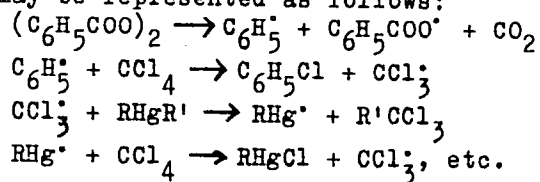


Reaction of free radicals ...

27487
S/062/61/000/009/002/014
B117/B101

khimii, 5, 1171 (1935)) or by means of the Grignard reaction. It was observed that in the reaction $\text{RHgR}' + \text{CCl}_4 \rightarrow \text{RHgCl} + \text{R}'\text{CCl}_3$ the free radical CCl_3^\cdot always combines in higher yield with a radical further left in the following sequence than with one further right:
2,4,6-(CH_3)₃ $\text{C}_6\text{H}_2^\cdot$, $\alpha\text{-C}_{10}\text{H}_7^\cdot$, $p\text{-CH}_3\text{C}_6\text{H}_4^\cdot$, $o\text{-CH}_3\text{C}_6\text{H}_4^\cdot$, $m\text{-CH}_3\text{C}_6\text{H}_4^\cdot$, $\text{C}_6\text{H}_5^\cdot$, $\text{C}_2\text{H}_5^\cdot$, $\text{C}_4\text{H}_9^\cdot$, $\text{C}_6\text{H}_5\text{CH}_2^\cdot$, $\text{C}_6\text{H}_{11}^\cdot$. If the radicals are further apart in this sequence, the reaction is frequently nearly quantitative. For a chain reaction with radical mechanism the order found shows a certain similarity to the sequence set up by M. S. Kharasch (J. Amer. Chem. Soc., 48, 3130 (1926); *ibid.*, 54, 674 (1932)) for the heterolytic reaction. The course of the chain reaction may be represented as follows:



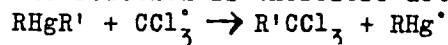
Card 2/

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S/062/61/000/009/002/014
B117/B101

Reaction of free radicals ...

The course of the reaction is therefore determined by



since in the further course of the reaction the RHg radical only participates the regeneration of the chloromethyl radical. The sequence established on the basis of decreasing proton affinity of the radicals corresponds to one based on decreasing affinity of the radicals towards the free radical CCl_3^\bullet . There are 1 table and 14 references: 5 Soviet-bloc and 9 non-Soviet-bloc. The two most recent references to English-language publications read as follows: R. E. Dessy, G. F. Reynolds, Jin Young-Kim, J. Amer. Chem. Soc. 81, 2683 (1959); S. Winstein, T. G. Traylor, J. Amer. Chem. Soc. 77, 3741 (1955).

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: March 11, 1961

Card 3/

NESMEYANOV, A.N.; BORISOV, A.Ye.; SAVEL'YEVA, I.S.

Kinetics of decomposition of symmetrical organomercury compounds.
Izv. AN SSSR Otd.khim.nauk no.12:2241-2242 D '61. (MIRA 14:11)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Mercury organic compounds) (Chemical reaction, Rate of)

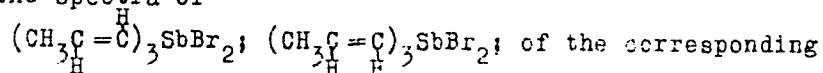
5.3700

9.4300 (1137, 1143, 1164)

S/O20/61/136/001/027/037
B004/B056AUTHORS: Borisov, A. Ye., Novikova, N. V., and Chumayevskiy, N. A.TITLE: Infrared Absorptionspectra of Organometallic Compounds of the Ethylene Series. On Cis- and Trans-configurations of Propylene-antimony Compounds (Sb^{III} and Sb^{V})

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 129-132

TEXT: The present paper is an account on investigations of the infrared absorption spectra of cis- and trans-isomeric propylene compounds with tri- and pentavalent antimony. Synthesis of these substances was described in an earlier paper (Ref. 1). Investigation was made with a BKAC M-3 (VIKS M-3) spectrometer and an NaCl prism within the range of 700-1800 cm^{-1} , and with an MKC-12 (IKS-12) spectrometer and KBr prism within 400-700 cm^{-1} . Figs. 1-3 show the spectra of



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Infrared Absorptionspectra of Organometallic Compounds of the Ethylene Series. On Cis- and Trans-configurations of Propylene-antimony Compounds (Sb^{III} and Sb^{V}) S/020/61/136/001/027/037
B004/B056

chlorides and iodides, moreover of $(\text{CH}_3\text{C}=\overset{\text{H}}{\text{C}})_3\text{Sb}$; $(\text{CH}_3\text{C}=\overset{\text{H}}{\text{C}})_3\text{Sb}$;
 $(\text{CH}_3\text{C}=\overset{\text{H}}{\text{C}})_5\text{Sb}$; $(\text{CH}_3\text{C}=\overset{\text{H}}{\text{C}})_5\text{Sb}$; $(\text{CH}_3\text{C}=\overset{\text{H}}{\text{C}})_4\text{SbBr}$; $\text{CH}_3\text{C}=\overset{\text{H}}{\text{C}})_4\text{SbBr}$; and, for
 comparison, sketches of $\text{CH}_3-\overset{\text{H}}{\text{C}}=\overset{\text{H}}{\text{C}}-\text{Br}$ and $\text{CH}_3-\overset{\text{H}}{\text{C}}=\overset{\text{H}}{\text{C}}-\text{Br}$ spectra. Frequencies

are listed in Table 1. All trans-configurations exhibit intense absorption at $945-970\text{ cm}^{-1}$. The frequencies of the CH-group uneven oscillations are at 971 cm^{-1} for tri- and pentapropenyl antimony, at 945 cm^{-1} for dihalogen derivatives, and at 967 cm^{-1} for tetrapropenyl stilbonium bromide. The trans-configurations are distinguished by bands at $718-726\text{ cm}^{-1}$ which do not exist in the cis-configuration. The $920-940\text{ cm}^{-1}$ absorption bands of the cis-configuration are considerably less intense than the $945-970\text{ cm}^{-1}$ absorption bands of the trans-configuration. Only cis-tripropenyl antimony and cis-pentapropenyl antimony turned out to have bands at 970 cm^{-1} , but their intensity amounts to only one third of the trans-configuration

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Infrared Absorptionspectra of Organometallic
Compounds of the Ethylene Series. On Cis- and
Trans-configurations of Propylene-antimony
Compounds (Sb^{III} and Sb^V)

S/020/61/136/001/027/037
B004/B056

intensity. The same holds for propenylbromide: Intensity of the 930 cm^{-1} band of the cis-configuration only one third of the trans-configuration band. The bands at $655\text{-}660\text{ cm}^{-1}$ of the cis-configuration are 2 - 2.5 times more intense than those of the trans-configuration. Cis-configurations of the halogen derivatives and of tetrapropenyl stilboniumbromide showed intense bands at 452 cm^{-1} which were not observed in the case of trans-configurations and cis- and trans-tri- and pentapropenyl antimony. The plane vibrations at the double bonds are more intense at 1200 cm^{-1} in the case of trans-isomers and at 1300 cm^{-1} in the case of cis-isomers. A. N. Nesmeyanov is mentioned in the paper. The authors thank Academician I. V. Obreimov for his interest in the investigation, and R. A. Isayeva and Ye. D. Vlasov for their collaboration. There are 3 figures, 2 tables, and 8 references: 5 Soviet, 1 US, and 2 British. X

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk
SSSR (Institute of Elemental Organic Compounds of the
Academy of Sciences USSR)

Card 3/4

88575

Infrared Absorptionspectra of Organometallic
Compounds of the Ethylene Series. On Cis- and
Trans-configurations of Propylene-antimony
Compounds (Sb^{III} and Sb^V)

S/020/61/136/001/027/037
B004/B056

PRESENTED: July 18, 1960, by I. V. Obreimov, Academician

SUBMITTED: June 16, 1960

Legend to table 1. Frequencies of the Sb^{III} and Sb^V propenyls. 1) cis,
2) trans, 3) boiling point, 4) melting point.

