DOROKHOV, S.M.; PAKHOMOV, S.P.; POLYAKOV, G.D.; DOBYCHINA, I.N.,
red.; GUREVICH, M.M., tekhn. red.

[Pond fish culture] Prudovoe rybovodstvo. Pod red. G.D.Poliakova.
Izd.2., ispr. i dop. Moskva, Sel'khozizdat, 1962. 263 p.
(MIRA 16:4)

(Fish culture)

PAKHOMOV, S. P.: Master Med Sci (diss) -- "A comparative evaluation of methods of intestinal suture in resection of the small intestine under experimental conditions". Gor'kiy, 1958. 14 pp (Gor'kiy State Med Inst im S. M. Kirov), 200 copies (KL, No 4, 1959, 171)

PAKHOMOV, V., podpolkovnik

We teach them how to prepare food under field conditions.
Tyl i snab. Sov. Voor. Sil 21 no.9:26-28 S '61.
(MIRA 14:12)

(Cookery, Military)

PAKHOMOV, V.

Cup goes to "Shakhtera" again. Sov. shakh. 11 no.10:33-34
O '62. (MIRA 15:9)

(Soccer)

ZAGORUL'KO, S. (Donetsk); PAKHOMOV, V. (Kazan')

Office of innovations of commercial aviation. Grazhd.av. 19 no.10:20 0 '62. (MIRA 16:2)

1. Nachal'nik shtaba Donetskogo podrazdeleniya Grazhdanskogo vozdushnogo flota (for Zagorul'ko). 2. Glavnyy inzhener lineynykh ekspluatatsionno-remontnykh masterskikh, Kazan' (for Pakhomov).

(Aeronautics, Commercial—Technological innovations)

PAKHOMOV, V. (Voronezh)

This can also happen this way... Pozh.delo 5 no.12:15 D '59. (MIRA 13:4)
(Repair and supply stations—Fires and fire prevention)

PAKHOMOV, V.

Manufacture of panels from organic glass. Radio no.7:49
Jl '62. (MIRA 16:6)

(Radio—Equipment and supplies)

TSYPKIN, K., polkovnik; PAKHOMOV, V., polkovnik.

Clearing the building site of the Stalingrad Hydroelectric Power Station of mines. Voen.-inzh. zhur. 101 no.2:33-34 F '58.
(MIRA 11:3)
(Stalingrad Hydroelectric Power Station--Mines, Military)

TSYPKIN, K., polkovnik; PAKHOMOV, V., polkovnik.

Selfless action of combat engineers in fighting a flood. Voen.-inzh. zhur. 101 no.2:34-35 F '58. (MIRA 11:3)
(Military engineers) (Ural Mountain region--Floods)

PAKHOMOV, V

TSYPKIN, K., polkovnik; PAKHOMOV, V., polkovnik.

Removing mines in the Smolensk Province. Voen.-inzh. zhur. 101 no.2: 34 F '58. (MIRA 11:3)

(Smolensk Province--Mines, Military)

PAKHOMOV, V., kand.tekhn.nauk

Technology of dredging. Rech. transp. 19 no.10:58 O '60.
(MIRA 13:11)

(Dredging)

L 1167-66

ACCESSION NR: AP5012835 44,55 UR/0348/65/000/004/0029/0029 21/18 B
632.951

AUTHOR: Karavyanskiy, N. (Candidate of agricultural sciences); Pakhomov, V. (Aspirant)

44,55

TITLE: The use of insecticides with sticking agents

SOURCE: Zashchita rasteniy ot vrediteley i bolezney, no. 4, 1965, 29

TOPIC TAGS: food technology, agriculture, insecticide 44,55

ABSTRACT: The authors report the results of experiments on the treatment of corn seed before sowing with a spray instead of dust, using a sulfite-alcohol malt concentrate as the sticking agent. Experiments were carried out with Bukovinskiy 3 corn in 1962—1964 on 30—50 m^2 plots at the Vsesoyuznyy institut kormov (All-Union Feed Institute) and the Moskovskaya selektsionnaya stantsiya (Moscow Selection Station). Seed was treated 1.5—2 months and 3 days before sowing with solutions containing 50 — 100 g of malt concentrate plus either 400 — 600 g of 60% TMTD (tetramethylthiuram disulfide) with 20% heptachlor or γ-hexachlorocyclohexane, or 200 — 400 g of TMTD plus 1 — 2 kg of 12% hexachlorocyclohexane, all per 100 kg of seed. This decreased the incidence of disease from 32 to 0.5%, increased the germination rate by 8 — 26%, and increased the yield of green fodder to 35.6 — 37.3 metric tons per hectare. Experiments carried out in 1964 at the "Menshineta" state

Card 1/2

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L 1467-66

ACCESSION NR: AP5012835

farm in Moscow oblast showed that treatment with TMTD plus heptachlor resulted in significant improvement in plant height, width, and number of leaves, length of internodes, and length of ears, while being only 60% as expensive as dusting with hexachlorane. Orig. art. has: 1 table.

ASSOCIATION: Vsesoyuznyy institut kormov (All-Union Feed Institute) 44,55

SUB CODE: LS, GC

NO REF SOV: 000

SUBMITTED: 00

OTHER: 000

ENCL: 00

Card 2/2

BERLINER, M.A.; PAKHOMOV, V.A.

Instrument used for automatic moisture control of tanning extract. Kozh.-obuv.prom. no.1:28-30 Ja '59. (MIRA 12:6)
(Tanning materials) (Measuring instruments)

PAKHOMOV, V.A. inzh.

New automatic control devices used in the leather industry. Mekh. i avtom.proizv. 15 no.3:47-50 Mr '61. (MIRA 14:3)
(Automatic control) (Leather industry)

PAKHOMOV, V. A.

"Study and Development of Technical Methods of Increasing the Working Efficiency of Agricultural Hammer Mills." Min. Higher Education USSR, Ukrainian Order of Labor Red Banner Agricultural Academy, Kishinev, 1955. (Dissertation for the Degree of Candidate in Technical Sciences)

SO: <u>Knizhnaya Letopis'</u>, No. 22, 1955, pp 93-105

PAKHOMOV, V. B.: Master Tech Sci (diss) -- "Investigation of flattening structures (of earth)". Gor'kiy, 1958. 15 pp (Min River Fleet RSFSR, Leningrad Inst of Water Transport Engineers), 150 copies (KL, No 7, 1959, 125)

PAKHOMOV, V. B. Cand Tech Sci -- (diss) "Study of corrective structures (made of [illegible] earth)." Gor'kiy, 1959. 15 pp (Min of Higher and Specialized Secondary Education RSFSR. Gor'kiy Construction Engineering Inst im V. P. Chkalov), 150 copies (KL, 46-59, 138)

PAKHOMOV, V.B., kand. tekhn. nauk; NAUMOV, A.I., inzh.; SHELMANOV, V.S., inzh.; KONSTANTINOV, V.P., inzh.; KOSTIN, A.M., inzh.; SEMENOV, YU.K., inzh.; PYATLIN, A.A., kapitan; VAGANOV, G.I., kand. tekhn. nauk; SVIRIDOV, A.A., inzh. KHODUNOV, M.Ye., kand. yurid. nauk; SAPOGOVA, A.Ye., inzh.; SOYUZOV, A.A., doktor tekhn. nauk, prof., red.; VASIL'YEV, A.V., kand. tekhn. nauk; ALEKSEYEV, V.I., red.; KUSTOV, L.I., red.; VITSINSKIY, V.V., red.; BORISOV, I.G., red.; SOLAREV, N.F., red.; ANDRIYENKO, V.I., red.; SUTYRIN, N.A., red.; GOLOVNIKOV, V.I., red.; ZOTOVA, V.V., red.

[Manual for the navigator of a river fleet] Spravochnik sudovoditelia rechnogo flota. Izd.2., dop. Moskva, Transport, 1965. 423 p. (MIRA 18:2)

1. Gor'kovskiy institut inzhenerov vodnogo transporta (for Pakhomov, Semenov, Vaganov, Vasil'yev). 2. Moskovskiy rechnoy tekhnikum (for Naumov). 3. Volzhskoye ob"yedinennoye rechnoye parokhodstvo (for Shelmanov, Sapogova). 4. Ministerstvo rechnogo flota (for Konstantinov, Sviridov). 5. Kazanskiy port (for Kostin). 6. Moskovskoye rechnoye parokhodstvo (for Pyatlin).

PAKHOMOV, V.B., inzh.

Calculating the strength of a dam's crest. Rech.transp. 18
no.10:47-49 O '59. (MIRA 13:2)
(Dams)

PAKHOMOV, V.B., inzhener.

Effectiveness of waterway maintenance operations. Rech. transp. 16 no.4:30 Ap '57. (MLRA 10:5)

(Waterways)

Pakhomov, V B

PAKHOMOV, V.B., inzh.

Design and calculation of hydraulic fill structures isolating flood basins from navigable channels. Rech.transp. 16 no.9:22-25 S '57.
(MIRA 10:12)

(Rivers--Regulation)
(Flood dams and reservoirs)

BONDAREVSKIY, Yu. P., inzh.; PAKHOMOV, V. G., inzh.

Volga-Baltic Sea Waterway. Transpstroi 13 no. 11:26-28 N '63. (MIRA 17:5)

SOLOV'YANOV, L.M.; VOLOD'KO, N.P.; PAKHOMOV, V.I

High-duty telescoping drills. Biul. TSNIICHM no. 8:36-37 '58.
(MIRA 11:7)

1. Giprorudmash.
(Boring machinery)

PITSKHELAURI, Grigoriy Zakharovich; PAKHOMOV,V.I., redaktor; ROMANOVA, Z.A., tekhnicheskiy redaktor

[Organization of medical services for workers in the petroleum industry of the U.S.S.R.] Organizatsiia mediko-sanitarnogo Obsluzhivania rabochikh neftedobyvaiushchei promyshlennosti SSSR. Moskva, Gos.izd-vo med. lit-ry, 1955. 179 p. (MLRA 9:2)
(PETROLEUM INDUSTRY--MEDICAL AND SANITARY AFFAIRS)

KROTKOV, Fedor Grigor'yevich, general-mayor meditsinskoy sluzhby; PAKHOMOV, V.I., polkovnik meditsinskoy sluzhby, red.; STREL'NIKOVA, M.A., tekhn.red.

