

PARKHUTIK, P.A., kand.tekhn.nauk; ZAKHAROVA, A.F.

Effect of heat treatment conditions on the characteristics of  
AL9 alloy. Avt.prom. ~~28~~ no.2:34-36 F '62. (MIRA 15:2)

1. Minskiy avtozavod.  
(Aluminum alloys--Heat treatment)

18.1210

39509  
S7123/62/000/014/004/020  
A004/A101

AUTHORS: Parkhutik, P. A., Zakharova, A. F.

TITLE: The effect of the heat-treatment conditions on the properties of the AL9 (AL9) alloy

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 14, 1962, 22, abstract 14A139 ("Avtomob. prom-st'", 1962, no. 2, 34 - 36)

TEXT: The authors present the results of investigations for cutting down the heat-treatment procedure of the AL9 aluminum alloy on account of a reduction in the holding time prior to hardening and of the ageing time. It is pointed out that optimum mechanical properties of AL9 alloy specimens  $\sigma_b = 25 - 27 \text{ kg/mm}^2$ , HB 85 - 90 and  $\delta = 1.5 - 2.0\%$  are obtained with hardening at  $535^\circ\text{C}$  (holding time 4 hours) and ageing at 170 and  $185^\circ\text{C}$  (with 4 - 6 and 2 - 4 hours holding). The cast AL9 alloy will harden without quenching. For parts which are of no special importance and which do not require a particular surface finish, the following heat-treatment conditions are recommended: tempering at 170 and  $185^\circ\text{C}$  in the course of 6 - 8 and 2 - 4 hours.

X

[Abstracter's note: Complete translation]

Card 1/1

S/129/62/000/005/006/011  
E073/E535

18.12.10  
AUTHORS:

Parkhutik, P.A., Candidate of Technical Sciences and  
Zakharova, A.F., Engineer

TITLE:

Heat treatment of the alloy АЛ9 (AL9)

PERIODICAL:

Metallovedeniye i termicheskaya obrabotka metallov,  
no.5, 1962, 38-40

TEXT:

Standard specimens (200) cast into earthen moulds with various contents of silicon and magnesium (within the limits of the specification ГОСТ (GOST) 1497-42) were investigated for hardness and strength after the following heat treatments (the skin was not machined off): 1) quenching after holding at 535°C for four hours; cooling in water to 60-40°C; ageing at 150, 170, 185 and 200°C for 2, 4, 6 and 8 hours; 2) ageing of specimens in the as-cast states at 150, 170 and 185°C with the same holding times; 3) quenching in water from 535°C after holding for 40, 60, 90, 120 and 180 min; ageing at 170°C for 2, 4, 6 and 8 hours. It was found that tempering at 150°C does not ensure full strengthening of the quenched alloy. The highest strength is achieved after ageing for two hours at 170 and 185°C

Card 1/2

✓E

SHELUCHENKO, Valentin Mikhaylovich: Prinimani uchastiye: ZAKHAROVA, A.E.,  
dots., kand. tekhn. nauk; ROMANOVSKIY, V.I., kand. tekhn. nauk;  
GORYANSKIY, Yu.V., dots., red.; SANDLER, N.V., red. izd-va;  
KOTLYAKOVA, O.I., tekhn. red.

[Shipbuilding materials and ship repairs] Sudostroitel'nye ma-  
terialy i sudoremont. Leningrad, Izd-vo "Morskoi transport,"  
1961. 332 p. (MIRA 15:3)

(Shipbuilding--Equipment and supplies)  
(Ships--Maintenance and repair)

ZAKHAROVA, A.F., kand. tekhn. nauk, red.; FOMICHEV, A.G., red. izd-va;  
GVIRTS, V.L., tekhn. red.

[Small hard-alloy forming cutting tools made of plasticized blanks; abridged report of lectures delivered in the Leningrad House of Scientific and Technical Propaganda at the "Manufacture of cutting tools" seminar] Tverdospлавnyi fasonnyi malogabaritnyi instrument iz plastifitsirovannykh zagotovok; sokrashchennaia stenogramma dokladov, prochtannykh v LDNTP na seminare "Instrumental'noe proizvodstvo." Leningrad, 1961. 26 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Seria: Mekhanicheskaja obrabotka metallov) (MIRA 14:7)  
(Metal-cutting tools)

PROCESSES AND PROPERTIES INDEX

197 AND 190 D10181

190 AND 191 (1008)

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*ca*

Preparation of unsymmetric  $\gamma$ -glycols of the acetylene series. II. Yu. S. Zalkind and A. I. Zakharova. *J. Gen. Chem. (U. S. S. R.)* 3, 432-3(1933); cf. C. A. 28, 2211<sup>h</sup>.—See C. A. 27, 2079. W. F. Ricks

438-31A METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

COMMON ELEMENTS

COMMON VALUABLE METALS

FROM STEEL

FROM IRON

FROM COPPER

FROM ALUMINUM

FROM ZINC

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FROM NICKEL

FROM COBALT

FROM MANGANESE

FROM SILICON

FROM PHOSPHORUS

FROM SULFUR

FROM CHROMIUM

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FROM TITANIUM

FROM ZIRCONIUM

FROM NIOBIUM

FROM MOLYBDENUM

FROM RUTHENIUM

FROM RHODIUM

FROM PALLADIUM

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FROM RHODIUM

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FROM GOLD

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FROM IRIUM

FROM OSMIUM

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1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

**Chlorohydrins of tertiary acetylenic alcohols. Action of halogenating agents on dimethyl(phenylethynyl)carbinol.**  
**A. L. Zakharova and Z. I. Sergeeva. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 18, 1322-7(1948). --PhC:CC(OH)Me<sub>2</sub>**  
 (I), prepd. in 70.4% yield by addn., dropwise, of 51 g. PbCl<sub>2</sub> in Et<sub>2</sub>O to 100 g. powd. KOH and 200 ml. Et<sub>2</sub>O, followed by 28 g. Me<sub>2</sub>CO in Et<sub>2</sub>O, at 0°, m. 51° (from Et<sub>2</sub>O). 1 (16 g.) in Et<sub>2</sub>O treated with 4.0 g. PCl<sub>5</sub> at 0°, followed by 2 hrs. at room temp., yielded H<sub>2</sub>PO<sub>4</sub> and on distn. the product lost HCl, yielding *isopropenylphenylacetylene* (II), b. 87-0°, d<sub>4</sub><sup>20</sup> 0.9425, n<sub>D</sub><sup>20</sup> 1.5790, n<sub>D</sub><sup>25</sup> 1.6048. 1 (16 g.) in 60 ml. Et<sub>2</sub>O, treated with 200 ml. 1:1 HCl, 20 g. CuCl<sub>2</sub>, and 10 g. NH<sub>4</sub>Cl at room temp. gave HCl, II, and II dimer, m. 108° (purified by sublimation). Use of concd. HCl in the above expt. gave 50% chlorides, which result from allene rearrangement of the initially formed chloride; these chlorides, b. 101-5°, d<sub>4</sub><sup>20</sup> 1.0750, d<sub>4</sub><sup>25</sup> 1.0580, n<sub>D</sub><sup>20</sup> 1.5882, represent an unseparable mixt. of Me<sub>2</sub>C:C:CClPh and PhCCl:CHC:CH<sub>2</sub>Me, as shown by KMnO<sub>4</sub> oxidation. G. M. Kosolapoff

A.S.B.S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

CA

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60th Jubilee of "Journal of Russian Chemical Society,"  
1900-1960. I. I. Zhukov and A. I. Zakhareva. *Zhur.  
Obshch. Khim. (J. Gen. Chem.)* 19, 205-9(1940).—A  
review of the history of the journal with portraits of N. A.  
Menshutkin, A. E. Favorzhin, and S. N. Danilov.  
G. M. Kozlov

ASB-61A METALLURGICAL LITERATURE CLASSIFICATION

GROUP	SECTION	SUBSECTION	RELATIONS	CLASSIFICATION
1	2	3	4	5
6	7	8	9	10
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86	87	88	89	90
91	92	93	94	95
96	97	98	99	100



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PROCESSES AND PROPERTIES INDEX

*Ca*

**Reaction of dimethyl- and methylethylbromoethyl- carbinal with hydrogen chloride.** A. I. Zakhvatova, *J. Gen. Chem.* (U. S. S. R.) 8, 1224 (1938). —  $Me_2C(OH)C_2H_4Br$  (I) and  $MeEtC(OH)C_2H_4Br$  (II) were prepd. by the method of Straus, *et al.* (C. A. 25, 71). A mixture of 60 g. I, 10 g.  $Cu_2Cl_2$ , 5 g.  $NH_4Cl$  and 60 ml. of concd.  $HCl$  (2 mols.  $HCl$ ) was stirred at room temp. for 8 hrs. until the nauseating odor of I had disappeared. The reaction mixt. was poured into water and the top layer, after washing with water and drying with  $CaCl_2$ , was vacuum redistd., giving  $Me_2C(OH)C_2H_4Br$  (III) and  $C_2H_5C(OH)C_2H_4Br$ ,  $b_p$  52-3°,  $d_4^{20}$  1.030,  $n_D^{20}$  1.5215, M. R. 41.00. The latter compd. appears to be  $Me_2CC(OH)C_2H_4Br$ . III,  $b_p$  48°,  $d_4^{20}$  1.4551,  $n_D^{20}$  1.4801, M. R. 35.01, was identified by hydrolytic decompn. of its ozonide to  $Me_2C(OH)CO_2H$ , m. 79°. Similar treatment of II gave  $MeEtC(OH)C_2H_4Br$ ,  $b_p$  65.0°,  $d_4^{20}$  1.3840,  $n_D^{20}$  1.4973, M. R. 41.11. The hydrolytic decompn. of its ozonide gave  $EtC(OH)MeCO_2H$ . Thus, the presence of a Br atom in the  $\beta$ -position to the Cl atom in acetylene chlorohydrins excludes the possibility of acetylene-allene intramol. transposition (cf. Favorskii and Favorskaya, C. A. 29, 3051<sup>1</sup>).

Chas. Blanc

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

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CA

Isomeric transformations of unsaturated aliphatic halogen compounds III. The action of hydrochloric acid on methylethylethylyncarbinal in the presence of ammonium chloride and cuprous chloride. T. A. Favorovskaya and A. I. Zakharova. *J. Gen. Chem.* (U. S. S. R.) 10, 446-450 (1940); *cf. C. A.* 34, 1303. —When 100 g. MeEtC(OH)C:CH is allowed to stand for 4 hrs. with 170 cc. concd. HCl, 10 g. CuCl and 5 g. NH<sub>4</sub>Cl, it gives a mixt. of 40 g. 1-chloro-1-methyl-1-pentyne, *b.m.* 48-50°, *d*<sub>4</sub><sup>20</sup> 0.9141, *n*<sub>D</sub><sup>20</sup> 1.42043, MR 31.01, and 18 g. 1-chloro-3-methyl-1,3-pentadiene (II), *b.m.* 68-70°, *d*<sub>4</sub><sup>20</sup> 0.9502, *n*<sub>D</sub><sup>20</sup> 1.40467, MR 34.44. When I is allowed to stand 8 months with CuCl, NH<sub>4</sub>Cl and a few drops of concd. HCl, it is converted into 1-chloro-1-methyl-1,3-pentadiene, *b.m.* 63-3°, *d*<sub>4</sub><sup>20</sup> 0.9574, *n*<sub>D</sub><sup>20</sup> 1.47714, MR 34.40. This reacts with maleic anhydride to give a mixt. from which, after hydrolysis, 2 acids, *m.* 218-20° and 350-1°, are obtained. All these reactions are analogous to those of Me<sub>2</sub>CClC:CH, but go more slowly. IV. The action of hydrochloric acid on diethylethylyncarbinal in the presence of cuprous or cupric chloride and ammonium chloride. T. A. Favorovskaya and I. A. Favorovskaya. *Ibid.* 451 (6). —Et<sub>2</sub>CO and C<sub>2</sub>H<sub>5</sub> in the presence of powd. KOH give 70-80% Et<sub>2</sub>C(OH)C:CH (II), *b.* 136-7°, *d*<sub>4</sub><sup>20</sup> 0.8748, *d*<sub>4</sub><sup>15</sup> 0.8779, *d*<sub>4</sub><sup>10</sup> 0.8800, *n*<sub>D</sub><sup>20</sup> 1.4385, *n*<sub>D</sub><sup>15</sup> 1.44097, MR 31.58, MRs 31.01; phenylurethan, *m.* 32-3°. At the same time, 10% tetraethyl-

butynediol is always formed. When I reacts with HCl, either alone or in the presence of CuCl and NH<sub>4</sub>Cl, it forms 70% 3-ethyl-1-chloro-1-pentyne (III), *b.m.* 73-6°, *d*<sub>4</sub><sup>20</sup> 0.9230, *d*<sub>4</sub><sup>15</sup> 0.9330, *n*<sub>D</sub><sup>20</sup> 1.4373, *n*<sub>D</sub><sup>15</sup> 1.4504, MR 37.51, MRs 37.88. If a mixt. of CuCl and NH<sub>4</sub>Cl is used as a catalyst, a mixt. of II and 3-ethyl-1-chloro-1,2-pentadiene (III), *b.m.* 85-8°, *d*<sub>4</sub><sup>20</sup> 0.9297, *d*<sub>4</sub><sup>15</sup> 0.9329, *d*<sub>4</sub><sup>10</sup> 0.9502, *n*<sub>D</sub><sup>20</sup> 1.47036, *n*<sub>D</sub><sup>15</sup> 1.48431, MRs 39.10, MRs 40.11, is obtained. The amt. of III in the mixt. gradually increases with time of stirring, but reaches a max. of 25-30% which is not exceeded even if the mixt. is stirred more than 6 hrs. II is partly converted to III when it is stirred with HCl and CuCl-NH<sub>4</sub>Cl, but if the HCl is absent, no isomerization occurs. Isomerization to a conjugated diene never occurs. The CuCl dissolves to form a complex acid which is the true catalyst. The reactions of these compds. are all much slower than those of the corresponding diene Me derivs. II easily loses HCl to form 3-ethyl-1-penten-1-ylne (IV), *b.m.* 41-3°, *d*<sub>4</sub><sup>20</sup> 0.7733, *n*<sub>D</sub><sup>20</sup> 1.43962, *n*<sub>D</sub><sup>15</sup> 1.45224, MRs 31.7, MRs 32.9. Some IV is always formed during isomerization of II to III. When IV is hydrated, it forms MeCH<sub>2</sub>CH(OH)CMe which reacts with NO<sub>2</sub>C<sub>2</sub>H<sub>5</sub>NHNH<sub>2</sub> to give a pyrazolone, *m.* 105-6°. Hydrolysis of II with an aq. suspension of CaCO<sub>3</sub> gives a mixt. of I and IV. When III is hydrolyzed under these conditions, it isomerizes to II which then forms I and IV. V. Reactions of dimethyl-