(CH ₂ CH=CH) ₂ ·Sb		(CH ₂ CH=CH) ₂ ·SbCl ₂		(CH ₂ CH=CH) ₂ ·SbBr ₂		(CH ₂ CH=CH) ₂ ·SbI ₂		(CH ₂ CH=CH) ₂ ·SbBr		(CH ₂ CH=CH) ₂ ·Sb	
1) цис- т. кип.) 76°/4-5	2) транс- т. кип.) 82°/5 мм	1) цис- т. кип.) 74-75°	2) транс- т. кип.) 160- 162/мм	1) цис- т. кип.) 85-86°	2) транс- т. кип.) 167°/4 мм	1) цис- т. кип.) 122- 123°	2) транс- т. кип.) 123°	1) цис- т. кип.) 140- 143°	2) транс- т. кип.) 145-148°	1) цис- т. кип.)	2) транс- т. кип.)
1600	1600	1606	1607	1604	1605	1600	1595	1600	1600	1600	1600
1438	1442	1446	1440	1443	1440	1425	1437	1445	1432	1440	1437
1378	1377	1385	1376	1382	1377	1378	1375	1380	1367	1350	1375
1320	1320	1308	1306	1305	1306	1297	1302	1305	1304	1321	1308
1193	1199	1201	1191	1199	1190	1196	1185	1195	1225	1200	1190
1115	1115	—	1109	—	1105	1100	1105	1109	1185	1115	1110
—	1060	1047	1075	1045	1075	1040	1085	1048	1062	1062	1062
—	1039	—	1042	—	1041	—	1039	—	1043	1035	1040
—	970	910	957	930	951	937	945	960	967	970	971
—	920	928	—	925	—	925	—	924	945	920	935
—	710	720	724	—	722	—	718	700	726	—	722
—	660	665	667	663	655	660	660	660	663	660	662
—	610	625	620	618	620	615	615	635	625	—	660
—	—	455	452	452	—	452	—	452	—	—	—

Table 1

Card 4/4

DONSKOY, Aleksandr Vasil'yevich; BASHENKO, Vsevolod Vladimirovich;
BORISOV, A.Ya., red.; VASIL'YEV, Yu.A., red. izd-va;
~~BELOGUROVA, I.A., tekhn. red.~~

[Industrial application of electron-beam heating; transcript
of a lecture]Primenenie elektronno-luchevogo nagreva v pro-
myshlennosti; stenogramma leksii. Leningrad, 1962. 32 p.
(MIRA 15:9)

(Electron beams) (Metallurgy)

NESMEYANOV, A.N.; BORISOV, A.Ye.; BORISOVA, A.I.

Alkenyl derivatives of arsenic. Izv.AN SSSR.Otd.khim.nauk
no.7:1199-1203 J1 '62. (MIRA 15:7)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Arsenic organic compounds) (Unsaturated compounds)

S/062/62/000/007/008/013
B117/B180AUTHORS: Borisov, A. Ye., Abramova, A. N., and Nesmeyanov, A. N.

TITLE: Propenyl stereoisomers of phosphorus

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 7, 1962, 1258 - 1261

TEXT: The reaction of cis and trans propenyl lithium with phosphorus trichloride yielded tri(cis)- and tri(trans propenyl)phosphine, and the reaction of isopropenyl lithium with phosphorus trichloride yielded tri(isopropenyl)phosphine. The resulting phosphorus derivatives and methyl iodide yielded the corresponding phosphonium iodides $R_3P \cdot CH_3I$ and together with the sublimate and β -chloro-vinyl mercury chloride formed complex $R_3P \cdot HgCl_2$ -type compounds. The configurations of the synthesized compounds were determined from their infrared spectra. Compounds with intense absorption lines of non-planar vibrations of the CH groups with a double bond in the $960 - 973 \text{ cm}^{-1}$ range and with C=C bond frequencies of

Card 1/2

Propenyl stereoisomers of phosphorus

S/062/62/000/007/008/013
B117/B180

$\sim 1630 \text{ cm}^{-1}$ were assumed to be trans isomers. Compounds with intense absorption lines of non-planar vibrations of the CH group in the $917 - 930 \text{ cm}^{-1}$ range and with C=C bond frequencies of 1615 cm^{-1} were assumed to have cis configurations. 12 hrs heating at $80 - 105^\circ\text{C}$ or ultraviolet irradiation had no effect on the trans isomer, but $\sim 40\%$ of the cis isomer was converted into trans isomers by the irradiation. Attempts to synthesize R_5P -type propenyl compounds of phosphorus failed. There is 1 table.

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: February 2, 1962

Card 2/2

S/062/63/000/001/024/025
B101/B186

AUTHORS: Nesmeyanov, A. N., Borisov, A. Ye., and Novikova, N. V.

TITLE: Diphenyl stibine

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 1, 1963, 194

TEXT: Reaction of diphenyl antimony chloride with lithium aluminum hydride in anhydrous ether under an atmosphere of argon, produced the hitherto unknown diphenyl stibine, $(C_6H_5)_2SbH$, in 50% yield, a colorless liquid, b.p. 115-120°C/0.5 mm Hg, n_D^{20} 1.6882, which quickly decomposes in air with formation of a precipitate. ✓

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: November 27, 1962
Card 1/1

S/020/63/148/006/015/023
B117/B186

AUTHORS: Nesmeyanov, A. N., Academician, Borisov, A. Ye., Novikova, N. V.,
Chumayevskiy, N. A.

TITLE: Infra-red absorption spectra of stereo-isomers of propenyl-
lithium

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 6, 1963, 1312 - 1313

TEXT: Infra-red absorption spectra of cis- and trans-isomers of propenyl-
lithium were studied more accurately in comparison with the results ob-
tained (in a 20% ether solution) earlier (DAN, 119, 712 (1958)) by the
same authors, and with those of N. L. Allinger and R. B. Hermann (J. Org.
Chem., 26, 1040 (1961)). In order to eliminate the misleading frequencies
by which the ether is characterized, the spectra mentioned were taken both
in ether solution and in paraffin oil. A comparison of the spectra taken
in these media showed the following frequencies to be consistent:

1625 cm^{-1} , 1540 cm^{-1} and 1300 cm^{-1} in spectra of the cis-isomer; 1635 cm^{-1} ,
1550 cm^{-1} in the spectrum of the trans-isomer. Hence the higher frequencies
in the infra-red spectrum of propenyllithium of the C-C oscillations
Card 1/2

Infra-red absorption spectra of...

S/020/63/148/006/015/023
B117/B186

(1635 cm^{-1} and 1545 cm^{-1}) correspond to the trans-isomer, and the lower frequencies (1625 cm^{-1} and 1535 cm^{-1}) correspond to the cis-isomer. Thus, the infra-red absorption spectra gave results that were in agreement with those obtained by Allinger and Hermann. The conclusions drawn in the above paper from optical and chemical data as to the configuration of cis- and trans-isomers are still valid.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: November 26, 1962

Card 2/2

BORISOV, A.Ye.; NOVIKOVA, N.V.; NESMEYANOV, A.N.

Triallylstibine. Izv.AN SSSR.Ser.khim. no.8:1506-1507 Ag '63.
(MIRA 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Stibine)

BORISOV, A.Ye.; OSIPOVA, M.A.; NESMEYANOV, A.N.

Alkenyl compounds of bismuth. Izv.AN SSSR.Ser.khim. no.8:1507-
1509 Ag '63. (MIRA 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Bismuth organic compounds)

BORISOV, A.Ya.; ABRAMOVA, A.N.

Interaction of triphenyltin hydride with oxygen and some
halogen-containing organic and inorganic compounds. Izv.
AN SSSR. Ser. khim. no. 5:844-848 My '64. (MIRA 17:6)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

NESMEYANOV, A.N., akademik; BORISOV, A.Ye.; SAVEL'YEVA, I.S.

Acidolysis kinetics of symmetrical aromatic and aliphatic compounds of mercury. Dokl. AN SSSR 155 no. 3 603-606 Mr '64.
(MIRA 17:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

BORISOV, A.Ye.; ABRAMOVA, A.N.; PARIENIS, Z.N.

Evidence of the heterolytic mechanism of reactions of triphenyltin
hydride. Izv. AN.SSSR.Ser.khim. no. 5:941-943 M^y '64.
(MIRA 17:6)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

ACCESSION NR: AP4037245

S/0062/64/000/005/0941/0943

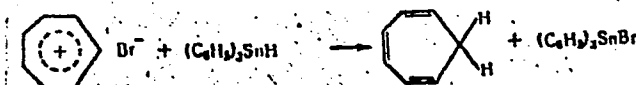
AUTHOR: Borisov, A. Ye.; Abramova, A. N.; Parnes, Z. N.