[Military hygiene] Voennaia gigiena. Moskva, Voen.izd-vo M-va obor.SSSR, 1959. 366 p. (MIRA 12:12)
(Military hygiene)

SPASSKIY, Vladislav Akimovich, polkovnik med. sluzhby, prof.; ARKAYEV, Viktor Alekseyevich, polkovnik, med. sluzhby, dots.; **Prinimali uchastiye:** ANTIPIN, G.M., podpolkovnik med. sluzhby; POLYAKOV, V.I., podpolkovnik med. sluzhby; PAKHOMOV~~, V.I.~~, polkovnik med. sluzhby, red.; CHAPAYEVA, R.I., tekhn. red.

[Military hygiene)Voennaia gigiena. Izd.2., perer. i dop. Moskva, Voenizdat, 1962. 167 p. (MIRA 15:8)
(Military hygiene)

PAKHOMOV, V.I.

FD-1146

USSR/Chemistry - Physical

Card 1/1	Pub. 129-10/23
Author :	Batsanov, S. S.; Pakhomov, V. I.
Title :	Refractions of chlorine substituted alcohols and acids of the aliphatic series
Periodical :	Vest. Mosk. un., Ser. fizikomat. i yest. nauk, 9, No 7, 83-86, Oct 1954
Abstract :	Studied the effect of the presence of a halogen atom near the carboxyl group in a number of aliphatic compounds, on the refractive index and on the molecular refraction. Eighteen references (seven USSR).
Institution :	Chair of Crystallography and Crystal Chemistry
Submitted :	May 14, 1954

PAKHOMOV, V. I.

6

7 7

Methyl and ethyl silicanes. B. D. Izyumov, V. I. Pakhomov, Zh. I. Gol'shtein, and V. P. Shevyakova. U.S.S.R. 103,695, June 25, 1956. Na methyl- and ethylsilicanes are obtained by dissolving in aq. NaOH the liquid hydrolysis product of $MeSiHCl_2$ and $EtSiHCl_2$ obtained as waste in the production of $MeSiH_2Cl$ and $EtSiH_2Cl$.
M. Hosch

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PAKHOMOV, V I

USSR/Physical Chemistry - Molecule. Chemical Bond, B-4

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 60810

Author: Batsanov, S. S., Pakhomov, V. I.

Institution: None

Title: On Refractions of α-,β-Substituted Naphthalenes

Original Periodical: Vestn. Mosk. un-ta, 1956, No 2, 65-67

Abstract: By comparison of refractions of isomeric monosubstituted naphthalenes it is shown that α-isomers (I) have lower refraction than β-isomers (II). The authors attribute this to the fact that in I overlapping of Van der Waals spheres of adjoining atoms not combined through valence and consequently the decrease of effective volume of molecule is greater than in II. Difference in refractions of I and II and Van der Waals radii increase in the series H, O, N, C, Cl and J.

Card 1/1

PAKHOMOV, V. I.

2

Med

Properties and application of organosilicones. B. D. Razumov and V. I. Pakhomov. *Med. Prom.* 10, No. 1, 7-10 (1956).—A discussion of the well-known properties of organosilicones is given. Their use in dermatoses is stressed. Immiscibility with other substances: water, vegetable and mineral oils, fatty acids, soaps, alc., etc., renders them valuable as protective skin creams. Further use is indicated with the development of manufg. facilities.

A. S. Mirkin

PAKHOMOV, V. I.

USSR/ Chemistry - Hydrogen bonds

Card 1/1 Pub. 147 - 17/35

Authors : Batsanov, S. S., and Pakhomov, V. I.

Title : New methods of quantitative investigation of a hydrogen bond. Part 1. Molal volume

Periodical : Zhur. fiz. khim. 30/1, 142-154, Jan 1956

Abstract : New methods for the study of the formation of hydrogen bonds are described. Actual experiments showed that the formation of hydrogen bonds in inorganic substances increases the molal volume of the compounds. It was established that the formation of intermolecular hydrogen bonds in organic compounds reduces their molal volumes and that an intramolecular hydrogen bond produces no essential effect on the compounds. The values of the volumetric hydrogen bond increments were found to vary in accordance with their forces. Twenty-three references: 8 USSR, 6 USA, 7 Germ., 1 Indian and 1 Eng. (1841-1955). Tables; graphs.

Institution : Moscow State University im. M. V. Lomonosov

Submitted : May 3, 1955

~~PAKHO~~ PAKHOMOV, V.I.

14

6

Acid-resistant cement. B. D. Izyumov, V. I. Pakhomov, and G. V. Grishina. U.S.S.R. 106,253, July 25, 1957. The cement is prepd. from a mixt. of Na silicate, Na_2SiF_6, ground diabase, and org. Si compds. The silicate can be wholly or partly replaced by an alkali metal alkyl or aryl silane. 2-7

M. Hosch

Pakhomov, V. I.

BATSANOV, S.S.; PAKHOMOV, V.I.

Changes in the nature of chemical bonds in case of changes of coordination numbers. Kristallografiia 2 no.1:183-186 '57. (MLRA 10:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Chemical bonds) (Coordination numbers)

Pakhomov, V. I.

27

5

New methods for the quantitative study of the hydrogen bond. II. Molar refraction. S. S. Batsanov and V. I. Pakhomov (M. V. Lomonosov State Univ., Moscow). Zhur. Fiz. Khim. 31, 170-80(1957); cf. C.A. 50, 10461e.—The use of refractometry for the quant. study of the H bond in org. and inorg. compds. is described. The method was described earlier (C.A. 51, 792a). The exptl. data show that the formation of H bonds in inorg. compds. increases the refraction from 0.04 to 0.24 cc. per bond. In org. compds. the refraction is increased from 0.08 to 0.49 cc. per bond.

J. Rovtar Leach

1-4E4A

S/081/62/000/011/046/057
E202/E192

AUTHOR: Pakhomov, V.I.

TITLE: Application of organosilicon polymers in machine manufacture

PERIODICAL: Referativnyy zhurnal, Khimiya, no.11, 1962, 591, abstract 11 P 67. (In the Symposium: "Plastmassy v mashinostr." ("Plastics in Machinery"), M., Mashgiz, 1959, 65-70).

TEXT: A brief description of advantages and shortcomings of organosilicon polymers is given, with a general review of preparation, properties and application of organosilicon liquids, rubbers, varnishes and plastics. The basic characteristics of the organosilicon plastics of types К-41-5 (K-41-5), К-71 (K-71), КМК-9 (KMK-9), КМК-218 (KMK-218), and methylphenylpolysiloxane varnishes of types K-41, K-43, K-44, K-47 and K-48 are also given.

[Abstractor's note: Complete translation.]

Card 1/1

PAKHOMOV, V.I.

PHASE I BOOK EXPLOITATION SOV/4592

Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut plasticheskikh mass

Issledovaniya v oblasti termoreaktivnykh plastmass (Investigations in the Field of Thermosetting Plastics) Moscow, Goskhimizdat, 1959. 98 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agencies: Gosudarstvennyy komitet Soveta Ministrov SSSR po khimii; Gosudarstvennyy nauchno-issledovatel'skiy institut plasticheskikh mass.

Ed.: V. N. Tur'yev; Tech. Ed.: Ye. G. Shpak.

PURPOSE: This book is intended for chemical engineers and technicians, and research chemists interested in thermosetting plastics.

COVERAGE: The collection contains 11 articles which reflect some Soviet efforts and achievements in synthesizing plastics with special physicochemical properties, i.e., water-, acid-, heat-, and arc-resistance. No personalities are mentioned. References given are mainly Soviet and English, with several French and German and accompany the articles.

AVAILABLE: Library of Congress (TP986.A2I68)

JA/rm/fal
1-5-61

Card 3/3

S/081/61/000/014/028/030
B105/B202

AUTHORS: Izyumov B. D., Pakhomov V. I., Gol'dshteyn Zh. I.

TITLE: Water soluble hydrophobic organosilicon liquids

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 619, abstract 14П55 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii, 1959, No. 5 (17), 45-48)

TEXT: The authors discuss the properties and the fields of application of water-soluble organosilicon polymers which are used to waterproof textile products, paper, carton, leather, and building materials. Materials are waterproofed by means of aqueous solutions of the liquid ГМС-9 (GMS-9) in the presence of catalysts (NH_3, CH_3COOH, H_2O_2, triethylamine, alum etc.) and by subsequent heat treatment (5-10 min at 130-150°C) for the fixation of the foil. The liquids MSG-9 and ES-9 are aqueous solutions of sodium methyl and ethyl siliconate. They are applied by a brush, a spray or by immersion, and subsequently dried on air. The authors give data on the

Card 1/2

S/081/61/000/014/025/030
B105/B202

Water soluble hydrophobic ...

effectiveness of the treatment of a series of materials by the liquids mentioned. [Abstracter's note: Complete translation]

Card 2/2

S/0[illegible]/61/000/00[illegible]/0[illegible]/024
B[illegible]/B208

AUTHORS: I[illegible], B. D., Pakh[illegible] V. I., P[illegible]filov, I. N.

TITLE: New types of organosilicon plastics

PERIODICAL: Referativnyy zhurnal. Khimiya, no. [illegible], 1961, [illegible], abstract 5P38 (5P38) ("Vestn. tekhn. i ekonom. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii", 1959, no. 3, [illegible])

TEXT: A short characteristic of organosilicon compounds is given: KMK-9 (KMK-9) molding powder, KMK-218 (KMK-218), KMC-9 (KMS-9) molding materials, and CKП-9 (SKP-9) glass textolite (technological, physico-chemical, physico-mechanical, and dielectric properties, temperature-dependence of dielectric and mechanical characteristics). [Abstracter's note: Complete translation.]

Card 1/1

BAZHANT, V. [Bažant, V.], laureat Gosudarstvennoy premii; **KHVALOVSKI**, V.
[Chvalovský, V.], laureat Gosudarstvennoy premii; **RATOUSKI**, I.
[Rathouský, J.], laureat Gosudarstvennoy premii; **VAYNSHTEYN**, Yu.I.
[translator]; **STANKO**, V.I. [translator]; **PAKHOMOV, V.I.**, red.;
ZAZUL'SKAYA, V.F., tekhn.red.