SEE OTHER SIDE

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

ethynylcarbinal with hydrogen bromide and hydrogen iodide. T. A. Pavlovskaya. *Ibid.*, 401 7. -- When  $\text{Me}_2\text{C}(\text{OH})\text{C}\equiv\text{CH}$  and  $\text{HBr}$  react, no matter how the reaction conditions are varied, the only product is 3-methyl-1-bromo-1,3-butadiene (I), bp 48°,  $d_4^{20}$  1.3149,  $d_4^{25}$  1.3100,  $d_4^{30}$  1.3088,  $n_D^{20}$  1.53001,  $n_D^{25}$  1.52001,  $n_D^{30}$  1.51001,  $M_R$  33.04. Thus, the reaction goes rapidly and completely to the final product, instead of going through the series of intermediate isomerizations found with the analogous chloride. With mackay anhydride I gives the same compds. obtained from the chloride. When HI is used, the product is a liquid, bp 48.9°, which decomps. very easily and cannot be sepd. by distn. Its oxidation products indicate that it is a mixt. of  $\text{Me}_2\text{C}(\text{C}\equiv\text{CH})$  and  $\text{CH}_2(\text{C}\equiv\text{CH})\text{C}\equiv\text{CH}$ . H. M. Leicester

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*Ca*

Polymerization of hydrocarbons  $C_nH_{2n-2}$  with conjugated double and triple bonds. II. Cyclic dimerization of isopropenylacetylene. A. I. Zakharova and V. A. Herzl-Sycheva. *J. Gen. Chem.* (U.S.S.R.) 11, 67-0(1941); cf. Favorskii and Z., *C. A.* 31, 5318'.—The present work deals with dimerization of the nearest homolog of vinylacetylene, *isopropenylacetylene* (I). I, prep'd. by dehydration of  $Me_2C(OH)C\equiv CH$  by boiling with 30%  $H_2SO_4$ , b. pt. 37-3°. I (20 g.) and 210 g.  $MeOH$ , heated in sealed tubes for 12 hrs. at 120°, upon washing with  $H_2O$  and steam distn. gave (I) g. of original I, 3 g. of a substance b. pt. 72-1° (II) (18%), and a resin which formed during the steam distn. II has  $d_4^{20}$  0.9112,  $d_4^{25}$  0.9070,  $n_D^{20}$  1.52573,  $n_D^{25}$  1.51553. Mol.-wt. detns. and analysis show that the product is a dimer of I. In order to prove its structure it was oxidized as follows: 2 g. II and 150 cc. 2%  $KOH$  were treated at water-bath temp. with 20 g. dry  $KMnO_4$ , added slowly; the oxidation required 18 hrs. After the usual working-up, the product isolated was an insol. acid, m. 347-8°. This was identified as isophthalic acid by conversion into the  $Me$  ester, m. 67-8°, and comparison with an authentic sample of the latter. II does not react with  $NH_3-CuCl$ . It is therefore considered as established that II is 1-methyl-3-isopropenylbenzene. G. M. Kosolapoff

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000

PROCESSES AND PROPERTIES INDEX

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CA

The polymerization of C<sub>5</sub>H<sub>8</sub> hydrocarbons with neighboring double and triple bonds. A. E. Favorskii and A. I. Zakharova. *J. Gen. Chem.* (U. S. S. R.) 7: 973-6(1937). Cf. C. A. 31, 96. 3-Methyl-3-penten-1-ene was heated at 120° for 12 hrs. in a sealed tube with MeOH or HOAc as catalyst and gave 50% of dimer. KMnO<sub>4</sub> oxidized this to 1,2,4-C<sub>10</sub>H<sub>16</sub>(CO)<sub>2</sub>, 3,4-C<sub>10</sub>H<sub>16</sub>(CO)<sub>2</sub> and HOAc. This showed that the dimer was 1-pseudobutylene-3,6-dimethylbenzene, bp 85.7°, d<sub>4</sub><sup>20</sup> 0.801, n<sub>D</sub><sup>20</sup> 1.51255. H. M. Leicester

ASME-ISA METALLURGICAL LITERATURE CLASSIFICATION

GROUPS: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

ALPHABETIC INDEX

Characteristics of hydrocarbons of the C.M.<sub>n</sub> series with conjugated double and triple linkings. A. I. Zakharov. *Sol. Repts. Leningrad State Univ.* 7, No. 3, 102-105 (1930). MeHgCO is added gradually to a suspension of KOH in EtOH acid. with C<sub>2</sub>H<sub>4</sub> at -10°. C<sub>2</sub>H<sub>4</sub> is passed for 8 hrs. and H<sub>2</sub>O is added when HOCCMeH:CH is obtained in 70% yield. This gives CHMe:CMcC:CH (I) when passed over MgSO<sub>4</sub> at 230°. I and KOH in MeOH (120°; 12 hrs.) give 2-ethoxy-3-methyl-Δ<sup>2,3</sup>-pentadiene (II), b<sub>p</sub> 45-6°, converted by heating with 1% H<sub>2</sub>SO<sub>4</sub> (25-30°; 8 hrs.) into CHMe:CMcCOMe, and by O<sub>3</sub> in CHCl<sub>3</sub> into MeCHO, AcCO<sub>2</sub>Me and HCO<sub>2</sub>H. I and KOH in EtOH yield similarly 2-ethoxy-3-methyl-Δ<sup>2,3</sup>-pentadiene (III), b<sub>p</sub> 54-5°, which reacts analogously to I with 1% H<sub>2</sub>SO<sub>4</sub> and gives 2-ethoxy-3-methylpentane, b<sub>p</sub> 140-2°, on hydrogenation (Pd-Ni). A dimer of I, b<sub>p</sub> 74-5°, is obtained as a by-product of the prepa. of II or III; it yields H<sub>2</sub>C=O, MeHgCO and AcOH with KMnO<sub>4</sub> and is probably (CMeHgC:CH)<sub>2</sub>. B. C. A.

ASAC-11A METALLURGICAL LITERATURE CLASSIFICATION

SUBJECT INDEX		CLASSIFICATION	
ALPHABETIC	CYCLIC	ALPHABETIC	CYCLIC
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D		D	
E		E	
F		F	
G		G	
H		H	
I		I	
J		J	
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L		L	
M		M	
N		N	
O		O	
P		P	
Q		Q	
R		R	
S		S	
T		T	
U		U	
V		V	
W		W	
X		X	
Y		Y	
Z		Z	

USSR/Chemistry - Alcohols, Acetylenic, Chlorhydrine of  
Chemistry - Halogenation Jul 48

"The Problem of Obtaining Chlorhydrine of Tertiary Acetylene Alcohols, by Means of the Action of Halogenizing Agents on Dimethyl-Phenyl-Acetylenyl-Carbinol," A. I. Zakharova, Z. I. Sergeyev, Chair of Org Chem, Chem Faculty, Leningrad State Order of Lenin U, 4 1/2 pp

"Zhur Obshch Khim" Vol XVIII (DOX), No 7

Studies action of halogenizing agents on dimethyl-phenylacetylenyl-carbinol (I). When I is treated

9/49736

USSR/Chemistry - Alcohols, Acetylenic, Chlorhydrine of (Contd.) Jul 48

with phosphorus trichloride or dry hydrogen chloride, chlorhydrin carbinol is formed but it is very unstable and decomposes on heating. When I is treated with dilute hydrochloric acid in presence of  $CuCl_2$  and  $NH_4Cl$ , isopropenylphenylacetylene and a substance with formula  $C_{22}H_{20}$  are formed. When I is treated with concentrated hydrochloric acid in the presence of  $CuCl_2$  and  $NH_4Cl$ , the main reaction product is a mixture of chlorides. Submitted 20 Apr 1947.

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96167/6 WH

ZAKHAROVA, A. I.

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CA

Preparation of methyl-*tert*-butylacetylene. A. I. Zakharova (A. A. Zhilanzov State Univ., Leningrad). *Zhur. Obshchei Khim. (J. Gen. Chem.)* 20, 1572-81(1950). Authentic  $Me_3C-C\equiv C-Me$  was prepd. as follows: *tert*-Bu-C<sub>1</sub>H<sub>7</sub> was prepd. according to Ivitskii (J. C. I., 18, 1970) with BuOH as solvent; stirring at 200-210° gave an 80% yield. The hydrocarbon treated with Na sand under Et<sub>2</sub>O readily gave the Na deriv., which was treated with cooling with Me<sub>2</sub>SO, then heated 2 hrs., yielding 60%  $Me_3C-C\equiv C-Me$ . b. 82-83°, d<sub>4</sub><sup>20</sup> 0.7343, d<sub>4</sub><sup>25</sup> 0.7161, n<sub>D</sub><sup>20</sup> 1.4051, n<sub>D</sub><sup>25</sup> 1.4020, n<sub>D</sub><sup>20</sup> 1.4113 (the properties are compared with numerous previous preps.; 10 references). Oxidation with 1% KMnO<sub>4</sub> gave Me<sub>2</sub>CCO<sub>2</sub>H and AcOH, which were also obtained on ozonolysis. The Raman spectrum showed a line at 2243.1 cm.<sup>-1</sup> characteristic of the C≡C link. The product is stable and is unchanged on long storage or on heating with alc. NaOH. G. M. Kuznetsov



CA

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Raman spectra of acetylenic hydrocarbons. A. I. Zakharova (Leningrad State Univ.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 493-4 (1951).— $\text{Me}_2\text{CClCH}$  (from pinacolin), b. 39-40°,  $d_4^{20}$  0.6741,  $n_D^{20}$  1.37721, showed the Raman lines (intensities on a 5-scale) 2105(1), 2105(5), 2050(0.5), 2011(0.5), 1823(0.5), 1451(4), 1285(3), 1025(0.5), 928(3), 887(2), 701(4), 578(2), 543(1), 362(0.5), 193(5). The frequency 2105  $\text{cm}^{-1}$  corresponds to the triple bond. The lines 1285 and 1451 are characteristic of terminal branching and of Me groups, resp. N. Thou

1957

ZAKHAROVA, A.I.; SAPOZHNIKOVA, E.A.

Intramolecular rearrangements in the acetylene series. VII. Reaction of an acetylenic chloride, 2,3,3-trimethyl-3-chloro-4-hexyne, with organomagnesium compounds. Zhur. Obshchey Khim. 22,1804-10 '52.  
(CA 47 no.14:6857 '53) (MLR. 5:11)

1. Leningrad State Univ.

CA 12

Intramolecular rearrangements in acetylene series. VI. Preparation of methyl-*tert*-butyl(methylsilynyl)carbinol and its reaction with hydrogen chloride. Reaction of 2,2,3-trimethyl-3-chloro-4-hexyne with silver acetate. A. I. Zakharova and K. N. Dobromyslova (A. Zhdanov State Univ., Leningrad). *Zhur. Obshchei Khim.* (J. Gen Chem.) 20, 2029-37(1950); cf. C.I. 43, 6153c; 44, 1001a. — Passage of MeC≡CH through 400 ml. Et<sub>2</sub>O and 200 g. powder KOH at 0° with addn. of 110 g. Me<sub>2</sub>CO in Et<sub>2</sub>O gave, after standing overnight, 65% Me<sub>2</sub>CCMe(OH)C≡CH (I), b<sub>p</sub> 68°, d<sub>4</sub><sup>20</sup> 0.8046, d<sub>4</sub><sup>25</sup> 0.8767, n<sub>D</sub><sup>20</sup> 1.45261, n<sub>D</sub><sup>25</sup> 1.45006, n<sub>D</sub><sup>30</sup> 1.45881 (cf. Iotsich, *J. Russ. Phys. Chem. Soc.* 41, 540 (1909)). Treatment of 25 g. I with 4-5 g. portions of dry HCl gave a spontaneous temp. rise to 70-75°, yielding 2,2,3-trimethyl-3-chloro-4-hexyne (II), b<sub>p</sub> 56-7°, m. 21°, d<sub>4</sub><sup>20</sup> 0.8275, d<sub>4</sub><sup>25</sup> 0.9251, n<sub>D</sub><sup>20</sup> 1.46310, n<sub>D</sub><sup>25</sup> 1.46663, n<sub>D</sub><sup>30</sup> 1.46904; this with 1% alk. KMnO<sub>4</sub> at 50° gave Me<sub>2</sub>CO and AcOH. Stirring 10 g. II with 17 g. AgOAc in AcOH 1 hrs. at 60° gave 63% 2,2,3-trimethyl-3-acetoxy-4-hexyne (III), b<sub>p</sub> 63°, d<sub>4</sub><sup>20</sup> 0.8921, d<sub>4</sub><sup>25</sup> 0.9144, n<sub>D</sub><sup>20</sup> 1.44310, n<sub>D</sub><sup>25</sup> 1.44068, n<sub>D</sub><sup>30</sup> 1.45128. Refluxing 8 g. I with 40 g. Ac<sub>2</sub>O 6 hrs. gave an acetate closely similar to III, b<sub>p</sub> 62-3°, d<sub>4</sub><sup>20</sup> 0.9315, d<sub>4</sub><sup>25</sup> 0.9138. Formation of the II from I proceeds by a monomolec. mechanism, as shown by the ease of replacement caused by the inductive effect of the Me group. G. M. Kosolapoff

ZAKHAROVA, A. I.

