SOBOLEWSKI, H.

A study on the traffic safety of trains with two locomotives on curves. p.201
(PRZEGLAD KOLEJOWY, Vol. 9, No. 6, June 1957, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 9, Sept. 1957, Uncl.

PHASE I BOOK EXPLOITATION POL/5033

Czapliński, Stefan, Master in Engineering, Jan Dyduszyński, Professor, Master in Engineering, Jan Sobolewski, Docent, Master in Engineering, Zbigniew Szaniawski, Master in Engineering, and Zdzisław Ziołkowski, Professor, Master in Engineering.

Najnowsze rozwiązania konstrukcyjne w budowie aparatury chemicznej 1959/1960; praca zbiorowa (Latest Design Developments in the Construction of Chemical Apparatus 1959/60; a Collective Work) Warsaw, Państwowe Wydawn. Techniczne, 1960. 127 p. Errata slip inserted. 1,690 copies printed. (Series: Nowa technika, zesz. 32)

Coordinator: Jan Dyduszyński, Professor, Master in Engineering; Scientific Ed. PWT: Irena Gajewska, Master in Science; Tech. Ed.: I. Milewska.

PURPOSE: This book is intended for chemists, engineers, and designers of chemical equipment for research and industry. It may also be used by students in higher technical schools.

Card ~~1/5~~

Latest Design (Cont.) POL/5033

COVERAGE: The book discusses the latest (up to 1959) trends in the development of some designs for chemical equipment. The authors deal specifically with progress in the design of absorption and distillation equipment, and latest developments in the design of gas compressors and sedimentation separators used in the chemical industry. No personalities are mentioned. References accompany each section.

TABLE OF CONTENTS:

Card ~~2/5~~

NOWAKA, Wieslaw, mgr inz.; KASANECKI, Antoni, mgr inz.; SOBOLEWSKI, Jerzy, inz.

Critical evaluation of certain methods of laboratory cement testing. Inz i bud 21 no.1:43[illegible] N '64.

1. Evening School of Engineering, Bialystok.

CZERNIC-LEHMAN, Hanna; SOBIESKI, Jozef

On the role of some endogenous factors in the etiopathogenesis of periodontosis in the light of recent studies. Pol. tyg. lek. 19 no.7:269-270 10 F '64.

1. Z Zakladu Stomatologii Zachowawczej Akademii Medycznej w Lodzi (kierownik: prof. dr Mieczyslaw Fuchs).

SOBOLEWSKI, L. (Engr.):

Zarys Chlodniczych Urzadzen Absorpcyjnych. (Sketch of Absorbing Agents in Refrigeration). In Vol. V, Wspolczesne Problemy Inzynierii Chemicznej (Common Problems of Chemical Engineering) Pages 551-558, Warsaw, 1950.

MACHEJ, Karol; [illegible]KI, Ludwik

Studies on the heat penetrating coefficient in a sprinkled tube while condensing vapor from the saturated air. Chemia stosow A 1 no.4:443-466 '64.

1. Institute of Chemical Engineering and Apparatus Design, of the Polish Academy of Sciences, Gliwice. Submitted September 21, 1964.

SOBOLEWSKI, M.

SOBOLEWSKI, M. Vibrators, modern equipment for driving piles into the ground. p. 418. GOSPODARKA WODNA. Warszawa, Poland. Vol. 15, No. 10, Oct. 1955

SOURCE: East European Accessions List (EEAL) LC Vol. 5, No. 6, June 1956

COUNTRY : Poland H-32
CATEGORY : Chemical Technology - Artificial and Synthetic Fibers
ABS. JOUR. : RZKhim., No. 24 1959, No. 88616

AUTHOR : Sobolewski, M.
INST. :
TITLE : Development of the Industry of Chemical Fibers

ORIG. PUB. : Chemik, 1959, 12, No 4, 137-139

ABSTRACT : A review of the technical and economic development of the industry of chemical fibers in various countries and in the Polish People's Republic.

T. Budkevich

CARD:

SOBOLEWSKI, M.

"Some problems of the rubber industry." p. 221. (Chemik. Vol. 6, no. 7/8, July/Aug. 1953. Katowice.)

SO: Monthly List of East European Accessions, Vol. 3, No. 2, Library of Congress, Feb. 1954, Uncl.

SOBOLEWSKI, Marian, mgr inz.

