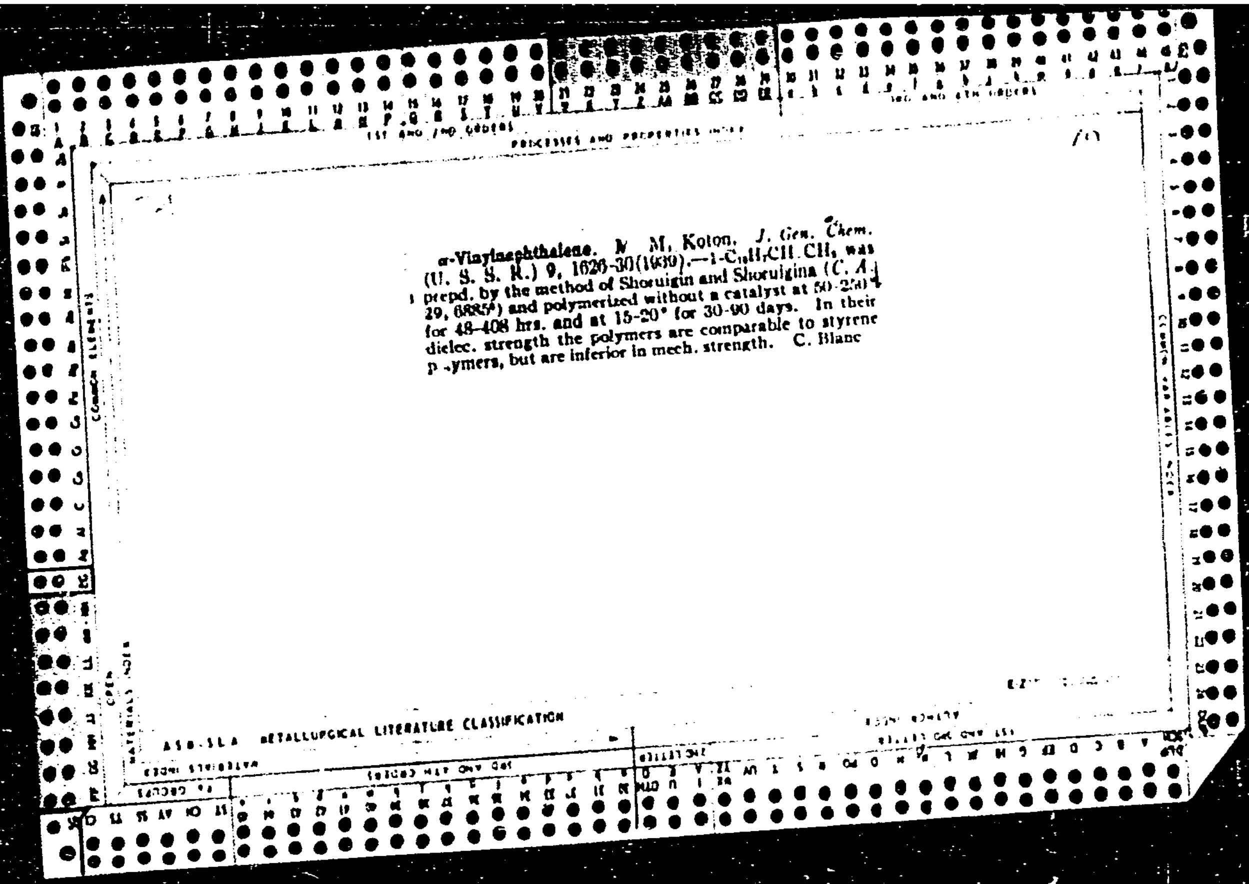
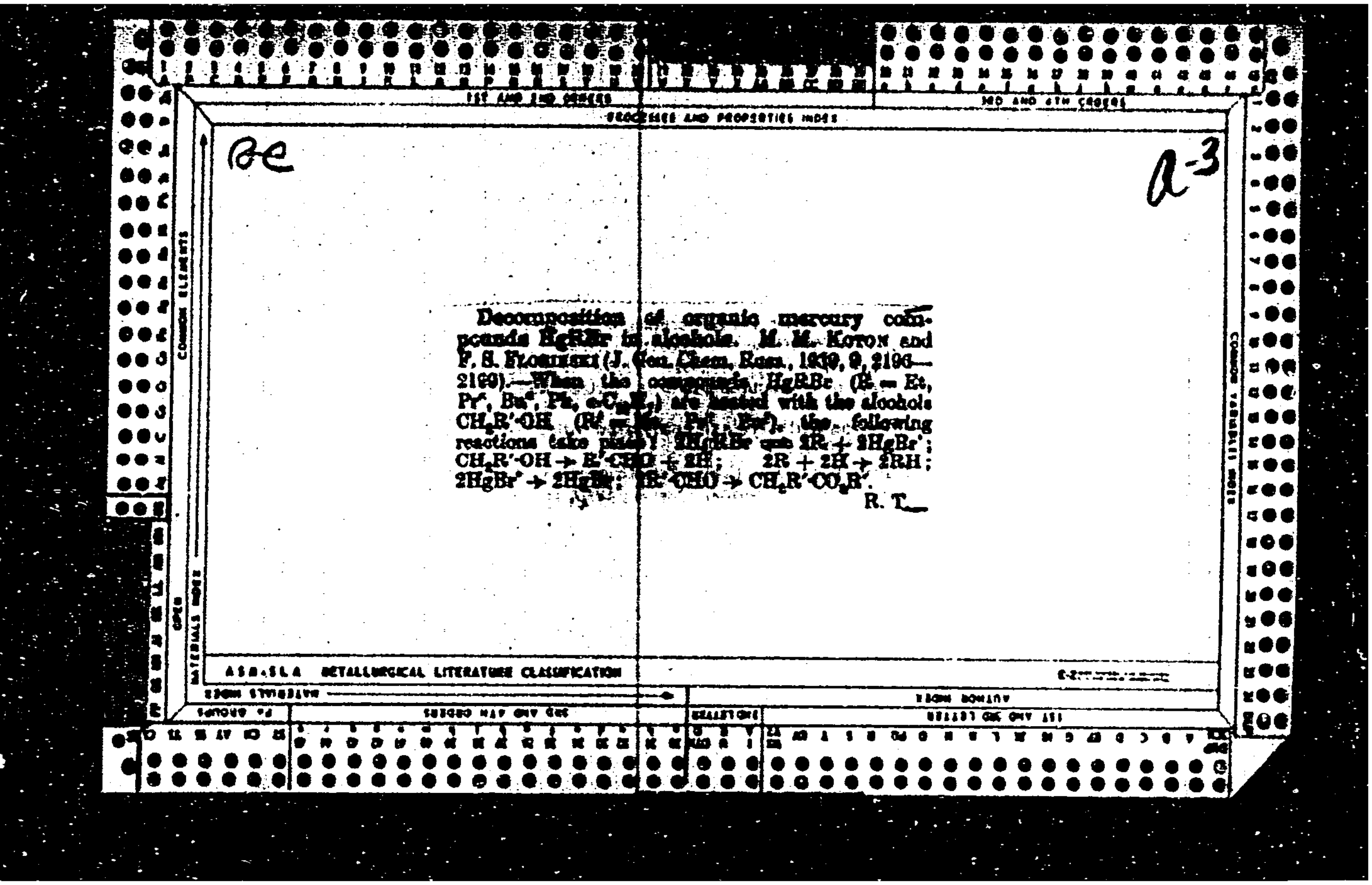


α-Vinylnaphthalene. M. M. Koton. *J. Gen. Chem.* (U. S. S. R.) 9, 1626-30(1939).—1-$C_{10}H_7CH:CH_2$ was prepd. by the method of Shoruigin and Shoruigina (*C. A.* 29, 6885⁴) and polymerized without a catalyst at 50-250° for 48-408 hrs. and at 15-20° for 30-90 days. In their dielec. strength the polymers are comparable to styrene polymers, but are inferior in mech. strength. C. Blanc

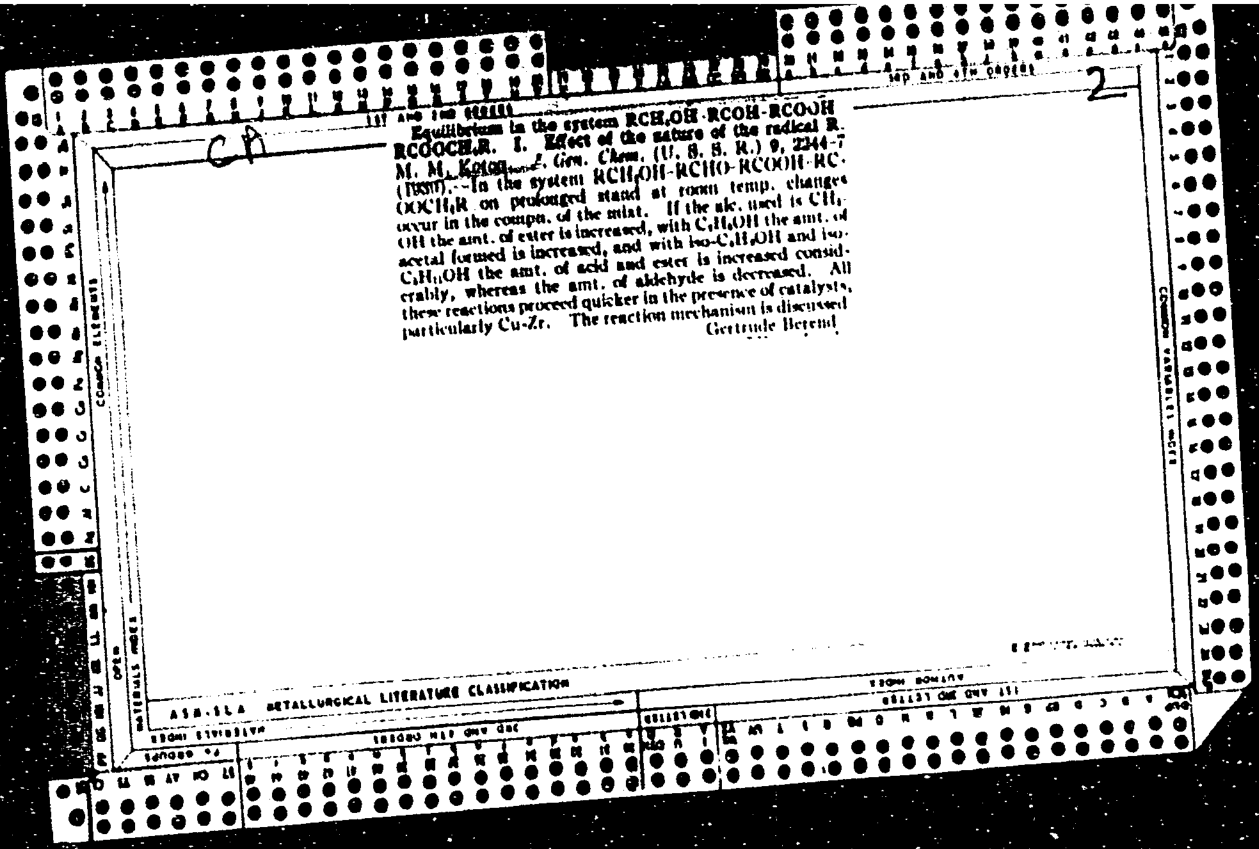


Be

a-3

Decomposition of organic mercury compounds HgRBr in alcohols. M. M. Koton and F. S. Florinski (J. Gen. Chem. Russ., 1939, 9, 2196—2199).—When the compounds HgRBr (R = Et, Pr^{α}, Bu^{α}, Ph, c-C_6H_{11}) are heated with the alcohols $CH_2R'\cdot OH$ (R' = Me, Pr^{α}, Bu^{α}), the following reactions take place: $2HgRBr \rightarrow 2R + 2HgBr'$; $CH_2R'\cdot OH \rightarrow R'\cdot CHO + 2H$; $2R + 2H \rightarrow 2RH$; $2HgBr' \rightarrow 2Hg$[illegible]; $2R'\cdot CHO \rightarrow CH_2R'\cdot CO_2R'$.

R. T.

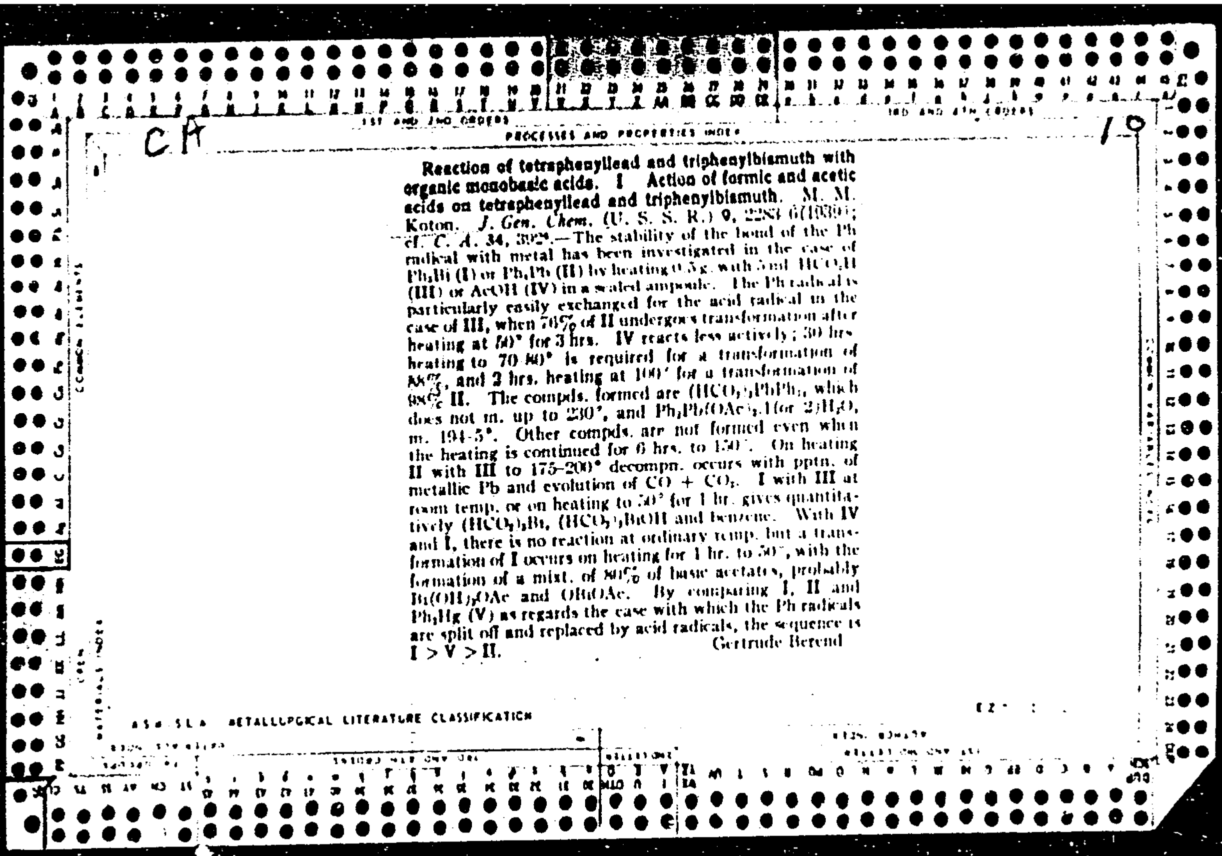


CA

2

Equilibrium in the system RCH_2OH-$RCOH$-$RCOOH$-$RCOOCH_2R$. I. Effect of the nature of the radical R. M. M. Koton. J. Gen. Chem. (U. S. S. R.) 9, 2244-7 (1939).—In the system RCH_2OH-$RCHO$-$RCOOH$-$RCOOCH_2R$ on prolonged stand at room temp. changes occur in the compn. of the mixt. If the alc. used is CH_3OH the amt. of ester is increased, with C_2H_5OH the amt. of acetal formed is increased, and with iso-C_4H_9OH and iso-$C_5H_{11}OH$ the amt. of acid and ester is increased considerably, whereas the amt. of aldehyde is decreased. All these reactions proceed quicker in the presence of catalysts, particularly Cu-Zr. The reaction mechanism is discussed.

Gertrude Berend



CA

10

Reaction of tetraphenyllead and triphenylbismuth with organic monobasic acids. I Action of formic and acetic acids on tetraphenyllead and triphenylbismuth. M. M. Koton. *J. Gen. Chem.* (U. S. S. R.) 9, 2283-6(1939); cf. *C. A.* 34, 3025.—The stability of the bond of the Ph radical with metal has been investigated in the case of Ph_3Bi (I) or Ph_4Pb (II) by heating 0.5 g. with 5 ml HCO_2H (III) or AcOH (IV) in a sealed ampoule. The Ph radical is particularly easily exchanged for the acid radical in the case of III, when 70% of II undergoes transformation after heating at 60° for 3 hrs. IV reacts less actively; 30 hrs. heating to 70-80° is required for a transformation of 88%, and 2 hrs. heating at 100° for a transformation of 98% II. The compds. formed are $(HCO_2)_2PbPh_2$, which does not m. up to 230°, and $Ph_2Pb(OAc)_2.1$(or 2)H_2O, m. 194-5°. Other compds. are not formed even when the heating is continued for 6 hrs. to 150°. On heating II with III to 175-200° decompn. occurs with pptn. of metallic Pb and evolution of CO + CO_2. I with III at room temp. or on heating to 50° for 1 hr. gives quantitatively $(HCO_2)_3Bi$, $(HCO_2)_2BiOH$ and benzene. With IV and I, there is no reaction at ordinary temp. but a transformation of I occurs on heating for 1 hr. to 50°, with the formation of a mixt. of 80% of basic acetates, probably $Bi(OH)_2OAc$ and OBiOAc. By comparing I, II and Ph_2Hg (V) as regards the ease with which the Ph radicals are split off and replaced by acid radicals, the sequence is I > V > II. Gertrude Berend

PROCESSES AND PROPERTIES INDEX

Preparation of esters of acrylic acid. P. P. Kobeko, M. M. Koton and F. S. Florinskii. *J. Applied Chem.* (U. S. S. R.) 12, 313-16(in English, 316)(1939).—$KHSO_4$ 200, anhyd. Na_2SO_4 40 g. and dry glycerol 129 cc. were heated in a 1-l. Cu flask, provided with a condenser for removal of acrolein and a dropping funnel for addn. of glycerol, until acrolein appeared in the condenser; then 500 cc. more dry glycerol was added by drops for 5-6 hrs. at 200°. To the acrolein obtained was added Br in ether by drops for 3 hrs., while the reaction mixt. was cooled; the product was heated on a water bath. The $CH_2BrCHBrCHO$ was oxidized with HNO_3 (d. 1.41) while cooling in ice-NaCl mixt. The liquid was evapd., the product was filtered out, washed with cold HNO_3 (d. 1.41) and heated in a water bath to remove the residue of HNO_3. The $CH_2BrCHBrCO_2H$ was esterified with EtOH, BuOH, and iso-AmOH, resp., in the presence of HCl. Et ester, b. 211-14°; Bu ester, b_9 105°, b_{17} 135-7°; iso-Am ester b_8 110-12°, b_{18} 125-30°. The esters were debrominated by adding their emulsions (100 cc. of ester and 20 cc. of 20% H_2SO_4) by drops to EtOH and Zn shavings and heating at 78-80° for 4 hrs. The product after removal of the solids was washed with ether and with water, and then was treated in the usual way. The yield of acrylic esters was 75.8%: Et, b. 98-9°, b_{11} 40°, d_{20} 0.9125; Bu, b. 128-30°, b_{5} 66-8°, d_{20} 0.9141; iso-Am, b. 149-51°, b_{5} 73-5°, d_{20} 0.9109. The esters were polymerized at high temp. and on standing in the presence of light at room temp.