TITLE: Proof of heterolytic reaction mechanism of triphenyltin hydride

SOURCE: AN SSSR. Izv. Seriya khimicheskaya no. 5, 1964, 941-943

TOPIC TAGS: triphenyltin hydride, reaction mechanism, heterolytic reaction mechanism, troyl bromide, triphenyltin bromide, cycloheptatriene, triphenyltin chloride, bis triphenyltin sulfate, free radical mechanism

ABSTRACT: A heterolytic reaction mechanism for the substitution of the hydrogen in organotin hydrides was proposed and confirming reactions were run. Troyl bromide reacted with triphenyltin hydride at room temperature in absolute alcohol and dioxane to give a 98% yield of triphenyltin bromide and cycloheptatriene:



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ACCESSION NR: AP4037245

Triphenyltin hydride reacted with aqueous HCl to give 99% yield of triphenyltin chloride and hydrogen, and with 50% H₂SO₄ to give a 90% yield of bis-triphenyltin sulfate and 99% hydrogen. The author questions the free radical mechanism indicated by H. G. Kuivila (J. Amer. Chem. Soc. 84; 3585 (1962)). Orig. art. has: 3 equations.

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR
(Institute of Organometallic Compounds, Academy of Sciences SSSR)

SUBMITTED: 19Nov63

ENCL: 00

SUB CODE: IC

NO REF SOV: 004

OTHER: 007

Card 2/2

NESMEYANOV, A.N.; BORISOV, A.Ye.; NOVIKOVA, N.V.

Trialkenyldialkyl and trialkenyldiaryl compounds of antimony.
Izv. AN SSSR Ser. khim. no.7:1197-1202 J1 '64.

(MIRA 17:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 14335-65 EWT(m)/EPF(c)/EPR/EWP(j)/I PC-A/PT-A/P5-A SSD/AEDC(a)/ASD(p)-3
ACCESSION NR: AP4042870 WJ/RM S/0062/64/000/007/1202/1209

AUTHOR: Nasmeyanov, A. N. ; Borisov, A. Ye. ; Novikova, N. V.

TITLE: Pentaalkenyl compounds of antimony | B

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 7, 1964, 1202-1209

TOPIC TAGS: organoantimony compound, pentaalkenylantimony, pentacovalent antimony compound, synthesis, pentaisopropenylantimony, pentavinylantimony, thermal stability, halogenation, bromination, iodination, trialkenylantimonydibromide, pentanaphthylantimony, exchange reaction

ABSTRACT: Cis-propenyllithium, trans-propenyllithium, isopropenyllithium and vinylmagnesium bromide were reacted with $SbCl_5$ to form the pentacovalent antimony compounds: penta (cis-propenyl)antimony(I), penta(trans-propenyl)antimony (II), pentaisopropenylantimony(III) and pentavinylantimony(IV). These products were characterized and their behavior toward heat, various halides and exchange reaction was investigated. Heating I to 101C or II to 160C, pro-

Card 1/3

L 14335-65
ACCESSION NR: AP4042870

moted gas evolution and formation of the tri(cis- or trans-propenyl) antimony, which was then brominated to the tri(cis-propenyl)antimony dibromide (V) or tri(trans-propenyl)antimony dibromide (VI). Reaction of I or II with an equivalent amount of iodine gave the tetra (cis- or trans-propenyl)stibonium iodide. All four initial compounds reacted with 2 moles of iodine to form the corresponding periodides: $R_4SbI \cdot I_2$. Reaction of the tetraalkenylstibonium bromides with iodine gave the compounds: cis- or trans- $(CH_3CH=CH)_4SbBr \cdot I_2$, $CH_2=C(CH_3)_4SbBr \cdot I_2$ and $(CH_2=CH)_4SbBr \cdot I_2$. The cis-isomer is the most stable; the other compounds decomposed liberating iodine. The tetraalkenylstibonium iodides reacted with bromine: $R_4SbI + Br_2 \rightarrow R_3SbBr_2 + RI$ to form V, VI, triisopropenylantimony dibromide (VII) and trivinylantimony dibromide (VIII). The same products were obtained by reaction of the tetrapropenylstibonium bromide with bromine: $R_4SbBr + Br_2 \rightarrow R_3SbBr_2 + RBr$. Reaction of I, II or III with $TlBr_3$ resulted in the formation of complex compounds of the type $R_4Sb \cdot TlBr_4$ and $TlBr$. The dibromide compounds V, VI, VII and VIII underwent exchange reaction with KF to form the corresponding trialkenylantimony difluorides. Reaction between trinaphthalantimony dibromide and naphthyllithium to form pentanaphthylantimony was not successful. Orig. art. has: 8 equations.

Card 2/3

L 14335-65
ACCESSION NR: AP4042870

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 27Nov52

ENCL: 00

SUB CODE: GB

NO REF SOV: 002

OTHER: 000

Card 3/3

KUSLITSKIY, A.B.; BABEY, Yu.I.; KARPENKO, G.V., SEPEBYYSKIY, V.I.;
MIZETSKIY, V.L.; BORISOV, A.Ya.

Effect of nonmetallic inclusions and metal density on the
fatigue strength of electric slag and vacuum remelted ShKh15
steel. Stal' 25 no.2:151-153 F '65. (MIRA 18:3)

CHUMAYEVSKIY, N.A.; BORISOV, A.Ye.

Cis- and trans-configurations of propenyl compounds of As^{IV}, Hg^{II},
and Sn^{IV}. Dokl. AN SSSR 161 no.2:366-369 Mr '65.

(MIRA 18:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. Submitted
September 14, 1964.

L 57093-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RH

ACCESSION NR: AP5012459

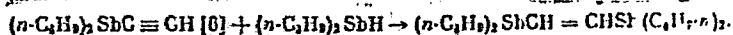
UR/0062/65/000/004/0763/0763
542.957AUTHORS: Nesmeyanov, A. N.; Borisov, A. Ye.; Novikova, N. V. 23
22
5

TITLE: Organometallic derivatives of ethylene 7

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 4, 1965, 763

TOPIC TAGS: organo metallic compound; ethylene, organic synthesis, antimony

ABSTRACT: The authors have synthesized dimetallic derivatives of antimony and ethylene by combining organometallic hydrides with organometallic monoacetylides according to the scheme:



The resulting 1,2-bis(n-dibutylantimonyl)ethylene ²⁰ boils at 108-109°C ($2.5 \cdot 10^{-3}$ mm);
 n_D^{20} 1.5490. The IR spectrum has (in cm^{-1}) 880 s, 970 s, 987 md, 1010 md, 1055 wk,
 1083 s, 1127 wk, 1155 s, 1182 s, 1255 s, 1295 md, 1345 md, 1365 wk, 1382 s,
 1423 md, 1450-1470 s, 1528 md, a number of weak bands at 1577, 1620, 1670 and a
 moderate band at 1740. The C-H vibration of the ethylene carbon is at 987, char-
 acteristic for trans-isomers of organometallic compounds of the ethylene series.

Card 1/2

L 57093-65

ACCESSION NR: AP5012459

Measured composition (in %) gave 42.49 and 42.23 C, 7.51 and 7.68 H, and 48.33 and 48.14 Sb; $C_{18}H_{38}Sb_2$. Computed percentages were 43.41 C, 7.69 H, and 48.90 Sb.

In similar fashion $(C_6H_5)_2SbCH=CHSb(C_4H_9-n)_2$ was obtained from diphenyl antimonous anhydride and di-n-butylethynyl antimony. Boiling point is 147-150C ($3.5 \cdot 10^{-3}$ mm): n_D^{20} 1.5960. Measured composition (in %) gave 48.66 and 48.83 C, 6.06 and 6.23 H, and 44.06 and 43.89 Sb; $C_{22}H_{30}Sb_2$. Computed composition gave 49.09 C, 5.62 H, and 45.27 Sb. Orig. art. has: 1 formula.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy, Akademii nauk SSSR
(Institute of Organoelemental Compounds, Academy of Sciences, SSSR)

SUBMITTED: 26Feb65

ENCL: 00

SUB CODE: 00, 00

NO REF SOV: 003

OTHER: 004

PK
Card 2/2

BORISOV, A.Ye.; SAVEL'YEVA, I.S.; SERDYUK, S.R.