The Polish synthetic fiber industry in the prospective plan up to 1980. Chemik 15 no.5:156-160 My '62.

1. Zjednoczenie Przemyslu Wlokien Sztucznych, Lodz.

S/081/62/000/024/045/052
B106/B186

AUTHORS: Kraul, Emil, Cłapiński, Jan, Sopiela, Wacław, Sobolewski, ~~Marian,~~ Rybicki, Zbigniew

TITLE: Methods for producing a fiber from polyvinyl alcohol

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24 (II), 1962, 953, abstract 24P1034 (Pol. patent 44511, June 10, 1961)

TEXT: A method is described for the production of a fiber from polyvinyl alcohol by coagulation from aqueous solutions in a bath, dehydration and simultaneous stretching of the deposited fiber, removal of part of the salt contained in the fiber by washing, drying of the fiber, thermal treatment and acetalation. The method distinguishing features of this are as follows: the spinning solution flows from the spinneret into the coagulating bath at a velocity of 12 - 13 m/min. It then follows its course at an angle of 90°. The fiber leaves the coagulating bath at 15 m/min; there is a distance of 130 - 150 cm between the exit of the spinning solution from the spinneret and the point at which the fiber changes its direction in the bath. The excess from this bath is removed

Card 1/2

Methods for producing a fiber from ...

and the fiber is passed through a washing bath which consists of an aqueous solution of sodium sulfate (concentration 140 - 155 g/l). The pH value of the spinning solution and coagulating bath is adjusted to 7 as to yield a spinning solution of polyvinyl alcohol containing <0.2% by weight of ashes. The maximum moisture of the dried fiber is 3% and the maximum drying temperature is 120°C. Before it is dried the fiber ought to contain 35-37% by weight of polyvinyl alcohol, 58 - 60% by weight of water, and 5-7% by weight of salt. The temperature of the washing bath is 25 - 29°C, the washing time of the fiber is ~1 min. [Abstracter's note: Complete translation.]

Card 2/2

SOBOLEWSKI, Marian

Fifty years of the Polish chemical fiber industry. Przegl wlokien 16 no.6:348-350 Je '62.

SOBOLEWSKI, Marian, mgr inz.

The photochemical industry in Poland and in the world.
Chemik 16 no.12: Supplement no.3: [illegible] D'63

SOBOLEWSKI, S.

"Organization of mechanized openwork end planks by using single-shovel excavators working above the ground level." p. 320, (MATERIALY BUDOWLANE Vol. 9, No. 12, Dec. 1954. Warszawa, Poland)

SO: Monthly List of East European Accessions. (EEAL). LC. Vol. 4, No. 4. April 1955. Uncl.

SOBOLEWSKI, T.

Chemical analysis of gypsum rock according to American and German standards. T. Sobolewski and P. Wajda. *Cement-Wapno-Gips* 13(22), 62–7(1957).—The ASTM C26-52 method and the German DIN 1168 method of analysis gave for CO_2, MgO, and NaCl identical results, and for Fe_2O_3 + Al_2O_3 0.18% and 0.21%, resp. By the ASTM method H_2O of crystn. was 20.48, hygroscopic H_2O 0.04, CaO 32.43, SO_3 45.81, SiO_2 + matter insol. in dil. HCl 0.85%; by the DIN method the resp. results were 20.60, 0.03, 32.11, 45.93, and 0.73%. R. L. Hendel

POLAND / Chemical Technology. Chemical Products and Their Application--Ceramics. Glass. Binding Materials. Concrete H-13

Abs Jour: Ref Zhur-Khimiya, No 3, 1959, 9108

Author : Sobolewski, T.

Inst : Not given

Title : Chemical Analysis of Gypseous Stone by German and American Standards

Orig Pub: Cement. Wapno. Gips, 1958, 14, No 4, 79-82

Abstract: A comparison of methods of chemical analysis of gypseous stones by ASTM C 26-52 and DIN-1168 standards was conducted on two samples of known chemical composition. Close conformity of results

Card 1/2

SOBOLEWSKI, Tadeusz (Wroclaw)

"A general map of Germany 1 : 200 000." Reviewed by Tadeusz Sobolewski. Czasop geograf 33 no.2:270-271 '62.