A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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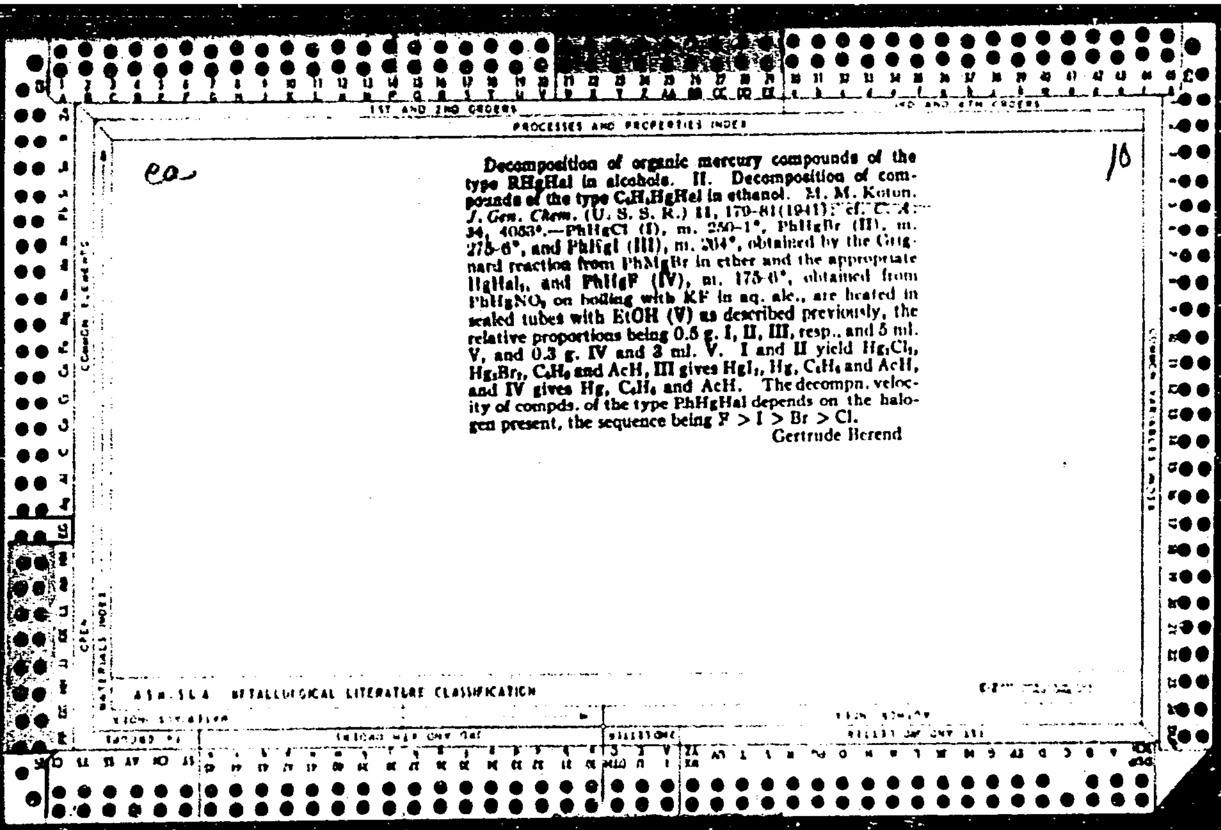
10

Properties of silicoörganic compounds. M. M. Koton. *J. Applied Chem.* (U. S. S. R.) 12, 1435-9(in French, 1439)(1939).—The syntheses of silanols, silanediols and silanetriols were carried out by first prepg. the Mg org. compd. in abs. ether which was then admitted in drops to the ether soln. of $SiCl_4$. The chloride obtained was purified by distn. *in vacuo*, followed by decompn. with ice H_2O acidified with H_2SO_4. The ppt. was removed by suction, extd. with ether (with the addn. of C_6H_6), washed with H_2O, dried over $CaCl_2$ and the ether was finally removed on the water bath. Thus, $Ph_2Si(OH)_2$ yields glass-like polymers resistant to high temps. but fairly brittle when heat treated. $(PhCH_2)_2Si(OH)_2$ under the same conditions does not yield a high-melting polymer. Ph_3SiOH yielded under the above conditions very brittle films. $PhSi(OH)_3$ was synthesized as follows: The Grignard app. was charged with 15 g. Mg shavings activated with I and 100 g. of PhBr and 400 g. abs. ether was then introduced by drops and under agitation to complete soln. of the Mg. The resulting soln. of PhMgBr was added in small portions to 100 g. $SiCl_4$ in 100 ml. abs. ether with agitation and external cooling. The ppt. of MgClBr was removed after cooling, the ether removed on the water bath and the residue contg. mainly $PhSiCl_3$ was decompd. with ice water acidified with H_2SO_4. The white ppt. was extd. with ether contg. C_6H_6, washed neutral with pure water, dried over $CaCl_2$ and the ether was finally removed on the water bath. The product (65% yield) was a glass-like solid mass. It was also prepd. as follows: One part of Mg activated with I and 8 parts of PhBr in a sealed glass ampoule were heated in a thermostat for 4-6 hrs., while raising the temp. gradually from 140° to 165°. Into the ampoule contg. a yellow mass was introduced ether (dried over $CaCl_2$), the mixt. was heated to dissolve PhMgBr and $SiCl_4$ was then introduced. The yield of the final product was 52%. It softened at 80-95°, was insol. in water and sol. in C_6H_6. $PhCH_2Si(OH)_3$ and $C_6H_{11}Si(OH)_3$ were prepd. by the last method, the 1st yielding an elastic film (softening below 140°) after the addn. of insulating varnish "No. 231" (characteristics not given), and the 2nd an elastic film which did not soften at 120° after a preliminary heating for 6 hrs. at 140°. These compds. are suitable as a dielec. material and insulating substance at elevated temps.

V. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

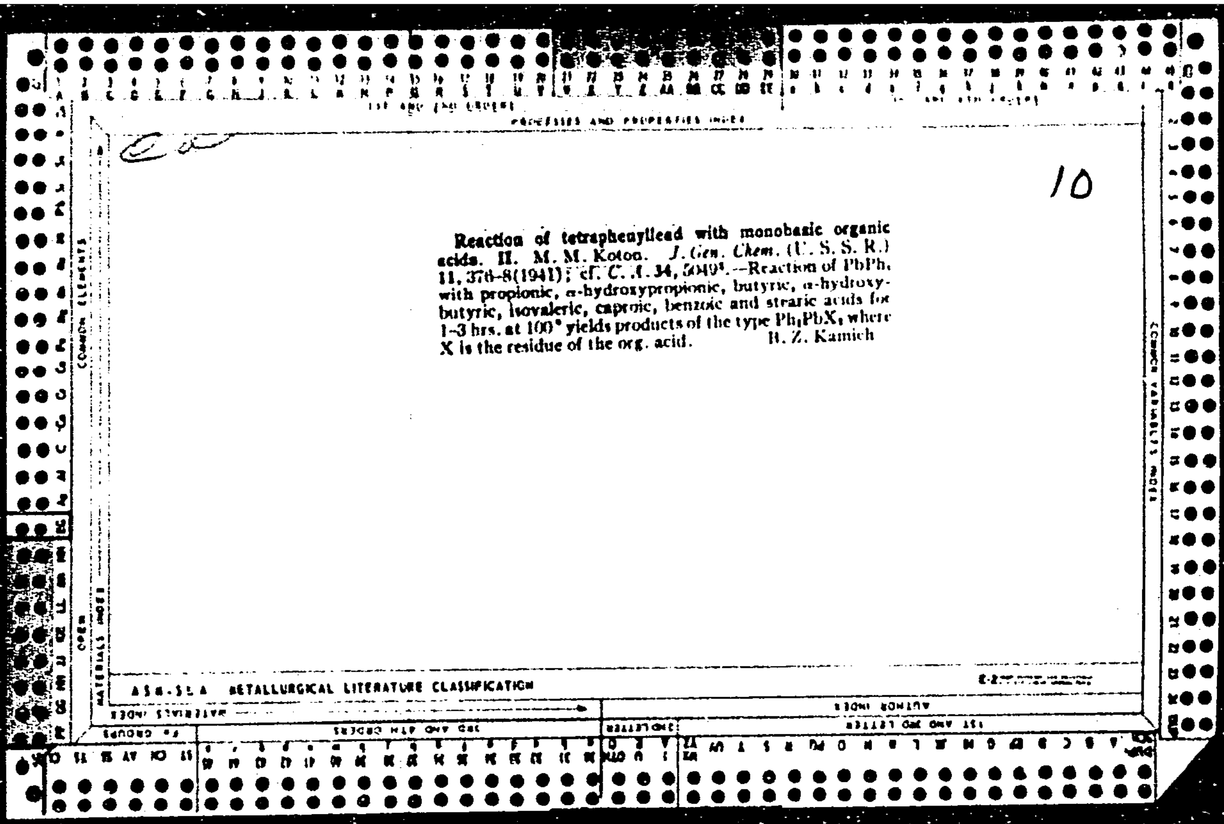


ea

16

Decomposition of organic mercury compounds of the type RHgHal in alcohols. II. Decomposition of compounds of the type C_6H_5HgHal in ethanol. M. M. Koton. *J. Gen. Chem.* (U. S. S. R.) 11, 170-81(1941); cf. C. A. 34, 4053^4.—PhHgCl (I), m. 250-1°, PhHgBr (II), m. 275-6°, and PhHgI (III), m. 264°, obtained by the Grignard reaction from PhMgBr in ether and the appropriate $HgHal_2$, and PhHgF (IV), m. 175-6°, obtained from $PhHgNO_3$ on boiling with KF in aq. alc., are heated in sealed tubes with EtOH (V) as described previously, the relative proportions being 0.5 g. I, II, III, resp., and 5 ml. V, and 0.3 g. IV and 3 ml. V. I and II yield Hg_2Cl_2, Hg_2Br_2, C_6H_6 and AcH, III gives HgI_2, Hg, C_6H_6 and AcH, and IV gives Hg, C_6H_6 and AcH. The decompn. velocity of compds. of the type PhHgHal depends on the halogen present, the sequence being F > I > Br > Cl.

Gertrude Berend



PROCESSES AND PROPERTIES INDEX

Ce

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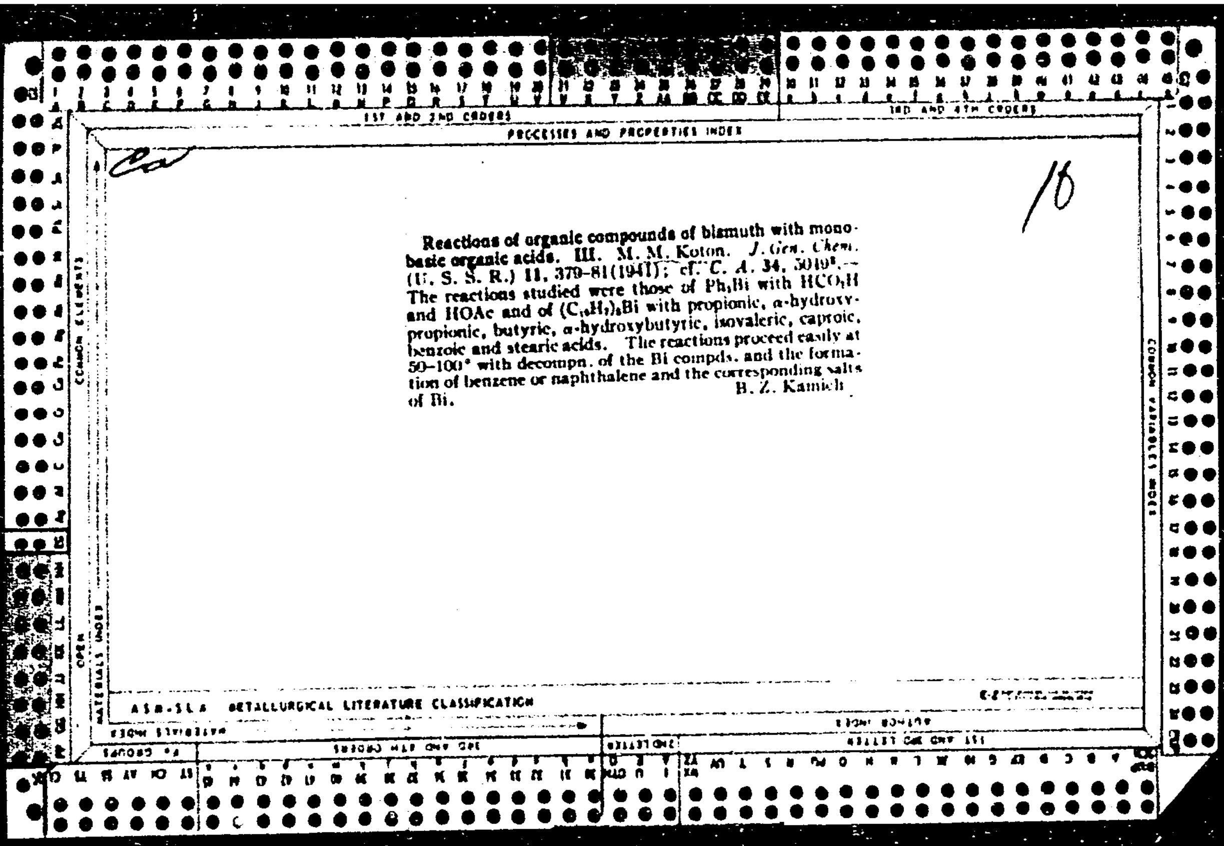
Reaction of tetraphenyllead with monobasic organic acids. II. M. M. Koton. *J. Gen. Chem.* (U. S. S. R.) 11, 376-8(1941); cf. *C. A.* 34, 5049^4.—Reaction of $PbPh_4$ with propionic, α-hydroxypropionic, butyric, α-hydroxybutyric, isovaleric, caproic, benzoic and stearic acids for 1-3 hrs. at 100° yields products of the type Ph_3PbX, where X is the residue of the org. acid. B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



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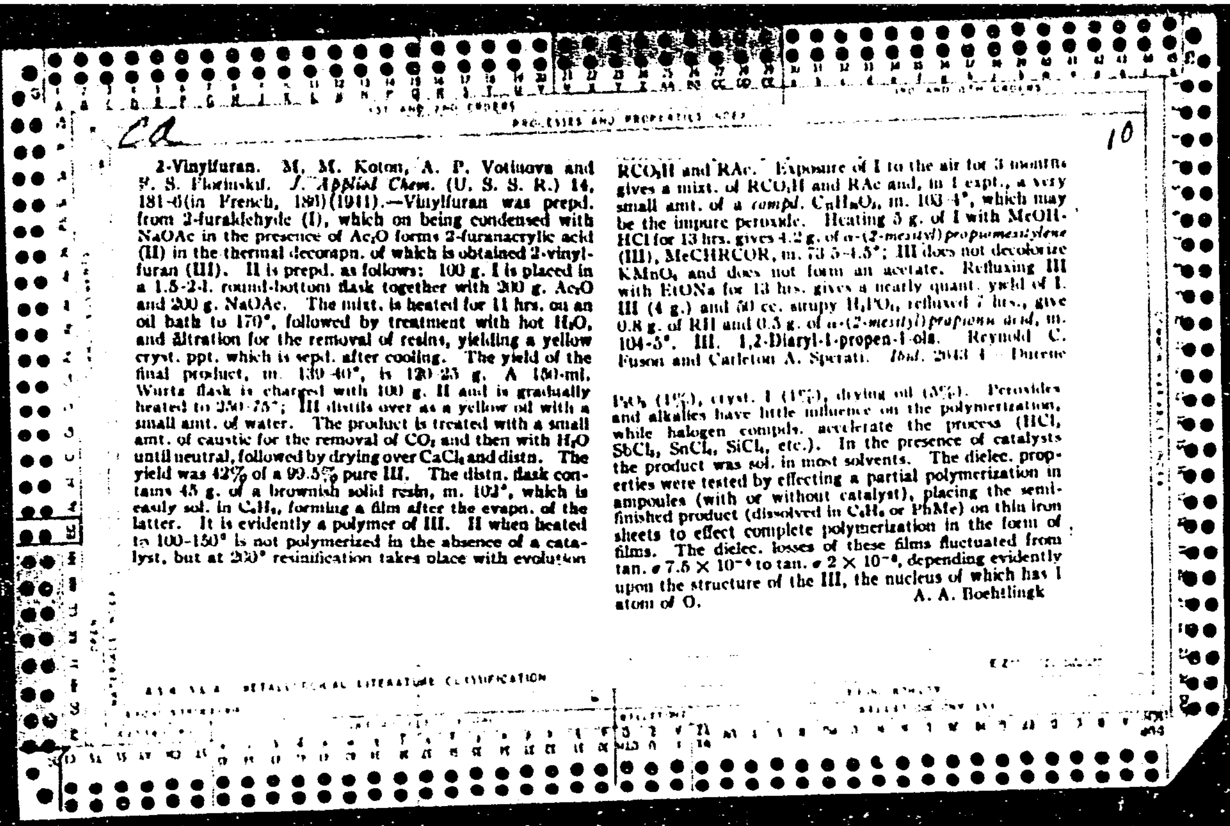
18

Reactions of organic compounds of bismuth with monobasic organic acids. III. M. M. Koton. *J. Gen. Chem.* (U. S. S. R.) 11, 379-81(1941); cf. *C. A.* 34, 5019⁸.—The reactions studied were those of Ph_3Bi with HCO_2H and HOAc and of $(C_{10}H_7)_3Bi$ with propionic, α-hydroxypropionic, butyric, α-hydroxybutyric, isovaleric, caproic, benzoic and stearic acids. The reactions proceed easily at 50-100° with decompn. of the Bi compds. and the formation of benzene or naphthalene and the corresponding salts of Bi.

B. Z. Kamich



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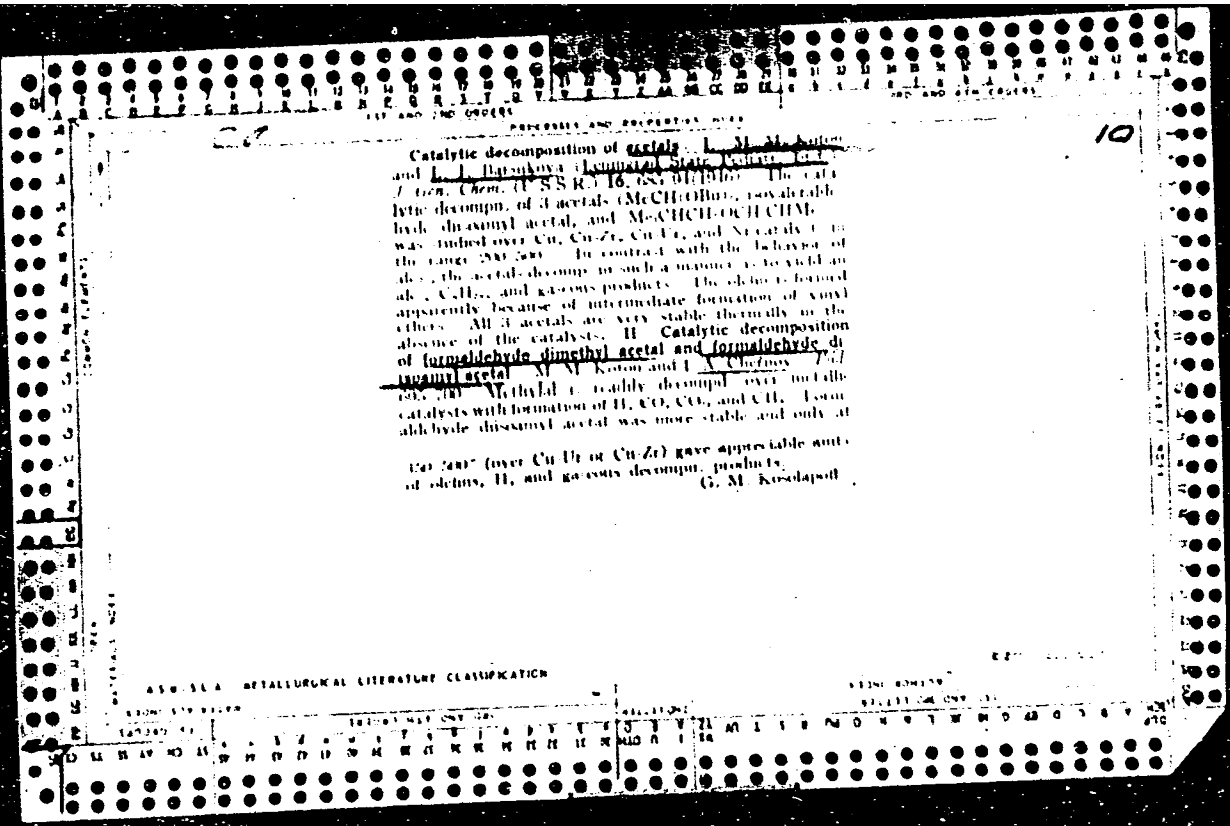
2-Vinylfuran. M. M. Koton, A. P. Votluova and F. S. Florinskii. *J. Applied Chem.* (U. S. S. R.) 14, 181-6(in French, 191)(1941).—Vinylfuran was prepd. from 2-furaldehyde (I), which on being condensed with NaOAc in the presence of Ac_2O forms 2-furanacrylic acid (II) in the thermal decompn. of which is obtained 2-vinylfuran (III). II is prepd. as follows: 100 g. I is placed in a 1.5-2-l. round-bottom flask together with 200 g. Ac_2O and 200 g. NaOAc. The mixt. is heated for 11 hrs. on an oil bath to 170°, followed by treatment with hot H_2O, and filtration for the removal of resins, yielding a yellow cryst. ppt. which is sepd. after cooling. The yield of the final product, m. 130-40°, is 120-25 g. A 150-ml. Wurtz flask is charged with 100 g. II and is gradually heated to 250-75°; III distils over as a yellow oil with a small amt. of water. The product is treated with a small amt. of caustic for the removal of CO_2 and then with H_2O until neutral, followed by drying over $CaCl_2$ and distn. The yield was 42% of a 99.5% pure III. The distn. flask contains 45 g. of a brownish solid resin, m. 103°, which is easily sol. in C_6H_6, forming a film after the evapn. of the latter. It is evidently a polymer of III. II when heated to 100-150° is not polymerized in the absence of a catalyst, but at 200° resinification takes place with evolution

RCO_2H and RAc. Exposure of I to the air for 3 months gives a mixt. of RCO_2H and RAc and, in 1 expt., a very small amt. of a *compd.* $C_{22}H_{28}O_4$, m. 103-4°, which may be the impure peroxide. Heating 5 g. of I with MeOH-HCl for 13 hrs. gives 4.2 g. of *α-(2-mesityl)propiomesitylene* (III), MeCHRCOR, m. 73.5-4.5°; III does not decolorize $KMnO_4$ and does not form an acetate. Refluxing III with EtONa for 13 hrs. gives a nearly quant. yield of I. III (4 g.) and 50 cc. sirupy H_3PO_4, refluxed 7 hrs., give 0.8 g. of RH and 0.5 g. of *α-(2-mesityl)propionic acid*, m. 104-5°. III. 1,2-Diaryl-1-propen-1-ols. Reynold C. Fuson and Carleton A. Speratl. *Ibid.* 2043-4. Durene

[illegible] (1%), cryst. I (1%), drying oil (3%). Peroxides and alkalies have little influence on the polymerization, while halogen compds. accelerate the process (HCl, $SbCl_3$, $SnCl_4$, $SiCl_4$, etc.). In the presence of catalysts the product was sol. in most solvents. The dielec. properties were tested by effecting a partial polymerization in ampoules (with or without catalyst), placing the semi-finished product (dissolved in C_6H_6 or PhMe) on thin iron sheets to effect complete polymerization in the form of films. The dielec. losses of these films fluctuated from tan. δ 7.5 × 10^{-4} to tan. δ 2 × 10^{-4}, depending evidently upon the structure of the III, the nucleus of which has 1 atom of O.