Synthesis of some organomercury compounds. Izv. AN SSSR. Ser. khim.
no.5:924-925 '65. (MIRA 18:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

NESMEYANOV, A.N., akademik; BORISOV, A.Ye.; NOVIKOVA, N.V.

Geometric isomers of germanium alkenyl compounds. Dokl. AN SSSR
165 no.2:333-336 N '65. (MIRA 18:11)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

24(7), 23(5)

SOV/48-23-1-21/36

AUTHORS: Borisov, A. Yu., Tumerman, L. A.

TITLE: A New Type of Fluorometer (Novyy tip fluorometra)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol 23, Nr 1, pp 97 - 101 (USSR)

ABSTRACT: The phase method or fluorometric method, is based upon the following principle: Measurements are carried out of the phase shift between exciting and emitted light. In the exponential extinction law the constant of this law (the average duration of extinction) can be determined up to an order of magnitude of 10^{-9} sec. For this purpose it is, however, necessary that frequency be modulated by the order of 10 megacycles. In principle, the phase fluorometer has remained the same since it was developed in 1941, with the exception that for the oscillograph tube, which had been used as zero indicator of the phase shift, a phase detector with an insertion measuring device was substituted. In the course of further development the following tasks remained to be performed: Increase of sensitivity, stability and reliability of the device, and providing for the possibility

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SOV/40-23-1-21/36

A New Type of Fluorometer

of easily passing from one frequency to another. In connection with the last-mentioned requirements, the previously used heterodyne was replaced by an electromechanical frequency transformer, and general frequency shift was replaced by the multiplier FEU. The old basic scheme and the new one are illustrated by figures. Further possibilities of development are being envisaged. It is intended, within wide limits, to provide for a possibility of regulating amplifier resistance in view of the fact that current measurements up to 10^{-10} A are carried out, and the electromagnetic frequency transformer is to be replaced by two generators which are independent of each other and are stabilized by means of quartz. There are 3 figures and 15 references, 8 of which are Soviet.

Card 2/2

85344

9.2580
9.4/30 (2 301, 2801, 3001)

S/120/60/000/005/012/051
E192/E382

AUTHOR: Borisov, A.Yu.

TITLE: Signal Frequency Changing by means of a Photoelectron Multiplier⁵

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 5,
pp. 60 - 62

TEXT: The frequency changing is based on the following principle. The basic circuit of a photomultiplier is shown in Fig. 1. Two dynodes ∂_{n-1} and ∂_{n+1} are connected across the terminals of a potentiometer 2R. The intermediate dynode ∂_n is connected to the slider of the potentiometer.

A constant light flux is now applied to the photomultiplier and its anode current I is measured as a function of the voltage applied to the dynode ∂_n ; this voltage can be varied by the potentiometer from zero to twice V_k where V_k is the normal interstage voltage. The output current characteristic as a function of the dynode voltage is in the

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S/120/60/000/005/012/051
E192/E382

Signal Frequency Changing by means of a Photoelectron Multiplier

form shown in Fig. 2. The sloping part of this characteristic, centred around the point a, can be approximated by a straight line. The current voltage characteristic can therefore be expressed by

$$I = AS(V - V_0) \quad (1)$$

where A is a constant coefficient,
S is the light flux, and
V₀ is the voltage corresponding to the intersection point shown in Fig. 2.

It is now assumed that the light flux is modulated with a frequency ω in accordance with:

$$S = S_0(1 + m \cos \omega t) \quad (2)$$

where m is the modulation index.

If now the voltage applied to the dynode varies sinusoidally according to

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S/120/60/000/005/012/051
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Signal Frequency Changing by means of a Photoelectron
Multiplier

$$V = V_{oa} \cos \omega_f t + V_a \quad (3)$$

from Eq.(1) it follows that the output current will be in the form of Eq. (4). From this it is seen that the output current contains combination frequencies $\omega \pm \omega_f$. It is clear that the frequency changing can be effected in this way and that a selective receiver tuned to the intermediate frequency $\omega - \omega_f$ will reject the oscillator signal ω_f . The frequency changing can also be obtained under different operating conditions. Thus, the operating point can be shifted to the maximum of the current-voltage characteristic (Fig. 2). In this case the frequency of the heterodyne voltage should be twice as low as in the previous case since, due to the symmetry of the curve, the heterodyne will modulate the multiplier at the double frequency. The above frequency changer can be used at frequencies up to several Mc/s. The instrument was employed

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S/120/60/000/005/012/051
E192/E382

Signal Frequency Changing by means of a Photoelectron
in a fluorescence meter at the Physics Institute of the
AS USSR which operated at 8 Mc/s. The author expresses his
gratitude to L.A. Tumerman for suggesting the subject. X
There are 3 figures and 5 references: 4 Soviet and 1 English.

ASSOCIATION: Fizicheskiy institut AN SSSR
(Physics Institute of the AS USSR)

SUBMITTED: July 15, 1959

Card 4/4

8192D

24,6810

S/051/60/009/01/022/031
B201/B691

AUTHOR: Borisov, A. Yu.

TITLE: A Highly Sensitive Modulation Photometer^b

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, Nr 1, pp 115-116 (USSR)

ABSTRACT: The author describes a photometer^a in which the d.c. signal of the photomultiplier is transformed (by a weak a.c. voltage applied to one of the dynodes) into an a.c. signal of double the applied frequency. This makes it possible to separate out the useful signal from the leakage currents through the insulation separating the photomultiplier electrodes. The modulated photomultiplier signal is fed to a tuned resonance amplifier. The sensitivity of photometers with the signal modulation described above is one order of magnitude greater than that of photometers with d.c. amplifiers: it is possible to detect down to 50 photoelectrons per second from the photomultiplier cathode. There are 3 figures and 2 Soviet references.

SUBMITTED: January 18, 1960
Card 1/1

UH

BORISOV, A.Yu.

Measuring the passage of a signal through a photoelectronic amplifier.
Prib. i tekhn. eksp. 8 no.3:187-188 My-Je '63. (MIRA 16:9)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR.
(Pulse techniques (Electronics))

BORISOV, A.Yu.; MOKHOVA, Ye.N.

Spectrophotometer for recording slight absorption differences.
Prib. i tekhn. eksp. 9 no.2:145-147 Mr-Ap'64. (MIRA 17:5)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR.

ACCESSION NR: AP4033136

S/0120/64/000/002/0145/0147

AUTHOR: Borisov, A. Yu.; Mokhova, Ye. N.

TITLE: Spectrophotometer for recording small differences in absorption

SOURCE: Pribery* i tekhnika eksperimenta, no. 2, 1964, 145-147

TOPIC TAGS: spectrophotometer, monochromator, ZMR-3 monochromator, differential spectrophotometer, differential absorption spectrophotometer .

ABSTRACT: A differential spectrophotometer was developed on the basis of the Soviet-make ZMR-3 monochromator, after B. Chance's ideas (Rev. Scient. Instrum., 1951, 22, no. 8, 619, and 1959, 30, no. 8, 732; Science, 1954, 120, 767). The spectrophotometer is intended for measuring absorption and diffusion of light in two specimens within the 350-700-millimicron range. The error of the spectrum recording is $\pm(0.5-1) \times 10^{-4}$ optical-density unit, at maximum sensitivity, with a slit spectral width of 20-30 Å and a time constant of about

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ACCESSION NR: AP4033136

1 sec. The instrument was reported before the Conference of Diffusion-Media Optics, Minsk, Feb 62. Orig. art. has: 3 figures.

ASSOCIATION: Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR
(Institute of Radiation and Physico-Chemical Biology, AN SSSR)

SUBMITTED: 05Jul62

ATD PRESS: 3047

ENCL: 00

SUB CODE: OP

NO REF SOV: 003

OTHER: 002

Card 2/2

BORISOV, B.

New machine. Mashinostroitel' no.1:25 Ja '65.

(MIRA 18:3)

BORISOV, B.

BORISOV, B. Heating installations in housing construction. p.9.

Vol. 2, no. 10/11, 1955

STRICITELSTVO

TECHNOLOGY

Sofiya, Bulgaria

So: East European Accessions, Vol. 5, no. 5, May 1956

BORISOV, R.

