L 61064-65 EWT(l) IJP(c)

ACCESSION NR: AP5013901 UR/0056/65/048/005/1419/1426

18

15

B

AUTHOR: Shavrov, V. G.

TITLE: On the magnetoelectric effect 21

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 5, 1965, 1419-1426

TOPIC TAGS: magnetoelectric effect, antiferromagnetism, ferrimagnetism, magnetic sublattice, antiferromagnetic structure, spin wave spectrum

ABSTRACT: The author studies the magnetoelectric effect in antiferromagnets and in ferrimagnets with two magnetic sublattices having different local magnetizations. The possibility of the existence of the effect in various types of antiferromagnetic structures is studied by classifying the various types of antiferromagnetic structures on the basis of the parity concept introduced by Ye. A. Turov (ZhETF v. 42, 1582, 1962). The spin wave spectrum is calculated for the case of the rhombohedral antiferromagnets Cr_2O_3 and Ti_2O_3, with account taken of the magnetoelectric energy in both types of antiferromagnets. In addition, the magnetoelastic energy is taken into account in the case of the Ti_2O_3. The influence of the electric field on the antiferromagnetic resonance frequency is analyzed. It is concluded that in uniaxial antiferromagnets in which the magnetoelectric effect exists and the axis of

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L 61064-65
ACCESSION NR: AP5013901

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antiferromagnetism lies in the basal plane, there is an appreciable probability of observing experimentally the dependence of the antiferromagnetic frequency on the external electric field. "The author thanks Ye. A. Turov for his interest in the work and for his comments, and A. S. Borovik-Romanov for a discussion of certain results." Orig. art. has: 34 formulas.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics, Academy of Sciences SSSR)

SUBMITTED: 04Dec64 ENCL: 00 SUB CODE: SS, EM

NR REF SOV: 012 OTHER: 007

KC

Card 2/2

SAMBEK, L.; SHAVROV, Ya.

Sensational discovery or advertising? Tekh.mol. 28 no.5:32 '60.
(MIRA 13:7)

(Gas and oil engines)

SBOROVSKIY, A.K., kand. tekhn. nauk; SHAVROV, Yu.N., inzh.

Dynamic characteristics of AMg-5B and AMg-6T aluminum alloys. Sudostroenie 25 no.5:7-11 My '59. (MIRA 12:8)

(Ships--Welding) (Aluminum alloys)

BOYTSOV, Gennadiy Vladimirovich; NEBYLOV, Vladimir Matveyevich; TAUBIN, Georgiy Osipovich. Prinimal uchastiye SHAVROV, Yu.N.; BAYKOV, D.I., kand. tekhn.nauk, retsenzent; KOROTKIN, Ya.I., kand. tekhn.nauk, retsenzent; SHAKHNOVA, V.M., red.; TSAL, R.K., tekhn. red.

[Strength of ship structures from aluminum alloys; design and calculations] Prochnost' sudovykh konstruktsii iz aliumineievykh splavov; proektirovanie i raschet. Pod obshchei red. G.O.Taubina. Leningrad, Sudpromgiz, 1962. 211 p. (MIRA 15:7)
(Hulls (Naval architecture)) (Aluminum alloys)

L 12939-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG
ACCESSION NR: AP3004080 S/0229/63/000/007/0048/0050

59
56

AUTHOR: Shavrov, Yu. N. (Candidate of technical sciences)

TITLE: Fatigue characteristics of the aluminum alloy AMg-61 16

SOURCE: Sudostroyeniye, no. 7, 1963, 48-50 16 27

TOPIC TAGS: Aluminum alloy, fatigue characteristic, notch sensitivity, stress concentrator

ABSTRACT: Large scale cantilever-type specimens (see Fig. 1. of Enclosure) of aluminium alloy AMg-61 [unidentified] were tested for fatigue strength under simulated operating conditions of actual ship elements. Vibrations at 1200 cpm were simulated by a vibrator located on the builtin end of the specimen. The test results (see Fig. 2) were as follows: The fatigue curves have no horizontal section up to 10,000,000 cycles. The 10,000,000-cycle endurance limit is 550 kg/cm² for smooth specimens; 400 kg/cm² for specimens with central hole, butt weld, or double fillet weld; 250 kg/cm² for notched specimens; and 180 kg/cm² for specimens with a single continuous or interrupted fillet weld. Cracks always formed at the location of

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L 12939-63
ACCESSION NR: AP3004080

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stress concentration and propagate rather slowly; the propagation time was 10—15% of test duration. A rapid fatigue test suggested by V. S. Ivanovar, which is based on the hypothesis of energetic similarity between fatigue failure and 14 melting, can be used for steels but not for the aluminum alloys AMg-61, AMg-5B [4.8—5.5% Mg; 0.3—0.5% Mn; 0.02—0.2% V], and AMg-6T [APEX 41]. Orig. art. has: 2 figures and 1 table. 16

ASSOCIATION: none

SUBMITTED: 00
DATE ACQ: 15Aug63
ENCL: 02

SUB CODE: ML,AP
NO REF SOV: 002
OTHER: 000

Card 2/2

SHAVROV, Yu.N., kand.tekhn.nauk

Fatigue characteristics of the AMg-61 aluminum alloy. Sudostroenie 29 no.7:48-50 Jl '63. (MIRA 16:9)

(Aluminum alloys--Fatigue)

L 05214-67 EWP(k)/EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(t)/ETI IJP(c) EM/WW/JD/HM

ACC NR: AP7000764 SOURCE CODE: UR/0229/66/000/004/0010/0012

SBOROVSKIY, A. K., SHAVROV, Yu. N.

47
B

"Vibration Strength of Weld Joints Made From 1Kh18N9T Stainless Steel"

Leningrad, Sudostroyeniye, No 4, Apr 66, pp 10-12

Abstract: The authors studied the fatigue strength of butt, T- and slot welds made with 1Kh18N9T steel. Large, flat, specially shaped specimens were subjected to cyclic bending vibrations. A test base of $5.0 \cdot 10^6$ cycles was used. An analysis of the experimental data shows that 1Kh18N9T steel has a high index of fatigue strength ($0.8\sigma_T$) due to its excellent ductile properties. A comparison of joints welded from 0Kh17N7Yu and 1Kh18N9T steels shows that welding has a greater effect on the microstructure of 1Kh18N9T steel. The fatigue limit of T-joints welded from 1Kh18N9T steel is 9.5 kg/mm^2, which is somewhat lower than that of similar joints welded from 0Kh17N7Yu steel. The fatigue strength of slot joints welded from both types of steel is about the same. The fatigue limit for weld joints of this type is not more than 3.5 kg/mm^2 in spite of the considerable differences in mechanical properties of these steels. This indicates that when there are considerable stress concentrators, vibration strength is determined by the form of the welded joint and various technological flaws. Orig. art. has: 1 figure and 4 tables.

[JPRS: 36,902]

TOPIC TAGS: stainless steel, vibration stress, welding technology, fatigue strength/ 1KH18 stainless steel

Card 1/1 gl SUB CODE: 11,13,20/ SUBM DATE: none

0923

SHAVROVA, M M

11Z3

PROCESSES AND PROPERTIES INDEX

The colloidal state of antigens for the seroreaction for syphilis N. Kholchev, M. Shavrova and R. Sapozhnikova. *Z. Mikrobiol. Epidemiol. Immunitätsforsch.* (U. S. S. R.) 19, 129-35 (in German 135) (1937). The Sachs-Georgi (I), Kahn (II) and citochol (III) antigens, dild. with 10 vol. of physiol. saline, were compared nephelometrically with a standard 1% alc. lecithin soln. which had been dild. with distd. water until its nephelometric index was equal to that of a mixt. of equal parts of 1:5000 N $AgNO_3$ and 1:9000 N NaCl. The turbidity of each group of antigens varied considerably, the nephelometric index being 0.26-1.5 for I, 3.0-4.4 for II and 3.3-4.76 for III. There are limits below and above which an antigen is not specific. An antigen of I, with an index of 0.15, 3 antigens of II with indexes of 4.9, 6.8 and 2.56 and an antigen of III with an index of 5.35 gave neg. results with positive serums. S. A. Karala

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TRUSHINA-TUMANOVA, Ye.F.; SHAVROVA, M.M.; MAMAYEVA, Ye.A.

Further study of antigens of the pertussin pathogen. Zhur.mikrobiol. epid. i immun.,supplement for 1956:40-41 '57 (MIRA 11:3)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny.
(ANTIGENS AND ANTIBODIES) (HEMOPHILUS PERTUSSIS)

TRUSHINA-TUMANOVA, Ye.F.; SHAVROVA, N.M.; MAMAYEVA, Ye.A.

Growing the whooping cough pathogen on a blood-free medium and studying the properties of cultures thus obtained; authors' abstract. Zhur.mikrobiol.epid. i immun. 28 no.7:141-142 Jl '57.
(MIRA 10:10)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny.
(HEMAPHILUS PERTUSSIS)

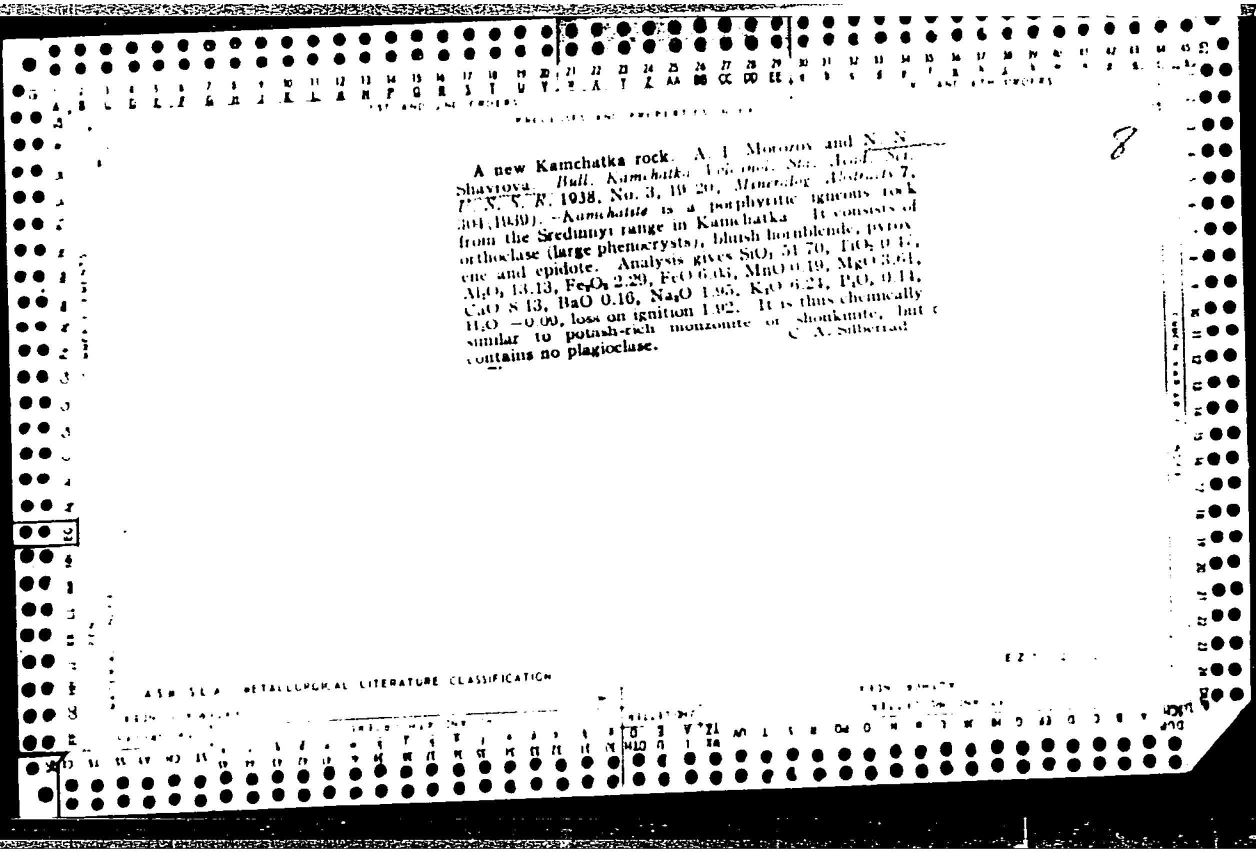
PROCESSES AND PROPERTIES INDEX

CA

3

Determination of the radioactivities of gases of the secondary volcanoes of the Klyuchevskaya Mountain (in Kamchatka) N. N. Shavrova. *Byull. Vulkanolog. Stantsii Kamchatke* **1938**, No. 2, 37-40; *Khim. Referat. Zhur.* **1938**, No. 6, 60.—Of 9 samples from the fumarole of the Tuila volcano 2 contained no Rn and 7 contained Rn in amts. of 0.059-0.177 emans/l. The temp. of the fumarole was 205-300°. One of the fumaroles of the same volcano, having a temp. of 70°, contained large amts. of water vapor (0.40 emans/l.). Of 2 samples of gas from the Kuchurich volcano fumarole (210° and ?), one contained no Rn and the other contained 0.11 emans/l. The results are considerably lower than those obtained previously in the investigation of the volcanic gases of Kamchatka, probably, owing to the greater [illegible] of the Tuila and the Kuchurich volcanoes. A no. of spring waters had radioactivity of 0.06-0.46 emans/l.; in one case the radioactivity was 1.2 emans/l. W. R. Henn

METALLURGICAL LITERATURE CLASSIFICATION



8

A new Kamchatka rock. A. I. Morozov and N. N. Shavrova. *Bull. Kamchatka Volcanol. Sta. Acad. Sci. U.S.S.R.* 1938, No. 3, 19-20; *Mineralog. Abstracts* 7, 304(1939).—*Kamchatite* is a porphyritic igneous rock from the Sredinnyi range in Kamchatka. It consists of orthoclase (large phenocrysts), bluish hornblende, pyroxene and epidote. Analysis gives SiO_2 51.70, TiO_2 0.46, Al_2O_3 13.13, Fe_2O_3 2.29, FeO 6.05, MnO 0.19, MgO 3.61, CaO 8.13, BaO 0.16, Na_2O 1.95, K_2O 6.24, P_2O_5 0.14, H_2O −0.00, loss on ignition 1.02. It is thus chemically similar to potash-rich monzonite or shonkinite, but contains no plagioclase. C. A. Silberrad

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHAVROVA, N. N.