A. A. Boehtlingk



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

10

Catalytic decomposition of acetals. I. M. M. Koton and L. I. Barsukova (Leningrad State Univ.). *J. Gen. Chem.* (U.S.S.R.) 16, 683-91(1946). The catalytic decompn. of 3 acetals (MeCH(OBu)₂, isovaleraldehyde diisoamyl acetal, and [illegible]) was studied over Cu, Cu-Zr, Cu-Th, and Ni catalysts in the range 200-500°. In contrast with the behavior of ethers, the acetals decomp. in such a manner as to yield an ald., the alc., C_nH_{2n}, and gaseous products. The olefin is formed apparently because of intermediate formation of vinyl ethers. All 3 acetals are very stable thermally in the absence of the catalysts. **II. Catalytic decomposition of formaldehyde dimethyl acetal and formaldehyde diisoamyl acetal.** M. M. Koton and L. A. Chefranova. *Ibid.* 693-[illegible]. Methylal is readily decompd. over metallic catalysts with formation of H, CO, CO_2, and CH_4. Formaldehyde diisoamyl acetal was more stable and only at 300° (over Cu-Th or Cu-Zr) gave appreciable amts. of olefins, H, and gaseous decompn. products.

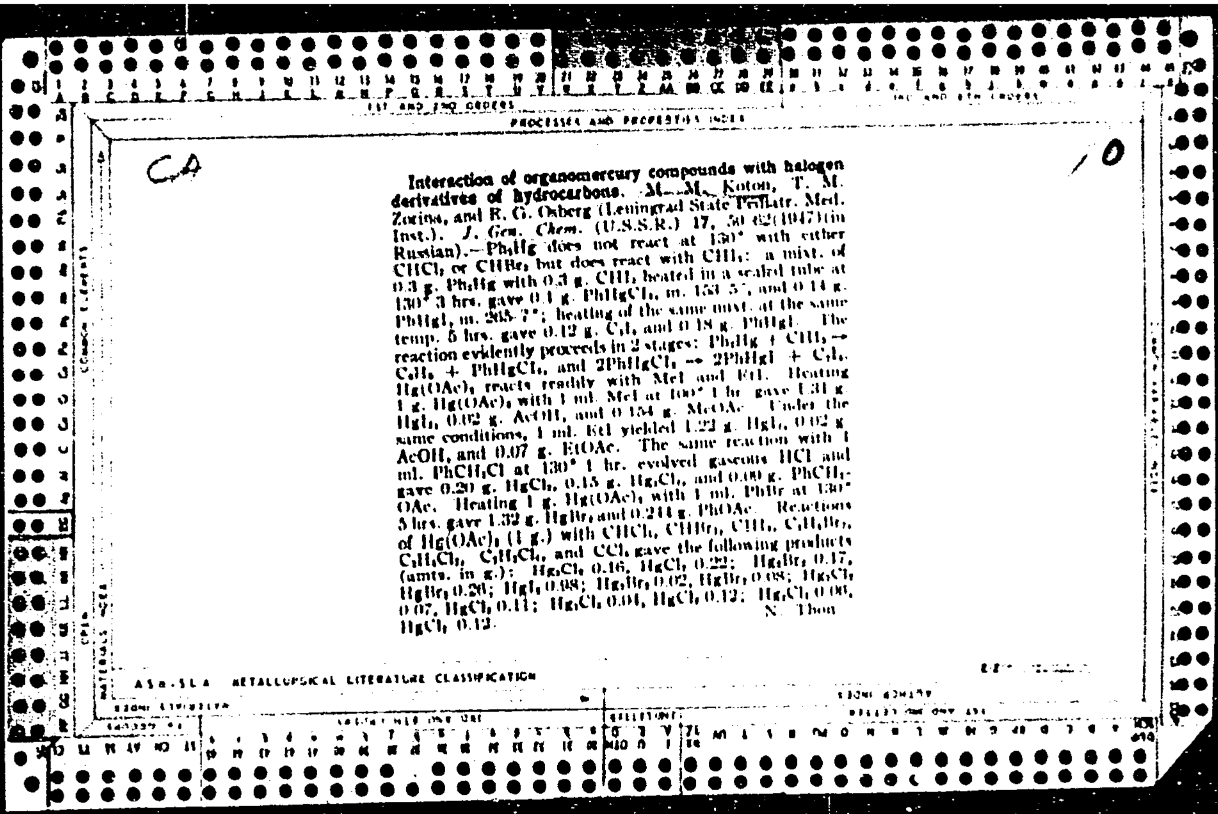
G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KOTON, M. M.

"Catalytic decomposition of acetals II. Catalytic decomposition of methylal and of methylene di-isoamylate" by M. M. Koton and I. A. Chernov (p. 700)

SO: Journal of General Chemistry (Zhurnal Obshcie Khimii) 1946, Volume 16, No, 4-5



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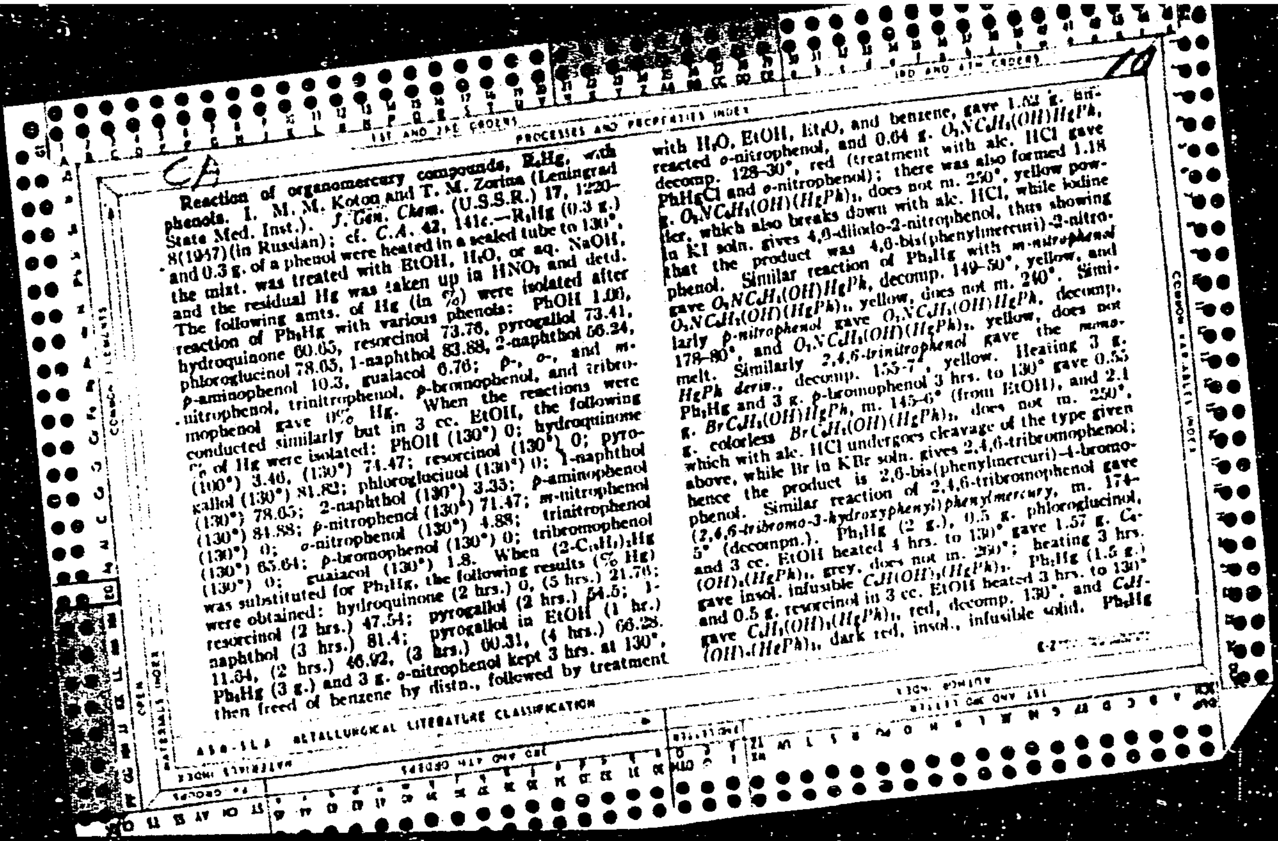
Interaction of organomercury compounds with halogen derivatives of hydrocarbons. M. M. Koton, T. M. Zorina, and R. G. Osberg (Leningrad State Pediatr. Med. Inst.). *J. Gen. Chem.* (U.S.S.R.) 17, 50-62(1947)(in Russian).—Ph_2Hg does not react at 130° with either $CHCl_3$ or $CHBr_3$ but does react with CHI_3: a mixt. of 0.3 g. Ph_2Hg with 0.3 g. CHI_3 heated in a sealed tube at 130° 3 hrs. gave 0.1 g. $PhHgCI_3$, m. 153-5°, and 0.14 g. PhHgI, m. 265-7°; heating of the same mixt. at the same temp. 5 hrs. gave 0.12 g. C_2I_4 and 0.18 g. PhHgI. The reaction evidently proceeds in 2 stages: $Ph_2Hg + CHI_3 \rightarrow C_6H_6 + PhHgCI_3$, and $2PhHgCI_3 \rightarrow 2PhHgI + C_2I_4$. $Hg(OAc)_2$ reacts readily with MeI and EtI. Heating 1 g. $Hg(OAc)_2$ with 1 ml. MeI at 100° 1 hr. gave 1.31 g. HgI_2, 0.02 g. AcOH, and 0.154 g. MeOAc. Under the same conditions, 1 ml. EtI yielded 1.22 g. HgI_2, 0.02 g. AcOH, and 0.07 g. EtOAc. The same reaction with 1 ml. $PhCH_2Cl$ at 130° 1 hr. evolved gaseous HCl and gave 0.20 g. $HgCl_2$, 0.15 g. Hg_2Cl_2, and 0.40 g. $PhCH_2OAc$. Heating 1 g. $Hg(OAc)_2$ with 1 ml. PhBr at 130° 5 hrs. gave 1.32 g. $HgBr_2$ and 0.214 g. PhOAc. Reactions of $Hg(OAc)_2$ (1 g.) with $CHCl_3$, $CHBr_3$, CHI_3, $C_2H_4Br_2$, $C_2H_4Cl_2$, $C_2H_2Cl_4$, and CCl_4 gave the following products (amts. in g.): Hg_2Cl_2 0.16, $HgCl_2$ 0.22; Hg_2Br_2 0.17, $HgBr_2$ 0.20; HgI_2 0.08; Hg_2Br_2 0.02, $HgBr_2$ 0.08; Hg_2Cl_2 0.07, $HgCl_2$ 0.11; Hg_2Cl_2 0.04, $HgCl_2$ 0.12; Hg_2Cl_2 0.06, $HgCl_2$ 0.12. N. Thon



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

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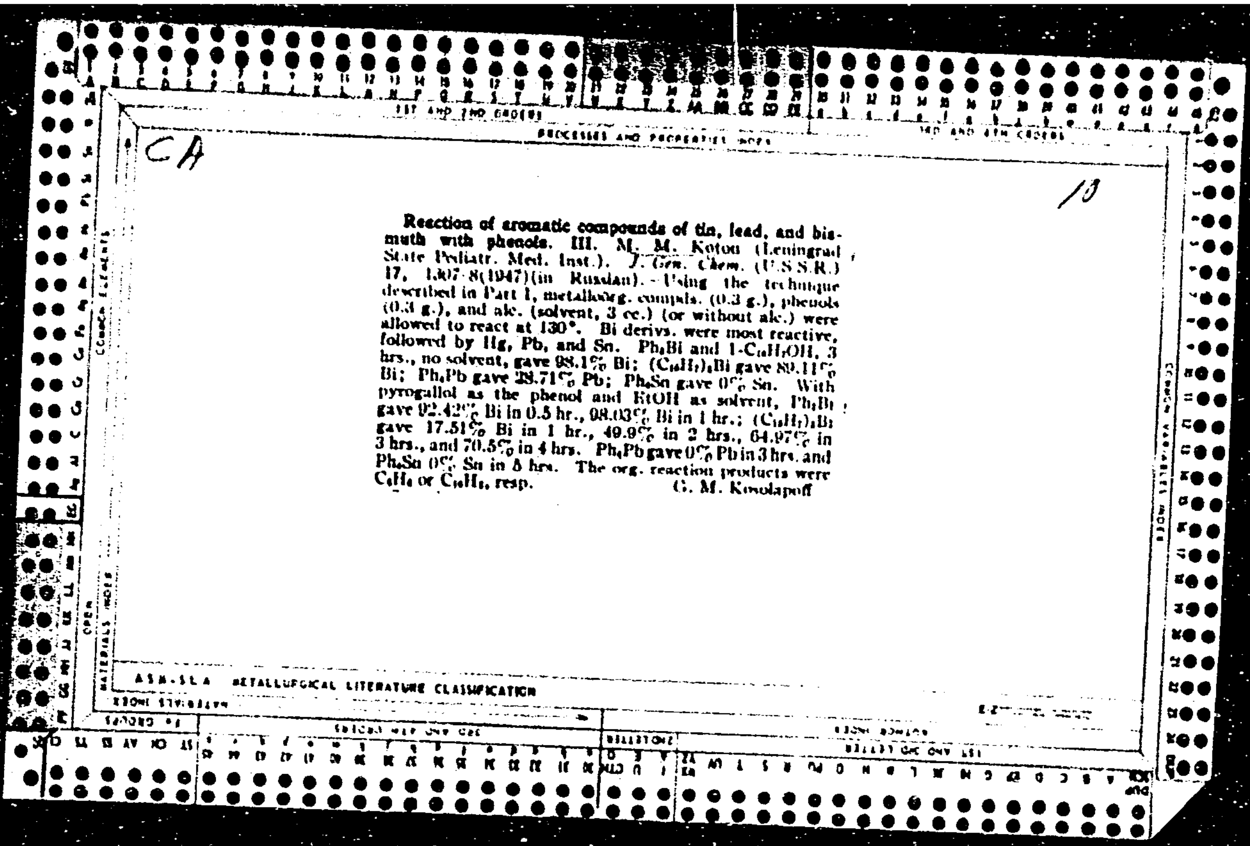
Reaction of organomercury compounds, R₂Hg, with phenols. I. M. M. Koton and T. M. Zorina (Leningrad State Med. Inst.). *J. Gen. Chem.* (U.S.S.R.) 17, 1220–8(1947)(in Russian); cf. *C.A.* 42, 141c.—R_2Hg (0.3 g.) and 0.3 g. of a phenol were heated in a sealed tube to 130°, the mixt. was treated with EtOH, H_2O, or aq. NaOH, and the residual Hg was taken up in HNO_3 and detd. The following amts. of Hg (in %) were isolated after reaction of Ph_2Hg with various phenols: PhOH 1.00, hydroquinone 60.05, resorcinol 73.76, pyrogallol 73.41, phloroglucinol 78.05, 1-naphthol 83.68, 2-naphthol 56.24, *p*-aminophenol 10.3, guaiacol 6.76; *p*-, *o*-, and *m*-nitrophenol, trinitrophenol, *p*-bromophenol, and tribromophenol gave 0% Hg. When the reactions were conducted similarly but in 3 cc. EtOH, the following % of Hg were isolated: PhOH (130°) 0; hydroquinone (100°) 3.46, (130°) 74.47; resorcinol (130°) 0; pyrogallol (130°) 81.82; phloroglucinol (130°) 0; 1-naphthol (130°) 78.05; 2-naphthol (130°) 3.35; *p*-aminophenol (130°) 81.88; *p*-nitrophenol (130°) 71.47; *m*-nitrophenol (130°) 0; *o*-nitrophenol (130°) 4.88; trinitrophenol (130°) 65.64; *p*-bromophenol (130°) 0; tribromophenol (130°) 0; guaiacol (130°) 1.8. When $(2\text{-}C_{10}H_7)_2Hg$ was substituted for Ph_2Hg, the following results (% Hg) were obtained: hydroquinone (2 hrs.) 0, (5 hrs.) 21.76; resorcinol (2 hrs.) 47.54; pyrogallol (2 hrs.) 54.5; 1-naphthol (3 hrs.) 81.4; pyrogallol in EtOH (1 hr.) 11.64, (2 hrs.) 46.92, (3 hrs.) 60.31, (4 hrs.) 66.28. Ph_2Hg (3 g.) and 3 g. *o*-nitrophenol kept 3 hrs. at 130°, then freed of benzene by distn., followed by treatment with H_2O, EtOH, Et_2O, and benzene, gave 1.63 g. unreacted *o*-nitrophenol, and 0.64 g. $O_2NC_6H_3(OH)HgPh$, decomp. 128–30°, red (treatment with alc. HCl gave PhHgCl and *o*-nitrophenol); there was also formed 1.18 g. $O_2NC_6H_2(OH)(HgPh)_2$, does not m. 250°, yellow powder, which also breaks down with alc. HCl, while iodine in KI soln. gives 4,6-diiodo-2-nitrophenol, thus showing that the product was 4,6-bis(phenylmercuri)-2-nitrophenol. Similar reaction of Ph_2Hg with *m*-nitrophenol gave $O_2NC_6H_3(OH)HgPh$, decomp. 149–50°, yellow, and $O_2NC_6H_2(OH)(HgPh)_2$, yellow, does not m. 240°. Similarly *p*-nitrophenol gave $O_2NC_6H_3(OH)HgPh$, decomp. 178–80°, and $O_2NC_6H_2(OH)(HgPh)_2$, yellow, does not melt. Similarly *2,4,6-trinitrophenol* gave the mono-HgPh deriv., decomp. 155–7°, yellow. Heating 3 g. Ph_2Hg and 3 g. *p*-bromophenol 3 hrs. to 130° gave 0.55 g. $BrC_6H_3(OH)HgPh$, m. 145–6° (from EtOH), and 2.1 g. colorless $BrC_6H_2(OH)(HgPh)_2$, does not m. 250°, which with alc. HCl undergoes cleavage of the type given above, while Br in KBr soln. gives 2,4,6-tribromophenol; hence the product is 2,6-bis(phenylmercuri)-4-bromophenol. Similar reaction of 2,4,6-tribromophenol gave *(2,4,6-tribromo-3-hydroxyphenyl)phenylmercury*, m. 174–5° (decompn.). Ph_2Hg (2 g.), 0.5 g. phloroglucinol, and 3 cc. EtOH heated 4 hrs. to 130° gave 1.57 g. $C_6(OH)_3(HgPh)_3$, grey, does not m. 250°; heating 3 hrs. gave insol. infusible $C_6H(OH)_3(HgPh)_2$. Ph_2Hg (1.5 g.) and 0.5 g. resorcinol in 3 cc. EtOH heated 3 hrs. to 130° gave $C_6H_2(OH)_2(HgPh)_2$, red, decomp. 130°, and $C_6H(OH)_2(HgPh)_3$, dark red, insol., infusible solid. Ph_2Hg

[illegible]

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

(1 g.), and 1 g. PhOH heated 3 hrs. to 130° gave 0.45 g. $C_6H_3(OH)(HgPh)_3$, insol., does not m. 240°. $(1\text{-}C_{10}H_7)_2$-Hg (1 g.) and 1 g. 2,4,6-tribromophenol kept 3 hrs. at 130° gave 0.98 g. $Br_3C_6H(OH)(HgC_{10}H_7)$, decomp. 200-2° (from benzene), which breaks down with alc. HCl to yield, apparently, $Br_3C_6H(OH)HgCl$, m. 179-82°, and $C_{10}H_8$. Repetition using *p*-bromophenol gave BrC_6H_2-$(OH)(HgC_{10}H_7)_2$, red-orange, insol., does not m. 240°; *o*-nitrophenol gave $O_2NC_6H_2(OH)(HgC_{10}H_7)_2$, orange, insol., does not m. 240°. G. M. Kosolapoff



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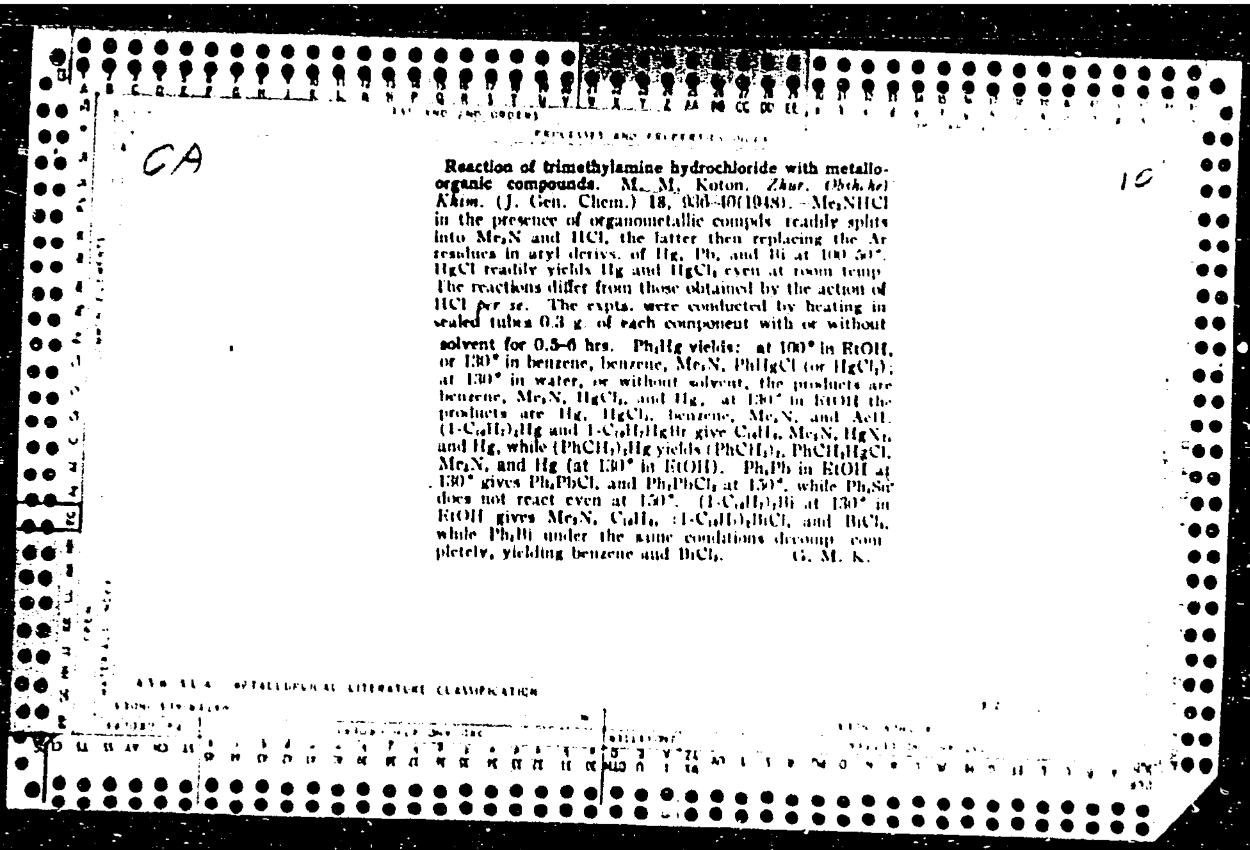
Reaction of aromatic compounds of tin, lead, and bismuth with phenols. III. M. M. Koton (Leningrad State Pediatr. Med. Inst.). *J. Gen. Chem.* (U.S.S.R.) 17, 1307-8(1947)(in Russian).—Using the technique described in Part I, metalloörg. compds. (0.3 g.), phenols (0.3 g.), and alc. (solvent, 3 cc.) (or without alc.) were allowed to react at 130°. Bi derivs. were most reactive, followed by Hg, Pb, and Sn. Ph_3Bi and $1-C_{10}H_7OH$, 3 hrs., no solvent, gave 98.1% Bi; $(C_7H_7)_3Bi$ gave 89.11% Bi; Ph_4Pb gave 28.71% Pb; Ph_4Sn gave 0% Sn. With pyrogallol as the phenol and EtOH as solvent, Ph_3Bi gave 92.42% Bi in 0.5 hr., 98.03% Bi in 1 hr.; $(C_7H_7)_3Bi$ gave 17.51% Bi in 1 hr., 49.9% in 2 hrs., 64.97% in 3 hrs., and 70.5% in 4 hrs. Ph_4Pb gave 0% Pb in 3 hrs. and Ph_4Sn 0% Sn in 5 hrs. The org. reaction products were C_6H_6 or C_7H_8, resp.