PA 2/50T26

USSR/Chemistry - Acetylene Series Jul 49  
Rearrangements, Intermolecular

"Intermolecular Rearrangements in the Acetylene Series: V. Interaction of Acetylene Chloride - 3-Chloro-3-Methylbutyne-4 With Magnesium Chloride - Compounds," A. I. Zakharova, Chair of Org Chem, Chem Faculty, Leningrad Ord of Lenin State U, Invent A. A. Zhdanov, 5 1/4 pp

"Zhur Obshch Khim" Vol XIX, No 7

Reaction of initial compound with  $C_2H_2MgBr$  is accompanied by an intermolecular rearrangement, as a result of which are produced 3,5-dimethylheptadiene-3,4 and 3-methyl-3-ethylbutyne-4.

USSR/Chemistry - Acetylene Series (Contd) Jul 49  
Rearrangements, Intermolecular 2/50T26

Anomalous product, 3-methyl-5-phenyl-heptadiene-3,4, results from reaction of  $C_6H_5MgBr$  with initial compound. Discusses possible mechanisms of these reactions. Submitted 7 Mar 48.

2/50T26

ZAKHAROVA, A. I.

58/49T13

USSR/Chemistry - Acetylene Jan 49  
Chemistry - Rearrangements Intramolecular

"Intramolecular Rearrangements in the Acetylene Series: IV, Interaction of 3-Chloro-3-Methyl-1-Butyne and 3-Chloro-3-Methyl-4-Hexene With Silver Acetate," A. I. Zakharova, Chair of Org Chem, Chem Faculty, Leningrad State Ord of Lenin U Imeni A. A. Zhdanov, 8 1/2 pp

"Zhur Obshch Khim" Vol XIX, No 1

Interaction of tertiary acetylene chlorides with silver acetate in glacial acetic acid gives acetates of the initial alcohols from

58/49T13

USSR/Chemistry - Acetylene (Contd) Jan 49

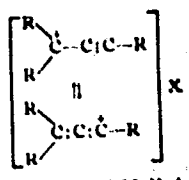
which the chlorides were prepared, an unstable allene acetate, formed by intramolecular rearrangement, and an olefinic diacetate. This course of the reactions was demonstrated on subject compounds. Methyl-1-methylacetylenyl-carbinol was prepared from methylacetylene and methyl ethyl ketone and converted into the corresponding chlorid~~e~~ by reaction with phosphorus trichloride or gaseous hydrogen chloride. This reaction is accompanied by partial dehydration, forming 3-methyl-2-hexene-4-yne bp 107 - 108o at 737 mm, d(20/4) 0.7785, n (20/D) 1.45057. Submitted 20 Apr 47.

58/49T13

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INTRAMOLECULAR REARRANGEMENTS IN THE ACETYLENE SERIES.

III. Reaction of an acetylenic chloride, 2-chloro-2-methyl-3-pentyne, with organo-magnesium compounds. A. I. Zakharova (Leningrad State Univ.), *J. Gen. Chem. (U.S.S.R.)*, *sr.*, 1277-85(1947) (in Russian); *cf. C.A.* 42, 1871f. —  $\text{MeMgBr}$  (from 10 g. Mg and 52 g.  $\text{MeBr}$ ) in 200 cc.  $\text{Et}_2\text{O}$  was decanted from unused Mg and the soln. slowly treated with 40 g.  $\text{Me}_2\text{CClCMe}$ ; after 6 hrs. at  $60^\circ$  the mixt. was decompd. with dil.  $\text{HCl}$  and the org. layer gave 51% *tetramethylallene*, b.  $82-4^\circ$ ,  $d_4^{20}$  0.7311,  $n_D^{20}$  0.7160,  $n_D^{25}$  1.4282. A similar reaction using  $\text{PhMgBr}$  (from 8 g. Mg and 50 g.  $\text{PhBr}$ ) gave *trimethylphenylallene* (40%), bp  $106-8^\circ$ ,  $d_4^{20}$  0.8400,  $d_4^{25}$  0.9322,  $n_D^{20}$  1.54133,  $n_D^{25}$  1.59337,  $n_D^{30}$  1.54703. The products in both cases are thus anomalous and result from a rearrangement, probably taking place intramolecularly at the moment of reaction. Under the reaction conditions, a bound resonating carbonium ion,



is formed; its reaction with  $\text{RMgX}$  gives the formation of either the allene or the acetylene type products. (I. M. Kowdopoff)

**Intramolecular rearrangements of compounds in the acetylene series. II. Reaction of an acetylenic chloride (2-chloro-2-methyl-3-pentyne) with silver acetate.** A. I. Zakharova (Leningrad State Univ.), *J. Gen. Chem. (U.S.S.R.)* 17, 681 (2(1947) (in Russian); cf. C.A. 40, 4654. —Powd. KOH (200 g.) and 400 cc. abs. Et<sub>2</sub>O were used, with stirring at 0° with Me<sub>2</sub>C=CH and the mixt. was treated with 87 g. Me<sub>2</sub>CO in 300 cc. Et<sub>2</sub>O with continued addn. of Me<sub>2</sub>C=CH (total used 22-4 g.). The mixt. was decanted, with ice water and the dried org. layer gave on distn. 25% Me<sub>2</sub>C(OH)C≡CMe (I), bp 80-1°, d<sub>4</sub><sup>20</sup> 0.8000, n<sub>D</sub><sup>20</sup> 1.4440, n<sub>D</sub><sup>25</sup> 1.44186 (these values agree with those of Iosich (*J. Russ. Phys. Chem. Soc.* 39, 651(1907)), but differ from those of Hurd and Cohen (C.A. 25, 1814). Prepn. of I by the method of H. and C. gave a product identical with I: to RMgBr, from 30 g. Mg and 140 g. Et<sub>2</sub>O, in 750 cc. Et<sub>2</sub>O was added dry Me<sub>2</sub>C=CH over 10 hrs., and the product was treated at 0° with stirring with 87 g. Me<sub>2</sub>CO, allowed to stand 3 days, and treated with ice, then with dil. HCl, to give on distn. a little CH<sub>2</sub>=CMeC≡CMe, 45% I, bp 81-2°, n<sub>D</sub><sup>20</sup> 1.44385, and a small amt. of a substance, bp 61-77°, which failed to show the presence of either OH or CO groups, and which was apparently mistakenly assigned the structure of I by H. and C. I (40 g.) was treated with HCl generated by heating concd. HCl (without drying) without cooling; at first, HCl was absorbed with spontaneous temp. rise, then at 70-5° a vigorous reaction took place and 2 layers formed (generally 20-30 min. sufficient to complete the reaction) and, on cooling, the upper layer, after drying, was distd. to yield 70% 2-chloro-2-methyl-3-pentyne (II), bp 61-2°, d<sub>4</sub><sup>20</sup> 0.8472, n<sub>D</sub><sup>20</sup> 1.42831, n<sub>D</sub><sup>25</sup> 1.44913, n<sub>D</sub><sup>25</sup> 1.45118, and a small amt. of CH<sub>2</sub>=CMeC≡CMe, b. 75-0°. Confirmation of the structure of II by ozonization gave AcOH and chloroacetic acid (analyzed as the Ca salt). It is noteworthy that II differs in its const. from the product assigned the same

structure by H. and C. (see above). I (15 g.) and 75 g. Ac<sub>2</sub>O were heated on a sand bath 6 hrs., dild. with H<sub>2</sub>O, and the org. layer sepd., washed, dried, and distd. to give only Me<sub>2</sub>C(OAc)C≡CMe, bp 100-2°, bp 81-2.5°, d<sub>4</sub><sup>20</sup> 0.8381, d<sub>4</sub><sup>25</sup> 0.8485, d<sub>4</sub><sup>25</sup> 0.83980, n<sub>D</sub><sup>20</sup> 1.43707. The same product was obtained when 42 g. AgOAc in 50 cc. AcOH was treated over 0.5 hr. with stirring with 20 g. II in 25 cc. AcOH, then heated 4 hrs. to 60°, dild. with water, neutralized with 10% Na<sub>2</sub>CO<sub>3</sub>, extd. with Et<sub>2</sub>O, and distd. When the latter expt. was repeated using Pb(OAc)<sub>2</sub>, the same result was obtained. No acetate of the allene structure was detected.

G. M. Kosolapoff

PRECISE AND PROPERLY INDEXED

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*ca*

Intramolecular rearrangements in the acetylene series.

1. Reaction of 3-chloro-1-ethoxy-1-butyne with silver acetate. A. I. Zakharen (Leningrad State Univ.), *J. Gen. Chem. (U.S.S.R.)*, 13, 439-47(1942) (English summary).

3-Acetylene (4.3 g.) and 50 cc. AcOH were treated, with vigorous stirring, with 25 g. Me<sub>2</sub>CCl<sub>2</sub>CH in 25 cc. AcOH, after stirring for 4 hrs. at 60° the mixt. was treated with water, neutralized by Na<sub>2</sub>CO<sub>3</sub>, and expd. with Et<sub>2</sub>O. Distn. gave a mixt. from which the following products were isolated: 3-methyl-3-acetoxy-1-butyne, b<sub>p</sub> 68-70°, n<sub>D</sub><sup>20</sup> 1.4193, d<sub>4</sub><sup>20</sup> 0.9351, d<sub>15</sub><sup>20</sup> 0.9444, d<sub>17</sub><sup>20</sup> 0.93504, n<sub>D</sub><sup>20</sup> 1.4193, n<sub>D</sub><sup>20</sup> 1.4193 (hydrogenation over Pt black gave diacetylene (acetylene acetate), b. 124-5°, d<sub>4</sub><sup>20</sup> 0.8900); 3-methyl-1-acetoxy-1,3-butadiene, b<sub>p</sub> 72-4°, d<sub>4</sub><sup>20</sup> 0.9784, d<sub>15</sub><sup>20</sup> 0.8857, n<sub>D</sub><sup>20</sup> 1.45793, n<sub>D</sub><sup>20</sup> 1.46438 (hydrogenation as above gave iso-AmOAc); and 3-methyl-1,2-diacetoxy-2-butene, b<sub>p</sub> 115-17°, b<sub>1</sub> 94-5°, d<sub>4</sub><sup>20</sup> 1.0560, d<sub>15</sub><sup>20</sup> 1.43657, n<sub>D</sub><sup>20</sup> 1.45174 (ozone gave Me<sub>2</sub>CO, AcOH and AcOCH<sub>2</sub>CO<sub>2</sub>H, while hydrogenation as above gave iso-PrCH(OAc)CH<sub>2</sub>OAc, which on hydrolysis by Me-OH-HCl yielded iso-PrCOMe by a secondary rearrangement). If KOAc is used in the above reaction no action occurs at 60°, while increased temp. leads to a secondary reaction with formation of Cl<sub>2</sub>: Me<sub>2</sub>CCl<sub>2</sub>CH besides the normally expected acetate. Substitution of Et<sub>2</sub>O for AcOH gives only the normal substitution product, the acetylenic acetate. G. M. Kosolapoff

ASTM-A METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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ZAKHAROVA, A. I.

The action of concentrated hydrochloric acid on tetramethylbutanediol. II. A. I. Zakharova and G. D. Il'ina (Leningrad State Univ.). *Zhur. Obshch. Khim.* 24, 2144-6 (1984); cf. C.A. 44, 4349. —Passage of  $C_4H_{10}$  with ice cooling into 30% aq. KOH in dry  $Et_2O$  and addn. of 87 g.  $Me_2CO$ , further addn. of  $C_4H_{10}$  and addn. of 87 g. more  $Me_2CO$  and allowing the mixt. to stand 48 hrs. gave upon treatment with  $H_2O$  60%  $(Me_2C(OH)C)_2$ , m. 65-7°. This (284 g.) stirred 4 hrs. with 1.5 l. concd.  $HCl$  with cooling gave 20.4% 2,5-dichloro-2,5-dimethyl-3-hexyne, m. 23-9°,  $n_D^{20}$  1.4613,  $d_4^{20}$  1.0115, bis 65-7°, and 54.4% 3,4-dichloro-2,5-dimethyl-2-hexadiene, bis 80-2°,  $n_D^{20}$  1.4940,  $d_4^{20}$  1.0550. These were identified by Raman spectra. G. M. K.