USSR.

GP

①

Anorthoclase from lavas of the volcanic region of Darigan (S.E. Mongolian S.S.R.). V. I. Vlodavets and N. N. Shavrova. *Voprosy Petrog. i Mineral., Akad. Nauk S.S.S.R.* 2, 71-8(1953).—The anorthoclase phenocrysts of the basaltic lavas have diameters up to 2 cm.; the crystals are rarely transparent, usually translucent, whitish, or moonstone-like. They are evidently of intratelluric origin, and slightly corroded by post-effusive agents. Consts. of the transparent crystals: $\gamma = 1.530$; $\alpha = 1.524$; $2V = 42°$, optically neg.; d. 2.59. Chem. analysis: SiO_2 65.20; Al_2O_3 21.36; CaO 1.01; SrO 0.25; BaO 0.19; Na_2O 7.68; K_2O 4.50; Li_2O 0.005; Rb_2O 0.005; no Cs_2O, H_2O 0.12; sum 100.38% (= *Or* 26.5%; *Ab* 63.4%; *An* 3.3%; Celsian mol. 0.2%). From Belyankin's diagram (*C.A.* 21, 1238) it is evident that the mineral is an anorthoclase remarkably high in Na feldspar and very low in *An*, of monoclinic symmetry, a typical high-temp. modification, metastable at room temp.

W. Eitel

SHAVROVA, N.N.

USSR.

Kabardino Mountain. V. I. Vlodavets and N. N. Shavrova. *Trudy Lab. Vulkanol., Akad. Nauk S.S.S.R.* 1953, No. 7, 137–66.—Kabardino is located in the Caucasus near Kazbek Mountain and is part of the Kazbek volcanic region. Its geology and morphology are described. Chem. analyses of minerals found there are given. M. Hosch

SHAVROVA, N.N.

Some microelements in lavas of the Klyuchevskaya group of volcanoes.
Biul.Vulk.sta. no.22:67-75 '54. (MLRA 8:11)
(Kamchatka--Lava)

NABOKO, S.I.; SHAVROVA, N.N.

Pyroxenes in lavas of present-day and recent eruptions of some Kamchatka volcanoes. Biul.Vulk.sta. no.23:47-50 '54.
(MLRA 8:11)

(Kamchatka--Pyroxenes) (Kamchatka--Lava)

SHAVROVA, N.N.

Report on the radium content in lavas of volcanoes of the Klyuchevskaya group. Biul.Vulk.sta. no.24:65-67 '56. (MLRA 9:10)

(Klyuchevskaya Sopka--Radium)

USSR/Inorganic Chemistry. Complex Compounds C

Abs Jour : Referat. Zhurnal Khimiya, No 6 1957 18824

Author : Vikt. I Spitsyn N.N. Shavrova
Inst : -
Title : Study of Hydrous Sodium Tantalates

Orig Pub : Zh.Obshch.Khimii 1956, 25, No 5 1258 - 1262

Abstract : Sodium tantalates were obtained by combining Ta_2O_5(I) with NaOH (II) in the weight ratio I : II = 1 : 5. The fused mass having been washed with water in order to remove the superfluous II was dissolved in water heated to 80°; the obtained solution was evaporated at 50° until the crystallization started. Under these conditions $8Na_2O.6Ta_2O_5.33H_2O$ (III) was separated in the form of hexagonal plates with unequal sides. When 0.1 of the normal solution of II was added to the initial mass at a low temperature a precipitate of $7Na_2O.5Ta_2O_5.22H_2O$ (IV) was separated; this precipitate consists of very little needle crystals of a

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USSR/Inorganic Chemistry. Complex Compounds.

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 18824

prismatic shape. IV was obtained also by evaporating the aqueous solution of the initial fused mass at a temperature above 85°, but in prisms of a larger size. d^{20}(3.58 and 3.78), refraction indices, pH of 1% solutions (8.58 and 8.48) were determined for III and IV. The interplanar spacing of III and IV is quoted. The authors arrive to the conclusion that it is possible to obtain two different compounds - III and IV - from the aqueous solution of I combined with II, depending on the concentration of the superfluous II and temperature.

SHAVROVA, N.N.

4

The mechanism of the reaction of tantalum pentoxide with sodium hydroxide. V. I. Spitsyn and N. N. Shavrova. J. Gen. Chem. (U.S.S.R.) 26, 1429-32 (1956) (English translation).—See C.A. 51, 119e. B. M. R.

2

chem

PM

MT

SHAVROVA, N.N.

Radium and thorium content of lavas of the Semyachik volcanoes. Biul. Vulk. sta. no.27:51-54 '58. (MIRA 11:10)
(Semyachik volcanoes--Radioactive substances)

SHAVROVA, N.N.

Radium and thorium content of lavas of the Bezymyannyy Volcano.
Biul.Vulk.sta. no.31:28-31 '61. (MIRA 15:2)
(Bezymyannyy Volcano—Lava) (Radium) (Thorium)

SHAVROVA, N.N.

Radium and thorium contents in andesite-basalt, andesite, and dacite. Biul.Vulk.sta. no.33:67-70 '62. (MIRA 15:12)
(Rocks, Igneous—Analysis)

IRKHIN, Yu.P.; SHAVROV, V.G.

Theory of the spontaneous Hall effect in ferromagnetics. Zhur. eksp. i teor. fiz. 42 no.5:1233-1240 My '62. (MIRA 15:9)

1. Institut fiziki metallov AN SSSR.
(Hall effect) (Magnetic materials)

SHAVROVA, V.S.; KLEMINA, Ye.I.

Certain data on the problem of practical significance of laboratory investigations in diagnosis of viral influenza. Vest. otorinolar., Moskva 15 no.2:28-32 Mar-Apr 1953. (CLML 24:3)

1. Candidate Medical Sciences for Shavrova. 2. Of the Central Polyclinic of the Therapeutic Sanitary Administration of the Kremlin.

137-1-165D

Translation from: Referativnyy Zhurnal, Metallurgiya, 1956, Nr 1, p. 18 (USSR)

AUTHOR: Shavrova, Ye. B.

TITLE: Research on the Effect of Technological Factors and Sintering on the Elastic Properties of Silica at High Temperatures (Issledovaniye vliyaniya tekhnologicheskikh faktorov na uprugiye svoystva dinasa pri vysokikh temperaturakh)

ABSTRACT: Bibliographic entry on the author's dissertation for the Degree of Candidate of Technical Sciences, presented to the Kharkov Polytechnical Institute, (Khar'kovsk. politekhn. in-t) Khar'kov, 1956

ASSOCIATION: Khar'kov Polytechnical Institute (Khar'kovsk. politekhn. in-t)

Card 1/1

KAYNARSKIY, I.S.; SHAVROVA, Ye.B.

Modulus of elasticity in dinas bricks and its dependence on basic technological factors. Ogneupory 22 no.6:241-249 '57. (MIRA 10:7)

1. Khar'kovskiy politekhnicheskiy institut im. Lenina.
(Firebrick--Testing)

KAYNARSKIY, I.S.; SHAVROVA, Ye.B.

Interrelation of the stability and elasticity of Dinas brick. Mat. Trudy KhPI 31 no.1:37-42 '59. (MIRA 13:10)
(Firebrick)

AUTHORS: Ka[illegible]skiy, I. S., Snavrova, Ye. B. SOV/131-58-7-6/14

TITLE: Rules Governing the Change of the Elastic Properties of Dinas on Heating (Zakonomernosti izmeneniya uprugikh svoystv dinasa pri nagrevanii)

PERIODICAL: Ogneupory, 1958, Nr 7, pp 313 - 319 (USSR)

ABSTRACT: This paper determines the causes of the change of the shear modulus within the temperature interval of from 20 to 1500°. The angles of rotation at various temperatures were measured with a number of samples (Table 1). A considerable change of the shear modulus can be observed on the heating of the dinas to 800°, as is shown in figures 1,2 and 3, as well as in table 2. On a further heating to 1100° the shear modulus does almost not change at all, at temperatures above 1100° its decrease according to the rules begins. These changes depend on the additions, the specific weight as well as the formation of the liquid phase. Figure 4 shows the dependence of the decrease of the shearing modulus at 175° on the content of tridymite of the dinas, and figure 5 shows that at 250° on the content of cristobalite. Figure 6 shows the dependence of the decrease of the shear modulus at 200° on the content of quartz in the

Card 1/3

dinas. Table 3 gives the change of the shear modulus of the dinas within the temperature interval of from 250-1000°. The dependence of the degree of increase of the shear modulus (in %) in the case of a heating above the inversion temperature on the content of silicon oxide of the dinas can be seen from table 4. Figure 7 shows the dependence of the increase of the shear modulus (in %) at 800° on the total content of tridymite and cristobalite of the dinas. Table 5 gives the change of the shear modulus of the dinas on a heating within the interval of from 1000-1500°. Conclusions:

1. The decrease of the shear modulus of the dinas within the temperature interval of from 20 to 250° is dependent on the changes of the modification of tridymite and cristobalite.
2. The degree of the increase of the shearing modulus within the temperature interval of from 250 to 1000° depends on the content of additions.
3. The decrease of the shear modulus of the dinas at above 1000° is dependent on the formation of the liquid phase. Up to a temperature of 1500° dinas with a normal content of Al_2O_3

Rules Governing the Change of the Elastic Properties SOV/131-58-7-6/14
of Dinas on Heating

has an elasticity which insures its performance in furnaces exposed to heavy work for a long time. There are 7 figures, 5 tables, and 4 references, 2 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. Lenina (Khar'kov Polytechnical Institute imeni Lenin)

1. Rock--Elasticity 2. Rock--USSR 3. Ceramic materials--Test results

Card 3/3

SHMELEV, N.A., prof.; SHAVROVA, Z.N.

Prolonged chemotherapy in tuberculosis. Probl.tub. 35 no.7:50-55 '57.
(MIRA 11:2)

1. Iz Instituta tuberkuleza AMN (dir. Z.A.Lebedeva). 2. Chlen-korrespondent AMN SSSR (for Shmelev)
(TUBERCULOSIS, PULMONARY, ther.
drug ther., prolonged)
(TUBERCULOSIS, MILIARY, ther.
drug ther., prolonged)

KOGAN, S. M.; SHAVRUK, A. D.

Experience in the use of pectolytic fermentation preparations.
Spirt. prom. 28 no.8:34-35 '62. (MIRA 16:1)

1. Bobruyskiy soko-morsovyy zavod.

(Fermentation)

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CA

16

Racemization in the camphene rearrangement. The stereochemistry of the alicyclic compounds. S. S. Nametkin and A. I. Shavrugin. *J. Gen. Chem.* (U. S. S. R.) **4**, 847-55(1934); cf. N. and Khukhrikova, *C. A.* **18**, 1486; N., *C. A.* **18**, 1487.—By a series of schemes of configuration formulas it is shown that the camphene rearrangement of the 2nd type proposed by N. and Bryusova (*C. A.* **22**, 1584) together with that of the 1st type proposed by Wagner (W. and Godlevskiĭ, *J. Russ. phys.-chem. Soc.* **29**, 121(1897); W., Moĭkho and Zen'kovskiĭ, *Ber.* **38**, 1036(1905); *Ann.* **340**, 24(1905)) can easily and graphically explain the racemization process in the rearrangement of camphene to isoborneol, and conversely, and other optical interrelations observed in the analogous reciprocal rearrangements of the substituted camphenes and borneols (cf. Houben and Pfankuch, *C. A.* **26**, 1272, 3245; **27**, 2047) Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Ch

10

Tertiary propylfenchyl alcohol. A. I. Shavrygin. *J. Gen. Chem.* (U. S. S. R.) **6**, 1310-13(1936). cf. C. A. 29, 3999^8.—*Propylfenchyl alc.* (I) could not be prepd. from fenchone (II) and PrMgBr. Allylfenchyl alc. resulted in 73% yield by adding, with mech. shaking, within 8 hrs. a mixt. of 100 g. II and 80 g. allyl bromide to Mg in Et_2O contg. a few I crystals. After refluxing for 2 days and decompn. of the reaction mixt. with dil. H_2SO_4, it was fractionated. It b_{11} 111-11.5°, has d_4^{20} 0.9585, n_D^{20} 1.4923, M. R. 58.81, calcd. 58.80. Catalytic reduction (Pt black) at room temp. gave nearly 100% I, b_{11} 118°, d_4^{20} 0.9402, n_D^{20} 1.483, M. R. 50.2, calcd. 50.36. Heating I with Na_2SO_4 at 120-5° for 8 hrs. gave an unsatd. hydrocarbon, $C_{13}H_{22}$, b_{12} 87-8°, d_4^{20} 0.8718, n_D^{20} 1.4788, M. R. 57.94.