The Way How the Speed of 400 Code Signals per Minute Has Been Achieved.
"RADIO" Ministry of Communication, #9:10: Sept 55

SAFONOV, Aleksandr Petrovich; BORISOV, B., redaktor; VORONIN, K.P.,
tekhnicheskiy redaktor

[Heating system problems] Zadachnik po teplovym setiam. Moskva,
Gos. energ. izd-vo, 1956. 191 p. (MLRA 9:9)
(Heat engineering)

SHRABSHTEYN, I., dots.; CHERKESOV-TSYBIZOV, A., starshiy prepodavatel'; MILYUKOV, M.; prepodavatel'; BORISOV, B., inzh.-ekonomist; LAPINA, N.

"Economics of transportation by sea" by S.F.Koriakin, I.L.Bernshtein, IU.F.Ellinskii. Reviewed by I. Shrebshtein and others. Mor.flot 20 no.10:46-48 0 '60. (MIRA 13:10)

1. Odesskiy institut inzhenerov morskogo flota (for Shrebshteyn, Cherkesov-Tsybizov, Milyukov). 2. Nachal'nik Planovogo otdela Baltiyskogo parokhodstva (for Borisov). 3. Nachal'nik Planovo-ekonomicheskogo otdela Kanonerskogo zavoda (for Lapina).
(Shipping)

(Koriakin, S.F.) (Bernshtein, I.L.) (Ellinskii, IU.F.)

BORISOV, B.

Construct helicopter models. Kryl. rod. 13 no.9:25-26 S '62.
(MIRA 15:10)

(Helicopters--Models)

BORISOV, B.

Welding of plastics. Tekh.mol. 29 no.11:8 '61. (MIRA 14:11)
(Plastics—Welding)
(Ultrasonic waves—Industrial applications)

37098

3/25/62/000/005/001/001
D408/D301

272800
AUTHORS: Borisov, B. and Sergeev, A., Scientific Associates
Akademiya nauk SSSR (Academy of Sciences USSR)

TITLE: The biosphere of a spaceship cabin

PERIODICAL: Nauka i zhizn', no. 5, 1962, 39-41

TEXT: The authors argue that spaceships on long-duration trips will have to organize a closed life cycle in the crew accommodation where plants will be cultivated to supply oxygen, absorb carbon dioxide and provide food and water. The plants in turn will feed on human, animal and mineral waste products which are put back into the soil. Good varieties of plants for this purpose would be ordinary and sweet potatoes, whose vegetation would provide considerable amounts of oxygen. Chlorella and Scenedesmus would be good for air purification and waste conversion into food. By varying the temperature, lighting and nutrient products one can condition such algae to accumulate mainly proteins or mainly fats, the possi-

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The biosphere of a spaceship cabin

S/025/62/000/005/001/001
D408/D301

ble variation being as follows: protein 8.7-38.2%; fats 4.5-85.6%; carbohydrates 5.7-37.5%. For a balanced diet, however, animal products would also be needed. These animals would have to be sturdy (to survive the stresses of space flight), low oxygen consumers with a low carbon dioxide output, fast maturing, high meat yielders and capable of feeding on plants and animal waste. The best choice would probably be rabbits and poultry, especially since these lend themselves to automatic "forced" feeding. Plankton would be a valuable additional source of food; dried plankton would yield 7% fat; 59% protein, 20% carbohydrate and 14% ash and chitin. The spaceship of the future will probably also carry fish. Research is now in progress on the best varieties of fish and considerable attention is being paid to labyrinthine species which grow to a large size, are good breeders and draw their oxygen direct from the surrounding air outside the tank. Some scientists also recommend goldfish for the purpose.

Card 2/2

RUSEV, M.; BORTSOV, B.; SHAL'MIN, S.; GADYSHEVA, I.

Electric contact cutting of crankshafts. Avt. Transp. 43
no.10:27 Q '65. (SIRA 18:10)

ABDEYEV, Yu.M.; BORISOV, B.A.; LIMONOVA, E.G.

Measurement of the period of electric pulses. Izv. tekh. no. 5:
47-48 My '62. (MIRA 15:6)

(Pulse techniques (Electronics))

SELIVERSTOV, Yu.P.; BORISOV, B.A.

Traces of ancient permafrost in the Zaysan Depression. Inform.sbor.
VSEGEI no.52:85-92 '62. (MIRA 15:11)
(Zaysan Depression--Frozen ground)

BORISOV, B.A.

Methodology of contrast arthrography. Vest. rent. 1 rad. 39 no.4:
70 J1-Ag '64. (MIRA 18:7)

1. Kislovodskaya gorodskaya bol'nitsa No.1.

BORISOV, B.A.

Stratigraphy of the Upper Cretaceous and Paleogene-Neogene in
the Zaysan Depression. Trudy VSEGEI 94:111-75 '63. (MIRA 17:6)

BORISOV, B.A.

A case of multiple progressive mycositis ossificans. Vest.
rent. 1 rad. 38 no.6:61-62 N-D '63. (MIRA 17:6)

1. Iz Kislovodskoy gorodskoy bol'nitsy No.1 (glavnyy vrach
S.F. Kosaurikhin).

GUBCHENKO, O.E., inzh.; KRYZHANOVSKIY, E.M., inzh.; BORISOV, B.A., inzh.

Using soil cement for roadbeds. Oct. Dec. 23 Dec. 23-24. Ig '65.
(MOR: 1F:11)

BORISOV, B.A.

Use of intravenous choledochography in jaundice. Vest. rent. 1
rad. 40 no.4:64-65 J1-Ag '65. (MIRA 18:9)

1. Kislovodskaya gorodskaya bol'nitsa Nr. 1 (glavnyy vrach
S.P. Kosourikhin).

RITOV, H.H.; BAKISOV, B.A.

Planning norms in road construction. Avt. dor. 28 no.12:10-13
D '65. (MEM 19:1)

ACC NR: AP6016321

(N)

SOURCE CODE: UR/0410/65/000/005/0012/0016

AUTHOR: Borisov, B. D. (Novosibirsk); Senin, A. G. (Novosibirsk)

33
B

ORG: none

TITLE: On the synthesis of a measurement system for the classification of random processes

SOURCE: Avtometriya, no. 5, 1965, 12-16

TOPIC TAGS: random process, random noise signal, wideband communication

ABSTRACT: A method is proposed for the synthesis of an analog measurement system which can be used to classify random processes. Each channel of the system consists of two linear filters and a square law detector. In the classification problem considered, a signal, observed in the time interval $[0-T]$ is a realization of one of n random processes $\eta_j(t)$ ($j=1,2,\dots,n$) and it is required to establish the nature of the process itself from the accepted realization $x(t)$. Problems of this type are encountered in medical and technical diagnostics when random signals must be detected in the presence of background noise or when speech signals must be recognized automatically. In the proposed system, the input signals are measured and transformed and the accepted realization is used to evaluate the correlation function and to compare it with the correlation function of the process to be classified when the latter correlation func-

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UDC: 621.391

ACC NR: AP6016321

tion is known *a priori*. The solution is obtained to favor the process whose correlation function is best approximated by the evaluation. The proposed method of classification is suitable both for wideband and narrow band signals. However, in the latter case the operation is carried out on a complex correlation function and on quadratic terms of the process. Orig. art. has: 1 figure, 15 formulas.