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PROCESSES AND PROPERTIES MOSES

117 AND 120 CODES
140 AND 174 CODES

10

ca

ACTION OF CONCENTRATED HYDROCHLORIC ACID ON TETRAMETHYLBUTYEDIOL. A. I. Zakharova and I. M. Serdman (Leningrad Univ.). *J. Gen. Chem. (U.S.S.R.)* 15, 438-41 (1948) (English summary).—Tetramethylbutyediol (71 g.) was stirred with 375 cc. concd. HCl at room temp. for 4 hrs. to yield 94 g. mixed dichlorides which were sepd. by distn. in vacuo, into *3,3*-dimethyl-*3,4*-dichloro-*3,4*-hexadiene (probably),  $b_p$  65-7°,  $d_4^{20}$  1.019,  $n_D^{20}$  1.46334,  $n_D^{25}$  1.47320, and *3,3*-dimethyl-*3,3*-dichloro-*3*-hexyne,  $b_p$  80-2°,  $d_4^{20}$  1.082,  $d_4^{25}$  1.069,  $n_D^{20}$  1.40056,  $n_D^{25}$  1.42208. The structures of the dichlorides are only provisional, because identification by means of dehalogenation was only partially successful. The 1st compd. failed to react with  $K_2CO_3$  soln. and gave only a slight reaction with Na in  $Et_2O$  to yield a small amt. of resin, while heating with Zn dust in  $EtOH$  gave a small amt. of a hydrocarbon which was apparently  $C(CMe)_2$ . The 2nd compd. failed to give an appreciable amt. of dehalogenated products with either Na or Zn in the cold; heating in the latter case led to decompn.

G. M. Kosolapoff

ASB. S. A. METALLURGICAL LITERATURE CLASSIFICATION

GENERAL ELEMENTS

COMMON VARIABLES MOSES

FROM SOURCE

REAGENT ONE ONLY ALL

GROUP NO.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

AUTHORS: Zakharova, A. I., Il'ina, G. D. 79-12-6/43

TITLE: The Synthesis of Ramified Triacetylene Hydrocarbons (Sintez razvetvlennykh triatsetilenovykh uglevodorodov).  
II. Production of 4,4,7,7-Tetramethyl-Decatriene-2,5,8 and 3,3,6,6-Tetramethyl-1,8-Diphenyl-Octatriene-1,4,7 (II. Polucheniye 4,4,7,7-tetrametil-dekatriina-2,5,8 i 3,3,6,6-tetrametil-1,8-difenil-oktatriina-1,4,7).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 12, pp. 3201-3203 (USSR).

ABSTRACT: In a previous work the authors proposed a method for the synthesis of triacetylene hydrocarbons with a  $\beta$ -position of the triple bindings, by means of the propargylation of magnesium bromalkine-1 with the help of tertiary acetylenedichlorides ( $R_2C Cl-C \equiv C-Cl R_2$ ).  
This way the first representative of the completely  $\beta$ -triines was obtained. In the present work the authors continue the investigation of the synthesis and properties of ramified triacetylene with a  $\beta$ -position of the triple bindings and describe the synthesis of two new representatives of this class. By means of propargylation of the magnesium bromalkine with tertiary acetylene-dichloride the synthesis of two new ramified diacetylene hydrocarbons of the following formulae was then carried out:

Card 1/2

The Synthesis of Ramified Triacetylene Hydrocarbons.

II. Production of 4,4,7,7-Tetramethyl-Decatriene-2,5,8 and 3,3,6,6-Tetra-methyl-1,8-Diphenyl-Octatriene-1,4,7. 79-12-6/43

a) 4,4,7-tetramethyl-decatriene-2,5,8; b) 3,3,6,6-tetramethyl-1,8-diphenyl-octatriene-1,4,7. The structure of these hydrocarbons was proved by the fact that on the occasion of the ozonization acetic acid and corresponding dimethyl malonic acid formed. There are 6 references, 3 of which are Slavic.

ASSOCIATION: Leningrad Agricultural Institute (Leningradskiy sel'skokhozyaystvennyy institut).

SUBMITTED: November 20, 1956.

AVAILABLE: Library of Congress.

1. Triacetylene Hydrocarbons - Synthesis

Card 2/2

ZAKHAROV, M. I.  
Z

6

CH

(3)

MA  
6/23/54

✓ Synthesis of branched triacetylenic hydrocarbons. Preparation of 2,2,3,5,8,8,11,11-octamethyl-3,6,9-dodecatriyne.  
A. I. Zakharov, G. D. Il'ina, and G. M. Murashov (State Univ., Leningrad). Zhur. Obshch. Khim. 25, 1963-71 (1955); Ch. C. A. 30, 4773i.—To EtMgBr (from 25 g. Mg) was added in 7 hrs. 82 g. Me<sub>2</sub>CC:CH in Et<sub>2</sub>O and after 30 hrs. at room temp., followed by refluxing until C<sub>2</sub>H<sub>2</sub> evolution ceased, cooling, addn. of 2 g. Cu<sub>2</sub>Cl<sub>2</sub> and 1 g. HgCl<sub>2</sub>, followed by 60 μ. (i-CCMe<sub>2</sub>Cl)<sub>2</sub> in Et<sub>2</sub>O, allowing to stand 20 hrs. and refluxing 4 hrs. and hydrolyzed with dil. HCl gave after 2 distns. 100% 2,2,3,5,8,8,11,11-octamethyl-3,6,9-dodecatriyne, bp<sub>10</sub> 82-4°, m. 47°, d<sub>4</sub> 0.7713, n<sub>D</sub><sup>20</sup> 1.4295, n<sub>D</sub><sup>17</sup> 1.4284; Raman spectrum cm.<sup>-1</sup> 233(1), 616(2), 1028(1), 1112(1), 1210(3), 1343(1), 1447(3), 2176(1), 2290(2), 2290(5), 2275(4). Ozonolysis of this gave Me<sub>2</sub>CCO:H and Me<sub>2</sub>C(CO<sub>2</sub>H)<sub>2</sub> identified as the Ag salts. Oxidation of the hydrocarbon with KMnO<sub>4</sub> failed to take place. Hydrogenation over Pt/C<sub>2</sub>C<sub>6</sub> gave the 2,2,3,5,8,8,11,11-octamethyl-dodecane, m. 37-3°.  
 G. M. Kosolapoff

ZAKHAROVA, A. I.

✓ Synthesis of branched diacetylenic hydrocarbons. Preparation of 2,2,5,5,8,8-hexamethyl-3,6-nonadiyne. A. I. Zakharova and G. M. Kosolapov (Leningrad State Univ.) *Zhurnal Khim. Fiz.* 25, 1453 (1957); *cf. C.A.* 49, 27834.

Branched acetylenic hydrocarbons can be prepd. by propargylation of acetylenic Grignard reagents by compds. of the type  $R_1CCIC:CR$  in the presence of  $HgCl_2$  and  $Cu_2Cl_2$ . To 150 g. powd. KOH in 200 ml. dry  $Et_2O$  was added, with good stirring at  $0^\circ$  in 4 hrs., 0.5 mole  $Me_3CC:CH$ , 0.5 mole  $Me_2CO$ , and 60 ml. dry  $Et_2O$ ; after stirring 12 hrs. the mixt. was treated with  $H_2O$  with cooling and the org. layer yielded 88.0%  $Me_3CC:CCMe_2OH$ ,  $b_p$   $62^\circ$ ,  $b_r$   $62^\circ$ ,  $m$   $34^\circ$ ,  $n_D^{20}$  1.42449,  $n_D^{25}$  1.42190,  $n_D^{30}$  1.43057,  $n_D^{35}$  1.43991. The alc. treated in 5-10-g. portions with dry  $HCl$  with cooling gave 85.5%  $Me_3CC:CCMe_2Cl$  (I),  $b_p$   $72^\circ$ ,  $n_D^{20}$  1.43598,  $n_D^{25}$  1.43323,  $n_D^{30}$  1.44285,  $n_D^{35}$  1.45134 [cf. Buch and Stöve, *C.A.* 10, 2727] for technique].  $EtMgBr$  from 12 g. Mg, 65 g.  $EtBr$ , and 200 ml.  $Et_2O$  was treated over 4 hrs. with 41 g.  $Me_3CC:CH$  in 50 ml.  $Et_2O$  with cooling and after 8 hrs. in the cold the mixt. was refluxed until  $C_2H_2$  evolution ceased. The cooled Grignard reagent was then treated with 1 g.  $Cu_2Cl_2$  and 1 g.  $HgCl_2$  followed by 40 g. I added with cooling; after stirring 3 days the mixt. was treated with dil.  $HCl$  and the org. layer was sepd. and distd. yielding 2 products: 20%  $CH_3:CCMe_2:CCMe_2$ ,  $b_p$   $58^\circ$ ,  $d_4^{20}$  0.7825,  $d_4^{25}$  0.7682,  $n_D^{20}$  1.43851,  $n_D^{25}$  1.43160,  $n_D^{30}$  1.44704,  $n_D^{35}$  1.45697 [Raman spectrum: 149.1(3), 531.0(1), 560.7(1), 863.6(5), 919(2), 1290.1(3), 1376(1), 1444.4(5), 1627(10), 2202.9(10), 2915.0(1), 2987.3(1)] and 80%  $Me_3CC:CCMe_2C:CCMe_2$ ,  $b_p$   $82^\circ$ ,  $b_r$   $74^\circ$ ,  $m$   $46^\circ$ ,  $d_4^{20}$  0.7482,  $n_D^{20}$  1.41735,  $n_D^{25}$  1.41469,  $n_D^{30}$  1.42350,  $n_D^{35}$  1.43293 [Raman spectrum in molten state: 139(2), 166.4(2), 445.5(0.5), 547.5(1), 604.9(1), 741.6(0.6), 880.5(3), 919.5(2), 1190.8(1), 1195.2(4), 2220.2(5)]. Ozonolysis of the latter gave  $Me_3CCO_2H$ ,  $Me_2C(CO_2H)_2$ , and hydroxyisobutyric acid,  $m$   $78^\circ$ . Hydrogenation over Pd required 3 moles of  $H_2$ . The diyne was unattacked after 3 days with 1%  $KMnO_4$ . G. M. Kosolapov

ШАРХАРОВА, А. И.

Synthesis of branched bicyclic hydrocarbons. Prepa-  
ration of 2,2,5,5-tetramethyl-1,6-nonadiene. I.  
Munshov. J. Gen. Chem. U.S.S.R.  
1976, 49, 103 (Engl. translation).—See C.A. 50,  
B.M.R.

④

MA

Synthesis of branched acetylenic hydrocarbons.

Preparation of 2,6,6-trimethyl-3,3-dipropyl-4-heptyne.  
 A. I. Zikharov and G. M. Korshakov (State Higher Learning Institute, Moscow, U.S.S.R. 3328-31, 1961); *Chem. Abstr.* 56: 14414z.

50, 11633g. — 1 dm. of 41 g Me<sub>2</sub>CClCH and 57 g. iso-Pr<sub>2</sub>CO in 50 ml. Et<sub>2</sub>O to a well stirred suspension of 150 g. powd. KOH in 200 ml. Et<sub>2</sub>O at 0° in 8 hrs. gave, after ac. treatment on the following day, 75% Me<sub>2</sub>CClCC(OH) (CH<sub>3</sub>)<sub>2</sub>, b<sub>p</sub> 73.5°, d<sub>4</sub> 0.8550, d<sub>20</sub> 0.8334, n<sub>D</sub><sup>20</sup> 1.44142, n<sub>D</sub><sup>19</sup> 1.43900, n<sub>D</sub><sup>17</sup> 1.44743. This treated (in 5 g. portions) with dry EtCl gave a hydrocarbon, b<sub>p</sub> 67-34° described below, and 41% 2,6,6-trimethyl-3-isopropyl-2-chloro-4-heptyne, b<sub>p</sub> 75.5°, d<sub>4</sub> 0.81061, d<sub>20</sub> 0.8313, n<sub>D</sub><sup>17</sup> 1.47037, which 1.5 g. was treated in Et<sub>2</sub>O with sodium over 2 hrs. to iso-

chem

6

rene n. from acetylene — 100% — b<sub>p</sub> 66°, d<sub>4</sub> 0.8374, d<sub>20</sub> 0.8238, n<sub>D</sub><sup>17</sup> 1.45207, n<sub>D</sub><sup>19</sup> 1.45018, n<sub>D</sub><sup>17</sup> 1.46514, whose Raman spectrum was (cm<sup>-1</sup>): 181.6(2), 180.6(1), 423.8 (0.5), 650.2(0.5), 791.0(1), 904.7(3), 979.8(3), 1042(3), 1200.3(1), 1224.4(2), 1228.1(2), 1440.7(1), 2221.8(5), 2924.3(3), 2978.6(4). The hydrocarbon, mentioned above, was obtained as a byproduct in all the above steps and had the constants: b<sub>p</sub> 58.5°, d<sub>4</sub> 0.7930, d<sub>20</sub> 0.7778, n<sub>D</sub><sup>17</sup> 1.46183, n<sub>D</sub><sup>19</sup> 1.46837, n<sub>D</sub><sup>17</sup> 1.46066. The Raman spectrum (cm<sup>-1</sup>): 179.8(3), 234.3(3), 361.7(10), 426.3(1), 432.9(5), 648.6(1), 639.8(1), 791.3(1), 952.7(4), 923(2), 1012.6(1), 1202.5(4), 1614.5(10), 2129.0(10), 2623.7(1), 2965.5(1), confirmed its structure as 1,6,6-trimethyl-3-isopropyl-2-hepten-1-yne.

