

SWT(1)/EWA(4)/EWA(b)-2 JK
AP5012389

UR/0016/64/000/012/0026/0029

15
B

Yegorova, L. S.; Korsh, P. V.; Havdonikas, O. V.; Fedorova, T. N.

epizootic of tularemia and Omsk hemorrhagic fever in muskrats in

mikrobiologii, epidemiologii i immunobiologii, no. 12, 1964, 26-28

bacterial disease, virus disease, disease incidence

Mixed epizootic of tularemia and Omsk hemorrhagic fever broke out
of the fall and winter of 1960-1961 in Omsk (Izhevskiy, Bar-
anovskiy, Karpat'skiy, and Chanovskiy Rayons), and Kurgan (Kokorousovskiy Rayon);
an epizootic among muskrats may threaten muskrats being reared
out with Omsk hemorrhagic fever. (See attached tables.)

Omskiy institut prorochno-chagovykh infektsiy Ministerstva
Omsk Institute of Natural-Focus Infections, Ministry

SUBMITTED: 03Jun63

ENCL: 00

SUB CODE: LS

MC REF SQV: 005

OTHER: 000

JPRS

Card 1/2

KORSH, V B. task.

Determining operational engineering indices for automatic control in classification hump yards. Vest. TSNII MPS 17 no.6:9-14 S '58. (MIRA 11:11)
(Railroads--Automatic train control)
(Railroads--Hump yards)

KORSH, V.B., insh.

Basic operational and technical requirements for small
car retarders. Vest, TSNII MPS 19 no.5:12-17 '60.
(MIRA 13:8)

(Railroads--Hump yards)

SADIKOV, P.P.; LEBEDEVA, T.P.; KORSH, V.B.; BELENOV, V.K.; PETRUNENKOV, A.Ya.;
TISHKOV, L.B.; ASHIKHIN, A.A., inzh.; retsenzent; PREDE, V.Yu.,
inzh., red.; VOROTNIKOVA, L.P., tekhn.red.

[Technological equipment of railroad stations] Tekhnicheskoe
osnashchenie stantsii. Moskva, Transzheldorizdat, 1963.
153 p.

(MIRA 16:6)

(Railroads—Stations)

(Railroads—Equipment and supplies)

KORSH, YA.

USSR/Biology, Agricultural - Plant Growth Stimulants Sep. 51

"Chemical Weeding of Grain Crops," Ya. Korsh

"Nauka i Zhizn'" Vol XVIII, No 9, pp 33,34

Large-scale expts on the agricultural application of 2,4-dichlorophenoxyacetic acid and 2-methyl-4-chlorophenoxyacetic acid were conducted in many parts of the USSR in the summer of 1950. Spraying of fields for the purpose of weeding was carried out from planes. (Docent I.I. Gunar and M.Ya. Berezovskiy, Cand Agr Sci, scientists from the Moscow Agr Acad imeni K.A. Timiryazev who were in charge of this work, received a Stalin Prize in 1951 for this work.)

213T7

PUTYATIN, M.D., kandidat tekhnicheskikh nauk; KORSH, Ya.M., redaktor;
ISLINT'YNA, P.G., tekhnicheskii redaktor.

[Experience in the operation of DT-54 diesel tractors] Opyt eksplua-
tatsii diesel'nykh traktorov DT-54. Moskva, Izd-vo "Znanie," 1953. (MLBA 6:12)
31 p. (Tractors) (Diesel engines)

KORSH, Ya.

A sixth sense. IUn. nat. no. 4:32-33 J1 '56.
(Fishes)

(MIRA 9:9)

KORSH, Ya.

Stream regulating system. Nauka i zhizn' 23 no.6:36 Ja '56.
(MLRA 9:9)

(Amu Darya Valley--Irrigation)

~~KORSH, Ya.M.~~

Steel produced from ores. Nauka i zhizn' 23 no.11:50 N '56.

(MLBA 9:11)

(Steel--Metallurgy)

KORSH, Ya.

Precious grains. Znan. sila 31 no.8:26-29 Ag '56.

(MLRA 9:10)

(Ore dressing)

KORSH, Ya.

~~_____~~
Turbodrills. Un. tekhn. 2 no. 9:46-48 § '57.
(Turbodrills)

(MIRA 10:9)

AUTHOR: Korsh, Ya.

4-58-4-10/19

TITLE: Oil From Sand (Neft' iz peska)

PERIODICAL: Znaniye - Sila, 1958, Nr 4, pp 26-27 (USSR)

ABSTRACT: The article describes the sandy hill of Kirmak near Baku which has proved to be so impregnated with raw petroleum that it can be "cracked" and refined at low cost. There are many more such hills in the neighbourhood, and around Sochi, there are thought to be many others. About 92% of the oil is extracted. The balance remains in a coke, which burns hotly and leaves a residue useful for building purposes. Inflammable gas is produced as a by-product. The article finally estimates that there are millions of tons of this black gold. There are 2 sketches.

AVAILABLE: Library of Congress

Card 1/1

KORSH, Ya.M.

The tagged silkworm. Nauka i zhizn' 25 no. 6:61-64 Ja '58.
(MIRA 11:8)

(Sericulture)

KORSH, Ya.

Blast furnace. *In*.tekh. 3 no.1:30-32 Ja '59. (MIRA 12:1)
(Blast furnaces)

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SOV/25-59-6-45/49

AUTHOR: Korsh, Ya.

TITLE: A Migrating Lake

PERIODICAL: Nauka i zhizn', 1959, Nr 6, pp 78-79 (USSR)

ABSTRACT: The Lobnor Lake situated in the Takla-Makan desert (West China) changed both its geographic position and its chemical composition. Its water has been found to be sometimes salty, sometimes potable. Professor E.M. Murzayev, Doctor of Geographic Sciences, gives the following explanation of the strange facts: The Tarim and Konche-Darya Rivers, feeding the lake, sometimes change their directions and fill other depressions having other geological contents. In 1930, the lake was 100 km long, 50 km wide and not more than 5 m deep. New irrigation networks will probably dry up the entire lake.

Card 1/1

KORSHAK, F. A.:

Geodesy, Geodeziya, Dorizdat, 1949.

TABCON, W-13807, 22 Sep 50

FEDOROV, N. V.; F. A. KOPSHAK.

Geodeziya. (Geodesy) 3. Izd Perer. I Dopol. Moskva, Dorizdat, 1952.
381 p. Tables, Diagr. s.
"Spisok Literaturny": p. 377-(378)

So: N/5
623.1
.F2
1952

STEPANOV, Nikolay Nikolayevich, professor; ~~KORSHAK, F.A.,~~ redaktor;
SOLOVYCHIK, A.A., tekhnicheskiy redaktor

[Geodesy] Geodesia. Leningrad, Gidrometeorologicheskoe izd-vo, 1954.
343 p. [Microfilm] (MIRA 8:3)
(Geodesy)

FEDOROV, Nikolay Vasil'yevich; KORSHAK, Fedor Afanas'yevich; CHVANOV, V.G.,
redaktor; KOZAN, F.L., ~~tekhnicheskij redaktor~~

[Geodesy] Geodesia. Izd. 4-oe, perer. Moskva, Nauchno-tekhn. izd-vo
avtotransp. lit-ry, 1956. 403 p. (MLA 10:1)
(Geodesy)

KORSHAK, Fedor Afanas'yevich; SERZHANOV, A.Ye., red.

[General projection with a moving pencil of rays in photogrammetry] Tsentral'noe proektirovanie dvizhushchimsia puchkom lucei v fotogrammetrii. Makhachkala, Dagestanskiy gos. univ., im. V.I.Lenina, 1962. 233 p. (MIRA 18:4)

KOVAL', N.M., nauchnyy sotr., kand. sel'khoz. nauk; GERMAN, Ya.B., starshiy nauchnyy sotr.; BIRYUKOV, Yu.V., starshiy nauchnyy sotr.; MART'YANOVA, O.A., starshiy nauchnyy sotr.; SHASHKOV, I.G., nauchnyy rabotnik; KORSHAK, I.T.; BROZHEYT, M.F.; KUKHARCHUK, G.N.; YEFREMOV, N.V., red.; CHEREVATSKIY, S.A., tekhn. red.

[Technological charts for grape cultivation] Tekhnologicheskie karty po vozdeleyvaniu vinograda. Kiev, Gos.izd-vo sel'khoz. lit-ry USSR, 1961. 141 p. (MIRA 15:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya im. Tairova (for Koval', German, Biryukov, Mart'yanova). 2. Zakarpatskaya opytnaya stantsiya (for Shashkov). 3. Ministerstvo sel'skogo khozyaystva USSR (for Korshak, Brozheyt, Kucharchuk).

(Ukraine--Viticulture)

L 14133-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/GG

ACC NR: AP6000875

SOURCE CODE: UR/0181/65/007/012/3655/3657 66

AUTHORS: Galavanov, V. V.; Goryunova, N. A.; Korshak, N. M.;
Mamayev, S.; Nazarov, A.

ORG: Physicotechnical Institute im. A. F. Ioffe AN SSSR, Leningrad
(Fiziko-tehnicheskij institut AN SSSR)

TITLE: Some properties of ^{21, 43, 55}p-CdSnAs₂

SOURCE: Fizika tverdogo tela, v. 7, no. 12, 1965, 3655-3657

TOPIC TAGS: cadmium compound, arsenic compound, tin compound,
single crystal, electric conductivity, Hall coefficient, thermo-
electric power, temperature dependence

ABSTRACT: Although the properties of n-type CdSnAs₂ have been described in the literature, there is no published ^{27 57-2 21} information on the p-type compound. The authors have produced by single crystals of p-type CdSnAs₂ zone melting and measured the temperature dependence of the specific electric conductivity σ , the Hall coefficient R, and

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ACC NR: AP7006211

(A)

SOURCE CODE: UR/0363/67/003/001/0180/0181

AUTHOR: Goryunova, N. A.; Borshchevskiy, A. S.; Venkrbets, Ya. Ya.; Korshak, N. M.ORG: Physicotechnical Institute im. A. F. Ioffe, Academy of Sciences, SSSR (Fiziko-
tekhnichoskiy institut Akademii nauk SSSR); Department of Solid State Physics,
Prague Polytechnic Institute (Kafedra fiziki tverdogo tela, Prazhskiy politekhni-
cheskiy institut)TITLE: Growing of CdSnAs₂ single crystals

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 3, no. 1, 1967, 180-181

TOPIC TAGS: cadmium compound, tin compound, arsenide, single crystal growing, zone
melting

ABSTRACT: A single-crystal ingot of the semiconducting compound CdSnAs₂ was prepared by zone melting. The zone temperature was 600°C, and the gradient at the crystallization front, 20 deg/cm. After one pass of the zone at a rate of 8 mm/hr, an ingot was obtained whose first half was a single crystal, whose middle portion contained twins, and whose end was macrocrystalline and contained cracks. The mechanism of formation of cracks is explained. The ingot had an n-type conductivity. The electrical conductivity σ , carrier concentration $n = 1/eR$ and Hall mobility $U = R\sigma$, where R is the Hall coefficient, were measured at 100 and 300°K. It is shown that the chief mechanism of electron scattering in n-CdSnAs₂ with $n \geq 1 \times 10^{18} \text{ cm}^{-3}$ at

Card 1/2

UDC: 546.3-19-48-811-19+548.55

11
temperatures is scattering on impurity ions. During zone recrystallization, the
carriers are separated, as indicated by the measured mobilities of the charge
single crystals with high electron mobilities. The zone melting method is thought to be effective for growing pure CdSnAs₂
repeatedly and using a single crystal seed, the authors obtained CdSnAs₂ ingots in
which individual single crystal grains were up to 50 mm in size. The CdSnAs₂ single
crystals obtained had an electron concentration from 7×10^{16} to $5 \times 10^{18} \text{ cm}^{-3}$ at
300°K. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 20Dec65/ ORIG REF: 004/ OTH REF: 005

Card

2/2

KORSHAK, V. V.

Condensation of methylene chloride with phenols. P. P. Shorygin, I. P. Losev and V. V. Korshak. J. Applied Chem. (U.S.S.R.) 9, 1432-6 (in French 1436) (1936).- CH_2Cl_2 was condensed with PhOH in the presence of 2-10 cc, of 25% NH_3 aq. (Catalyst) in a sealed glass tube at 180° for 1 hr., yielding 3.3 g. of tar per 4.2 g. of CH_2Cl_2 of the compn. C 74.27, H 7.43, and Cl 0%, AcO no. 259, mol. wt. 192.7 Br no. 203, d. l. 159, initial m. p. 68° , relative viscosity of the 3% alc. soln. 1.137. NaOH, HCl and the "Kontakt Petrov" (petroleum sulfonic acids) were also tested as catalysts with neg. results. The condensation of 71 g. of Ph OH and 42 g. of CH_2Cl_2 in a rotatory steel autoclave at 180° under pressure up to 45 atm. for 1 hr. in the presence of 80 cc. of 25% NH_4OH yielded 50 g. of a dark brown tar (contg. no Cl) of "bakelite" type, m. $108-20^\circ$. The tar was polymerized at 160° in the presence of 10% of urotropine in 5 min. and in 3 min. with 20% of the latter, and the product of the polymerization was used in the prepn. of a plastic mass. The plastic mass, contg. polymerized tar 50 and wood dust 50%, was pressed at $150-60^\circ$ at 300 atm. to a board, which had good mech. properties and was not much affected by acid and water. Condensation of CH_2Cl_2 with a technical cresol under the same condition yielded a light brown tar m. 50° . Condensation of CH_2Cl_2 with urea yielded a light brownish product consisting mainly of biuret, and in the absence of NH_3 a white solid substance consisting of biuret and cyanuric acid. One literature and 5 patent references. A. A. Podgorny

KORSHAK, V. V.

"Condensation of Methylene Chloride with Phenols, II." by P. P. Shorygin, I. P. Losev, and V. V. Korshak. J. Applied Chem. (USSR) 10, 138-40 (in French 1140) (1937); cf. C.A. 31, 2181². - CH_2Cl_2 condenses with PhOH in the presence of aq. NH_3 at 130° on 5 hrs. heating with a mol. ratio of PhOH to CH_2Cl_2 of 1.25. NH_3 can be replaced ~~with~~ by MeNH_2 , Me_2NH or Me_3N ; hence $(\text{CH}_2)_6\text{N}_4$ is not an intermediate reaction product of the condensation. PhOH (7.1 g.) heated for 1 hr. at 180° with 4.2 g. CH_2Cl_2 gave in the presence of NH_3 , MeNH_2 , Me_2NH and Me_3N , resp., 5.83, 8.36, 5.32 and 4.16 g. of resin.

