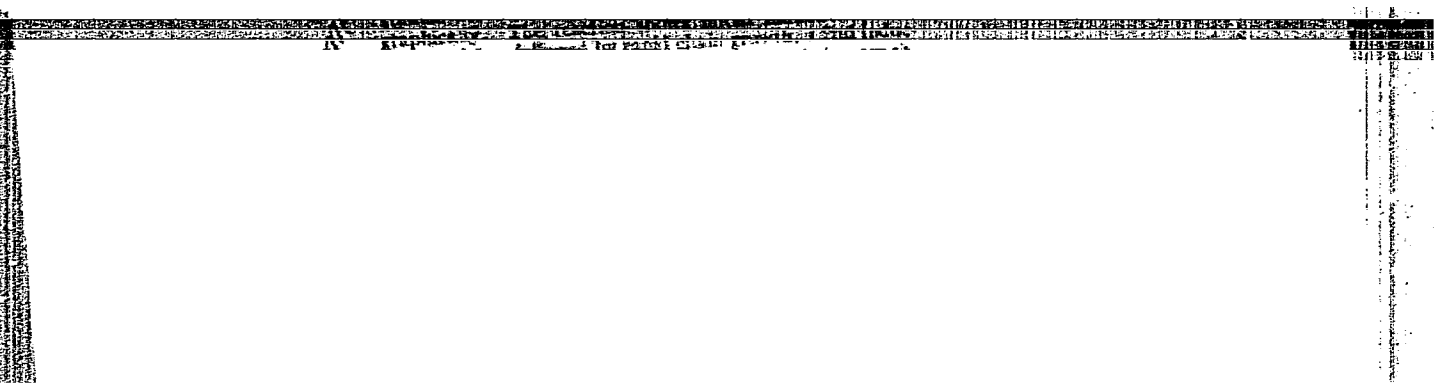

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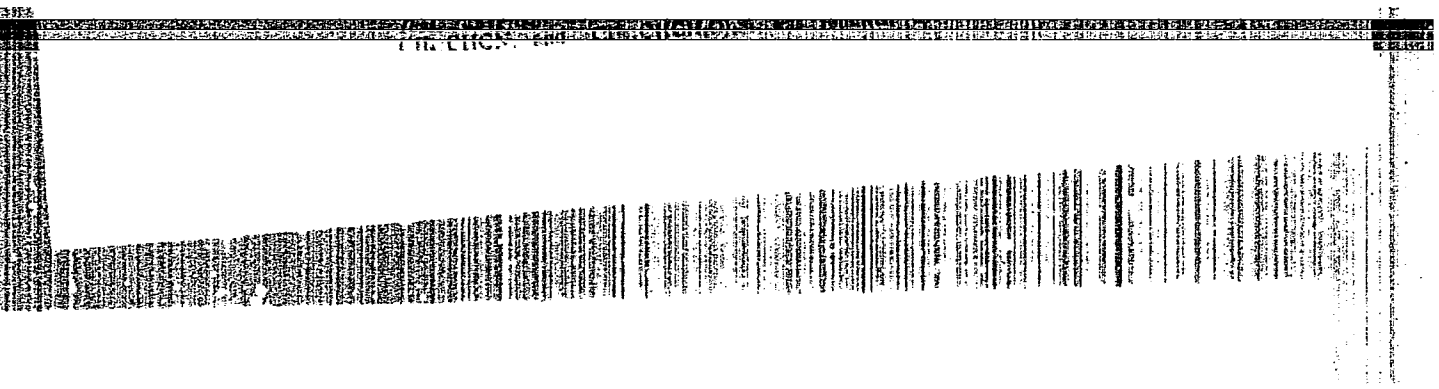

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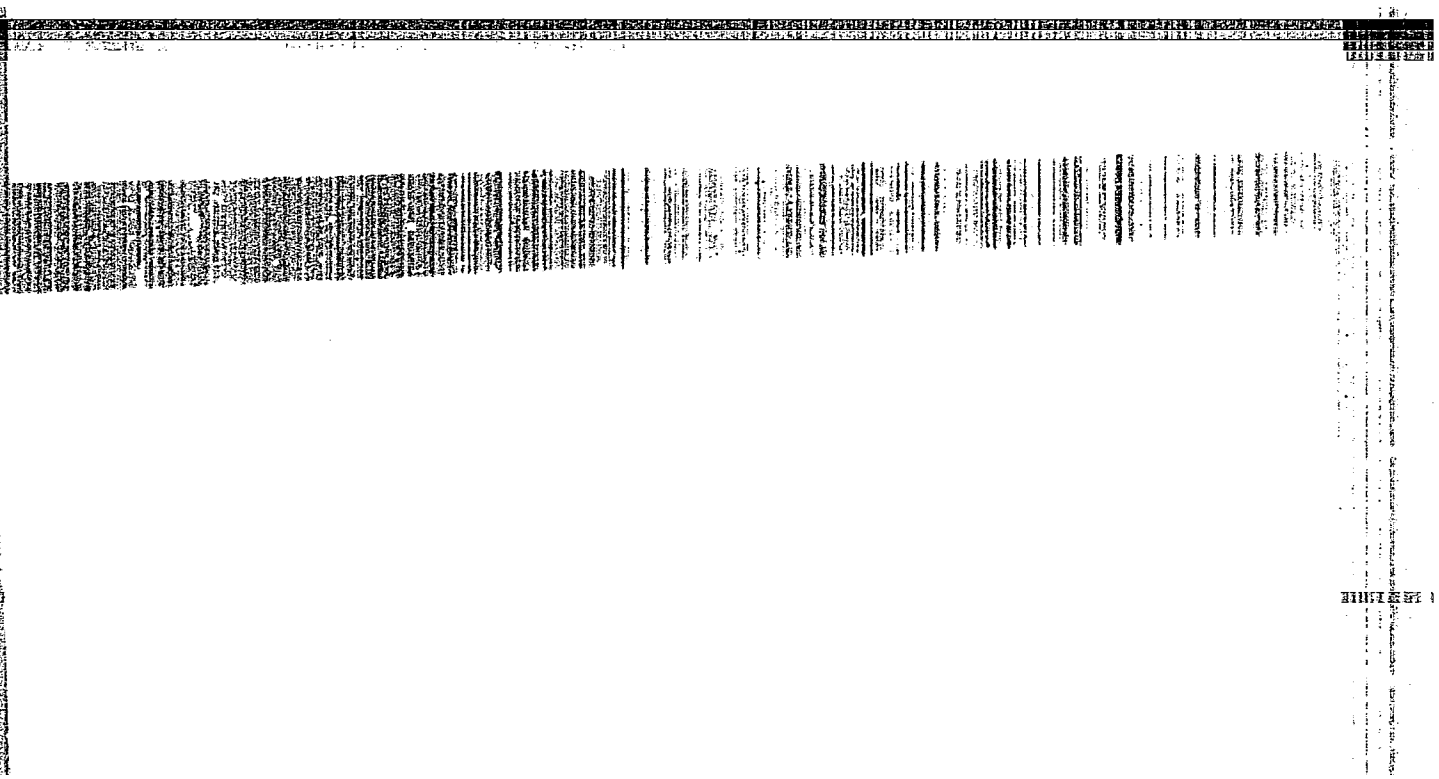

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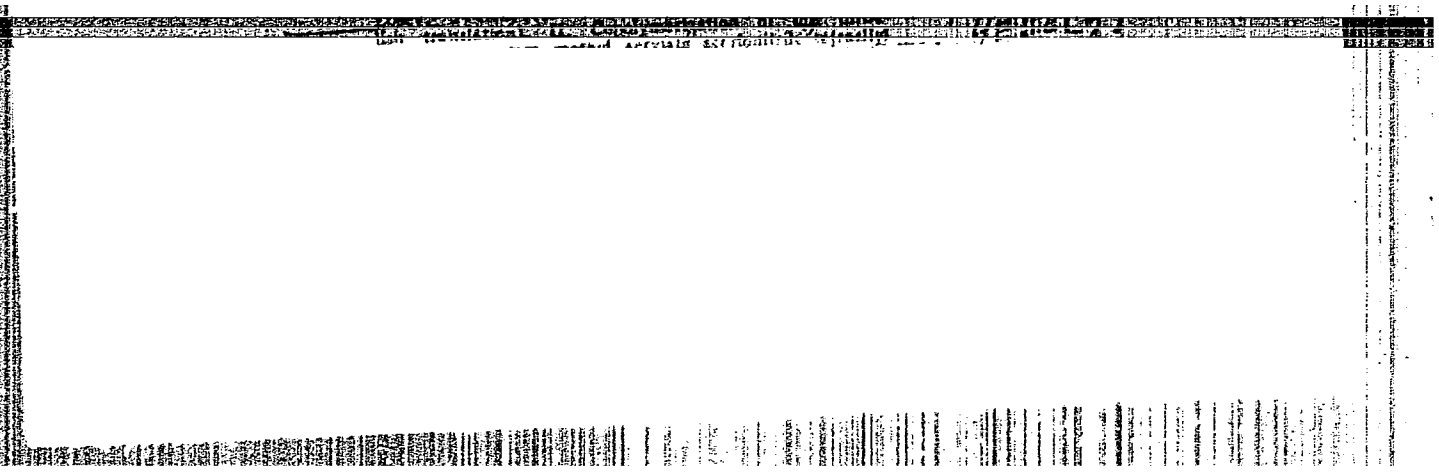

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ZHIVUKHIN, S.M.

ZHIVUKHIN, S.M.; BARKOVA, M.V.; LOSEV, I.P.

Investigation of copolymerization of three-component systems. Part 2: Copolymerization of the three-component system: methyl methacrylate - acrylonitrile - tetraallyl orthosilicate. Zhur. ob. khim. 26 no.8: 2247-2250 Ag '56. (MLRA 10:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.
(Polymerization)

ZHIVUKHIN, S.M.

ZHIVUKHIN, S.M.; BARKOVA, M.V.; LOSEV, I.P.

Investigation of copolymerization of three-component systems. Part 3: Copolymerization of the system methyl methacrylate - acrylonitrile - glycol esters of methacrylic acid. Zhur. ob. khim. 26 no.8:2250-2254 Ag '56. (MLRA 10:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.
(Polymerization)

84354

15.8116 2109, 2209

S/191/60/000/008/005/014
B004/B056

AUTHORS: Zhivukhin, S. M., Dudikova, E. D.