G. M. Korshakov

RM  
K.A.



ZAKHAROVA, A. I.

USSR.

Synthesis of branched acetylenic hydrocarbons. Preparation of 2,2,3,3,6,6-hexamethyl-1-heptyne. A. I. Zakharova and G. M. Kosolapoff (Leningrad State Univ.). *Zhur. Obshch. Khim.* 13, 1031-6 (1937). Into an ice-cooled mixture of 150 g. powder, KOH and 200 ml. Et<sub>2</sub>O was added over 5 hrs. 0.5 mole Me<sub>2</sub>CCl<sub>2</sub> and 0.5 mole picoline with cooling. Et<sub>2</sub>O; after 15 hrs. the mixt. was hydrolyzed with cooling. and the org. layer gave 60% 2,2,3,3,6,6-pentamethyl-1-heptyne-3-ol, m. 22°, b. 75°, *n*<sub>D</sub><sup>20</sup> 1.4328, *d*<sub>4</sub><sup>20</sup> 0.8321, *n*<sub>D</sub><sup>20</sup> 1.43742, *n*<sub>D</sub><sup>20</sup> 1.43493, *n*<sub>D</sub><sup>20</sup> 1.44328, *n*<sub>D</sub><sup>20</sup> 1.44810, *s*<sub>D</sub><sup>20</sup> 25.10. This (25 g.) in 5 g. portions was treated with dry HCl with cooling, yielding 80% 1,2,3,3,6,6-pentamethyl-1-chloro-1-heptyne(1), m. 52°, *b*<sub>D</sub><sup>20</sup> 82°, which hydrolyzed readily on shaking with aq. AgNO<sub>3</sub>. I (10 g.) was added to Me<sub>2</sub>Cl<sub>2</sub> from 50 g. EtBr in 150 ml. Et<sub>2</sub>O, the addn. being made with ice-cooling, after which the mixture was set aside for 14 hrs., then refluxed 2 hrs., treated with dil. HCl and the org. layer distilled yielding 55% 2,2,3,3,6,6-hexamethyl-1-heptyne, b. 48°, *d*<sub>4</sub><sup>20</sup> 0.8316, *n*<sub>D</sub><sup>20</sup> 1.43526, *n*<sub>D</sub><sup>20</sup> 1.43036, *n*<sub>D</sub><sup>20</sup> 1.43377, *n*<sub>D</sub><sup>20</sup> 1.44523. Raman spectrum given. Ozonolysis gave CH<sub>3</sub>O. Me<sub>2</sub>C(CMe<sub>2</sub>)CO<sub>2</sub>H, m. 182°, whose *dg salt* was analyzed, gave HCO<sub>2</sub>H, Me<sub>2</sub>CCO<sub>2</sub>H and Me<sub>2</sub>CCMe<sub>2</sub>C(O<sub>2</sub>C)CMe<sub>2</sub>, a greenish oil whose abs. spectrum shows max. at 2880, 2180 and 2030 Å.

G. M. Kosolapoff

AUTHORS: Zakharova, A. I., Efros, A. M. SOV/79-28-12-17/41

TITLE: On the Problem of the Cyano-Ethylation of Acetylene- $\gamma$ -Glycols  
(K voprosu tsianetilirovaniya atsetilenovykh  $\gamma$ -glikoley)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 12, pp 3243-3245  
(USSR)

ABSTRACT: Recently Efros (Ref 2) investigated the cyano-ethylation reaction in the series of benzimidazole in the presence of triethyl-benzyl ammonium hydroxide. It was interesting to use this catalyst also in the cyano-ethylation of unsaturated hydroxyl-containing compounds, especially of acetylene- $\gamma$ -glycols. The authors, therefore, cyano-ethylated the tetramethyl and tetraphenyl butynediol in the presence of this catalyst. With the former this reaction takes place very easily on the addition of the double amount of acrylonitrile to the solution of glycol in dioxane under the formation of heat and slight resinification. After 24 hours standing at room temperature and pouring the reaction mixture into water crystals of tetramethyl butynediol ether are separated, which have a melting-point of 37-38° (yield 65%). The yield of the monocyano-ethyl ether of this glycol obtained

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On the Problem of the Cyano-Ethylation of  
Acetylene  $\gamma$ -Glycols

SOV/79-28-12-17/41

under the same conditions amounted only to 8-10%. Thus the above catalyst can also be used efficiently in the cyano-ethylation of tetramethyl butynediol, as this reaction takes place easier than that suggested by Nazarov and his cooperators (Ref 1), and the final product does not need tedious purification. The cyano-ethylation of tetraphenyl butynediol (I) carried out in the same way as mentioned above also takes place easily, but with a somewhat larger excess of acrylonitrile. The final product is the di-( $\beta$ -cyano-ethyl)-ether of tetraphenyl butynediol (II), (melting-point 179-180°). Its yield amounted to 52.6%. From the reaction mass remaining the mono- $\beta$ -cyano-ethyl ether of glycol (III) was obtained (melting point 68-69°) (yield 26.5%). Both of these ethers had been unknown before. There are 2 Soviet references.

ASSOCIATION: Leningradskiy sel'skokhozyaystvennyy institut (Leningrad Agricultural Institute)

Card 2/3

ZAKHAROVA, A. I.

PHASE I BOOK EXPLOITATION

SOV/4583

Leningrad. Universitet

Voprosy teorii stroyeniya organicheskikh soyedineniy (Problems in the Theory of the Structure of Organic Compounds) [Leningrad] 1960. 239 p. Errata slip inserted. 3,725 copies printed.

Sponsoring Agency: Leningradskiy ordena Lenina Gosudarstvennyy universitet im. A.A. Zhdanova.

Resp. Ed.: T.A. Favorskaya; Ed.: V.D. Piastro; Tech. Ed.: S.D. Vodolagina.

PURPOSE: This collection of articles is intended for chemists and organic chemists.

COVERAGE: The collection is concerned with the scientific legacy of A.Ye. Favorskiy, and includes discussions of his theoretical views and their evolution in connection with the development of theoretical organic chemistry. The articles review problems on the structure, reactivity and transformations of various classes of organic compounds: unsaturated acyclic and cyclic hydrocarbons, saturated and unsaturated alcohols, glycols and carbonyl compounds. No personalities are mentioned. References accompany each article.

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## Problems in the Theory of the Structure (Cont.)

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From the Editors

5

Danilov, S.N. Evolution of A.Ye. Favorskiy's Ideas on the Course of Chemical Reactions and Present-Day Understanding of the Mechanisms of Favorskiy Reactions

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Zakharova, A.I. Development of A.Ye. Favorskiy's Work on Synthesis and Conversions of Acetylene Hydrocarbons and Their Halogen Derivatives

52

Domnin, N.A., R.Ch. Kolinskiy, and V.A. Cherkasova. Development of A.Ye. Favorskiy's Work in the Field of Polymethylene Cycles

68

Lebedeva, A.I. Development of A.Ye. Favorskiy's Ideas on the Synthesis of Terpenes and Related Compounds by the Soviet School of Chemists

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Yanovskaya, L.A., and V.F. Kucherov. Role of A.Ye. Favorskiy's Research on the Synthesis of Isoprenoid Compounds

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~~Card 2/3~~

ACC NR: AR6035271

SOURCE CODE: UR/0169/66/000/009/G012/G012

**AUTHOR:** Zakharova, A. I.

**TITLE:** Some results of the study of the mechanism of earthquake foci in the Tashkent region

**SOURCE:** Ref. zh. Geofizika, Abs. 9G70

**REF SOURCE:** Sb. Geol. stratigr. i seysmol. Uzbekistana. Tashkent, Nauka, 1966, 90-108

**TOPIC TAGS:** seismology, earthquake, seismic wave, earth crust

**ABSTRACT:** The mechanism of the focus of 11 earthquakes of the 9—14 intensity scale, has been determined in the area around Tashkent. Displacement signs in straight, head and refracted longitudinal waves were used for the above determination. In the case of nearby stations, the emission angles of seismic rays were calculated according to a model of the structure of the Earth's crust in the area around Tashkent. Errors in drawing of nodal lines did not exceed an average of  $\pm 10$ —15 degrees along the azimuth. The directions of compression and decompression stresses for most of the foci investigated, form small angles with the

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UDC: 550.341.4

ACC NR: AR6035271

horizon. Moreover, the decompression stresses are found to be oriented parallel, and the compression stresses, at a right angle to the Chatkala Mountain range. Possible planes of the fault are characterized by a fairly steep occurrence. Displacement shifts predominate in the north-eastern part of the region in the foci (10 earthquakes). Shifts in the direction of the fall of the fault planes have been determined in the case of the foci of two earthquakes investigated in the south-western part of the region. L. Balakhina. [Translation of abstract]

[GC]

SUB CODE: 08/

Card 2/2

DANILOV, S.N., glav. red.; ZAKHAROVA, A.I., red.; ARBUZOV, A.Ye.,  
red.; VVEDENSKIY, A.A., red.; VENUS-DANILOVA, E.D., red.;  
IOFFE, I.S., red.; KAVERZNEVA, Ye.D., red.; LITSENKO,  
I.F., red.; MISHCHENKO, K.P., red.; NEMTSEV, M.S., red.;  
PETROV, A.A., red.; FREYDLINA, R.Kh., red.; SHEMYAKIN,  
M.M., red.; SHCHUKAREV, S.A., red.; YUR'YEV, Yu.K., red.

[Problems of organic synthesis] Problemy organicheskogo  
sinteza. Moskva, Nauka, 1965. 323 p. (MIRA 18:8)



BUTOVSKAYA, Yo.M.; ZAKHAROVA, A.I.; ATABAYEV, Kh.A.; FLENOV, Yu.P.

Results of the application of specific hodographs for the  
determination of the epicenters of some regions in Central Asia.  
Dokl.Sov. po seism. no.15:101-111 '63. (MIRA 17:4)

ZAKHAROVA, A.I.

Specific hodographs based on earthquake data for the Tashkent area  
and the central Chatkal Range. Trudy Inst. mat. AN Uz. SSR no.25:  
147-160 '62. (MIRA 16:8)  
(Tashkent region--Seismometry) (Chatkal Range--Seismometry)

S/167/62/CCO/CC4/CC2/CC2  
D207/D308

AUTHOR: Zakharova, A.I.

TITLE: On the recurrent shocks following the Brichmulla earthquake on October 24, 1959

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya. tekhnicheskikh nauk, no. 4, 1962, 77 - 81

TEXT: A strong earthquake occurred at 23.40 hours GMT on October 24, 1959, near the village of Brichmulla about 90 km north-east of the city of Tashkent. The intensity of the earthquake was  $I = 4 - 5$  and its magnitude was  $M = 5.6$ . Further shocks were recorded in the region of Brichmulla during the next 18 months. Nine strong shocks ( $M > 3$ ) were recorded from November 1959 to May 1960 by the regional seismic-station network. In May 1960 new sensitive stations were established near Brichmulla and these stations recorded about 100 shocks of  $M > 3$  up to October 1961. An analysis of 9 strong shocks and 26 weak ones is given by the author, the follow-

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On the recurrent shocks ...

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D207/D3C8

ing items being tabulated: date, time of the shock at the focus, distance from the earthquake center, depth of the focus, energy class of the shock ( $K = \log E$ , where  $E$  is in Joules), stations which recorded the shock. The area over which these shocks occurred covers 350 km<sup>2</sup> including the Chatkalo-Kuraminskiye Ridges, consisting of paleozoic rocks, and the Tashkent-Golodnostepskaya Submontane Depression filled with cainozoic deposits. The data indicate that about 16 months after the earthquake on October 24, 1959, the active area has reached seismic stability. ✓

ASSOCIATION: Institut matematiki im. V.V. Romanovskogo AN UzSSR  
(Mathematics Institute imeni V.V. Romanovskiy, AS  
UzSSR)

SUBMITTED: March 20, 1962

Card 2/2

ZAKHAROVA, A.I., inzh.

Graphitization of the metal of steampipes and cast components operating for long periods at electric power plants with high parameters. Teploenergetika 8 no.6:48-50 Je '61.

(MIRA 14:10)

1. Vsesoyuznyy teplotekhnicheskii institut.  
(Steam power plants) (Steam pipes)

ZAKHAROVA, A.I.

KRUPINA, T.N.; ZAKHAROVA, A.I.