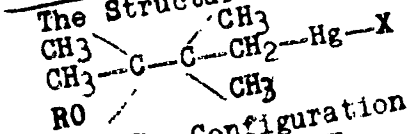
[Silicones; organosilicon compounds, their production, properties,
and uses] Silikony; kremniiorganicheskie soedineniia, ikh polu-
chenie, svoistva i primenenie. Moskva, Gos.nauchno-tekhn.izd-vo
khim.lit-ry, 1960. 709 p. Translated from the Czech.
(MIRA 14:4)
(Silicon organic compounds)

85997
/070/ /005/005/026/026/XX
E132/E160

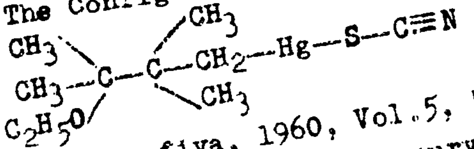
5.3700 2209, 1273, 15

AUTHOR: Pakhomov, V.I.

TITLE: The Structure of Molecules of the Series

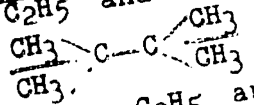


I. The Configuration of the Molecule



PERIODICAL: Kristallografiya, 1960, Vol.5, No.5, pp.800-802

TEXT: The systematic study of mercury-organic derivatives of the above type where R may be H, CH_3 or C_2H_5 and where X may be Cl, Br, I, CNS, $OCOCH_3$, CN or — CH_2



OR

is being commenced. Data on the case where R is C_2H_5 and X is SCN follows: The unit cell is orthorhombic with a = 15.62, b = 12.33 and c = 6 23 Å Z = 4 and the space group is

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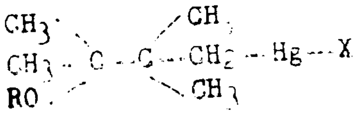
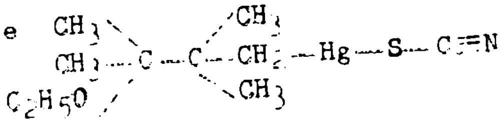
E132/E160

The Structure of Molecules of the Series



$(CH_3)_2(RO)C-C(CH_3)_2-CH_2-Hg-X$

1. The Configuration of the Molecule



$(CH_3)_2(C_2H_5O)C-C(CH_3)_2-CH_2-Hg-S-C\equiv N$

$P2_12_12_1$. $d_{obs.} = 2.01$ and $d_{calc.} = 2.06$ g/cm^3. Two dimensional Patterson projections on to 001 and 100 gave the mercury positions which controlled the signs for the succeeding electron density projections. Rough coordinates of the C atoms have been obtained giving the general configuration of the molecule. The ethyl and the thiocyanate groups are packed close to each other. Further refinement of the structure would require three dimensional data and is not contemplated. Acknowledgements are made to R.Ya. Levina, V.N. Kostin and A.I. Kitaigorodskiy for supply of materials and assistance

There are 3 figures

Card 2/2

SUBMITTED: March 7, 1960

37777

S/661/61/000/006/072/081
D247/D302

15.8170

AUTHORS: Pakhomov, V. I., Izyumov, B. D. and Gol'dshteyn, Zh. I.

TITLE: Thermostable silico-organic glues

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soyedineniy; trudy konferentsii, no. 6: Doklady, diskussii, resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958. Leningrad, Izd-vo AN SSSR, 1961, 306-316

TEXT: Two methods are used for obtaining glues with both high thermal stability and good adhesion. The first is the modification of polysilicone resins by other polymers containing strong polar groups. The second is by the introduction of polar groups into the organic radicals in the polysilicones. A series of glues with different modifications were examined for adhesion and thermostability and the constitution of the glues and their performance was noted. Their uses and methods of application were also given. Various si-

Card 1/2

S/661/61/000/006/073/081
D247/D302

AUTHORS: Pakhomov, V. I., Izyumov, B. D. and Panfilova, I. P.

TITLE: Thermal stability and resistance of silico-organic pressed materials to arcing

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soxedineniy; trudy konferentsii, no. 6: Doklady, diskussii, resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958. Leningrad, Izd-vo AN SSSR, 1961, 316-322

TEXT: A series of silico-organic pressed materials were examined for their stability, mechanical and dielectric properties. Their composition and uses were recorded, and also their appearance. In the discussion, in which B. A. Kiselev (Moscow) took part, particular properties of various resins were mentioned. The greatest thermal stability noted was 100 hours at 350 - 400°C and the highest limit before electrical breakdown was 18 kV/mm. There are 8 figures, 1 table and 8 references: 5 Soviet-bloc and 3 non-Soviet

Card 1/2

28967

S/191/61/000/011/003/008
B110/B147

15.8140

11.2212

AUTHORS: Andrianov, K. A., Pakhomov, V. I., Lapteva, N. Ye.

TITLE: Reactions of hydroxy-methyl-methyl siloxanes with acids and isocyanates

PERIODICAL: Plasticheskiye massy, no. 11, 1961, 17-20

TEXT: The stability of the hydroxyl group being in α-position to the Si atom, and its reaction with acids and isocyanates is investigated on the example of bis-(hydroxy-methyl)-tetramethyl disiloxane (A) and poly-(hydroxy-methyl-methyl)-siloxane (B). For the preparation of A according to $CH_3COOCH_2(CH_3)_2Si\text{-}O\text{-}Si(CH_3)_2CH_2OOCCH_3 + 2CH_3OH \xrightarrow{HCl} HOCH_2(CH_3)_2Si\text{-}O\text{-}Si(CH_3)_2CH_2OH + 2CH_3COOCH_3$, 60 g of bis-(acetoxy-methyl)-tetramethyl disiloxane were methanolized by means of 240 ml CH_3OH with 1-1.2 % HCl. 5 g of anion exchanger АН-2Ф (AN-2F) or АН-18 (AN-18) in the OH form lower the HCl content to 0.05-0.02 %. The yield of

Card 1/5

28987 S/191/61/000/011/003/008
B110/B147

Reactions of hydroxy-methyl-methyl...

unpurified A is 91 % of the theoretical amount (45.7 g): $n_D^{20} = 1.4355$; $d_4^{25} = 0.7989$; OH content = 16.47 %; Si content = 29.86 %; MW = 210. Rectification at $5 \cdot 10^{-1}$ mm Hg produced crystalline, pure A (melting point ~8°C). (Table 1). Experiments proved a comparatively difficult condensation of the hydroxyl groups of A (Table 2). Only when small amounts of acid are introduced into A, its properties change slowly. Heating of A for 15 hr at 200°C lowers the OH content from 16.55 to 14.36 %. Esterification of 6.98 g of A by means of 5.26 g of adipic acid (molar ratio 1:1) proceeds readily at 200°C:

$$xHOCH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OH + xHOOC(CH_2)_4COOH \rightarrow$$
$$HO[CH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OOC(CH_2)_4COO]_xH + (2x-1)H_2O$$

The ester number increases quickly during polycondensation, the acid number drops after 15 hr of heating. The polymer with acid number 8.3, ester number 338, and MW 9500 was a viscous, highly sticky brown liquid, soluble in alcohols, ethers, hydrocarbons, ketones, dioxane, tetrahydrofuran, acetic acid, and formic acid. The polyester was treated at 200°C

Card 2/7

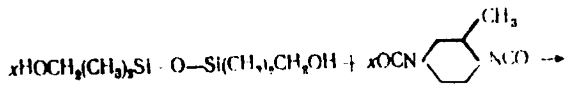
and 10 mm Hg with 0.37 g of A for esterification of the terminal COOH groups. 2.023 g of polyester with 0.0516 g of hexamethylene diisocyanate (C) (0.5 g-mole to 1 COOH group) at 200°C in 10 % acetic acid solution in the N_2 flow produced an elastic, rubber-like polymer:

$$HO[CH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OCO(CH_2)_4COO]_xCH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OH + OCN(CH_2)_6NCO \rightarrow$$
$$HO[CH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OCO(CH_2)_4COO]_xCH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OOCNH(CH_2)_6NCO \quad \text{и т. д}$$

This dissolves in acetic acid and formic acid, and swells in tetrahydrofuran, dioxane, hydrocarbons, and pyridine. 3.06 g of A at 120°C with 2.7 g of C form sticky, elastic polymers well adhering to glass and duralumin in 1.5 % alcoholic solution. 3.4 g of A at 120°C with 2.9 g of p-toluylene diisocyanate form solid polymers in 1 % acetic acid solution

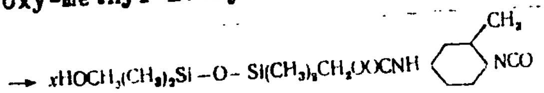
$$\text{I}\quad xHOCH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OH + xOCN(CH_2)_6NCO \rightarrow$$
$$\rightarrow xHOCH_2(CH_3)_2Si-O-Si(CH_3)_2CH_2OOCNH-(CH_2)_6NCO$$

II.



28987 S/191/61/000/011/003/008
B110/B147

Reactions of hydroxy-methyl-methyl...



I dissolves in aliphatic alcohols and cresol, I and II in acetic acid and formic acid. They swell in pyridine, hydrocarbons, and tetrahydrofuran. 15 g of A were mixed with 50 g of 2 % HCl, stirred at 90°C for 15 hr, and the content of acetic acid was determined. It was neutralized by means of solid $NaHCO_3$ and determined in %: Si - 20.5; OH = 3.41; CH_3COO = 24.18. 20 g of A was stored for 48 hr at 20°C, and viscosity as well as refractive index were determined (Table 2). After heating 5 g of A at 200°C for 15 hr, the OH content drops from 16.95 to 14.36 %. During the effect of 0.4 g of 98 % H_2SO_4 on 15 g of A, η_{20} and n_D^{20} remained nearly unchanged even after a longer effect. When 10.72 g of A was left standing for 48 hr with 40.98 CH_3OH acidified with 35 % HCl, the Si and OH content remained practically constant. The same applied when 4.97 g of A was left standing for 48 hr with 0.64 g of distilled water. There are 4 figures, 4 tables, and 3 references: 1 Soviet and 2 non-Soviet.