SUB CODE: 13/

SUBM DATE: 12Apr65/

ORIG REF: 003/

OTH REF: 002

Card 2/2 *gl*

ACC NR: AT6023395

(N)

SOURCE CODE: UR/0000/65/000/000/0153/0157

AUTHOR: Borisov, B. D. (Novosibirsk); Karyshev, Ye. N. (Novosibirsk); Nesterova, Z. I. (Novosibirsk)

ORG: none

TITLE: System for data input into a special purpose computer for statistical investigations

SOURCE: Vsesoyuznaya konferentsiya po avtomaticheskomu kontrolyu i metodam elektricheskikh izmereniy. 5th, Novosibirsk, 1963. Avtomaticheskii kontrol' i metody elektricheskikh izmereniy; trudy konferentsii. t. I: Metody elektricheskikh izmereniy. Tsifrovyye izmeritel'nyye pribory. Elementy izmeritel'nykh sistem (Automatic control and electrical measuring techniques; transactions of the conference. v. 1: Electrical measuring techniques. Digital measuring instruments. Elements of measuring systems. Novosibirsk, Izd-vo Nauka, 1965, 153-157

TOPIC TAGS: special purpose computer, computer input unit, analog digital computer system, computer technology, analog digital conversion, graphic data processing

ABSTRACT: Analog-to-digital converters for transforming signals and graphic data into digital, computer-oriented form for input into special purpose computers are described. The A/D voltage converter is a fast acting unit capable of 15 thousand con-

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L 10002-07

ACC NR: AT6023385

versions per second, with an error of 7%. The input is a random varying dc voltage of 0 to 300 mV. The output in binary form is recorded on magnetic tape by a tape-recorder, an integral part of this converter. The tape is then used for feeding data into the computer. The input voltage is successively compared to internal binary scaled reference voltages, until a balance condition is achieved. The resultant four-bit word is serially read out of a register by a commutator and recorded on magnetic tape. Natural binary code is used. To speed up the operation, the most significant bit is read out as soon as the balance for it occurs, while the next significant bit is being processed. The tape has two tracks: one for binary data, the other for synchronizing timing pulses, recorded simultaneously with the signal information. The recording density is 2×15 imp/mm at a tape speed of 6 m/sec. The graph scanner is based on a row of photodiodes, arranged across the width of a paper chart or film containing the line graph to be digitized. The chart or film are illuminated from one side, and the light is registered by the photodiodes on the opposite side. A commutator scans the photodiodes, and produces a count of ordinate increments (each increment corresponding to the space between two adjacent photodiodes) starting from a reference line to the intersect with the graph line. This count is converted into binary form and fed directly into the computer. Provisions to prevent errors where the graph line appears between two sensors at the instant of sampling and errors due to steep graph slopes are incorporated. Four-bit binary words are used to represent the ordinate values in 16 discrete levels. The Vidicon graph scanner adapted for a single

Card 2/3

17 10002-01
ACC NR: AT6023385

master line scan is used in this converter. The intersect of the scanning spot with the edge of the graph triggers a gate to admit pulses from a generator to a binary form representing graph ordinates is then fed directly into the computer. Orig. art. has: 3 figures.

SUB CODE: 09/

SUBM DATE: 20Sep65/

ORIG REF: 004

Card 3/3 *N*

ZININ, I.P.; BORISOV, B.F.

Determination of the porosity of well cuttings. Trudy
Giprovostoknefti no.5:47-54 '62. (MIRA 16:8)

(Kuybyshev Province--Borings--Analysis)
(Porosity)

BORISOV, B.F.; KALERI, N.B.

Possibility of determining the content of bound water in
producing layers based on well cuttings. Trudy Giprovostoknefti
no.5:55-57 '62. (MIRA 16:8)

(Borings---Analysis) (Oil field brines)

BORISOV, B. G.

"Study of Hydraulic Resistance in Horizontal Pipelines
Carrying a Two-Phase Mixture." Min Higher Education USSR, Moscow
Order of Lenin Power Inst imeni V. M. Molotov, Moscow, 1955.
(Dissertation of the Degree of Candidate in Technical Sciences)

SO: M-955, 16 Feb 56

BORISOV, B.G., dots.kand.tekhn.nauk

Results of the scientific and technical conference at the Ivanovo Power
Engineering Institute; izv.vys.ucheb.zav.; energ. no.8:134-135 Ag.
'58. (MIRA 11:11)
(Power engineering--Congresses)

BORISOV, B.G., kand. tekhn. nauk

Experimental determination of relative phase-velocities of water-stream mixtures passing through horizontal pipes. Izv. vys. ucheb. zav.; energ. 2 no.10:66-75 0 '59. (MIRA 13:3)

1. Ivanovskiy energeticheskiy institut imeni V.I. Lenina. Predstavlena kafedroy teplofikatsii i gidroenergetiki.
(Fluid dynamics)

BORISOV, B.G., kand.tekhn.nauk

Studying hydraulic resistances in horizontal pipelines in the case of the movement of steam and water mixtures. Izv.vys. ucheb.zav.; energ. 3 no.4:116-126 Ap '60. (MIRA 13:6)

1. Ivanovskiy energeticheskiy institut imeni V.I.Lenina.
Predstavlena kafedroy teplofikatsii.
(Pipe--Hydrodynamics)

BORISOV, B.G., inzh.

For the builders of natural-gas pipelines. Izobr.i rats. no.2:
5-6 F '62. (MIRA 15:3)

1. Tekhnicheskoye upravleniye Glavnogo upravleniya gazovoy
promyshlennosti SSSR.
(Pipelines—Technological innovations)

TROSHIN, P.V., kand.tekhn.nauk, dotsent; FEDOTOV, M.P., inzh.; SOKOLOV, Yu.P., inzh.; BORISOV, B.G., kand.tekhn.nauk; MALKOV, Yu.A., inzh.; SOROKIN, A.F., doktor tekhn.nauk, prof. [deceased]; ZUYEV, A.I., kand.tekhn.nauk; KOPELOV, Yu.K., kand.tekhn.nauk; YERSHOV, Yu.G., inzh.; BROVKIN, L.A., kand.tekhn.nauk, dotsent; POTOSKUYEV, M.P., kand.tekhn.nauk, dotsent; PYATACHKOV, B.I., kand.tekhn.nauk, dotsent; ROMANOVA, T.M., kand.tekhn.nauk, dotsent

Abstracts of completed research works contracted for the national economy. Sbor. nauch.trud. LEI no.10, 1962.

(MIRA 16:9)

*

AMIYAN, V.A., red.; BORISOV, B.G., red.; IGREVSKIY, V.I., red.;
KREMS, N.K., red.; MATSKIN, L.A., red.; SAAKOV, M.A., red.;
SILANT'YEV, I.A., red.; KAYESHKOVA, S.M., ved. red.;
STAROSTINA, L.D., tekhn. red.

[Creative activity of inventors and efficiency promoters in
the oil and gas industries] Tvorchestvo izobretatelei i ra-
tsionalizatorov neftianoi i gazovoi promyshlennosti. Pod ob-
shchei red. V.A.Amiana. Moskva, Gostoptekhizdat, 1963. 190 p.
(MIRA 16:6)

1. Vsesoyuznoye obshchestvo izobretateley i ratsionalizatorov.
(Petroleum industry--Technological innovations)

BORISOV, B.G., kand.tekhn.nauk; POTOSKUYEV, M.N., kand.tekhn.nauk; ROMANOVA,
T.M., kand.tekhn.nauk; TROSHIN, P.V., kand.tekhn.nauk. TSELEBROVSKIY,
V.Ye., kand.tekhn.nauk; DANICHEK, Ye.A., kand.tekhn.nauk; KARYAGIN,
N.P., kand.tekhn. nauk; FATEYEV, V.P. (Ioshkar-Ola)

Training of engineers for work in industrial heat and electric power sys-
tems. Prom.energ. 18 no.8:35-41 Ag '63. (MIRA 16:9)

1. Ivanovskiy energeticheskiy institut imeni V.I.Lenina. (for Borisov,
Potoskuyev, Romanova, Troshin). 2. Tomskiy politekhnicheskiy institut
(for TSelebrovskiy). 3. Dnepropetrovskiy ~~metallurgicheskiy in-~~
stitut (for Danichek). 4. Gor'kovskiy inzhenerno-stroitel'nyy institut
(for Karyagin).

(Power engineering—Education and training)

10.6120

16.7600

AUTHOR: Borisov, B.I.

TITLE: Determination of the profile of least resistance for a ring wing

PERIODICAL: Moscow. Universitet. Vestnik. Seriya I. Matematika, mekhanika, no.1, 1961, 62-65

TEXT: The author considers a thin asymmetrical ring in supersonic flow (velocity V_0). After the introduction of the dimensionless variable

$$x = \frac{\bar{x}}{\bar{r}_0 \sqrt{M^2 - 1}}, \quad r = \frac{\bar{r}}{\bar{r}_0} \quad (1)$$

the linearized equation for the velocity potential of Rakhmatulin

$$(M^2 - 1) \frac{\partial^2 \varphi}{\partial \bar{x}^2} = \frac{\partial^2 \varphi}{\partial \bar{r}^2} + \frac{1}{\bar{r}} \frac{\partial \varphi}{\partial \bar{r}}$$

changes to

$$\frac{\partial^2 \varphi}{\partial x^2} = \frac{\partial^2 \varphi}{\partial r^2} + \frac{1}{r} \frac{\partial \varphi}{\partial r} \quad (2)$$

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S/055/61/000/001/005/005

C111/C222

Determination of the profile...