Chas. Blanc

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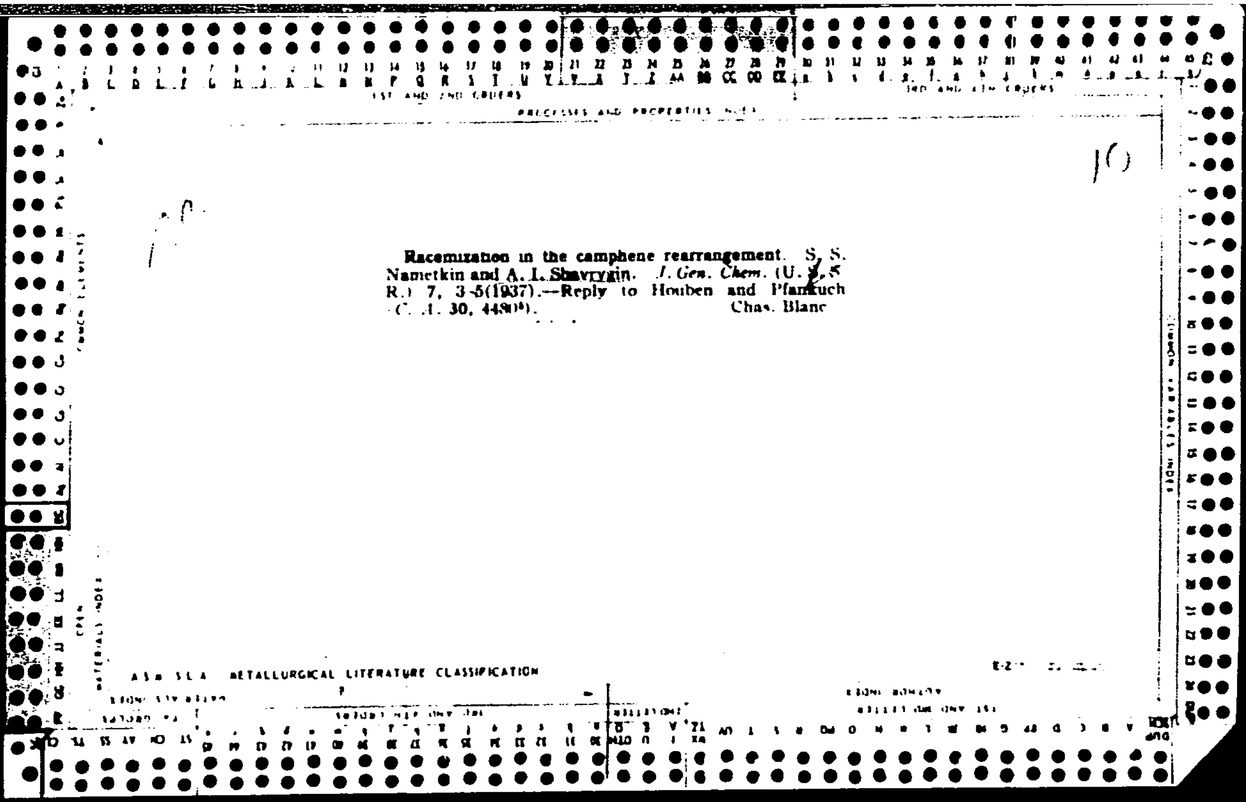
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ca

10

Racemization in the camphene rearrangement. A. I. Shavrygin. *J. Gen. Chem.* (U. S. S. R.) **6**, 1414-24 (1936); cf. *C. A.* **29**, 2157¹. —In the camphene rearrangement of the 1st type proposed by Wagner and Godlevskii (*J. Russ. phys.-chem. Soc.* **29**, 121(1897)), *d*-4-methylisoborneol (I) gave *l*-β-methylcamphene (II), and conversely, II gave I. In the rearrangement of the 2nd type proposed by Nametkin and Bryusova (*C. A.* **22**, 1584), *d*-α-methylcamphene (III) gave I. The partial racemization obtained in the conversion of I to II and that of II acetate back to I can be explained by assuming that the dehydration of I gave II contaminated with III and the optically inactive methylcyclene. On the basis of preliminary expts. and a series of schemes of configuration formulas it is shown that the 2 camphene rearrangements (1st and 2nd types) explain not only the racemization in the conversion of camphene to isoborneol and conversely, but also the absence of racemization in the analogous mutual transitions of substituted camphenes and isoborneols. The work is being continued. Fifteen references.
Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

10

Racemization in the camphene rearrangement. S. S. Nametkin and A. L. Shavrygin. *J. Gen. Chem.* (U.S.S.R.) 7, 3-5(1937).—Reply to Houben and Pfankuch (C. A. 30, 4480^4). Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Optical inversion and racemization in the camphene rearrangement. II. The change of optical activity in the dehydration of substituted tertiary bornyl alcohols. A. I. Shavrygin. *J. Gen. Chem.* (U. S. S. R.) 7, 2068-77(in French 2077)(1937); cf. *C. A.* 31, 1384^{8}. The 1st type of dehydration cited in the previous paper is accompanied by a change in the C skeleton of the compd. and a reversal of the sign of the optical activity. In the 2nd type, there is no change in ring structure or in the sign. Thus, methyl fenchyl alc. gives α-methylcamphene (I) by the 2nd type with no change of sign, while purified tertiary methylbornyl alc., $[\alpha]_D$ −12.66°, gives I with a change of sign. Change of sign occurs when tertiary phenylbornyl alc. gives α-phenylcamphene, but tertiary benzylbornyl alc., $[\alpha]_D$ −23.12°, gives benzylidine camphane, $[\alpha]_D$ −67.97°. The dehydration of tertiary propylbornyl alc. goes by both types, which explains the apparent exception. This rule can be used to det. the course of a reaction. Thus, tertiary allylbornyl alc., $[\alpha]_D$ −15.68°, dehydrates to give a mixt. contg. a large amt. of a hydrocarbon (II), b_{12} 95-7°, d_4^{20} 0.80768, n_D^{20} 1.5084, $[\alpha]_D$ −95.47°, and smaller amts. of compds. b_{11} 82-4°, d_4^{20} 0.89648, n_D^{20} 1.4857, $[\alpha]_D$ −9.36°, and b_{14} 90-2°, d_4^{20} 0.89096, n_D^{20} 1.4921, $[\alpha]_D$ −29.23°, resp. II is thus allylidenecamphane. This is proved, since it cannot be rehydrated, and is oxidized by $KMnO_4$ to camphor, $(CO_2H)_2$ and HCO_2H, and by N_2O_4 to camphor.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca

10

Racemization and optical inversion during the camphene rearrangement. III The stereochemical nature of the reactions of 4-methylborneol and 4-methylisoborneol. A. I. Shavrygin. *J. Gen. Chem.* (U. S. S. R.) 7, 2754-9(1937); cf. C. A. 32, 2100. When 4-methylbornylene is esterified with HOAc in the presence of $ZnCl_2$, it forms the same 4-methylbornyl acetate which is obtained from 4-methylisoborneol. Sapon. of the ester gives 4-methylisoborneol which is oxidized by HNO_3 to 4-methylcamphor. No new 4-methylborneol is formed. Xanthate dehydration of 4-methylborneol and 4-methylisoborneol gives the same 4-methylbornylene. Hence, the isoborneol cannot have a tertiary structure, and the theory of Krestinskii and Lebedenko (C. A. 31, 1647) on the structure of isoborneol is incorrect.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

Ca

10

4-Methylbornylene and its hydration. A. I. Shavrygin. *J. Gen. Chem.* (U. S. S. R.) 9, 516-21 (1939).—Dehydration of 4-methylborneol and 4-methylisoborneol (I) by the xanthate method gives only 4-methylbornylene. When this is heated with AcOH in the presence of H_2SO_4 or $ZnCl_2$, only the acetate of I is obtained. This is easily sapond. to give I. Since no new alc. is obtained, doubt is cast on the work of Achmatowicz (*C. A.* 22, 4517) and Krestinskii and Eshchenko (*C. A.* 31, 4308⁹). H. M. L.

Lab Org Chem, Moscow Inst. Fine Chem. Tech.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

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2A

10

Preparation of fenchone from the waste of fennel oil. A. I. Shavrygin. *J. Applied Chem.* (U. S. S. R.) 12, 1201-3(in French, 1203)(1939).—The waste of fennel oil, after recovering anethole, was fractionated and the fraction b. 175-210° was refractionated three times and the fractions (180-210°, total of 4 fractions) were treated with HNO_3 (d. 1.4). The fenchone obtained b. 192-3°. The yield was 10-12% by wt. of the waste used.

A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

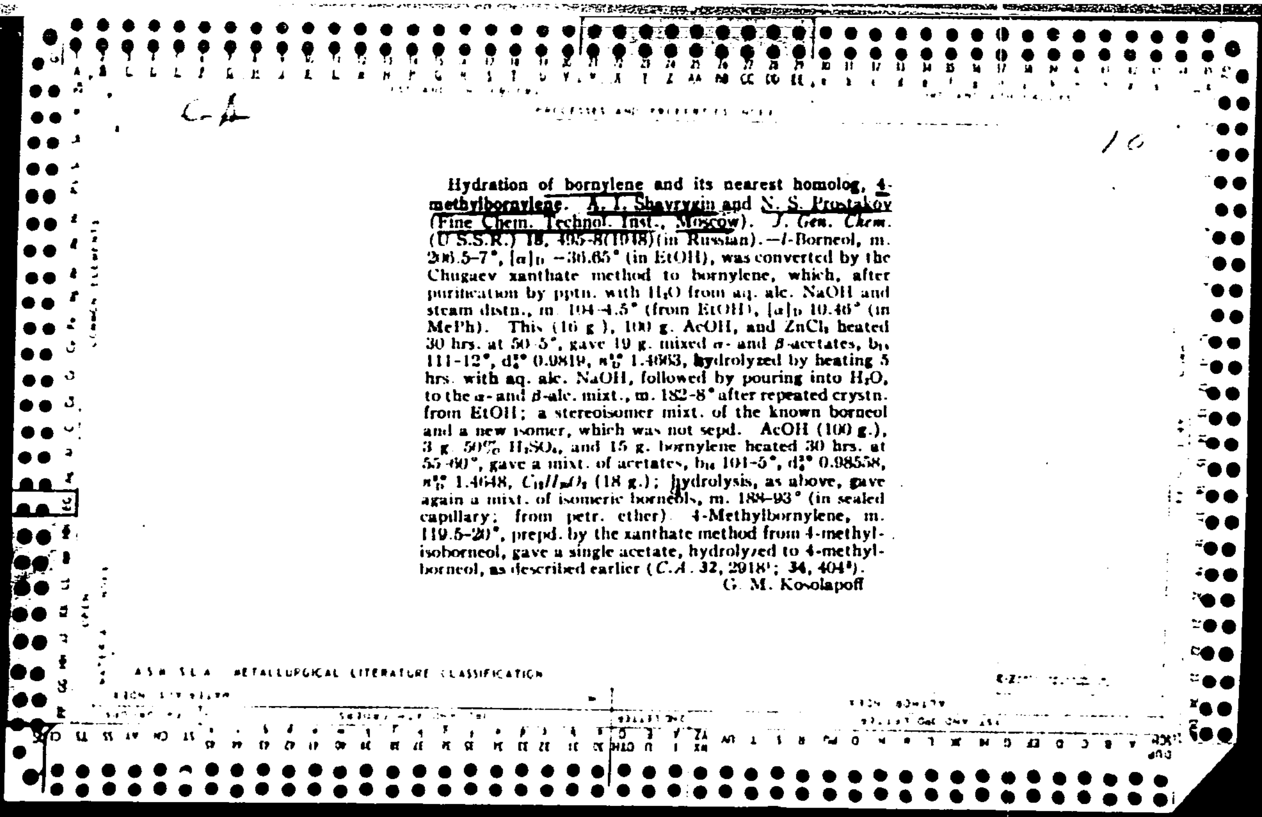
PROCESSES AND PROPERTIES INDEX

Ca

10

Dehydration of isoborneol by the xanthate method. A. I. Shavrygin. *J. Gen. Chem.* (U. S. S. R.) 10, 807-11 (1940); cf. *C. A.* 34, 404^{1}.—Dehydration of isoborneol (I) by the xanthate method gives a mixt. of equal parts of camphene and bornylene. Since the latter is formed by dehydration of borneol (II), the probable isomerization of I to II in the process is being investigated. C. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



C-A

PROCESSES AND PROPERTIES INDEX

10

Hydration of bornylene and its nearest homolog, 4-methylbornylene. A. I. Shavrygin and N. S. Prostakov (Fine Chem. Technol. Inst., Moscow). *J. Gen. Chem.* (U.S.S.R.) 18, 495-8(1948)(in Russian).—*l*-Borneol, m. 206.5-7°, $[\alpha]_D$ −30.65° (in EtOH), was converted by the Chugaev xanthate method to bornylene, which, after purification by pptn. with H_2O from aq. alc. NaOH and steam distn., m. 104-4.5° (from EtOH), $[\alpha]_D$ 10.46° (in MePh). This (16 g.), 100 g. AcOH, and $ZnCl_2$ heated 30 hrs. at 50-5°, gave 19 g. mixed α- and β-acetates, b_{10} 111-12°, d_4^{20} 0.9819, n_D^{20} 1.4663, hydrolyzed by heating 5 hrs. with aq. alc. NaOH, followed by pouring into H_2O, to the α- and β-alc. mixt., m. 182-8° after repeated crystn. from EtOH; a stereoisomer mixt. of the known borneol and a new isomer, which was not sepd. AcOH (100 g.), 3 g. 50% H_2SO_4, and 15 g. bornylene heated 30 hrs. at 55-60°, gave a mixt. of acetates, b_{14} 101-5°, d_4^{20} 0.98558, n_D^{20} 1.4648, $C_{12}H_{20}O_2$ (18 g.); hydrolysis, as above, gave again a mixt. of isomeric borneols, m. 188-93° (in sealed capillary; from petr. ether). 4-Methylbornylene, m. 119.5-20°, prepd. by the xanthate method from 4-methylisoborneol, gave a single acetate, hydrolyzed to 4-methylborneol, as described earlier (*C.A.* 32, 2918¹; 34, 404⁸).