A. A. Podgorny

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CA

PROCESSES AND PROPERTIES INDEX

Action of hexachloroethane on Grignard compounds.
V. V. Korshak, *J. Gen. Chem.* (U. S. S. R.) 9, 1153-4
(1939).—EtMgBr, PhMgBr, *p*-MeC₆H₄MgBr and *o*-
C₆H₄MgBr, resp., were treated with C₂Cl₆ in ether, in
the mol. ratio 8:1 and 1:1, resp. The results were in both
cases the same, the reaction products being C₆H₆, C₆H₅,
C₆H₄, C₆H₃, Ph, *p,p'*-bitolyl, *o,o'*-binaphthyl, C₂Cl₄,
C₂H₂Cl and C₂HCl. The reaction mechanism is dis-
cussed. Gertrude Hereml

Lab., Organic Chemistry, Mendeleev Inst.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS

LETTERS

GROUPS

LETTERS

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PROCESSES AND PROPERTIES INDEX

CR

The action of sulfur monochloride on phenylacetonitrile. V. V. Korshak and A. F. Liseenko. *J. Gen. Chem.* (U. S. S. R. T. J. 1329-31(1939)).—PhCH₂CN (I) (40 g.) with 93 g. S₂Cl₂ (II), allowed to stand at room temp. for 15 days, with occasional stirring, gave a mixt. of I, PhCH₂CICN, PhCCl₂CN (III) and diphenylmalonitrile (IV), m. 150-60°. By extending the time of reaction to 3 months or by heating a mixt. of 10 g. I, 10 g. III and 18 g. II on the water bath for 20 hrs. complete conversion to IV was obtained. IV sapond. with alc. KOH gave diphenylmaleic anhydride (V), yellow, m. 153°. I (58 g.) with 135 g. II refluxed on the water bath for 40 hrs. gave 30 g. diphenyldichlorosuccinonitrile (VI), m. 190-90°, and a small amt. of IV. VI sapond. with 10% alc. KOH gave V and with KI in Me₂CO gave IV in quant. yield. An attempt to add Br and Cl to IV proved unsuccessful.

John Livak

Moscow Chemico-Technological Inst. im. D. I. Mendelejev.

METALLURGICAL LITERATURE CLASSIFICATION

GROUP #

SUBGROUP

CLASSIFICATION

SUBCLASSIFICATION

100 AND 4TH CROSS

13 AND 14 CROSS

PROCESSES AND PROPERTIES INDEX

3

3c

Preparation of higher secondary alcohols: V. V. Kargin, *J. Gen. Chem. Russ.* 1939, 9, 1670.

Reaction of Cu, Zn, Ni, and Mg in 10% solution with chloroacetylene, $\text{ClCH}_2\text{C}\equiv\text{CH}$, and chloroacetylene with chloroacetylene. $\text{ClCH}_2\text{C}\equiv\text{CH}$ reacts with Cu, Zn, Ni, and Mg to form secondary alcohols and aldehydes. The reaction is most pronounced with Cu and Zn. The products are readily soluble in chloroform, CHCl_3 , and are readily decomposed by H_2O when distilled in vac. with product.

Reaction of α -chloro- β -hydroxyaldehyde, b.p. 120-130°/10 mm, m.p. 34° (lit. 34°). F.H.R. 230°/10 mm, m.p. 34° (lit. 34°). $\text{ClCH}_2\text{C}\equiv\text{CH}$ reacts with HBr gives chloroacetylene, m.p. 70-71° (lit. 70-71°).

R. T.

Moscow Chemicotechnological Inst. im. D. I. Mendeleev.

COMMON ELEMENTS

MATERIAL INDEX

ASS-3LA METALLURGICAL LITERATURE CLASSIFICATION

RIGHTS DIVISION

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

10

ca

The action of acetylated ethylene chlorohydrins on benzene in the presence of aluminum chloride. Ya. Yu. Makarov-Zemlyanski, V. V. Korshak and S. V. Savenkov. *J. Gen. Chem. (U. S. S. R.)* 33:1-4 (1941).—When $\text{ClCH}_2\text{CH}_2\text{OAc}$ reacts with C_6H_6 and AlCl_3 , the products are bibenzyl (I) and PhCOMe . Under the same conditions, bis(2-chloroethyl) oxalate, in 132°, gives only I and tan, while $p\text{-NO}_2\text{C}_6\text{H}_4\text{COCH}_2\text{CH}_2\text{Cl}$ reacts only enough to give traces of I. H. M. Lancaster

ASAC-11A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSING AND PROPERTIES INDEX

3RD AND 4TH ORDERS

GROUPS

1ST CH AT

2ND CH AT

3RD CH AT

4TH CH AT

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11TH CH AT

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94TH CH AT

95TH CH AT

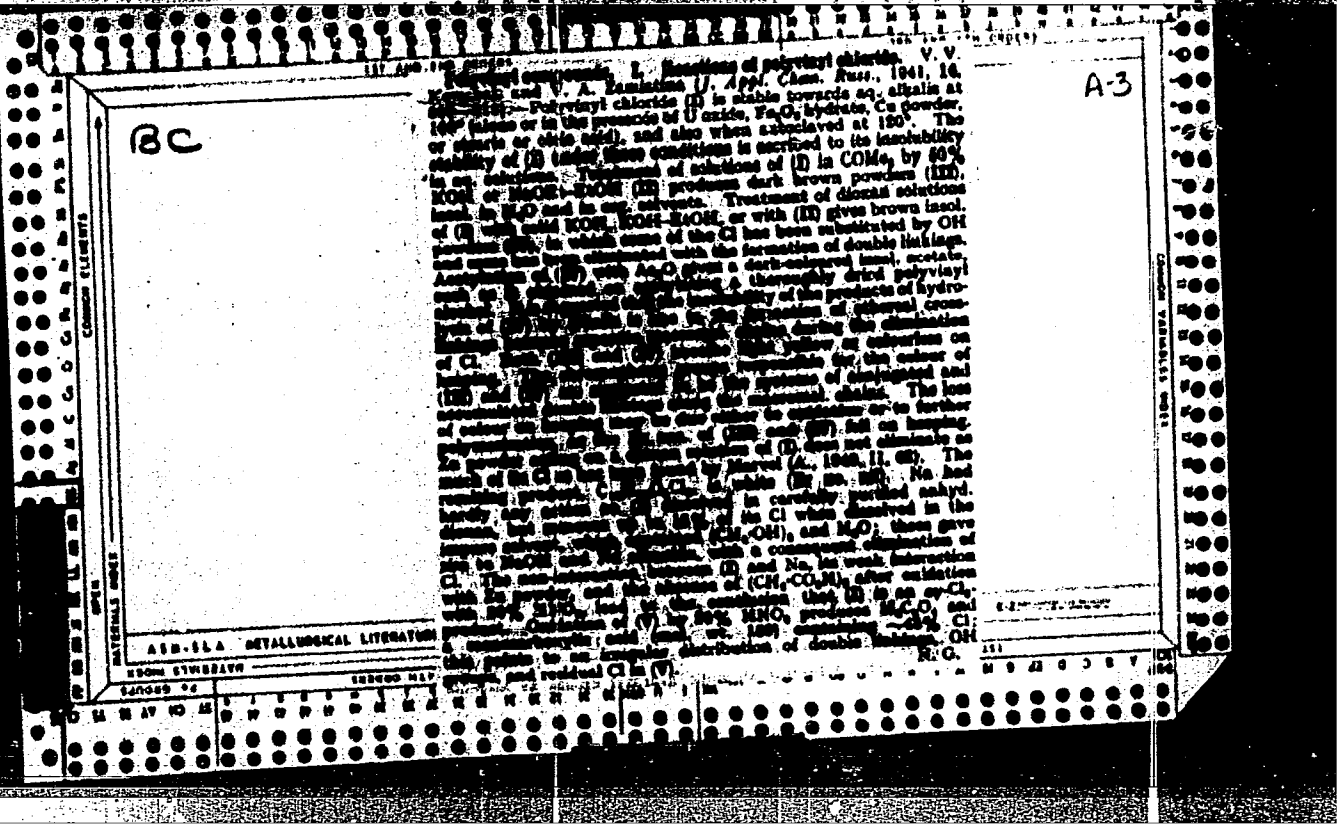
96TH CH AT

97TH CH AT

98TH CH AT

99TH CH AT

100TH CH AT



PROCESSES AND PROPERTIES INDEX

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Cy

Polycondensation reactions. IV. The viscosity of solutions of polyamides. S. R. Raikov and V. V. Kiselevskii. *Bull. Acad. Sci. U.S.S.R., Classe sci. chim.* 1944, 612 (W English summary). Solns. in *m*-cresol of the polyamides obtained by condensing $\text{NH}_2(\text{CH}_2)_n\text{NH}_2$ and $\text{HO}(\text{C}_6\text{H}_4)_m(\text{CO})_2\text{H}$ show limiting values of concn. above which the sol goes to a gel, and variations of the viscosity η_{sp}/C from linearity, which are not in accord with the values calcd. by Staudinger. The differences are most pronounced in the case of low-mol.-wt. polymers and are due to free NH_2 groups at the ends of the mols. These are easily solvated and cause assocn. into linear chains, thus raising the viscosity of the soln. Rise in temp. disrupts the chains and decreases the solvation; thus the viscosity is lowered.
H. M. Leicester

METALLURGICAL LITERATURE CLASSIFICATION

A U T W V U T S R Q P O N M L K J I H G F E D C B A

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

100 AND 100 SERIES

PROCESSES AND PROPERTIES NOTES

4-Phenyl-1,4-thiazane. V. V. Korshak and Yu. A. Strepikheev. *J. Gen. Chem.* (U.S.S.R.) 14, 312-15 (1944) (English summary).—Aniline (50 g.) and 25 cc. H₂O were treated with ethylene oxide at 70° until the theoretical wt. gain was reached; on distn. there was obtained 80% *N,N*-bis(2-hydroxyethyl)aniline, bp 200-4°, m. 55-6° (from EtOH) (picrate, m. 119-20° (from EtOH)). The above (50 g.) was treated with 60 g. PCl₅ in 100 cc. CHCl₃, heated on a steam bath until HCl evolution ceased, the solvent was removed, and the residue recrystd. from MeOH to yield 68% *N,N*-bis(2-chloroethyl)aniline, m. 30 N°. This (10 g.) in 50 cc. EtOH and 2 g. Na₂S were refluxed for 2 hrs. to yield an almost quant. amt. of 4-phenyl-1,4-thiazane, bp 160-2°, m. 32.3-3.0° (from EtOH), b₁ 140°, b₂ 185°, b₃ 190°, b₄ 184°, b₅ 190°; picrate, m. 141-2°; ZnCl₂ salt, m. 115° (from EtOH); HCl salt, m. 163°. The thiazane (5 g.) in 5 cc. 5 N HCl was treated with 2.5 g. NaNO₂ in 10 cc. H₂O to yield a cryst. 4-*p*-nitrosophenyl-1,4-thiazane-HCl; free base (by treatment with Na₂CO₃), m. 80° (from Et₂O). PhNHCH₂CH₂OH was treated with PCl₅ in CHCl₃ to yield a dark oil which rapidly deteriorated on standing; a freshly prepd. sample refluxed with Na₂S in EtOH also gave 4-phenyl-1,4-thiazane. PhNHCH₂CH₂OH (50 g.) in 100 cc. CHCl₃ was treated with 30 g. PCl₅, the soln. was washed with water and Na₂CO₃ soln., dried, and concd. to yield 1,6-diphenylpiperazine, m. 163-4° (from Et₂O); the same is obtained by heating to 140° a mixt. of 43.6 g. PhN(CH₂CH₂Cl)₂ and aniline. On the basis of the above the reported prepn. of 4-phenyl-1,4-thiazane by Helfrich and Reid (*C.A.* 14, 2480) is erroneous. G. M. Koslapoff

Moscow Order Lenin
Chemico-technological
Inst. im. D. I.
Mendeleev.