TITLE: Silanols and Their Transformations. Report I. Diphenylsilanediol and Its Transformation

PERIODICAL: Plasticheskiye massy, 1960, No. 8, pp. 23-25

TEXT: The authors first give a brief review of studies on the synthesis and transformations of silanols. They mention papers by N. N. Sokolov, V. A. Astakhin, M. M. Kotton, K. A. Andrianov, and B. N. Breytman, N. S. Nametkin, A. V. Topchiyev and F. F. Machus, M. F. Shostakovskiy, and D. A. Kochkin. The authors aimed at giving a precise description of the conditions for the synthesis of silanols, the study of their transformations and their combination with other organic substances. Diphenylsilanediol, with which the present paper deals, was obtained by the hydrolysis of diphenyldichlorosilane in a mixture of toluene, water and isoamyl alcohol, the best yields being obtained at 0 - 5°C. The melting point of the white diphenylsilanediol crystals fluctuates between 132° and 148°C because of inseparable anhydride forms, and increases to 152°C

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84354
S/191/60/000/008/005/014
B004/B056

Silanols and Their Transformations. Report I. Diphenylsilanediol and Its Transformation

because of condensation when stored for a length of time. The condensation of diphenylsilanediol was carried out at 150°C (molecular weight, 780-4080), 190°C (molecular weight, 2200-4650), and 230°C (molecular weight, 2870-4890). The melting points were between 30° and 60°C. Further, this compound was combined with: 1) with adipic acid (5 h at 190°C; ratio between the components, 1 : 1). The acid number decreased from 331 to 147.5, and a brittle yellowish substance with a molecular weight of 1390 was obtained. 2) With azelaic acid (1 : 1, at 190° and 230°C), a yellow wax-like substance formed which had a molecular weight of 1470. 3) With sebacic acid at 190° and 230°C, a brown wax-like substance was formed. With succinic and glutaric acids no stable products were obtained. The solubility differing from the components and the analyses confirmed the formation of condensates, and not of mixtures of the individual components. There are 16 references: 6 Soviet, 7 US, and 3 German.

Card 2/2

87646

S/191/60/000/012/005/016
B020/B066

15.9209 2209

AUTHORS: Zhivukhin, S. M., Tolstoguzov, V. B.

TITLE: Phosphonitryl Chloride, Its Synthesis, Properties, and Use. Report No.1. Synthesis of Phosphonitryl Chloride

PERIODICAL: Plasticheskiye massy, 1960, No. 12, pp. 14 - 16

TEXT: This is a survey of publications dealing with phosphonitryl chloride (PNC). It polymerizes to give a rubber-like material - a so-called "inorganic rubber". The course of this polymerization, the properties and the application of this material are described in recent publications and patents. PNC was later on obtained from PCl_5 and NH_4Cl, but in poor yields. Yields can be considerably increased when performing the reaction in an autoclave, or using tetrachloro ethane as solvent, or applying a protective layer of NH_4Cl. In some variants of this method, a 52.6% yield of the trimer and a 25% yield of the tetramer, referred to theoretical yields, could be obtained. By means of the two newest methods suggested in 1957 also high yields are obtained. One of them is based

Card 1/2

87646

Phosphonitryl Chloride, Its Synthesis, Properties, and Use. Report No.1. Synthesis of Phosphonitryl Chloride

S/191/60/000/012/005/016
B020/B066

upon the reaction of NH_4Cl with PCl_5 in tetrachloro ethane in the presence of quinoline as catalyst, and yielded 35 - 40% trimer, 55 - 60% heptamer, and 0 - 5% tetramer and other polymers. The other method bases upon the reaction of a solution of PCl_5 in methylene chloride with liquid ammonia, in which a mixture of the trimer and tetramer and 0 - 5% of other polymers were obtained. The physiological properties of the product are given, the principal features of the separation of the polymer homologs and their purification are briefly described. The analytical methods for the resultant products are briefly described, and the results obtained by the laboratory of the kafedra organicheskikh i elementoorganicheskikh vysokomolekulyarnykh soyedineniy, MKhTI imeni Mendeleyeva (Department of Organic and Elemental-organic High-molecular Compounds of the Moscow Institute of Chemical Technology imeni Mendeleyev) with respect to PNC synthesis and the properties of the resultant reaction products are given. There are 47 references: 1 Soviet, 9 US, 12 German, 23 French, 3 British, and 1 Japanese.

Card 2/2

ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.

Phosphonitrile chloride, its production, properties, and uses. Report No.2: Chemical properties of phosphonitrile chlorides. Plast.massy no.4:14-17 '61. (MIRA 14:4)
(Phosphonitrile chloride)

ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.

Phosphonitrile chloride, its preparation, properties, and uses. Report No.3: Practical utilization of phosphonitrile chloride polymers. Plast.massy no.5:26-28 '61. (MIRA 14:4)
(Phosphonitrile chloride)

89990

S/190/61/003/003/006/014
B101/B204

11.2210 also 2209

AUTHORS: Zhivukhin, S. M., Tolstoguzov, V. B., Meytin, Yu. V.

TITLE: Phosphonitryl chloride rubber

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 3, 1961, 414-419

TEXT: The aging of phosphonitryl chloride (PNC) rubber has already been repeatedly investigated, but, as remarked by N. L. Paddock (Ref. 7: Chem. and Ind., 1960, 91-92), it has not yet been fully cleared. It was therefore the purpose of the present work to investigate the aging and the stabilization of PNC rubber. First, the trimer $(PNCl_2)_3$ was synthetized from PCl_5 and NH_4Cl purified by recrystallization and distillation, after which it was polymerized for 6 hr at 320°C. Experiments confirm the fact that HCl is liberated during aging, corresponding to an equation (reaction with the water of moist air with formation of P-O-P cross links) suggested by H. Specker (Ref. 6: Angew. Chem. 65, 299-303, 1953). The infrared spectroscopic analysis of the films of fresh and aged rubber

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89990

S/190/61/003/003/006/014
B101/B204

Phosphonitryl chloride rubber

applied to KBr by means of a UR-10 spectrograph confirms: 1) The occurrence of a band corresponding to the P-O-P bond during aging. 2) The decrease of the intensity of the P=N band and occurrence of NH bands as a result of destruction. Furthermore, a displacement of the P=N bands with increasing molecular weight from 1340 cm^{-1} (molecular weight 2.10^5) to 1360 cm^{-1} (molecular weight 1.10^6) was observed. Pycnometrically, an increase in specific weight (from 1.77 to 2.02) was found, which takes place within 8 days. By X-ray analysis, this effect could be explained as crystallization. Conforming with the data of the increase in specific weight, a duration of the crystallization of 170 hr was found. The melting point of the crystals was between 30 - 40°C. By weighing, the effect produced by aging upon weight was investigated. With 100% moisture, the increase in weight was 1.4% after 200 hr, and 7.9% after 300 hr. This change in weight, however, depended on the ratio between the cross section of the specimen and its surface. The authors found: $y = (P - P_\tau)/P = -0.111F - 0.794\delta + 1.22$ (4). Here, P is the initial weight, P_τ after τ hr, F the area of the cross section, cm^2, δ the thickness in mm. From this equation it follows that aging is a diffusion process proceeding from

Card 2/4

X

Phosphonitryl chloride rubber

S/190/61/003/003/006/014
B101/B204

the surface. 40 stabilizers were examined and the degree of stabilization K was determined: $K = y_p/(y_p - y_{stab})$, where y_p is the loss in weight of pure rubber according to Eq. (4), and y_{stab} is the loss in weight of stabilized rubber. Table 2 shows the results obtained by means of some stabilizers. There are 5 figures, 2 tables, and 11 references: 1 Soviet-bloc and 10 non-Soviet-bloc. The 1 reference to English-language publication is given in the text of the abstract.

ASSOCIATION: Khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Chemotechnical Institute imeni D. I. Mendeleyev)

SUBMITTED: July 7, 1960

89990

Phosphonitryl chloride rubber

S/190/61/003/003/006/014
B101/B204

Наименование стабилизатора или наполнителя (1)	Количество стабилизатора, % (2)	K	Наименование стабилизатора или наполнителя (1)	Количество стабилизатора, % (2)	K
(3) Силиконовый каучук	4,1	0,98	Полимочевина (9)	6,8	0,89
(4) Стеарат бария	3,7	0,93	Sb_2O_3	5,0	0,90
(5) Стеарат олова	3,9	0,90	Cr_2O_3	43,0	0,89
(6) Ортоборная кислота	7,0	0,90	CuO	40,0	0,81
(7) Стеарат кадмия	2,8	0,89	PbO_2	30,0	0,72
(8) Поливиниловый спирт	8,0	0,89	Sb_2O_3	43,0	0,76

Legend to Table 2: 1) Stabilizer or filler. 2) Quantity of stabilizer. 3) Silicon rubber. 4) Barium stearate. 5) Tin stearate. 6) Ortho-boric acid. 7) Cadmium stearate. 8) Polyvinyl alcohol. 9) Polyurea.

Card 4/4

ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.; LEVITSKIY, M.M.

Synthesis of phosphonitrile chloride. Zhur.neorg.khim. 6 no.10: 2414-2416 O '61. (MIRA 14:9)

(Phosphonitrile chloride)

158150

27511
S/079/61/031/009/012/012
D215/D306

AUTHORS: Zhivukhin, S.M., Dudikova, E.D., and Kireyev, V.V.

TITLE: Synthesis and study of organostannoxanes. I

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 9, 1961, 3106 - 3111

TEXT: The present work was conducted to investigate the possibility of producing polyorganostannoxanes from certain dialkyltin dichlorides of the general formula R_2SnCl_2 where R = C_2H_5 and C_3H_7. The starting materials were obtained by K.A. Kocheshkov's method (Ref. 9: Sinteticheskiye metody v oblasti metalloorganicheskikh soyedineniy. Izd. AN SSSR, v. 5, 1947). Alkyltin acetates were prepared by reacting the corresponding dialkyltin dichloride with an acetate in an aqueous medium. Under such conditions, however, the acetates formed decomposed giving products of hydrolysis and condensation, i.e. compounds of the type

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27511
S/079/61/031/009/012/012
D215/D306

Synthesis and study of ...

$$CH_3COO\left[\begin{array}{c}R\\|\\SnO\\|\\R\end{array}\right]_n\begin{array}{c}R\\|\\SnOCOCH_3\\|\\R\end{array}$$ where n = 2, 3.