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

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Reaction of trimethylamine hydrochloride with metallo-organic compounds. M. M. Koton. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 18, 936-40(1948).—Me_3NHCl in the presence of organometallic compds. readily splits into Me_3N and HCl, the latter then replacing the Ar residues in aryl derivs. of Hg, Pb, and Bi at 100-50°. HgCl readily yields Hg and $HgCl_2$ even at room temp. The reactions differ from those obtained by the action of HCl *per se*. The expts. were conducted by heating in sealed tubes 0.3 g. of each component with or without solvent for 0.5–6 hrs. Ph_2Hg yields: at 100° in EtOH, or 130° in benzene, benzene, Me_3N, PhHgCl (or $HgCl_2$); at 130° in water, or without solvent, the products are benzene, Me_3N, $HgCl_2$, and Hg. at 130° in EtOH the products are Hg, $HgCl_2$, benzene, Me_3N, and AcH. $(1\text{-}C_{10}H_7)_2Hg$ and $1\text{-}C_{10}H_7HgBr$ give $C_{10}H_8$, Me_3N, HgX_2, and Hg, while $(PhCH_2)_2Hg$ yields $(PhCH_2)_2$, $PhCH_2HgCl$, Me_3N, and Hg (at 130° in EtOH). Ph_4Pb in EtOH at 130° gives Ph_3PbCl, and Ph_2PbCl_2 at 150°, while Ph_4Sn does not react even at 150°. $(1\text{-}C_{10}H_7)_3Bi$ at 130° in EtOH gives Me_3N, $C_{10}H_8$, $(1\text{-}C_{10}H_7)_2BiCl$, and $BiCl_3$, while Ph_3Bi under the same conditions decomp. completely, yielding benzene and $BiCl_3$. G. M. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PA 8/49T67

USSR/Chemistry - Trimethylamine, Chlorhydrate May 48
Chemistry - Organic Compounds, Metallo

"The Reaction Caused by the Chlorhydrate of Trimethylamine on Metallo-Organic Compounds," M. M. Koton, Leningrad State Pediatrics Med Inst, Chair of Gen Chem, 4 3/4 pp

"Zhur Obshch Khim" Vol XVIII (LXXX), No 5

Trimethylamine chlorhydrate (I) readily decomposes into trimethylamine and hydrogen chloride (II) in the presence of metallo-organic compounds. The II evolved subsequently replaces aryl radicals by chlorine in mercury, lead and bismuth organic

8/49T67

USSR/Chemistry - Trimethylamine, Chlorhydrate (Contd) May 48

compounds (at 100 - 150°). In the presence of I, mercurous chloride at room temperature readily decomposes into mercuric chloride and metallic mercury. The reactions of I with metallo-organic compounds are distinct from the reactions of hydrochloric acid with these compounds. Submitted 20 May 1947.

8/49T67

KOTON, M. M.

KOTON, M. M.

M. M. Koton and A. A. Bol'shakova, The reaction of diphenyl mercury with phenols. IV. P. 1290.

Diphenyl mercury on heating with various phenols at 100° decomposes with precipitation of metallic mercury. The decomposition rate depends on the nature of the substitutes, their amount and mutual disposition in the benzene ring of phenol.

Leningrad State Pediatric Medical Inst.
Chair of General Chemistry
June 2, 1947.

SO: Journal of General Chemistry (USSR) 18. (80) No. 7 (1948).

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0

KOTON, M.M.

22981 Reaktsii difenilrtuti s aromaticheskimi al'degidami i ketonami.
Zhurnal obshchey khimii, 1949, Vyp. 6, C. 1137-40.

OS: LETOPIS' NO. 31, 1949

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CA

18

Reactions of metalloörganic compounds with phenols. M. M. Koton, E. P. Moskvina, and F. S. Florinskii (Acad. Sci., U.S.S.R.). *J. Gen. Chem.* (U.S.S.R.) 19, No. 9, a105-8(1949)(English translation).—See *C.A.* 44, 1436f.

F. L. C.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0"

C-A

/10

The catalytic acid-free esterification of benzyl alcohol. M. M. Koton and S. M. Labuzov (Leningrad State Pediat. Inst.). *J. Gen. Chem.* (U.S.S.R) 19, No. 9, a149-50 (1949) (English translation).—See *C.A.* 44, 1053i.

E. J. C.

CA

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The reactions of *o*- and *p*-ditolylmercury with phenols. VII. M. M. Koton and I. A. Chetnov (Leningrad State Inst. Pediat. Med.). *J. Gen. Chem. U.S.S.R.* 19, No. 11, a575-9(1949)(Engl. translation).—See *C.A.* 44, 3936.

E. J. C.

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Reaction of diethylmercury with phenols. V. M. M. Koton (Leningrad State Inst. Pediat. Med.). *J. Gen. Chem.* (U.S.S.R.) 19, 703-7(1949)(English translation). **Reaction of diamylmercury with phenols.** VI. *Ibid.* 709-10.—See *C.A.* 44, 1043*i*. E. J. C.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0"

Reaction of diethylmercury with phenols. V. M. M. Koton. *Zhur. Obshchei Khim.* (J. Gen. Chem.) **19,** 730-3(1949); cf. C.A. **43,** 1740g, **42,** 1904h.—Et_2Hg reacts with phenols, yielding C_2H_6 and EtHgArOH derivs.; with resorcinol or bromohydroquinones, dimercurated derivs. are formed. The rate of reaction rises rapidly with increased OH content. Et_2Hg (prepd. by the Gilman-Brown method (C.A. **24,** 4758) from EtMgBr), b_{758} 159.60°, d 2.420, was heated with an equal wt. (0.5 g.) of the various phenols in sealed tubes (in most cases *opening the tube is accompanied by explosion*). PhOH in 3 hrs. at 100° gave 1.04% Hg without org. Hg derivs.; 3 hrs. at 130° gave 1.8% Hg and the residue mixed with Et_2O gave 0.12 g. *EtHg*C_6H_4OH, m. 113-14° (from EtOH-Et_2O), yielding EtHgCl with alc. HCl. Resorcinol in 3 hrs. at 100° gave 1.16% Hg and 0.1 g. pink, insol., cryst. mass, $(EtHg)_2C_6H_2(OH)_2$, sol. only in alkali, decomp. 180°; 3 hrs. at 130° gave 38.62% Hg and 0.11 g. of the above deriv. Bromohydroquinone in 3 hrs. at 100° gave on treatment of the mixt. with EtOH 0.12 g. $(EtHg)_2C_6HBr(OH)_2$, m. 180-2° (decompn.), while the alc. soln. yielded 0.08 g. $EtHgC_6H_2Br(OH)_2$, m. 168°; a reaction run at 130° gave solely the 1st product (0.3 g.). Pyrogallol gave 100% Hg, tars, and no org. derivs. at 100° or 130°. *p*-BrC_6H_4OH in 3 hrs. at 130° gave 3.05% Hg and alc. extn. gave $EtHgC_6H_3(OH)Br$, m. 92-4° (0.08 g.); at 130°, 3 hrs. in 3 ml. EtOH, the reaction yielded 14.03% Hg and the above deriv. 2,4,6-$Br_3C_6H_2OH$ in 3 hrs. at 130° gave 2.01% Hg and treatment of the residue with EtOH, then C_6H_6, gave (from the latter soln.) 0.3 g. $EtHgC_6H(OH)Br_3$, m. 96-7°. 3 hrs. at 130° in 3 ml. EtOH gave 29.81% Hg and the above deriv. 2,4-$Cl_2C_6H_3OH$ in 3 hrs. at 130° gave 1% Hg and a slowly crystg. oil (0.15 g.) which could not be purified but approached $EtHgC_6H_2(OH)Cl_2$. 3 hrs. at 130° in 3 ml. EtOH gave 15.1% Hg and the above deriv. 2,4,6-$Cl_3C_6H_2OH$ in 3 hrs. at 130° gave 3.52% Hg and the residue after washing with EtOH and extg. with C_6H_6 yielded 0.2 g. $EtHgC_6H(OH)Cl_3$, m. 158-60°, sol. in alkalies and giving EtHgCl with alc. HCl; in 3 hrs. at 130° in 3 ml. EtOH were obtained 18.2% Hg and 0.1 g. of the above deriv. *p*-$HOC_6H_4NO_2$ in 3 hrs. at 130° gave 18.68% Hg and the residue, after extn. by EtOH to remove unreacted nitrophenol, gave 0.1 g. greenish mass which could not be purified but which approached $EtHgC_6H_3(OH)NO_2$; the *o*-isomer gave 5.15% Hg, unreacted Et_2Hg, and nitrophenol without Hg derivs. **Reaction of diamylmercury with phenols. VI.** M. M. Koton. *Ibid.* 734-5.—Treatment of AmMgBr with $HgBr_2$ gave Am_2Hg, b_4 104-6°, d_4^{20} 1.655. Heating with an equal wt. (0.4 g.) of phenols in sealed tubes gave the following Hg derivs.: Bromohydroquinone in 3 hrs. at 130°, followed by treatment with EtOH and crystn. of the residue from C_6H_6 gave 0.08 g. $AmHgC_6H_2(OH)_2Br$, m. 118-19°. Similarly, 2,4,6-$Cl_3C_6H_2OH$ gave 0.12 g. $AmHgC_6H(OH)Cl_3$, m. 50-2° (from C_6H_6), as well as 9.11% Hg. Reactions with PhOH, *p*-$O_2NC_6H_4OH$, $Cl_2C_6H_3OH$, pyrogallol, BrC_6H_4OH, $Br_3C_6H_2OH$, resorcinol, and hydroquinone gave 2-22.76% Hg and resinous viscous unpurifiable products.

G. M. Kosolapoff

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KOTON, M. M.

"The reaction of diamylmercury with phenols. VI."
Koton, M. M. (p. 734)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1949, Vol. 19, No. 4

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CA

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The reaction of aromatic mercury compounds with dimethylaniline hydrochloride. M. M. Koton and V. F. Martynova (Leningrad State Pediat. Inst.). *J. Gen Chem. U.S.S.R.* 19, 1135-6(1949)(Engl. translation). See *C.A.* 44, 2943*d*. E. J. C.

CA

1d

Reaction of diphenylmercury with aromatic aldehydes and ketones. M. M. Koton and T. M. Zorina. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1137-40(1949).—Ph_2Hg (0.5 g.) and 0.3 g. o-HOC_6H_4CHO after 3 hrs. at 150° in a sealed tube gave 0.15 g. $PhHgC_6H_3(OH)CHO$, yellow, m. 81-3° (from petr. ether); this yields PhHgCl on standing in a Me_2CO-EtOH soln. of HCl; 6% Hg is also formed in the synthesis. If the heating is extended to 6 hrs., much tar forms, as well as 12.7% Hg. A similar 3-hr. reaction with AcPh gave 0.12 g. $PhHgC_6H_4Ac$, m. 105-6° (from EtOH-Et_2O), which also gives PhHgCl with alc. HCl; 1.06% Hg is formed in the synthesis. Ph_2Hg (0.7 g.) and 0.2 g. PhCH:CHBz after 3 hrs. at 150° gave 0.35 g. $PhHgC_6H_4CH:CHBz$, m. 88-90° (from Et_2O), which behaves as described above; no Hg was detected. PhCH:CHAc in 3 hrs. gave 0.3 g. $PhHgC_6H_4CH:CHAc$, m. 85-7° (from Et_2O), and 1.7% Hg; extension to 6 hrs. gave 6.7% Hg. Ph_2CO, PhOMe, C_6H_6, Me_2CO, and fluorenone failed to react even in 9 hrs. *Cinnamaldehyde* and *furfurylideneacetone* gave tars and 30.75% and 11.04% Hg, resp., in 3 hrs., or 46.13 and 39.50% in 6 hrs. $PhCH:CH_2$ in 6 hrs. gave 5.3% Hg. *Cyclohexanone* gave 4.53% Hg in 3 hrs. and 22.5% in 6 hrs. G. M. K.

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Reaction of aromatic derivatives of mercury with dimethylaniline hydrochloride. M. M. Koton and V. F Martynova. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19. 1141-3(1949).--Heating 0.5 g. Ph_2Hg with 0.5 g. Me_2NPh.HCl in ampuls 3-6 hrs. to 130° yields a *violet dye* (probably an analog of Crystal Violet), C_6H_6, 0-1%; Hg. 48-69% Hg_2Cl_2, and 48-27% Hg($HgCl_2$)** (isolated as HgS); a 6-hr. run at 150° gave 42% Hg, 30% Hg*, and 28.5% Hg**; $(C_{10}H_7)_2Hg$ similarly gave in 3 hrs. at 130° 0% Hg, 25.7% Hg*, 72.4% Hg**, and $C_{10}H_8$; at 150° some 9.7% Hg*, 65% Hg**, and 17% Hg were obtained. Similar heating with $HgCl_2$ also gave the violet dye, without formation of Hg or Hg_2Cl_2, but a salt, $(C_8H_{11}N)_2.HgCl_2$, m. 141-3°, was isolated. Hg_2Cl_2 at 150-130° (3 hrs.) gave 77-80% Hg, 20-2% $HgCl_2$, and some of the violet dye. The reaction is believed to proceed via dissocn. of the amine-HCl, with the HCl cleaving R_2Hg into RH and $HgCl_2$ and the latter reacting with Me_2NPh to yield the dye in an oxidation-reduction reaction. G. M. K

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Reaction of metalloörganic compounds with phenols. M. M. Koton, E. P. Moskvina, and F. S. Florinskiĭ. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1075-8(1949).— Heating Ph_4Sn, Ph_4Pb, or Ph_3Bi with phenols causes the loss of all Ph groups of the metalloörg. substance with formation of C_6H_6 and the phenolates of the corresponding metals. The analogy with the reaction of org. acids is pointed out (except for Ph derivs.). Heating 0.3 g. Ph_3Bi with 0.3 g. p-$O_2NC_6H_4OH$ 1-3 hrs. to 75-100° gives C_6H_6 and an orange, infusible, insol. solid (0.13-0.18 g.); 1 hr. at 75° gives (by analysis) $BiO(OC_6H_4NO_2)$, 3 hrs. gives $C_6H_4(OH)NO_2.Bi_2O_3.H_2O$, and 1 hr. at 100° gives the same, while 3 hrs. gives $C_6H_4(OH)NO_2.Bi_2O_3$; treatment of all with cold alc. HCl gave p-nitrophenol. Heating 0.2 g. Ph_3Bi and 0.2 g. p-MeC_6H_4OH gave C_6H_6 and 0.18 g. insol. yellow $C_6H_4(OH)Me.Bi_2O_3.H_2O$; 3 hrs. at 150° with 2,4,6-$Cl_3C_6H_2OH$ similarly gave insol. yellow $(Cl_3C_6H_2O)_3Bi$. In 6 hrs. at 150° 0.4 g. Ph_4Sn and 0.4 g. p-$HOC_6H_4NO_2$ gave 0.06 g. insol. $C_6H_4(OH)NO_2.SnO_2.2H_2O$, while p-MeC_6H_4OH gave 0.08 g. $MeC_6H_4OH.SnO_2.3H_2O$, and in a 0.2-g. expt., 2,4,6-$Cl_3C_6H_2OH$ gave $SnCl_4$, which on hydrolysis gave 0.055 g. SnO_2. At 150° for 3-9 hrs. 0.3 g. Ph_4Pb and 0.3 g. p-$HOC_6H_4NO_2$ gave 0.22-0.25 g. yellow insol. $C_6H_4(OH)NO_2.2Pb(OC_6H_4NO_2)_2$, while p-MeC_6H_4OH gave 0.1 g. yellow insol. $(MeC_6H_4O)_2Pb.2H_2O$; 2,4,6-$Cl_3C_6H_2OH$ gave $PbCl_2$. G. M. K.

Catalytic nonacid esterification of benzyl alcohol. M. M. Koton and S. M. Labuzov. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1713-14(1949).—Passage of PhCH$_2$OH at 15 ml./hr. at 225° in a stream of O (11 l./hr.) over Cu-Zn catalyst (cf. C.A. 31, 1359) gave, from 30 ml. PhCH$_2$OH, 20 ml. condensate, contg. 1.95% BzOH, 3.81% BzOCH$_2$Ph, 56.08% BzH, and 0.40% PhMe; in an air stream these figures are 0.67, 0.49, 45.05, and 0.56%, resp.; PhCH$_2$OH alone gave 1.76, 16.18, 42.43, and 0.38%, resp., while 1:1 PhCH$_2$OH-EtOH gave 1.12% BzOH, 0% EtOBz, 43% aldehydes, and 0% MePh.

G. M. Kosolapoff

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Reaction of *o*- and *p*-ditolylmercury with phenols. VII. M. M. Koton and I. A. Chernov (Leningrad State Pediat. Inst.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 2104-8(1949); cf. *C.A.* 44, 1043*i*.—$(o\text{-}MeC_6H_4)_2Hg$ (I) and the *p*-isomer (II) react with phenols analogously to Ph_2Hg; the reactions proceed probably via the radical mechanism and appear to be general for R_2Hg compds. At 150° the following % yields of Hg were obtained on heating equal wts. of phenols with I or II, resp.: pyrogallol 83.49, 71.71; hydroquinone 70.61, 63.85; 1-$HOC_{10}H_7$ 88.4, 49.11; resorcinol 77.6, 35.38; PhOH 60.9, 15.72; *p*-BrC_6H_4OH, *o*- and *p*-HOC_6H_4OH, and 2,4,6-Br_3(or $(NO_2)_3$)C_6H_2OH all failed to yield any Hg. The organomercury derivs. obtained in the reactions were: from II and *o*-$HOC_6H_4NO_2$, *p*-$MeC_6H_4HgC_6H_3(OH)NO_2$-(*1,2*), m. 225-7°, which yields MeC_6H_4HgCl with alc. HCl; II and *p*-$HOC_6H_4NO_2$ similarly gave *p*-$MeC_6H_4HgC_6H_3(OH)NO_2$-[*2,5(?)*], m. 239° (from EtOH), as well as $(p\text{-}MeC_6H_4Hg)_2C_6H_2(OH)(NO_2)$, yellow, does not m. 250°, insol. in org. solvents; II and *p*-BrC_6H_4OH gave *p*-$MeC_6H_4HgC_6H_3(OH)Br$, m. 169-70°, yielding 3,4-$Br_2C_6H_3OH$ on bromination in KBr soln.; II and 2,4,6-$Br_3C_6H_2OH$ gave (5 hrs., 130°) *p*-$MeC_6H_4HgC_6H(OH)Br_3$, m. 186-7° (from EtOH); II and 2,4,6-$(O_2N)_3C_6H_2OH$ gave (3 hrs., 115°) yellow *p*-$MeC_6H_4HgC_6H(OH)(NO_2)_3$, decomp. 143-4° (from C_6H_6); I and *o*-$HOC_6H_4NO_2$ gave $(o\text{-}MeC_6H_4Hg)_2C_6H_2(OH)NO_2$, insol., infusible; I and *p*-BrC_6H_4OH gave $(o\text{-}MeC_6H_4Hg)_2C_6H_2(OH)Br$, pink infusible solid; I and 2,4,6-$(O_2N)_3C_6H_2OH$ gave *o*-$MeC_6H_4HgC_6H(OH)(NO_2)_3$, brown, decomp. 135-7°; I and *p*-$HOC_6H_4NO_2$ gave $(o\text{-}MeC_6H_4Hg)_2C_6H_2(OH)NO_2$, infusible yellow solid; I and resorcinol gave insol., infusible $(o\text{-}MeC_6H_4Hg)_2C_6H_2(OH)_2$.