COMP. ELEMENTS

MATERIAL INDEX

AS. 1.1. METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

1000000 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

SELECT ONE OR TWO

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Friedel-Crafts reaction. I. V. V. Korshak and G. S. Kolchanikov. *J. Gen. Chem. (U.S.S.R.)* 16, 436-7(1944) (English summary).—AlBr₃ (8.16 g.) and 40 cc. benzene were treated with agitation with 2.1 g. CCl₄Br₂; the evolved gases were shown to contain 83.26 mol. % HBr and 17.74 mol. % HCl; the reaction mass was decomposed with HCl and the org. layer distd. to yield 33% EtPh. AlBr₃ (6.95 g.) was treated with cooling with 2.22 g. CCl₄Br₂ to yield a brown solid, which was then heated to 260°; the evolved gases were shown to contain 81.87 mol. % HBr and 18.23 mol. % HCl. The complex between AlBr₃ and AlCl₃ was subjected to distn., yielding a mixt. of AlBr₃ and AlCl₃ (83.68 and 16.22 mol. %, resp.). The reaction of the above complex with abs. EtOH or benzene gave, analogously, mixts. of HBr and HCl in similar ratio. The reaction mechanism apparently involves the formation of an ion of AlCl₂Br which can react through either halogen atom. O. M. Kosolapov

Chem. Tech. Inst im. Mendeleev, Moscow

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

REGION BOWLING

REGION ONE ONE 101

cc

Polycondensation reactions. I. Products of condensation of some dibasic acids with diamines. V. V. Korshak and S. R. Radkov. *J. Gen. Chem. (U.S.S.R.)* 16, 674-75 (1944) (English summary).—The polycondensation of ethylenediamine, hexamethylenediamine, and benzidine with sebacic and adipic acids was studied, as well as the reaction of the latter acid with tetramethylethylenediamine. It was shown that tetramethylethylenediamine and hexamethylenediamine form high polymers with both acids, while benzidine and ethylenediamine yield only low-mol. products. The phys. and chem. properties of the high-mol. products were studied. **II. Influence of water removal on the rate of polycondensation.** The intermediates were prepared as follows: Sebacic acid (312 g.) and 373 cc. 40% NaOH were heated for 9 hrs. at 200-70° under 180 atm. pressure; the mixt. was treated with water and the aq. layer on solidification gave 70% with water and the aq. layer on solidification gave 70% *sebacic acid*, m. 130-8° (from water). *Cyclohexanone adipic acid*, m. 130-8° (from water). *Cyclohexanone adipic acid* was slowly added to 201 g. HNO₃ (d. 1.42) and 180 g. H₂SO₄ (d. 1.84), with simultaneous addition of 123 g. concd. H₂SO₄ in the presence of 0.7 g. Cu nitrate, at 60° to yield 85% *adipic acid*, m. 140-81° (from water). *Adiponitrile* (10.8 g.) in 200 cc. dry MeOH is poured slowly on 34 g. Na, at such a rate that the Na remains molten; this is followed by 180 cc. dry MeOH, and after completion of the reaction, the cooled soln. is treated with 30 g. NaOH and steam-distd. into dil. HCl with 1 l. distillate is obtained; the soln. is concd. to dryness to

yield 62.8% *hexamethylenediamine-HCl*; mixing with 18 g. powd. KOH and insoluble distn. gives 3.8 g. *hexamethylenediamine*, b. 194-203°, while an aq. soln. 2.5 g. may be obtained by catn. of the aq. soln. with alkali and catn. with H₂O; *di-Se deris.*, m. 158-6.6°. *Adipic acid* and 5% excess *hexamethylenediamine* in aq. KOH give 84% *hexamethylenediamine adipate*, m. 190-1°; *sebacic acid*, m. 173-2.6°; *acetate*, m. 120-1°. **II. Condensation of hexamethylenediamine with adipic acid.** S. R. Radkov and V. V. Korshak. *Ibid.* 1953-60 (English summary).—The influence of duration, temp., amt. of solvents and their nature, and the rapidity and completeness of water removal were studied in the condensation of hexamethylenediamine with adipic acid. It was shown that it is sufficient to heat the salt for 8-8 hrs. at 230-40° in an equal amt. of solvent (xylenol, cresol, or phenol). The reaction also proceeds in water as well as by heating of the salt without solvent, with the formation of low-mol. products. Both low- and high-mol. products are capable of further condensation on heating in a vacuum or in a N stream. The detg. factor for the formation of high-mol. products is the degree and completeness of water removal; the reaction is reversible at temps. over 200°, with formation of low-mol. products as a result of partial hydrolysis. **III. Influence of the ratio of components on the polyamide chain growth.** S. R. Radkov, V. V. Korshak, and L. N. Piskina. *Ibid.* 1953-9.—It was shown that the presence of an excess of one of the components in adipic acid-hexamethylenediamine condensation; the excess, especially of the acid, affects the degree of polycondensation inversely proportionally. Heating of the polyamide, from equimol. amts. of ingredients, with free adipic or sebacic acids causes acidolysis with formation of low-mol. products, which no longer change on further heating, in distinction from the original polyamide. G. M. Koschepoff

AIR-SEA METALLURGICAL LITERATURE CLASSIFICATION

FROM DIVISION

SEARCHED INDEXED

FILED

KORSHAK, V. V.

"Studies of polycondensation reactions. II. On the condensation of hexamethylenediamine with adipic acid." Rafikov, S. R. and Korshak, V. V. (p. 983)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1944, Volume 11, no. 9-10.

Lab. High Molecular Compounds Inst. Organic Chemistry, AS SSSR.

ca

PROCESSES AND PROPERTIES INDEX

Mechanism of the Friedel-Crafts reaction. II. V. V. Kuzhok and G. S. Kolesnikov (Moscow Chem. Tech. Inst. Mendeleeva). *J. Gen. Chem.* (U.S.S.R.) 14, 1003-5 (1944) (English summary); cf. *C.A.* 39, 4595. It was shown that in mixts. of $AlBr_3$ with cyclohexyl chloride, the halogen bound with Al, as detd. by hydrolysis, consists of 89.82% Br and 10.18% Cl. Detns. of HCl and HBr in the off-gases from the reaction of benzene halogen derivs. in the presence of a different halide of Al showed the presence of both gases. Thus, with $AlBr_3$ catalyst the following compds. gave the gas compn. as listed below: $NaCl$ 31.65%; HCl , 68.35%; HBr ; $PhCl_2Cl$ 25.07% and 74.93%; cyclohexyl chloride 24.07% and 75.93%; $p-ClC_6H_4Cl$ 23.89% and 76.11%; $PrCl$ 18.17% and 81.83%. With $AlCl_3$ catalyst the following gas compns. were found: $NaBr$ 80.47% HCl , 19.53% HBr ; $PhCl_2Br$ 70.41% and 29.59%; $EtBr$ 69.74% and 30.26%; $PrBr$ 66.67% and 33.33%. The results support the formation of an intermediate complex of the type $R(AlX_2)$.

G. M. Kosolapoff

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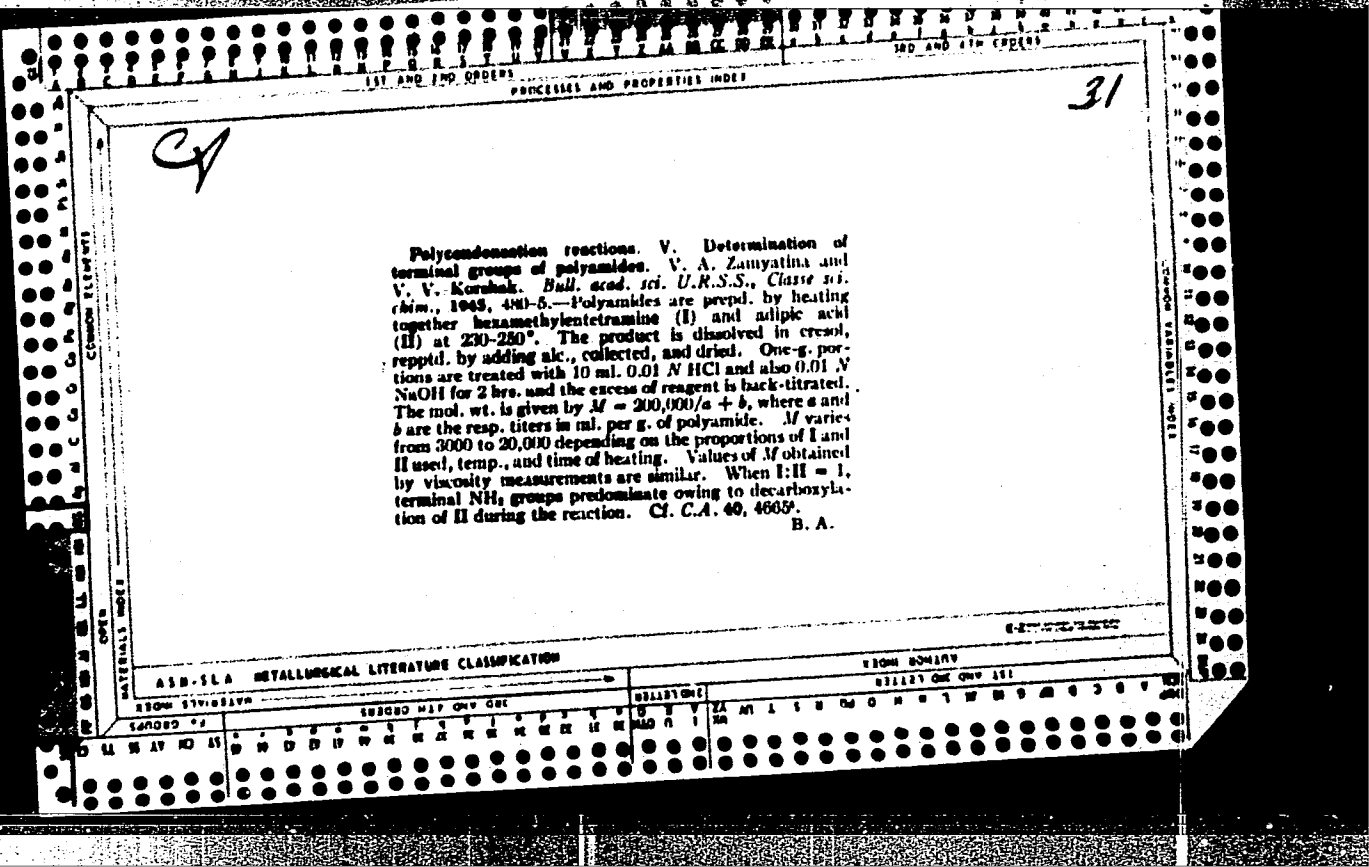
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED WITH ONLY USE

RELATIONS

FROM SOURCE

SEARCHED ONLY LIST



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

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Polycondensation reactions. VI. Acidolysis and aminolysis of polyamides. V. V. Korshak and V. A. Zamyatina (Inst. Org. Chem., Acad. Sci. U.S.S.R.). *Bull. Acad. Sci. U.R.S.S., Class. Sci. Chem.* 1945, 610-15 (in English, 616); cf. *C.A.* 39, 4262, 4302. When cresol solns. of polyamides are heated for 4 hrs. at 240° with acids such as adipic (I) or stearic (II), they are broken down into smaller mole. (acidolysis). The mol. wt. of the final product is inversely proportional to the amt. of acid used. When I is used, the products have terminal CO₂H groups, but on long heating, these lose CO₂ and the mol. acquires a terminal hydrocarbon group. If II is used the terminal group is initially hydrocarbon. In such cases, titration gives incorrect values for the mol. wt. Hexamethylenetetramine produces a similar effect (aminolysis) but the product has only terminal NH₂ groups. Titration of such compds. gives low values for the mol. wt. because the NH₂ groups are united by H bonds.

H. M. Leicester

Also: *Iz. Ak. Nauk SSSR, Otdel. Khim. Nauk.*

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS 3RD AND 4TH ORDERS

KORSHAK, V. V.

Polyvinyl derivatives. II. Polyvinylbutyl ether. V.
 V. Korshak and V. A. Zaitseva. *J. Gen. Chem.*
 (U.S.S.R.) 15, 047-51 (1945) (English summary); cf.
 C.A. 37, 1985. — The polymerization of butylvinyl ether
 was studied between -55° and 60° in the presence of
 various catalysts: SnCl_4 is most vigorous, BF_3 slightly
 less vigorous, FeCl_3 less vigorous and capable of most re-
 producible results, AlCl_3 gave colored products. The
 presence of SO_2 had no effect on the polymerization.
 The polymers are viscous and very sticky fluids, sol. in
 Et_2O , and in benzene, insol. in EtOH and in water and
 generally have mol. wts. up to about 6000 (max. size ob-
 tained with SnCl_4 at 30°) which polymer was isolated by
 fractional pptn. of the crude mixt. Oxidation by HNO_3
 gave butyric and oxalic acids; this showing the structure
 of polymer as of a 1,3-glycol. Hydrolysis by acids led
 only to tars, whereas hydrolysis by alkali, especially alc.
 EtONa , gave noticeable amts. of polyvinyl alc. (no de-
 tails or yields given). Heating of the polymer with 1:1
 mixt. of AcOH and Ac_2O in the presence of NaH_2PO_4
 gave a product which contained but 28% Bu groups, and
 thus was a mixed acetate-butyl ether of polyvinyl alc.;
 it differed from the original polyether by ready soly. in
 EtOH .

G. M. Kosolapoff

Lab. High Molecular Compounds, Inst. Organic Chemistry, AS SSSR.

S.C. 6.

35. Synth. Mat. & Glass Products

Products (polyamides) of linear condensation of diamines with dicarboxylic acids. V. Y. KOSCHAK and S. R. RAFIROV (Compt. Rend. Acad. Sci.

U.S.S.R., 1945, 68, 25-H; Brit. Abs., 1946, B 11, 212). Polyamides from adipic and sebacic acids with ethylene, tetramethylene, hexamethylene, and decamethylene diamines and with benzidine have been examined. Products with the highest molecular weight were obtained with hexamethylene diamine, that with the most complete elimination of water, giving the highest degree of reaction. The initial acid/diamine ratio determines the molecular weight of the product, and is inversely proportional to the excess of acid present. Free acid fused with the polymer causes lowering of molecular weight. A prolonged reaction time does not result in increased molecular weight if excess of acid is present. Three-dimensional, insoluble, infusible products are formed by heating the polymer in air, possibly owing to cross-linking.

35217E.N22.14

1946

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Korshchak, V. Y., and Radkov, S. F.: Introduction to the Study of High-molecular Compounds. (In Russian.) Moscow: Acad. Sci. U.S.S.R., 1946, 171 pp. Reviewed in *Ts'khim Khimii* 15, 755(1946).

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	100
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Polyvinyl compounds. III. Some reactions of polyvinyl acetate. Ushakov and V. A. Zernovskaya. *Dokl. Akad. Nauk SSSR* 1958, 116-110 (in Russian); cf. C.A. 53, 6922. Polyvinyl acetate (mol. wt. 18,151; η_{inh} 1.87) was hydrolyzed according to Staudinger and Schwabach (C.A. 25, 8138) by hot alc. KOH and according to Ushakov by alc. HCl. The polyvinyl alc. was then dialyzed and the analysis showed the presence of 1 Ac group per 75 alc. units. The mol. wt. of the alc. was 8377 (viscosity of aq. soln.), thus showing that no significant chain scission took place; this was checked by reacylation by AcO-AcOH in the presence of H₂SO₄. It was noted that absolutely dry polyvinyl alc. cannot be completely acetylated even at 60-80° or 1 month's standing; use of wetted polyvinyl alc., which was then washed thoroughly by alc. and Et₂O, however, gave rapid and complete acetylation after 1 hr. at 70°; the product was purified by soln. in benzene and evapn. Polyvinyl alc. (30 g.) in 200 ml. 30% NaOH was boiled 6-10 hrs.; an insol. modification sepnl. in a lump which, after ag-itation and prolonged washing in water and drying over P₂O₅, was obtained in the form of a brownish solid, insol. in water, only swelling on heating in water. The wetted material, after alc.-Et₂O washing, is readily acetylated to a similarly insol. acetate, which merely swells in the usual org. solvents, although its Ac no. is 115, i.e. very close to normal polyvinyl acetate. Oxidation of polyvinyl alc. by hot 20% HNO₃ gives only (CO₂H), while oxidation by 30% H₂O₂-10% NaOH gave Me₂CO, confirming the 1,3-glycol structure of the normal polyvinyl alc. Polyvinyl alc. (5 g.) added to 50 g. phthalic anhydride in 150 ml. AcOH and 0.5 ml. concd. H₂SO₄, heated 1 hr. to 100°, and poured into cold water gave 7 g. polyvinyl phthalate, crumbly solid, softening at 70°, sol. in alc., AcOH, and Me₂CO. (G. M. Knudapoff)

ASB-35A METALLURGICAL LITERATURE CLASSIFICATION

KORSHAK, V. V.