The reaction was carried out at 0°, 20° and 50°C. Compounds obtained at 50°C did not dissolve completely in benzene due to the admixtures of diethyltin oxide, but the yield corresponded to maximum. Compounds obtained at 0 and 20°C were soluble in organic solvents. To prevent the formation of diethyltin oxide the reaction was carried out at pH <7. Preparation of polypropylstannoxanes is most suitable conducted at 50°C when up to 70 % yields are obtained. Further experiments were concerned with increasing the molecular weight of the acetates prepared by subjecting them to the action of moisture containing air, in vacuum at different temperature over a period of 3 - 32 hrs. The resulting products were waxy

Card 2/7

Synthesis and study of ...

solids soluble or partially soluble in organic solvents, some of their properties, in relation to the conditions of treatment, are given in Table 2. The molecular weight increases were, however, small and the treatment resulted mainly in decreases of solubility. The analysis of insoluble residue, from the treatment of polyethylstannoxane at 180-185°C, showed the increase of the oxygen content with simultaneous reduction of carbon and hydrogen contents. It may, therefore, be assumed that ethyl radicals bonding molecular chains were substituted by oxygen atoms, in the process involving the reaction of organic radicals linked to tin atoms with weak organic acids and the formation of the corresponding hydrocarbons. Acetic acid liberated during the condensation promotes separation of alkyl radicals and formation of acetate groups in the side chains of the polymeric molecules, followed by cross-linking and production of insoluble or slightly soluble compounds. Heating of the original alkylstannoxanes and their acetates in aqueous alkali brings about deeper transformations then the expected saponification of terminal acetate groups and the resulting products are in-

Card 3/7

Synthesis and study of ...

soluble in organic solvents. Prolonged heating in the presence of excess water resulted in the separation of the acetic acid

$$CH_3COO\left[\begin{matrix}R\\|\\Sn-O\\|\\R\end{matrix}\right]_n\begin{matrix}R\\|\\Sn-OCOCH_3\\|\\R\end{matrix}+2H_2O\rightleftarrows$$

$$\rightleftarrows HO-\left[\begin{matrix}R\\|\\Sn-O\\|\\R\end{matrix}\right]_n\begin{matrix}R\\|\\Sn-OH\\|\\R\end{matrix}+2CH_3COOH$$

The saponification products, dihydroxyalkylstannoxanes were white brittle solids with softening point of 200°C. They dissolved, with difficulty, in hot benzene and dioxane and the molecular weight of the soluble part corresponded to 900-1000. The presence of terminal hydroxyls opens the possibility of condensing these compounds with corresponding di- and poly-functional substances, e.g. polyalkylstannoxane-acetates. Polyethylstannoxane-acetates were pre-

Card 4/7

Synthesis and study of ...

pared by mixing aqueous solutions of diethyltin dichloride, sodium acetate and acetic acid at 20°C. After standing for 1.5 hours, the solid was filtered, washed and dried, the yield was 54-55 %, molecular weight 700-720. Polypropyl stannoxane was similarly prepared but at 50°C, by adding dipropyltin dichloride solution in methanol to aqueous acetate. The yield was 70.5 %, molecular weight 883-914. Dihydroxypolyethylstannoxane was obtained by refluxing polyethylstannoxane acetate with water for 5 hours. After neutralizing the acid the residue was boiled for 5 hours with more water and the procedure repeated several times. The yield of product was 60 %. The dihydroxypolystannoxane obtained was then condensed with an equimolecular quantity of polyethylstannoxane acetate at 160°C for 3 hours and 200°C for 5 hours. The product was a brown transparent mass slightly softening at 250°C. There are 3 tables, and 12 references: 6 Soviet-bloc and 6 non-Soviet-bloc. The four most recent references to the English-language publications read as follows: J.C. Montermoso, T.M. Andrews, L.P. Marinelli, J. of Polymer Sci., 32, 523, 1958; T.M. Andrews, F.A. Bower, B.R. LaLiberte, J.

Card 5/7

Synthesis and study of ...

C. Montermoso, J. Am. Chem. Soc., 80, 4102, 1958; British Patent 718,393, 1954; R. Sasin, J. Org. Ch., 20, 770, 1955.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (Moscow Institute of Chemistry and Technology im. D.I. Mendeleyev)

SUBMITTED: October 13, 1960

Table 2.
Legend: 1 - Starting compounds; 2 - reaction temperature; 3 - time of reaction (hrs.); 4 - solubility in benzene; 5 - polyethylstannoxane acetate (mol.wt. 796); 6 - 7 - polyethylstannoxane acetate (mol.wt. 796); 8 - polypropylstannoxane acetate (mol.wt. 898; 9 - polypropylstannoxane acetate (mol.wt. 898); 10 - total; 11 - cloudy solution; 12 - strongly cloudy solution, precipitate, precipitate; 13 - total; 14 - cloudy solution.

33439
S/064/62/000/001/002/008
B110/B138

15.8180

AUTHORS: Zhivukhin, S. M., Tolstoguzov, V. B.

TITLE: Production of phosphorus nitryl chloride

PERIODICAL: Khimicheskaya promyshlennost', no. 1, 1962, 19 - 23

TEXT: A method is developed for the industrial production of phosphorus nitryl chloride according to $nPCl_5 + nNH_4Cl \rightarrow (PNCl_2)_n + 4nHCl + 120$ kcal/mole. The trimer (II) produced in the experiments contained tetramer (I) impurities, was crystalline (m. 108 - 114°C), had a slight odor and almost imperceptible irritant properties. Vapor pressures between 75.2 - 114.9°C and 114.9 - 189.3°C were determined from log P = 11.187 -3979/T and log P = 8.357 - 2880/T, respectively. Heat of vaporization was 13.2 kcal/mole, heat of sublimation 18.2 kcal/mole, and heat of fusion 5.0 kcal/mole. The eutectic mixture II (0.65 - 0.7 molar parts) + I melts at 89.0 - 89.5°C. Best solubility of II is in benzene (55.0 g/100 g), and of I in CCl_4. Molecular weight of II is 340 - 450. It decomposes in moisture, is not corrosive, and can be stored for ever. The resulting

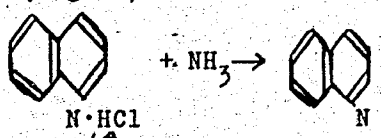
Card 1/2

Production of phosphorus nitryl...

dark yellow-to-brown oily liquid (D_{20} = 2.01; at 60°C, η = 110 cp; $n_D^{14.5}$ = 1.5857; MW = 1172 - 1392; 24.9% P; 59.63% Cl; 11.74% N; mean degree of polymerization: 10 - 12) is a mixture of higher polymer homologs $(PNCl_2)_n$, $n > 4$, soluble in benzene, toluene, xylene, acetone, and insoluble in water, acetic acid, and petroleum ether. The higher homologs have better solubility in benzene than the lower ones. The optimum solvent chlorobenzene (1.65 - 1.75 liters/kg of PCl_5) melts near the optimum boiling point (128 - 130°C) causing violent agitation. The optimum molar ratio of NH_4Cl to PCl_5 is 1.15 - 1.17. Optimum synthesis period is 8 - 12 hrs in the presence of 0.160 - 0.163 moles of quinoline per mole of PCl_5. The trimer yield decreases and the mean polymerization degree increases in 12 hrs. The reaction is at first violent, bulk conversion takes place after 7 - 8 hrs, and then HCl is separated. The starting materials are put into enameled vessel 2 (Fig. 2) with reflux condenser 3. The separated HCl gas is collected in 5, the reaction mixture is cooled to room temperature, and quinoline hydrochloride and the NH_4Cl excess are

IX

filtered off at 6. C_6H_5Cl is distilled off in 8 and recycled. In 11, the oily residue is separated into phosphorus nitryl chloride and oil. The crystals are dissolved in petroleum ether, and the saturated solution is passed through filter 16. Partial distillation of the petroleum ether occurs at 18, and the trimer is crystallized in 20. It is centrifuged at 21, and the mother liquid passes into 18 again. The purified trimer (42% related to PCl_5) is separated from the tetramer by fractional vacuum distillation, crystallization, or by CH_3OH. The oil is passed to 22 (Fig. 3), dissolved in benzene, precipitated by petroleum ether, and left standing for 6 hrs. The bottom layer is pure oil, and the top layer is a mixture of solvents containing impurities. It is distilled at 80 - 100°C in 24. The oil yield is 40 - 42%. Quinoline hydrochloride and NH_4Cl from 6 (Fig. 2) are rendered weakly alkaline in 27 (Fig. 4) by 25% NH_4OH:



For extraction, benzene is added by

Production of phosphorus nitryl....

stirring, and the mixture is left standing for 2 - 3 hrs. The solution of quinoline in benzene is passed to 29, dried with KOH for 24 hrs, filtered and distilled in 30. For 1 kg of phosphorus nitryl chloride, 1.96 kg of PCl_5, 0.59 kg of NH_4Cl, and 0.19 kg of quinoline are used.

There are 4 figures, 2 tables, and 5 references: 2 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: H. N. Stokes, Am. Chem. J., 19, 782 (1897). N. L. Paddock, Brit. Plast., 31, no. 11, 473, 494 (1958).

Fig. 2. Flow chart for phosphorus nitryl chloride production (production and separation of polymer homologs).
Legend: (a) vapor; (b) vacuum; (c) brine; (d) nitrogen; (e) water; (f) HCl; (g) trimer for purification; (h) Fig. 3; (i) chlorobenzene; (k) quinoline; (l) petroleum ether; (m) oil.
Fig. 3. Purification of the oily liquid.
Legend: (a) of 12 and 16, Fig. 2; (b) petroleum ether; (c) benzene; (d) solvent for rectification; (e) vapor; (f) vacuum; (g) oil.

Card 4/04

S/078/62/007/009/004/007
B144/B101

AUTHORS: Zhivukhin, S. M., Tolstoguzov, V. B., Ivanov, A. I.

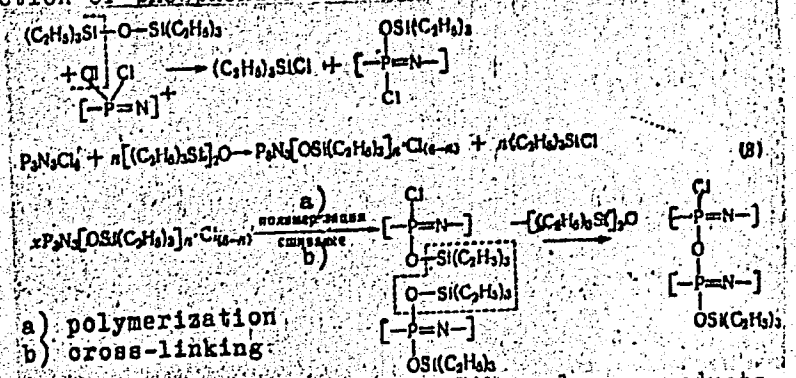
TITLE: Reaction of phosphonitrile chlorides with silanols, silanolates, and hexaalkyl disiloxane

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 9, 1962,2192-2199

TEXT: Tests with triethyl and triphenyl silanoles and Na silanolates were unsuccessful but proved that $PNCl_2$ attacks the Si-O-Si bond. Hence hexaethyl disiloxane which contains one Si-O-Si bond was made to react at 230°C with $PNCl_2$ trimer (molar ratio 6:1). Substitution was obtained.

Card 1/3

Reaction of phosphonitrile chlorides ...



(8)

a) polymerization
b) cross-linking

and yielded rubberlike or powder-like polymer products, the latter being non-hydrolizable, having roughly the formula $[PN\{OSi(C_2H_5)_3\}_2]_x \cdot [PON]_y \cdot [PNCl_2]_z$, where x, y, and z are derived from the Si and Cl contents: x depends on the degree of Cl substitution which rises in polymerization between 260 and 300°C with increasing temperature; y is determined by the breaking of siloxy groups and z by the content in nonsubstituted Cl atoms. There are 6 figures and 1 table.