G. M. Kosolapoff

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Reactions of metalloörganic compounds with thiophenols. M. M. Koton, E. P. Moskvina, and F. S. Florinskii (Phys.-Tech. Inst., Acad. Sci., Leningrad). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 2093-5(1950); cf. C.A. 44, 6398d.—Heating 0.4 g. Ph_2Hg and 0.3 g. PhSH 3 hrs. at 130° gave .55% Hg, some C_6H_6, and $(PhS)_2$, m. 59-60°, as well as .19 g. $(PhS)_2Hg$, m. 150-1°. p-MeC_6H_4SH similarly gave 0% Hg, some C_6H_6, and 0.2 g. $(p\text{-}MeC_6H_4S)_2Hg$, m. 158-0° (from C_6H_6). The Hg salts are quite stable and only slowly decomp. into RSH and $HgCl_2$ on boiling with EtOH-HCl. Heating 0.3 g. Ph_3Bi with 0.3 g. PhSH 1.3 hrs. at 75-130° gave 0.22 g. yellow $(PhS)_3Bi$, does not m. 250°; p-MeC_6H_4SH gave 0.22 g. p-MeC_6H_4SBiO, red, decomp. 252-60°. Ph_4Pb (0.3 g.) and 0.3 g. PhSH heated 6 hrs. at 130° and 3-6 hrs. at 150° gave some C_6H_6 and 0.21 g. $(PhS)_2Pb$, yellow, m. 195-6°, and 0.12 g. $(PhS)_2$; p-MeC_6H_4SH gave 0.25 g. $(p\text{-}MeC_6H_4S)_2Pb$, m. 202-3°. Ph_4Sn (0.5 g.) and 0.3 g. PhSH gave in 6 hrs. at 150° some crystals, m. 72-9°, whose analysis indicated a mixt. of $(PhS)_3SnOH$ with $(PhS)_4Sn$; p-MeC_6H_4SH similarly gave 0.21 g. $(p\text{-}MeC_6H_4S)_2Sn(OH)_2$, needles, m. 92-9° (from Et_2O). Thus, Ph from Hg, Pb, Sn, and Bi compds. reacts with SH of thiophenols, forming benzene and thiophenolates of the metals. The reactivity (decreasing order) is Bi, Hg, Pb, Sn.

G. M. Kosolapoff

M. M. KOTON

Feb. 1953

Organo-Metallic Compds.

(1)

Mercuration of phenols. VIII. M. M. Koton (*J. gen. Chem. USSR*, 1950, **20**, 2096—2100 (~~U.S. transl.,~~ 2171—2175)).—Mercuration of phenols may be effected by compounds of the type R_2Hg and also, less readily, RHgOAc. New organo-mercury compounds are described.

Heating $(PhCH_2)_2Hg$ (0·2) with p-$NO_2 \cdot C_6H_4 \cdot OH$ (0·1 g.) (2 hr., 75°) gives Hg (21·3%) and *4-nitro-1-hydroxy-2-benzylmercuribenzene* (0·09 g.), m.p. 95—97° (decomposed by HCl-EtOH to p-$NO_2 \cdot C_6H_4 \cdot OH$, m.p. 112—114°, and $PhCH_2 \cdot HgCl$, m.p. 102—104°). With 1 : 3 : 5-$C_6H_3(OH)_3$, 1 : 2- and 1 : 3-$C_6H_4(OH)_2$, and p-$C_6H_4Me \cdot OH$, Ph_2Hg reacts more rapidly than PhHgOAc; with o-, m- and p-$C_6H_4Me \cdot OH$ and Ph_2Hg, reaction velocities are in the

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(decomp.), 103°/14 mm., d^{20} 2·86, n_D^{20} 1·6317 [lit., b.p. 112°/18 mm., d^{20} 2·87, n_D^{19} 1·6277], with Br. Pyrolysis of I at 620° during 11 hr. gives HBr, an unidentified unsaturated gas, and a mixture, separated into two fractions: VI, b.p. 67—95°, and VII, b.p. 140—169°. VI, which gives a positive test for CH:C· with NH_3–CuCl, is treated with Br and fractionated, yielding $SiCl_4$, $SiBrCl_3$, b.p. 78—82° (lit., 80°), d^{25} 1·79, and 1 : 2-*dibromovinyltrichlorosilane*, $C_2HCl_3Br_2Si$ (VIII), b.p. 90°/11 mm., 210—213°/755 mm., d^{25} 2·1, n_D^{20} 1·5458; on treatment with aq. NaOH VIII gives CHBr:CHBr, b.p. 111—114°, d^{25} 2·3, n_D^{20} 1·5432. VII gives a product (IX), b.p. 147—165°, considered to be a mixture of II and 2-bromovinyltrichlorosilane; treatment of IX with Br affords a mixture of III with its 1 : 2 : 2-isomer, which with excess of aq. NaOH gives on distillation (flashes of flame—halogenated acetylene), IV (characterised as V). Treatment of III with quinoline gives $SiCl_4$ and IV; pyrolysis of III at 635° during 3 hr. gives HBr, a little Br, and unidentified silanes, b.p. 85—180°. Pyrolysis of IX at 630—650° during 8 hr. gives a product, which, after treatment with Br to remove $CH{:}C \cdot SiCl_3$, gives $SiCl_4$ and $SiBrCl_3$. The interaction of $CHBr{:}CBr_2$ and $SiHCl_3$ at 470° during 110 min. affords what is considered to be *bromoethynyltrichlorosilane*, C_2Cl_3BrSi, b.p. 76—80°/11 mm., n_D^{25} 1·5240.

M. C. Ford.

ME

9-17-54

2A

[illegible]

Reactions of metalloörganic compounds with thiophenols. M. M. Koton, E. P. Moskvina, and F. S. Florinskii. *J. Gen. Chem. U.S.S.R.* 20, 2167-9(1950)(Engl. translation).—See *C.A.* 45, 5844c. B. L. M.

21

(Organic Chemistry-10

Reaction of organomercury compounds. VIII. Mercuration of phenols. M. M. Koton. *J. Gen. Chem. U.S.S.R.* 20, 2171-8(1950)(Engl. translation).--See *C.A.* 45, 504f.
B. L. M.

c.r.

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Esters of methacrylic acid. M. M. Koton and F. S. Florinskii (Acad. Sci. U.S.S.R., Leningrad). Zhur. Obshchei Khim. (J. Gen. Chem.) 21, 1841-3(1951).—The prepn. of following *esters* of *methacrylic acid* is reported; the lower esters are prepd. by direct esterification of the free acid, while those higher than Bu are prepd. by transesterification of Me methacrylate (alc. radical, b.p., and d^{20} given): *Et*, b_4 19-23°, 0.9116; *Pr*, b_4 33-6°, 0.9035; *iso-Pr*, b_4 26-8°, 0.8880; *Bu*, b_4 39-40°, 0.8949; *iso-Bu*, b_4 36-7°, 0.8858; *sec-Bu*, b_4 35-6°, 0.8944; *Am*, b_4 54-7°, 0.8881; *iso-Am*, b_4 49-51°, 0.8875; *sec-Am*, b_4 42-5°, 0.8812; C_6H_{13}, b_4 65-7°, 0.8840; *sec*-C_6H_{13}, b_4 60-8°, 0.8751; C_7H_{15}, b_4 81-3°, 0.8843; C_8H_{17}, b_4 84-6°, 0.8749; $C_{10}H_{21}$, b_4 117-19°, 0.8770; $C_{12}H_{25}$, b_4 192-5°, 0.8741; *cyclohexyl*, b_4 68-70°, 0.9671; $PhCH_2$, b_4 95-8°, 1.0332; *diethylene glycol*, b_4 91-6°, 1.0491. Polymers obtained with esters up to Bu, with 0.5% BzOH catalyst 48 hrs. at 75° and 24 hrs. at 100°, were glassy solids, sol. in Me_2CO and C_6H_6. *Polymers* of esters with C_{5-8} alcs. were elastic solids, sol. as above; the ester of the C_7 alc. was only partly sol. in org. solvents. Higher alc. esters gave liquid polymers (the C_{16} and C_{18} esters apparently failed to polymerize at all). The cyclohexyl ester gave an insol. glassy polymer, as did the glycol ester. All the esters up to C_7 copolymerize in emulsion with $PhCH:CH_2$, as well as in bulk.

G. M. Kosolapoff

CA

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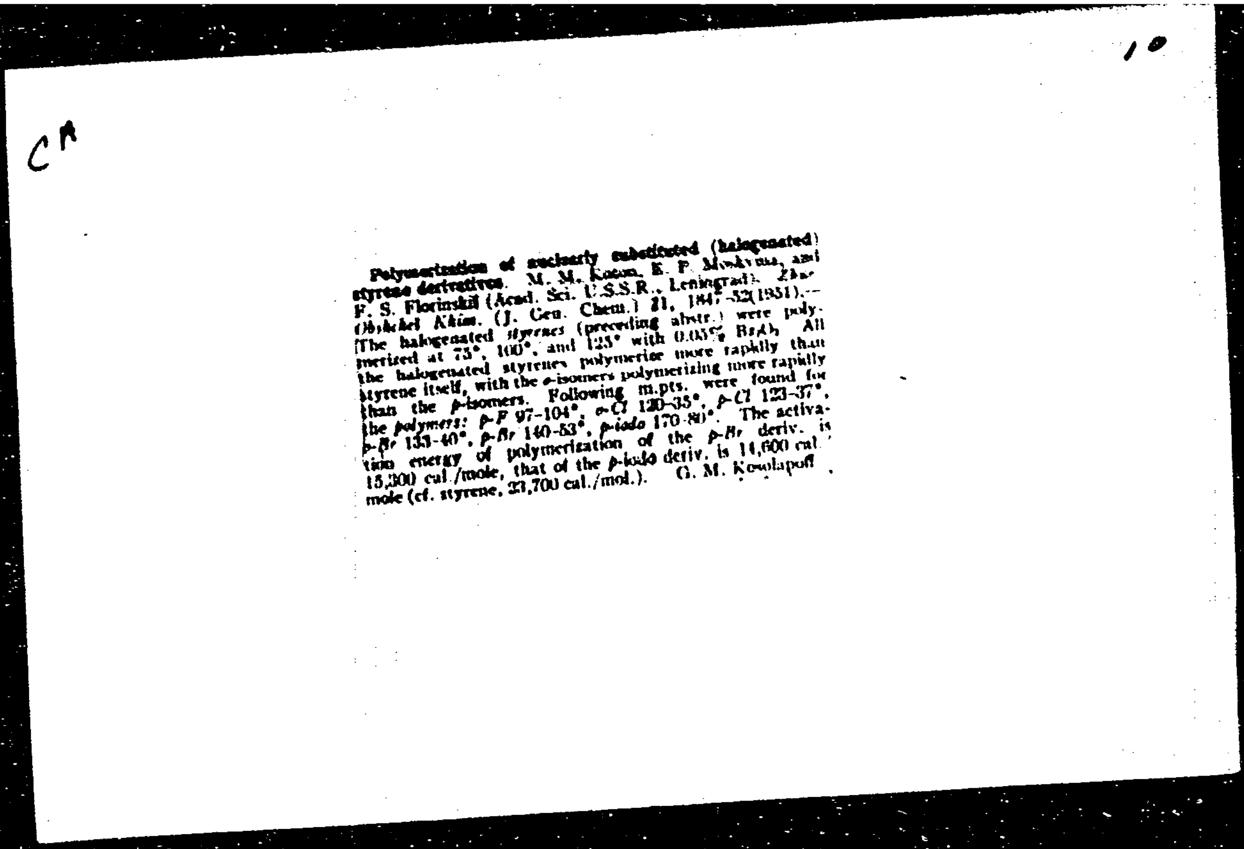
Synthesis of nuclearly halogenated derivatives of styrene. M. M. Koton, E. P. Moskvina, and F. S. Florinskiĭ (Acad. Sci. U.S.S.R., Leningrad). *Zhur. Obshchei Khim.* (J. Gen. Chem.) *21*, 1843-7(1951).—Bromination overnight of 100 g. PhF with 88 g. Br and 1 g. Fe, followed by 3 hrs. at 100°, gave 87% *p-FC$_6$H$_4$Br*, b. 151-2°, which, converted to RMgBr and treated with AcH, gave 62% *p-FC$_6$H$_4$CH(OH)Me*, b$_{10}$ 104-6°; this on dehydration (best by passage over Al$_2$O$_3$ at 300-400° at 110 mm., or less well by heating with KHSO$_4$ and hydroquinone) gave 50% *p-fluorostyrene*, b$_{16}$ 34-6°, d$_4^{20}$ 1.029; *dibromide*, m. 73-5°. *o*-FC$_6$H$_4$Me (60 g.) with 65 g. CrO$_2$Cl$_2$ in CCl$_4$ 3 days at room temp. gave 63% pure *o-fluorobenzaldehyde*, b$_{20}$ 70°, which (40 g.), heated on a steam bath 3 days with 32.6 g. CH$_2$(CO$_2$H)$_2$, 8 ml. pyridine, and 56 ml. EtOH, concd., and filtered, gave 60% *o-fluorocinnamic acid*, m. 172-4°; this (34 g.) heated 3 hrs. with 3.4 g. CuSO$_4$ and 68 g. quinoline with slow distn. at 200-20°, gave 45% *o-fluorostyrene*, b$_4$ 29-30°, d$_4^{20}$ 1.0253. Similarly, *o*-ClC$_6$H$_4$Me gave 65% *o-chlorobenzaldehyde*, m. 9-10°, b. 206-8°, yielding 75% *o-chlorocinnamic acid*, m. 200-1°, which gave 50-2% *o-chlorostyrene*, b$_8$ 57-8°, d$_4^{20}$ 1.0922; similarly was prepd. *p-chlorostyrene*, b$_4$ 53-7°, b$_6$ 60-2°, d$_4^{20}$ 1.0909. Likewise, *p*-BrC$_6$H$_4$Me gave 61% *p-bromobenzaldehyde*, m. 56-7°, yielding *p-bromocinnamic acid*, m. 246-8°, which gave 37.5% *p-bromostyrene*. Alternatively, 90 g. *p*-BrC$_6$H$_4$Ac heated on a steam bath 6 hrs. with 500 ml. iso-PrOH and 180 ml. satd. Al(OCHMe$_2$)$_3$ in ROH with distn. of the Me$_2$CO gave 73.5% (*p-bromophenyl*)*methylcarbinol*, b$_{20}$ 144-5°, yielding on dehydration over Al$_2$O$_3$ 47.5% *p-bromostyrene*, b$_{20}$ 102°, d$_4^{20}$ 1.3980. The former method gave 35% *o-bromostyrene*, b$_{20}$ 98°, b$_{22}$ 103-4°, d$_4^{20}$ 1.3721, from *o-bromocinnamic acid*, m. 212-14°. Boiling 100 g. PhNH$_2$ 30 hrs. with 250 g. Ac$_2$O and 150 g. ZnCl$_2$, pouring into hot H$_2$O, neutralizing with alkali, filtering, boiling the ppt. 1 hr. with concd. HCl, neutralizing, steam-distg. the residual PhNH$_2$, and extg. the residue with Et$_2$O gave 18 g. *p-aminoacetophenone*, m. 105-6° (from H$_2$O), which, diazotized in H$_2$SO$_4$ and treated with a mixt. of KI, iodine, and powd. Cu in H$_2$O gave 48% *p-iodoacetophenone*, m. 85-6°, yielding with Al(OCHMe$_2$)$_3$ 75% (*p-iodophenyl*)*methylcarbinol*, m. 39-40°, which on dehydration with KHSO$_4$ in the presence of hydroquinone gave 40% *p-iodostyrene*, m. 43-4° (from MeOH). G. M. K.



CA

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Polymerization of nuclearly substituted (halogenated) styrene derivatives. M. M. Koton, E. P. Moskvina, and F. S. Florinskii (Acad. Sci. U.S.S.R., Leningrad). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 1843-52(1951).—The halogenated *styrenes* (preceding abstr.) were polymerized at 73°, 100°, and 125° with 0.05% Bz_2O_2. All the halogenated styrenes polymerize more rapidly than styrene itself, with the *o*-isomers polymerizing more rapidly than the *p*-isomers. Following m.pts. were found for the *polymers*: *p-F* 97-104°, *o-Cl* 120-35°, *p-Cl* 123-37°, *p-Br* 133-40°, *p-Br* 140-53°, *p-iodo* 170-80°. The activation energy of polymerization of the *p-Br* deriv. is 15,300 cal./mole, that of the *p*-iodo deriv. is 11,600 cal./mole (cf. styrene, 23,700 cal./mol.). G. M. Kosolapoff

USSR/Chemistry - Catalysis Nov 51

"Review of B. N. Dolgov's 'Catalysis in Organic Chemistry,'" M. M. Koton

"Zhur Prik Khim" Vol XXIV, No 11, pp 1222-1224

Koton calls book valuable material for students of catalysis and 1st comprehensive USSR work in field but disapproves Dolgov's occasional dependence on reasonance theory. Introduction covers development of catalysis in USSR. Ten chapters treat catalytic principles, adsorption theory, and different types of catalysis (oxidation, dehydrogenation, cracking, polymerization, etc.).

204T11

USSR/Chemistry - Catalysis (Contd) Nov 51

Sp subjects include A. N. Bakh's peroxide theory, N. N. Semenov's theory of chain mechanisms, and development of synthesis of liquid fuels, methanol, and higher alcs from laboratory investigation to industrial production. Book published by Goskhimizdat, Leningrad/Moscow, 1949, 560 pp (text for higher chem technological education).

204T11

KOTON, M. M.

USSR/Chemistry - Styrene Derivatives; Plastics Mar 52

"Synthesis and Study of the Polymerization Capacity of Styrene Derivatives Substituted With Halogen in the Nucleus-Synthesis Dichloro-Substituted Styrenes," M. M. Koton, I. N. Samsonova, F. S. Florinskiy, Leningrad Phys-Tech Inst, Acad Sci USSR

"Zhur Obshch Khim" Vol XXII, No 3, pp 489-491

Developed a general method for producing 2,5-dichlorostyrene, and 3,4-dichlorostyrene. The process starts with p-, m-, or 3-dichlorobenzene, resp, which is treated with anhydrous aluminum chloride

209T47

USSR/Chemistry - Styrene Derivatives; Plastics (Contd) Mar 52

and acetyl chloride, to yield dichloroacetophenone. This is treated with isopropyl alc and aluminum alcoholate to yield dichlorophenylmethyl carbinol. The latter, when dehydrated over Al_2O_3 at reduced pressure and elevated temp, gives the final product.

209T47

KOTON, M. M.

KOTON, M.M.

USSR/Chemistry - Organometallic Compounds Apr 52

"Reaction of Organometallic Compounds With Thiosalicylic Acid and Thiophenol," M. M. Koton, Leningrad Phys-Tech Inst, Acad Sci USSR

"Zhurn Obshch Khim" Vol XXII, No 4, pp 643-647

Aromatic derivs of mercury, lead, tin, and bismuth react with thiosalicylic acid to form hydrocarbons and metal compds of the general formula $Me^{x}(SC_6H_4COOH)_x$o Mercury-organic compds of the general formula RHgHal react with thiosalicylic acid to form $Hg(SC_6H_4COOH)_2$, RH, HHal, and Hg_2Hal_2. With thiophenol they form $Hg(SC_6H_5)_2$, RH, Hg, and $(C_6H_5S)_2$.

224T43

KOT[illegible], M. M.

Koton, M. M., Moskvina, E. P., Florinskii, F. S. - "Polymerization of halo derivatives of styrene (substituted in the nucleus). II. Polymerization of dichlorostyrene." (p. 789)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1952, Vol. 22, No. 5

KOTON, M.M.

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Chem

Chemical Abst.
Vol. 48 No. 5
Apr. 10, 1954
Organic Chemistry

The polymerization of derivatives of styrene halosubstituted in the ring. M. M. Koton, E. P. Moskvina, and F. S. Florinskiĭ (Leningrad Inst. Tech. Phys.). J. Gen. Chem. U.S.S.R. 22, 851-3(1952)(Engl. translation).—See C.A. 47, 3253e.

H. L. H.

7-14-54

KOTON, M. M.

USSR/Chemistry - Mercury Organic Compounds Jul 52

"The Reaction Capacity of Dimethylmercury," M. M. Koton, Leningrad Phys-Tech Inst, Acad Sci USSR

"Zhur Obshch Khim" Vol 22, No 7, pp 1136-1139

In the reaction with phenols, dimethylmercury forms principally monomercury compds of the formula $CH_3HgC_6H_3(OH)R$. Upon interaction with org acids, dimethylmercury forms compds of the general formula $RCOOHgCH_3$.

229T35

KOTON, M. M.

USSR/Chemistry - Mercury Organic Compounds Jul 52

"The Reactions of Diphenylmercury With Esters," M. M. Koton, T. M. Kiseleva, Leningrad Phys-Tech Inst, Acad Sci USSR.

"Zhur Obshch Khim" Vol 22, No 7, pp 1139, 1140

Studied the reactions of diphenylmercury with esters. At 150°, diphenylmercury reacted with esters to form corresponding derivs of the general formula $RCOOHgC_6H_5$. Besides the latter, formation of metallic mercury took place in several cases.

229T36

KOTON, M.M.

KOTON, M.M.

Synthesis and polymerization of nuclearly substituted [illegible]. [illegible] and E. E. M[illegible] (Phys.-Chem. [illegible], Leningrad). Zhur. Priklad. Khim. 26, 800-5 (1953).—BzH with KNO$_3$-H$_2$SO$_4$ at 10-15° gave 55% p-O$_2$NC$_6$H$_4$CHO, m. 12-1°, which formed in 40% yield from BzH with HNO$_3$-H$_2$SO$_4$ & Ac$_2$O. This (60 g.) with 180 g. SnCl$_2$ in 300 ml. HCl at 80-90° gave the H$_2$N analog which was directly diazotized and treated with KI, yielding 40-50% p-IC$_6$H$_4$CHO, m. 78° (after steam distn.). This with [illegible] gave [illegible] ArCH(OH)Me, b$_1$ 122-3°, n 1.6140, d 1.752; dehydration at [illegible] with KHSO$_4$ in the presence of hydroquinone [illegible] [illegible], b. 88-90°, [illegible] 1.6[illegible], d 1.6731; [illegible], b. 92-4° m. 41-3°; [illegible], b. [illegible], [illegible] 1.5[illegible]. These were polymerized without catalyst at 100°, 110°, and 125°, yielding solid thermoplastic polymers, sol. in CHCl$_3$. The rate of polymerization declines in the order [illegible]. [illegible] wt. of the polymer declines in the order [illegible]. The rates of polymerization are shown graphically. (Cf. C.A. 49, 8027f.) G. M. Kosolapoff

Koton, M. M.