Card 4/7

28987
S/191/61/000/011/003/008
B110/B147

Reactions of hydroxy-methyl-methyl...

The two references to English-language publications read as follows: Speier, J. Am. Chem. Soc., 74, 1474 (1949); Us Pat. 2527590 (1950); C. A., 45, 2498 (1951).

Table 1. Effect of 2 % HCl and H_2SO_4 on bis-(acetoxymethyl)-tetramethyl disiloxane.

Legend: (1) Amount of bis-(acetoxymethyl)-tetramethyl disiloxane, g; (2) acid used; (3) experimental conditions; (4) content, %; (5) molecular weight; (6) acetoxy group cleavage, %; (7) initial bis-(acetoxymethyl)-tetramethyl disiloxane; (8) designation; (9) amount, ml; (10) time, hr; (11) temperature, °C; (12) OH groups; (13) 2 % H_2SO_4; (14) 2 % HCl.

Table 2. Effect of heating on bis-(hydroxy-methyl)-tetramethyl disiloxane.

Legend: (1) Temperature, °C; (2) time, min; (3) viscosity, η_{20} cm^3.

Card 5/7

OZEROV, R.P.; RANNEV, N.V.; PAKHOMOV, V.I.; REZ, I.S.; ZHDANOV, G.S.

Structure of KIO_3 at room temperature. Kristallografiia 7 no.4:620-622 Jl-Ag '62. (MIRA 15:11)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Potassium iodide crystals)

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

AUTHORS: Andrianov, K. A., Pakhomov, V. I., and Lapteva, N. Ye.

TITLE: Reactions of allyl phenol and trimethyl siloxy allyl benzene with alkyl alkoxy silanes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1962, 2039 - 2046

TEXT: In the reaction of o-allyl phenol with alkyl alkoxy silanes in the presence of $H_2PtCl_6 \cdot 6H_2O$, the following addition was found to take place: $\equiv SiH + CH_2=CHCH_2C_6H_4OH \rightarrow \equiv Si(CH_2)_3-C_6H_4OH$ (1), as well as substitution of the hydroxyl hydrogen according to: $\equiv SiH + HOC_6H_4CH_2CH=CH_2 \rightarrow \equiv SiOC_6H_4C_3H_5 + \overset{\uparrow}{H}_2$ (2). Reaction (2) was confirmed by ether formation from o-allyl phenol and triethoxy silane in the presence of KOH. The resulting product was identical with that obtained by reaction (2), its IR spectrum, in contrast to the compound obtained by reaction (1), did not show the 3400 - 3600 cm^{-1} band of the HOC_6H_4 group. To avoid hydrogen substitution, the

Card 1/5

reaction of the alkyl alkoxy silanes was carried out with o-trimethyl siloxy allyl benzene synthesized from trimethyl chlorosilane and o-allyl phenol in petroleum ether by bubbling with NH_3 (yield 74%), or in petroleum ether and pyridine (yield 50%), - b.p. 93 - 95°C/7 - 8 mm Hg, d_4^{20} 0.9542, n_D^{20} 1.4885. It reacted with silanes at 125°C in N_2 atmosphere and in the presence of $H_2PtCl_6 \cdot 6H_2O$, dissolved in i-propanol, only by addition: $CH_3(RO)_2SiH + CH_2{=}CHCH_2C_6H_4OSi(CH_3)_3 \rightarrow (CH_3)_3SiOC_6H_4C_3H_6SiCH_3(OR)_2$; R = CH_3, C_2H_5, C_4H_9. The following compounds were synthesized by this reaction: $(CH_3)_3SiOC_6H_4(CH_2)_3SiCH_3(OC_2H_5)_2$, yield 54%, b.p. 145 - 146°C/2 - 3 mm Hg, d_4^{20} 0.9527, n_D^{20} 1.4660; $(CH_3)_3SiOC_6H_4(CH_2)_3SiCH_3(OC_4H_9)_2$, yield 55 %, b.p. 180 - 183°C/2 - 3 mm Hg, d_4^{20} 0.9321, n_D^{20} 1.4663; $(CH_3)_3SiOC_6H_4(CH_2)_3Si(OC_2H_5)_3$, yield 52%, b.p. 157 - 159°C/1 - 2 mm Hg, d_4^{20} 0.9771, n_D^{20} 1.4620; $(CH_3)_3SiOC_6H_4(CH_2)_3Si(OC_4H_9)_3$, yield 50%, b.p. 202 - 204°C/1 - 2 mm Hg,

d_4^{20} 0.9442, n_D^{20} 1.4954; $(CH_3)_3SiOC_6H_4(CH_2)_3SiC_2H_5(OC_2H_5)_2$, yield 75%, b.p. 162 - 164°C/ 2 - 3 mm Hg, d_4^{20} 0.9509, n_D^{20} 1.4698; $(CH_3)_3SiOC_6H_4(CH_2)_3SiC_2H_5(OC_4H_9)_2$, yield 52%, b.p. 184 - 188°C/1 mm Hg, d_4^{20} 0.9336, n_D^{20} 1.4700; $(CH_3)_3SiOC_6H_4(CH_2)_3SiC_2H_5(OCH_3)_2$, yield 60%, b.p. 143°C/1 - 2 mm Hg, d_4^{20} 0.9729, n_D^{20} 1.4750. The IR spectra of these compounds and of the products of their hydrolysis did not show the 1375 cm^{-1} band characteristic of the $C\text{-}CH_3$ group, but the 1449 cm^{-1} band corresponding to the $-CH_2-CH_2-$ group. Thus the Si adds to the carbon atom situated at the end of the allyl group. The alcoholysis of these compounds in the presence of KOH or H_2SO_4 yielded heterocyclic compounds:

$(RO)_3SiC_3H_6C_6H_4OSi(CH_3)_3 \xrightarrow[KOH]{ROH} [(RO)_3SiC_3H_6C_6H_4OH] + (CH_3)_3SiOR$ $\longrightarrow (RO)_2\overline{SiC_3H_6C_6H_4O} + ROH$. The following compounds were thus obtained:

$\overline{OC_6H_4C_3H_6Si}(OC_2H_5)CH_3$, yield 79%, b.p. 95 - 97°C/1 - 2 mm Hg, d_4^{20} 1.0359, n_D^{20} 1.5020; $\overline{OC_6H_4C_3H_6Si}(OC_4H_9)CH_3$, yield 69 - 70%, b.p. 132 - 134°C/9 mm Hg, d_4^{20} 1.0099, n_D^{20} 1.4952; $\overline{OC_6H_4C_3H_6Si}(OC_4H_9)_2$, b.p. 143 - 145°C/3 - 4 mm Hg, d_4^{20} 1.0044, n_D^{20} 1.4812; $\overline{OC_6H_4C_3H_6Si}(OC_2H_5)_2$, yield 59%, b.p. 117-121°C/1-2 mm Hg, d_4^{20} 1.0583, n_D^{20} 1.4918; $\overline{OC_6H_4C_3H_6Si}C_2H_5(OC_2H_5)$, yield 50%, b.p. 110 - 112°C/1 - 2 mm Hg, d_4^{20} 1.0023, n_D^{20} 1.5040; $\overline{OC_6H_4C_3H_6Si}C_2H_5(OC_4H_9)$, yield 45%, b.p. 148 - 150°C/2 - 3 mm Hg, d_4^{20} 1.0042, n_D^{20} 1.4985; $\overline{OC_6H_4C_3H_6Si}C_2H_5(OCH_3)$, yield 67%, b.p. 95°C/1 mm Hg, d_4^{20} 1.0504, n_D^{20} 1.509. The hydrolysis of some of these cyclic compounds yielded polysiloxanes containing oxyphenyl groups. There are 4 figures and 2 tables. The English-language reference is: J. L. Speier, R. Zimmerman, J. Webster, J. Amer. Chem. Soc., 78, 2278 (1956); British patent 769497 (1957).

Reactions of allyl phenol and...

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

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Plastics)

SUBMITTED: March 27, 1962

Card 5/5

PAKHOMOV, V. I.

Structure of molecules of the series $(CH_3)_2C(OCH_3)C(CH_3)_2CH_2HgX$. Part 2. Configuration of the molecules $(CH_3)_2C(OCH_3)C(CH_3)_2CH HgI(CH_3)_2C(OCH_3)C(CH_3)_2CH_2HgSCN$. Kristallografiia 7 no.3:456-457 My-Je '62. (MIRA 16:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

(Molecules)

PAKHOMOV, V. I., REZ, I. S., LOBANOVA, G. M.,

"X-ray Investigation of $N(CH_3)_4 Hg X_3$."

report presented at the Symposium on Ferroelectricity and Ferromagnetism, Leningrad, 30 May-5 June 1963.

PAKHOMOV, V.I.

S/191/63/000/004/007/015
B101/B186

AUTHORS: Nikolenko, V. I., Panfilova, I. P., Pakhomov, V. I., Belyy, A. P.

TITLE: Properties of high-frequency КФ-9 (KF-9) molding material

PERIODICAL: Plasticheskiye massy, no. 4, 1963, 25 - 26

TEXT: The physicomechanical and dielectric properties of the high-frequency thermosetting KF-9 material were tested. Its dielectric properties are similar to those of polytetrafluoroethylene. For the initial material, the following data are given: $\rho_v = 2\cdot 10^{16}$ ohm·cm; surface resistivity $\rho_s = 2\cdot 10^{16}$ ohm; $\tan\delta = 0.00626$ at 10^6 cps; dielectric constant $\varepsilon = 3.02$; breaking voltage $E = 17.05$ kv/mm; impact strength $\sigma_i = 35.0$ kg·cm/cm^2; bending strength $\sigma_b = 479$ kg/cm^2; compressive strength $\sigma_c = 356$ kg/cm^2. After a threefold thermal shock by changing the temperature from +360°C to -60°C, the values changed as follows: $\rho_v = 1\cdot 10^{15}$; $\tan\delta = 0.00427$;

Card 1/2

Properties of high-frequency... S/191/63/000/004/007/015
B101/B186

$\delta = 3.2$; $E = 19.7$; $\sigma_i = 31.5$; $\sigma_b = 390$; $\sigma_c = 476$. After 2160 hrs of tropical humidity: $\varrho_v = 2\cdot10^{14}$; $\varrho_s = 2\cdot10^{14}$; $\tan\delta = 0.0100$; $\varepsilon = 3.25$; $E = 16.9$. The dielectric properties of KF-9 changed only slightly after 1500 hrs of ageing at 300°C and subsequent storage for 100 hrs in the moist chamber, containing 98% moisture. The loss in weight was 0.57 - 0.90% after 10 hrs at 300°C and 0.7 - 1.25% after 210 hrs. The material can be used for 1000 hrs at temperatures between -60 and +250°C, withstanding +300°C for one hour. The material is not liquid when cold, and can be processed by molding or compression molding (different to ftoroplast-4 (Teflon-4)). There are 4 figures and 3 tables.