Card 2/3

S/078/62/007/009/001/007

Reaction of phosphonitrile chlorides ... B144/B101

SUBMITTED: December 12, 1961

Card 3/3

S/079/62/032/009/011/011
I048/I242

AUTHORS: Zhivukhin, S.M., Dudikova, E.D., and Ter-Sarkisyan, E.M.

TITLE: Synthesis and investigation of organostannoxanes. II

PERIODICAL: Zhurnal obshchey khimii, v.32, no.9, 1962, 3059-3061

TEXT: The first paper on this subject appeared in this publication, v. 31, 1961, 3106. This paper reports the results of an attempt to prepare polyorganostrannoxanes by polycondensation of dibutyldiacetoxystannane and dibutyldibutoxystannane according to the equation

$$nC_4H_9OSn(C_4H_9)_2OC_4H_9 + nCH_3COOSn(C_4H_9)_2OOCCH_3 \rightarrow C_4H_9O\left[Sn(C_4H_9)_2\right]_{2n}OOCCH_3 + (n-1)C_4H_9OCOCH_3.$$

The experiments were carried out in an inert gas stream with constant stirring at 150 to 200°C. The starting materials were syn-

Card 1/2

Synthesis and investigation...

thesized in the laboratory. Both the rate of condensation and the final yield of butyl acetate increased, while the molecular weight of the polymer decreased with increasing reaction temperature. Thus, at 150°C the reaction was completed within 2 hrs, the yield of butyl acetate was 61.4%, and the molecular weight of the polymer was 1290 when the reaction was carried out under atmospheric pressure and 2400 in vacuo. At 180°C the reaction was completed within 1.5 hrs, the yield of butyl acetate was about 75%, and the molecular weight of the polymer was 840 under atmospheric pressure and 1610 in vacuo. The product formed at temperatures above 200°C contained a non-melting, insoluble phase whose structure needs further clarification. The polymer formed at 180°C was a brittle substance, easily soluble in benzene and its homologs, with a softening temperature of 130-140°C. The polymer formed at 150°C was a glass-like, brittle and transparent substance with good adhesion to metals and glass; its m.p. was 96-100°, and it did not lose its melting characteristics on repeated melting-solidification cycles. There are 2 figures.

SUBMITTED: September 13, 1961

Card 2/2

34969
S/080/62/035/002/006/022
D235/D302

15,9209

AUTHORS: Zhivukin, S. M., Tolstoguzov, V. B. and Levitskiy, M.M.

TITLE: Certain properties of oily oligomers of phosphonitrile chloride

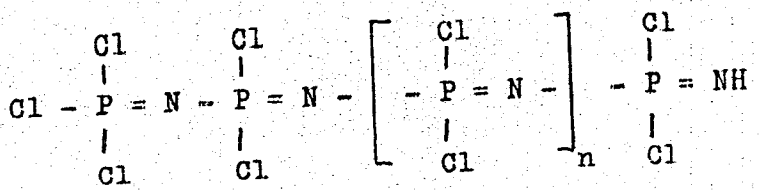
PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 2, 1962, 290-295

TEXT: The composition and structure of oligomers of phosphonitrile chloride and the properties of high molecular polymeric products obtained from them are studied. The oligomers were obtained by reacting PCl_5 with NH_4Cl in a medium of chlorobenzene in the presence of quinoline. The trimer and tetramer were removed from the oligomers by extraction with petroleum ether. The yield of oligomers was 40 - 45% and the composition was within the limits P - 24.96-25.4%, N - 12.01-11.74%, Cl - 59.63.62.5%. The molecular weight was 1170 - 1390 and titration of a fraction of molecular weight 1200 showed a minimum of three polymer homologues. In order to elucidate the composition the infra-red spectrum in the frequency range 400 - 3800

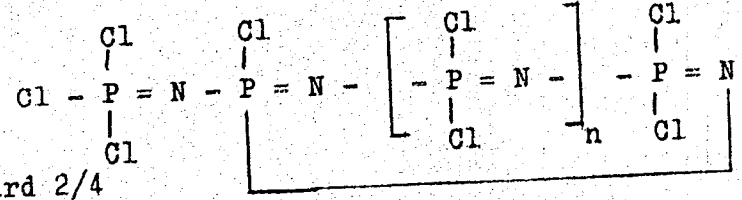
Card 1/4

Certain properties of ...

cm^{-1} was studied. The groups P=N, OH and NH were discovered but not P-H or P-OH. The considered oligomers with a degree of polymerization of 10 to 12 have the following structure:



and a portion of the molecule must have the structure



Card 2/4

Certain properties of ...

The oligomers were subjected to polymerization in a glass ampoule for 4 hours at 192, 210, 226, 245 and 260°C. On increasing the temperature, consistency of the products changed from a brown paste to a dark brown or black resinous material possessing low adhesion to glass. Density of the samples after extraction with chloroform was found to be 1.58 - 1.68 at 20°C. The was no relationship between density and temperature of polymerization. A linear relationship was found between the composition of the soluble fraction and the temperature of polymerization which can be written:

$$\frac{M_{sol.fract.}}{M_{sample}} \times 100 = 175 - 0.57\ t^{o}$$

The authors also studied swelling of the resin and discovered that the degree of swelling decreased with increasing temperature of polymerization. Ageing of the elastomers was considered concluding that the change in weight of the samples during ageing was mainly due to absorption of moisture from the air followed by reaction

Card 3/4

with the resin with the elimination of HCl; this hydrolysis takes place more quickly the larger the quantity of oily oligomers contained in the resin. The poly-acid formed changes to the more stable tetracompound. There are 6 figures and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: L. F. Audrieth, R. F. Steedman and A. D. F. Toy, Chem. Rev., 32, 109, 1943; N. L. Paddock, and H. T. Searle, Advances in inorganic chemistry and radiochemistry, 1, 347, 1959; N. L. Paddock, Endeavour., 19, 75, 134, 1960.

SUBMITTED: December 26, 1960

Card 4/4

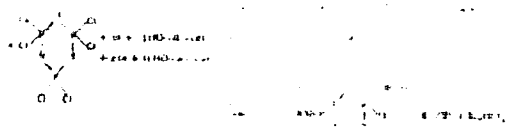
AUTHOR: Zhivukhin, [illegible]

TITLE: Synthesis of polymeric [illegible]

SOURCE: Plasticheskiye massy, no. 7, 1963, [illegible]

TOPIC TAGS: polyphosphonitrile chloride, alkoxyphosphonitrile chloride, alkoxyphosphonitrilate, polydioxyarilenephosphonitrilate

ABSTRACT: Hydrolytically stable polymers of types A and B,



with alternating phosphonitrile and oxyaromatic groups in the backbone have been

Card 1/3

ACCESSION NR: AP[illegible]

synthesized by the following methods: 1) Condensation of phosphonitrile chloride (PNC) trimer or oily oligomers [illegible] isopropylidenediphenol, resorcinol, or hydroquinone). The reaction with the trimer proceeds at a high rate in high-boiling solvents (e.g., nitrobenzene, [illegible] or higher under dry nitrogen, or in inert solvents in the [illegible] diaza quinoline, pyridine) at 130°. The oligomers [illegible] condensation. Polymers of types A and B are formed [illegible] synthesis conditions [illegible] condensation time. 2) Condensation of PNC trimer [illegible] phenyl. The reaction proceeds [illegible] polymers of type B. [illegible] or with [illegible] type A or B. Both types [illegible] Polymers of type [illegible] organic solvents [illegible] coatings and [illegible] cross-linked, depending [illegible] soluble in aromatic hydrocarbons, [illegible] vents; they can be cured with [illegible]

Card 2/3

ACCESSION NR: AP3005306

made with polymers of type B exhibit good mechanical properties but poor elasticity and adhesion to metals. The polymers can be used to make molded articles and glass-reinforced plastics. The presence of [illegible] alkoxy, chlorine atoms in phosphonitrile [illegible] the adhesion and mechanical properties of [illegible] tion with epoxy [illegible] and fire resistance of other polymers can be [illegible] mers of type A and B. Orig. art. has: [illegible]

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 30Jul63 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 003

Card 3/3

ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.

Production and uses of phosphonitrile chlorides and their derivatives. Plast.massy no.5:24-27 '63. (MIRA 16:6)
(Phosphonitrile chloride)

ZHIVUKHIN, S.M.; DUDIKOVA, E.D.; KOTOV, A.M.

Synthesis and study of polyorganostannanes. Zhur.ob.khim. 33 no.10:3274-3277 O '63. (MIRA 16:11)

ACCESSION NR: AP4041779 S/0191/64/000/007/0024/0026

AUTHOR: Zhivukhin, S. M., Kireyev, V. V.

TITLE: Some properties of polydihydroxyarylenephosphonitrilates

SOURCE: Plasticheskiye massy*, no. 7, 1964, 24-26

TOPIC TAGS: polydihydroxyarylenephosphonitrilate, phosphonitrile chloride, phenol, diphenylolpropane, resorcinol, hydroquinone, infrared absorption, thermosetting polymer, arylenephosphonitrile, polymer hydrolysis

ABSTRACT: The authors investigated the thermosetting and hydrolytic properties of polydihydroxyarylenephosphonitrilates obtained by the reaction of the trimer phosphonitrile chloride with diatomic phenols, such as diphenylolpropane, resorcinol and hydroquinone. The infrared absorption spectra are shown and the effects of hardening on the %C, H and Cl in the polymer are tabulated. Thermosetting takes place as a result of the interaction of the functional groups of the polymer and, depending on the temperature, the process can be accompanied by a partial polymerization of the trimer rings. Hydrolysis curves and a study of the products of hydrolysis in either 95% dimethylformamide or 95% acetone at 150 or 55C, respectively, showed that polydihydroxyarylenephosphonitrilates have satisfactory hydrolytic stability. In these polymers, partial or complete substitution of chlorine atoms