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Synthesis and polymerization of nuclearly substituted dibromostyrenes. [illegible] F. S. Florinskii [illegible] T. M. Kiseleva, and [illegible] Leningrad). Zhur. [illegible] Acad. Sci. U.S.S.R. 26, 1006-9(1953).—p-$C_6H_4Br_2$ with AcCl in the presence of $AlCl_3$ gave 2,5-$Br_2C_6H_3Ac$, b. 120-1°, m. 30-1°, which with $Al(OCHMe_2)_3$ yielded the corresponding 2,5-$Br_2C_6H_3CH(OH)Me$, b. 133-40°; dehydrated over $KHSO_4$, or better over Al_2O_3, to 61.5% 2,5-dibromostyrene, b. 101-2°, d. 1.7749, n. 1.6225; this polymerizes with or without catalysts at a rapid rate at 75-100°, either in mass or in emulsion; the polymer is sol. in halogenated solvents and MePh, not in alc.; the monomer forms copolymers with styrene. Similarly, o-$C_6H_4Br_2$ gave 3,4-$Br_2C_6H_3Ac$, b. 120-30°, m. 31-2°; the carbinol, b. 125-30°, yielded over Al_2O_3 41% 3,4-dibromostyrene, b. 94-5°, n. 1.6345; its polymer is yellowish, sol. in halogenated hydrocarbons, sparingly sol. in MePh, insol. in alc. This isomer polymerizes less rapidly than the 2,5-isomer, and both polymerize less rapidly than the di-Cl analogs. The activation energy of polymerization is 18,300 cal./mole for the 2,5-isomer, and the polymer of this has twice the mol. wt. of its isomeric analog. G. M. K.

Koton, M. M. 21 Jan 53

USSR/Chemistry - Plastics

"The Relationship Between Structure and Ability to Polymerize in Vinyl Derivatives of Naphthalene," M. M. Koton and T. M. Kiseleva, Leningrad Physicotech Inst, Acad Sci USSR

Dan SSSR, Vol 88, No 3, pp 465-466

1-Vinylnaphthalene, 2-vinylnaphthalene, 6-vinyl-1,2,3,4-tetrahydronaphthalene, and vinyldecahydronaphthalene were prepd and the process of their polymerization studied. On the basis of these compds, it was demonstrated that by increasing the no of double bonds in the mol, the no of conjugates is increased. This leads to a greater redistribution of the electron atm which enables the double bond in the vinyl group to open up, thus enhancing polymerization. Presented by Acad A. V. Topchiyev 6 Nov 52

265 T9

Koton, M.M.

Polymerization of vinyl compounds by means of organometallic compounds. I. Polymerization of vinyl monomers [illegible]. M. M. Koton (Leningrad [illegible]). *Doklady* [illegible] 88, 991-4 (1953).—Ph₂Hg accelerates the polymerization of styrene, CH₂:CMeCO₂Me, and [illegible] AcOCH:CH₂ (I); in the latter case part of the Ph₂Hg reacts with I, forming PhHgOAc, and all the I is polymerized. The following compds. were tested similarly with I: (PhCH₂)₂Hg, [illegible] (MeOC₆H₄)₂Hg, (C₆H₁₁)₂Hg, MeHgC₆H₅, (Me-C₆H₄)₂Hg, [illegible] AcOHgPh, HCO₂HgPh, C₆H₄(HgCl)₂, [illegible] Ph₃Bi, (C₆H₅)₄Si, (C₆H₅)₄Pb, [illegible]. The most active catalysts are (C₆H₅)₄Sn and Ph₄Pb, (C₆H₅)₄Pb, (C₆H₁₁)₂Hg, and (PhCH₂)₂Hg; Ph₂Hg was less effective, while Ph derivs. of Sn and Pb are weakly active. The other compds. were inactive. (C₆H₅)₃Pb was a very active catalyst. Generally the least stable compds. were the most effective catalysts, but they yielded polymers of lower mol. wt. than those obtained with less active catalysts. Small amts. of the metals were found in the polymers obtained with these catalysts, although the amts. introduced by Ph₂Hg and (PhCH₂)₂Hg were below the limits of the analytical methods used. G. M. Kosolapoff

VAYNSHTEYN, B.K.; KOTON, M.M.

Normalization of Fourier's series as applied in the calculation of electron density. Dokl.AN SSSR 93 no.5:821-823 D '53. (MLRA 6:12)

1. Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR. Predstavleno akademikom A.N.Nesmeyanovym.

(Crystallography) (Fourier's series)

KOTON, M.M.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Synthetic Resins and Plastics

② 10

Polymerization of o-vinylbiphenyl. M. M. Koton (Phys. Tech. Inst., Acad. Sci. U.S.S.R., Leningrad). *Doklady Akad. Nauk S.S.S.R.* 93, 825-6(1953).—o-$PhC_6H_4CH:CH_2$ polymerization was studied at 100, 110, and 125°; at these temps. the compd. polymerizes significantly more rapidly than does $PhCH:CH_2$ (results shown graphically); the rate difference is about 300% and the polymer is of high mol. wt. The more ready polymerization is explained by lower activation energy (17.75 cal./mole) relative to styrene (20.24). G. M. Kosolapoff

Chemical behavior of Plexiglas. Jeannine Courdurié. *Industrie plastiques mod.* (Paris) 5, No. 5, 28-9(1953).—Summary of data, much of which has appeared in other publications or trade catalogs, on the resistance of this methyl methacrylate polymer to various chemical reagents. W. B. Gloor

KOTON, M.M.

Original checked –

[redacted]

Inst. High Molecular Compounds also mentioned

62 Reaction of symmetric aromatic compounds of mercury with phenols. I. Thermal stability of diaryl mercury compounds. M. M. Koton and V. P. Martynova (Leningrad Pediat. Med. Inst.). *Zhur. Obshchei Khim.* 24, 2177–80 (1954).—$(XC_6H_4)_2Hg$ (I) show different orders of stability depending on the nature of X. I with X = HO, NH_2 or MeO are the less stable decompg. fairly rapidly at 130°; I with X = NO_2, CO_2H are stable above 160°. I reacts with phenols (pyrogallol, *p*-aminophenol and hydroquinone). The results are shown in tabular form in the following decreasing order (detd. by the extent of the wt. of evolved metallic Hg) (X given): *p*-NH_2, *p*-HO, *p*-MeO; *m*-NO_2, *p*-NO_2, *p*-HO_2C. G. M. Kosolapoff ①

KOTON, M.M.

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Original checked
Leningrad Phys.-Tech. Inst.
also [illegible]

Reaction of unsymmetric compounds of mercury with phenols. M. M. Koton and A. A. Bol'shakova (Leningrad State Pedagog. Inst.). *Zhur. Obshchei Khim.* 23, 1153-7(1953); cf. *C.A.* 45, 5644f.—Unsym. RHgR' compds. react with pyrogallol, hydroquinone and naphthols, yielding Hg, RH, and R'H. The products are readily explained on the basis of free radical cleavage of the Hg derivs. $MeHgC_{10}H_7$-1 (I), m. 82°; *MeHgPh* (II), liquid, is rather unstable and is best identified after conversion to MeHgCl, m. 170-1°; II can be obtained from PhMgBr and MeHgI, but not from MeMgI and PhHgBr. 1-$C_{10}H_7$-*HgPh* (III), from PhMgBr and 1-$C_{10}H_7HgBr$, m. 110-12° (decompn.). Heating 0.3 g. RR'Hg with 0.3 g. phenol (shown below) 3-6 hrs. at 100° or 130° in ampuls gave the following results. I or II with p-$O_2NC_6H_4OH$ gave Me-$HgC_6H_3(OH)NO_2$, m. 168-70°, which with cold HCl gave p-$O_2NC_6H_4OH$ and MeHgCl; treated with Br_2-KBr soln. it gave 3,4-$Br(O_2N)C_6H_3OH$, indicating that the compd. was 3,4-$(MeHg)(O_2N)C_6H_3OH$. I and II with m-$O_2NC_6H_4$-OH gave 4,3-$(O_2N)(MeHg)C_6H_3OH$, m. 126-7°. II and 2,4-$(O_2N)_2C_6H_3OH$ gave $MeHgC_6H_2(OH)(NO_2)_2$, m. 99-102°. I or II with 2,4,6-$(O_2N)_3C_6H_2OH$ gave $MeHgC_6H$-$(OH)(NO_2)_3$, m. 125-7°. I or II with p-BrC_6H_4OH gave $MeHgC_6H_3(OH)Br$, m. 126-8°, which with HCl gives p-BrC_6H_4OH, while bromination with Br_2-KBr gave 3,4-dibromophenol, indicating the structure 3,4-$(MeHg)Br$-C_6H_3OH. I or II with 2,4,6-$Br_3C_6H_2OH$ gave 2,3,4,6-$(MeHg)Br_3C_6HOH$, m. 120-1°, which is rapidly cleaved by HCl to the original phenol, while bromination gives 2,3,4,6-tetrabromophenol, m. 115-16°. I or II with resorcinol gave pink infusible $(MeHg)_2C_6H_2(OH)_2$. II with p-ClC_6H_4OH gave $MeHgC_6H_3(OH)Cl$, m. 116-18°. II with 2,4-$Cl_2C_6H_3OH$ gave $MeHgC_6H_2(OH)Cl_2$, m. 108-9°. I or II with p-MeC_6H_4OH gave $MeHgC_6H_3(OH)Me$, m. 124-6°. II with PhOH gave $MeHgC_6H_4OH$, m. 109-10°. III and p-$O_2NC_6H_4OH$ gave $(PhHg)_2C_6H_2(OH)NO_2$, infusible at 250°, which with alc. HCl gave the original phenol and PhHgCl. III and 2,4,6-$(O_2N)_3C_6H_2OH$ gave $PhHgC_6H(OH)$-$(NO_2)_3$, decompg. 157°. III and p-BrC_6H_4OH gave $(PhHg)_2C_6H_2(OH)Br$, infusible, which with alc. HCl gave the original phenol and PhHgCl; bromination in KBr gave 2,4,6-$Br_3C_6H_2OH$, indicating that the original product was 2,6,4-$(PhHg)_2BrC_6H_2OH$. III and 2,4,6-$Br_3C_6H_2OH$ gave $PhHgC_6H(OH)Br_3$, decompg. 174-5°. III and resorcinol gave red insol. $(PhHg)_2C_6H_2(OH)_2$, decompg. 132°; if the reaction is run in EtOH 3 hrs. at 130° there is formed the same substance and a small amt. of insol. infusible $(PhHg)_3$-$C_6H(OH)_2$. In reactions of I and II with substituted phenols is also formed C_6H_6 or $C_{10}H_8$. G. M. Kosolapoff

USSR/Chemistry - Physical chemistry

Card 1/2 : Pub. 147 - 7/27

Authors : Koton, M. M.; Kiseleva, T. M.; and Bessonov, M. I.

Title : Radical polymerization of styrene investigated by the marked atom method

Periodical : Zhur. fiz. khim. 28/12, 2137-2141, Dec 1954

Abstract : A study of styrene polymerization by means of marked atoms showed that benzoyl peroxide decomposes during the polymerization of styrene in mass forming $C_6H_5COO\cdot$ radicals, a majority of which attaches itself to the polymer. The benzoate $C_6H_5COO\cdot$ radicals are considered as the basic polymerization initiators. The separation of polymer chains during styrene polymerization in the presence of benzoyl peroxide takes place by the encounter of two growing chains or growing chain and benzoate radical but not by the transfer of chains. It was established that the number of benzoate radicals attaching themselves to the polymer depends upon the conditions of polymerization. An increase in temperature and in concentration of the basic benzoyl peroxide is followed by a reduction in the radical groups in the polymeric molecule and an increase in CO_2 in the gaseous phase. Seven references ; 3 USSR and 4 USA (1942-1953). Tables; graph; illustration.

Zhur. fiz. khim. 28/12, 2137-2141, Dec 1954

Card 2/2

Institution : Academy of Sc. USSR, Institute of High Molecular Compounds, Leningrad

Submitted : January 29, 1954

KOTON, M. M.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0"

② 5

1 Polymerization of styrene in the presence of benzoyl peroxide studied by the method of labeled atoms. M. M. Koton, T. M. Kiseleva, and M. I. Bessonov. *Doklady Akad. Nauk S.S.S.R.* 96, 85-6(1954).—Treatment of PhMgBr with $C^{14}O_2$ gave C^{14}-labeled BzOH in 73-4% yield; this heated with PCl_5 gave labeled BzCl which, with H_2O_2, gave $(PhC^{14}O_2)_2$, which was used for initiation of PhCH:CH₂ polymerization at 0.7-2% concn. and at 70°, 100°, and 140°. The solid polymer was repptd. from benzene by MeOH and ranged in mol. wt. from 10,400 to 30,600. From 1.3 to 1.73 labeled BzO radicals are found to be present per mol. of the polymer; a much smaller proportion of the peroxide decomp. with evolution of CO_2; this proportion rises with temp. and with increased catalyst concn. G. M. K.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0

KOTON, M.M.

V. Synthesis of [illegible] [illegible] labeled with radioactive carbon. M. M. Koton, [illegible] Kiseleva, and [illegible] [illegible]. [illegible] [illegible] [illegible] (1953); [illegible] [illegible] [illegible] [illegible] [illegible] (translation). $C^{14}O_2$ from $BaC^{14}O_3$ and H_2SO_4 was treated at -10° with 0.8N MeMgI, yielding, after treatment with 10% HCl and distn. of the product from K_2SO_4, [illegible] $MeC^{14}O_2H$, isolated as the Ba salt which was pyrolyzed at 500° to give 100% $Me_2C^{14}O$. This (10.96 g.) and 12.15 g. KCN in 15 ml. H_2O was added to 18.15 g. [illegible] in 50 ml. H_2O, yielding 15 g. [illegible], which was filtered off after 12 hrs. This (15 g.) in 50 ml. KOH was treated with slight heating with 16 ml. concd. HCl and 30 ml. H_2O, and the soln. diluted and treated with [illegible] in 415 ml. H_2O, yielding a ppt. of [illegible] [illegible] [illegible] (from [illegible] or H_2O), specific activity [illegible]. [illegible]

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0

KOTON, M.M. (Leningrad)

Progress in the preparation of new polymers. Usp.khim.24 no.7: 901-930 '55. (MIRA 9:2)
(Polymers and polymerization)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0"

KOTON, M. M.

Reactions of bis(p-aminophenyl)mercury with phenols. XI. M. M. Koton [illegible] (Polit. [illegible] Inst., [illegible]). Zhur. Obshchei Khim. 25, [illegible] (1955); [illegible] J. Gen. Chem. U.S.S.R. 25, 686-8 (1955) (Engl. translation); [illegible] 217 [illegible] $(p\text{-}H_2NC_6H_4)_2Hg$ (I) readily mercurated phenols [illegible] and [illegible] derivs. Heating equal wts. of I with various phenols [illegible] resulted in the reaction. Thus, I and $p\text{-}O_2NC_6H_4OH$ in 3 hrs. at 70° gave 0.— g. orange, infusible [illegible] 2,6-bis(p-aminophenylmercuri)-4-nitrophenol (with aq. HCl this gave $PhNH_2$, $HgCl_2$ and original phenol; [illegible] 2,6-diiodo-4-nitrophenol). I and p-$O_2NC_6H_4OH$ [illegible] at 100° or 180° gave 0.16 g. blue, infusible [illegible]-4-nitrophenol; at 160° the reaction yielded Hg. Chlorination of the dimercurated product in H_2O gave 2,6-dichloro-4-nitrophenol. I and 2,4-dinitrophenol at 100°, 130°, or 180° gave only 0.15 g. [illegible]-2,4-dinitrophenol, orange, decomp. 202-5°; in [illegible] at 150-60° some Hg was formed. Cleavage of the product with HCl gave p-aminophenylmercuric chloride, decomp. 200°, while [illegible] gave [illegible]. I and 2,6-dinitrophenol in 5 hrs. [illegible] 2,4-dinitrophenol [illegible] at 180° gave 0.14 g. orange [illegible]. I and resorcinol in 3 hrs. at 70° gave 0.65 g. green $(p\text{-}H_2NC_6H_4Hg)_2C_6H_2(OH)_2$, decomp. above 200°; in 9 hrs. at 70° there formed deep-green infusible $(p\text{-}H_2NC_6H_4Hg)_3C_6H(OH)_2$; at 130° no mercurated products were isolated and much Hg formed. I and p-ClC_6H_4OH in 3 hrs. at 70° gave yellow $(p\text{-}H_2NC_6H_4Hg)C_6H_3(OH)Cl$, m. 180°, and infusible green $(p\text{-}H_2NC_6H_4Hg)_2C_6H_2(OH)Cl$, probably 2,6-dimercuri deriv. I and 2,4-dichlorophenol at 80-180° gave [illegible] infusible $(p\text{-}H_2NC_6H_4Hg)_2C_6H(OH)Cl_2$, while 2,4,6-trichlorophenol in 3 hrs. at 70-100° gave green [illegible]-2,4,6-trichlorophenol, m. 180°, and blue infusible $(p\text{-}H_2NC_6H_4Hg)_2C_6(OH)Cl_3$. I and p-$MeC_6H_4OH$ gave infusible $(p\text{-}H_2NC_6H_4Hg)_2C_6H_2MeOH$, while PhOH in 3 hrs. at 70° gave $(p\text{-}H_2NC_6H_4Hg)_2C_6H_3OH$, m. 172°.

G. M. Kosolapoff

C.H

KOTON, M.M.

Reaction of bis-*p*-methoxyphenylmercury with phenols. I. M. M. Koton and V. F. Martynova (Inst. High-Mol. Compds., Acad. Sci. U.S.S.R. and Leningrad Pediat. Med. Inst.). *Zhur. Obshchei Khim.* 25, 705-8; *J. Gen. Chem. U.S.S.R.* 25, 673-5(1955)(Engl. translation); cf. *C.A.* 42, 1572f; 46, 11138k; 50, 217a.—Heating 0.2 g. (*p*-MeOC$_6$H$_4$)$_2$Hg with 0.2 g. various phenols in a sealed tube 3 hrs. at indicated temp. yielded MeOPh and the following products. At 100° *o*-O$_2$NC$_6$H$_4$OH gave 0.12 g. *p*-MeOC$_6$H$_4$HgC$_6$H$_3$(OH)NO$_2$-4,3, orange, m. 109-10°; at 130° there was formed 0.14 g. yellow (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H$_2$(OH)NO$_2$, insol. and infusible at 250°; the mono-Hg deriv. with alc. HCl gave MeOPh, HgCl$_2$, and *o*-O$_2$NC$_6$H$_4$OH; Br in satd. KBr gave 2-nitro-4-bromophenol. Reaction with *p*-O$_2$NC$_6$H$_4$OH at 130° gave 0.24 g. insol., infusible yellow (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H$_2$(OH)NO$_2$. 2,4-(O$_2$N)$_2$C$_6$H$_3$OH at 130° gave 0.1 g. insol. infusible yellow (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H(OH)NO$_2$ and 3.55% Hg. 2,4,6-(O$_2$N)$_3$C$_6$H$_2$OH at 100° gave 0.13 g. 2,4,6,3-(O$_2$N)$_3$(HO)C$_6$HHgC$_6$H$_4$OMe-*p*, m. 125-6°. *p*-ClC$_6$H$_4$OH at 70° gave 0.09 g. *p*-MeOC$_6$H$_4$HgC$_6$H$_3$(OH)Cl, m. 154-6°, while at 100° it gave 0.15 g. colorless (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H$_2$(OH)Cl, insol. and infusible. 2,4,6-Cl$_3$C$_6$H$_2$OH at 70° gave 0.36 g. *p*-MeOC$_6$H$_4$HgC$_6$H(OH)Cl$_3$-3,2,4,6, m. 178-81°, while at 100° it gave 0.08 g. same product and 0.15 g. insol. and infusible (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$(OH)Cl$_3$; only the latter formed at 130°. Resorcinol at 100° gave 0.1 g. *p*-MeOC$_6$H$_4$HgC$_6$H$_3$(OH)$_2$, orange, m. 169-70°, while 0.2 g. insol. infusible (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H$_2$(OH)$_2$ also formed; at 130° only metallic Hg formed. *p*-MeC$_6$H$_4$OH at 70° or 100° gave insol. infusible (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H$_2$(OH)Me. PhOH at 70° gave 0.12 g. (*p*-MeOC$_6$H$_4$Hg)$_2$C$_6$H$_3$OH.

G. M. Kosolapoff

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Kotan M [illegible]

[illegible] and polymerization of [illegible] containing [illegible]

A. [illegible], [illegible] M. [illegible], Yu. V. [illegible] and [illegible] (2)

[illegible] 27, 1115-17 (1957)

[illegible] C.A. 50, [illegible]

KOTON, M. M.