Products of addition of mercuric nitrate to acetylene. V. V. Korshak and V. A. Zamyatina. Bull. acad. sci. U.R.S.S., Classe sci. chim. 1946, 111-14 (in Russian).--

C_2H_2 was passed into a 25% soln. of $Hg(NO_3)_2$ in 2% HNO_3 ; the ppt. was washed after rapid filtration by 2% HNO_3 , H_2O , alc., and Et_2O . It is a heavy white solid, $C_2HNO_4 \cdot Hg_2$, which inflames on heating and gives CHI_3 with iodine in KI ; it absorbs Br from its soln. in CCl_4 or H_2O (2 moles and 6 moles, resp.). Heating 1 g. in 20 ml. $AcOH$ gives an anhydride, $C_2H_2O_2Hg$ (mol. wt. 249.5-269, in $AcOH$), which ppts. from the reaction soln. and decomp. above 240° . If C_2H_2 is passed into 10 g. $Hg(NO_3)_2$ in $AcOH$ contg. a little Ac_2O the pptd. product is $C_2H_2N_2O_7Hg_2$, adds Br and gives CHI_3 with iodide, i.e. is a deriv. of AcM . $CECH: CHHgCl$ (1g.) (from C_2H_2 and $HgCl_2$ in 15% HCL) was shaken in 25% aq. $Hg(NO_3)_2$; soln. and simultaneous pptn. take place; the product is $C_2HNO_4Hg_2$, identical with that described above. On the basis of the observations, the following structures are believed to be correct: $C_2H_2N_2O_7Hg_2$ is $(O_3NHg)_2CHCHO$, while $C_2HNO_4Hg_2$ is $Hg.O.CH:CHg:IO_3$.

G. M. Kosolapoff

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Polycondensation reactions. VII. Influence of excess of adipic acid on polycondensation with hexamethylenediamine. V. V. Korshak and V. V. Golubev. *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1946, 185-90 (in Russian); *cf. C.A.* 40, 4665; 41, 1017; 42, 6150a. — Excess of adipic acid (I) in the condensation with hexamethylenediamine (II) leads to polyamides of lowered mol. wt. An empirical formula $M = (1264/b) + 140$, where M is the av. mol. wt. of the products and b is the wt. % of excess I, was derived from considerations in the previous paper. The technique used was that of Radkov and K. (*C.A.* 39, 4593). The products were examd. for mol. wt. (by viscosity in cresol) and no. of end groups according to a previous paper (*Ibid.* 1945, 480). The following results (given in the order mol. % excess I and mol. wt. by end groups, by viscosity, and by the above formula) were obtained: 0.5, 25,087, 23,023, above formula 45,346; 1, 22,809, 19,529, 22,746; 2, 18,181, 14,870, 11,446; 6, 6341, 5029, 3912; 15, 4200, 4138, 1052; 30, 3169, 2833, 899; 60, 2604, 2592, 522; 100, 2176, 2029, 372. The results are also given graphically. The divergence between calcd. and observed mol. wts. is not caused by incomplete reaction and may be explained by the unreacted portion of I, which upsets the equil. $I + II \rightarrow$ polyamide; by application of a cor. formula, using a as a part of I which enters the reaction: $a = 22,000/(M - 146)u$, where u is the total amt. of I used, the values of a were found to be: 0.77 at

2 mol. % excess I, 0.77 at 0%, 0.88 at 16%, 0.88 at 30%, 0.16 at 60%, and 0.12 at 100% excess I. Two explanations of the action of excess I may be given: (1) the reaction proceeds through alternate coupling of I and II until the terminal groups are both of type I and reaction ends (this, however, does not account for interaction of the polyamide with I), and (2) such interaction occurs by means of acidolysis, which leads to chain scission and decrease of av. mol. wt. G. M. Kosolapoff

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Also: Iz. Ad. Nauk SSSR, Otdel Khim. Nauk

Inst. of Organic Chem., AS USSR.

ASAC - S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED	INDEXED	SERIALIZED	FILED
MAY 1948			
FBI - NEW YORK			

COMMON ELEMENTS		PROCESSES AND PROPERTIES INDEX	
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z		10	
Tetraethyllead. V. V. Korshak and G. S. Kolesnikov. <i>Uspekhi Khim.</i> 15, 325-42(1946).—A review of the applications, lab. and com. methods of prepn., and phys., chem., and physiol. properties of PbEt ₄ . 146 references. Arild J. Miller.			
ASB-SEA METALLURGICAL LITERATURE CLASSIFICATION		AUTHOR INDEX	
MATERIALS INDEX		187 AND 188	
187 AND 188		187 AND 188	

137 AND 138 COLUMNS 140 AND 141 COLUMNS

PROCESSES AND PROPERTIES INDEX

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Mechanism of the Friedel-Crafts reaction. III. Reaction of vinyl ethers and esters with benzene. V. Y. Korshak, M. K. Samplavskaya, and A. I. Gershanovich (Moscow Chem. Tech. Inst. Mendeleeva). *J. Gen. Chem. (U.S.S.R.)* 16, 1085-70 (1946) (in Russian); cf. *C.A.* 40, 4033¹.— C_6H_6 (120 g.) and 34 g. $AlCl_3$ were treated with 50 g. $BuOCH_2CH_3$; after heating on a water bath, the mixt. was treated with dil. acid and the org. layer distd. with steam to yield 3 g. *BzPh* (I), b. 178-80°, unreacted C_6H_6 , and a tarry residue, which, when subjected to dry distn., gave $BuOH$, acetaldhyde di-Bu acetal, b. 179-82°, and a small amt. of material, b. 216-30°, which was not investigated; no styrene was found in the condensate. It was apparent that the ether failed to condense with C_6H_6 , but merely formed a polymer; the latter reacted with C_6H_6 only to a slight extent with formation of I. C_6H_6 (78 g.) and 200 g. $AlCl_3$ were treated with 43 g. $AcOCH_2CH_3$ (slow addn.); a vigorous evolution of HCl took place, and the mixt. was heated to 60-70° several hrs. to yield, after the usual decomp., small amts. of *AcPh*, *1,1-diphenylethane* (II), and *9,10-dimethyl-9,10-dihydroanthracene* (III), m. 181-2° (from $EtOH$). III is readily obtained in 72% yield from 4 g. II and 3 g. $AlCl_3$ at 60-70°. AcH passed into a mixt. of C_6H_6 and $AlCl_3$ (no amts. given), followed by heating to 60-70° several hrs., gave up to 50% III and substantial yields of II, b. 162-4°.

G. M. Kosolapoff

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

FROM HOWARD

137 AND 138 COLUMNS 140 AND 141 COLUMNS

KORSHAK, V.

PA 52T2

USSR/Chemistry - Condensation, Jul/Aug 1946
Chemical Poly-
Chemistry - Amides, Poly - Acidolysis
and Aminolysis of

"Studies of Polycondensation Reactions," V. Korshak,
B. Raffikov, V. Zamiatina, Inst Org Chem, Acad Sci
USSR, Moscow, 18 pp

"Acta Physicochimica URSS" Vol XXI, No 4

Studies of polycondensation reaction between hexa-
methylenediamine and adipic acid, and of diamines
with dicarboxylic acids. Acidolysis and aminolysis
reactions consisting in destruction of polyamides
on heating with acids or amines are described. Re-
ceived 16 Oct 1945.

Mechanism of the Friedel-Crafts reaction. V. Complex compounds of benzene and toluene with aluminum bromide. V. V. Korshak, N. N. Lebedev, and S. D. Petrov (Mendeleev Chem. Tech. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 17, 875-88 (1947) (in Russian); *cf. C.A.* 41, 2715c.—Judging by the strict additivity of the mol. refractions, solns. of $AlBr_3$ in benzene or PhMe do not contain truly definite compds. but represent an equil. of the type $AlBr_3 + nC_6H_6 \rightleftharpoons Al_3Br_3(C_6H_6)_n$, shifted substantially to the left-hand side. When such a soln. is treated with HBr , however, profound changes occur, leading to a complex which seps. as an oil, characterized by electrocond. and having the compn. $Al_3Br_3 \cdot Ar_3 \cdot HBr$; the over-all system is best considered an equil.

similar to that given above. $AlBr_3$ was prepd. by the action of Br on Al shavings, with Br being added to a layer of glass wool underlying a thick mass of Al shavings contained in a flask fitted with a sublimation tube and receiver; the flask is heated concurrently with the Br addn.; the product is distd. as needed from the receiver. $AlCl_3$ was made similarly, using Cl and Al ; the distn. neck was provided with a sleeve-sealed rod for clearing the sublimate from the distn. tube. Both halides were obtained in better than 90% purity. Solns. of $AlBr_3$ in benzene as high as 40% in concn. are readily made and, after removal of a small amt. of the oily complex, can be stored indefinitely. The following constns. were detd. for such solns.: 6.2% $AlBr_3$, d_4^{20} 0.923, n_D^{20} 1.5041; 0.05%, 0.928, 1.5032; 13.77%, 0.979, 1.5008; 17.10%, 1.005, 1.5001; 19.65%, 1.023, 1.5001; 26.88%, 1.083, 1.5130. The mol. refra-

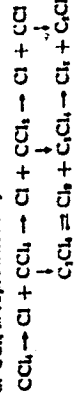
tion for all solns. was 23.4. The mol. wts. of $AlBr_3$ in this soln. (l.p. method) found were 404 and 401.5 (theoretical, 633.6), indicating only a small degree of dissocn. Solns. in PhMe are similar. When dry HBr is passed into a soln. of $AlBr_3$ in PhMe, the complex seps. as a yellow-red oil which has 3.14-3.38 atoms of Br to 1 Al ; if, however, the oily complex is obtained without the use of added HBr but at the expense of moisture present in PhMe, the compn. is somewhat different: 2.93-2.97 atoms Br to 1 Al . The individual variations were considerable and are accounted for by partial hydrolysis of $AlBr_3$. If the HBr -originated complex is washed with dry PhMe, its Br/Al ratio approaches 3.5:1. The similar complex obtained by treatment of $AlBr_3$ in benzene with HBr was somewhat less stable and did not withstand washing without some loss of Br ; the complex has n_D^{20} 1.5625-1.6140 and with water gives benzene and tarry by-products. Complexes prepd. in moist benzene have the compn. $Al_3Br_3 \cdot 6C_6H_6$ while those made with dry HBr are $Al_3Br_3 \cdot 6C_6H_6 \cdot HBr$. Detn. of the mol. wt. cryoscopically in benzene gave 141-144 for the toluene complex and 600-617 for the benzene complex, thus showing considerable dissocn. in soln. Reaction of the complexes with $AcCl$ gave the following compn. of the HX evolved: benzene complex, 81.48 mol. % HBr and 18.62 mol. % HCl ; toluene complex, 84.07-81.16 mol. % HBr and 15.93-18.84 mol. % HCl , which supports the formulation: $2(Al_3Br_3 \cdot 6C_6H_6 \cdot HBr) + 4AcCl \rightarrow 8C_6H_6 + 4PhAc + 4H(AlBr_2Cl) + 9HBr$; $4H(AlBr_2Cl) + 2HBr \rightarrow 5HBr + HCl + 3AlBr_2Cl + AlBr_3$.

G. M. Kosolapoff

CA

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The interaction of chlorides with carbon. V. V. Korshak, Yu. A. Streptikheev, and L. F. Verlatova (D. T. Mendeleev Chem. Technol. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 17, 1629-31(1947)(in Russian).—(1) Chlorination of active C, dried at 120° with Cl₂ mixed with SCl₂, yielded some CCl₄ at 700-800°; admixt. of SnCl₄ or FeCl₃ was ineffective; nor was any CCl₄ formed in attempts at chlorination by heating a mixt. of C with SnCl₄ in a sealed tube 100 hrs. at 350-400°. (2) Thermal decompos. of CCl₄ vapor over active C decreases, at a given temp., with increasing rate of flow *r*, and, at const. *r*, linearly with the temp.; at *r* = 0.10, 0.60, 3.10, 6.1, 4.9; at 600°, 21.4, 17.6, 10.6; at 600°, 30.5, 26.0, 15.1; at 700°, 52.5, 23.0, 23.9. The decrease of the decompos. yield with decreasing time of contact is rapid only up to about *r* = 0.6, considerably slower with further increasing *r*; the slopes of the lines giving the degree of decompos. as a function of temp. are steeper the lower the *r*. The catalytic effect of C on the decompos. of CCl₄ is demonstrated by 2 runs without C: at *r* = 0.10 and 1.50, wt.-% CCl₄ decompos. at 400°, 6.0 and traces, at 700°, 36.0 and 18.0; the degree of decompos. reached at 500° in the presence of C is attained only at 700° in the absence of the catalyst. (3) The products of the thermal decompos. of CCl₄ are Cl₂, C₂Cl₄, CCl₂, and CCl₃; at a lower temp. (600°) more C₂Cl₄ is formed, while higher temp. (700°) favors formation of CCl₂ and particularly C₂Cl₄. (4) Thermal decompos. of CCl₄ on active C increases nonlinearly with temp.; at *r* = 0.30, 0.25, 0.20, 0.35 g./min.; the wt.-% CCl₄ decompos. was: at 500°, 12.3, 9.6, 8.3, 4.3; at 600°, 22.2, 17.3, 16.0, 12.6; at 700°, 42.1, 30.8, 36.8, 26.0. The products are Cl₂, C₂Cl₄, and CCl₂. (5) The catalytic effect of SCl₂ on the formation of CCl₄ is due to the reactions 2SCl₂ → S₂Cl₂ + Cl₂, S + C → CS₂, S₂Cl₂ → SCl₂ + S, and CS₂ + 3Cl₂ → CCl₄ + S₂Cl₂. The mechanism of the thermal decompos. of CCl₄ is represented by



The assumed polymerization of the intermediate C₂Cl₃ into C₂Cl₄ is in agreement with Ott and Dittus (C.A. 37, 5013).