SOBOLEWSKI, Tadeusz

"Germany and Europe. The Great Shell Atlas." Reviewed by Tadeusz Sobolewski. Czasop geograf 34 no.1:92 '63.

SOBCIEWSKI, W.

The development of the synthetic fibers industry. p. 197.

CHEMIK. (Ministerstwo Przemyslu Chemicznego i Stowarzyszenie Naukowe-Techniczne Inzynierow i Techników Przemyslu Chemicznego) Warszawa. Poland. Vol. 12, no. 4, April 1959.

Monthly List of East European Accessions (EEAI) LC. Vol. 8, no. 8, August 1959.

Uncl.

SOBOLIC, P.

" A few notes on the tectonics of the Pezinok-Pernek crystalline rocks".

GEOLOGICKE PRACE; ZPRAVY, (Slovenska akademia vied, Geologicky ustav Dionyza Stura) Bratislave, Czechoslovakia, No. 15, 1959.

Monthly List of East European Accessions (EEAI), LC, Vol 8, No. 8, August 1959.

EYDMAN, I.Ye.; ROMANOVA, V.G.; SOBOL'KIN, S.Ya.

Evaluating the salinity of underground waters on the basis of hydrogeological well logging. Razved.i prom.geofiz.no.17:79-83 '57. (MIRA 10:12)

(Borings) (Water, Underground)

SOBOLOTSKAYA Y.B.

Rubber Abst.
May 1954
Synthetic Rubbers and Like Products

6

(4)

2079. Kinetics and mechanism of the copolymerisation of vinyl chloride and vinylidene chloride. A. D. ARKIN, S. S. MEDVEDEV, P. M. KHOMIKOVSKII, and V. B. SOBOLOTSKAYA. *J. Phys. Chem. U.S.S.R.*, 1953, 27, 1616–24; *Plaste u. Kaut.*, 1954, 1, 45. The benzoyl peroxide catalysed, suspension polymerisation of this system has been investigated, at 50°, 60°, and 70° C. Conclusions are drawn on the reactivity of each monomer. 3S2H21MI123.123

11-11-54

"The Shape and Width of Spectral Lines Omitted by a Flame and by a Direct Current Arc." 7th International Colloquium on Spectroscopy, 14-18 May 1956.

SOBOLOV, V. S.

Technology

Building and maintenance of hackling machines in the hemp and jute industry, Moskva, Gizlegprom, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952/////1953, Uncl.

SOBOLOVA, V. Technicka spoluprace A. Kudrnova

Effect of thermal factors on working performance and on the course of the recovery phase. Cesk. fysiol. 8 no.3:245-246 Apr 59.

1. Katedra lekarskych ved ITVS, fakulta telesne vychovy, Praha. Predneseno na III. fysiologickych dnech v Brne dne 14. 1, 1959.

(HEAT, eff.
on working performance (Cz))
(WORK, physiol.
eff. of heat on performance (Cz))

SOBOLOVA, V.;SKORPIL, V.

Participation of the striate muscles in restoration processes in animals adapted to low environmental temperature. Cesk. fysiol. 9 no.1:51-52 Ja 60.

1. ITVS-Fakulta telesne vychovy, Fysiologicky ustav CSAV, Praha.
(ACCLIMATIZATION)
(MUSCLES physiol.)

SOBOLOVA,V.

Effect of thermoregulation and of motor adaptation on the work performance and on the recovery phase. Cesk.fysiol. 9 no.3: 265-.66 My '60.

1. Katedra lek. ved ITVS, fak. KU Praha.
(ADAPTATION PHYSIOLOGICAL)
(BODY TEMPERATURE)
(MOVEMENT)
(EXERTION)

SOBOLSKI, Konstanty, dr

Engineers and technicians, facilitate the way of living for disabled veterans! Przegl techn 84 no.1:6 6 Ja '63.

SOBOLSKI, R., prof., mgr., inz.; HAWRYLAK, H., Zastepca prof., dr., inz.; STRYCZEK, S., adiunkt, mgr., inz.; TESIOROVSKIY, J., adiunkt, mgr., inz.

Investigation of the dynamic coefficient of crane steel supporting structures. Mechanika Wroclaw 6 no.43:65-108 '61.

1. Katedra Maszyn Dzwigowych i Urzadzen Transportowych Politechniki Wroclawskiej.

SOBOLSKI, Roman, prof.; HAWRYLAK, Henryk, dr., inz.