Synthesis and polymerization of nitrogen-containing substituted styrenes. M. M. Koton, Yu. V. Mitin, and F. S. Florinskii (Inst. High-Molecular Compds., Acad. Sci. U.S.S.R., Moscow). Zhur. Obshchei Khim. 25, 1469-73 (1955).—Polymerization of PhCH:CH$_2$ is greatly accelerated by a *p*-CN or NO$_2$ group, while *p*-NMe$_2$ or NH$_2$ groups retard polymerization; the kinetic curves are shown for these examples in polymerizations at 100°. Thus *p*-aminostyrene polymerizes only with difficulty even at 150° yielding a brown transparent polymer; the *p*-dimethylaminostyrene polymerizes somewhat more readily at 120-30°, but at 150° it evolves gaseous by-products (amines). Polymerization of *p*-nitrostyrene and *p*-cyanostyrene are reactions of 1st order with activation energies of 21,000 and 8200 cal./mole, resp. PhCH$_2$CH$_2$OH treated overnight with PBr$_3$ gave 78% PhCH$_2$CH$_2$Br, b$_{11}$ 91-3°, which nitrated with fuming HNO$_3$ in AcOH-Ac$_2$O to 53% *p*-O$_2$NC$_6$H$_4$CH$_2$CH$_2$Br, m. 69°, which (25 g.) refluxed with 150 ml. (HOCH$_2$CH$_2$)$_3$N and 80 ml. H$_2$O with steam distn. of the product as formed, gave 62% *p*-O$_2$NC$_6$H$_4$CH:CH$_2$, m. 23°. From 14 g. Mg, 118 g. *p*-C$_6$H$_4$Br$_2$ and 15 g. AcH the conventional method yielded 40% *p*-BrC$_6$H$_4$CHMeOH, b$_{15}$ 144-6°, which heated with pyridine and fresh (CuCN)$_2$ in the presence of hydroquinone, a few drops of *p*-MeC$_6$H$_4$CN and a little CuSO$_4$ 15 hrs. at 200-15° gave 24% *p*-NCC$_6$H$_4$CHMeOH, b$_5$ 135-40°, n_D^{20} 1.5480; this passed over Al$_2$O$_3$ at 300-25° gave 46% *p*-NCC$_6$H$_4$CH:CH$_2$, b$_{10}$ 104°, n_D^{20} 1.5782. *p*-H$_2$NC$_6$H$_4$CH:CH$_2$ was prepd. in 55% yield according to Shorygin (S. and Shorygina, *C.A.* 34, 389^1) and the product m. 20-2°. MeMgBr from 40 g. MeBr was treated with 60 g. *p*-Me$_2$NC$_6$H$_4$CHO and the treatment of the mixt. with NH$_4$Cl-HCl soln. gave on distn. 25% *p*-Me$_2$NC$_6$H$_4$CH:CH$_2$, b$_{14}$ 89°, m. 16°, n_D^{20} 1.6045. G. M. Kosolapoff

(2)

KOTON, M.M.; KISELEVA, T.M.; BESSONOV, M.I.

Study of the radical polymerization of styrene by means of tracers.
Zhur.fiz.khim.28 no.12:2137-2141 D '55. (MIRA 8:5)

1. Akademiya nauk SSSR. Institut vysokomolekulyarnykh soyedineniy Leningrad.
(Polymers and polymerization) (Styrene) (Carbon--Isotopes)

KOTON, M.M., MARTYNOVA, V.P.

Reactions of symmetrical aromatic compounds of mercury with phenols. Izv.AN SSSR Otd.khim.nauk 86 no.6:1063-1070 My.'55. (MLRA 9:4)

1.Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR.

(Mercury organic compounds) (Phenols)

Koton, M. M.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 30/59

Authors : Koton, M. M. and Smolyuk, T. G.

Title : Polymerization of methylated styrenes

Periodical : Dok. AN SSSR 102/2, 305-306, May 11, 1955

Abstract : Studies were conducted to determine the effect of the number and mutual disposition of methyl groups oriented in the benzene ring of styrene on the polymerizability and properties of polymers obtained. A check of the polymerization kinetics showed that some styrenes polymerize easier and more rapid than the other. The activation energy values for the process of polymerization of methylated styrenes were estimated. It was established that an increase in the number of methyl groups in the benzene ring of styrene reduces the polymerizability of the styrene substitutes as result of the staric hindrances originating thereat. Two reference: 1 USA and 1 USSR (1935-1954). Graphs.

Institution : Acad. of Sc., USSR, Inst. of Highmolecular Comp.

Presented by : Academician V. A. Kargin, December 14, 1954

Koton, M. M.

RUMANIA/Physics of High - Molecular Substances D-9

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11539

Author : Koton, M.M.
Inst :
Title : Accomplishments in the Region of Production of New Polymers.

Orig Pub : An. Rom.-Sor. Ser. Chim., 1956, 10, No 3, 84-111

Abstract : Translation from the journal Uspekhi khimii (see Referat Zhur Fizika, 1956, 16533).

Card 1/1

Koton, M.M.

Synthesis and polymerization of thioesters of methacrylic acid. M. M. Koton, T. M. Kiseleva, and R. S. Podror. [illegible] (Inst. High Mol. Compds., [illegible] Moscow). Zhur. Obshchei Khim. [illegible] — To 10 g. PhSH in 100 ml. 5% NaOH was added with cooling 10.5 g. $CH_2:CMeCOCl$, yielding 60% $CH_2:CMeCOSPh$, b_{10} 106-7°, b_{14} 117°, n_D^{20} 1.5588, d_{20} 1.0777. Also prepd. were: $CH_2:CMeCO_2Ph$, b_{10} 80-4°, n_D^{20} 1.5160; $CH_2:CMeCOSCH_2Ph$, 18%, b_3 110-20°, n_D^{20} 1.5574, d_{20} 1.0681; $CH_2:CMeCO_2CH_2Ph$, b_3 104-8°, n_D^{20} 1.5130. The esters were polymerized in ampuls. At 90°, 100°, & 110° without a catalyst the relative rates of polymerization (shown graphically) in descending order were: benzyl ester, thiobenzyl ester, thiophenyl ester, Ph ester. The relative order was the same in polymerization at 70° with 0.1% Bz_2O_2. Ph ester gave the highest polymers, thiobenzyl ester the lowest (on the basis of viscosity detns.).

G. M. Kosolapoff

Котон, М.М.,

DOKUKINA, A.F.; KOTON, M.M.; MINEYEVA, O.K.; PARIBOK, V.A.

Synthesis of chloro- and brome-substituted methylstyrenes. Zhur.ob. khim. 26 no.6:1651-1653 Je '56. (MIRA 11:1)

1.Leningradskiy politekhnicheskiy institut.
(Chemistry, Organic--Synthesis) (Styrene)

KOTON, M.M.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1273
AUTHOR KOTON, M.M.
TITLE On the Properties of Scintillating Plastics.
PERIODICAL Žurn. techn. fis, 26, fasc. 8, 1741-1743 (1956)
Publ. 8 / 1956 reviewed 9 / 1956

In literature the question concerning the influence exercised by the chemical character of plastics used for the production of scintillation counters has hardly been examined. Therefore, a number of polymers of different chemical character was examined and the scintillating properties of the plastics obtained were studied. It was shown that, on the occasion of the introduction of specially purified anthracenes into styrol and its derivates, into ether of methacryl acid, into the derivates of naphtalene, etc., as well as on the occasion of a following polymerization and in the presence of benzoil, plastics of different scintillating activity which is closely connected with the chemical structure of the initial product were obtained. The highest degree of activity was found in the case of those plastic samples which were obtained on the basis of pure polystyrol or with additions of naphtalene derivates. This shows what an important part is played by the aromatic benzol rings together with the system of the hereto connected bonds in photoluminescence processes. With an increase of the percentage of aromatic compounds scintillation activity is increased.
Tests have shown that, for the production of scintillating plastics with

KOTON, M.M.

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Synthesis of chloro- and bromo-substituted methylstyrenes. A. P. Dolnikina, M. M. Koton, O. K. Mineeva, and V. A. Parbuk. J. Gen. Chem. U.S.S.R. 26, 1849-51 (1956)(English translation).—See C.A. 51, 1885c.

B. M. R.

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KOTON, M.M.

Reactions of tetraphenyltin with organic acids. M. M. Koton (High Polymer Inst., Leningrad). Zhur. Obshchei Khim. 20, [illegible] (1950).—Heating 1 g. Ph_4Sn and 1.5 ml. dry HCO_2H 3 hrs. in an ampul at 100° gave 0.85 ml. C_6H_6 and an infusible solid, presumably $(HO)_2SnO_2CH$. Ph_4Sn (1 g.) and 1.5 ml. AcOH in 2 hrs. at 125° gave 0.75 ml. C_6H_6 and 0.45 g. infusible $AcOSnC_6H_5$. Ph_4Sn (1 g.) and AcCl heated at 115-130° in vacuum ampuls gave at 60° some Ph_3SnCl, while at 100-130° it gave $SnCl_4$ and AcPh.

G. M. Kosolapoff

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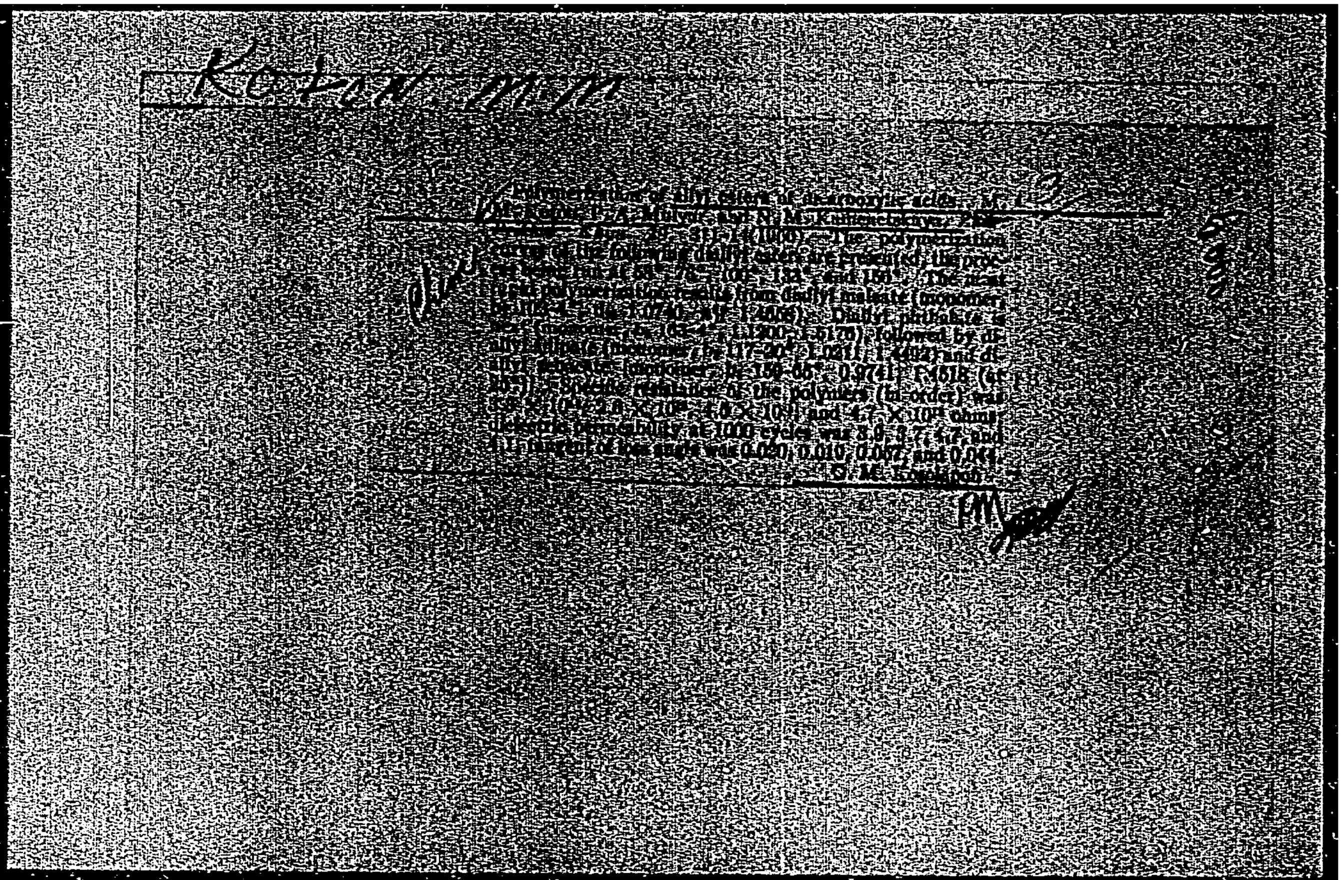

Koton, M.M.

Polymerization of allyl esters of dicarboxylic acids. M. M. Koton, T. A. Mulyar, and N. M. Kamenetskaya. Zhur. [illegible] Khim. 29, 311-14(1956).—The polymerization curves of the following diallyl esters are presented; the process was run at 80°, 100°, 133°, and 150°. The most rapid polymerization results from diallyl maleate (monomer b_{10} 102-4°, d_{20} 1.0740, n_D 1.4668). Diallyl phthalate is next (monomer b_4 163-4°, 1.1200, 1.5170), followed by diallyl adipate (monomer b_1 117-20°, 1.021, 1.4602) and diallyl sebacate (monomer b_3 150-65°, 0.9741, 1.4518 (at 20)). Specific resistance of the polymers (in order) was 5.8×10^{14}, 2.0×10^{15}, 4.8×10^{15}, and 4.7×10^{14} ohms; dielectric permeability at 1000 cycles was 3.9, 3.7, 4.7, and 4.1; tangent of loss angle was 0.020, 0.010, 0.007, and 0.044.

G. M. Kosolapoff

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000825410010-0"

KOTON, M.M.

USSR/ Chemistry - Physical chemistry

Card 1/2 Pub. 147 - 23/35

Authors : Dokukina, A. F.; Koton, M. M.; Kryukova, K. N.; Mineyeva, O. K.; Paribok, V. A.

Title : Relation between structure and polymerizability of substituted styrenes

Periodical : Zhur. fiz. khim. 30/1, 190-195, Jan 1956

Abstract : Investigation was conducted to determine the polymerization process of numerous disubstituted styrene derivatives containing halogen atoms and methyl radicals in various arrangements in the benzene ring of styrene. The position 2,5- at which the maximum rate of polymerization and maximum molecular weight was observed was considered to be the most favorable position for substitutes in the styrene benzene ring. The series formed

Institution : Leningrad Polytechnic Inst. im. M. M. Kalinin

Submitted : June 27, 1955

Card 2/2 Pub. 147 - 23/35

Periodical : Zhur. fiz. khim. 30/1, 190-195, Jan 1956

Abstract : by styrene substitutes are shown in the order of their polymerization rate. The effect of substituting groups in the benzene ring of styrene on the polymerizability and other characteristics of polymers is discussed. Four USSR/USA references (1939-1955). Tables; graphs; drawing.

Koton, M.M.

KOTON M.M.

Synthesis and polymerization of vinyl derivatives of furan and thiophene. L. Ya. Andreeva and M. M. Koton (Inst. High Polymers, Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 110, 75-8(1956). *2-Vinylfuran* (by decarboxylation of furylacrylic acid), bp 98-7°, n^{20}_D 1.4604; *2-vinylthiophene* (from thienylmagnesium iodide and ethylene oxide, the alc. dehydrated with solid KOH), b_{15} 66.5°, n^{20}_D 1.5728. The following vinyl derivs. were prepd. by Meerwein-Ponndorf reduction of corresponding ketones, the alcs. being dehydrated over Al_2O_3. Me benzofuryl ketone was prepd. by ring closure condensation of salicylaldehyde and $MeCOCH_2Cl$. The following vinyl derivs. were used for polymerization studies: *2-vinylbenzofuran*, b_{12} 85°, n^{20}_D 1.6090; *2-vinyldibenzofuran*, b_{12} 180°, b_6 147°, m. 41°, n^{50}_D 1.6672; *2-vinyldibenzothiophene*, b_{10} 187°, m. 48°. Kinetics of polymerization of the above were shown by reaction curves obtained dilatometrically with 0.5% Bz_2O_2 as catalyst at 60°, 80°, 90°, and 100°; LiBu at 35° and $BF_3.Et_2O$ at 0° were also examd. as catalysts. Since O affected the polymerization rates in these cases atm. O was rigidly excluded. From the polymerization rates at the indicated temps. the activation energy for peroxide catalysis was found to be: 2-vinylfuran 17 cal./mole; 2-vinylbenzofuran 16.0; 2-vinyldibenzofuran 12.4. The rate of polymerization increased with increased no. of condensed rings on furan for both radical and ionic processes. Activation energy for polymerization of 2-vinylthiophene in the peroxide-catalyzed reaction was 10 cal./mole. Vinyldibenzothiophene polymerized much more rapidly than did vinylthiophene. With radical catalysts a stepwise elevation of temp. during the reaction yielded polymers with almost unchanged properties over the conventional const. temp. prodn. Vinyldibenzofuran polymers showed higher viscosity and higher mol. wt. than those from vinylbenzofuran. The high mol. wt. products had dielectric properties identical with those of the low mol. wt. products. The m.ps. tended to decline with increase of the no. of condensed rings in a given monomer, 2-derivs. being lower melting than O-derivs.

G. M. Kosolapoff

Koton, M. M.

KOTON, M. M. MMX and MITIN, Yu. V.

"The Synthesis of Polymers with Cycles in the Chain,"

TITLE : General Meeting of the Department for Chemical Sciences of the AN USSSR Held in May 30-31 and June 28, 1957.

PERIODICAL: Izvestiya AN SSSR, Otdel, Khim. Nauk, 1957, Nr 11, pp. 1416-1419 (USSR)

KOTON, M. M., VOL'KENSHTEYN, M. V., and ANUFRIYEVA, F. V.

"Inhibition of styrene polymerization by anthracene," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Organic Chemistry Research Inst.

B-3,084,395

KOTON, M. M., Institute of Macromolecular Compounds, AS USSR, Leningrad

"On the Polymerization of Vinyl Derivatives in the Aromatic and Heterocyclic Series," a paper submitted at the International Symposium on Macromolecular Chemistry, 9-15 Sep 1957, Prague.

Koton, M.M.

120-3-11/40

AUTHORS: Adrova, N.A., Koton, M.M., Panov, Yu.N., Florinskiy, F.S.

TITLE: Effective Plastic Scintillators for Recording of Radioactive **Emissions** (Effektivnyye stsintillyatsionnyye plastmassy dlya registratsii radioaktivnykh izlucheniy)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, Nr 3, pp.45-47 (USSR)

ABSTRACT: Various plastics have been investigated as possible scintillators. It has been shown experimentally that the following plastic scintillators based on polystyrene are efficient:

1. 2% terphenyl + 0.1 quarterphenyl.
2. 1% 2,5-diphenyloxazole.
3. 1-2% 1,1,4,4-tetraphenylbutadiene.
4. 2% terphenyl + 0.02 to 0.03% 1,1,4,4, tetraphenylbutadiene.
5. 2.5% 9,10-diphenylanthracene.
6. 2% terphenyl + 0.02 to 0.03% 1,4- 2-(5-phenyl-oxazolyl)-benzene.
7. 1% 2,5-diphenyloxazole + 0.02 to 0.05% 1,4-di-2-(5-phenyloxazolyl)-benzene.

Card 1/2 The technique of preparation of plastic scintillators based

KOTON, M.M.

ADROVA, N.A.; KOTON, M.M.; FLORINSKIY, F.S.

Preparation of 2, 5-diphenyloxazole and study of its scintillation efficiency in plastics. Izv.AN SSSR.Otd.khim.nauk no.3:385-386 Mr '57. (MLRA 10:5)

1. Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR.
(Oxazole) (Plastic materials) (Scintillation counters)

KOTOV, M. M.

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[illegible] of effective scintillator. [illegible] preparation of 1,4-di[illegible] and [illegible] fluorescence in polystyrene. N. [illegible] M. M. Kotov [illegible] High Polymer [illegible] Acad. Sci. U.S.S.R. Otdel. Khim. [illegible] — A 0.4% soln. of 1,4-di[illegible]benzene (I) in polystyrene gives [illegible] relative to 100% given by terphenyl [illegible] containing [illegible] substance gave 62% [illegible] in monomeric poly[illegible]. Mixing the 2 substances, best in 1:100 proportion, gave up to 108% [illegible] according to Hayes, et al. (C.A. 50, [illegible]) in [illegible] yield, m. [illegible] O. M. Kosolapoff

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1-4E3c(j)

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1-4E4j

1-4E3d

Koton, M. M.

Distr: 4E4j/4E2c(j)

Synthesis and polymerization of *p-tert*-butylphenyl methacrylate. II. M. M. Koton, T. V. Sheremet'eva, and M. O. [illegible] (High Polymer Inst., Leningrad). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1957, 826-7.—p-$Me_3CC_6H_4OH$ with $CH_2{:}CMeCOCl$ gave p-$Me_3CC_6H_4O_2CCMe{:}CH_2$, b. 131-2°, m. 34.5-6°. This was polymerized under N with 0.1-5% Bz_2O_2 at 60-120° over 4 days. The product is a glassy solid polymer obtained in 90% yield with 10% low polymer. The ester polymerizes much more rapidly than does $CH_2{:}CMeCO_2Me$ (kinetic curves shown). The considerable residual monomer and low polymer formed in polymerization of this ester is ascribed to steric hindrance produced by the Me_3C group.

G. M. Kosolapoff

3

2 may

2

1/1

KOTON, M.M. (Leningrad)

Organic unsaturated compounds with elements and the polymers of these compounds. Usp.khim. 26 no.10:1125-1140 O '57. (MIRA 10:10)
(Unsaturated compounds) (Polymers)

476

AUTHORS: Koton, M. M.; Sokolova, T. A.; and Chetyrkina, G. M.

TITLE: Synthesis of N-Substituted Methacrylamides. Part 1. Carboxy- and Carbalkoxy-plenylmethacrylamides (Sintez N-zameshchennykh metakrilamidov. I. Karboksi- i karbalkoksifenilmetakrilamidy)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, No. 1, pp. 185-189 (U.S.S.R.)