Card 1/2

ACCESSION NR: AP4041779

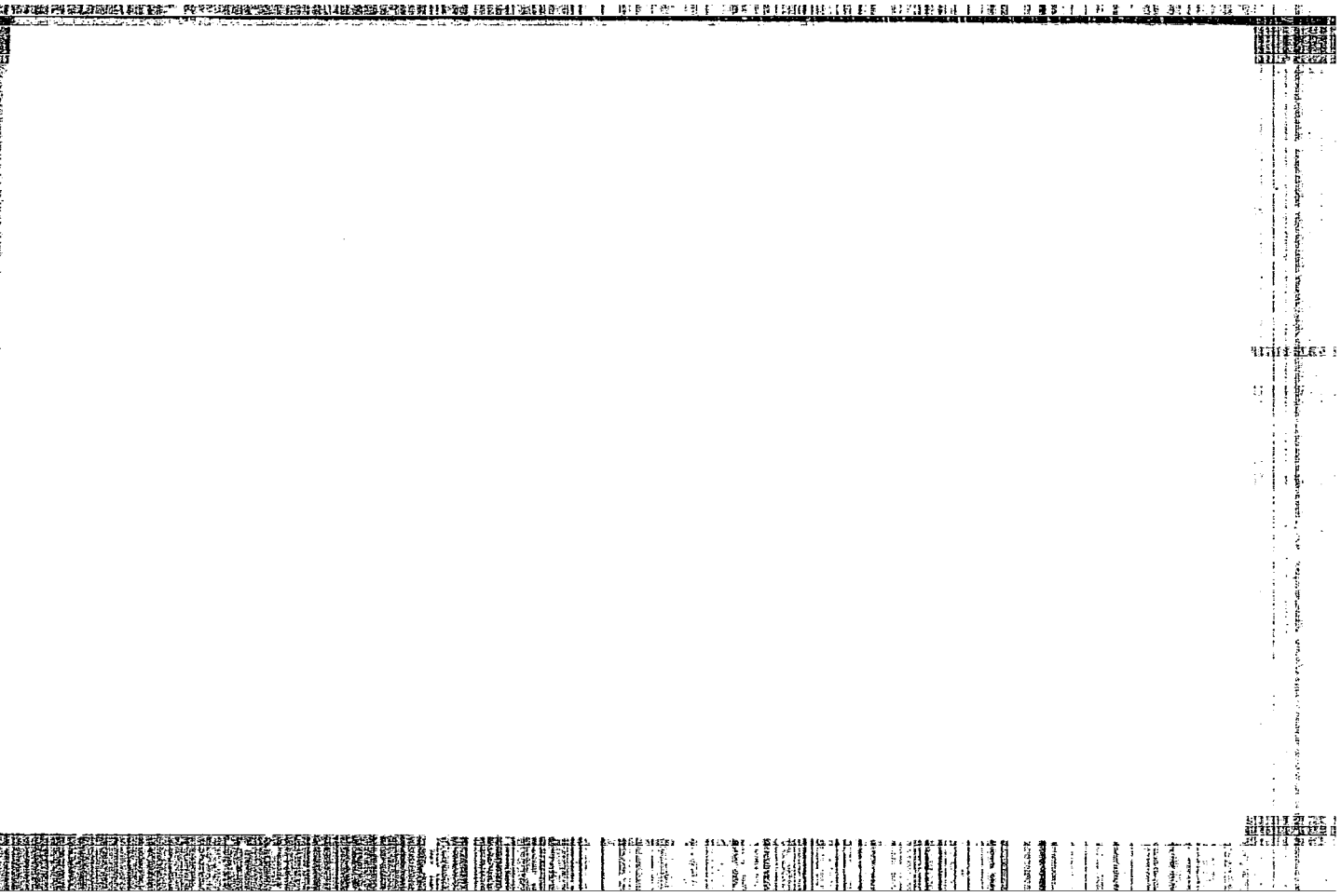
by hydroxyl groups is possible. "N. V. Aulova and L. T. Gerasimenko also took part in the experimental work." Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: OC, MT NO REF SOV: 003 OTHER: 002

Card 2/2



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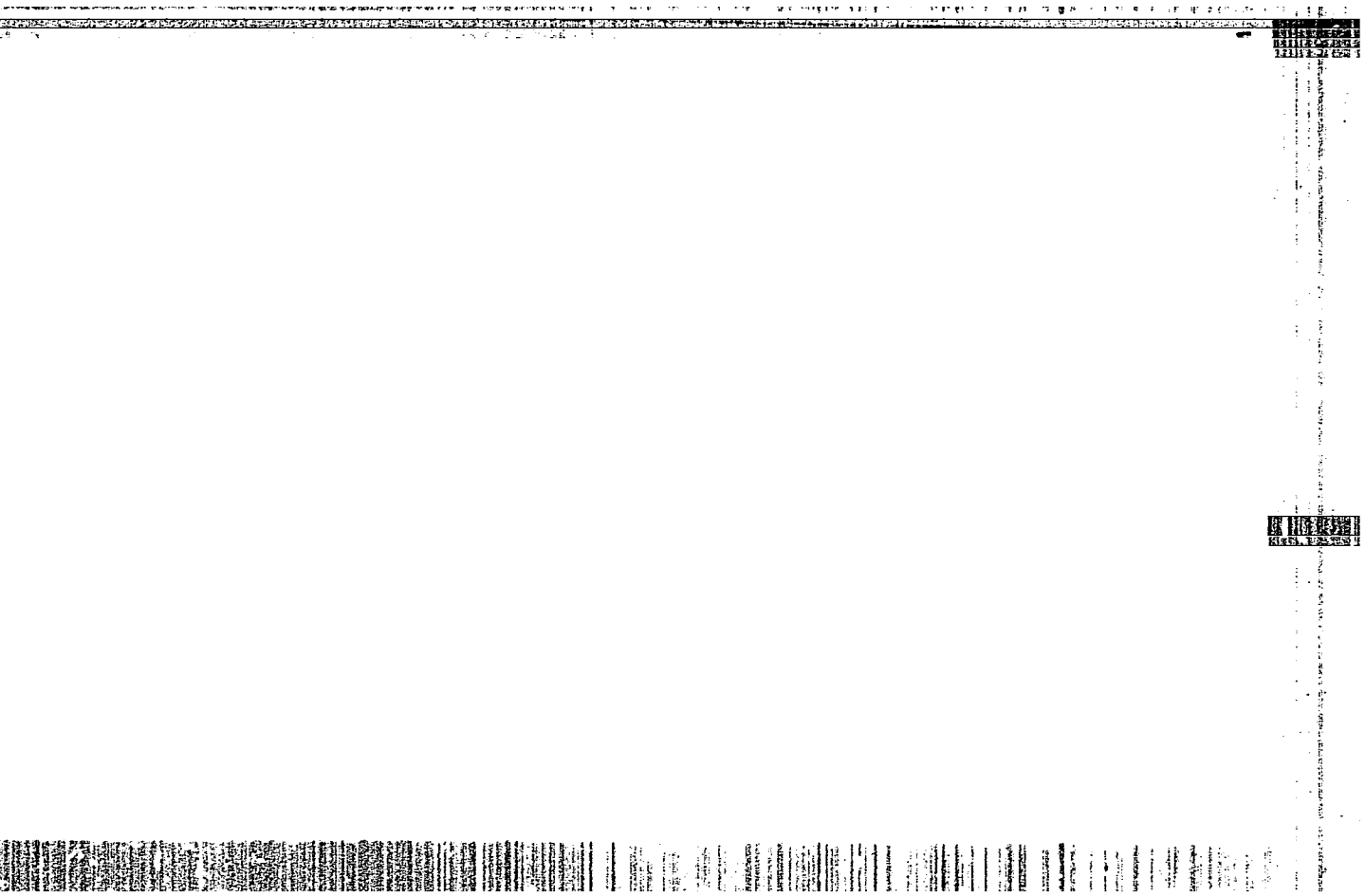

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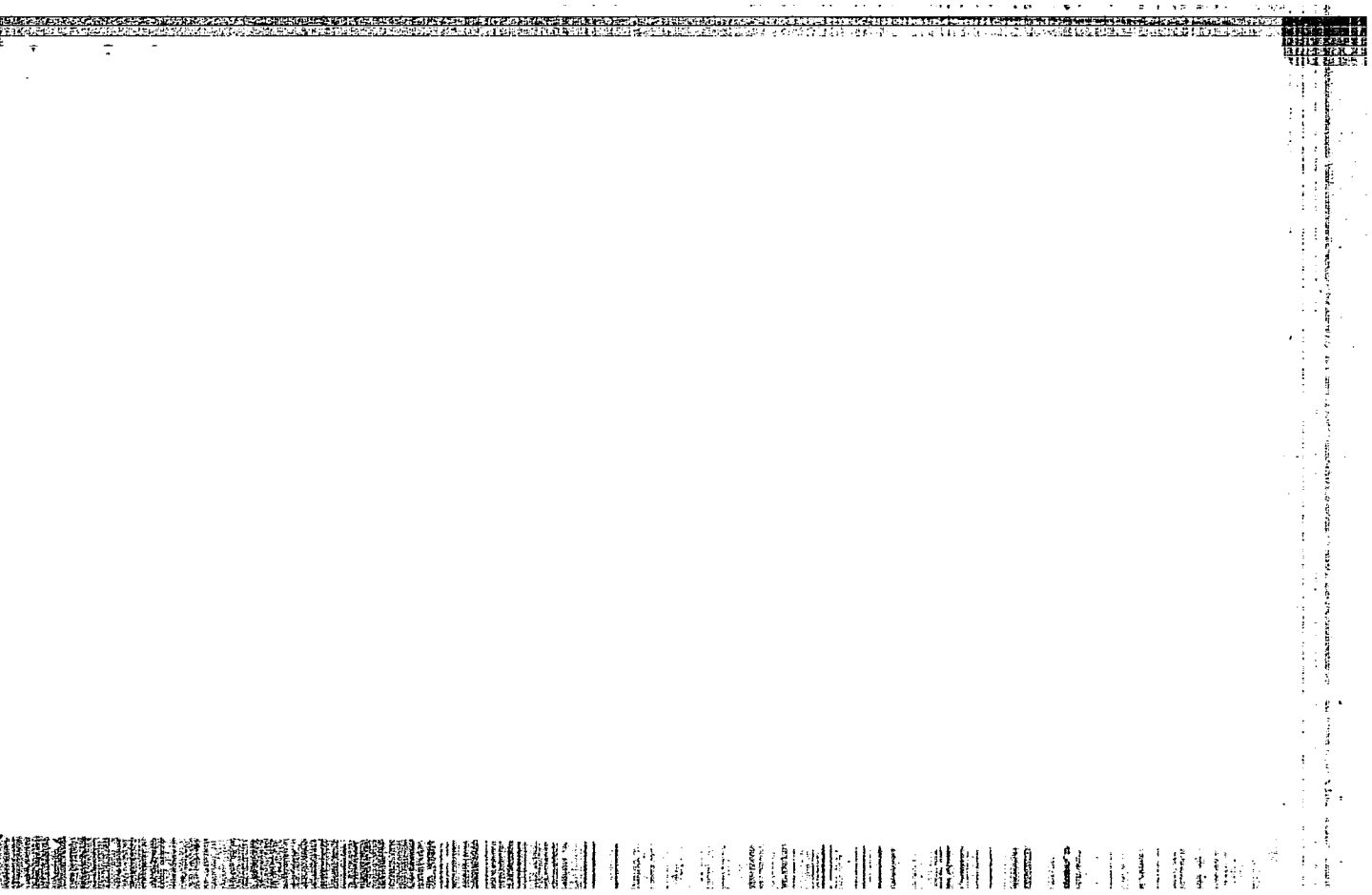