Analysis of the needs and possibilities of domestic machinery production, essential for open cut mining of brown coal. Przegl mech 21 no.7:193-197 Ap '62.

1. Politechnika Wroclawska.

WROBLEWSKI, Teodor, prof.; SOBOLSKI, Roman, prof.

On the fate of the cair of machine designing in technical colleges. Przegl mech 21 no.12:357-359. 25 Je '62.

1. Politechnika, Wroclaw.

SOBOLSKI, Roman, prof. inz.; HAWRYLAK, Henryk, dr inz.

On some dynamic phenomena in the operation of a multibucket dredger excavators on wheels. Przegl mech 21 no.18:549-552 25 S '62.

1. Politechnika, Wroclaw.

SOBOLSKI, Roman, prof.

Hydraulic power systems, their application and development prospects. Przegl mechan 21 no.23:713-714 10 D '62.

1. Rzeczoznawca Stowarzyszenia Inzynierow Mechznikow Polskich, przewodniczacy Oddzialu Stowarzyszenia Inzynierow Mechanikow Polskich, Wroclaw.

SOBOLSKI, Roman, prof.

Scientific and Technological Conference on the Construction, Utilization and Testing of Pumps. Przegl mech 22 no.14:425-426 25 Jl '63.

1. Przewodniczacy Oddzialu Stowarzyszenia Inzynierow Mechanikow Polskich, Wroclaw, oraz kierownik Katedry Maszyn Dzwigowych i Urzadzen Transportowych, Politechnika, Wroclaw.

SOBOLSKI, Roman, prof. mgr. inz., HAWRYLAK, Henryk, dr., inz.

Breakdown correlation of machine sets in opencast mining.
Przegl mech 22 no.19:585-591 10 O '63.

1. Kierownik Katedry i Zakladu Maszyn Dzwigowych i Urzadzen Transportowych, Politechnika, Wroclaw (for Sobolski).
2. Wykladowca, Katedra Maszyn Dzwigowych i Urzadzen Transportowych, Politechnika, Wroclaw (for Hawrylak).

SOBON, Janina

Cooperation of the Upper Silesian Field Station of the Geological Institute with institutions abroad. Przegl geol 11 no.5:239-240 My '63.

SOBON, J.

Schedule of sessions of the Upper Silesian Field Station of the Geological Institute. Przegl geol 11 no.5:249-250 My '63.

SOBON, J.

Special library of the Upper Silesian Field Station. Przegl geol 11 no.5:250 My '63.

BACA, Ferenc, inz.arch. (Backa Topola, Dure Salaja 1); SOBONJA, Petar, tehn. (Backa Topola).

Industrial method of building at the Prvi Maj Building Enterprise, Backa Topola. Tehnika Jug 18 no.10:Supplement: Gradevinarstvo 17 no.10:1842-1844 0'63.

ACCESSION NR: AP4040426 S/0302/64/000/002/0025/0028

AUTHOR: Sobornikov, Yu. P.; Kravets, P. N.; Yanik, A. F.

TITLE: Capacitance parametrons with pulse-type junction diodes

SOURCE: Avtomatika i priborostroyeniye, no. 2, 1964, 25-28

TOPIC TAGS: semiconductor diode, parametron, capacitance parametron, junction diode, junction diode parametron, digital computer

ABSTRACT: The details of a new design of C-parametron using quick-pulse-response Ge junction diodes are reported. The diodes have a base resistivity of 3--5 ohms and a barrier capacitance of 6--28 pf at -1 v bias; they are used in the simplest self-biased series-supplied circuit which permits a substantial diode-parameter spread. Clock frequencies of 200 and 300 kc are selected for 3-cycle and 2-cycle h-f pumping systems, respectively; the parametrons are intended for industrial computers. A 3-input parametron may have 6 logical couplings (with

Card 1/2

ACCESSION NR: AP4040426

R = 20 kohms); a 5-input parametron, 10 logical couplings. Other details are given. Orig. art. has: 2 figures, 2 formulas, and 1 table.