Acute primary infectious nonpurpurative encephalomyelitis in children [with summary in French]. Zhurnal nevrologii i psikh. 57 no.7: 836-841 '57. (MLRA 10:9)

1. Klinika nervnykh bolezney (rukovoditel' - prof. D.S.Futer)  
II Moskovskogo meditsinskogo instituta imeni I.V.Stalina i datskaya klinicheskaya bol'nitsa No.1 (glavnyy vrach Ye.V.Prokhorovich)  
(ENCEPHALOMYELITIS, in infant and child,  
acute primary infect. nonpurpurative (Rus))

EXPERIMENTA MEDICA Sec 7 Vol 13/8 Pediatrics Aug. 59

2164. THE CLINICAL PICTURE OF NERVOUS SYSTEM LESIONS DUE TO ANTIRABIES INOCULATIONS IN CHILDREN (Russian text) - Zakharova A. I. - ZH. NEVROPAT. I PSIKHIAT. 1958, 18/7 (801-805)

These nervous system lesions are diffuse. On the basis of 12 cases, 3 forms are distinguished, the syndromes of: meningo-encephalomyelitis; myelopolyradiculo-neuritis; and Landry's paralysis. In children, the prognosis is favourable. The disease is attributed directly to the inoculations. Particular significance is attached to alteration of the neurotrophic functions in the patients. (L. 7. 8)

ZAKHAROVA, A.I.

Clinical aspects of affections of the nervous system in children  
vaccinated against rabies [with summary in French]. Zhur.nerr.  
i psikh. 58 no.7:801-805 '58 (MIRA 11:7)

1. Detskaya klinicheskaya bol'nitsa No.1 (glavnyy vrach Ye.V.  
Prokhorovich) i klinika ostrykh nervnykh infektsiy Gosudarstvennogo  
pediatricheskogo instituta RSFSR (zav. - prof. D.S. Futer).

(RABIES, prevention and control,

vacc. causing NS dis. in child. (Rus))

(VACCINES AND VACCINATION, compl.

rabies vaccine causing NS dis. in child. (Rus))

(NERVOUS SYSTEM, dis.

caused by rabies vacc. in child. (Rus))



ZAKHAROVA, A. I., Cand Med Sci (diss) -- "Hemoglobin iron in the blood serum of patients with chronic occupational intoxication". Kuybyshev, 1960. 12 pp (Kuybyshev State Med Inst), 250 copies (KL, No 15, 1960, 139)

DANILOV, S.N., gl<sup>av</sup>. red.: ARBUZOV, A.Ye., red.; VVEDENSKIY, A.A., red.; VENUS-DANILOVA, E.D., red.; ZAKHAROVA, A.I., red.; IOFFE, I.S., red.; KAVERZNEVA, Ye.D., red.; LUTSENKO, I.F., red.; MISHCHENKO, K.P., red.; NEMTSOV, M.S., red.; PETROV, A.A., red.; FREYDLINA, R.Kh., red.; SHEMYAKIN, M.M., red.; SHUKAREV, S.A., red.; YUR'YEV, Yu.K., red.

[Biologically active compounds] Biologicheski aktivnye soedineniia. Moskva, Nauka, 1965. 305 p.  
(MIRA 18:7)

ZAKHAROVA, A.I.; IL'INA, G.D.

Diacetylene hydrocarbons. Part 2: Preparation and hydrogenation  
of 2,2,5,5-tetramethyl-3, 6-octadiyne. Zhur. ob. khim. 34  
no. 5:1389-1393 Mj '64. (MIRA 17:7)

1. Leningradskiy sel'skokhozyaystvennyy institut.

BUTOVSKAYA, Ye.M.; ZAKHAROVA, A.I.; IODKO, V.K.; FLENOVA, M.G.;  
FLENOV, Yu.P.; RYZHKOV, O.A., doktor geol.-miner. nauk,  
otv. red.; SHAFEYEVA, K.A., red.

[Seismicity of Uzbekistan] Seismichnost' Uzbekistana.  
[By] E.M.Butovskaia i dr. Tashkent, Izd-vo "Nauka,"  
UzSSR. No.2. [Tashkent and Yuzhnyy seismic regions, the  
central part of the Chatkal Range] Pritashkentskii i  
Iuzhnyi seismicheskie raiony, tsental'naia chast' Chatkal'-  
skogo khrebta. 1964. 121 p. (MIRA 17:6)

ZAKHAROVA, A.I.

Repeated earth shocks during the Brichmulla earthquake  
of October 24, 1959. Izv.AN Uz.SSR. Ser.tekh.nauk no.4:77-81  
'62. (MIRA 15:7)

1. Institut matematiki imeni V.V. Romanovskogo AN UzSSR.  
(Brichmulla—Earthquake, 1959)

ZAKHAROVA, A.I.

Map of seismic activity with an arbitrary zone of averaging.  
Dokl. AN Uz.SSR. 21 no.3:43-47 '64.

(MIRA 19:1)

1. Institut geologii i geofiziki imeni Kh.M.Abdullayeva  
AN UzSSR. Submitted July 24, 1963.

ASHBEL', S. I.; KHIL', R. G.; ZAKHAROVA, A. M. (Gor'kiy)

Disorders of the blood circulation in toxic pneumoscleroses. Gig.  
truda i prof. zab. no.2:26-32 '62. (MIRA 15:2)

1. Gor'kovskiy institut gigiyeny truda i profbolezney.

(LUNGS--DISEASES)  
(BLOOD--CIRCULATION, DISORDERS OF)

ZAKHAROVA, A. I.

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PHASE I BOOK EXPLOITATION

SOV/2276

Prochnost! tsilindricheskikh obolochek; sbornik statey (Strength of Cylindrical Shells; Collection of Articles) Moscow, Oborongiz, 1959. 157 p. Errata slip inserted. 2,400 copies printed.

Ed. (Title page): V.M. Darevskiy, Doctor of Physical and Mathematical Sciences; Ed.: S.I. Bumshteyn, Engineer; Ed. of Publishing House: A.P. Starykh; Tech. Ed.: V.I. Oreshkina; Managing Ed.: A.S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for aircraft jet-engine designers and production engineers.

COVERAGE: This collection of nine articles covers problems of statics and dynamics of cylindrical shells which arise in the calculation of stability of jet-engine cases. Results of new theoretical and experimental investigations are included. No personalities are mentioned. References follow some of the articles.

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Foreword

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Strength of Cylindrical Shells (Cont.)

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Zakharova, A.P. Calculation of a Circular Cylindrical Cantilever Shell Loaded at the Free End by Uniformly Distributed Transverse Forces

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The above problem is representative of jet-engine cases subject to stresses and deformations due to forces of inertia of the rotor in nonlinear flights. In the general case the safety coefficient and the clearance must be determined. The article is primarily concerned with stresses and deformations.

Zakharova, A.P. Flexure of a Cylindrical Cantilever Shell Reinforced With a Rigid Radially Loaded Ring

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The cylinder is reinforced with a rigid ring at its free end. The force is applied along one of the diameters of the ring. The problem is similar to the problem described in the first article and was treated analogously. Displacements due to flexure differ but little from displacements determined in the first article, and the category of the displacement is nearly momentless.

Kshnyakin, R.I. Influence of an Axial Tensile Force on the Stability of Cylindrical Shells Subject to Flexure and Normal External Normal Pressure

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Strength of Cylindrical Shells (Cont.)

SOV/2276

According to the author the simultaneous action of an axial tensile stress and external pressure has not been thoroughly analyzed. He considers a thin, circular, closed shell under torsion. Other loads produce a momentless stressed state. The expressions of stresses and deformations are given.

Darevskiy, V.M. Stability of Circular Cylindrical Shells Under Flexure by a Transverse Force Combined With Torsion and Internal Pressure

72

In this article, the results of the author's former work are used to simplify the evaluation of the stability of cylindrical shells under the simultaneous action of torsional moments, internal pressure and transverse rim forces. The author describes conditions under which the evaluation of the stability of the shell may be determined by simple formulas. The above analysis is applicable to the calculation of combustion chambers of jet engines.

Darevskiy, V.M., and S.N. Kukudzhanov. Stability of Orthotropic Shells Under Torsion and Normal Pressure

95

Card 3/6

Strength of Cylindrical Shells (Cont.)

SOV/2276

The authors establish basic equations for the determination of stresses, moments and deformations, and then analyze separately cases of the uniform transverse compression, torsion, and torsion with pressure. The established formulas are valid only within the limits of elastic deformations.

Kukudzhinov, S.N. Stability of an Orthotropic Cylindrical Shell Under External Transverse Pressure With Axial Tension and Torsion With Axial Tension 109

In this article, results obtained for an isotropic shell by R.I. Kshnyakin are generalized for orthotropic shells. In order to establish final formulas, the author considers the stability of cylindrical orthotropic shells under outer transverse pressure with axial tension, and the stability of cylindrical orthotropic shells under torsion with axial tension.

Serdyukov, V.V. Stability of Anisotropic Cylindrical Shells Under Certain Loads 118

The author considers the stability of anisotropic cylindrical shells under the action of outer pressure, torsion and simultaneous action of torsion and normal pressure. Stability is studied on the basis of more complete equations than those esta-

Card 4/6

Strength of Cylindrical Shells (Cont.)

SOV/2276

published by Kh.M. Mushtari in his theory of thin shells (1938). The established formulas provide a method for determining critical stresses under simultaneous torsion and normal pressure.

Nikulin, M.V. Influence of Axial Stresses on the Frequency of Natural Vibrations of Cylindrical Shells 131

The author is concerned with natural vibrations of near-cylindrical shells, due to the dynamic action of an unbalanced rotor or to gas-dynamic impulses. In both cases the determination of natural vibrations of the system is important. The influence of axial stresses on the vibration frequency is considered, generally speaking, as independent of pressure. Formulas and graphical representations are given.

Nikulin, M.V. Natural Vibrations of Cylindrical Shells Prestressed by Torsional Moments 146

This article is a continuation of the preceding article. The author reduces three differential equations of vibration to one differential equation of radial displacement. Thus an

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Strength of Cylindrical Shells (Cont.)

SOV/2276

algebraic equation of the third order is obtained for determining of the square of the frequency without solving the third order. The boundary conditions are considered in detail.

AVAILABLE: Library of Congress

Card 6/6

IS/bg  
10-8-59

L 12880-66 EWT(d)/EWT(w)/EWP(w)/EWP(v)/EWP(k)/EWA(h)/ETC(m) IJP(c) NW/EM  
ACC NR: ATG001261 SOURCE CODE: UR/0000/65/000/000/0036/0051

AUTHOR: Zakharova, A. P.

ORG: none

TITLE: Designing for flexure a cantilever cylindrical shell reinforced by an elastic ring

SOURCE: Prochnost' i dinamika aviatsionnykh dvigateley (Durability and dynamics of aircraft engines); sbornik statey, no. 2, Moscow, Izd-vo "Mashinostroyeniye," 1965, 36-51

TOPIC TAGS: thin shell, cylindrical shell, cantilever cylindrical shell, shell flexure, shell bending, stiffened shell, reinforced shell, ring reinforced cylindrical shell

ABSTRACT: The flexure of a cantilever thin-walled hollow cylinder fixed at one end and reinforced at the free end by an elastic ring is analyzed. This shell-ring system is acted upon by lateral forces uniformly distributed along the axis of the middle surface of the ring. The deformations of the shell and of the ring are analyzed separately, applying to the latter the theory of thin curvilinear bars. The constants contained in the solution are determined from boundary conditions of the shell at the fixed end, and of its junction with the stiffening ring. The latter boundary conditions are based on the joint deformation at the end of a plain shell

Card 1/2

UDC: 539.384:62-215.001.24

L 12880-66

ACC NR: AT6001261

and of the ring, assuming a rigid connection between them and relating their deformations to their middle surfaces. The expressions for determining the constants contain rigidity parameters which account for the effects of the flexure, torsion, and tension exerted by the external load; by equating some of these parameters either to zero or to infinity, one can obtain the constants either for a plain cantilever shell or a shell reinforced by a perfectly rigid ring. The distribution of forces, moments, and deflections along the axis of the shell was calculated for plain and ring-reinforced cantilever cylindrical shells with various nondimensional geometric parameters and the results are plotted in diagrams showing the effect of rigidity of the reinforcing ring on the longitudinal distribution of these quantities. Orig. art. has: 7 figures and 29 formulas. [VK]

SUB CODE: 20/ SUBM DATE: 17Jul65/ ORIG REF: 003/ ATD PRESS: 4/83

Card

2/2

HW

MINSKER, K.S.; CHERNOVSKAYA, R.P.; ZAKHAROVA, A.S.

Kinetics and mechanism of propylene polymerization in the presence of styrene on the  $\alpha$ -TiCl<sub>3</sub> + AlR<sub>3</sub> system. Vysokom.soed. 5 no.11:1627-1631 N '63. (MIRA 17:1)

1. Nauchno-issledovatel'skiy institut khimii pri Gor'kovskom gosudarstvennom universitete imeni N.I.Lobachevskogo.



(A) L 12915-66 EWT(m)/T DJ

ACC NR: AP6000960

SOURCE CODE: UR/0286/65/000/022/0042/0043

AUTHORS: <sup>44</sup>Rapoport, I. B.; <sup>44</sup>Moshkin, P. A.; <sup>44</sup>Belizar'yeva, N. I.; <sup>44</sup>Ivanova, Ye. A.;  
Zakharova, A. S.