Card 2/2

PAKHOMOV, V.I.

Structure of the crystals C_6H_5HgX. Zhur.strukt.khim. 4 no.4:594-601 Jl-Ag '63. (MIRA 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Mercury organic compounds) (X-ray crystallography)

PAKHOMOV, V.I.

Crystalline structure of the compound α-$C_{10}H_7HgI$. Kristallografiia 8 no.5:789-790 S-O '63. (MIRA 16:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 17541-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3004424 S/0020/63/151/004/0849/0852

AUTHORS: Andrianov, K. A. (Corresponding Member, AN SSSR); Pakhomov, V. I.; Lapteva, N. Ye.

TITLE: Intramolecular transesterification reactions of substituted Gamma-oxypropylalkoxysilane ethers

65
64

SOURCE: AN SSSR. Doklady, v. 151, no. 4, 1963, 849-852.

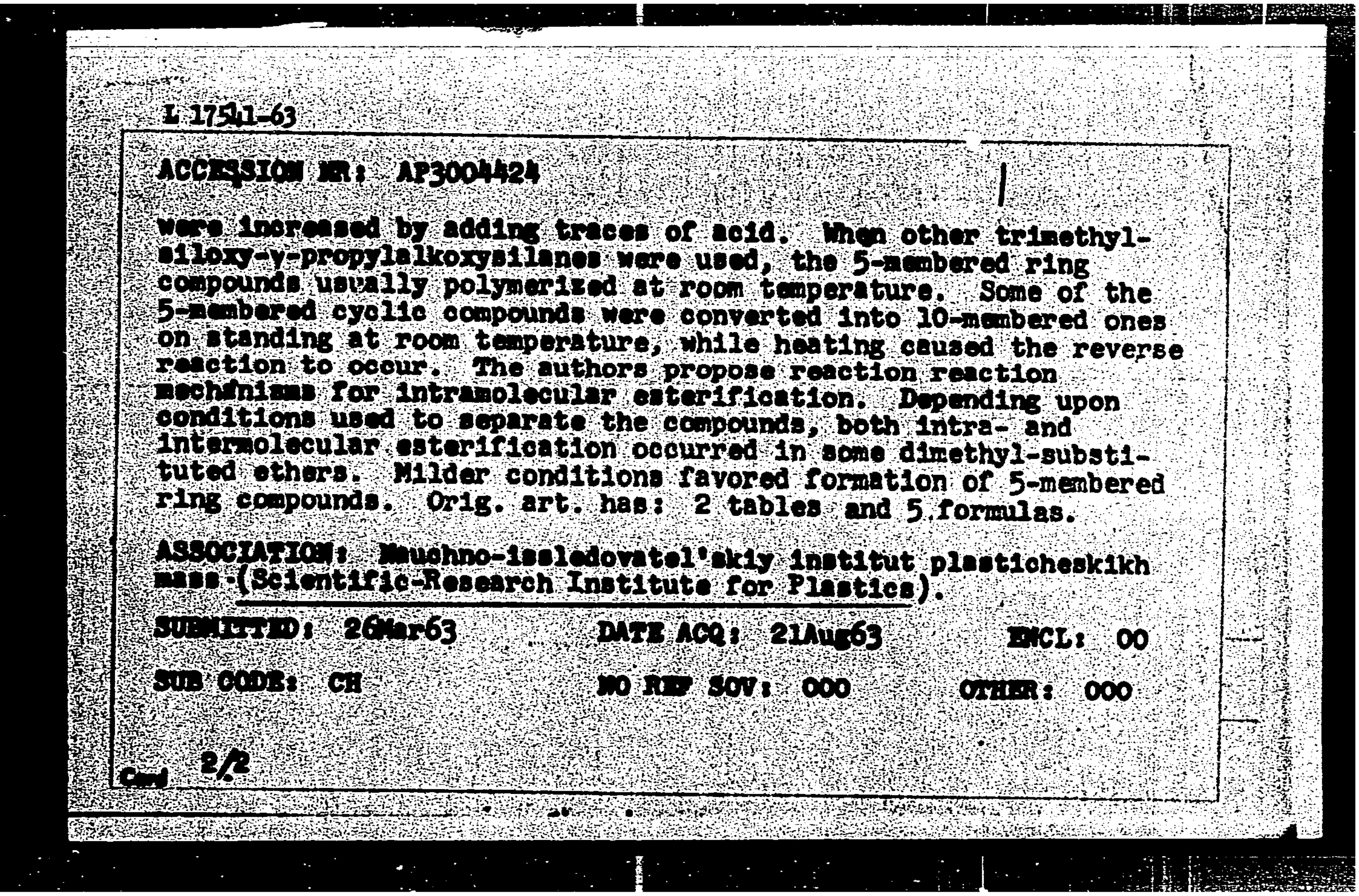
TOPIC TAGS: esterification, organosilicon compound

ABSTRACT: Substituted ethers of γ-oxypropylalkoxysilanes were obtained by the reaction:

$$R_3SiOCH_2-CH=CH_2 + HSi(OR)_3 \rightarrow R_3SiOCH_2CH_2CH_2Si(OR)_3.$$

Substituted γ-oxypropylalkoxysilane ethers can undergo intramolecular esterification to form 5- to 10-membered cyclic compounds. When γ-trimethylsiloxypropyltributoxysilane was heated under vacuum, a 32% yield of trimethylbutoxysilane and 1,1-dibutoxy-1-sila-2-oxycyclopentane was formed. The reaction rate and yield

Card 1/2



L 17541-63

ACCESSION NR: AP3004424

were increased by adding traces of acid. When other trimethylsiloxy-γ-propylalkoxysilanes were used, the 5-membered ring compounds usually polymerized at room temperature. Some of the 5-membered cyclic compounds were converted into 10-membered ones on standing at room temperature, while heating caused the reverse reaction to occur. The authors propose reaction reaction mechanisms for intramolecular esterification. Depending upon conditions used to separate the compounds, both intra- and intermolecular esterification occurred in some dimethyl-substituted ethers. Milder conditions favored formation of 5-membered ring compounds. Orig. art. has: 2 tables and 5 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific-Research Institute for Plastics).

SUBMITTED: 26Mar63 DATE ACQ: 21Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 000 OTHER: 000

Card 2/2

ACCESSION NR: AP4042189 S/0190/64/006/007/1275/1280

AUTHOR: Pavlova, S. A., Pakhomov, V. I., Tverdokhlebova, I. I.

TITLE: Cyclolinear polyphenylsiloxanes

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 7, 1964, 1275-1280

TOPIC TAGS: siloxane, polyphenylsiloxane, benzene, toluene, xylene, dinil, cyclolinear polymer, phenyltrichlorosilane, infrared spectrum, polymer structure

ABSTRACT: Polyphenylsiloxanes obtained by condensation of the hydrolysis products of phenyltrichlorosilane in four solvents (benzene, toluene, xylene and dinil) were investigated by infra-red spectroscopy. All four polyphenylsiloxanes were found to have the same cyclolinear structure predicted by Brown, et al. (J. Amer. Chem. Soc., 82, 6194, 1960). The molecular weight of the polymer was 4.1×10^6. The effect of the reaction medium on the mechanical properties, the degree of polymolecularity and the structural homogeneity of polyphenylsiloxanes was studied in detail. The four test samples were fractionated from 0.5% benzene solution with methanol at 20C. Infrared spectra were then taken for all four polymers, their thermal properties were studied and the molecular weight was determined by light diffusion. The molecular weight distribution curves are plotted. The polymers were found to be rather stable during fractionation. The infrared spectra show that the

Card 1/2

ACCESSION NR: AP4042189

four polymers have almost the same structural elements, with bands at 1000-1100 cm^{-1}, corresponding to Si-O-Si-and at 1400-1500 cm^{-1} corresponding to $Si-C_6H_5$. The mechanical properties of the polymers were not affected by the solvent. All four polyphenyl siloxanes had a very high glass temperature (T_c=300C). The close T_c values for the polyphenylsiloxanes show that the conditions of preparation do not significantly affect the structure. The reaction conditions also do not significantly affect the polydispersity of polyphenylsiloxanes. The degree of polymolecularity and the average molecular weight of the polyphenylsiloxanes increased, depending on the solvent used, in the order benzene-toluene-xylene-dinil. A mechanism for the formation of these polyphenylsiloxanes is proposed. Orig. art. has: 3 figures, 1 table and 3 structural formulas.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organometallic Compounds, SSSR)

SUBMITTED: 08Aug63 ENCL: 00

SUB CODE: OC NO REF SOV: 001 OTHER: 001

Card 2/2

ACCESSION NR: AP4042190 S/0190/64/006/007/1281/1285

AUTHOR: Pavlova, S. A., Pakhomov, V. I., Tverdokhlebova, I. I.