ASSOCIATION: Institut avtomatiki gosudarstvennogo komiteta po priborostroyeniyu (Institute of Automation, State Committee for Instruments)

SUBMITTED: 00 DATE ACQ: 24Jun64 ENCL: 00

SUB CODE: DP, EC NO REF SOV: 002 OTHER: 001

Card 2/2

ACCESSION NR: AP4042955 S/0102/64/000/004/0037/0048

AUTHOR: Doly*ns'ka, N. O. (Dolinskaya, N. A.) (Kiev); Maralin, V. G. (Kiev); Sobornikov, Yu. P. (Kiev); Yany*k, A. F. (Yanik, A. F.) (Kiev)

TITLE: High-frequency pumping systems in parametron digital computers

SOURCE: Avtomaty*ka, no. 4, 1964, 37-48

TOPIC TAGS: digital computer, parametron, parametron digital computer, industrial digital computer

ABSTRACT: A 3-cycle pumping system is considered which permits synthesizing industrial digital computers with parametrons operating at an excitation frequency 4--30 Mc, with 20—30 oscillations per packet (clock frequencies, 100--500 kc). Hard-closed self-synchronizing and ring 3-phase relaxation-oscillator schemes for 3-cycle semiconductor submodulators are described, as well as mixed and purely semiconductor h-f supply schemes which have a pulse-amplitude pumping

Card 1/2

ACCESSION NR: AP4042955

modulation in the power-amplifier output stage. Schemes of (a) directional switching of C-parameters by pulse-biasing the operating point and (b) transistor switching of the pumping voltage are discussed. Orig. art. has: 8 figures, 8 formulas, and 2 tables.

ASSOCIATION: none

SUBMITTED: 12Feb63 ENCL: 00

SUB CODE: DP NO REF SOV: 003 OTHER: 002

Card 2/2

L 22140-65 EPF(n)-2/EWT(d)/EWP(1) Pg-4/Pk-4/Pl-4/Po-4/Pq-4/Pu-4/Pae-2 SSD/ASDA-5
AEDC(a)/AFMDC/AFETR/AFTC(p)/RAEMA/RAEMD/ESDD(p) LJP(c) WW/RH/BC
ACCESSION NR: AP5001746 S/0302/64/000/004/0056/0059

AUTHOR: Dolinskaya, N. A.; Repnin, V. N.; Sobornikov, Yu. P.

TITLE: Device for comparing parameters with several set points

SOURCE: Avtomatika i priborostroyeniye, no. 4, 1964, 56-59

TOPIC TAGS: automatic control, automatic control design, automatic control system, automatic control theory

ABSTRACT: In digital systems of automatic industrial-process control, the current value of a process parameter is automatically compared with one or more set points. As existing synchronous comparison devices are too complicated, a new asynchronous device has been developed in which the code of each set point coincides, in the storage unit, with its numerical value. An additional indicant is introduced to identify the next-in-line set point of the same parameter. A functional diagram of the new device is briefly described. A 256-point laboratory

Card 1/2

L 22140-65

ACCESSION NR: AP5001746

hookup is reported to have been tested. Orig. art. has: 1 figure.

ASSOCIATION: Institut avtomatiki Goskomiteta po priborostroyeniyu Gosplana SSSR (Institute of Automation, State Committee on Measuring Instruments, Gosplan SSSR)

SUBMITTED: 00 ENCL: 00

SUB CODE: IE NO REF SOV: 000 OTHER: 000

Card 2/2

L 56526-65

ACCESSION NR: AP5009401

S/0208/65/005/002/0366/0369
681.142.2

16
B

AUTHOR: Sobornikov, Yu. P. (Kiev)

TITLE: On a method of division and determination of multiplicative overflow for computers operating in a system of residue classes

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 5, no. 2, 1965, 366-369

TOPIC TAGS: computer theory, computer programming

ABSTRACT: In connection with the unsolvability in the general case of the congruence $yz \equiv x \bmod m_i$, an indirect machine method for the division of integers in a system of residue classes is developed. It is based on the decomposition of exact (z) or of rounded (z') into residue representations of degree 2^i ($i = 0, 1, \ldots, k$; $2^k \leq z$). The method is free of the limitation of digital division in residue number systems, possible only for integral quotients. Given a non-redundant system of residue classes having the numerical range

$$M = \prod_i^n m_i$$

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L 56526-65

ACCESSION NR: AP5009401

where n is the number of relatively prime modules and where positive integers are in the interval 0—(M/2 -- 1) and negative M/2--(M--1). The method is illustrated in an example of division of positive numbers by a machine with an adder and a circuit for multiplication in a system of residue classes along with a converter, which converts, for example, from the residue code into a code with a mixed base. A tabular illustration of division is given for m_i = 7, 5, 3, 2; M = 210 and x = 104, y = 10. Orig. art. has: 11 formulas, 1 table.