ABSTRACT: Carboxy- and carbalkoxyphenylmethacrylamides are polymerizable monomers. In order to synthesize substituted amides of methacrylic acid, the authors began with their acid chlorides and following in the Patai (2) steps utilized equimolecular amounts of acid chloride and aromatic amine. It was discovered that the reaction in this case does not reach the end because a part of the amine is consumed for salt formation together with the hydrogen chloride forming during the reaction. For this reason the authors choose the Bryant, Mitchel (5) method (used in the derivation of p-bromphenylmethacrylamide) which consists in the reaction of moles of amine per 1 mole methacrylic acid chloride. The basic amines for carboxyphenylmethacrylamides were obtained by esterification of o-, m- and p-aminobenzoic acids by heating the latter with methyl, ethyl, or butyl alcohol saturated with dry hydrogen chloride.

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476

Synthesis of N-Substituted Methacrylamides

The basic aminobenzoic acids and their esters have low basicity and their salts are therefore easily hydrolizable.
The obtained N-substituted methacrylamides were analyzed for their carbon, hydrogen and nitrogen contents by employing the micro-combustion method. The analysis results and the properties of the obtained amides are described in the table; the melting points are corrected in every instance.
One table. There are 10 references, of which 2 are Slavic.

ASSOCIATION: Academy of Sciences USSR, Institute of High Molecular Compounds (Institut Vysokomolekulyarnykh Soyedineniy Akademii Nauk SSSR)

PRESENTED BY:

SUBMITTED: February 17, 1956

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Card 2/2

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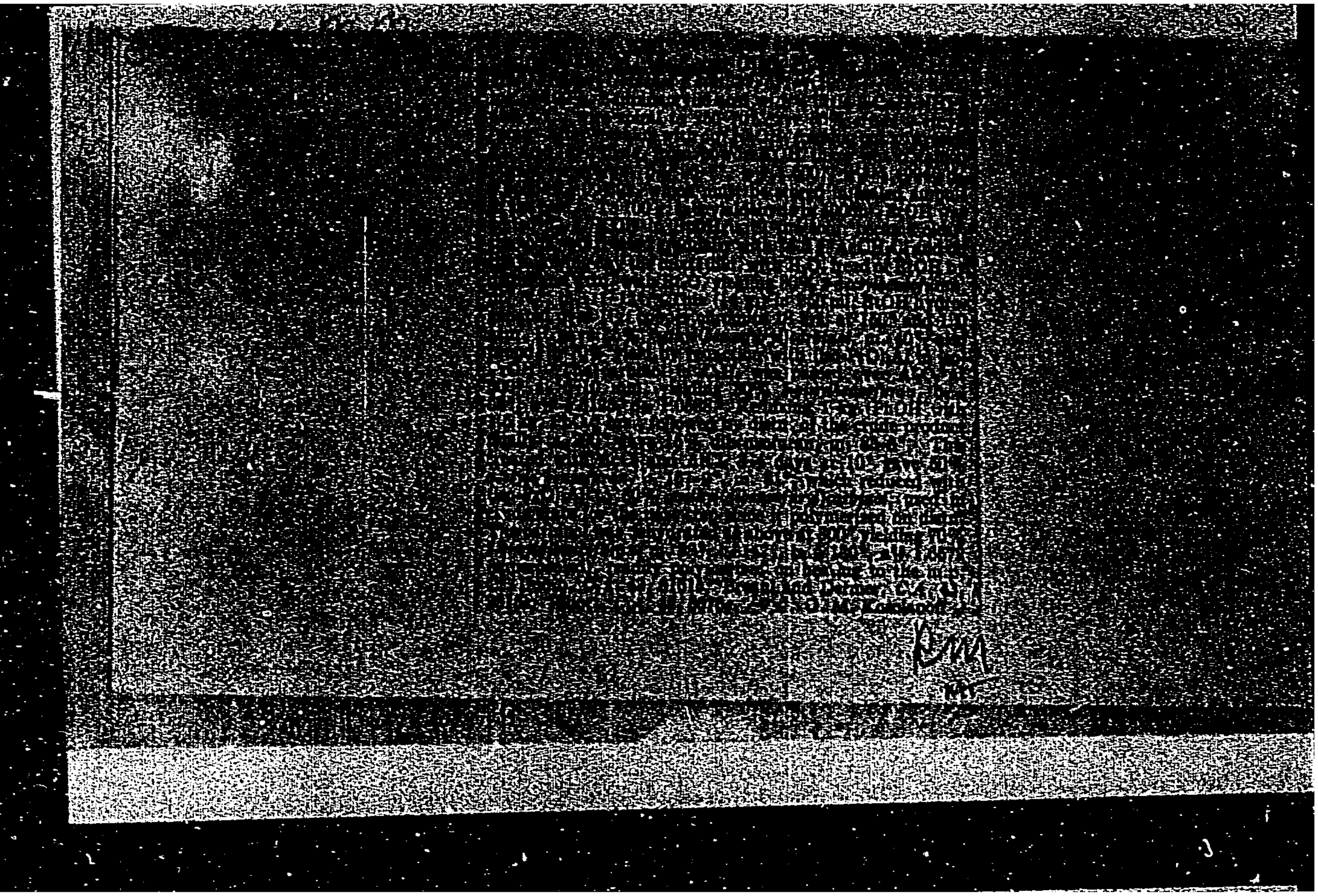

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[illegible]

[illegible] A14/A12 (?)/A23

[illegible] which con- [illegible] preferably in the [illegible] yielded [illegible] the prod. [illegible] AlCl₃ in [illegible] Acetylation in [illegible] about 20% [illegible] with the [illegible] were analyzed [illegible]

G. M. K.

[illegible]

Koton, M. M.

[illegible] 4E2c(j)/4E4j

5

2 may

2

Polymerization of nuclear methoxy-substituted styrenes. I. Synthesis and polymerization of isomeric methoxystyrenes. N. P. Zapevalova and M. M. Koton (Inst. High Polymer Lab., Acad. Sci. U.S.S.R., Leningrad). *Zhur. Obshchei Khim.* 27, 2136-42 (1957). — Methylation of salicylaldehyde with Me_2SO_4 in alk. medium gave 80% $o\text{-}MeOC_6H_4CHO$, b. 124°, m. 35°, which with MeMgBr gave the corresponding carbinol which, owing to ease of dehydration, was not isolated but was directly dehydrated over $KHSO_4$ in presence of hydroquinone. $m\text{-}O_2NC_6H_4CHO$ was reduced, the amino group diazotized, and converted to 80% $m\text{-}HOC_6H_4CHO$, m. 101-2°, which gave 80% MeO analog, b. [illegible], which gave as above 90% $m\text{-}MeOC_6H_4CHMeOH$, b. 107-8°, which dehydrated to the styrene analog as usual in 40% yield. Acetylation of MeOPh with Ac_2O in the presence of iodine gave 25% $p\text{-}MeOC_6H_4Ac$, b. [illegible], which on $Al(OCHMe_2)_3$ reduction gave 70-80% $p\text{-}MeOC_6H_4CHMeOH$, b. 106-8°, which was dehydrated as usual. Thus were obtained 99.4-99.8% pure specimens of: $o\text{-}MeOC_6H_4CH{:}CH_2$, b. 82°, b. 86°, [illegible] 1.5580, [illegible] 1.0081; *m*-isomer, b. 87°, b. 70-1°, 1.5540, 0.9919; *p*-isomer, b. [illegible], b. 106°, 1.5608, 0.9956. These polymerized at 100-25° without initiator; the *o*-isomer polymerized most rapidly, the *p*- and *m*-isomers less rapidly in that order. The *o*-isomer polymerized more rapidly than did styrene, the others more slowly. The rates of polymerization yielded the following values of the preexponential factors and activation energies, resp.: *o*-isomer, 8.5 × 10^6 sec.$^{-1}$, 11.9 kcal./mole; *m*-isomer, 2 × 10^4, 16.8; *p*-isomer, 8 × 10^7, 18.7. Cf. Mowry, *et al.*, *C.A.* 40, 4065. G. M. Kosolapoff

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Koton, M.M.

ZAPEVALOV, N.P.; KOTON, M.M.

Synthesis and polymerization of methoxy-substituted (in the ring) styrenes. Part 2: Synthesis and polymerization of dimethoxystyrenes. Zhur. ob. khim. 27 no.8:2142-2145 Ag '57. (MIRA 10:9)

1. Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR.
(Veratrols) (Styrene)

KOTON, M.M.; SOKOLOVA, T.A.; SAVITSKAYA, M.N.; KISELEVA, T.M.

Synthesis of N-substituted methacrylamides. Part 3: N-alkylacryl- and N-alkylmethacrylamides. Zhur. ob. khim. 27 no.8:2239-2243 Ag '57. (MIRA 10:9)

1. Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR. (Methacrylamide)

Koton, M.M.

Distr: 4E2c(j)
4E3j/4E3c

[illegible] M. M. Koton and [illegible] (Leningrad). Zhur. Obshchei Khim. 27, 2553-8(1957). Heating Sn(CH2CH:CH2)4 in an ampul at 170° gave C3H6, [illegible], the products are Sn, SnO2, and diallyl [illegible] with isobutyronitrile at 180° [illegible] Ph3Sn(CH2CH:CH2) in an ampul at 160°, and above 180° PhH is formed. Ph3SnCH2CH:CH2 [illegible]. At room temp. Sn(CH2CH:CH2)4 and dry HCl yield propylene and SnCl4. Ph2Sn(CH2CH:CH2)2 and dry HCl yields C6H6 and propylene, [illegible] while Ph3SnCH2CH:CH2 and dry HCl yield propylene, C6H6 and SnCl4. Ph3SnCH2CH:CH2 and iodine [illegible]. Sn(CH2CH:CH2)4 and HCO2H gave HCO2Sn(OH)3, infusible solid. Ph2Sn(CH2CH:CH2)2 and HCO2H in an ampul at 50° gave C6H6, propylene, and HCO2Sn(OH)3; Ph3SnCH2CH:CH2 with HCO2H at 80° yields propylene, C6H6 and HCO2Sn(OH)3. Sn(CH2CH:CH2)4 and EtOH at 150° gave propylene and SnO2. None of the allyl derivs. polymerized on heating alone or with isobutyronitrile and inhibited other monomers. G. M. Kosolapoff

Koton, M. M.

79-11-13/56

AUTHORS: Koton, M. M., Surnina, O. K.

TITLE: The Synthesis of 2-Vinylpyridine and of 2-Vinylquinoline (Sintez 2-vinilpiridina i 2-vinilkhinolina)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp.2974-2976 (USSR)

ABSTRACT: Although 2-vinylpyridine is already known for a long time, no satisfactory synthesis method existed hitherto which permitted to produce the monomer of 2-vinylpyridine with a good yield and a high degree of purity, although the patent data indicate a 30 % yield. 2-vinylquinoline is also already known for a long time, but it was only very recently that a method for the synthesis of this compound was described, where the yield is called very good, but where the temperature boiling interval is very wide, which indicates an insufficient purity of the preparation. Monomers of a high degree of purity were necessary for the performance of the polymerization process of 2-vinylpyridine and 2-vinylquinoline, so that appropriate changes in the process of the synthesis of these compounds had to be made. 2-vinylpyridine was synthesized from α-picoline and paraformaldehyde, 2-vinylquinoline from quinaldine and paraformaldehyde. Both reactions took place under high pressure in an autoclave and with the use of caustic potash. Thus

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79-11-13/56

The Synthesis of 2-Vinylpyridine and of 2-Vinylquinoline

An improved method for the synthesis of 2-vinylpyridine and 2-vinylquinoline was suggested which permits to synthesize these compounds as monomers with a good yield and a high degree of purity. There are 1 table, and 14 references, 5 of which are Slavic.

ASSOCIATION: Institute for High-Molecular Compounds AN USSR
(Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR)

SUBMITTED: December 3, 1956

AVAILABLE: Library of Congress

1. 2-Vinylpyridine-Synthesis 2. 2-Vinylquinoline-Synthesis

Card 2/2

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Koton, M. M.

[illegible] The infrared spectra of the monomer and the polymer were similar. [illegible]

KOTON, M.M.

20-5-33/67

AUTHOR KOTON,M.M., SURNINA,O.K.

TITLE Polymerization of 2-vinylpyridine And 2-vinylquinoline.
(Polimerizatsiya 2-vinilpiridina i 2 -vinilkhinolina -Russian)

PERIODICAL Doklady Akademii Nauk SSSR,1957,Vol 113,Nr 5 pp 1063-1065(U.S.S.R.)
Received 7/1957 Reviewed 8/1957

ABSTRACT
In spite of the fact that in the course of recent years vinyl
derivatives have been widely in use, their polyomerization and
co-polymerization has been but little investigated. Both substan-
ces have a very similar structure, but the second was very little
used, probably because the polymerization and the polymer proper-
ties were not sufficiently well known. The study of the polymeri-
zation of vinyl derivatives of pyridine is theoretically interest-
ing because it makes it possible to estimate the influence exer-
cised by the heteroatom in the rings of the vinylpolymers upon
their behavior in the polymerization and co-polymerization pro-
cesses. It was possible to study also the influence exercised by
the molecular complication of the heterocyclical monomer upon the-
se processes by introducing a second benzol ring. For this purpo-
se the authors synthetized the monomers of 2-vinylpiridine and 2-
vinylquinoline by the interaction of picoline with quinaldine with
paraform, which was followed by the dahydration ofthe obtaind car-
binoles. The physical properties of the monomers are shown by tab-
le 1. In order to study the polarizability of both substances the
kinetics of this process was investigated in the block by the di-

Card 1/2

Koton, M. M.

20-2-21/60

AUTHORS: Adrova, N. A., Koton, M. M., Panov, Yu. N., Florinskiy, F. S.

TITLE: The Scintillation Activity of Carbocyclic and Heterocyclic Compounds as Related to Their Chemical Structure (O svyazi mezhdu khimicheskim stroyeniyem karbo- i geterotsiklicheskikh soyedineniy i ikh stsintillyatsionnoy aktivnost'yu)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp.311-313 (USSR)

ABSTRACT: The paper under review investigates the relationship between the chemical structure of the carbocyclic and heterocyclic compounds and their scintillating activity. In addition to the known inorganic 'phosphors', also the organic 'phosphors' are at present being widely used as crystalline, liquid, or synthetic scintillators. Among the organic compounds, fluorescence will be found in the majority of the aromatic hydrocarbons and also in a considerable number of heterocyclic compounds, the molecules of which contain ring-shaped structures and conjugated double bonds.

Card 1/4

20-2-21/60

The Scintillation Activity of Carbocyclic and Heterocyclic Compounds as Related to Their Chemical Structure

An investigation of the relationship between their structure and their scintillating activity can be of help in the construction of scintillators with highest luminescent properties. The authors of the paper under review conducted the investigation of the above-mentioned activity of the substituted anthracenes, polyphenyls, aryl derivatives of the dienes and of a sequence (60) of heterocyclic compounds by introducing them into the polystyrol plastic. They were introduced into styrol monomer in quantities corresponding to their highest effectiveness. In presence of 0,2 % benzoyl peroxide and under gradually increasing temperature (80 to 120 degrees centigrade) they were polymerized until transparent cylindrical hard blocks were obtained. These blocks were examined with respect to their scintillating effectiveness by means of a device that permitted to establish the relative amplitude value by the output of the photoelectronic multiplier. The results obtained suggest a dependence between the chemical structure of the blocks and their scintillating effectiveness. It may be concluded from Chart Nr 1, contained in the paper under review, that the 1,4-di-(2-(5-phenyloxazolyl)-benzene, the quaterphenyl and the 9,10-diphenylanthracene, i.e. hydro-

Card 2/4

20-2-21/60

The Scintillation Activity of Carbocyclic and Heterocyclic Compounds as Related to Their Chemical Structure

of cycles is increased to 4, the activity rises from 9 % to 31 %. If substituents are introduced into the benzene ring, then both the chemical nature and also the isomerism affect the scintillating activity; this was observed by the authors of the paper under review in 9-substituted anthracene. Here this activity also increases at the transition from the methyl radical to the butyl radical. The paper under review gives diagrams of the chemical structure for all compounds mentioned. There are 4 references, 2 of which a

ASSOCIATION: Institut for High Molecular Compounds, AS USSR (Insitut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR)

PRESENTED: December 12, 1956, by A. N. Terenin, Academician

SUBMITTED: November 8, 1956

AVAILABLE: Library of Congress

Card 4/4

PHASE I BOOK EXPLOITATION SOV/1297

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke, Moscow, 1957

Polucheniye izotopov. Moshchnyye gamma-ustanovki. Radiometriya i dozimetriya; trudy konferentsii... (Isotope Production. High-energy Gamma-Radiation Facilities. Radiometry and Dosimetry; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science) Moscow, Izd-vo AN SSSR, 1958. 293 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'zovaniyu atomnoy energii SSSR.

Editorial Board: Frolov, Yu.S. (Resp. Ed.), Zhavoronkov, N.M. (Deputy Resp. Ed.), Aglintsev, K.K., Alekseyev, B.A., Bochkarev, V.V., Leshchinskiy, N.I., Malkov, T.P., Sinitsyn, V.I., and Popova, G.L. (Secretary); Tech. Ed.: Novichkov, N.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine or medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

COVERAGE: Thirty-eight reports are included in this collection under three main subject divisions: 1) production of isotopes 2) high-energy gamma-radiation facilities, and 3) radiometry and dosimetry.

TABLE OF CONTENTS:

PART I. PRODUCTION OF ISOTOPES

This report is a general survey of production methods, apparatus, raw materials, applications, investigations and future prospects for radio isotopes in the Soviet Union.

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PART III. RADIOMETRY AND DOSIMETRY

Card 9/12

KOTON, M. M.

(Institute of Macromolecular Compounds, Acad. Sci. USSR, Leningrad.)

"Polymerization of Aromatic and Hetrocyclic Vinyl Compounds," paper submitted at Soviet High Polymers, Intl. Conference, Nottingham, UK, 21-24 July 1958.

X E-3,109,661

AUTHOR: Koton, M.M., Professor 26-58-7-2/48

TITLE: Polymers (Polimery)

PERIODICAL: Priroda, 1958, Nr 7, pp 7-15 (USSR)

ABSTRACT: The polymers bring into close contact the two leading sciences of our time - chemistry and physics. They are also closely linked with practice and production. In addition, they open innumerable ways to new materials with unusual properties and, by use of new methods, changes in the already known polymers. In May 1958, the Plenum of the Soviet CP's Central Committee pointed out the importance of research and progress in the field of polymers. The industry requires cheap materials with a high chemical resistance at temperatures of 300 to 500°C. If in polyethylene all hydrogen atoms are replaced by fluorine, the polymer becomes soft only at temperatures over 300°C. Ion exchanger resins are being more widely used, especially in the field of antibiotics. In the laboratory of Professors A.A. Vanshteydt, A.A. Vasil'yev and N.N. Kuznetsova of the Institute of High-Molecular Compounds of the AS USSR, synthesized special ion exchanger resins, based on the theory of chromatography and ion exchange worked out by Professor S.Ye. Bresler and G.V.

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Samsonov, the first extremely pure antibiotics, such as streptomycin, albomycin, biomycin, terramycin and others were first obtained. This opened the road to the production of new antibiotics and other complicated drugs. Polymer substances can also be used to replace blood conserves. In the Leningradskiy institut polimerizatsionnykh plastmass (The Leningrad Institute of Polymerized Plastics), a "block"-copolymer resistant to impact was devised which will be mass-produced in the Leningradskiy Okhtinskiy khimkombinat (Leningrad Okhta Chemical Combine). In the Moskovskiy fiziko-khimicheskiy institut imeni L.Ya. Karpova (Moscow Physico-Chemical Institute imeni L.Ya. Karpov), under the direction of Academician S.S. Medvedev investigations have been carried out using model systems with marked atoms for an improved study of the ramifications of polymer chains and the mechanism of polymerization reactions. The theory of the process of the so-called reactions of the polycondensations is being worked out in the Institut elementoorganicheskikh soyedineniy AN SSR (Institute of Elemento-Organic Compounds of the AS USSR) in the laboratory of Correspondent-Member V.V. Korshak. He also worked out a polycondensation material called polyethylene terephthalate that is obtained

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from glycol and terephthalic acid called "lavsan", which is a base for strong fibers and mechanically resistant transparent material that can be exposed to all kinds of twisting. In the same institute, new synthetic fibers called "enant", "pelargon" and "undekan" were devised by Academician A.N. Nesmeyanov and the **Corresponding Member** R.Kh. Freydlina. Products from these fibers exceed the quality of kapron and are more economical to produce. Polycondensation products of phenols and derivatives of carbonic acids, the so-called "polycarbonates", have a great future. Resins of this type are - under the name of "leksan" - suitable for varnishes, films and fibers, known by their extraordinary resistance to high temperatures, ultraviolet radiation, and the effects of boiling water, acids and salts. In the last 10 to 15 years, increasing attention was devoted to polymers where the main chain of the macromolecule does not consist of carbon atoms but of alternating silicon and oxygen atoms. In nature, such substances, e.g. quartz and rock crystal, are known by their solidity and resistance to high temperatures. They are also brittle. **Corresponding Member K.A.** Andrianov has worked out such polymeric substances, removing the brittleness by the addition of supplementary carbon-

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containing groups to the remaining free valences of the silicon. This method permits the production of a vast array of caoutchoucs, oils and hard covers suitable for temperatures ranging from -55° and less to +300°C. This will be important in the electrical and radiotechnical fields. The same compounds have been used in the Institut khimii silikatov AN SSSR (Institute of the Chemistry of Silicates of AS USSR) by Professor B.N. Dolgov and senior scientific Assistant M.G. Voronkov to make paper, material, various dielectrics and entire buildings impervious to water. The Institute of High-Molecular Compounds has also obtained new highly heat-resistant materials from polymers containing various metals in the polymeric chain. In addition to common links, coordinated links were also obtained that expanded the possibilities of a synthesis of new polymers with special properties. Low-temperature (-80°C) polymerization in the presence of a little-studied catalyzer, gasous trifluoric boron, yielded an isoprene which did not have common rubber qualities but became a hard transparent polymer with a softening temperature of over 300°C.

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