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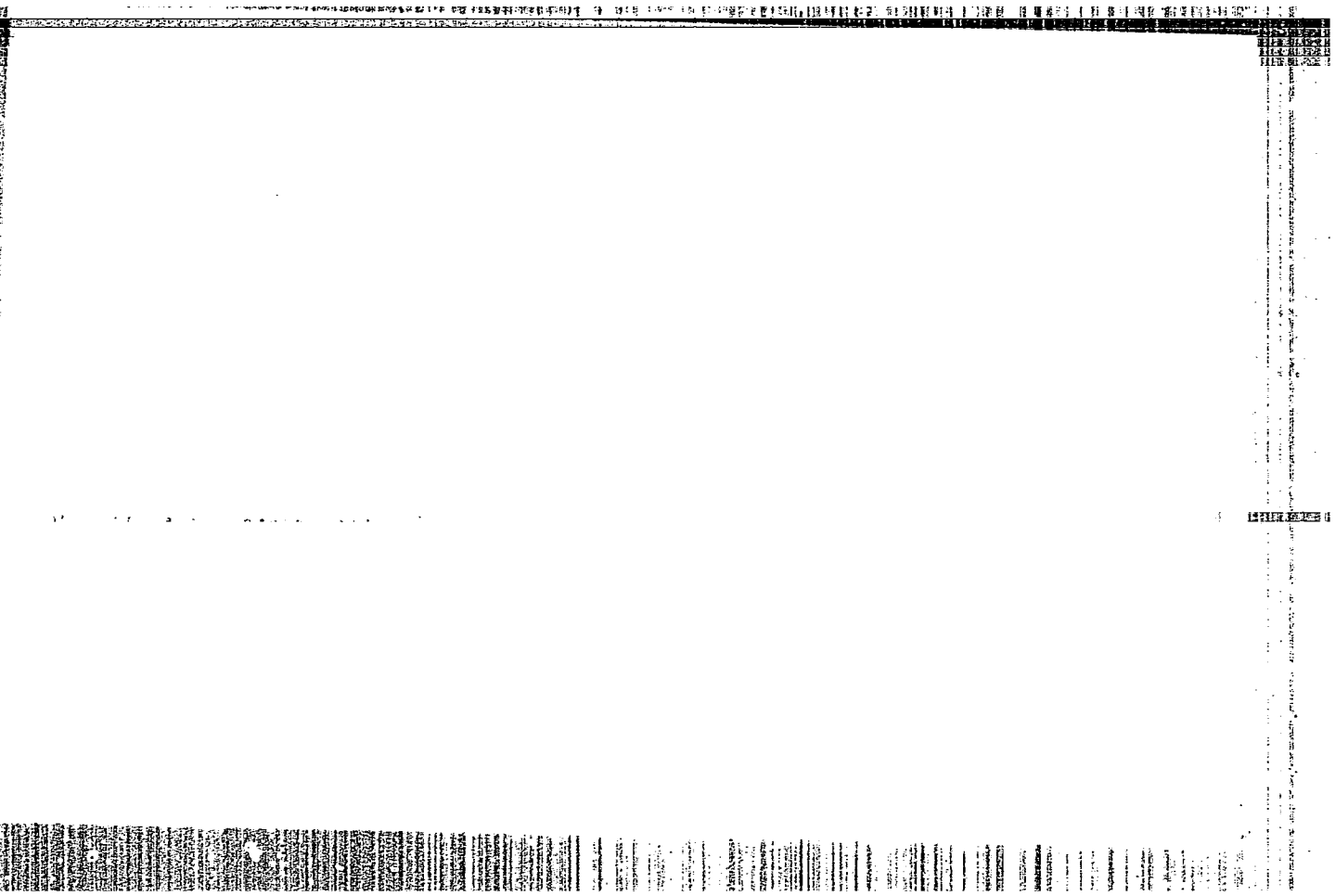
ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.; BELYKH, S.I.

Reaction of phosphonitrile chloride with diphenylsilanediol. Zhur.neorg. khim. 9 no.1:134-139 Ja '64. (MIRA 17:2)

ZHIVUKHIN, S.M.; KIREYEV, V.V.

Pyridine complexes of triphosphonitrile chloride with tin tetrachloride. Zhur. neorg. khim. 9 no.11:2671-2672 N '64

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.



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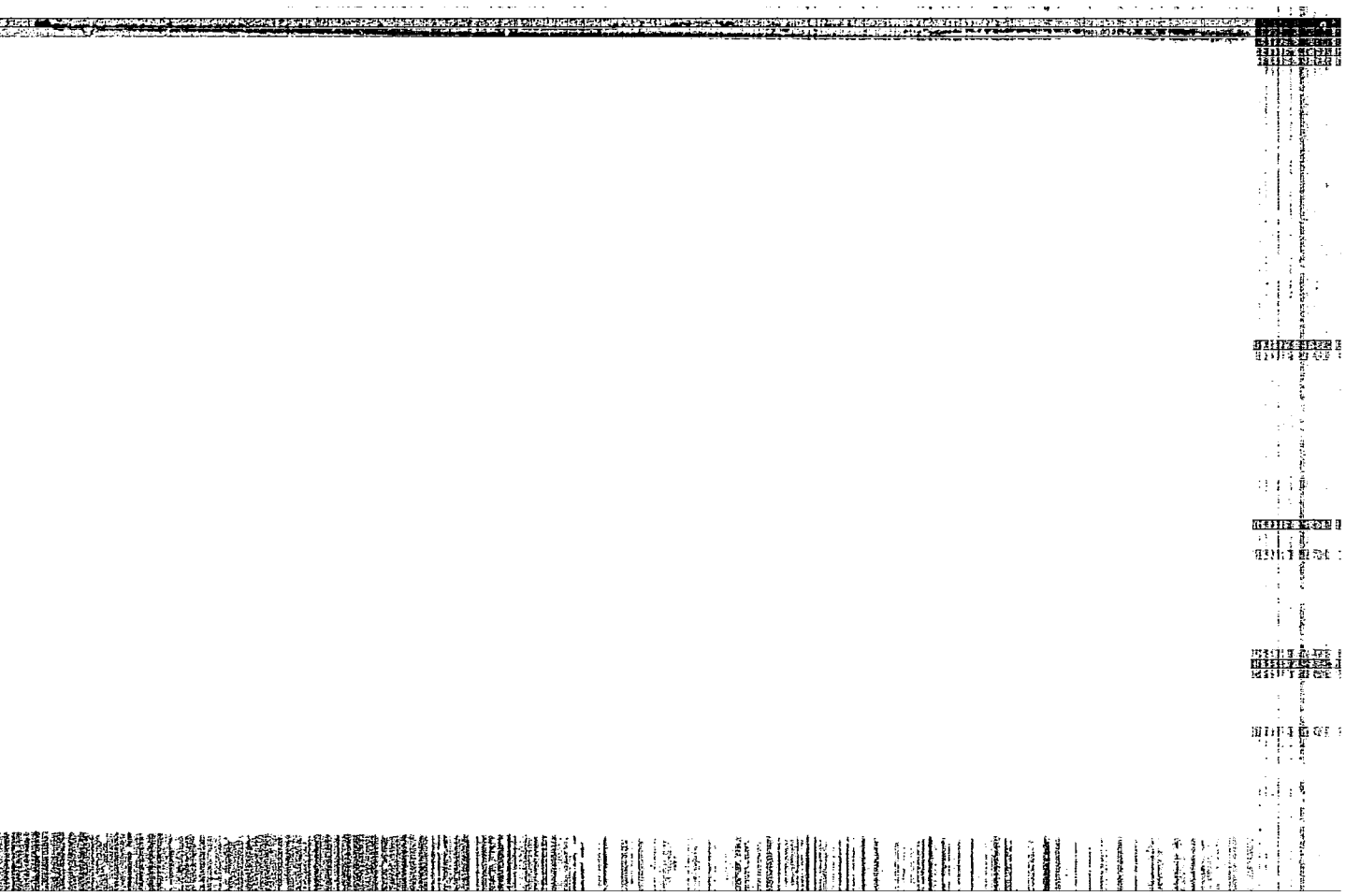

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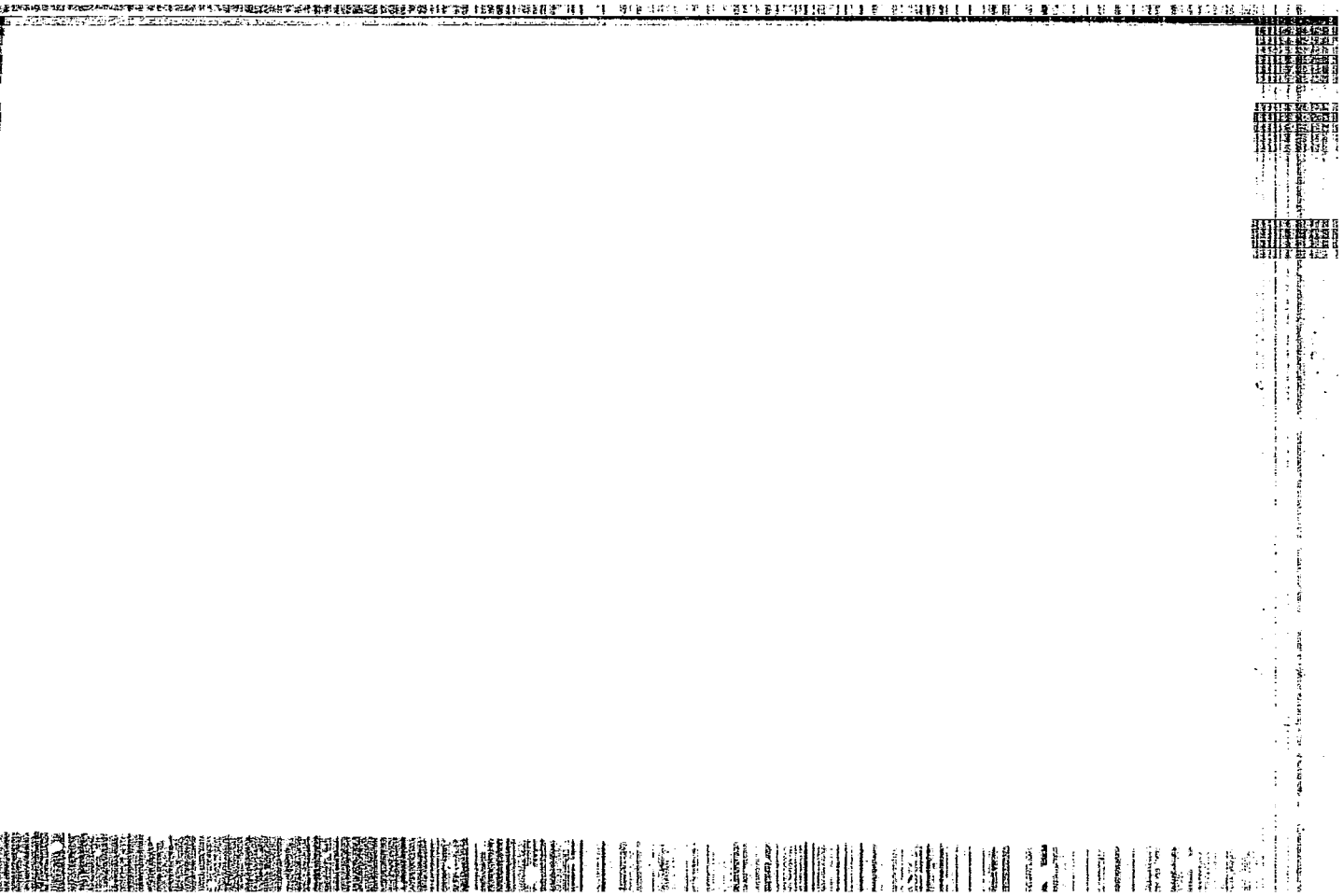