The boundary conditions for $r = 1$ read

$$\frac{\partial \varphi}{\partial r} = \bar{r}_0 v_0 \beta_e(x) \quad \text{on the outer surface,} \quad (3)$$

$$\frac{\partial \varphi}{\partial r} = \bar{r}_0 v_0 \beta_i(x) \quad \text{on the inner surface;}$$

for $r = 1 \pm x$ it holds $\varphi = 0$. Here $\beta_e(x)$ and $\beta_i(x)$ are the angles between the axis ox and the tangents at the outer and inner surfaces. The solution is sought with the arrangement

$$\varphi = \bar{r}_0 v_0 \int_0^x \beta_e(x-\tau) \psi_1(r, \tau) d\tau \quad (\text{outer problem}) \quad (4)$$

$$\varphi = \bar{r}_0 v_0 \int_0^x \beta_i(x-\tau) \psi_2(r, \tau) d\tau \quad (\text{inner problem})$$

According to the method of characteristics the author obtains

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S/055/61/000/001/005/005
C111/C222

Determination of the profile...

$$\psi_1(1,x) = -1+0.4195x-0.0795x^2, \tag{5}$$

$$\psi_2(1,x) = 1+0.209x+0.651x^2,$$

and from the Bernoulli equation for the pressure

$$p = p_0 - \rho_0 \int_0^z \frac{\partial \varphi}{\partial x} dz. \tag{6}$$

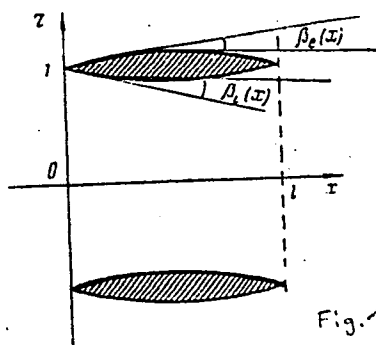


Fig. 1

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S/055/61/000/001/005/005
C111/C222

Determination of the profile...

If the symmetric profile of the figure 1 is given, where $\beta_e = -\beta_e(x) = \beta(x)$ then for the drag it follows

$$Q = 2\pi \frac{v_0^2 \delta_0}{\sqrt{M^2 - 1}} \int_0^1 \beta(x) \frac{d}{dx} \int_0^x \beta(x-\tau) \psi(\tau) d\tau dx,$$

where $\psi(\tau) = \psi_2(1, \tau) - \psi_1(1, \tau)$. If $\beta(x) = y'(x)$ then Q is proportional to the integral

$$I = \int_0^1 \left[y'^2(x) \psi_0 + y'(x) \int_0^x y'(\tau) \psi'(x-\tau) d\tau \right] dx, \tag{7}$$

where $\psi_0 = \psi(0)$. The author seeks the profile of least resistance by demanding the minimum of (7) for a given thickness 2δ of the profile. He states that the sought profile is a rhombus formed by four sine curves. If

$$y(x) = \begin{cases} y_0(x) & \text{for } 0 \leq x \leq x_1 \\ z_0(x) & \text{for } x_1 \leq x \leq 1 \end{cases} \tag{8}$$

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C111/C222

Determination of the profile...

is the profile equation and $y(x_1) = \delta$ then it is found

$$y_0 = \frac{\delta}{\sin \frac{kl}{2}} \sin kx, \quad z_0 = \frac{\delta}{\sin \frac{kl}{2}} \sin k(1-x), \quad x_1 = \frac{1}{2},$$

where $k = 0.85$. In the limit case $\bar{r}_0 \rightarrow \infty$ there follows the well-known solution of the plane problem

$$y_0 = \frac{\delta}{\frac{1}{2}} \bar{x}, \quad z_0 = \frac{\delta}{\frac{1}{2}} (\bar{1} - \bar{x}).$$

There are 2 figures.

ASSOCIATION: Kafedra volnovoy i gazovoy dinamiki (Chair of Wave and Gas Dynamics)

SUBMITTED: September 8, 1959

Card 5/5

BORISOV, B.I., inzh.

Durability of concrete elements acted upon by weak nitric acid.
Prom. stroi. 40 no.2:38-41 '62. (MIRA 15:7)
(Concrete products) (Nitric acid)

BORISOV, B.I., inzh.

Providing for the durability of structural elements of shops in
which sulfuric acid is liberated. Prom. stroi. 40 [i.e. 41]
no.6:35-39 Je '63. (MIRA 16:10)

BORISOV, B. I. (Aspirant)

"An Investigation of the Thermal Conditions in the Formation of Glass Strip by Continuous Rolling." Cand Tech Sci, All-Union Sci-Res Inst of Glass, Ministry of the Building Materials Industry USSR, 21 Dec 54. (VM, 9 Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)

SO: SUM No. 556, 24 Jun 55

BORISOV, D. I.

EYGENSON, Lev Solomonovich, prof. [deceased]; BELOBORODOVA, Tat'yana Ivanovna; BORISOV, Boris Ivanovich; FROLOVA, Yelena Gavrilovna; SOKOLOV, I.S., red.izd-va; GILGENSON, P.G., tekhn.red.

[Thermal principles of glass manufacture] Termicheskie osnovy formovaniia stekla. Pod red. L.S.Eigensona. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 267 p.
(MIRA 13:2)

(Glass furnaces)

BREKHOVSKIKH, S.M.; BORISOV, B.I.

Glass facing materials. Stek. 1 ker. 18 no. 1:5-8 Ja '61.

(MIRA 14:1)

(Glass construction)

BORISOV, B.I.; IGNATOVA, V.A.; KABANOV, N.P.; TERMAN, V.B.; SHUMILINA, V.I.;
NAZAROVA, N.A.; OKAL'NIK, G.N.; POPOV, M.I.

Improving the quality of the surface of sheet glass by electric
heating of the air in the chamber under the vertical drawing
machinery. Stek. i ker. 19 no.2:11-14 F '62. (MIRA 15:3)
(Glass furnaces)

SOLINOV, F.G.; BORISOV, B.I.; TERMAN, V.B.

Design of the working end of a tank for drawing sheet glass
without using floaters (Pennvernon method). Stek. i ker. 19
no.6:4-9 Je 62. (MIRA 15:7)
(Glass furnaces)

BORISOV, B.I.

"Prefabricated windows" by K.T.Bondarev. Reviewed by B.I.
Borisov. Stek.i ker. 19 no.4:48 Ap '62. (MIRA 15:8)
(Windows) (Bondarev, K.T.)

MOSHCHANSKIY, N.A., doktor tekhn. nauk; BORISOV, B.I., inzh.

Oxidizing corrosion of building materials. Stroi. mat. 10
no.5:6-8 My '64. (MIRA 17:9)

L 53670-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Ps-4/Pr-4/Ps-4 WW/RM

ACCESSION NR: AP5009322

S/0191/65/000/004/0050/0052

AUTHOR: Borisov, B. I.TITLE: On the quantitative evaluation of the protective action of polymers against various aggressive liquids

SOURCE: Plasticheskiye massy, no. 4, 1965, 50-52

TOPIC TAGS: polymer, polymer property, polymer wear material, polymer rheology, diffusion coefficient / PN 1 polyester resin

ABSTRACT: A rapid and accurate method for determining the coefficient of diffusion of aggressive liquids into polymers is described. The method is based upon the diffusion equation

$$Q_x = Q_{max} \left(1 - e^{-\frac{4\pi D t}{l^2}} \right)$$

where Q_x is the overweight of the specimen after time t , Q_{max} is the overweight of the specimen in the equilibrium state, D is the coefficient of diffusion (cm^2/sec), and l is the specimen thickness. By applying the method of least

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I 53670-65

ACCESSION NR: AP5009322

squares and differentiating, the author derives the equation

$$D = \frac{\lambda^2}{14400\pi^2}, \text{ cm}^2/\text{sec}$$

where $\lambda = \frac{4\pi^2 D}{P}$

Disks with 50-55 mm diameter and 3 mm thickness were made from polyester resins with and without an additive, and were placed in a 10% nitric acid bath and in water at room temperature. A diabasic flour was used as an additive. Tables are given showing the observed test parameter values. The tests yielded the diffusion coefficient of polyester resin PN-1 in water and 10% HNO₃. Tests showed that 60% H₂SO₄ penetrates the resin cover. Orig. art. has: 1 figure, 5 equations, and 4 tables.