ASSOCIATION: none

SUBMITTED: 16Nov64 ENCL: 00 SUB CODE: DP, MA

NO REF SOV: 000 OTHER: 002

Card 2/2

SOBORNIKOV, Yu.P. (Kiyev)

Method of division and determination of multiplicative overflow for electronic computers operating in residue number systems. Zhur. vych. mat. i mat. fiz. 5 no.2:366-369 Mr-Ap '65. (MIRA 18:5)

L 00976-66 EWT(d)/EWT(l)/EWA(h) IJP(c)

ACCESSION NR: AP5014215 UR/0102/65/000/002/0045/0053

AUTHOR: Sobornikov, Yu. P. (Kiev) 24 B

TITLE: Three-valued parametron logic in Post's algebra 16,55

SOURCE: Avtomatyka, no. 2, 1965, 45-53

TOPIC TAGS: ternary logic circuit, computer logic, logic element, ternary parametron, computer component

ABSTRACT: Ternary notation offers many advantages over binary and other systems of coding information; discrete automata based on three-valued logical elements offer much greater speed than analogous automata with binary elements. The possibility of using autoparametric resonance of the third type in a nonlinear oscillating circuit to construct logical elements with three stable phase states is discussed. It is demonstrated that the design of any three-valued operator of the basic logical system can be achieved with a single ternary parametron if use is made of the simplest lines of complex inter-parametron linking. The construction of a ternary parametric logic in Post's algebra is based on the principle of the linear vector addition of input information signals and the parametron's capacity for phase discrimination. [14]
Orig. art. has: 5 figures, 3 tables, and 9 formulas.

Card 1/2

L 00976-66

ACCESSION NR: AP5014215

ASSOCIATION: none

SUBMITTED: 10Jul64

ENCL: 00

SUB CODE: DP, EC

NO REF SOV: 003

OTHER: 002

ATD PRESS: 4069

Card 2/2

L 35956-66 EWT(d) IJP(c)

ACC NR: AP6027353 SOURCE CODE: UR/0102/66/000/002/0017/0025

33
B

AUTHOR: Sobornikov, Yu. P. (Kiev)

ORG: none

TITLE: Arithmetic operations with integers of arbitrary sign in a system of residual classes and their circuit realization

SOURCE: Avtomatyka, no. 2, 1966, 17-25

TOPIC TAGS: arithmetic, integer, computer circuit

ABSTRACT: Arithmetic operations with integers of arbitrary sign in a non-redundant residual class counting system (NRRCCS) are considered; this includes the operations of microprogrammed division, determination of additive and multiplicative redundancy for the case where the overall range of the NRRCCS is partitioned into equal subranges representing positive and negative numbers. The author proposes the structure of an arithmetic device (AD) consisting of addition-subtraction and multiplication circuits in NRRCCS, a "conveyer" circuit for conversion to a combined-base code (CBC) and a comparison circuit in CBC. The AD performs the operations of addition, subtraction, multiplication, microprogrammed division, raising to the n-th power, determination of additive and multiplicative redundancy, and universal group operation -- all pertaining to integers of arbitrary sign in NRRCCS; and also conversion to CBC, scaling with respect to one or more NRRCCS moduli or to a constant that is relatively

Card 1/2

ACC NR: AP6024362 SOURCE CODE: UR/0280/66/000/002/0049/0058

AUTHOR: Sobornikov, Yu. P. (Kiev)

ORG: none

TITLE: Synthesis of combinational networks realizing arithmetic operations in a system of residual classes

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 2, 1966, 49-58

TOPIC TAGS: Boolean algebra, computer circuit, circuit design, circuit theory, matrix element

ABSTRACT: The concept of the output function of adding, subtracting and multiplying networks is introduced. The properties of the diagonal symmetry and repetitiveness of the equivalent elements of the square m-matrices of these networks are defined and the method of their equivalent transformation to a finite set of Boolean matrices is described. It is shown that the synthesis of logic networks realizing modulo-m arithmetic operations can be reduced to the synthesis of a finite set of Boolean combinational networks with a single output terminal and multiple input terminals. The combinational network itself consists of logic elements realizing

Card 1/2

SOBORNIKOVA, I.G.