CA 10

MECHANISMS AND PROPERTIES INDEX

Mechanism of the Friedel-Crafts reaction. VI. Reaction of alkyl iodides with benzene. V. V. Korshak and G. S. Kolosovskiy (Moscow Chem. Tech. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 17, 1643-4 (1947) (in Russian); cf. *C.A.B.* 43, 1217a. — The reaction of benzene with RI in the presence of AlCl₃ was studied with analysis of the HX evolved. In the case of MeI the HCl:HI ratio was 3:1; EtI gave a gas contg. 25.95 mol. % HCl and 74.15 mol. % HI. Similarly, decompn. of EtI with AlCl₃ gives 34.17% HCl and 65.83% HI. Mixing HCl in benzene with an equimol. amt. of AlBr₃ in benzene, followed by heating, gave a gas mixt. contg. 75.01 mol. % HBr and 24.99 mol. % HCl. This proves the occurrence of the reaction of HCl with AlBr₃ in benzene. AlBr₃ in warm benzene was slowly treated with an equimol. amt. of HCl or BuCl in benzene, and the gas mixt. evolved was analyzed in 4 separate portions (total time, 1 hr.); with BuCl as addend, the gas compn. varied from 9.31 mol. % HCl and 90.69 mol. % HBr in the initial stage, to 27.76 mol. % HCl and 72.24 mol. % HBr in the final data.; when HCl was the addend, the initial gas was 4.5 mol. % HCl and 95.5 mol. % HBr, going up to 28.26 mol. % HCl and 71.74 mol. % HBr in the final data. This indicates that the process has characteristics of an equil. reaction; both the HX and the RX reactions are very similar. G. M. Kozlovskiy

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

GROUPS

ABBREVIATIONS

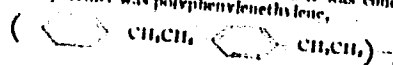
1ST AND 2ND LETTERS

1ST AND 2ND CROSS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH CROSS

The reaction of 1,2-dichloroethane with benzene. V. Korshak, G. S. Kolesnikov, and A. V. Kharchevnikova. *Compt. rend. acad. sci. U.R.S.S.* 56, 1602 (1947) (in French). The condensation products of $(C_6H_5CH_2)_2$ (I) and $C_2H_4Cl_2$ in the presence of $AlCl_3$ have been studied. Mixts. of 204 g. C_6H_6 and 50 g. I were heated 4.5 hrs. at 85° with varying amts. of $AlCl_3$ (0.4, 13.5, and 6.7 g.). The yield of diphenylethane (II) increased in these cases from 41.1% to 54.3% to 80.0%, whereas the yield of the polymeric condensation product decreased with the const. but the mole ratio of C_6H_6 to I was varied (13.5, 0.7, 3.35, 1.68, 1.10, 0.84, and 0.67), the % yields of II were resp. 68.3, 54.3, 37.0, 12.0, 0, 0, and 0, whereas the amt. of polymer increased. The polymeric product where the yield of II was 0% was insol. in C_6H_6 , I, MeOH, and EtOH. In all other expts. the C_6H_6 -sol. polymeric products were shown to have up. viscosities (4% in C_6H_6) of 0.08-0.14. Oxidation of these products resulted in the formation of terephthalic acid. Hence it was concluded that the polymer was polyphenylethylene.



Dibenzoylacetylene. Georges Dupont and Jean Germain. *Bull. soc. chim. France* 1947, 626-9. — A mixt. of 2 g. BzC_2CH_2 (I) and 15 g. $HgCl_2$ soln. (satd. in the conc. and acidified with a few drops H_2SO_4) heated several hrs. on the H_2O bath gives an uncrystallizable oil which after extr. with H_2O and agitation of this soln. with $Cu(OAc)_2$ gives a green ppt. of the Cu salt of the enol form of $BzC(OH)C_2H_2$ (II) (from C_6H_5), probably a mixt. of the *cis* and *trans* isomers $BzC(OH)C_2H_2$ (III) (*cis* and *trans*) and Ph.

$C(OH)COCH_2CPh_2$. A similar result is obtained with 10 g. $AcONa$, 50 g. alc., and 3 g. I (cf. Lutz, C.A. 21, 82). I (8 g.) and 1 g. Na in 75 g. MeOH, heated 5 min. on the H_2O bath and evapor. *in vacuo*, give, after dissolving the residue in H_2O , acidifying, and extr., the oil with petr. ether, *cis*-III (IV), m. 80.7°. IV is also obtained by heating on the H_2O bath 1 hr., amine derivs. of I (cf. Dupont, C.A. 22, 380) and a slight excess of alc. H_2SO_4 . Partial hydrogenation of I in alc. with Raney Ni gives 50% $BzCH=C_2H_2$, m. 130-1°. Cyclopentadiene (20 g.) added to 10 g. I in 50 g. cold, dry H_2O gives 2,3-dibenzoyl-bicyclo[2.2.1]-2,5-heptadiene (V), m. 142.3°. V (2 g.) the calcd. amt. of $NH_2NH_2 \cdot H_2O$, and 40 g. 50% $AcOH$, heated a few min. on the H_2O bath, give, after pptn. with H_2O and recrystn. from alc., a pyridazine deriv. (VI), m. 201.2°. V (1 g.), 25 cc. $AcOH$, and an excess of $NH_2CONHNH_2 \cdot HCl$ (VII) and $AcONa$, heated 1 hr. on the H_2O bath, give a monosemicarbazone (VIII), m. 180°, which will not react further with VII. V with Raney Ni absorbs 1 mol. H to give a compl. (IX), m. 132.5°. IX with 5% aq. permanganate gives $BzOH$ and *cis*-1,3-cyclopentane dicarboxylic acid, m. 120° (cf. C.A. 41, 2420c, for the structures of V, VI, VIII, and IX).

R. L. May

KORSHAK, V. V.

PA 11T72

USSR/Chemistry - Condensation, chemical
Chemistry - 1, 2-dichloroethane 1947

"The Polycondensation Products of 1, 2-dichloroethane
With Benzene," V. V. Korshak, G. S. Kolesnikov, A. V.
Kharchevnikova, 3 pp

"CR Acad Sci" Vol LVI, No 2

Tables of characteristics. Structural formulae.

11T72

KORSHAK, V. V.

PA 58T4

USSR/Chemistry - Amides, Poly
Chemistry - Synthesis

May 1947

"The Formation of Three Dimensional Structure in Poly-
amides," V. V. Korshak, S. R. Rafikov, Inst Org Chem,
Acad Sci, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVI, No 6

Discusses study of so-called "stitching" of macro-
molecules from point of view of importance of use in
technique to obtain new materials with technically
valuable qualities and to improve quality of known
products. Submitted by Academician A. N. Nesmeyanov,
20 Oct 1946.

58T4

V. V. and LEDEDEV, N. N.

"Complex Compounds of Alkyl Halide and Aluminum Halide," Dok. AN, 57, No. 3,
1947

ibid: 57, No. 9, 1947.

PROCESSING AND PROPERTIES INDEX

10

CA

High-molecular weight compounds. XVI. The polydispersity of polyamides. V. V. Kambak and V. A. Zamyatina. *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1948, 412-19; cf. C.A. 42, 7279c.—Two polyamides were prep'd. by condensation of hexamethylenediamine and adipic acid. The 1st polyamide (I), made from the stoichiometric ratio of diamine and acid, had a mol. wt. of 16,200 by η detn. and 16,300 by end-group analysis. The 2nd polyamide (II), made with an excess of adipic acid, had a mol. wt. of 4440 by η detn. and 5810 by end-group analysis. A mixt. of equal parts of I and II had a mol. wt. of 10900 by η detn. and 8810 by end-group analysis. Fractionation of a 2% cresol soln. of the mixt. by addn. of MeOH produced 2 fractions. The 1st fraction, corresponding to I, had a mol. wt. of 14,410 by η detn. and 17,650 by end-group analysis. The 2nd fraction, corresponding to II, had a mol. wt. of 5120 by η detn. and 3730 by end-group analysis. Another polyamide (III), also made from a stoichiometric ratio of reactants, had a mol. wt. of 19,400, calcd. from the intrinsic η . The 1.5% cresol soln. of III was fractionated with MeOH into 5 fractions ranging in mol. wt. from 8500 to 21,200. A polyamide (IV) made with excess diamine had a mol. wt. of 9200, calcd. from the intrinsic η . The 2.5% cresol soln. of IV was fractionated with MeOH into 6 fractions ranging in mol. wt. from 2800 to 10,800. Mol. wt. distribution curves showed III to be mostly in the 16,000-20,000 range, with a significant fraction of much lower mol. wt., while IV spread over a broad mol. wt. range without any pronounced max. The homogeneity of polyamides is affected by the fact that degradative (chain breaking) reactions can occur at the same time as condensation. The final mol. mixt. represents a resultant of the various reactions. Fractionation of polyamides does not necessarily proceed in a manner governed by the mol. wt. of the polymer mols. but is also affected by the nature of the end groups on the polymer mols. Min. soly. in cresol MeOH mixts. is observed with hydrocarbon groups, max. soly. with amino groups, whereas the carboxy groups have av. soly.

H. K. Livingston

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

KORSHAK, V. V.

USSR/Chemistry - Amides, Poly
Chemistry - Distillation

Jul/Aug 48

"Studies in the Field of High-Molecular Compounds," V. V. Korshak, V. A. Zamyatina,
Inst Org Chem, Acad Sci USSR, 7 $\frac{1}{2}$ pp

"Is Ak Nauk SSSR, Otdel Khim Nauk" No 4

Describes fractioning of polyamides from solutions in cresol by precipitation with methyl alcohol. Constructs distribution curve. Establishes that polyamides are fairly uniform products containing only small quantities of low-molecular fractions and, therefore, the mean value of the molecular weight, determined by viscosity of solutions, represents the basic constituent of the polyamide fairly accurately. This uniformity, evidently, distinguishes the polyamides from high-molecular substances obtained by polymerization. Submitted 20 Nov 1946.

PA 8/49T15

KORSHAK, V. V.

Nov/Dec 48

USSR/Chemistry - Condensation, Chemical
Chemistry - Molecular Weights, Determination

"Research in the Field of High Molecular Compounds: XVII, Distribution of Polyesters According to Molecular Weight," S. R. Rafikov, V. V. Korshak, G. N. Chelnokova, Inst Org Chem, Acad Sci USSR, 10 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6 p 642-651

Investigated reaction of polycondensation in adipic acid with glycols. Separated polyesters obtained into fractions, and determined their molecular weight by chemical and viscosimetric methods. Data obtained was used for consideration of the reaction mechanism of linear polycondensation. Submitted 19 Jul 47.

PA 33/49 T23

KORSSEK, V. A.

High molecular weight compounds. XV. Products of polycondensation of 1,2-dichloroethane with benzene. V. V. Korsek, G. S. Kolesnikov, and A. V. Kharchevnikova (Mendeleev Chem. Tech. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 18, 198-204 (1948) (in Russian). — The reaction of C_6H_6 and $(CH_2Cl)_2$ in the presence of $AlCl_3$ was shown to be affected by variation of the relative amts. of the components. Oxidation of the polyphenylethyl (polycondensation product) by Cr oxide gives terephthalic acid, indicating that the polymer is made of Ph nuclei joined by CH_2CH_2 links in para positions. C_6H_6 (261 g.) and 50 g. $(CH_2Cl)_2$ were treated with 87.4-8.7 g. $AlCl_3$ 4.5 hrs. on a steam bath; the yield of the polymer dropped with smaller amts. of $AlCl_3$ (from 37.7 g. to 16 g.) but its nature was not changed; it was still a homogeneous mass, sol. in C_6H_6 . In a 2nd series the $AlCl_3$ and C_6H_6 were held const. (amts. not given) while the $(CH_2Cl)_2$ was varied from 25 g. to 500 g. (mol. ratio to C_6H_6 from 13.5 to 0.87); as the amt. of the dichloride increases, the amt. of $(Ph-CH_2)_2$ drops and reaches zero at mol. ratios below 1 (the reaction time had to be reduced from 4.5 hrs. to 1-2.5 hrs. in these runs because of excessive foaming); the amt. of the polymer, however, constantly rises, from 6.2 g. to 300 g. Only when the ratio of C_6H_6 to the dichloride drops lower than 1.1 does the polymer change its properties; it becomes insol. in C_6H_6 . The mol. wt. of the polymer (by viscosity in benzene) remains in the 1200-1300 range until

the above ratio reaches 1.08, when the mol. wt. of the product climbs to 2100. When the polymer (3-7 g.) was boiled 7-18 hrs. with 80 cc. H_2O , 100 g. H_2SO_4 , and 40 g. $K_2Cr_2O_7$, only terephthalic acid was isolated. This also occurred when the benzene-insol. polymer was oxidized. The formation of the insol. polymer is readily explained by the fact that with the proportions used all the C_6H_6 reacts to form the polymer and the latter is then able to condense further with the dichloride through reaction in the ortho position, leading to 3-dimensional mols. by cross linking.

G. M. Kosolapoff

KORSHAK, V. V.

PA 19/49T12

USSR/Chemistry - Friedel-Craft's Reaction
Chemistry - Vinylidene Compounds

AUG 48

"Friedel-Craft's Reaction: VII, Reaction of Vinylidene Chloride With Benzene," V. V. Korshak, K. K. Samplarskaya, Moscow Ord of Lenin, Chemicaltech Instiment D. I. Mendeleev, 4 1/2 pp

"Zhur Obshch Khimii" Vol XVIII (LXXX), No 8

Previously established pronounced difference in type of reaction of olefinic part of molecule in vinyl chloride or acetate on one hand, and vinyl butyl ether in presence of aluminum chloride on the other hand. Disubstituted ethylenes now investigated on

19/49T12

USSR/Chemistry - Friedel-Craft's Reaction (Contd) Aug 48

example of vinylidene chloride. It reacted with benzene in ratio 1:8 in presence of 12-20% aluminum chloride, and yielded 35% theoretical 1,1-diphenylethylene and 45% theoretical of its dimer, 1,1,3-triphenyl-3-methylhydridene. Identification of polymerization to dimer is explained by steric hindrance. Submitted 7 Mar 47.