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

2 A

10

Camphene rearrangements and their optical consequences. A. I. Shavrygin (Lomonosov Inst. Fine Chem. Technol., Moscow). *J. Gen. Chem.* (U.S.S.R.) 18, 400-409(1948)(in Russian).—Investigation of the optical relationships in the transformation of α-methylcamphene into 4-methylisoborneol and of the mutual interchange of 4-methylisoborneol and δ-methylcamphene confirmed the previous expression of the optical consequences of camphene rearrangements (C.A. 29, 2157⁴) of type I (Wagner's and type II (Nametkin and Bryusova, *J. Russ. Phys. Chem. Soc.* 60, 285(1928))). The former involves inversion of rotation, the latter involves 2 inversions. Tertiary methylfenchyl alc. (crude from Grignard reaction) readily loses H_2O, especially in the presence of iodine, and yields *α-methylcamphene*, b_{760} 170-2°, m. 23.5-5°, d_4^{20} 0.8624, n_D^{20} 1.4649, $[\alpha]_D$ 36.21° (in EtOH). Treatment with AcOH by the Bertram-Wahlbaum method gave *4-methylisobornyl acetate*, b_{11} 108-9° (1 part hydrocarbon, 3 parts AcOH, 1 g. 20% H_2SO_4, heated 10 hrs. at 50-5°), which on hydrolysis for 3 hrs. on a steam bath with aq. alc. NaOH gave *4-methylisoborneol*, m. 190-1° (from Et_2O), $[\alpha]_D$ 18.74°. Tertiary methylfenchyl alc., m. 84°, $[\alpha]_D$ 9.25° (EtOH), (30 g.) and 90 g. AcOH with 2 g. 50% H_2SO_4 heated 10 hrs. to 50-5° gave 4-methylisobornyl acetate, b_{14} 110-11°, which on hydrolysis as above gave 4-methylisoborneol, m. 190-1°, $[\alpha]_D$ 18.91° (EtOH). Heating this with 3 parts $KHSO_4$ 3 hrs. to 200° initially, then at 170-5°, gave 70% δ-methylcamphene, m. 100-1° (closed tube) (from MeOH), $[\alpha]_D$ −14.55° (EtOH); addn. of AcOH as above and hydrolysis of the acetate gave 4-methylisoborneol, $[\alpha]_D$ 7.38° (EtOH). Pure α-methylcamphene (50 g.) and 150 g. AcOH in the presence of 3 drops 50% H_2SO_4 heated 26 hrs. to 50-5° gave 29 g. unreacted hydrocarbon and 20 g. 4-methylisobornyl acetate, b_9 105°, $[\alpha]_D$ 35.84°; hydrolysis as above gave 4-methylisoborneol (13 g.), m. 189-90° (closed tube), $[\alpha]_D$ 22.60° (EtOH). When the hydrocarbon recovered in the above expt. was retreated as above, the acetate and the alc. gave lower optical activity than the 1st-run samples.

G. M. Kosolapoff

CA

10

Transformation of tertiary propylborneol into secondary 4-propylborneol in connection with the mechanism of camphene rearrangement A. I. Shavrygin. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 18, 1097-1104(1948). — The previously proposed scheme (Nametkin and S., *C.A.* 29, 3660) of the formation of 4-propylisoborneol (I) from α-propylcamphene (II) or from propylidenecamphane (which isomerizes into II) is confirmed. The transformation of tertiary propylborneol (III), under the conditions of the Bertram-Wahlbaum reaction, into I proceeds through the intermediate formation of II and by the camphene rearrangement of the 2nd type (Nametkin-Bryusova, *J. Russ. Phys. Chem. Soc.* 60, 265(1928)). The corresponding changes of tertiary methylfenchyl and phenylbornyl alcs. into the corresponding secondary 4-substituted isoborneols proceed analogously. Camphor, $[\alpha]_D^{18}$ 41.21° (EtOH), was converted to tertiary allylbornyl alc. according to Khoin (*C.A.* 7, 1173) in 90% yield; the product, b_{15} 115-17°, $[\alpha]_D^{18}$ −15.60°. Hydrogenation over Raney Ni in 1:2 EtOH gave III, b_6 111-12°, m. 30-2°, $[\alpha]_D^{18}$ −11.71° (EtOH). III (284 g.) in 6 vols. AcOH and 28 g. 50% H_2SO_4 run in 3 flasks heated 25 hrs. at 50-60° gave 194 g. $C_{13}H_{22}$ (a mixt. of propylidenecamphane and II), b_6 80-1°, d_4^{20} 0.8753, n_D^{20} 1.4782, $[\alpha]_D^{18}$ −33.3°; hydrolysis of the residue with aq. alc. KOH gave 12 g. I. An improved yield of I was obtained by the following conditions: the hydrocarbon mixt. $C_{13}H_{22}$ in 6 vols. AcOH was treated with 0.1 its wt. of 50% H_2SO_4 and heated 25 hrs. at 50°, the products distd. *in vacuo*, and the residue hydrolyzed as above; extn. with Et_2O and evapn. of the dried ext., followed by distn. of the residual hydrocarbons, gave pure I; the best yield (64.98%) was obtained from 65 g. hydrocarbon, under the above conditions; larger runs gave yields of 41-50%. The phys. properties of the unreacted part of the hydrocarbon are almost unchanged, with only a gradual drop of the optical activity; the repeated re-use of the hydrocarbon, after 9 runs, gave $[\alpha]_D$ −1.76°. The resulting I m. 57-8°, $[\alpha]_D^{18}$ 7.97° (EtOH); the conclusions and exptl. results of Sivkov (*C.A.* 40, 2132) are criticized.

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

10

4-Propylbornylene. A. I. Shavrygin. *Zhur. Obshchei Khim.* (J. Gen. Chem.) **18**, 1105-8(1948); cf. C.A. **42**, 2270e.—In analogy to the formation of 4-methylbornylene from 4-methylisoborneol, dehydration of 4-propylisoborneol (I) leads to 4-propylbornylene (II). Thus, 4-substituted isoborneols, in contrast to isoborneol, give, on xanthate dehydration, the corresponding bornylenes. I (30 g.) and 3.3 g. Na in hot xylene gave the Na deriv. in 35 hrs.; this, treated with CS_2, let stand 2 days, then warmed 9 hrs. with MeI, and the excess MeI and CS_2 and the solvent removed with steam, yielded a yellow xanthate ester; this was heated to 160-220° for the decompn. and the resulting II was collected at 220-22°, washed with 10% NaOH, steam-distd., and purified by heating with Na; pure II (12.0 g., 41%), b_{744} 210-12°, d_4^{20} 0.8606, n_D^{20} 1.4703, is insol. in H_2O, sol. in Et_2O, C_6H_6, less sol. in EtOH. Oxidation with 2% alk. $KMnO_4$ gave propylcamphoric acid, m. 189.5-90°. Heating 5 g. II with 30 g. AcOH and 0.5 g. 50% H_2SO_4 35 hrs. at 100° gave a small amt. of I. G. M. Kosolapoff

LITERATURE CLASSIFICATION

Chem A

10

Camphene rearrangements and their optical consequences. II. Change of optical activity in transformation of [illegible] propylborneol into 4-propylisoborneol. V. I. Shavry[illegible] (Moscow Inst. Fine Chem. Technol.). *Zhur. Obshchei Khim.* [illegible] Chem. 24, 249-56(1954); cf. C.A. 42, 72[illegible]. The double change of the sign of optical activity in the camphene rearrangement of class II (C.A. 43, 17[illegible]) and the reversion of the sign of activity in rearrangement of class I, and finally the retention of the sign of activity in cases in which dehydration of substituted bornyl alcs. is not accompanied by isomerization, have been confirmed further. *l*-Camphor, prepd. according to Golubev (*J. Russ. Phys. Chem. Soc.* 36, [illegible](1904)) was obtained by HNO_3 oxidation of *l*-borneol, m. 205.6°, [α]D −38.33° (EtOH), by addn. of 2 parts HNO_3 (d. 1.38-1.4), and, after subsidence of reaction shaking intermittently 4-5 hrs.; after the usual purification through the semicarbazone, pure *l-camphor*, m. 178.8°, [α]D −42.06° (EtOH). Reaction with Mg and allyl bromide gave *tert-allylbornyl alc.*, b. [illegible] 121 [illegible] (EtOH), hydrogenated over a Ni catalyst to *tert-propylbornyl alc.*, b. 240.5[illegible], m. 30.1[illegible], [α]D 12.29 (EtOH). Reaction with AcOH in the presence of H_2SO_4 leads first to dehydration, yielding [illegible] and a [illegible], and a little corresponding [illegible] which on hydrolysis gives *4-propylisoborneol*; the [illegible] b. 98.4[illegible], d_4^{20} 0.8725, [illegible] 1.478[illegible], [illegible] 31.21 [illegible]. 4-propylisoborneol, obtained upon [illegible] KOH treatment of the residual acetate, has [α]D [illegible] (EtOH), m. [illegible]. *l*-Camphor with $PhCH_2MgCl$ gave *tert-benzylbornyl alc.*, b. [illegible] 162.3[illegible], [α]D 22.06[illegible], which, heated 3 hrs. with $KHSO_4$ to 150-60°, gave *benzylidenecamphane*, b. [illegible], [α]D [illegible] (EtOH) *d*-benzylidenecamphane, [α]D [illegible] 67.97[illegible]. The optical exaltation of the *d*-isomer is 3.19; the data on the isomer come from Nametkin and Strugatzkii (C.A. 30, 6727). The *d*-isomer m. 25.5[illegible], d_4^{20} [illegible], [illegible] 1.5683.