Effect of irrigation on Ciscaucasian terrace Chernozems of Rostov Province [with summary in English]. Pochvodedenie no.2:65-74 F '59. (MIRA 12:3)

1.Rostovskiy-na-Donu gosudarstvennyy universitet.
(Rostov Province--Irrigation)
(Chernozem soils)

L 29277-66 --EWP(j)/EWT(m)/T RM

ACC NR: AP6019321 SOURCE CODE: UR/0079/65/035/008/1460/1463

AUTHOR: Gololobov, Yu. G.; Dmitriyeva, T. F.; Zinov'yev, Yu. M.; Soborovskiy, L. A.

32
31
B

ORG: none

TITLE: Vinyl esters of phosphorus acids. IV. Vinyl chlorophosphates

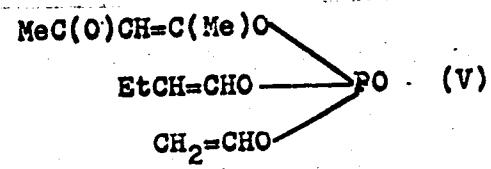
SOURCE: Zhurnal obshchey khimii, v. 35, no. 8, 1965, 1460-1463

TOPIC TAGS: phosphate ester, acetaldehyde, organic synthetic process

ABSTRACT: In the reaction of $POCl_3$ with acetaldehyde at 80-100° in an autoclave at about 2 atm in the presence of triethylamine, vinyl dichlorophosphate (I) or divinyl chlorophosphate (II) formed depending on the molar ratio of the initial substances: MeCHO + $POCl_3$ + $Et_3N \rightarrow CH_2=CHOP(O)Cl_2$ (I); 2MeCHO + $POCl_3$ + 2 $Et_3N \rightarrow \rightarrow$ $(CH_2=CHO)_2P(O)Cl$ (II). (I) had been prepared for the first time. By the reaction of (I) with dimethylamine, vinyl dimethylamidochlorophosphate (III) was prepared. (I) could be used as a starting material for the synthesis of phosphates with two different α-alkenyl ester groups - e.g., the reaction of (I) with butyraldehyde in the presence of Et_3N yielded vinyl - butenyl-1 chlorophosphate (IV). By treating (IV) with acetylacetone in the presence of Et_3N, the compound