19/49T12

KORSHAK, V. V.

V. V. Korshak and N. N. Lebedev, On the mechanism of the Friedel-Krafts reaction. VIII. On the structure of complex compounds of aluminum halides with alkyl halides. p. 1766.

The absorption of ultra-violet rays by solutions of aluminum bromide in ethyl bromide was investigated and it was found that this solution absorbs better than the pure solvent. The content of various hydrogen halides in gases evolved during the Friedel-Krafts reaction were also investigated. (This article has a bibliography of 43 entries.)

The Mendeleev Moscow Chemical Technological Inst., Holder of the Lenin Order
October 15, 1947

SO: Journal of General Chemistry (USSR) 28, (80) No. 10 (1948):

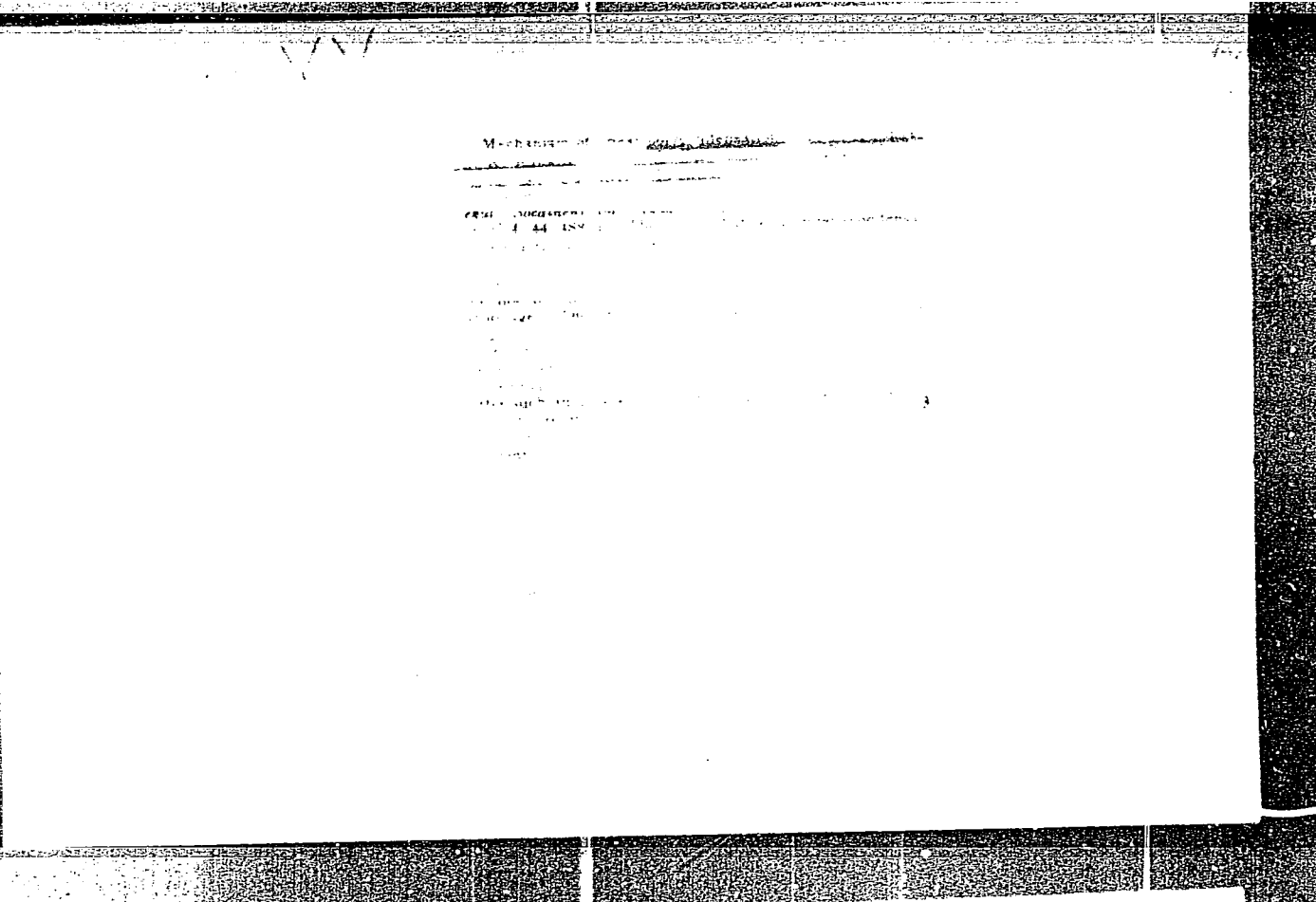
KORSHAK, V. V.

"Degree of Polydispersion of Polyamides," Dok. AN SSSR, Nova Ser., 59, No. 5,
1948.

Inst. Org. Chem., AS USSR.

GOLOVA, O.P., IVANOV, V.I., KORSHAK, V.V., doktor khimicheskikh nauk,
redaktor; SHEVCHENKO, G.N., tekhnicheskiy redaktor.

[Molecular weight of cellulose] O molekuliarnom vese tselliu-
lozy. Moskva, Izd-vo Akad. nauk SSSR, 1949. 114 p. (MLRA 8:8)
(Cellulose)



Significance of proportion of starting materials in the process of linear polycondensation. V. V. Korshak, V. V. Golubev, and G. S. Krasinsky (Inst. Chem., Acad. Sci. U.S.S.R., Moscow). *Issledovaniya v Oblas'ti Vysokomolekul. Soedinenii, Doklady 6-oi Konf. Vysokomolekul. Soedineniyum, Akad. Nauk S.S.S.R. 1949, 22, 34.* - The ratio of starting materials is considered in general and specific cases of polycondensation reactions from a kinetic viewpoint, in which it is shown that the excess of either component leads to a sharp decline of the av. mol. wt. of the polycondensation product. The data are taken from earlier publications, largely of the authors. 14 references. G. M. Kosolapoff

R

2

Problems of classification in the chemistry of high-molecu-
lar weight compounds. V. V. Korshak, *Izvestiya o*
Obshchey Khimii. Seriya: Doklady 6-oi. Kvsf.
Vysshemolekul. Soedineniyam, Akad. Nauk S.S.S.R. 1949,
99-101.—The classification of high polymers according to
their chem. nature and structure of the monomeric units is
discussed, with distinction being made between the C-chain
and hetero-chain substances. G. M. Kosolapov

AA
SW

KORSHAK, V. V.

G. I. Chelnokova, S. R. Rafikov and V. V. Korshak

"From the Field of Macromolecular Compounds, 19th Report: The Determination of the Mean Molecular Weight of Polyesters from the Endgroups." Reports of the Academy of Sciences, USSR, Department of Chemical Sciences, 1949, 205-11, April; Institute for Organic Chemistry of the Academy of Sciences, USSR.

ABSTRACT AVAILABLE

D-50054

PA 27/49T22

KORSHAK, V. V.

USSR/Chemistry - Molecular Weights,
Calculation of Average
Chemistry - Polymers, Molecular Weights of
Jan/Feb 49

"Study in the Field of Compounds of High Molecular Weight: VIII, Average Molecular Weights of Polymer Homologues," S. R. Rafikov, V. V. Korshak, G. M. Chelnokova, Inst Org Chem, Acad Sci USSR, 6 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 1

Considers influence the degree of polydispersion in compounds of high molecular weight has on average molecular weight, which is determined by various chemical and physicochemical methods.

27/49T22

USSR/Chemistry - Molecular Weights;
Calculation of Average (Contd)

Jan/Feb 49

Introduces method of theoretical determination of average molecular weight, correctness of which is confirmed by investigating synthetic mixtures of polymers. Introduces concept of a coefficient of polydispersion, by which the product may be determined. Shows graphic method of expressing the coefficient of polydispersion. Considers possibility of using this method to evaluate the mechanism of reaction. Submitted 20 Nov 47.

27/49T22

KORSHAK, V. V.

"Synthesis and Investigation of High Molecular Compounds," Vest. Ak. Nauk SSSR No. 3, 1949.

KORSHAK, V. V.

PA 56/49T18

USSR/Chemistry - Ethylene
Chemistry - Polymerization

May/June 49

"High-Molecular Compounds: XX, Effect of the Number and Nature of the Substitutes on the Polymerization Capacity of Substituted Ethylenes," V. V. Korshak, Inst of Org Chem, Acad Sci USSR, 5 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 3

Shows that size and number of substitutes determine the stage of a screening effect, by which these substitutes influence polymerization capacity.

Suggests a diagram explaining the dimerization of 1, 1-diphenylethylene. Submitted 20 Sep 48.

56/49T18

KORSHAK, V. V.

PA 63/4978

USSR/Chemistry - High Molecular Compounds

Jul/Aug 49

"Research in the Field of High Molecular Compounds: No XXI (1), Polycondensation of Glycol With Adipic Acid," V. V. Korshak, V. V. Tolubev, Inst of Org Chem, Acad Sci USSR, 67 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4

Study of polycondensation of ethyleneglycol, with an excess of adipic acid showed that molecular weight of the derived polyesters was decreased as excess of adipic acid was increased. Derived formula for this relation. Considered acidification by

63/4978

USSR/Chemistry - High Molecular Compounds (Contd) Jul/Aug 49

heating with adipic acid and glycolization of the polyester in turn. Gives a formula to express the relation between molecular weight of the polyester and quantity of acid required to acidify it. Submitted 20 Nov 48.

63/4978

USSR/Chemistry - High-Molecular
Compounds
Polymerization

Sep/Oct 49

"Field of High-Molecular Compounds: XXEL. Effect of the Polarity of Substituents on the Polymerization Ability of Substituted Ethylenes," V. V. Korshak, Inst of Org Chem, Acad Sci USSR, 5 1/2 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 5

Experiments showed that polymerization capacity of substituted ethylenes is increased as a result of polarization of the double bond under influence of the substituent and that polymerization tendency of

149716

USSR/Chemistry - High-Molecular
Compounds (Contd)

Sep/Oct 49

monosubstituted ethylenes is connected with polarity of substituents. Establishes connection between dipole moments of vinyl compounds and their tendency to polymerize, and explains regular structure of polyvinyl derivatives as result of polarization effect of substituents. Introduction of polar substituents attached to carbon of a carbonyl group decreases tendency of compound to polymerize. Shows polymerization tendency of cyclic amines and ethers to be dependent on polarity of bonds of heterostom. Submitted 20 Nov 47.

149716

KORSHAK, V. V.

PA149716

KORSHAK, V. V.
38013. KORSHAK, V. V., FREYDLINA, R. KH., AND KABACHNIK, M. I.

AKADYEMIK ALYEKSANDR NIKOLAYEVICH NYESMEYANOV / KHIMIK K 50-LYETIYU SO DNYA
ROZHDYENIYA⁷ IZVVESTIYA AKAD. NAUK SSSR, OTD-NIYE KHIM. NAUK, 1949,
No. 6, s. 562-66 s Portr.

KORSHAK, V. V.

PA 65/49T24

<p>Organic Chemistry - Friedel-Crafts Reaction Benzene</p>	<p>Mechanism of the Friedel-Crafts Reaction: II. The Reaction of Trichloroethylene With Benzene; V. V. Korshak, K. K. Samplavskaya, M. A. Andreyeva Moscow: Khimicheskii Inst. Imeni D. I. Mendeleeva, 3/4 pp</p> <p>"Zhur Obshch Khim" Vol XIX, No 4</p> <p>Study of subject reaction in the presence of aluminum chloride shows that polynuclear products of condensation are similar to those formed when 1, 1, 1-trichloro-2-chloroethylene is substituted for the</p>
<p>Organic Chemistry - Friedel-Crafts Reaction (Q474)</p> <p>Trichloroethylene. In the case of the latter, they are diphenylmethane, triphenylmethane, and naphthalene. Submitted 30 Dec 47.</p>	<p>Apr 49</p> <p>65/49T24</p> <p>65/49T24</p>

KORSHAK, V. V.

USSR/Chemistry - Benzyl Chloride Apr 49
High-Molecular Compounds

"The Field of High-Molecular Compounds: XIII,
Polycondensation of Benzyl Chloride," V. V. Korshak,
M. N. Lobedev, M. A. Tsipershteyn, Moscow Chemico-
technol Inst. imeni D. I. Mendeleev, 6 $\frac{1}{2}$ pp

"Zhur Obshch Khim" Vol. XIX, No 4

Studied this reaction in the presence and in the
absence of benzene, the molecular weight of the
product formed being decreased as the amount of
benzene is first introduced. Shows that the clos-
ing link in the chain of the macromolecule is the
dihydroanthracene ring. Submitted 4 Dec 47.

65/49123

KORSHAK, V. V.

S. R. Rabinovich
APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R00082492001

"Investigations in the Field of Highmolecular Compounds. 25th report: The
Mechanism of the Reaction of Linear Polycondensation." Journal of General
Chemistry, 19, (81) 2109-17, November 1949. Institute for Organic Chemistry
of the Academy of Sciences, USSR.

ABSTRACT AVAILABLE

D-50054

АУДИОНА, 1. . .

PA 25/49T7

USSR/Chemistry -- Kinetics
Chemistry -- Esterification

Jan 49

"The Problem of Reaction Kinetics in Polyesterification," S. R. Rafikov, V. V. Korshak; 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 2

Investigates reaction kinetics of polyesterification for the case of interaction of adipic acid with decamethyleneglycol and ethyleneglycol. Concludes that reaction speed of polyesterification will depend not upon chain's length, but upon concentration of free groups capable of reaction. Submitted 7 Oct 48.

25/49T7

KORSHAK, V. V.

USSR/Chemistry - Amides, Formation
Chemistry - Hydrolysis

Jan 49

"The Kinetics of Amid Formation and Hydrolysis," G. N. Chelnokova, S. R. Rafikov,
V. V. Korshak, 3 pp

"Dok Ak Nauk SSSR". Vol LXIV, No 3

Kinetic study of the reaction of sebacic acid with hexamethylenediamine under varying
conditions (temperature and catalysis). Submitted 8 Oct 48

PA 27/49T7

Feb 49

USSR/Chemistry - Molecular Weights,
Variations of

Chemistry - Cellulose, Hydrolysis of

"Variations in the Molecular Weight of Compounds
With a High Molecular Weight in the Process of
Chemical Destruction," V. V. Korshak, Inst Org Chem
Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 4

Attempts to make Freudenberg and Khn's theory
applicable to the first stages of the destructive
process. This theory stems from representations
of infinitely long chains of the parent substance,

27/49T12

Feb 49

USSR/Chemistry - Molecular Weights,
Variations of (Contd)

and was successfully applied in the case of complete
destruction of cellulose as a result of hydrolysis.
Submitted 9 Sep 48.