ORG: none <sup>44</sup>

41  
B

TITLE: A method for obtaining synthetic lubricating oils. <sup>44</sup> Class 23, No. 176350

SOURCE: Byulleten' izobreteniy i tovarnykh znaker, no. 22, 1965, 42-43

TOPIC TAGS: lubricant, ester, carbon, synthetic material

ABSTRACT: This Author Certificate presents a method for obtaining synthetic lubricating oils representing esters of two-base acids. A mixture of two-base acids with the number of carbon atoms exceeding 11 is used as the two-base acids. The carbon atoms are obtained from the C<sub>17</sub>-C<sub>20</sub> fraction of synthetic fatty acids.

SUB CODE: 11/ SUBM DATE: 08Feb64

Card 1/1

HW

UDC: 665.582

GOL'DBERG, V.V.; ZAKHAROVA, A.T. (Riga)

Report on the activities of the Latvian Urological Society in 1958.  
Urologia 24 no.4:78 J1-Ag '59. (MIRA 12:12)  
(LATVIA--UROLOGICAL SOCIETIES)

**ZAKHAROVA, A. V.**      PROCESSES AND PROPERTIES INDEX      150 AND 17th CATEGORIES

*ca*      *11F*

Age modification of the amino acid content of muscle proteins. A. V. Zakharova. *Bull. Egypt. Biol. Med.* 17, No. 1/2, 53-6(1944).—Cystine and tryptophan content did not show any age variation in rat muscle protein matter (specimens up to 2.5 yrs. of age). G. M. K.

ASB-SEA METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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ZAKHAROVA, A. V.

ca

11F

Action of diisopropyl fluorophosphate on glycolysis in muscle tissue. A. V. Zakharova and V. I. Rozenhart. *Biochimiya* 14, 67-9 (1949); cf. Webb, C.A. 42, 4624i.

Incubation of rabbit muscle with diisopropyl fluorophosphate (DFP) leads to a decrease in lactic acid formation. Even in a concn. of 0.001 M/l., DFP lowers the glycolytic activity of the tissue to 20-40% of the normal value. NaF in 0.001 M soln. also powerfully retards glycolysis. But the action of DFP is not due to the formation of inorg. F by hydrolysis. NaF completely checks the formation of lactic acid from hexose diphosphate added to tissue, whereas DFP is without effect. As is known, the glycolytic process stops at the stage of 2-phosphoglyceric acid when NaF is present. Since hexose diphosphate is a much earlier intermediate, it cannot serve as a source of lactic acid in the presence of NaF. But DFP does not prevent the transformation of hexose diphosphate into lactic acid, and hence is without effect on all the later stages of the glycolytic process. The retarding action of DFP on glycolysis is concd. on the initial stages leading up to the formation of hexose diphosphate.

H. Priestley

Lab. Biochem., A-U Sanitary & Chem. Inst., Leningrad

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
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ZAKHAROVA, A. V., ROMANCHUK, L. A., RUBINA, KH. M., GEFTER, YU. M.,  
and DORBRINSKAYA, M. A. (USSR)

"The Changes in Tissue Metabolism during Hypoxia and Therapeutic  
Effects."

Report presented at the 5th International Biochemistry Congress,  
Moscow, 10-16 Aug 1961

ZAKHAROVA, A.V.; TYURLIKOVA, I.P.

Reparative regeneration of the skeletal muscle tissue during the administration of ascorbic acid and vitamin P preparations. Arkh. anat., gist. i embr. 46 no.4369-74 Ap '64.

(MIRA 18:5)

1. Kafedra biokhimi (zav. - prof. Yu.M.Gafter) i kafedra obshchey biologii (zav. - prof. G.M.Litver) 1-go Leningradskogo meditsinskogo instituta imeni akademika Pavlova. Adres avtorov: Leningrad, ul. I'va Tolstogo, 6/8; kafedra obshchey biologii i kafedra biokhimi I Leningradskogo meditsinskogo instituta imeni akademika Pavlova.

KORYAKIN, V.I.; SOKOLOVA, A.I.; Primali uchastiye; VODOLAZOV, P.N;  
Zabolotskiy, M.V.; ZAKHAROVA, A.V.; KLINSKIKH, Ye.V.

Dry distillation of wood as a potential source of furfural.  
Gidroliz.i lesokhim.prom. 13 no.5:3-6 '60. (MIRA 13:7)

1. Tsentral'nyy nauchno-issledovatel'skiy lesokhimicheskoiy institut.  
(Furaldehyde) (Wood distillation)

ZAKHAROVA, A.V.

Effect of vitamins on glycolysis in muscle homogenates. Vop.med.  
khim. 4:237-241 '52. (MIRA 11:4)

1. Kafedra biokhimii I Leningradskogo meditsinskogo instituta  
im. I.P.Pavlova.  
(VITAMINS) (GLYCOLYSIS) (MUSCLE)



TYURLIKOVA, L.P. (Leningrad, Mokhovaya ul., 30 kv. 22); ZAKHARCVA, A.V.

Some features of posttraumatic muscle tissue under the administration of adenosine-triphosphoric acid. Arkh.anat.gist.i embr. 39 no.9:53-58 S '60. (MIRA14:1)

1. Kafedra biologii (zav. - prof. G.M. Litver) i kafedra biokhimii (zav. - prof. Yu.M. Geft'er) I Leningradskogo meditsinskogo instituta imeni akademika I.P. Pavlova. (MUSCLES) (REGENERATION (BIOLOGY))

ZAKHAROVA, A.V.; TYURLIKOVA, L.P.; TKACHENKO, A.V.

Content of nucleic acids, ascorbic acid and some phosphorus  
compounds in guinea pigs during the reparative regeneration  
of skeletal muscles. Vop. med. khim. 7 no.6:608-614 N-D '61.  
(MIRA 15:3)

1. Chairs of Biology and Biochemistry, "Academician I.P.  
Pavlov" First Medical Institute, Leningrad.

(MUSCLE)  
(ASCORBIC ACID)

(NUCLEIC ACIDS)  
(PHOSPHORUS COMPOUNDS)

MURIN, A.N.; LEVSKIY, L.K.; ZAKHAROVA, A.Ye.

Production of stable isotopes of krypton and xenon by irradiation  
of aluminum halides in a reactor. Atom. energ. 19 no.5:458-459  
N 165. (MIRA 18:12)

FEDOSYUK, L.G.; STARKOV, S.P.; ZAKHAROVA, D.K.; BATURINA, Ye.N.

Sec. pentylphenols. Met. poluch. khim. reak. i prepar.  
no.6:89-91 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i ~~osob~~o chistykh khimicheskikh veshchestv, Donetskiiy filial.

STARKOV, S.P.; FEDOSYUK, L.G.; ZAKHAROVA, D.K.; BATURINA, Ye.N.

Ion exchange resins as catalysts in organic synthesis. Part 1:  
Alkylation of phenol with a mixture of n-amylenes in the presence  
of the cation exchanger KU-2. Zhur.ob.khim. 33 no.7:2237-2238  
Jl '63. (MIRA 16:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh  
reaktivov i osobo chistykh khimicheskikh veshchestv, Donetskiiy  
filial.

(Phenols) (Alkylation) (Ion exchange resins)

ЗАХАРОВА, Б. П.

VOLFYANSKIY, I.M.; GORSHEKOV, A.A., doktor tekhnicheskikh nauk, retsenzent;  
ZHAROV, N.T., doktor tekhnicheskikh nauk, retsenzent: ZAKHAROVA, B.P.  
inzhener, redaktor; DUGINA, I.A., tekhnicheskiiy redaktor

[Casting iron in metallic molds] Zhugunnoe lit'e v metallicheskie formy. Pod red. B.P.Zakharova. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1954. 52 p. (Nauchno-populiarnaya biblioteka rabochego-liteishchika, no.8) [Microfilm] (MLRA 8:2)  
(Iron founding)

RESHETNIKOVA, L.P.; NOVOSELOVA, A.V.; ZAKHAROVA, B.S.

Solubility of  $(\text{NH}_4)_2 \text{BaF}_2$  in solutions of propyl and butyl  
alcohols. Vest. Msk. un. Ser. 2 Khim. 19 no.2:30-32 Mr-Ap'64  
(MIRA 17:6)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.

L 28709-65 EWT(m)/T/EWP(t)/EWP(t) IJP(c) JD

ACCESSION NR: AT5004079

S/3127/63/000/05-/0102/0104

AUTHOR: Katayev, G. A.; Zakharovs, E. A.; Oleynik, L. I.

TITLE: Determination of microimpurities of copper and lead in arsenic and gallium arsenide

SOURCE: USSR. Gosudarstvennyy komitet po khimii. Metody analiza khimicheskikh reaktivov i reparatorov. no. 5/5. 1963. Poliarograficheskoye opredeleniye ul'tramikrop-  
mestnykh impuretsiy v tverdykh elektrodakh ili tverdykh elektrodakh s  
polseduyushchim rastvoreniyem (Polarographic determination of ultramicroimpurities  
with their accumulation on stationary mercury or solid electrodes and subsequent  
dissolution), 102-104

TOPIC TAGS: copper determination, lead determination, arsenic analysis, gallium arsenide, polarography

ABSTRACT: The article describes methods for analyzing arsenic and gallium arsenide of high purity. Since As (V) and Ga (III) are not reduced on a mercury drop in alkaline media, the authors used salts of arsenic acid obtained after dissolving arsenic samples in concentrated nitric and hydrochloric acid and neutralizing the solution obtained with alkali. With potassium biarsenate as the supporting electrolyte, copper and lead give

Card 1/2



L 28709-65

ACCESSION NR: AT5004078

distinct polarographic troughs. Two copper troughs and a lead trough were obtained in the analysis of gallium arsenide (with  $K_3AsO_4 + GaAsO_4$  as the base electrolyte). It was found that an increase in the pH of the solution causes a shift in the potentials of the peaks to the more negative region. The dependence of the trough depth of copper and lead on their concentration was linear (in the investigated range of  $1 \times 10^{-7}$  to  $5 \times 10^{-6}$  M). The apparatus and procedure employed are described. In the analysis of lead, the maximum sensitivity of the method was  $2 \times 10^{-9}\%$  for lead and  $3 \times 10^{-9}\%$  for copper. In the analysis of gallium arsenide, the sensitivity was  $1.4 \times 10^{-8}\%$  for lead and  $1.2 \times 10^{-8}\%$  for copper. The results of the analysis agreed satisfactorily with those obtained by a spectral method. Orig. art. has: 2 figures.

ASSOCIATION: TPI

SUBMITTED: 00Jul62

ENCL: 00

SUB CODE: IC

NO REF SOV: 003

OTHER: 002

Card 2/2

L 34115-66 EWT(m)/EWP(j)/T WW/WW/WE/RM  
ACC NR: AP6008837

SOURCE CODE: UR/0294/66/004/001/0147/0148

34  
B

AUTHOR: Golovin, V. S.; Kol'chugin, B. A.; Zakharova, E. A.

ORG: Power Institute im. G. M. Krzizhanovskiy (Energeticheskiy institut)

TITLE: Measurement of the rate of growth of vapor bubbles during the boiling of various liquids

SOURCE: Teplofizika vysokikh temperatur, v. 4; no. 1, 1966, 147-148

TOPIC TAGS: boiling benzene, ethyl alcohol, water, vaporization, gas bubble

ABSTRACT: The authors obtained data on the rate of growth of vapor bubbles on the heat-transfer surface during the boiling of benzene, ethyl alcohol, and water for different thermal loads and saturation pressures in an experimental set-up described elsewhere (D. A. Labuntsov, B. A. Kol'chugin, V. S. Golovin, E. A. Zakharova, L. N. Vladimirova. Teplofizika vysokikh temperatur, 2, No. 3, 446, 1964). The experiments were performed with strips of silver and nickel-plated copper, using the methods of the earlier work. The results of the primary processing of motion picture data showed that, for all the cases investigated, the relationship  $R \sim \tau^{1/2}$  (where R is the vapor bubble radius,  $\tau$  is the time of its growth on the boiling surface) is revealed quite distinctly. This made it possible to calculate the values  $R/\tau$ , which are tabulated for various liquids and mode parameters. These data, together with the results of the earlier work, obtained during the boiling of water on a silver strip are shown in a diagram. The new data confirm the fundamental conclusions of the earlier work. Orig. art. has: 1 figure, 1 table, and 1 formula.

UDC 536.423.1

Card 1/2

L 34115-66

ACC NR: AP6008837

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SUB CODE: 07 / SUBM DATE: 19May65 / ORIG REF: 001

Card

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*pls*

L 31310-65 EXT(m)/EWA(d)/EWP(t)/ENE(b) IJP(c) JD/WB  
ACCESSION NR: AR5003885 S/0081/64/000/018/G017/G017

SOURCE: Ref. zh. Khimiya, Abs. 18G125

AUTHOR: Katayev, G. A.; Zakharova, E. A.; Oleynik, L. I.