TITLE: The structure of polyphenylsiloxane and the properties of its solutions

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 7, 1964, 1281-1285

TOPIC TAGS: polyphenylsiloxane, benzene, toluene, xylene, dinil, Mark-Houwink equation, polymer fractionation, light scattering, refractive index, polydimethylsiloxane, polyisobutylene, polymer structure, polymer viscosity, cyclolinear polymer, polymer rigidity

ABSTRACT: Viscosimetric and optical studies on polyphenylsiloxanes in dilute and very dilute solutions of benzene, toluene, xylene and dinil showed that the solvent affects only the molecular weight of the polymer. At a molecular weight ranging from 10,000 to 50,000, the viscosity of the polymer in solution is described by the equation $\eta = 1.305 \times 10^{-7} M^{1.29}$, indicating that this polymer consists of short, rod-shaped molecules. From 50,000 to 2,700,000 the Mark-Houwink equation assumes the form $\eta = 1.93 \times 10^{-4} M^{0.634}$, i.e., the molecules of the polymer are so long that they assume the form of a coil. For all fractions of polyphenylsiloxane, the molecular weight was measured in benzene by light diffusion at an angle of 90 ,

1/2

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ACCESSION NR: AP4042190

and the specific viscosity was measured in benzene at 20C. For the first fraction, the asymmetry of light scattering was measured and the true molecular weight was calculated. The characteristic values for the difference between the refractive index of the polymer and the refractive index of the solvent form a straight line, indicating clearly that, according to the theory, they all have the same cyclolinear structure proposed by Brown et al. (J. Amer. Chem. Soc., 82, 6194, 1960). The flexibility of polyphenylsiloxane molecules was also determined and the pertinent tabulated data show that the rigidity of the polyphenylsiloxane molecule is higher than that of the molecules of polydimethylsiloxane and polyisobutylene. The study of polyphenylsiloxane in very dilute solutions showed that polymers with a relatively low molecular weight (40, 000) have an abnormal slope of the η sp./c-c curve in benzene. Orig. art. has: 5 figures, 1 table, 2 formulas and 1 chemical structure.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 08Aug63 ENCL: 00

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

Card 2/2

ZHDANOV, A.A.; PAKHOMOV, V.I.; [illegible], I.

Reaction of α-chloroalkyl[illegible] [illegible] ex[illegible]-
ethylamine. [illegible]

L 7887-66 EWT(m)/EPF(c)/EWP(j)/T/EWP(t)/EWP(b) IJP(c) RM/JD

ACC NR: AP5025042 SOURCE CODE: UR/0286/65/000/016/0085/0085

AUTHORS: Pakhomov, V. I.; 44,55 Andrianov, K. A.; 44,55 Gel'perina, V. M. 44,55

50

ORG: none

TITLE: Method for obtaining silicon-organic compounds containing the chain silicon-divalent organic radical-silicon. Class 39, No. 173954 15

27 SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 85

TOPIC TAGS: organosilicon compound, polymerization, polymer, 44,55 monomer

ABSTRACT: This Author Certificate presents a method for obtaining silicon-organic compounds containing the chain silicon-divalent organic radical-silicon, by treating silicon-organic monomers. To simplify the process and to increase the yield of polymer silphenyl monomers containing an alkyl group and more than one alkoxy group at each silicon atom are used as starting reagents. The disproportionation of the monomers is carried out at or above 200C in the presence of alkali catalysts.

SUB CODE: 07/ SUBM DATE: 13Jun64

Card 1/1 UDC: 678.84

L 36341-65 EWG(j)/EWA(k)/FBD/EWT(l)/EPA(s)-2/EWT(m)/EEC(k)-2/EEC(t)/T/EWP(t)
EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h)/EWA(c) Pn-4/Po-4/Pf-4/Pt-10/Peb/Pi-4
ACCESSION NR: AP5008474 Pi-4 IJP(c) WG/JD/JG S/0070/65/010/002/0255/0256

AUTHOR: Filimonov, A. A.; Lomova, L. G.; Suvorov, V. S.; Pakhomov, V. I.; Sonin, A. S.

81

TITLE: Second harmonic generation in potassium iodate monocrystals 14 21

B

SOURCE: Kristallografiya, v. 10, no. 2, 1965, 255-256

TOPIC TAGS: laser, ruby laser 25, nonlinear optics, harmonic generation, second harmonic, potassium iodate, nonlinear effect, optical harmonic
27 27

ABSTRACT: A second harmonic generation in crystals of potassium iodate illuminated by a ruby laser emission (λ = 6943 Å) is reported. Maximum generation was in the [102], [120], and [012] directions and was of the same order of magnitude as that observed in ADP crystals in the direction of matching indices. The determination of the direction of matching indices in KIO_3 crystals was difficult because of low crystal symmetry and the difficulty of measuring refraction indexes. The minimal refraction indexes for the D_{Na} line with laser emission propagation in the [100], [010] and [011] directions were 1.7281, 1.7274, and 1.7278, respectively. The KIO_3 crystals exhibited high birefringence. It was determined from absorption spectra that the crystals were transparent between 0.4 and 6.2 μ. [CS]

Card 1/2

L 36341-65

ACCESSION NR: AP5008474 0

ASSOCIATION: none

SUBMITTED: 06Jul64 ENCL: 00 SUB CODE: EC,SS

NO REF SOV: 002 OTHER: 002 ATD PRESS: 3219

Card 2/2

PAKHOMOV, V.I.; GERKEN, V.A.

Structure of $N(CH_3)_4HgJ_3$ crystals. Izv. AN SSSR. Ser. fiz. 29 no.6:901-902 Je '65. (MIRA 18:6)

L 00265-66 EPF(c)/EWP(j)/EWT(m)/T RM

ACCESSION NR: AP5013444 UR/0020/65/162/001/0079/0081

AUTHOR: Andrianov, K. A. 44,55 (Academician); Pakhomov, V. I. 44,55; Gel'perina, V. M. 14,55 22 19 B

TITLE: Disproportion reaction--a new method of synthesis 1 of silicoorganic polymers. Synthesis of polyphenylenesilanes 1,44,55

SOURCE: AN SSSR. Doklady, v. 162, no. 1, 1965, 79-81

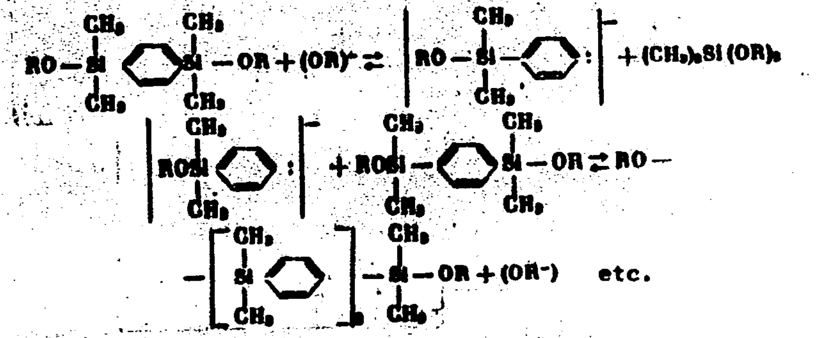
TOPIC TAGS: disproportion reaction, silicoorganic polymer, synthesis, polyphenylenesilane

ABSTRACT: Base catalyzed disproportionation of several bis-(dimethylethoxysilyl) benzenes is studied in an attempt to find new routes to the synthesis of polyphenylenesilanes. The ionic mechanism of this reaction is:

Card 1/4

L 00265-66

ACCESSION NR: AP5013444



The reaction is catalysed by KOH, alkali metal alcoholates, amines, etc. Disproportionation of 1,4-bis-(dimethylethoxysilyl)-benzene gives a dimer (360 molecular weight) in a 48% yield. Disproportionation of $(CH_3)_2(OC_2H_5)SiC_6H_4Si(OC_2H_5)_3$ gave a polymer $[(CH_3)SiC_6H_4]_{0.2}[(C_2H_5O)_2SiC_6H_4]_{0.8}$ in a 98.7% yield. The kinetics of the disproportionation reaction are shown in Fig. 1 of the Enclosure. Orig. art. has: 1 figure.

Card 2/4

L 00265-66

ACCESSION NR: AP5013444

3

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Plastics) 44,56

SUBMITTED: 14Jul64 ENCL: 01 SUB CODE: GC, OC

NO REF SOV: 000 OTHER: 003

Card 3/4

L 00265-66

ACCESSION NR: AP5013444 ENCLOSURE: 01

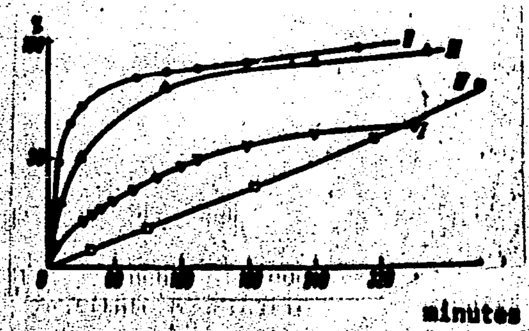


Fig. 1. I--$(CH_3)_2(OC_2H_5)SiC_6H_4Si(CH_3)_2OC_2H_5$ at 200°C and with 1% KOH; II--$C_2H_5O(CH_3)_2SiC_6H_4Si(CH_3)_2OC_2H_5$ at 230°C and with 1% KOH; III--$(C_2H_5O)_2CH_3SiC_6H_4SiCH_3(OC_2H_5)_2$ at 230°C and with 1.5% C_2H_5ONa; IV--$(C_2H_5O)_3SiC_6H_4Si(OC_2H_5)_3$ at 240°C and with 1% KOH.

Card 4/4

L 2267-66 EWT(m)/EPF(c)/EWP(j) RM
ACCESSION NR: AP5022223 UR/0191/65/000/009/0020/0022
678.842

32
B

44,55 44,55 44,55 44,55

AUTHOR: Andrianov, K. A.; Pakhomov, V. I.; Lapteva, N. Ye.