27/49T12

PA 27/49T12

KORSHAK, V. V.

KORSHAK, Vasilii Vladimirovich

[Chemistry of high-molecular compounds] Khimiia vysokomole-
kuliarnykh soedinenii. Moskva, Izd-vo Akad.nauk SSSR, 1950.
528 p. (MIRA 14:7)
(Macromolecular compounds)

28

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

High-Molecular-Weight Compounds. XXIV. (1). Causes of Creation of Chain Growth in Polycondensation Reactions. XXVI. (1). One Peculiarity of the Process of Chemical Disintegration of High-Molecular-Weight Compounds. (In Russian.) V. V. Korshak. *Izvestiya Akademii Nauk SSSR (Bulletin of the Academy of Sciences of the USSR), Section of Chemical Sciences, Jan.-Feb. 1950, p. 47-55.*

First article presents and discusses results of investigation of typical types of above reactions. In the second article, the problem of change of coefficient of polymerization and molecular weight of high polymers during chemical disintegration is studied. Experimental data are tabulated and charted. 24 ref.

ASAC METALLURGICAL LITERATURE CLASSIFICATION 28000 MONTHLY

MATERIALS INDEX COMMON ELEMENTS COMMON VARIABLES INDEX

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

1ST AND 2ND CODES PROCESSING AND PROPERTIES CODES 3RD AND 4TH CODES

COMMON ELEMENTS

Sgt L.

Synthetic Rubber and Allied Products

Chemical degradation of high-molecular compounds. V. V. KONTAN. *Izvest. Akad. Nauk S.S.S.R., Otdel Khim. Nauk*, 1950, Jan./Feb., p. 51 0; *Kunststoffe*, 1951, 41, 165. In this theoretical study of the degradation processes of high-molecular substances the author assumes that during degradation an equilibrium process takes place dependent on the amount of degrading agents added. He also finds that as a result of degradation processes the higher-molecular portions are altered to a greater extent. 3514

July '51

ASD-51A METALLURGICAL LITERATURE CLASSIFICATION

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LA 10

Mechanism of the Friedel-Crafts reaction. X Mechanism of the catalytic action of aluminum chloride. V. V. Korshak and N. N. Lebedev (Mendeleev Chem.-Technol. Inst., Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 266-70(1950); cf. *C.A.* 44, 3470b.—The catalytic action of $AlCl_3$ and related Friedel-Crafts reaction catalysts is explained by the presence of a powerful dipole in the catalyst, especially when the twinned mol. $AlCl_3$ is considered, which is given the highly dipolar $AlCl_3 \cdot AlCl_3$ structure, and induces strong polarization in the reactant moles. This is believed to be the important

step in the usual aromatic reactions catalyzed by the metal halides of this type. The action of $BF_3 \cdot Et_2O$ is similar, being due to dipole formation between pos. O and neg. B atoms.
G. M. Kosolapoff

CA

High-molecular weight compounds. XXVI. Polymerization of vinyl iodide and some properties of 1,2-diodoethane. V. V. Korshuk, K. K. Samplavskaya, and N. M. Dovol'skaya (D. I. Mendeleev Chem.-Technol. Inst., Moscow). *Zhur. Obshch. Khim. (J. Gen. Chem.)* 20, 2880-4 (1950); cf. *C.A.* 44, 7317i; 45, 1813e. — $C_{2}H_4I_2$ passed rapidly through an absorption train contg. 500 g. iodine with 150 ml. 80% EtOH and irradiated with a 1000-w. bulb was gradually transformed into $(CH_2I)_n$, yellow needles, which, after washing with aq. KI and drying, m. 79° (yield 20-50 g.). $(CH_2I)_n$ (140 g.) and 40 g. NaOH in 350 ml. EtOH heated on a steam bath gave 10.82 l. gas contg. 87% C_2H_4 , tar, and CH_4 . Careful warming of 11.5 g. $(CH_2I)_n$ with 40 ml. 0.8% KI in Me_2CO gave 0.58 l. (57%) C_2H_4 ; in EtOH 36% is obtained; NH₄CNS in EtOH gave 19.7-40.2%. Slow addn. of 178 ml. 3 N EtONa in EtOH to 150 g. $(CH_2I)_n$ gave 14.5 l. gas contg. 81.6% C_2H_4 , and 1-1.5 g. $CH_2=CHI$, b. 59°. Heating the latter (0.7 g.) with 1.5 ml. 0.1 N $Na_2S_2O_8$ at 150° (unstated time) caused polymerization to a dark crumbly solid, sol. in cresol and partly sol. in $(CH_2Cl)_2$ or $(CH_2Br)_2$. Heating 150 g. $(CH_2I)_n$ with 130 g. KOH, 250 ml. H_2O , and 500 ml. EtOH to 60-5° (finally to 70-5°) gave 63% $CH_2=CHI$, b. 16°. This (16 g.), let stand 7-10 days with 0.032 g. Bz_2O_2 , gave 2-2.5 g. solid polymer; after 2 months a 100% yield is obtained; the polymer is a colorless crumbly solid, decomp. 120°, soly. in $(CH_2Br)_2$ 2, $PhCl$ 1, cold dioxane 0.05, hot dioxane 0.6, $(CH_2Cl)_2$ 0.5, $PhCH_2Cl$ 0.2, $RtBr$ 0.3%, poorly sol. in CS_2 and $PhNO_2$, insol. in EtOH, Et₂O, or Me_2CO . Boiling 3 g. polymer with 9 g. KOH in 300 ml. dioxane 16 hrs. gave 2 g. hydrolysis product contg. 8.5% H_2 . The cause of the poor polymerization of $CH_2=CHI$ is the liberation of iodine, which acts as an inhibitor, and preventives, such as fine Ag or BH_3 , were ineffective. G. M. Kosolapoff

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High-molecular weight compounds. XXVIII. Action of hydriodic acid on ethylene glycol and its polyesters. V. V. Korshak and S. A. Pavlova (Acad. Sci. U.S.S.R., Moscow). *Zvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1950, 76-7; cf. C.A. 44, 7218a. —Boiling 10 g. (C₂H₄OH)₂ with 100 ml. HI (b. 125-7°) gave 0.5 l. gas, identified as C₂H₄ (formation of dibromide); distn. of the residual liquid gave a fraction b. 110-12°, which yielded a small amt. of poorly stable (C₂H₄)₂, m. 81°; no HI was detected (cf. Grin and Bockisch, C.A. 3, 179). Hence, the reaction proceeds by formation of (C₂H₄)₂ which decomp. into I and C₂H₄, and the Zeisel detn. fails with glycol. Attempted use of the method for the detn. of HO groups terminating polyesters of glycol with dicarboxylic acids similarly failed and gave erratic results. Evidently, the polyesters were hydrolyzed by HI, forming (C₂H₄)₂, which then decompd. as above.

XXIX. Polyhydrazones. V. V. Korshak and E. A. Porhil'tsova. *Ibid.* 412-17. —Condensation of (*p*-H₂NNHC₆H₄)₂ (I) with dicarbonyl compds. gave polymers. A closer study of the reaction with Ac₂ showed that excess of the latter lowered the mol. wt. of the resulting polymer. Benzilone (18.0 g.) in 24 ml. 30% HCl and 100 ml. hot H₂O, cooled to 30-40°, treated with 50 g. ice, followed by 24 ml. concd. HCl dil. with 24 ml. H₂O, cooled to -10°, and diazotized rapidly by 70 ml. 20% NaNO₂ (the temp.

may rise to 12°) gave a nearly neutral soln.; addn. of the diazotate soln. to 120 g. NaCl in 300 ml. concd. HCl (after some cooling) gave a vigorous reaction (much foam), which was completed by 2 hrs. on a steam bath; diln. with H₂O, heating, and cooling gave 50% I HCl salt, which forms a tar very readily. Alternative reduction: the diazotate soln. is added to a cooled satd. aq. soln. of 150 g. Na₂SO₃; diln. with much H₂O, heating, treatment with Zn-AcOH, filtration, cooling, and addn. of HCl, gave 48% I HCl salt, yellow-red solid which could not be recrystd. Although I condenses with aldehydes in various solvents, the following was the best procedure: 1 g. C₂H₄Ac₂ and 2.14 g. I in 15 ml. AcOH stirred 2 hrs. on a steam bath and dil. gave 0.6 g. brown solid, m. 320-40°, mol. wt. (cryoscopic in C₆H₆) 3578, (by viscosity) 3629. *Ac₂* similarly gave the polyhydrazones in unstated yield, whose mol. wt. (in dioxane) ranged from 3849 to 1245 when the amt. of Ac₂ was raised from 0% excess to 50% excess over theory; the product did not melt. *p*-C₆H₄(CHO)₂, m. 120-4° (0% from *p*-C₆H₄(COCl)₂ by heating with Pd in xylene in a stream of H₂ at 150°; the chloride, m. 77-8°, b. 258 (3)°, was obtained in 85% yield by heating the acid with PCl₅-POCl₃ 6 hrs., followed by 12 hrs. standing), with I also gave a low yield of polyhydrazones, m. 206-22°, mol. wt. (in dioxane) 2782. G. M. K.

CA

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New type of linear polycondensation reaction trans-
arylation. V. V. Korshak and G. S. Kolesnikov (Acad.
Sci. U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 70,
623 7 (1950); cf. *C.A.* 42, 545b. — Heating (PhCH₂)₂ with
AlCl₃ in a dry C₆H₆ stream to 180° and 140° until C₆H₆
evolution stopped gave, after washing and distn., about
40% unreacted material, the rest being "polyphenylene
ethyl," i.e. apparently a linear polymer with CH₂CH₂C₆H₄
repeating units and Ph chain terminations; this was pptd.
by pptn. with MeOH from C₆H₆ and had a mol. wt
of 3800-4000 when made at 180° or 3800-4200 if made at
140°. Its oxidation with Cr oxide gave terephthalic acid.
The product treated with much C₆H₆ during the reaction
undergoes "benzoylisis," i.e. chain scission. G. M. K.

IVANOV, V.I., doktor tekhnicheskikh nauk; KORSHAK, V.V., doktor khimicheskikh nauk, otvetstvennyy redaktor; KOROBITSYNA, I.L., redaktor izdatel'stva; KISEL'VA, A.A., tekhnicheskiiy redaktor

[Macromolecules] Molekuly-giganty. Moskva, Izd-vo Akademii nauk SSSR, 1951. 116 p. (MLBA 9:11)
(High molecular weight compounds)

CA 19

High-molecular-weight compounds. XXXV. Role of alcoholysis in polyesterification. V. V. Koroluk and S. V. Vinogradova (Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1951, 63-9; cf. *C.A.* 45, 7553c.—The kinetics of the alcoholysis of Et stearate (I) by cetyl alc. (II), $C_{18}H_{37}CO_2Et + C_{18}H_{37}OH \rightleftharpoons C_{18}H_{37}CO_2C_{18}H_{37} + EtOH$, is investigated as a model of the alcoholic side reaction assumed to accompany polycondensation and, along with acidolysis and ester exchange, to break the growth of the polycondensation chain. The progress of the reaction was followed by extn. of the EtOH formed with H_2O and its oxidation with $K_2Cr_2O_7$ to AcOH. With equimol. amts. of I and II and concd. H_2SO_4 (1% of the wt. of I) as a catalyst, the 2nd-order rate consts. at 122, 168, and 183° were: for the forward reaction, 0.510, 0.880, and 1.300, and for the back reaction, 1.345, 1.039, and 0.545 g./hr.; the equil. consts. = 2.038, 1.170, and 0.303. With $C_{18}H_{37}ONa$ (1% of the wt. of I) as a catalyst, at 183 and 250°, the 2nd-order rate consts. for the forward reaction, are 0.120 and 0.536, and for the back reaction, 0.427 and 0.228 g./hr.; the equil. consts., 3.140 and 0.426. Without catalyst, at 250°, rate consts.: forward 0.212, back reaction 0.060; equil. const. 3.000. Activation energies, in the temp. ranges 122-188°, 122-168°, and 168-183°, with H_2SO_4 , for the forward reaction, 1010, 571, and 12,050 cal.; for the back reaction, -930, -270, and -10,370 cal.; with $C_{18}H_{37}ONa$, in the temp. range 183-250°, forward 2700, back reaction -1173 cal. With H_2SO_4 , at 183°, the conversion attains 81.5%; with $C_{18}H_{37}ONa$, at 250°, 99.0%; without catalyst, at 250°, 30.3%. Alcoholysis undoubtedly plays a nonnegligible role in the polycondensation of glycols with dicarboxylic acids. N. Thon

KORSHAK, V. V.

V. V. Korshak and S. V. Vinogradova, High molecular compounds. 36. The importance of acidolysis in the reaction of polyesterification. P. 179.

Inst. of Organic Chem.
Acad. of Sci., USSR.
March 20, 1950.

SO: Bulletin of the Acad. of Sciences, Izvestia (USSR) Section on Chemical Sciences, No. 2. (March-April 1951).

C.A.

Studies in the field of high-molecular compounds.