G. M. Kosolapoff

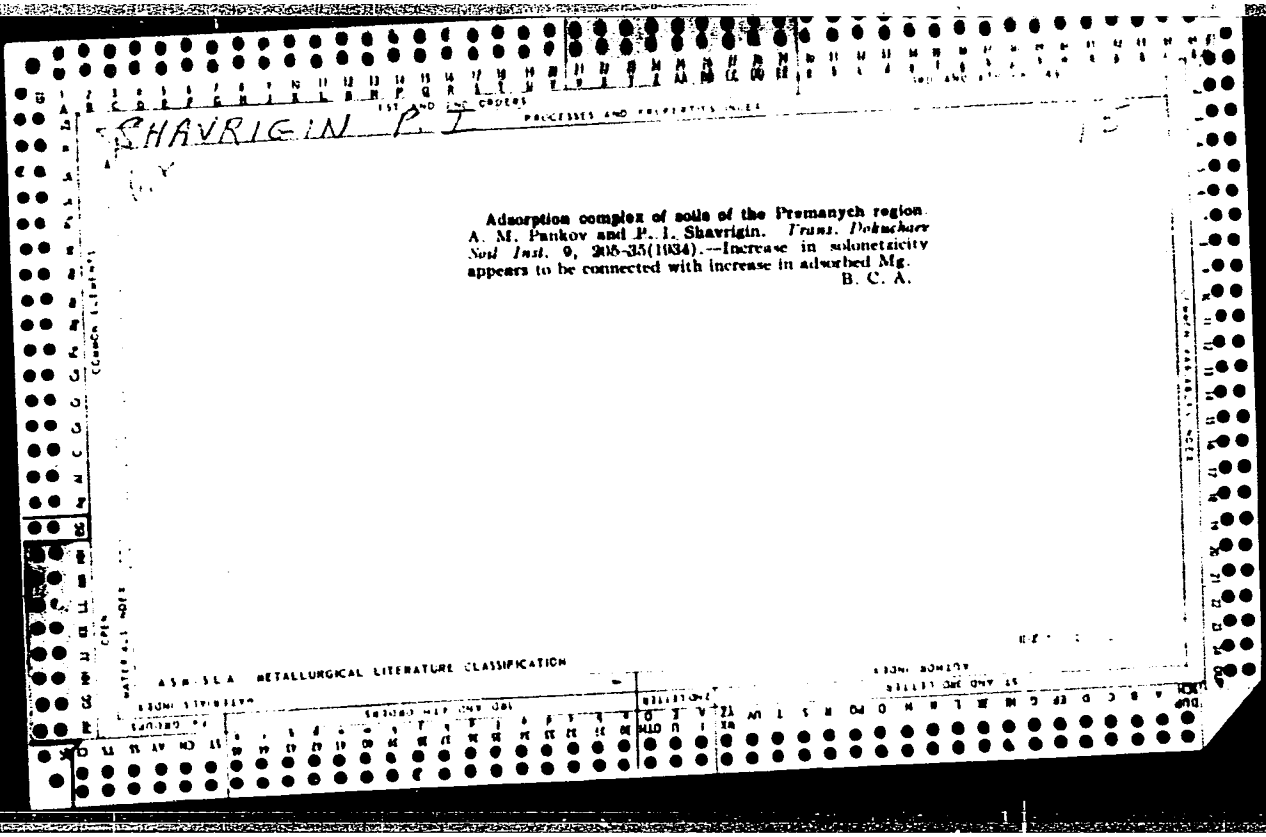
1957

Chem A

10

Isomerization of isoborneol and 4-methylisoborneol during dehydration by the xanthate method. A. I. Shavrygin (Moscow Inst. Fine Chem. Technol.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 756-[illegible](1951); cf. C.A. 34, [illegible]. —The exptl. results do not agree with the possibility of isomerization of isoborneol during xanthate dehydration; the same holds also for 4-substituted homologs of isoborneol. On the contrary, the data confirm the generally accepted ideas of the relation of isoborneol and borneol as secondary alcs. with geometric isomerism. 4-Methylisoborneol was converted conventionally into the Na *xanthate*, which (7.8 g.) was heated with ex. *PhC(Cl):NPh* in 100 ml. dry C_6H_6 5 hrs. on a steam bath; after steam distn. of the solvent, the residue was extd. with Et_2O and the ext. dild. with EtOH and allowed to evap. slowly, yielding red *1,2-diphenyl-3,4-methylisobornylimidoxanthide*, PhC(:NPh)SC(S)O$C_{10}H_{16}$, m. 112-13°. Similar reaction with Na 4-methylisobornylxanthate gave red *1,2-diphenyl-3,4-methylisobornylimidoxanthide*, m. 116-17°. Letting Me 4-methylisobornylxanthate stand 7 days in 10% EtOH-NH_3 gave *4-methylisobornylxanthamide*, m. 121-2°, *ROC(S)NH*$_2$ (from petr. ether-C_6H_6). *Me isobornylxanthate*, yellow oil, similarly yielded the corresponding *xanthamide*, m. 130-1° (from petr. ether-C_6H_6). G. M. Kosolapoff

1951



SHAVRIGIN P. I.

PROCESSES AND PROPERTIES INDEX

Adsorption complex of soils of the Premanych region. A. M. Pankov and P. I. Shavrigin. *Trans. Dokuchaev Soil Inst.* 9, 205-35(1934).—Increase in solonetzicity appears to be connected with increase in adsorbed Mg.
B. C. A.

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

SHAVRIGIN P. I.

8C

B-3-1

DEGRADATION AND REGRADATION OF GREY FOREST SOILS.

P. I. Shavrigin (Trans. Dokuchaiev Soil Inst., 1934, 10, No. 3, 47--80).--Several stages of podsolisation of these soils can be distinguished. Degraded soils under steppe vegetation or by cultivation accumulate org. matter and increase their exchange capacity and exchangeable-base content. A. M.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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10

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The physical properties of chestnut soils and their relation to the exchangeable bases. P. I. Shavruigin. *Dokuchaev Soil Inst., Studies in the Genesis and Geography of Soils* **1935**, 213-23(in English).—Samples of the 0-30 cm. layer of a chestnut soil monolith from the Transvolga region were washed with normal solns. of LiCl, NaCl, NH_4Cl, KCl, $MgCl_2$, $MnCl_2$, $CaCl_2$, $BaCl_2$ or $FeCl_3$ or of 0.025 *N* HCl soln. until tests showed no Ca present. The excess of electrolyte was removed by dialysis, the soil samples so prepd. were allowed to air-dry, ground and passed through a 0.5-mm. screen. These air-dry samples thus satd. with various cations contained the percentage of hygroscopic water indicated after the cation: H 5.20, Li 4.78, Na 4.48, NH_4 4.10, K 4.60, Mg 5.09, Mn 5.55, Ca 5.05, Ba 4.93, Al 6.05, and Fe 6.72. Hygroscopic water was detd. in the samples by the Robinson method with results as follows: H 9.71, Li 12.91, Na 12.27, NH_4 8.32, K 8.56, Mg 10.09, Mn 10.01, Ca 9.83, Ba 8.49, Al 8.47 and Fe 8.52. The max. mol. water capacity was detd. by the pressure method of Lebedev (a pressure up to 65 kg. per sq. cm. was applied for 5 min.). The total water capacity was detd. by pouring 250 cc. of water on 25 g. of soil and measuring the filtrate with the following results in percentage: H 62, Li 128, Na 103, NH_4 18, K 73, Mg 69, Mn 65, Ca 62, Ba 59, Al 56 and Fe 53. Water-lifting capacity was detd. by noting the time required to rise through 9.5 cm. of soil with the following results: H 4 hrs., NH_4 19 days, K 9 days, Mg 6 hrs., 45 min., Mn 4 hrs., 43 min., Ca 3 hrs., 30 min., Ba 2 hrs., 5 min., and Fe 1 hr., 20 min., Li rose 2.5 cm. in 3 months, Na 3 cm. in 3 months. The dispersion of these soils satd. with various cations was detd. by shaking 5 g. soil with water, allowing to settle for 24 hrs. and detg. the soil content of a layer 8.5 cm. deep. The percentage dispersion varied with the cation satg. the soil as follows: H 0.200, Li 8.890, Na 7.160, NH_4 1.840, K 1.320, Mg 0.560, Mn 0.41 , Ca 0.280, Ba 0.200, Al 0.114 and Fe 0.120. The specific weight of the clay particle decreases on taking on a hydration film while the surface in contact with the dispersed phase increases. Both these factors slow up the sedimentation which explains why the more hydrated alk. cations produce a higher degree of dispersion. All samples were adjusted to the lower Atterberg limit of flowing and stickiness was estd. with a suitably adopted Schopper's balance. Alk. cations produce the max. stickiness. Plasticity was detd. by the Atterberg method (cf. *C. A.* 10, 79). The heats of wetting of these samples expressed in small calories per g. of soil are given. The changes in phys. properties of soils due to exchangeable Mg are analogous to those brought about by Na but their value is much smaller. Medium clay particles in a water

(over)

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

13

The influence of absorbed magnesium on the physical properties of the soil. P. I. Shavrugin. *Pedology* (U. S. S. R.) 30, 167-73(1935).—Samples of chestnut brown soils, solonets and chernozem were satd. with Ca, Mg and Na and subjected to a series of tests. The Mg soil did not filter as well as the Ca soil; its swelling, [illegible]scopicity and moisture capacity were high- [illegible] and lower than the Na soil.

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Ca

15

The physical properties of soils and their relation to the composition of the adsorbed bases. P. L. Shavrygin. *Trans. Dokuchaev Soil Inst.* (U. S. S. R.) 13, 51-99 (in English 95-7) (1936).—Chestnut brown and chernozem soils were satd. with Na, NH_4, K, Mg, Ca, Ba, Al and Fe by treating them with the chlorides of the resp.
7 cations. For H satn. 0.025 *N* HCl was used. The following phys. properties were tested on these soils: heat of wetting, max. mol. moisture-holding capacity, total moisture-holding capacity, hygroscopicity, filtration capacity, capillary rise of water, plasticity, cohesion, stickiness, vol. wt. and porosity and dispersion. Sh. makes a special point about the effect of Mg in the complex showing that as far as the solonetzic properties of chernozem are concerned the Mg is not of much signifi-
3 cance. The destruction of org. matter in chernozem by H_2O_2 is conducive to the appearance of solonetzic properties.

J. S. Joffe

COMMON ELEMENTS

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PROCESSES AND PROPERTIES INDEX

The dynamics of alkalinity in soil solution upon irrigation. V. A. Kovda, P. I. Shavrygin and F. A. Gevel'son. *Pedology* (U. S. S. R.) 1944, No. 2-3, 65-71(in English, 71).—Solonchak (sulfate and chloride-sulfate types) upon irrigation becomes more alk. all through the profile. The highest increase in pH takes place in the surface horizon. These increases in alky. are deleterious to cotton. By increasing the quantity of irrigation water it is possible to overcome the difficulty. A better method of handling these soils is to leach the salts before planting.

J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

[illegible], P.I.

PA-2T75

USSR/Soil Studies - Black Earth Mar 1947

"Relation Between Soil Solutions and Aqueous Extracts in Salinized Soils," P I Shavryugin, 5 pp

"Pochvovedenie" No 3

The author studied aqueous extracts and soil solutions pressed out from slightly and strongly salinized meadow soils and from moderately and strongly salinized chernozems of the Golodnaya Steppe by the press constructed by P A Kryukov.

2T75

CA

15

Soil solution of saline soils. P. I. Shavrygin. *Pochvovedenie* (Pedology) **1948**, No. 12, 714-25.—The saline soils of Central Asia under natural conditions represent the sulfate-chloride series, i.e., more sulfates of Na and Mg than chlorides, whereas the irrigated soils change to the chloride-sulfate ones. The concn. of salt in the soil solution varies with the season, increasing in the summer and decreasing in the winter. In the medium salinized light gray semidesert soils the concn. varies from [illegible] to 17.08 g./l.; in a solonchak gray semidesert soil, 5.[illegible] to 25.56 g./l.; fluffy solonchak gray semidesert, 15.91 to 110.56 g./l.; crust solonchak, 7.72 to 119.56 g./l. During the summer season, NaCl and $MgSO_4$ are on the increase in the soil of solonchak. The highest relative content of Na_2SO_4 is encountered during the winter. Cotton seedlings can tolerate a concn. of soil soln. not above 8-10 g./l.; during the growing season the salt concn. should not exceed the 12-16 g./l. mark. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Oxidation-reduction conditions of solonchak meadow soils of the Fergan Valley. I. P. Serdobol'skii and P. I. Shavrygin. *Trudy Pochvennogo Inst. im. V. V. Dokuchaeva, Akad. Nauk S.S.S.R.* 31, 82-90(1950).—Two areas, one slightly salinized and the other a strongly salinized soil, were investigated for the E_H values. Eleven measurements were made in the field, before and after irrigating, between June 17 and September 6. Each test covered 9 layers in the profile, down to a depth of 130 cm. In all, 300 E_H, pH, and H_2O detns. were made. With the natural rainfall the mv. value throughout the summer varied from 480 for the more saline soil and 430 for the less saline soil. Twenty-four hrs. after irrigation the mv. value dropped from 460 to 300 and as low as 250. After 13–15 days the value went back to the original. With the lowering of the mv. value the NO_3 content dropped. The isopleths of Mn and Fe showed a huge increase of these elements after irrigation, more than 1000 times of Fe and tens of thousands of Mn. Since in the dry state the Fe and Mn were extremely low the increase was not so significant. In the layer near the water table the concn. of sol. Mn may reach 5–10 mg/l., and of Fe 0.001–0.01 mg./l.

J. S. Joffe

CA 15

The significance of the ash composition of several wild growing plant species in the process of soil formation at Baraba. B. M. Golush and P. I. Shavrygin. *Pochvovedenie* 1951, 741-56.—Water exts. of meadow chernozem solonetzic soil, meadow solonchakic, meadow solonchak, and sulfate-soda solonetz-solonchak soil were analyzed for CO_3, HCO_3, Cl, SO_4, Ca, Mg, K, Na, R_2O_3, and SiO_2. Similar analyses were made on the ground waters of the respective soils and on the water exts. and ash of the following plants (after water extn.): *Agropyron tenerum*, *Medicago sativa*, *Galatella punctata*, *Elymus salsuginosus*, *Plantago cornuti*, *Statice gmelini*, and *Atropis distans*. The water-sol. salts of the plants exceed the quantity of salts in the soil-water ext. Only traces of Na were found in the water ext. or ash of *Medicago* and *Agropyron* grown on the meadow chernozem solonetzic soil. The K and Na of the plants were all H_2O-sol. The higher the salt content of the soil the higher the Mg, Na, and Cl content of the plants at the expense of Ca, K, P, and S. The total salt contributed to the soil by the biol. cycle has been calculated to be 0.053-0.024 tons/ha. J. S. Joffe

A6

The salt regime of irrigated soils. Quality and yield of cotton at varying distance from drains. P. I. Shuvrygin. *Trudy Pochvennogo Inst. im. V. V. Dokuchaeva, Akad. Nauk S.S.S.R.* 44, 328–47(1954).—The salt content of irrigated saline soils was studied at various distances from the collector-drainage sieves and with various spacing of the drains. Collectors of 2.0 and 1.2 m. depths were effective at up to 160 and 70 m., resp., in reducing salinization and causing improved rate and quality of cotton growth in conjunction with a lower ground-water level. In the central part of the alluvial fan, drains (1.5 m. deep) had to be less than 120 m. apart to give uniform desalinization. The salinized meadow solonchaks contained chlorides (approx. 0.7–42.0% of total salts) and sulfates (approx. 40–96% of total salts) mainly of Na, or sometimes as salts of Ca or Mg. The ground waters contained chlorides and sulfates of Na and Mg. Soil salt content was studied by extn. with water or by use of a hydraulic press. Chloride and sulfate concns. for 20 plots at depths up to 100 cm. were tabulated in detail. A salt content of 283.6 tons/ha. was recorded for a meadow solonchak 190 m. from the collector. When distance between drains was increased from 120 to 160 m. in the same area the no. of plants decreased from 1965 to 1200, the av. wt. from 7.2 to 5.8 g./boll, and the av. yield from 644 to 563 g. A. W. Dalx

ZANIN,G.V.; ALEKSANDROVA,V.D.; KRAVTSOVA,V.I.; SHAVRYGIN,P.I.