TITLE: Amalgam polarographic method for the determination of trace impurities in arsenic and gallium arsenide

CITED SOURCE: Tr. Tomskogo un-ta, v. 157, 1963, 261-264

TOPIC TAGS: polarographic analysis, electrolysis, chemical analysis, arsenic, gallium arsenide

TRANSLATION: The amalgam polarographic method using pre-concentration into a mercury drop, produced by electrolysis of  $Hg_2(NO_3)_2$  on Pt wire (30 ml, 90 sec), was used for determining Cu and Pb trace impurities in arsenic and gallium arsenide. 0.5 g of As was ground in an agate mortar, placed into a 25 ml quartz beaker, 5 ml of concentrated  $HNO_3$  were added and the contents were heated in an air bath (115° C) to complete dissolution of As and evaporation of the excess acid. To the dry residue 0.74 g of KOH and 10 ml of water were added. After dissolution the contents were transferred into an electrolyzer, the beaker was flushed (total volume of

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ACCESSION NR: AR50G3885

solution ~ 20 ml) and preliminary electrolysis was conducted for 30 min at -1.0 v (with respect to SCE) and 30 sec after turning off the stirrer the dissolution curve of the amalgam was taken up to +0.4 v. After this the Hg drop is changed and determination of Pb and Cu is conducted by the standard addition method. For Pb  $E_{1/2}$  is -0.39v and for Cu it is +0.03 v. The analysis requires 3 hours and the error is 15-20%. The smallest concentration of Pb determined is  $3 \cdot 10^{-8}$  mole/l ( $2 \cdot 10^{-5}$  %) and of Cu  $3 \cdot 10^{-8}$  mole/l ( $3 \cdot 10^{-6}$  %). Equal amounts of Fe, Zn, Bi and Cd do not interfere. It changes the shape of the Pb peak. During analysis of arsenide,  $2 \cdot 10^{-5}$  g of arsenide is added to the solution. After removal of excess acid, 2.5 ml of 2N KOH are added along with 20 ml of water and the analysis are carried out as before.  $E_{1/2}$  is -0.16 and 0.27 v for Cu and -0.69 v for Pb. The minimum concentration of Pb which was determined is  $6 \cdot 10^{-8}$  mole/l ( $1.5 \cdot 10^{-5}$  %), and of Pb -  $2 \cdot 10^{-8}$  mole/l. Fe, Zn, Bi, Cd and Sn do not interfere with determination of Pb as do large amounts of ...

Card 2/2

LABUNTSOV, D.A., doktor tekhn. nauk; KOL'CHUGIN, B.A., inzh.; ZAKHAROVA,  
E.A., inzh.

Local vapor contents in the surface boiling of an underheated liquid  
in channels. Teploenergetika 12 no.4:73-76 Ap '65. (MIRA 18:5)

S/0294/64/002/003/0446/0453

ACCESSION NR: AP4042471

AUTHORS: Labuntsov, D. A.; Kol'chugin, B. A.; Golovin, V. S.; Zakharova, E. A. Vladimirova, L. N.

TITLE: The study of bubble growth during boiling of saturated water under wide pressure range by means of high speed motion pictures

SOURCE: Teplofizika vy'sokikh temperatur, v. 2, no. 3, 1964, 446-453

TOPIC TAGS: vapor bubble, boiling water, motion picture, wetting angle, water saturation pressure, motion picture camera SKS IM

ABSTRACT: The growth of vapor bubbles from boiling water in a pressure range 1 to 100 bars and 40 to 150 kvolt/m<sup>2</sup> heat supply was studied by high-speed motion pictures. The light source was a SVDSh-1000 mercury lamp and the SKS-IM camera was a 1000-to-4000 frame/second instrument. Analysis of bubble growth rate shows a functional dependence between bubble radius R and time  $\tau$   $R/\sqrt{\tau} = \sqrt{2\beta N}$ ,

where  $\beta$  - numerical coefficient

$$\beta = 2 \left( \cos \frac{\theta}{2} \right) \ln \frac{\Delta}{\gamma_A} \left[ (1 + \cos \theta)^2 (2 - \cos \theta) \right]^{-1/2}$$

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ACCESSION NR: AP4042471

and  $N = c \rho \Delta T / r \rho''$  (nondimensional parameter). The experiments were performed in two steps; first, from 1-30 bars, and second, 1-100 bars. Under given conditions of pressure and heat-flow rate, the average growth rate for the bubble

followed the rule  $R \sim \tau^{\frac{1}{2}}$ , decreasing sharply by increasing the pressure. In general, the results showed excellent agreement with the theoretical prediction above, with a mean value for  $\beta = 6$ . The wetting contact angle  $\phi$  was also investigated experimentally as a function of the water saturation pressure. The results show a minimum value for  $\phi = 30^\circ$  under a saturation pressure of 15 bars. Orig. art. has: 7 formulas, 3 figures, and 1 table.

ASSOCIATION: Energeticheskiy institut im. G. M. Krzhizhanovskogo (Institute of Heat Power)

SUBMITTED: 01Feb64

ENCL: 00

SUB CODE: ME,TD

NO REF SOV: 007

OTHER: 017

Card 2/2



SHUL'MAN, S.S.; BERENIUS, Yu.N.; ZAKHAROVA, E.A.

Parasites of local schools of some fishes in Lake Syanozero.  
Trudy Kar.fil.AN SSSR no.1447-71 '59. (MIRA 15:12)  
(Syanozero, Lake—Parasites—Fishes)

STROMBERG, A.G.; ZAKHAROVA, E.A.

Polarography with accumulation on stationary electrodes (review).  
Zav.lab. 30 no.3:261-267 '64. (MIRA 17:4)

KATAYEV, G.A.; ZAKHAROVA, E.A.

Determination of ultramicroimpurities of copper and lead in high-purity arsenic by the method of amalgam polarography on a stationary mercury drop. Zav.lab. 29 no.5:524-526 '63.  
(MIRA 16:5)

1. Tomskiy gosudarstvennyy universitet.  
(Copper—Analysis) (Lead—Analysis) (Arsenic—Analysis)

L 11411-63

EWP(q)/EWT(m)/BDS

S/032/63/029/005/003/022

AFFTC/ASD

JD

AUTHOR:

Katayev, G.A. and Zakharova, E.A.

55  
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TITLE:

The determination of ultramicroquantities of copper and lead impurities in high-purity arsenic utilizing amalgam polarography on a stationary mercury drop

PERIODICAL:

Zavodskaya laboratoriya, v. 29, no. 5, 1963, 524-526

TEXT:

The method described was worked out to determine ultramicroquantities of impurities in high-purity arsenic used in some semiconductors. The base electrolyte was 0.07M solution of acid calcium arsenate. The analysis took about 3 hours. The mean error was 15-20%. The maximum sensitivity of determination is  $2 \times 10^{-5}\%$  Pb and  $8 \times 10^{-6}\%$  Cu. There are 2 tables and 3 figures.

ASSOCIATION:

Tomskiy gosudarstvennyy universitet (Tomsk State University)

Im/

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Card 1/1

KATAYEV, G.A.; ZAKHAROVA, E.A.; OLEYNIK, L.I.

Determination of copper and lead microimpurities in arsenic and gallium arsenide. Metod. anal. khim. reak. i prepar. no.5/6:102-104 '63. (MIRA 17:9)

1. Tomskiy politekhnicheskii institut.

STROMBERG, A.G.; ZAKHAROVA, E.A.

Diffusion coefficients of metals in mercury. Part 1: New method  
for determining diffusion coefficients from the decay with time  
of the anodic limiting current on a hanging mercury drop.  
Elektrokhimiya 1 no.9:1036-1043 3 '65. (MIRA 18330)

1. Tomskiy politekhnicheskii institut i Tomskiy gosudarstvennyy  
universitet.

L 07559-67 EWT(1) IJP(c) JGS/WW/GD

ACC NR: AT6029317

SOURCE CODE: UR/0000/66/000/000/0156/0166

AUTHOR: Labunstov, D. A.; Kol'chugin, B. A.; Golovin, V. S.; Zakharova, Z. A.;  
Vladimirova, L. N.

ORG: none

69

B+1

TITLE: Investigation of the mechanism of the nucleate boiling of water using high speed moving picture photography 10

SOURCE: Moscow. Energeticheskiy institut. Teploobmen v elementakh energeticheskikh ustanovok (Heat exchange in power installation units). Moscow, Izd-vo Nauka, 1966, 156-166

TOPIC TAGS: nucleate boiling, high speed photography, heat transfer coefficient

ABSTRACT: The experiments were carried out on a Z-shaped silver plate. The specific heat loads in the experiments varied from  $40 \times 10^3$  to  $150 \times 10^3$  watts/m<sup>2</sup>, and the pressure from 1 to 100 bars. The article describes the results of an investigation of the following characteristics of the boiling mechanism: the magnitudes of the bubble densities on the heating surfaces, the values of the breakaway diameters, the macroscopic boundary angles, and the average frequency and rate of growth of the bubbles on the boiling surface. The experimental apparatus consisted of a vertical cylindrical vessel with a removable cover and a condenser. The experimental section

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was a 99.99% silver plate bent at a right angle, having a thickness of 0.2 mm and a width of 2 mm, and placed on its wide edge. The load on the plate was created by a low voltage direct current. Before the experiments, the surface was given a special preparatory treatment, after which it had a cleanness of Class 8b, GOST 2789-51. The working fluid was distilled water with a salt content of 0.2-0.5 grams/m<sup>3</sup>. Two series of experiments were made; one on freshly prepared surfaces and the other on surfaces which had been used. The experimental heat transfer data are shown in a table. The following conclusions were drawn: 1) the values of the heat transfer coefficients for surfaces which had been used were lower than those for freshly prepared surfaces; 2) there was observed a sharp decrease in the breakaway diameter with an increase in pressure; 3) the rate of growth of the bubbles slowed down sharply with an increase in pressure; 4) the average macroscopic boundary angles changed only slightly with an increase in pressure. Orig. art. has: 17 formulas, 11 figures and 1 table.

SUB CODE: 20/ *14/* SJEM DATE: 05Apr66/ ORIG REF: 010/ OTH REF: 013

Card 2/2 nst



SOV/78-3-12-11/36

AUTHORS: Essen, L. N., Zakharova, F. A., Gal'man, A. D.

TITLE: Concerning the Synthesis of Isomers With Six Different Addenda  
(K sintezu izomerov s shest'yu razlichnymi zamestitelyami)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 12,  
pp 2654-2661 (USSR)

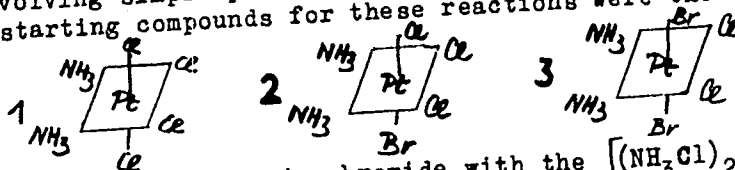
ABSTRACT:  $[\text{PyNH}_3\text{BrNO}_2\text{ClJPt}]$  and  $[\text{PyClNH}_3\text{NO}_2\text{BrJPt}]$ , two geometric isomers with six different addenda, were synthesized. The starting material for the synthesis of the trans isomers was  $[\text{PyNH}_3\text{BrNO}_2\text{Pt}]$ , containing divalent platinum. The compound was first treated with  $\text{NaNO}_2$ , then with chlorine, and finally converted to the trans form  $[\text{PyNH}_3\text{BrNO}_2\text{ClJPt}]$  by treating with potassium iodide. This product has a dark green color, and has a solubility in water of 0.05 grams per 100 grams solution. A decomposition with the generation of iodine takes place at  $200^\circ$  when it is heated in open capillary tubes. The synthesis of the cis isomer  $[\text{PyClNH}_3\text{NO}_2\text{BrJPt}]$  was carried out using the salt

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Concerning the Synthesis of Isomers With Six Different Addenda

$K[PtPyCl_3]$ . At 40-60°C in aqueous solution the  $NO_2$  group containing an equivalent amount of sodium nitrite was added to the salt. The compound was then oxidized with bromine and the produced salt converted to the cis isomer with six addenda by reaction with potassium iodide. The cis isomer is a fine crystalline powder with a dark brown color, and melts without decomposition at 200°C. It has a solubility in water at 25° of 0.095 grams per 100 grams solution. The syntheses of isomers with two, three, and eight addenda were not successful, because the addition of the  $NO_2$  group to the tetravalent platinum compound is extremely complicated. A few exchange reactions involving simple platinum (IV) compounds were carried out. The starting compounds for these reactions were the following:



By reacting potassium bromide with the  $[(NH_3Cl)_2Cl_2Pt]$  salt in the ratio 1:1 the displacement of one chlorine in the co-

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ordinates Cl-Pt-Cl takes place. By reacting 2 moles of KBr with one mole of  $[(\text{NH}_3\text{Cl})_2\text{Cl}_2\text{Pt}]$  an exchange of the two chlorine atoms with bromine takes place under development of  $[(\text{NH}_3\text{Cl})_2\text{Br}_2\text{Pt}]$ . The bromine ion in the coordinates Br-Pt-Br could not be displaced by reaction with KCl. The experimental results show that chlorine and bromine have different coordination affinities in the inner spheres of tetravalent platinum compounds. An exchange of chlorine and bromine with the  $\text{NO}_2$  group in the coordinates Br-Pt-Br, Br-Pt-Cl, and Cl-Pt-Cl did not occur. The course of the exchange reactions in the inner spheres of tetravalent platinum compounds is dependent upon the various coordination mobilities of the addenda. There are 11 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

Card 3/4 :

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Concerning the Synthesis of Isomers With Six Different Addenda

SUBMITTED: August 5, 1957

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