- XXVII. Role of the exchange reaction between esters in the polyesterification process. V. V. Kazahak and S. V. Vinogradova (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1951, 334-8; cf. C.I. 45, 8975g. — The rate of the ester exchange reaction, $C_{17}H_{33}CO_2R_1 + AcOC_{17}H_{33} \rightleftharpoons C_{17}H_{33}CO_2C_{17}H_{33} + AcOR_1$, was investigated by equimol. amts. of the 2 esters, and with H_2SO_4 (1% of the wt. of the stearate) as a catalyst, the amts. of $AcOR_1$ formed were: at 123°, in 1, 2, 4, 6 hrs., 18.3, 21.2, 30.4, 36.7%; at 168-9°, in 1, 2, 3, 4, 5, 6 hrs., 21.7, 26.9, 32.4, 40.0, 48.7, 48.7%; at 183-4°, in 1, 2, 3, 4, 5 hrs., 26.8, 41.0, 51.5, 53.5, 51.5%; at 230°, in 1, 2 hrs., 32.1, 38.2%; after 2 hrs. at 250°, the reaction mixt. underwent decompos. Without catalyst, at 183-4°, in 1, 3, 5, 6 hrs., 0, 10.5, 13.4, 13.5%; at 250°, in 1, 2, 3, 4, 6 hrs., 4.7, 11.5, 13.8, 14.0, 15.5%. With $NaOH$ (1% of the wt. of the stearate), as a catalyst, at 183-4°, in 1, 2, 3, 4, 5 hrs., 7.0, 10.4, 13.0, 18.7, 25.3%. The equil. const. K , and the rate consts. k_1 and k_2 of the forward and the backward reaction, calcul. from these data, are: with H_2SO_4 as a catalyst, at 183°, $K = 0.097$, $k_1 = 0.298$, $k_2 = 0.2005$; at 168°, 1.100, 0.375, 0.330; at 123°, 3.140, 0.257, 0.805; without catalyst, at 250°, 29.600, 0.080, 2.110; at 183°, 41.000, 0.050, 2.040. The activation energies for the forward and backward reactions, with H_2SO_4 , in the range 168-183°, 1370 and -14125 cal./mole; 123-168°, 100 and -935; 123-183°, 110 and -1410; without catalyst, 183-250°, 875 and -1080 cal./mole. Ester exchange reactions play a major role in polyesterification processes.

N. Thou

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High-molecular compounds. XXXVIII. Polyamides from 4,4'-diaminodiphenylmethane and dicarboxylic acids. V. M. Kozlov and S. V. Rogozhin. *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk*, 1961, 226-8; *ibid.*, 1947, 109; *C.A.* 42, 1440d, 2222d. — (*p*-H₂N-C₆H₄-CH₂-N₂) (from the dinitro aniline with *m*-HCl), does not form salts with aliphatic dicarboxylic acids. Heating equimolar amounts of the diamine and adipic acid 15 min. to 180° gave an insol. polyamide, m. above 400°, also formed on condensation in creosol as solvent. Sebacic acid forms a similarly insol. polyamide, m. 390°, which decomp. extensively on melting, with swelling; the swelled product absorbs creosol but does not dissolve in it appreciably; a similar product is obtained by condensation in solvent system at 200°. XXXIX. Condensation of benzene with 1,2-dichloroethane. G. B. Kolesnikov, V. V. Korshak, and T. V. Smirnova. *Ibid.*, 508-510. — Addn. of (CH₂Cl)₂ to C₆H₆ and AlCl₃ at room temp., heating 4 hrs. on a steam bath, hydrolysis, and evapn. of the C₆H₆ gave products conig. (PhCH₂)_n, *p*-diphenylbenzene, *m*-: 215-30°, and polyphenylethyl, whose mol. wt. rose from 2100 to 6400 on changing the ratio C₆H₆ to (CH₂Cl)₂ from 2 to 1.20. The yields of the low-mol. products underwent a steady decline as the reagent ratio was altered, amounting to 8.2% (total) for the lowest ratio. The polymer yield rose from 52 to 75%. After a 1.4 molar ratio is reached the mol.-wt. rise of the polymer becomes relatively small with increase of (CH₂Cl)₂ concn. *p*-C₆H₄(CH₂CH₂Ph)₂ with K₂Cr₂O₇ gave BuOH and *p*-C₆H₄(CO₂H)₂, confirmed by conversion to the di-Me ester, m. 130-5.5°. The polyphenylethyl polymer thus is probably a linear mol. of C₆H₄ and CH₂ units in para linkage. G. M. Kozlov

Instr. Proj. Chem
AS USSR

KORSHAK, V. V.

USSR/Chemistry - Polyamide Fibers Sep/Oct 51

High-Molecular Compounds. Communication 39.
Condensation of 1,2-Dichloroethane With Benzene,
G. S. Kolesnikov, V. V. Korshak, T. V. Saitinov,
Inst of Org Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 5,
pp 595-600

Study of polycondensation of $C_6H_4Cl_2$ with dif-
ferent molar proportions of C_6H_6 . In presence of
 $AlCl_3$ revealed that chief product is polyphenyl-
ene ethyl, other products are diphenylethane and

195720

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(Contd)

bis-(p-(3-phenylethyl))-benzene. Mol wt of
polyphenylene ethyl increases with reduced ex-
cess of C_6H_6 . (smaller molar ratio of C_6H_6 to
 $C_6H_4Cl_2$).

195720

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KORSHAK, V. V.

PA 197T11

USSR/Chemistry - High-Molecular Compounds Nov/Dec 51

"High-Molecular Compounds. IXI. Alcoholysis of Polyesters," V. V. Korshak, S. V. Vinogradova, Inst Org Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 756-759

Investigated alcoholysis of polyhexamethylenesuccinate by heating it with varying quantities of cetyl alc. Found that the destruction of polyester is directly proportional to the quantity of cetyl alc. The longest mols are destroyed last

USSR/Chemistry - High-Molecular Compounds (Contd) Nov/Dec 51

cause the greatest deg of destruction. Because of the equil character of the reaction and its reversibility, not all of the cetyl alc is utilized in the destructive reaction.

197T11

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High-molecular compounds. XI. Comparative tendency toward destruction of macromolecules of different lengths. V. V. Korshak. *Izvst. Akad. Nauk S.S.S.R., (Mol. Khim. Nauk 1951, 753-5; C.I. 46, 7084).*—The chain scission of polymers by a "destructive" mol. is more pronounced in substances of high mol. wt. Assuming the link of the polymer, it is readily seen that cleavage of 1 "destructive" material amts. to 0.0010 mole of this substance per mole of polymer contg. 10 units, and only 0.05 mole per mole of a 500-unit polymer. The location of the cleavage mole of a mol. wt. of the resulting fragments is discussed briefly; cleavage near the mol. center produces 2 small fragments relatively "resistant" to further cleavage, while a cleavage near a chain end produces 1 large fragment, whose fusibility is nearly that of the initial polymer. XIII. Alcoholysis of polyesters. V. V. Korshak and S. V. Vinogradova. *Ibid.* 756-60.—In the alcoholysis of polyhexamethylene sebacate by cetyl alc. at 190° the degree of chain scission is directly proportional to the concn. of cetyl alc. The longer chains are cleaved first (cf. preceding abstr.). Because of reversibility of the reaction, not all the cetyl alc. is utilized. XII. Transarylation reaction of diarylalkynes. G. S. Kolesnikov and V. V. Korshak. (D. I. Mendeleev Chem.-Technol. Inst., Moscow). *Ibid.* 761-70.—Addn. of 100 g. PhCH_2Cl to 400 ml. C_6H_6 and 6 g. AlCl_3 at reflux gave 49-52% Ph_2CH , b.p. 130-40°. Similarly, $(\text{CH}_2\text{Cl})_2$ yields 35-37% $(\text{PhCH}_2)_2$, b.p. 118-23°, m. 51-2° (from EtOH). Friedel-Crafts reaction

of C_6H_6 with $\text{C}_6\text{H}_5\text{CH}_2\text{Br}$ according to Tsubervankh and Yatsimirskii (C.I. 35, 3081) gave but 15% $\text{CH}_2(\text{C}_6\text{H}_5)_2$; the reaction run as outlined above gave 20-34%, b.p. 155-6°; Wurtz-Fittig reaction with 13 g. Na dust in Et₂O with 31.4 g. $\text{C}_6\text{H}_5\text{CH}_2\text{Br}$ and 31.4 g. PhBr gave 25-30% (based on PhBr). $(\text{C}_6\text{H}_5)_2\text{CH}$ (90 g.) treated at 0° with 200 g. PhBr , then let stand overnight, gave 85-90% 1,4-dibromobutane, b. 192-3°. Wurtz-Fittig reaction of this with PhBr gave 28-32% 1,4-diphenylbutane, m. 51-2°, b.p. 123-55° (crude). The above diaryl deriva. (0.11 mole) were subjected to a stream of pure N, the volatile hydrocarbons being collected over a 5-hr. exptl. period. Ph_2CH , Ph_2CHMe , $(\text{PhCH}_2)_2$, $(\text{PhCH}_2)_3$, and 1,2-bis(tetrahydro-2-naphthyl)ethane undergo the transarylation reaction, yielding, resp.: 6.1, 8.5, 4.5, 1.6, and 7.2 g. C_6H_6 (0, 0, 1.2, 7.6, 1.8, and 11.7 g. starting material); and 2.33, 7.0, 5.1, 2.2, and 13.2 g. linear polymer (sol.); and 2.33, 0.1, 0.5, 0, and 0 g. tridimensional polymer. The reaction is visualized as taking place at ortho and para positions of the aromatic rings with participation of the cleaved aliphatic bridges. The last substance gave 6.6 g. tetrahydronaphthalene. The polymer from $(\text{PhCH}_2)_2$ is polyphenyleneethyl, while $\text{CH}_2(\text{C}_6\text{H}_5)_2$ yields polyphenylenepropyl, as shown by oxidation. G. M. Kozolapoff

KORSHAK, V. V.

USSR/Chemistry - High-Molecular Compounds

Nov/Dec 51

"High-Molecular Compounds. IXLII. Rearylation of Diarylalkylenes," G. S. Kolesnikov, V. V. Korshak, Inst Org Chem, Acad Sci USSR, Moscow Chimicotechnol Inst imeni D. I. Mendeleev

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 761-770

Polycondensation of 1,2-diphenylethane in the presence of $AlCl_3$ into polyphenyleneethyl, as described previously by the authors, is based on a rearylation (benzene is liberated). In this instance, established that diphenylmethane, 1,1-diphenylethane, 1,3-diphenylpropane (I) 1,4-diphenylbutane (II), and 1,2-di-(beta-tetra-lyl)-ethane also undergo rearylation. Found that with I and II, there is cyclic condensation under formation of hydeindene and tetralin in addition to polycondensation. With II, cyclization predominates. In the rearylation of 1,3-diphenylpropane, polyphenylenepropyl is formed.

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Compounds of high molecular weight. XXX. Synthesis of 2-methoxy-1-vinylnaphthalene. G. S. Kolesnikov, V. V. Kurshuk, and I. P. Krakovnaya (D. I. Mendeleev Chem. Technol. Inst., Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 397-401 (1951); cf. C.A. 45, 5004. — 2-CuH₂OH (100 g.) in 200 g. NaOH, 400 ml. H₂O, and 400 ml. EtOH at 60-70° is treated with 100 g. ClCCl₃; after the red color develops, the EtOH is distd. off and mixt. cooled and acidified with HCl; extr. with Et₂O yields 72% 2-hydroxy-1-naphthaldehyde, *b.p.* 185-7°, *m.* 78-80° (from EtOH). This (3.6 g.) is added to 80 ml. 2% KOH at the b.p. and treated with 10 g. Me₂SO₂ over 20-30 min. with the mixt. kept alk. at all times; filtration after cooling yields 86% crude 2-methoxy-1-naphthaldehyde, *m.* 84° (from EtOH); a little starting material may be recovered from the soln. The product (4 g.) added to MeMgI (from 10 g. MeI) in 25 ml. Et₂O and 15 ml. dry CaH₂ and heated 30-40 min. yields after the usual treatment 80.6% (2-methoxy-1-naphthyl)methylcarbinol, *m.* 72-3° (from Et₂O, then from petr. ether). Dehydration by heating with an open flame in the presence of KHSO₄ and a little hydroquinone yields a glassy polymer of 2-methoxy-1-vinylnaphthalene, softening about 110-15°, with polymerization stage 04. Dehydration under reduced pressure (20 mm.) gives a similar polymer, softening at 104°, *m.* 154°. Hence, the 2-MeO group does not sterically hinder the activity of the vinyl group.

G. M. Kosolapoff

1251

KORSHAK, V. V.

"Chemistry of Highly Molecular Compounds," *Kommunist*, No. 62, 16 March 1951,
Yerevan.
Lab. of Organic Chemistry of the Academy of Sciences of USSR.

Abstract - Report No. 112887

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Transarylation reaction of diarylalkanes V. A. Kutshak and G. S. Kolesnikov. *Doklady Akad. Nauk S.S.S.R.* 76: 69-72 (1951); cf. C.A. 44: 4888a. — Treatment of PhCH_2 , PhCH_2Me , $\text{PhCH}_2\text{CH}_2\text{Ph}$, $\text{Ph}(\text{CH}_2)_3\text{Ph}$, $\text{Ph}(\text{CH}_2)_4\text{Ph}$, and 1,2-bis(tetrahydro-2-naphthyl)ethane with AlCl_3 yields C_6H_6 or the corresponding elementary aromatic hydrocarbon, and a polymeric product (linear or insol. tridimensional). The insol. tridimensional polymers appear to result by chain branching. (PhCH_2)_n yields, as polymeric product, polyphenyleneethyl (C.A. 42, 727b), proved by oxidation to $p\text{-C}_6\text{H}_4(\text{CO}_2\text{H})_2$. The polymer from $\text{Ph}(\text{CH}_2)_3\text{Ph}$ consists of $-\text{C}_6\text{H}_4\text{CH}_2\text{CH}_2\text{CH}_2-$ units, as shown by oxidation to $p\text{-C}_6\text{H}_4(\text{CO}_2\text{H})_2$ and $p\text{-C}_6\text{H}_4(\text{CH}_2\text{CO}_2\text{H})_2$; along with this linear product there is indication of ring formation and chainfolds as indan was also isolated. With $\text{Ph}(\text{CH}_2)_3\text{Ph}$ the cyclization is predominant and the main product is tetrahydronaphthalene and C_6H_6 ; the reaction being reversible, 5.9-8.4% yields of $\text{Ph}(\text{CH}_2)_3\text{Ph}$ are obtained from tetrahydronaphthalene and AlCl_3 . The possible mode of formation of 9,10-dimethyl-9,10-dihydroanthracene from Ph_2CHMe and of anthracene from Ph_2CH_2 in the presence of AlCl_3 may be: reaction of 2 mols. of the aromatic compd., yielding *o*- and *p*-condensation dimers; the *o*-dimer readily cyclizes with elimination of C_6H_6 , while the *p*-dimer may be isomerized into the *o*-isomer to carry the cyclization reaction to high yields. G. M. K.

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