Division into natural regions of the new reclaimed farm lands in the Altai Territory. Izv.AN SSSR. Ser.geog. no.2:69-72 Mr-Ap '55. (Altai Territory--Physical geography) (MLRA 8:6)

SHAVRYGIN, P.I.

USSR/Soil Science - Physical and Chemical Properties of Soils. J-3

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10512

Author : Kovda, V.A., Letunov, P.A., Budakova, A.A., Zemskiy, P.M., Shavrygin, P.I., Kuznetsova, T.V.

Inst : -

Title : Elements of the Moisture Regime of the Takyry

Orig Pub : Takyry Zap. Turkmenii i puti ikh s.-kh. osvoyeniya, Moskva, Akad Nauk SSSR, 1956, 513-521.

Abstract : In the takyry moisture travels exclusively in capillarily suspended solutions. Ground waters ordinarily have no effect on the water regime of the takyry. One characteristic of the water regime of the takyry, and of the takyr soils, is the extreme dessication of their upper horizons, up to hygroscopic moisture, /?/, in the summer period. The drying up of the crust horizon of the takyry can occur also during the winter (in the intervals between deposits of precipitation); this is due to certain

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USSR/Soil Science - Physical and Chemical Properties of Soils. J-3

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10512

characteristics of the structure and mechanical composition of this horizon.

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USSR/Soil Science. Tillage. Land Reclamation. Erosion. J-5

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24830.

irrigation norms: 7000-10,000 m.^{3} per 1 ha. in utilizing the salt flats for cotton-plants and 5000-6000 m.^{3} - for cereals. Sanding at the rate of 500-600 t. /ha. improves the aqui-physical properties of the soils, averts crust-formation and considerable increases the yield of the plants. The effectiveness of timely application of nitrogen-phosphorus fertilizers augments the yield of winter wheat 15-32%. By cultivation of perennial grasses, particularly of the leguminous grass family mixtures, an enrichment of soils with significant quantities of organic substances owing to root residues (to 87 C./ha. in a layer of one meter), saltiness, improvement of structure takes place. The yield of hay of lucerne-rye grass mixture in the 2nd year of cultivation of salt

Card : 2/3

USSR/Soil Science. Tillage. Land Reclamation. Erosion. J-5

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24831.

Author : Kizilova, A.A.; Shavrygin, P.I.
Inst :
Title : Influence of Various Rates of Irrigation on the Saltiness of Solochak Salt Flats.

Orig Pub: V. sb.: Takyry Zap. Turkmenii i puti ikh s.-kh. osvoyeniya. M., AN SSR, 1956, 648-662.

Abstract: The greatest freshening of a thickness of soil of the solonchak salt flats (foothill desert of Kopet-Dag) is achieved by an irrigation rate of 10,000 $m.^3$/ /ha. (the experiments were conducted on fields of 12 $m.^2$ in conditions of irrigation with the application of plantation ploughing on 45 cm.; crop - winter wheat). A thickness of 1 m. was liberated from

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SHAVRYGIN, P. I.

Solonetz phenomena in takyrs. P. I. Shavrygin (V. V. Dokuchaev Inst. Soil Sci., Moscow). *Pochvovedenie* 1956, No. 8, 44-8.—The takyrs of the deserts in Middle Asia, Turkmenia, located in a proluvial valley, 20-35 km. wide, are distinguished by a strong salinization. At the 0-6, 6-10-cm. layers, the salt content is 0.3-0.4%. Below these layers, the salt content increases 0.7-1.6-2.7%. The alky. is due to the alkali carbonates and bicarbonates. These takyrs have no contact with the water table and are thus not subject to progressive salinization. Actually, these takyrs are being desalinized. During the highest satn. with water, the upper layers have the lowest content of salts and during the highest desiccation, these layers contain the highest quantity of salts. The Na of the NaCl is the prevailing salt which replaces Ca and Mg in the exchange complex.

I. S. Joffe

SHAVRYGIN, P.I.

Formation of the chemical composition of soil solutions under the influence of ground waters. Pochvovedenie no.12:98-101 D '60. (MIRA 14:1)

1. Pochvennyy institut imeni V.V. Dokuchayeva Akademii nauk SSSR.
(Minerals in soil) (Water, Underground)

SHAVRYGIN, F.I.

Toxicity of various concentrations of soil solution for cotton. Pochvovedenie no.11:44-50 N '61. (MIRA 14:12)

1. Pochvennyy institut imeni V.V.Dokuchayeva.
(Saline and alkali soils) (Cotton)

SHAVRYGIN, P.I.

Toxicity of various concentrations of soil solution in the Baraba Lowland. Pochvovedenie no.1:85-91 Ja '63. (MIRA 16:2)

1. Pochvennyy institut imeni V.V.Dokuchayeva.
(Baraba steppe--Soils--Analysis)
(Plants, Effect of salts)

[illegible]

[illegible] of [illegible] processes in the [illegible]
[illegible] Institute [illegible] 11:10.
(MIRA 11:10)

1. [illegible] Institut [illegible] V.V. [illegible]vareva.

SHAVRYGIN, P.I.

Tolerance of cotton to various compositions of salts in soils. Pochvovedenie no.10:15-20 0 '65. (MIRA 18:11)

1. Pochvennyy institut imeni Dokuchayeva.

NAZAROV, I.N.; PROSTAKOV, N.S.; MIKHEYEVA, N.N.; SHAVRYGINA, O.A.

Heterocyclic compounds. Report No.40: Synthetic anesthetics. Part 5: Esters of 1,2,5-trimethyl-4-phenyl-4-piperidol with aromatic acids. Zhur. ob. khim. 26 no.10:2812-2820 O '56. (MIRA 11:3)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova.

(Esters) (Piperidine)

NAZAROV, I.N.; PROSTAKOV, N.S.; MIKHEYEVA, N.N.; SHAVRYGINA, O.A.

Heterocyclic compounds. Report No.41: Synthetic anesthetics. Part 5: Esters of 1,2,5-trimethyl-4-aryl-4-piperidols. Zhur. ob. khim. 26 no.10:2820-2834 O '56. (MIRA 11:3)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lononosova.

(Esters) (Piperidine)

AUTHORS: Nazarov, I. N. Member, Academy of Sciences, USSR, Gusev, B. P., Makin, S. M., Mochalin, V. B., Nazarova, I.I., Vinogradov, V. P., Kruptsov, B. K., Shavrygina, O. A., Nazarova, D. V.

20-114-4-32/63

TITLE: The Condensation of Acetylene With Methylheptanone and Its Analogues (Kondensatsiya atsetilena s metilgeptanonom i yego analogami) The Synthesis of Linalool and Its Analogues (Sintez linaloola i yego analogov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 796-799 (USSR)

ABSTRACT: Several years ago a simple method of synthesis of different acetylene alcohols was worked out in the laboratory of the authors by means of condensation of aldehydes and ketones under the influence of powdery caustic potash with acetylene at high pressure (5-10 at superpressure). It was of interest to employ this method in the condensation of acetylene with methylheptanone and similar ketones, in order to obtain the corresponding acetylenealcohols. Linalool and some analogues may then be obtained easily by partial hydrogenation with a Pd-catalyst. Hitherto such condensations have usually been carried out under the influence of metallic sodium in a solution of liquid ammonia.

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It was found that methylheptanone and its various analogues may be condensed very easily with caustic potash and acetylene at the above-mentioned pressure. At 0-20°C they give as a result the corresponding tertiary acetylene alcohols with an almost quantitative yield (more than 90%). This reaction may also be carried out without acetylene pressure, however, somewhat more slowly and with a yield of only 60-80%. It has been previously shown in the same laboratory that acetylene alcohols which contain a non-substituted acetylenehydrogen may be hydrated highly selectively in the presence of palladium over calcium carbonate or copper coated zinc powder. Thereby vinylalcohols with an almost theoretical yield are obtained. The acetylene alcohols may not be selectively hydrated with other catalysts (Ni, Pt) and are therefore useless in the production of pure vinyl alcohols. An analogous picture may also be noticed with the hydrogenation of the above-described acetylene alcohols which are obtained by condensation of acetylene with methylheptanone and its analogues. These acetylene alcohols may also be highly selectively hydrated in the presence of a Pd-catalyst. They form linalool and its analogues with an almost theoretical yield. The purity control of the vinylalcohols (linalool and its analogues) was carried out by means of the acetylene test (with ammonia solution of silver or copper oxide), whose sensitiveness was determined by special tests and amounted to 0,2-0,3%. At the hydrogenation of the acetylene alcohols with a Pd-catalyst the acetylene test always disappears at the theoretical point, that is, as only one hydrogen molecule is strongly attached. The acetylene alcohols obtained in the course of this work are summarised in table 1. Linalool and its analogues (table 2) were obtained by a partial hydrogenation of the above-mentioned acetylene alcohols with Pd-catalysts. In the experimental part the methods and yields of the said substances are described in detail. There are 2 tables and 5 references, 3 of which are Soviet.

Card 2/4

ASSOCIATION: Institute for Organic Chemistry imeni N.D. Zelinskiy of the AN USSR and Moscow Institute for Refined Chemical Technology imeni M.V. Lomonosov (Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR i Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova)

Card 3/4

SUBMITTED: March 12, 1957

4/4

20-114-6-29/54

AUTHORS: Nazarov, I. N., Academician, Makin, S. M., Vinogradov, V. P., Mochalin, V. B., Nazarova, D. V., Shavrygina, O. A. Kruptsov, B. K., Nazarova I. I. and

TITLE: The Synthesis of Methylheptenone and Methylheptadienone Analogues (Sintez analogov metilgeptenona i metilgeptadiyenona)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 114, Nr 6, pp. 1242-1245 (USSR)

ABSTRACT: This synthesis is of interest for the production of a number of corresponding analogues of natural isoprenoid compounds. The initial acetylene-alcohols for this purpose were produced according to the authors' method (reference 1). By a selective hydrogenation in the presence of palladium on calcium-carbonate acetylene alcohols are almost quantitatively converted to analogous vinyl alcohols (reference 2). These latter yield the corresponding analogues of methylheptenone in three different ways (reference 3). **Method A**. By the influence of gaseous hydrogen chloride or hydrogen bromide upon tertiary vinyl alcohols at 0 - 20°C primary haloid-derivatives of an allyl--type easily form (reference 4). Their condensation with sodium-acetate-acetic-ether with a subsequent saponification

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leads to methylheptenone analogues. **Method B**. At 140 - 190°C tertiary vinyl alcohols directly react with the same ether. An almost theoretical quantity of ethanol and CO_2 is separated and the same analogues as in A) are obtained. **Method V**. By the action of diketene upon tertiary vinyl alcohols in the presence of small amounts of triethylamine or piperidine, acetonacetic ethers of these alcohols are obtained (table 2). Their pyrolysis also leads to the above--mentioned analogues (reference 6). The 2,3-dimethyl-2--heptene-6-on (IV) necessary for the synthesis of irone was produced all three ways mentioned. Dimethylisopropenyl-carbinol (initial substance) was produced by the influence of methyl-lithium upon methyl-metacrylate. All methyl-heptenone analogues produced are comprised in table 1. The authors further produced: allyl- (I) (reference 9), crotyl-(II) and chlorocrotyl-acetone (III) (reference 8), dimethyl-isopropenyl-carbinol-acetoacetate, dimethylheptenone (IV), cyclohexylidenpentanone (IX) and tertiary butylheptadienone (XIII). The production methods and constants of these substances are given. There are 2 tables and 12 references, 6 of which are Slavic.

Card 2/3

ASSOCIATION: Institute of Organic Chemistry [illegible] [illegible]altinskiy AS USSR and Institute for F[illegible] [illegible]ment [illegible] im. M. V. Lomonosov, Moscow (Instit[illegible] [illegible] institut N. D. Zelinskogo Akademii nau[illegible] tonkoy khimicheskoy tekhnologii [illegible]a)

SUBMITTED: March 12, 1957

Card 3/3

SHAVRYGINA, O. A. Cand Chem Sci -- (diss) "Synthesis of alcohols, ketones and acids of the isoprenoid series on the basis of divinyl and chloroprene." Mos, 1959. 14 pp (Min of Higher Education USSR. Mos Inst of Fine Chem Technology im M. V. Lomonosov), 150 copies (KL, 46-59, 135)

5 (3) SOV/79-29-3-4/61

AUTHORS: Nazarov, I. N. (Deceased), Makin, S. M., Mochalin, V. B., Shavrygina, O. A., Nazarova, D. V., Kruptsov, B. K.