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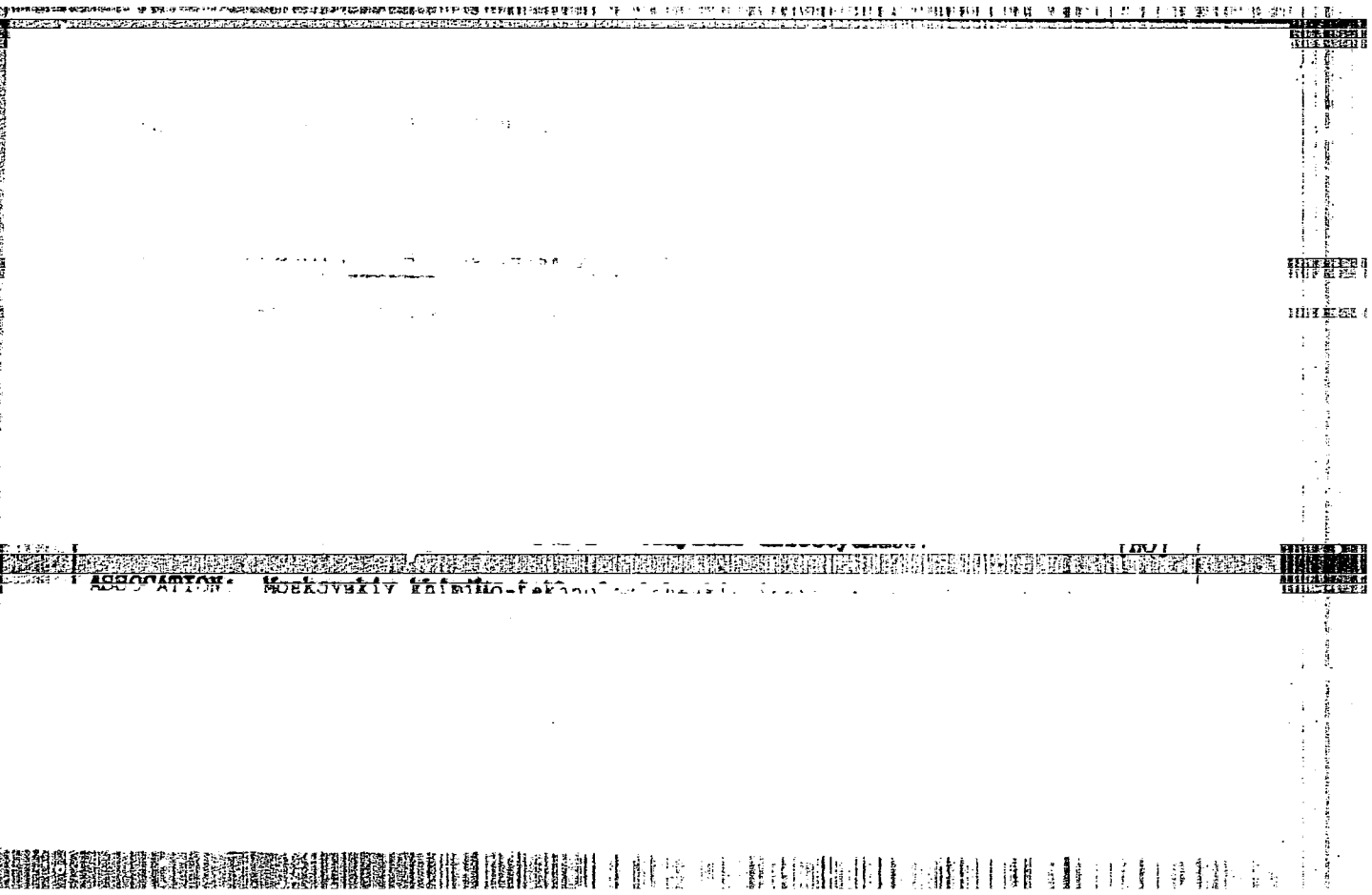

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ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.; LUKASHEVSKI, Z.

Reaction of trimeric phosphonitrile chloride with alcohols and alcoholates. Zhur. neorg. khim. 10 no.7:1653-1656 Jl '65. (MIRA 18:8)

ZHIVUKHIN, S.M.; TOLSTOGUZOV, V.B.; KIREYEV, V.V.; KUZNETSOVA, K.G.

Synthesis of phosphonitrile chlorides. Zhur. neorg. khim. 10 no.2:332-335 F '65. (MIRA 18:11)

1. Submitted Sept. 22, 1963.

ACC NR: AP6000974 SOURCE CODE: UR/0286/65/000/022/0057/0057

INVENTOR: Zhivukhin, S. M.; Tolstoguzov, V. B.; Kireyev, V. V.

ORG: none

TITLE: Method for preparing resins. Class 39, No. 176392

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 57

TOPIC TAGS: phosphorus, resin, polymer, epoxy plastic, fire resistant material, thermal stability, lacquer, glass, reinforced plastic, solid mechanical property, specialized coating

ABSTRACT: An Author Certificate has been issued for a preparative method for resins involving phosphorus-containing polymers and epoxy resins with heating. To obtain polymers with good adhesive and mechanical properties, fire resistance, and thermal stability, polymers consisting of alternating phosphonitrile and hydroxyaromatic structures (polydihydroxyarylenephosphonitrilates) [sic] were used as the phosphorus-containing components. The amount of epoxy resin used does not exceed 50%. The resins obtained are designed for use in lacquer coatings and in glass-reinforced plastics. [BN]

SUB CODE: 11,07 / SUBM DATE: 21Jan63/ ATD PRESS: 4157

UDC: 547.914'1
678.643'42'5
678.85

Card 1/1

L 15241-66 EWT(m)/EWP(j)/T/EWA(m)-2 WW/RM

ACC NR: AP6000996 (A) SOURCE CODE: UR/0280/65/000/022/0062/0062

AUTHORS: Zhivukhin, S. M.; Kireyev, V. V.; Tolstoguzov, V. B.

ORG: none

TITLE: A method for obtaining phosphonitrile polymers. Class 39, No. 176423

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 62

TOPIC TAGS: polymer, resin, phosphonitrile, organic phosphorus compound

ABSTRACT: This Author Certificate presents a method for obtaining phosphonitrile polymers by partial or complete hydrolysis and (or) alcoholysis of chloro-derivatives of phosphonitrile polymers. To obtain polymers of high thermostability, fire resistance, and adhesive properties, the polymer used consists of alternating phosphonitrile and oxyaromatic members. The obtained polymers are suitable for use as lacquer finishing and binder for fiber glass plastics.

SUB CODE: 07/11/ SUBM DATE: 21Jan63

GC

Card 1/1 UDC: 678.85.745.3:66.093.8

L 15324-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6000993 (A) SOURCE CODE: UR/0286/65/000/022/0061/0061

AUTHORS: Zhivukhin, S. M.; Kireyev, V. V.; Tolstoguzov, V. B.

ORG: none

TITLE: A method for obtaining phosphonitrile polymers. Class 39, No. 176420

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 61

TOPIC TAGS: polymer, polycondensation, organic phosphorus compound, phosphonitrile

ABSTRACT: This Author Certificate presents a method for obtaining phosphonitrile polymers by thermal condensation of phosphonitrile chlorides with dihydroxyphenols. To decrease the condensation temperature, the phenols are used in the form of their alkali metal salts. The condensation is carried out at temperatures not exceeding 150C.

SUB CODE: 07/11/ SUBM DATE: 11Jan63

Card 1/1 BC

UDC: 678.85.745.3

L 37644-66 EWT(m)/EWP(j)/T IJP(c) WW/RM

ACC NR: AP6011238 (A) SOURCE CODE: UR/0413/66/000/006/0076/0076

INVENTOR: Zhivukhin, S. M.; Tolstoguzov, V. B.; Kirayev, V. V. 33 B

ORG: none

TITLE: Preparation of phosphorus-containing polyesters. Class 39, No. 179928

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 6, 1966, 76

TOPIC TAGS: polyester, phosphorus containing polymer, transesterification ESTERIFICATION, PHOSPHOROUS, PHOSPHATE, GLYCOL

ABSTRACT: This Author Certificate introduces a method for preparing phosphorus-containing polyesters by transesterification of phosphates with glycols. To extend the variety of fire-resistant modified additives, alkoxyphosphonitrilates and/or alkoxyphosphonitrile chlorides are suggested as the phosphates. [LD]

SUB CODE: 11/ SUBM DATE: 11Jan63/

UDC: 678.745.3.73

Card 1/1 vmb

L 40379-66 EWT(m)/EWP(j)/T IJP(c) RM

ACC NR: AP6027274 (A) SOURCE CODE: UR/0191/66/000/008/0015/0018

33
B

AUTHOR: Zhivukhin, S. M.; Kireyev, V. V.; Tikhonova, G. S.