TITLE: Reactions of chloromethylsilanes and siloxanes with dihydric phenols

SOURCE: Plasticheskiye massy, no. 9, 1965, 20-22

TOPIC TAGS: organosilicon compound, resorcinol, hydroquinone, condensation reaction, silane esterification

ABSTRACT: The object of the work was to synthesize monomeric hydroxyphenoxymethylsiloxanes and monomeric products with completely esterified phenol hydroxyls by the reaction of chloromethylalkoxysilanes and siloxanes with mono- and diosodium derivatives of dihydric phenols. As a result of the reaction, the chlorine in the methyl radical was replaced by the residue of the dihydric phenol containing a free or esterified hydroxyl group. Reactions of bis(chloromethyl)tetramethyldisiloxane and chloromethyldimethylbutoxysilane with resorcinol, hydroquinone, or dihydroxydiphenylpropane (diane) were carried out in absolute butanol under nitrogen. The conditions and results of these reactions are tabulated. The silanols obtained were subjected to condensation reactions, and

Card 1/2

L 2267-66
ACCESSION NR: AP5022223

the transesterification of methylphenyldiethoxysilane and phenyltriethoxysilane was performed. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: OC

NO REF SOV: 001 OTHER: 003

Card 2/2 dq

L 65129-65 EWT(m)/EPF(c)/EWP(v)/EWP(j)/T WW/RM

ACCESSION NR: AP5021601 44,55 UR/0286/65/000/013/0071/0071

AUTHORS: Pakhomov, V. I.; Bazhenova, T. S. 44,55 32 B

TITLE: A method for obtaining epoxy 15, 44,55 organosilicon compounds. 15 Class 39, No. 172496 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 71

TOPIC TAGS: epoxy, organic chemistry, monomer, thermal stability, adhesion, catalyst

ABSTRACT: This Author Certificate presents a method for obtaining epoxy organosilicon compounds by ester exchange between monomers and oligomers with glycidol. To obtain epoxy organosilicon compounds with high thermal stability 15 and adhesion 15 to glass and metal, alkylhydridepolysiloxanes or oganosilicon monomers and oligomers containing alcoxy group are used as basic materials. Ester exchange is conducted in the presence of alkaline catalysts.

ASSOCIATION: none

SUBMITTED: 01Apr64 ENCL: 00 SUB CODE: OC

NO REF SOV: 000 OTHER: 000

Card 1/1

PAKHOMOV, V.I.

Study of the crystal structure of para-derivatives of phenyl mercury halides. Zhur. strukt. khim. 5 no.6:873-877 N-D '64. (MIRA 18:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 56662-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 WW/RM
ACCESSION NR: AP5017840
UR/0286/65/000/011/0078/0078
678.84

31
B

AUTHOR: Andrianov, K. A.; Pakhomov, V. I.; Lapteva, N. Ye.

TITLE: A method for producing organosilicon resins. Class 39, No. 171565 15 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 78

TOPIC TAGS: organosilicon resin, hydrolysis, catalysis

ABSTRACT: This Author's Certificate introduces a method for producing organosilicon resins by cohydrolysis of methyltrimethoxysilane and phenyltrimethoxysilane and then hardening them in the presence of a hardening catalyst. Resins with high thermal stability and improved mechanical characteristics are produced by carrying out the hydrolysis jointly with oxyphenylpropylsilane and using aldehydes or aldehyde derivatives as the hardening catalyst.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Plastic)

Card 1/2

L 56662-65

ACCESSION NR: AP5017840

0

SUBMITTED: 17Mar64

ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 000

OTHER: 000

Card 2/2

L 57021-65 EWT(l)/EWT(m)/T/EWP(t)/EEC(b)-2/EWP(b) Pi-4 IJP(c) JD/GG

ACCESSION NR: AP5016114 UR/0048/65/029/006/0901/0902

AUTHOR: Pakhomov, V.I.; Gerken, V.A.

41/B

TITLE: On the structure of $N(CH_3)_4HgI_3$ crystals (preliminary communication) [Report, 4th All-Union Conference on Ferroelectricity held in Rostov-on-the-Don 12-18 Sept 1964]

SOURCE: AN SSSR. Izvestiya. Ser.fizicheskaya, v.29, no.6, 1965, 901-902

TOPIC TAGS: crystal structure, crystal symmetry, ferroelectric crystal, nitrogen compound, carbon compound, hydrogen compound, mercury compound, iodine compound, bromine compound

ABSTRACT: The authors have determined the crystal structure of $N(CH_3)_4HgI_3$. The space group is $Pb2_1m$, the number of formula units in the unit cell is four, and the lattice constants are a = 9.45 Å, b = 16.44 Å, and c = 8.57 Å. The structure is compared with that of $N(CH_3)_4HgBr_3$ previously determined by the authors (Program of the 4th All Union Conference on Crystal Chemistry, Kishinev, 1961) and by J.G.

Card 1/2

L 57021-65

ACCESSION NR: AP5016114

0

White (Acta crystallogr.16,397,1963). The Patterson projections P(uv) of the two crystals nearly coincide. It is concluded that the change from the monoclinic structure of $N(CH_3)_4HgBr_3$ to the rhombohedral structure of $N(CH_3)_4HgI_3$ involves only slight shifts in the positions of the atoms in the unit cell. The coordinates of the atoms in the two crystals are tabulated. Orig.art.has: 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: SS, IC

NR REF SOV: 001 OTHER: 001

Card 2/2

MAKHNENKO, L.A.; PAKHOMOV, V.I.; STEPANOV, K.N.

High-frequency focusing in linear accelerators. Zhur. tekh. fiz. 35 no.4:618-622 Ap '65. (MIRA 18:5)

PAVLOVA, S.A.; PAKHOMOV, V.I.; TVERDOKHLEBOVA, I.I.

Cyclolinear polyphenylsiloxane. Vysokom. soed. 6 no.7:1275-1280 Jl '64 (MIRA 18:2)

Properties of solutions and the structure of polyphenylsiloxane. Ibid.:1281-1285

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 05038-67 EWT(m)/EWP(j) IJP(c) WW/RM

ACC NR: AP6031157 (AN) SOURCE CODE: UR/0190/66/008/009/1618/1622 25

AUTHOR: Andrianov, K. A.; Pakhomov, V. I.; Gel'perina, V. M.; Mukhina, D. N.

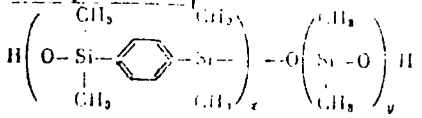
ORG: Scientific Research Institute for Plastics (Nauchno-issledovatel'skiy institut plasticheskikh mass)

TITLE: Catalytic polycondensation of 1,4-bis(dimethylhydroxysilyl)phenylene with diphenyldihydroxysilane and octamethylcyclotetrasiloxane

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 9, 1966, 1618-1622

TOPIC TAGS: polycondensation, catalytic polycondensation, copolymer, linear chain copolymer

ABSTRACT: A study was made of the polycondensation reaction of 1,4-bis(dimethylhydroxysilyl)phenylene with octamethylcyclotetrasiloxane and diphenyldihydroxysilane in the presence of alkali catalysts. These interactions were found to produce the following linear chain copolymers:

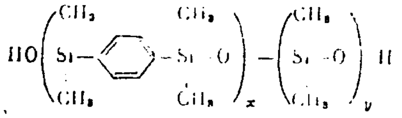
1.


$H\left(O-Si(CH_3)_2-C_6H_4-Si(CH_3)_2\right)_x-O\left(Si(CH_3)_2-O\right)_y H$

Card 1/2 UDC: 541.64+678.84

L 04655-67

ACC NR: AP6031157

2. 

$$HO\left(\begin{matrix}CH_3\\ Si\\ CH_3\end{matrix}-C_6H_4-\begin{matrix}CH_3\\ Si\\ CH_3\end{matrix}-O\right)_x-\left(\begin{matrix}CH_3\\ Si\\ CH_3\end{matrix}-O\right)_y H$$

The destruction of n-bis-(dimethylhydroxysilyl)phenylene was found to proceed much faster above 490C. Copolymers of 1,4-bis(dimethylhydroxysilyl)phenylene with octamethylcyclotetrasiloxane were found to form as a result of polycondensation as well as polymerization with opening of octamethylcyclotetrasiloxane. The polycondensation of compounds was studied at various ratios. Orig. art. has: 2 tables and 5 figures. [Based on authors' abstract]

SUB CODE: 07/ SUBM DATE: 23Jul65/ ORIG REF: 001/ OTH REF: 005/

Card 2/2

L 07401-67 EWT(l) IJP(c) AT/GD

ACC NR: AT6020583 (N) SOURCE CODE: UR/0000/65/000/000/0189/0205

54

B+1

AUTHOR: Pakhomov, V. I.

ORG: none

TITLE: Radiation of low frequency waves by ions and electrons of a nonisothermal magnetoactive plasma

SOURCE: AN UkrSSR. Vysokochastotnyye svoystva plazmy (High frequency properties of plasma). Kiev, Naukovo dumka, 1965, 189-205

TOPIC TAGS: plasma wave propagation, Cerenkov radiation, magnetoacoustic effect, magnetoactive plasma

ABSTRACT: The intensities of Alfven waves and fast and slow magnetoacoustic waves radiated by ions and electrons is calculated. The analysis is carried out in detail for several cases. It is shown that in low pressure plasma, where the Alfven velocity v_A greatly exceeds the velocity of sound v_s, the index of refraction of the slow wave is much greater than that of the other two waves. This leads to a great increase in the radiated intensity of the slow wave harmonics of $(v_A/v_s)^{2s+1}$, where s is the harmonic index. It is also proven that Cerenkov radiation of low frequency waves by the elec-

Card 1/2

L 07401-67

ACC NR: AT6020583

0

trons of nonisothermal plasma is a considerable fraction of the total radiation. The radiation and absorption efficiency of plasma for the spectral range of frequencies below ion cyclotron frequency is also computed. Spatial properties of the propagation characteristics are given. Orig. art. has: 42 formulas.

SUB CODE: 20/ SUBM DATE: 19Nov65/ ORIG REF: 007

Card 2/2

86813

S/185/60/005/001/013/018
A151/A029

6 8000 (3201, 1099, 1162)
6110 also 1144, 1063, 1147
9300

ORS: Tkalich, V.S.; Pakhomov, V.I.

LE: Elastic Waves in a Thin Toroidal Tube Filled With a Liquid

RIODICAL: Ukrayins'kyy Fizychnyy Zhurnal, 1960, Vol. 5, No. 1, pp. 115 - 117

XT: The generation of homogeneous acoustic fields in a liquid is of great importance for certain technical purposes (Ref. 1). A homogeneous acoustic field (according to period) can be generated in a resonator which is shaped like a toroidal tube filled with a liquid. In such a system, a wave can be established which runs along the tube's axis (Ref. 2). Mathematically and by considering the potential of the liquid's velocity, the deformation vector in a hard body, the velocity of the sound in the liquid (c), the longitudinal (c_e) and transverse (c_t) sound velocities in the liquid, the normal tension component on ne inner surface of the tube, as well as a number of other factors, the authors erive a formula by which the phase speed can be calculated:

$$\frac{(3 - 4a) + (1 - a)(1 + d) \pm \sqrt{[b\,(3 - 4a) + (1 - a)(d - 1)]^2 + d\,(1 - 2a)^2}}{\frac{d}{2} + 2b\,(1 - a)} \qquad (8)$$

Card 1/3

86813

S/185/60/005/001/013/018
A151/A029

Elastic Waves in a Thin Toroidal Tube Filled With a Liquid

ASSOCIATION: Fizyko-tekhnichnyy instytut AN URSR (Physico-Technical Institute, AS UkrSSR)

SUBMITTED: October 17, 1959

Card 3/3

83597

S/056/60/038/005/030/050
B006/B070

26.2311
26.2537

AUTHORS: Stepanov, K. N., Pakhomov, V. I.