TITLE: Synthesis of Analogues of Geranyl Acetone and Pseudoionone (Sintez analogov geranilatsetona i psevdoionona)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, pp 744-753 (USSR)

ABSTRACT: These analogues are initial products for the synthesis of the corresponding analogues of the most important natural isoprenoid compounds, of vitamin A, carotene, farnesol, as well as of phytol, a component of vitamins K and E. Recently, the authors reported on three syntheses of ketones of the isoprenoid type carried out by them: 1) By reaction of sodium acetoacetic ester with halogen derivatives of the allyl type (method A). 2) By reaction of vinyl- and ethynyl carbinols with acetoacetic ester (method B). 3) By pyrolysis of the acetoacetates of vinyl- and ethynyl carbinols (method V). This method was used to obtain methyl heptenone, methyl heptadienone and their analogues (Refs 1, 2). By condensation of methyl heptenone and its analogues with acetylene under pressure (5-10 atmospheres excess pressure), dehydrolinalool and its analogues resulted almost quantitatively. These com-

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SOV/79-29-3-4/61

Synthesis of Analogues of Geranyl Acetone and Pseudoionone

pounds were transformed by partial hydrogenation over a Pd-catalyst into linalool and its analogues (Ref 3). The three methods used for the synthesis of the ketones of the isoprenoid type were also employed for the synthesis of various analogues of geranyl acetone (Scheme 1). The synthesized analogues of geranyl acetone are shown in table 2. The synthesis of the pseudoionone analogues was carried out according to the methods B and V. In heating the analogues of dehydrolinalool with acetoacetic ester the analogues of pseudoionone were formed (Table 3) (Scheme 2), in yields of 50-70%. The pyrolysis of acetoacetates of the dehydrolinalools preponderantly leads to one of the pseudoionone isomers; the other is obtained but in small quantities, which is not the case with the pseudoionone analogues (XVIII) and (XX), where two stereoisomeric forms (Table 3) were separated in form of their hydrazones. The compounds synthesized are characterized by absorption spectra in the ultraviolet range. There are 3 tables and 7 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
(Moscow Institute of Fine Chemical Technology)

Card 2/3

SOV/79-29-3-4/61

Synthesis of Analogues of Geranyl Acetone and Pseudoionone

SUBMITTED: January 23, 1958

5 (3)

SOV/79-29-4-29/77

AUTHORS: Makin, S. M., Mochalin, V. B., Shavrygina, O. A., Nazarova, D. V., Nazarov, I. N. (Deceased)

TITLE: Synthesis of the Analogs of Nerolidol, Farnesil Acetone and Geranyl Linalool (Sintez analogov nerolidola, farnezilatsetona i geranillinaloola)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1176-1182 (USSR)

ABSTRACT: In the present paper the authors investigated thoroughly the synthesis of isoprenoid alcohols and -ketones (of the analogs of the above-mentioned products) and of the intermediate products according to the given scheme. The condensation of the analogs of geranyl acetone (a) with acetylene was carried out in the steel reactor at 0-20° and at 3-10 atmospheres excess pressure in the presence of powdery caustic potash. The yield of tertiary acetylene alcohols (b) was 80-85 %. The condensations hitherto used (Refs 5, 6) are very complicated. All analogs of dehydronerolidol (b) synthesized in this investigation are presented in table 1. According to previous experiments (Ref 7) it was possible to carry out the hydrogenation of the

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acetylene alcohols obtained, the analogs of dehydronerolidol (b), in the presence of the Pd/CaCO$_3$-catalyst. The analogs of nerolidol (v) obtained by partial hydrogenation of acetylene alcohols (b) with this catalyst are given in table 2. According to the reaction with catalysts described in reference 6 the authors were able earlier to carry out the reaction of tertiary vinyl alcohols with acetoacetic ester at 160-190° also without catalysts, and obtained in this way methyl heptene, geranyl acetone, and their analogs (Refs 1, 2). In the present study they applied this method to the synthesis of the analogs of farnesil acetone (g). When heating the nerolidol analogs described above (Table 2) with acetoacetic ester at 180-200° the analogs of farnesil acetone (g) were obtained (Table 3). The analogs of farnesil acetone (g) synthesized were then condensed with acetylene. The resulting tertiary acetylene alcohols (d) were converted by partial hydrogenation on Pd/CaCO$_3$ into the analogs of geranyl linaloöl (e) (Tables 4 and 5). The compounds obtained could be used in the synthesis of the corresponding analogs, the phytol, a

Synthesis of the Analogs of Nerolidol, Farnesil Acetone and Geranyl Linaloöl SOV/79-29-4-29/77

constituent of vitamins K and E. There 5 tables and 8 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova (Moscow Institute of Fine Chemical Technology imeni Lomonosov)

SUBMITTED: March 28, 1958

Card 3/3

5.3400

77868
SOV/79-30-2-19/78

AUTHORS: Nazarov, I. N., Makin, S. M., Shavrygina, O. A., Smirnyagin, V. A.

TITLE: Synthesis of Higher Fatty Acids and Alcohols From Tertiary Vinylcarbinols

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, pp 443-450 (USSR)

ABSTRACT: The higher unsaturated acids were synthesized using acetoacetic and malonic esters. Diesters (III, $R - CH_3R'-OC_2 H_5$), (XV), (XXII) and (XXIX) were obtained by reacting sodium derivatives of malonic or acetoacetic esters with the respective bromides (see schemes 1 and 2 for designations and for synthetic routes).

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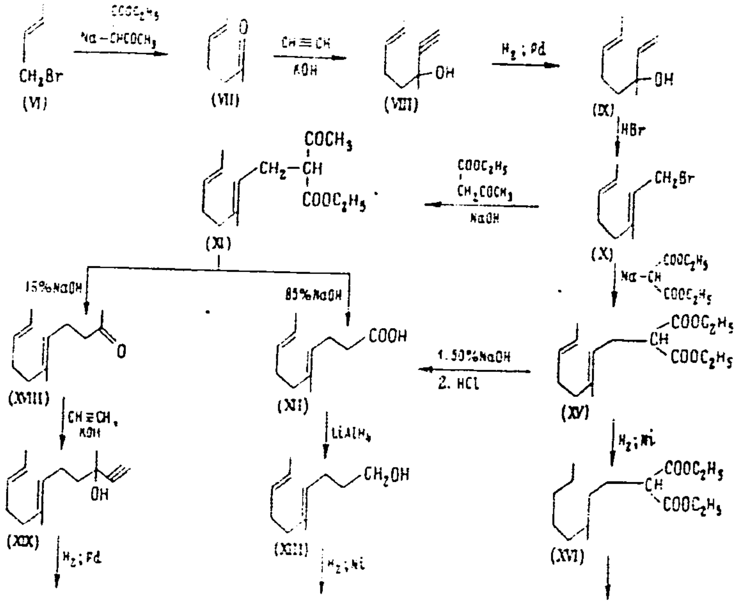
Scheme 1. Synthesis of higher fatty acids and alcohols.



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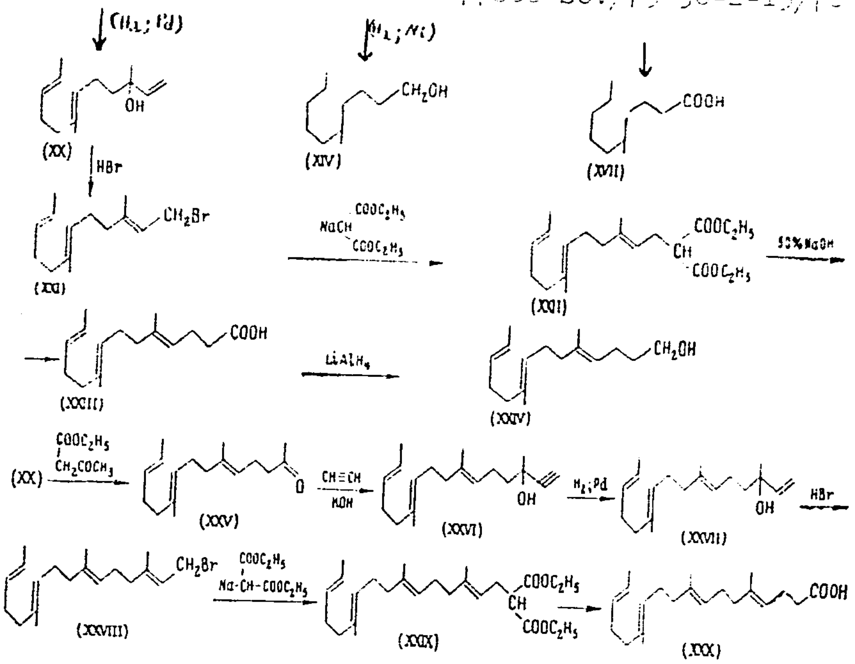
(H_2; Pd)
(H_2; Ni)
OH
(XX)
CH_2OH
(XIV)
COOH
(XVII)
HBr
CH_2Br
(XXI)
$NaCH(COOC_2H_5)_2$
$COOC_2H_5$
CH
$COOC_2H_5$
(XXII)
33% NaOH
COOH
(XXIII)
$LiAlH_4$
CH_2OH
(XXIV)
(XX)
$CH_3COCH_2COOC_2H_5$
O
(XXV)
CH≡CH
KOH
OH
(XXVI)
H_2; Pd
OH
(XXVII)
HBr
CH_2Br
(XXVIII)
$Na{-}CH(COOC_2H_5)_2$
$COOC_2H_5$
CH
$COOC_2H_5$
(XXIX)
COOH
(XXX)

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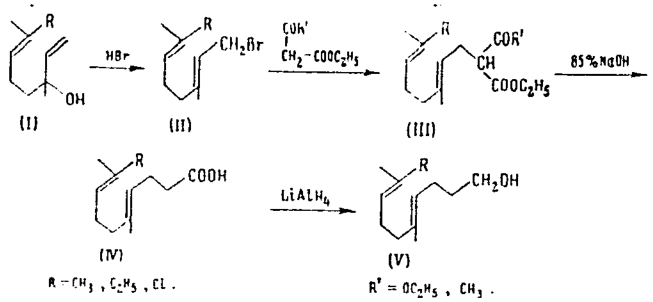
Scheme 2. Synthesis of geranylacetic acid and of its analogues.



The diesters were converted by successive saponification and decarboxylation into (2, 6-dimethyl-2,6-decadien-10-oic (geranylacetic) acid (IV, $R - CH_3$), 6-methyl-

-2,6-decadien-10-oic acid (XII), 6,10-dimethyl-2,6,10-tetradecatrien-14-oic acid (XXIII), and 6, 10, 14-trimethyl-2,6-10, 14-octadecatetraen-18-oic acid (XXX). The table below lists the constants of the synthesized acids with the constants of their S-benzylpseudothiuronium salts. The higher alcohols were obtained by either reducing the respective acids with lithium aluminum hydride (2,6-dimethyl-2,6-decadien-10-ol (V), bp 72-74° (0.05 mm), n_D^{20} 1.4740, d_4^{20} 0.8756; 6-methyl-2,6-decadien-10-ol (XIII), bp 64-66° (0.035 mm), n_D^{20} 1.4711, d_4^{20} 0.8770; 6,10-dimethyl-2,6,10-tetradecatrien-14-ol (XXIV), bp 123-125° (0.4 mm), n_D^{20} 1.4845, d_4^{20} 0.8849), or by hydrogenation of unsaturated alcohols (e.g., 6-methyl-10-decanol (XIV), bp 114-115° (4 mm), n_D^{20} 1.4416, d_4^{20} 0.8349). Saturated acids were

... ils of Higher Fatty Acids and Alcohols ... Tertiary Vinylcarbinols

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Table 3. Constants of higher fatty acids.
Key to Table 3: (1) Acid; (2) boiling point (pressure in mm); (3) found; (4) calculated; (5) formula; (6) yield (in %); (7) S-benzylpseudothiuronium salt; (8) boiling point.

(1)	(2)	n_D^{20}	d_4^{20}	MR_D (3)	MR_D (4)	(5)	(3) (%) C	(3) (%) H	(4) (%) C	(4) (%) H	(6)*	(7) (8)	(7) (5)	(7) (3) N (%)	(7) (4) N %
(IV) R = CH_3	125–128° (3) 124–127 (3)	1.4735 1.4730	–	–	–	$C_{12}H_{20}O_2$	–	–	–	–	30	113–114°	$C_{20}H_{30}O_2N_2S$	7.88, 7.74	7.72
(XII)	125–127 (3)	1.4684	0.9419	53.77	53.57	$C_{11}H_{18}O_2$	72.53, 72.85	9.86, 9.95	72.52	9.89	58	114–115	$C_{19}H_{28}O_2N_2S$	8.19, 7.89	8.04
(XXIII)	150–152 (0.16)	1.4842	0.9324	76.61	76.29	$C_{16}H_{26}O_2$	77.04, 77.12	10.55, 10.56	76.84	10.46	50	–	–	–	–
(XXX)	154–162 (0.02)	1.4890	0.9263	98.77	98.65	$C_{21}H_{34}O_2$	78.81, 78.93	11.04, 11.07	79.17	10.74	40	89–90	$C_{29}H_{44}O_2N_2S$	5.55, 5.61	5.77
(IV) R = C_2H_5	136–138 (3)	1.4750	0.9273	62.84	62.83	$C_{13}H_{22}O_2$	–	–	–	–	41	117–118	$C_{21}H_{32}O_2N_2S$	7.86, 7.84	7.44
(IV) R = Cl	143–144 (2)	1.4870	1.0572	58.06	58.47	$C_{11}H_{17}O_2Cl$	–			–	38	116–117	$C_{19}H_{27}O_2ClN_2S$	6.90, 7.30	7.31

Notes to Table: * The yield is based on the tertiary olefinic alcohol.

Card 6/7

obtained from the previously hydrogenated diesters (e.g., 6-methyl-10-decanoic acid (XVII), bp 128-129° (3 mm), n_D^{20} 1.4548, d_4^{20} 0.9209). There are 1 table; and 9 references, 7 Soviet, 1 German, 1 U.K. The U.K. reference is: M. O. Forster, D. Cardwell, J. Chem. Soc., 103, 1346 (1913).

ASSOCIATION: Moscow Institute of Fine Chemical Technology (Moskovskiy institut tonkoy khimichskoy tekhnologii)

SUBMITTED: February 4, 1959

SHAVRYGINA, O.A.; MAKIN, S.M.