ORG: none

TITLE: Polymers based on phosphonitrile chlorides and bisphenol phenoxides

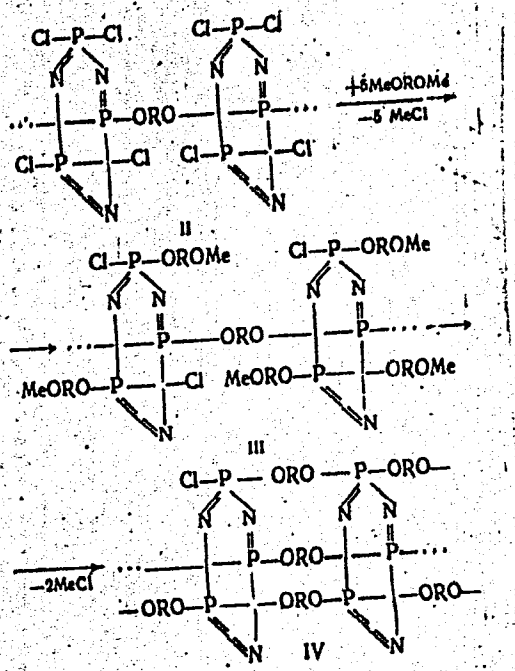
SOURCE: Plasticheskiye massy, no. 8, 1966, 15-18

TOPIC TAGS: ~~phosphorus-containing polymer~~, phosphonitrile ~~chloride~~, bisphenol phenoxide, ~~heat-resistant polymer~~, reactive polymer, POLYMER HEAT RESISTANCE, PHENOL, RESIN, POLYMER CHEMISTRY

ABSTRACT: A study has been made of the synthesis of phosphonitrile chloride-bisphenol phenoxide polymers. This reaction is of interest because it has the following advantages: it proceeds rapidly at 70—130C in the absence of catalysts without the liberation of HCL. The products exhibit high heat resistance and contain reactive phenoxide end groups. The starting materials were phosphonitrile chloride trimer and/or phosphonitrile chloride oily oligomers, and Na or K phenoxides of 2,2-bis(p-hydroxylphenyl) propane or of resorcinal. The reactions were conducted in dehydrated m-xylene, dioxane, or methyl ethyl ketone. The procedure is described in the source. The following reaction mechanism is proposed

Card 1/3 UDC: 678.85

L 40379-66
ACC NR: AP6027274



Me: Na, K
R: C_6H_4, $C_6H_4 \cdot C(CH_3)_2 \cdot C_6H_4$

Card 2/3

L 40379-66

ACC NR: AP6027274 O

The optimum reaction conditions were: temp, 70—75C; time, 10 hr; phosphonitrile chloride/phenoxide molar ratio 1/2 to 1/4. The yield in soluble and insoluble polymers was about 85%. The mixture of crystalline and oily oligomers obtained in the synthesis of phosphonitrile chloride can be used as is in the process. The polymers are fusible resins, soluble in polar solvents, and curable by heating with paraform or urotropine. Orig. art. has: 3 figures and 1 table. [BO]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 011/ OTH REF: 005/ ATD PRESS: 5052

Card 3/3 MLP

ACC NR: AP6012719 (A) SOURCE CODE: UR/0190/66/008/004/0727/0731

15
8

AUTHOR: Zhivukhin, S. M.; Tolstoguzov, V. B.; Yakobson, F. I.

ORG: Moscow Institute of Chemical Technology im. D. I. Mendeleyev (Moskovskiy khimiko-tekhnologicheskiy institut)

TITLE: Synthesis of polydioxyarylenephosphonitrilates 1

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 4, 1966, 727-731

TOPIC TAGS: phosphonitrilate, esterification, polyesterification

ABSTRACT: Polyester exchange reaction of hexabutoxytriphosphonitrilate with diatomic phenols was carried out at the molar component ratio from 1 : 1 to 1 : 1.5. The rate of polyester exchange depends on the concentration of the reaction mixture and on the type of diatomic phenol. Resorsinal is somewhat more active in polyester exchange. In the case of hydroquinone, products with higher substitution but lower molecular weight are formed. Products which have a molecular weight of 3000 to 10,000 are easily soluble in alcohols and ketones and partially soluble in aromatic and aliphatic solvents. Orig. art. has: 5 figures and 2 tables. [Based on authors' abstract] [NT]

SUB CODE: 11, 07/ SUBM DATE: 09May65/ ORIG REF: 003/ OTH REF: 003

Card 1/1 bdh UDC: 541.64+678.86

L 15772-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/RM

ACC NR: AP6005522 SOURCE CODE: UR/0080/66/039/001/0234/0237

AUTHOR: Zhivukhin, S. M.; Kireyev, V. V.; Zelenetskiy, A. N. 68 B

ORG: none

TITLE: The reaction of phosphonitrile chloride trimer with dihydric phenols

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 1, 1966, 234-237

TOPIC TAGS: polymer, thermal stability, fire resistance 7445

ABSTRACT: Polymers derived from phosphonitrile chlorides and dihydric phenols have high thermal stability, fire resistance, and other desirable properties. The purpose of this work was to investigate the reaction between phosphonitrile chloride trimer and 2,2-bis-(p-hydroxyphenyl)propane, resorcinol and hydroquinone. It was found that phosphonitrile chloride trimer does not react with dihydric phenols below 180C, either in the melt or in organic solvents. The reaction, accompanied by liberation of HCl, takes place at 200C, or above, in nitrobenzene or ditolylmethane, or at lower temperatures in some organic solvents in the presence of quinoline or pyridine. The effect of the duration of the reaction, and of the ratio and concentration of starting materials on the composition of

Card 1/2 UDC: 547.56+541.6

L 15772-66

ACC NR: AP6005522 O

the product is shown. Some conclusions concerning the structure of the product are drawn from elemental and functional-group analyses, molecular weights, and infrared spectra. Orig. art. has: 4 figures and 1 table. [VS]

SUB CODE: 11,07/ SUBM DATE: 01Jul63/ ORIG REF: 001/ OTH REF: 006

ATD PRESS: 4200

Card 2/2 MOS

ZHIVUKHINA, G.M.

Frost resistance and dormancy in different wheat varieties as affected by fertilization. Uch. zap. MOPI 79:105-125 '60.
(MIRA 14:9)

(Moscow Province--Wheat--Fertilizers and manures)
(Plants--Frost resistance)

ZHIVUKHINA, G. M. Cand Biol Sci -- "Frost resistance and state of rest of winter wheat under conditions of Moskovskaya Oblast." Mos, 1961 (Mos Oblast Ped Inst im N. K. Krupskaya). (KL, 4-61, 192)

17(1)

AUTHORS: Genkel', P. A., Zhivukhina, G. M. SOV/20-127-1-61/65

TITLE: The Process of Protoplasm Isolation as the Second Phase of Winter Wheat Hardening (Protsess obosobleniya protoplazmy kak vtoraya faza zakalivaniya ozimykh pshenits)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 220-223 (USSR)

ABSTRACT: The plants resistant to frost are characterized by a period of long-lasting and profound rest. The resistance of the tissues of resting plants is determined on the whole by the conditional peculiarities of the plasma (Refs 1-3). The lacking of growth processes (Refs 4-8 for winter wheat), the reduced metabolism intensity as well as the protoplasm separation are characteristic of the period of rest. During the period of rest the content in growth substances is considerably reduced (Refs 9-12). In plants hardened against frost and in a state of rest the protoplasm is characterized by a higher viscosity and by a reduced permeability (Refs 18-19). The physiological processes are of little intensity in winter wheat (Refs 20, 21). The state of rest is of little stability in winter crops. However, if winter wheat is stored during the winter in a warm room for a few days only,

Card 1/4

the growth processes start quickly in contrast to ligneous plants. The period of rest of the winter crops is very short because no profound transformation of the protective- and supply substances takes place in their cells and because they have no reserve fat which guarantees a stable state of rest (Ref 3). The transition to the state of rest takes place under the influence of autumn conditions of temperature and light. Under the same circumstances the hardening of the plants against low temperature takes place. Thus the transition to the period of rest and the hardening occur during the same period in the life of plants, and both reflect the same processes during the course of which the plants attain the resistance to frost. The hardening is attained in two stages: 1) accumulation of carbohydrates; 2) change of the physico-chemical protoplasm properties (Ref 2). In the present paper the cyto-physiological state of the winter wheat was investigated. The observations of the authors confirmed that the protoplasm becomes peeled off from the cell-coverings in the late autumn- and winter period. The degree of the state of rest differs in the individual organs of the winter wheat. The state of rest of the leaves

is not long. The protoplasm is partly detached only in a few epidermic cells. In autumn and winter, a concave plasmolysis is predominant. At the turn of the year many damaged and dead cells appear. The most complete rest (according to the number of cells with separated protoplasm), and the most stable (according to the length of separation) were found in the growth cone and in the tillering knots (Fig 1). The observations of the authors showed: 1) that the protoplasm separation from the cell walls begins after the first stage of the hardening, that is the accumulation of the soluble carbohydrates in the cells, and 2) that this separation begins at slight frost. In other words, the conditions of the separation process of the protoplasm are exactly the same as those at which the second stage of hardening of the winter crops is attained which is connected with the physico-chemical changes of the

protoplasm. The said separation occurs obviously just in the second hardening stage and forms the final stage of the development of the resistance to frost of the winter crops under autumn conditions. There are 1 figure, 1 table, and 22 references, 21 of which are Soviet.

ASSOCIATION: Institut fiziologii rasteniy im. K. A. Timiryazeva Akademii nauk SSSR (Institute of Plant Physiology imeni K. A. Timiryazev of the Academy of Sciences, USSR)

PRESENTED: February 2, 1959, by A. L. Kursanov, Academician

SUBMITTED: February 2, 1959

L 3991-66 EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(i)/ETC/EWG(m)/EPA(w)-2/T/EWP(t)/EWP(k)
ACC NR: AP5025655 EWP(b)/EWA(c)/EPF(n)-2 IJP(c)
JD/WW/JG/AT/WH

UR/0080/65/038/010/2222/2226
537.363+546.261+546.831

AUTHOR: Savitskaya, Ya. S.; Yekimenko, T. M.; Zhivulina, L. I.

TITLE: Preparation of thin zirconium carbide layers by electrophoresis

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 10, 1965, 2222-2226

TOPIC TAGS: zirconium carbide, refractory coating, electrophoresis

ABSTRACT: A study, claimed to be the first of its kind, has been made of depositing thin (80—100 μ) ZrC layers on metallic substrates by electrophoresis of a ZrC suspension in alcohol. Two problems were studied: 1) preparation of stable ZrC suspensions; and 2) establishment of the optimum depositing conditions. Study of the stability of organic ZrC suspensions resulted in the selection of ethyl alcohol as the dispersive medium and in the addition of 0.5% solution of $HFCl_4$ in absolute ethyl alcohol as generator of the electric charge on the particle surface. Suspensions of the following composition were selected for the experiments: absolute alcohol, 80 ml; ZrC powder with 2—5 μ particle size, 20 g; 0.5% $HFCl_4$ solution in absolute alcohol, 0.5—2 ml. Experimental study of electrophoresis resulted in the determination of the dependence of the coating thickness and coating density on time, the electrokinetic potential (ζ) of the particles, and cell potential. From these data curves were plotted which made it possible to select conditions for depositing ZrC coatings of the desired quality. Orig. art. has: 8 figures.

Card 1/2

[BO]

L 39[illegible]

ACC NR: AP5025655

ASSOCIATION: none

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

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4120

Card 2/2

ZHIVUSHCHEV, A., GUZEV, N.

Thermometers and Thermometry

Electro-thermometer equipment in refrigerators. Khol. tekh. 29, No. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, September 1952. UNCLASSIFIED.

ZHIVUSHCHEV, A.A.

Filter for compressor oils. Khol.tekh. 42 no.2:60 Mr-Ap '65.
(MIRA 18:5)

1. Kostromskoy kholodil'nik.

ZHIVUSHCHEV, A.A., inzh.

Operation of the Kostroma automated cold storage warehouse.
Khol. tekh. 38 no. 1:39-45 Ja-F '61. (MIRA 14:4)
(Kostroma--Cold storage warehouses)