TITLE: Magnetic Bremsstrahlung 19 of a Restricted Plasma

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1564 - 1568

TEXT: The present paper is a contribution to the topic of controlled thermonuclear reactions (energy equilibrium in the thermonuclear reactor, microwave diagnostics of a plasma). The authors make a theoretical study of the magnetic bremsstrahlung emitted by a restricted high-temperature plasma placed in a strong magnetic field. For this purpose, it is assumed that the magnetic pressure p_H is much higher than the pressure p_e of the electron gas. $p_H \gg p_e + p_i$ (p_i - ion gas pressure) is a necessary condition for the formation of equilibrium plasma configurations, which guarantees the stability of the configuration. The electron plasma considered moves in the $\vec{H}$ field in a spiral along the lines of force, emitting electromagnetic waves of the frequency (1):

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ing. The authors assume

y small so that $\Delta H/H \lesssim \beta$, and the

Card 1/3

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83597

Magnetic Bremsstrahlung of a Restricted Plasma S/056/60/038/005/030/050
B006/B070

field may be assumed to be homogeneous. Under these assumptions, the propagation of waves with $\omega \sim s\omega_H$ (which are strongly absorbed in the high-temperature plasma - cyclotron absorption) is studied, that is to say, the tensor components of the dielectric constant (ε_{ij}) are determined. Then, expressions for the attenuation factor are derived for two special cases. The emissivity of the plasma is investigated, and some expressions are obtained for the total and individual intensities of radiation. The problem of the intensity of thermal radiation in the region of resonance frequencies is discussed in the last section of the paper. An investigation on the same lines was earlier made by V. L. Ginzburg and V. V. Zheleznyakov. A. I. Akhiyezer, M. A. Leontovich, and Ya. B. Faynberg are thanked for discussions. B. A. Trubnikov is mentioned. There are 10 references: 9 Soviet and 1 Australian.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: December 9, 1959

Card 3/3

9,2572
10.2000
262311

28770
S/057/61/031/010/003/015
B111/B112

AUTHORS: Pakhomov, V. I., Aleksin, V. F., and Stepanov, K. N.

TITLE: Radiation of an electron moving on helical orbits in a magnetically active plasma. I.

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 10, 1961, 1170 - 1184

TEXT: The determination of the radiation intensity of an electron moving in a magnetic field is significant for thermonuclear reactions, radiophysical and astrophysical problems. Several authors have worked in this field: A. G. Sitenko, A. A. Kolomenskiy (Ref. 1: ZhETF, 30, 511, 1956), A. A. Kolomenskiy (Ref. 2: DAN SSSR, 106, 982, 1956), V. Ya. Eydman (Ref. 5: ZhETF, 34, 131, 1958), V. L. Ginzburg, V. V. Zheleznyakov (Ref. 7: Izv. vuzov, Radiofizika, 1, no. 2, 59, 1959), and B. A. Trubnikov, A. Ye. Bazhanova (Ref. 8: Sb. "Fizika plazmy i problema upravlyayemykh termoyadernykh reaktsiy" - " Plasma physics and the problem of controlled thermonuclear reactions", izd. AN SSSR, v. 3, p. 121, 1958). This article deals with the determination of the energy loss of a non-relativistic electron moving on a helical orbit in plasma. The mean thermal velocity

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Card 1/6

28770
S/057/61/031/010/[illegible]
Radiation of an electron moving on ... B111/B112

of the electron is much smaller than the velocity of light. The energy absorption due to thermal motion is taken into account. Proceeding from the Maxwell equations and after carrying out a Fourier transformation $\vec{E}(\vec{r},t) = \int \vec{E}(\vec{k},\omega) e^{i\vec{k}\vec{r}-i\omega t}\, d\vec{k}\, d\omega$ for an anisotropic plasma dispersed in space and time, the authors derive general formulas for $\vec{E}$ and $\vec{H}$ in spherical coordinates, which are used to calculate the intensity of the magnetic bremsstrahlung of the electron. The following relation holds for the frequency of the s-th harmonic ω_s: $\omega_s = s\omega_H + k_\parallel v_\parallel$, where $\omega_H = \frac{eH_0}{mC}$; $k_\parallel$ and $v_\parallel$ are the projections of $\vec{k}$ and $\vec{v}$ onto the direction of the external field. The summand $k_\parallel v_\parallel$ takes the Doppler shift of the frequency into account. The radiation intensity in the solid angle dO is given by

$$\omega(\chi,\varphi,t)\, dO = \frac{c}{4\pi} \sum_{s,s'=-\infty}^{\infty} (E_{\chi s} H_{\varphi s'} - E_{\varphi s} H_{\chi s'}) R^2\, dO,$$

where $E_{\chi s}$, $E_{\varphi s}$, $H_{\chi s}$ and $H_{\varphi s}$, are the Fourier components of E_χ, E_φ, H_χ, and H_φ, respectively. The magnetic bremsstrahlung of non-relativistic particles in the fundamental frequency in dilute plasma is studied. Since the refractive index

Card 2/6

28770 S/057/61/031/010/003/015

Radiation of an electron moving on ... B111/B112

in this case is close to unity, the general formulas become simpler. The solution of the dispersion equation shows that the attenuation factor of the ordinary wave is considerably lower than that of the extraordinary one. Formulas for E_χ, E_φ, H_χ, and H_φ, which describe outgoing and incoming waves, are given. The following relation is derived for the radiation intensity of the extraordinary wave in the first harmonic:

$$w_2 = \frac{e^2 \omega_H^2 v_\perp^2}{8\pi c^3} (1 + \cos^2\chi)\, e^{-2\varkappa_2 R}, \quad \text{where}$$

$$\varkappa_2 = \frac{1}{4}\sqrt{\frac{\pi}{2}}\, \frac{\Omega^2 (1 + \cos^2\chi)}{\omega_H \beta c_\perp |\cos\chi|} \cdot \exp\left(-\frac{v_\perp^2}{2v_T^2}\right), \quad \beta = v_T/c.$$

The radiation in higher harmonics for dilute plasmas is calculated as well. The condition $s\beta n_j \ll 1$ (s - number of harmonics; n_j - refractive index for the ordinary wave ($j = 1$) and for the extraordinary wave ($j = 2$)) must be satisfied here. For the radiation intensity of the s-th harmonic in the unit solid angle one obtains

Card 3/6
5

28770 S/057/61/031/010/003/015
Radiation of an electron moving on ... B111/B112

$$w_{sj}(\chi)=\frac{e^2\omega_H^2}{2\pi c}\beta_\perp^{2s}U_{sj}(\theta)e^{-\beta s\psi^2}, \qquad (4,7)$$

ane where

$$\left.\begin{array}{l} U_{sj}(\theta)=\dfrac{s^2\sin^2\theta\,(sn_j\sin\theta)^{2s-2}\cos^2\chi\,\Phi_{sj}(\theta)}{2^{2s}(s!)^2\cos^2\theta\left|\dfrac{d\cos\chi}{d\theta}\right|\left[n_j^4\sin^4\theta(\varepsilon_2-\varepsilon_1)^2+4\varepsilon_3\varepsilon_2^2(\varepsilon_3-n_j^2\sin^2\theta)\right]},\\ \Phi_{sj}(\theta)=\left(-n_j^2\sin\theta\dfrac{dn_j}{d\theta}+\varepsilon_2 n_j\cos\theta+\varepsilon_3\sin\theta\dfrac{dn_j}{d\theta}\right)\times\\ \times(n_j^2-\varepsilon_1-\varepsilon_2)^2\varepsilon_3\cos\theta+n_j[\varepsilon_2 n_j^2\cos^2\theta+(\varepsilon_1+\varepsilon_2)(n_j^2\sin^2\theta-\varepsilon_3)]]^2,\\ \dfrac{dn_j}{d\theta}=\dfrac{uv\sin\theta\cos\theta\,n_j(n_j^2-1)}{2(1-u-v+uv\cos^2\theta)n_j^2+(2-v)u-2(1-v)^2-uv\cos^2\theta}. \end{array}\right\} \qquad (4,8)$$

Although for a low density $n_j \sim 1$, the angular distribution of the radiation intensity of a single electron in the first harmonics differs considerably from that into the vacuum. The emissivity and absorptivity of a plasma for frequencies near $s\omega_H$ are given by

Card 4/~~6~~
5

28770
Radiation of an electron moving on ... S/057/61/031/010/003/015
B111/B112

$$\eta_j(\omega) = \frac{\pi n e^2 \omega_s}{2\pi\sqrt{2\pi}\; c n_j \cos\theta}\,\beta^{2s-1} 2^s s!\, U_{sj}(\theta)\, e^{-z_s^2}, \qquad z_s = \frac{\omega - s\omega_H}{\sqrt{2}\;\omega\beta n_j\cos\theta}.$$ (4.16) (emission),

$\alpha_j(\omega_s) = 2\varkappa_{sj}$ (absorption), where $\varkappa_j = k'_{\parallel j}(k_{\perp j})\cos\chi$ and $\varkappa_{sj}$ are the corresponding Fourier components. A. I. Akhiyezer is thanked for advice. S. M. Rytov (Ref. 13: Teoriya elektricheskikh fluktuatsiy i teplovogo izlucheniya - Theory of electric fluctuations and thermal radiation, Izd. AN SSSR, M., 1953) is mentioned. There are 1 figure and 13 references: 12 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Ref. 4: R. Q. Twiss, J. A. Roberts, Aust. J. Phys., II, no. 3, 424, 1958.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physico-technical Institute, AS UkrSSR, Khar'kov)

SUBMITTED: January 31, 1961

Card 5/6
5