Chemistry of unsaturated ethers. Part 17: Synthesis of acetals of aryl polyene aldehydes. Zhur.ob.khim. 33 no.10:3176-3180 O '63. (MIRA 16:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V.Lomonosova.

ACC NR: AP6031290 SOURCE CODE: UR/0366/66/002/009/1586/1589

AUTHOR: Shavrygina, O. A.; Nazarova, D. V.; Makin, S. M.

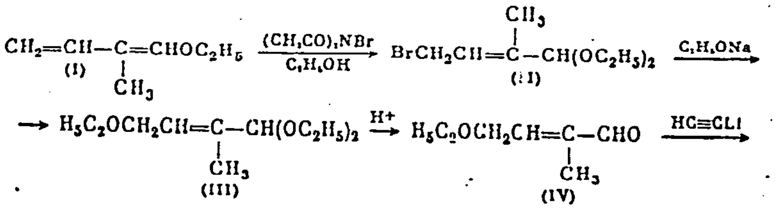
ORG: Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov (Moskovskiy institut tonkoy khimicheskoy tekhnologii)

TITLE: Chemistry of unsaturated ethers. XXIV. Preparation of vitamin A ethers

SOURCE: Zhurnal organicheskoy khimii, v. 2, no. 9, 1966, 1586-1589

TOPIC TAGS: vitamin, ether, CHEMICAL REACTION

ABSTRACT: Ethyl ether of vitamin A (bp 144—147°C, n_D^{20} 1.5735) was obtained by the following reactions:

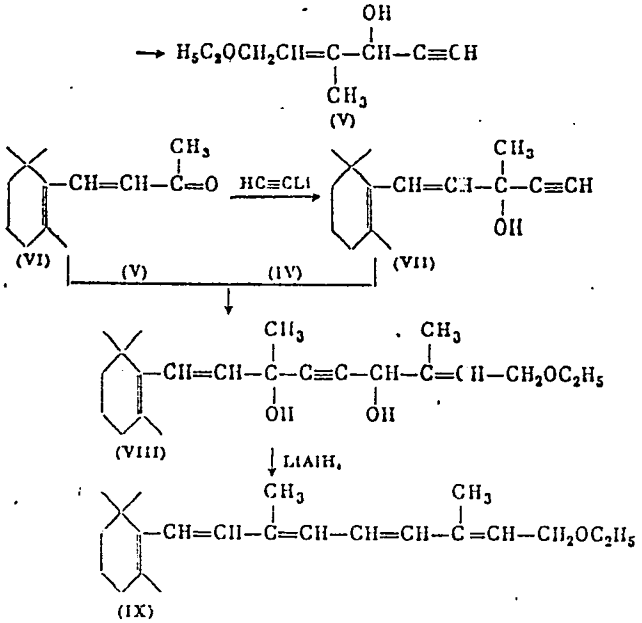


$$\underset{(I)}{CH_2{=}CH{-}\underset{CH_3}{\underset{|}{C}}{=}CHOC_2H_5} \xrightarrow[C_2H_5OH]{(CH_3CO)_2NBr} \underset{(II)}{BrCH_2CH{=}\overset{CH_3}{\overset{|}{C}}{-}CH(OC_2H_5)_2} \xrightarrow{C_2H_5ONa}$$

$$\rightarrow \underset{(III)}{H_5C_2OCH_2CH{=}\underset{CH_3}{\underset{|}{C}}{-}CH(OC_2H_5)_2} \xrightarrow{H^+} \underset{(IV)}{H_5C_2OCH_2CH{=}\underset{CH_3}{\underset{|}{C}}{-}CHO} \xrightarrow{HC\equiv CLi}$$

Card 1/2 UDC: 547.37

ACC NR: AP6031299



Preparation of the starting compounds is also described.

[WA-50; CBE No. 12]

Card 2/2 SUB CODE: 07/ SUBM DATE: 24Jul65/ ORIG REF: 002/ OTH REF: 002/

SHAVRYUKOV, Ya.; KOLOMEYTSEV, L.

Pile foundations are improving. Na stroi. Ros. no.6:17-19 Je '61.
(MIRA 14:7)

1. Glavnyy inzhener tresta Stalingradstroy (for Shavryukov).
2. Nachal'nik tsentral'noy laboratorii trest Stalingradstroy (for Kolomeytsev).

(Stalingrad—Piling (Civil engineering))

C A 2

Dipole moments of esters of orthocarbonic acids. B. A. Arbuzov and T. G. Shavsha. *Doklady Akad. Nauk S.S.S.R.* **66**, 615-17(1949).—From dielec.-const. measurements in dil. solns. in C_6H_6 at 20 and 25°, with the electronic polarization taken equal to the mol. refraction, the dipole moments of the following tetraalkyl esters of $C(OH)_4$ were detd. Me 0.83, Et 1.1, Bu 1.00, hexyl 1.00, octyl 0.93, nonyl 1.17, decyl 1.06 D. The value for the Me ester is close to that of Ebert and Hartel (*C.A.* 21, 3808) but at variance with Fuchs (*C.A.* 24, 5651). All exptl. values are close to an av. 1.1, and considerably below the 1.70 D., calcd. by Zahn's formula (*C.A.* 26, 4219) under the assumption of free rotation of the OR groups. N. Thon

CA

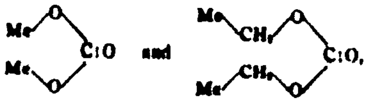
2

Dipole moments of esters of orthosilicic and of orthotitanic acids. B. A. Arbuzov and T. G. Shavsha. *Doklady Akad. Nauk S.S.S.R.* 68, 859-60(1949).—(1) From measurements of the dielec. const. in C_6H_6 soln. at 20°, with P_{e+a} (electronic + at. polarization) = 1.05 MR_D, the dipole moments of esters of $Si(OH)_4$ were detd.: Me ester 1.61, Et 1.70, Pr 1.66, Bu 1.65, C_5H_{11} 1.60, C_7H_{15} 1.64, C_8H_{17} 1.60, C_9H_{19} 1.75, $C_{10}H_{21}$ 1.6[illegible] D. For esters of $Ti(OH)_4$, the exptl. values are: Bu 1.68, C_5H_{11} 1.62, C_7H_{15} 1.60, C_8H_{17} 1.67, C_9H_{19} 1.68 D. In both cases, the values are close to 1.70, calcd. on the assumption of symmetrically tetrahedral grouping around the Si or Ti atom, and unhindered rotation of the O—R groups. This agreement contrasts with the big difference between the exptl. and the calcd. moments of esters of orthocarbonic acid (A. and S., *C.A.* 44, 392e). (2) The esters of $Ti(OH)_4$ were newly synthesized by exchange with $Ti(OEt)_4$, and had the following consts.: Bu, $b_{6.5}$ 166°, d_4^{20} 1.0051, n_D^{20} 1.4925; C_5H_{11}, b_5 201-4°, 0.9573, 1.4830; C_7H_{15}, b_4 232-5°, 0.8963, 1.4610; C_8H_{17}, b_3 255-8°, 0.933[illegible], 1.4810; C_9H_{19}, $b_{1.5}$ 264-5°, 0.9241, 1.4785. N. Thon

CA

2

Dipole moments of cyclic esters of carbonic acid. B. A. Arbuzov and T. G. Shavsha. *Doklady Akad. Nauk S.S.S.R.* 68, 1045-8(1949).—In connection with G. Thomson's calcns. (*C.A.* 33, 8461^{9}) of dipole moment for the 2 possible configurations of Me$_2$CO$_3$ and the 3 configurations of Et$_2$CO$_3$, leading to the conclusion of the nonoccurrence of the configurations



detns. of the dipole moments were made, by dielec. const. measurements in C$_6$H$_6$ soln., for 3 cyclic esters close to the above improbable configurations of Me$_2$CO$_3$ and Et$_2$CO$_3$. Exptl. values are $\underline{\mathrm{O.CO.O.CH_2.CH_2}}$ 4.80, $\underline{\mathrm{O.CO.O.CH_2.CH_2.CH_2}}$ 5.21, $\underline{\mathrm{O.CO.O.CHMe.CH_2.CH_2}}$ 5.[illegible] D. The excess of these values over those calcd. by Thomson for the improbable configurations is due to ring closure, and the corresponding increment, 0.6 Debye, checks with that found by Robles (*C.A.* 33, 2785^{6}) for the dipole-moment difference between simple alkyl and polymethylene oxides. Six-membered rings have a dipole moment about 0.3-0.4 greater than five-membered rings, owing to nonplanar configuration.

N. Thon

2

CA

Dipole moments of cyclic esters of sulfurous acid. B.
A. Arbuzov and T. G. Shavsha. *Doklady Akad. Nauk*
S.S.S.R. **69**, 41-3(1949).—The exptl. value of the dipole
moment of diethyl sulfoxylate, $S(OEt)_2$, μ = 1.9) D., is
fairly close to μ = 1.73 calcd. with the angle O—S—O =
103°, the bond moments S—O = 1 and O—Et = 1.12,
and on the assumption of free rotation of the OEt groups
around S—O; it is intermediate between 0.90 and 2.42,
calcd. for the 2 extreme rigid structures. From dielec.
const. measurements in C_6H_6 soln., $\underbrace{\text{O.CH}_2\text{.CH}_2\text{.O.S}}$:O (I)

has μ = 3.65, $\underbrace{\text{O.CH}_2\text{.CH}_2\text{.CH}_2\text{.O.S}}$:O (II) μ = 3.60 D.

For I, calcn. with the above angle (103°) and bond mo-
ments (S—O = 1, O—CH_2 = 1.12) and S—O = 3.0 D.,
on the assumption of a plane structure of the ring, gives
μ = 3.46; this, plus an increment of 0.3 for removal of 2
H atoms and ring closure (on the basis of the difference of
μ Et_2S and $\underbrace{\text{CH}_2\text{.CH}_2\text{.CH}_2\text{.CH}_2\text{.S}}$) gives μ = 3.76, close

to the exptl. 3.65. The closeness of the μ of I and II can
be due either to nonplanar structure of the ring in II alone,
or in both II and I. The value of 3.60 is the mean of 5.21
and 1.39, calcd. for the 2 possible nonplanar configura-
tions, plus 0.3 for ring closure. N. Thon

SHAVSHA, T. G.

USSR/Chemistry - Organophosphorus Compounds Nov/Dec 51

"Dipole Moments of Esters of Thiophosphoric Acid," B. A. Arbuzov, T. G. Shavsha, Sci Res Chem Inst imeni A. M. Butlerov, Kazan' State U imeni V. I. Lenin

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 795-798

Measured dipole moments of ethyl, n-propyl, n-butyl, n-hexyl, and n-octyl esters of thiophosphoric acid. Found that the av dipole moment of these esters differs little from the av dipole moment of phosphoric acid esters. The dipole moment of the $P=S$ bond is practically the same as that of the $P=O$ bond.

PA 197T14

SHAVSHA, T. G.

USSR/Chemistry - Silicon and Titanium Compounds 1 Aug 51

"Dipole Moments and Structure of Esters of Orthocarbonic, Orthosilicic, and Orthotitanic Acids," B. A. Arbuzov, Corr Mem, Acad Sci USSR, T. G. Shavsha, Chem Inst imeni A. M. Butlerov, Kazan' State U imeni V. I. Ul'yanov-Lenin

"Dok Ak Nauk SSSR" Vol LXXIX, No 4, pp 599, 600

On the basis of data on dipole moments previously published by them, the authors figured out the structure of the esters in question. The results

211T26

were in agreement with parachor measurements carried out earlier by B. A. Arbuzov and V. S. Vinogradova.

211T26

SHAVSHA, T. G.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

② 5 1

Dipole moments of diesters of diethylamidophosphoroformic acid. B. A. Arbuzov and T. G. Shavsha. *Bull. acad. sci. U.S.S.R., Classe sci. chim.* 1952, 781-6 (Engl. translation). See *C.A.* 47, 10458c. H. L. H.

ATF 4-28-54

ARBUZOV, B.A.; SHAVSHA, T.G.

Dipole moments of diesters of diethylamidophosphonoformic acid. Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk '52, 875-81. (MLRA 5:11)
(CA 47 no.20:10458 '53)

1. Kazan State Univ.

SHAVSHA, T. G.

USSR/Chemistry - Organophosphorus Compounds 21 May 52

"Dipole Moments of Some Complex Compounds of Complete Phosphorous Acid Esters," B. A. Arbuzov, Corr Mem, Acad Sci USSR, T. G. Shavsha, Sci Res Chem Inst, imeni A. M. Butlerov and Kazan' State U imeni V. I. Lenin

"Dok Ak Nauk SSSR" Vol LXXXIV, No 3, pp 507, 508

K. A. Jensen successfully utilized the method of measuring dipole moments to det the configuration of the complex compds resulting from the interaction of trialkylphosphines with platinous halides.

225T2

It was shown that compds which had been considered cis-isomers were actually trans-isomers, and conversely compds thought to be trans-isomers were cis-isomers. Arbuzov and Shavsha measured the dipole moments of complex compds resulting from the reaction of complete phosphorous acid esters with different metal salts. According to A. Ye. Arbuzov and V. M. Zoroastrova, compds like $CuX{-}P(OR)_3$ have a triple mol. Similarly, as with the complex compds constructed with tertiary phosphines and arsines, F. Mann, D. Purdie and A. Wells add a quadruple mol. (Exptl data lie between a triple and quadruple mol.)

225T2