ASSOCIATION: none

SUBMITTED: 00

ENGL: 00

SUB CODE: CCMT

NO REF SOV: 002

OTHER: 001

Card 2/2 BAB

MOSHCHANSKIY, N.A.; BORISOV, B.I.

Investigating the chemical stability of materials for linings,
coverings and coatings. *Zashch.net.* 1 no.4:26-42 51-5g '65.
(MTRA 18:8)

1. Nauchno-issledovatel'skiy institut betona i zhелеzobetona.

BORISOV, B.I.

Liquid glass as a binding material in various compositions.

Zhur. prikl. khim. 38 no.3:505-510 Mr '65.

(MIRA 18:11)

1. Submitted March 5, 1964.

BCRISOV, B.I.

Quantitative determination of the degree of interaction between
liquid-phase oxidizing agents and anticorrosive synthetic materials.
Zav. lab. 31 no.9:1096-1099 '65. (MIRA 18:10)

1. Nauchno-issledovatel'skiy institut betona i zhelezobetona.

L 62195-65 EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(1)/EPR/EPA(w)-2/ENP(j)/ENP(b) Pc-4/
Pr-4/Ps-4/Pt-7 WM/RM/WH

ACCESSION NR: AP5015884

UR/0080/65/038/006/1321/1326
546.175 + 620.191/.193

AUTHOR: Borisov, B. I.

TITLE: Mechanism of interaction between nitric acid and certain organic materials

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 6, 1965, 1321-1326

TOPIC TAGS: nitric acid, paraffin, colophony, polyester resin, anticorrosion agent

ABSTRACT: A study of the mechanism of interaction between 58.25% nitric acid (12.51 M) and polyester resin PN-1, homogenized liquid paraffin, or colophony, showed that polyester resin PN-1 and colophony are unsuitable as materials for protecting constructional materials and equipment against the action of nitric acid of such concentration in the 20-100C range. It was found that homogenized liquid paraffin could be used as an anticorrosion material for coating a variety of surfaces exposed to the action of 58.25% nitric acid at 50C. The problem of determining the factors responsible for the great stability of paraffin toward oxidation by nitric acid (a stability exceeding that of polyethylene) is discussed. The kinetics of the oxidation reactions between nitric acid and the organic materials were studied, and rate constants and activation energies were determined. Infrared spectra of the oxidation products produced by the reaction of paraffin with nitric acid (3 days at 100C) are illustrated and interpreted. Orig. art. has:
Card 1/2

L 62195-65

ACCESSION NR: AP5015884

5 figures and 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy institut betona i zhelezobetona (Scientific Research Institute of Concrete and Reinforced Concrete)

SUBMITTED: 30May64

ENCL: 00

SUB CODE: MT, OC

NO REF SOV: 005

OTHER: 001

Card

llc
2/2

L 39764-66 EWP(j)/EWI(m)/I/EWP(t)/ETI IJP(c) RM/WW/JD/WB/GD-2

ACC NR: AF6007973

(A)

SOURCE CODE: UR/0191/66/000/003/0061/0063

AUTHOR: Borisov, B. I.; Moshchanskiy, N. A.

19
B

ORG: none

TITLE: Diffusion of corrosive liquids through polymeric materials

SOURCE: Plasticheskiye massy, no. 3, 1966, 61-63

TOPIC TAGS: chemical stability, corrosion resistance, epoxy plastic, polyisobutylene

ABSTRACT: The diffusion of corrosive liquids through the epoxy resin ED-6 (with and without a filler) and polyisobutylene were studied to determine the chemical stability of these polymers. The diffusion coefficient (D) was determined using the sorption method and the equation:

$$D = \frac{(\lambda l)^2}{14400 \pi^2} \text{ cm}^2/\text{sec}$$

where l = thickness of a sample (in cm), λ = a coefficient determined by the equation:

$$\lambda = \frac{\sum_{i=0}^n \left[\left(-\ln \frac{w_{\max} - w_i}{w_{\max}} \right) \cdot t_i \right]}{\sum_{i=0}^n t_i}$$

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UDC: 678.643'42'5.019.34+678.742.4.019.34

ACC NR: AP6007973

where W_i = gain in weight (in %) of the sample during a specific time t_i (in hr), and W_{max} = gain in weight (in %) of the sample in the equilibrium state, which is defined by the maximal saturation of the sample with the liquid. Discs from polymers 55 mm diameter and 3 mm thick were submerged in a liquid and the increase in their weight was determined. For ED-6 without a filler $D \cdot 10^7$ cm²/sec was 0.012, 0.028, and 0.016, and for ED-6 with a filler (diabase powder) it was 0.017, 0.038, 0.039 for water, 15% HNO₃, and 25% H₂SO₄, respectively. For water D was $8 \cdot 10^{11}$ cm²/sec for poly-isobutylene. The increased permeability for 15% HNO₃ and 25% H₂SO₄ in ED-6 with a filler was explained by the presence of an increased number of channels formed between the particles of the filler and at the contact points between the filler and the resin. With 50% H₂SO₄, D was $0.0095 \cdot 10^7$ and $0.058 \cdot 10^7$ cm²/sec for ED-6 with and without the filler, respectively. Apparently, the saturation of the samples with 50% H₂SO₄ was accompanied by a chemical reaction and, due to it, a partial decomposition of the material, the resin, and the filler. Orig. art. has: 1 fig. and 2 tables.

SUB CODE: 07, 11 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 001

Card

2/2 gd

L 02152-67 EWP(j)/EWT(m)/T/EWP(t)/ETI IJP(c) RM/WW/JD/WE

ACC NR: AP6008270

SOURCE CODE: UR/0080/66/039/002/0338/0344

AUTHOR: Borisov, B. I.

41
39
B

ORG: Scientific-Research Institute of Concrete and Reinforced Concrete (Nauchno-issledovatel'skiy institut betona i zhelezobetona)

TITLE: Classification of building materials according to their degree of susceptibility to various kinds of oxidizing corrosion

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 2, 1966, 338-344

TOPIC TAGS: corrosion rate, corrosion resistance, construction material, *OXIDATION*

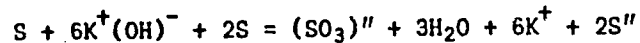
ABSTRACT: The purpose of this work is to review in a systematic way the various types of oxidation processes that occur in building materials. From the point of view of oxidizing corrosion all building materials can be separated in the following manner: I. Non-oxidizable materials (ionic-physical corrosion) and II. Oxidizable materials (A. Oxidation involving oxygen. 1. Self-oxidation and self-reduction. B. Oxidation in the absence of oxygen). Materials of Class I include natural and artificial minerals, cement, brick, and ceramics. Interaction of these materials with liquid oxidants usually result in physical changes such as leaching, volume increase or in chemical changes such as formation of soluble salts and double decomposition reactions. Ozone, oxygen, gaseous fluorine and chlorine do not react with these materials under dry con-

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UDC: 691+620.193

ACC NR: AP6008270

ditions but do react in the presence of moisture. Materials of Class II can be divided into three groups: (1) inorganic materials (elemental sulfur, carbon and its various forms, pigments), (2) metals, (3) organic materials (polymers, organometallics). Except for metals, the mechanism of corrosive destruction of these materials has been little studied. Oxidations of Class II materials which involve oxygen can lead to the formation of water as in the sulfonation of polymers. Table 1 shows that the strongest oxidizing media are the acid oxidants in the liquid phase in high concentration. Chromic acid is also an oxidant of this type. Another type of oxidation involves self-oxidation and self-reduction as in the action of caustic potash on sulfur cement:



The sulfur is partially oxidized to sulfate and partially reduced to sulfide. Organic materials can undergo similar reactions such as the disproportionation of an aldehyde in the presence of KOH to give one molecule of alcohol and one molecule of acid for every two molecules of aldehyde consumed. An example of oxidizing corrosion not involving oxygen is chlorination and other reactions with halogens. However, these reactions are of less significance than those involving oxygen. Orig. art. has: 2 tables, 9 formulas.

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