UDC: 546.185:547.361.21

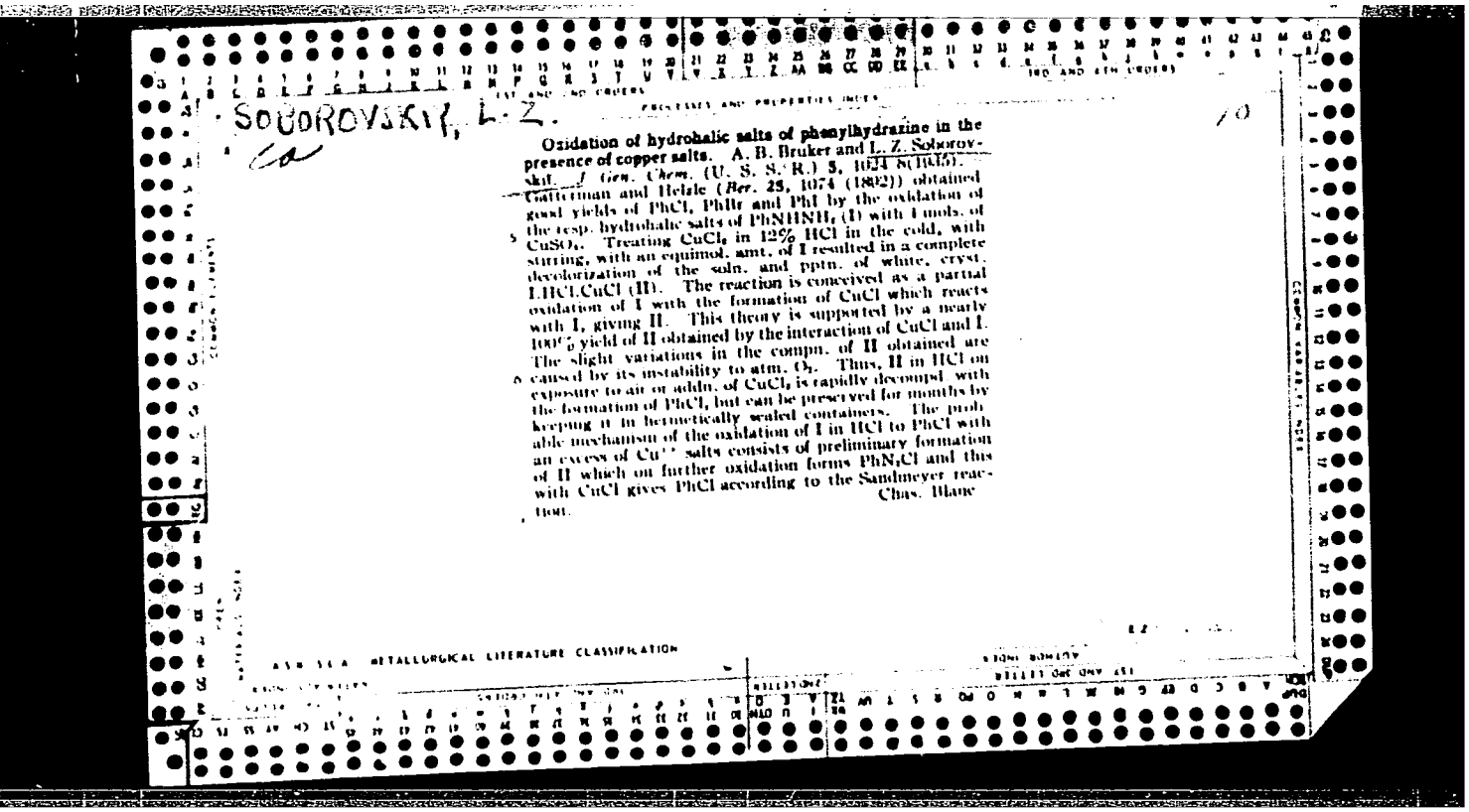
Card 1/2



(V)

was obtained, which is the first phosphoric acid ester with three different alpha-alkenyl groups that has ever been prepared. The reaction of $POCl_3$ with acetone proceeded with greater difficulty than that with acetaldehyde; isopropenyl dichlorophosphate $CH_2=CO(Me)-POCl_2$ (VI) formed with a small yield. The new compounds that have been synthesized had the following boiling points: I, 36-40°/30 mm; III, 60-66°/1.0 mm; IV, 57-61°/2.0 mm; V, 96-102°/ 10^{-3} mm; VI, 69-70°/30 mm. Orig. art. has: 3 formulas and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 16Jul64 / ORIG REF: 003



SOUOROVSKIY, L. Z.

Ca

Oxidation of hydrohalic salts of phenylhydrazine in the presence of copper salts. A. B. Bruker and L. Z. Soborovskii. *J. Gen. Chem.* (U. S. S. R.) 5, 1074-8(1935). Gattermann and Helzle (*Ber.* 25, 1074 (1892)) obtained good yields of PhCl, PhBr and PhI by the oxidation of the resp. hydrohalic salts of $PhNHNH_2$ (I) with 1 mols. of $CuSO_4$. Treating $CuCl_2$ in 12% HCl in the cold, with stirring, with an equimol. amt. of I resulted in a complete decolorization of the soln. and pptn. of white, cryst. I.HCl.CuCl (II). The reaction is conceived as a partial oxidation of I with the formation of CuCl which reacts with I, giving II. This theory is supported by a nearly 100% yield of II obtained by the interaction of CuCl and I. The slight variations in the compn. of II obtained are caused by its instability to atm. O_2. Thus, II in HCl on exposure to air or addn. of $CuCl_2$ is rapidly decompd. with the formation of PhCl, but can be preserved for months by keeping it in hermetically sealed containers. The probable mechanism of the oxidation of I in HCl to PhCl with an excess of Cu^{++} salts consists of preliminary formation of II which on further oxidation forms PhN_2Cl and this with CuCl gives PhCl according to the Sandmeyer reaction.

Chas. Blanc

SOBOROVSKII, L. S.

"Chemistry and Technology of Poisonous Military-Substances," Par. 15, B-81482 and Par. six, B-84216. (1937)

B-84689, 21 Apr 55

SOBOROVSKIY, L. Z.

CA

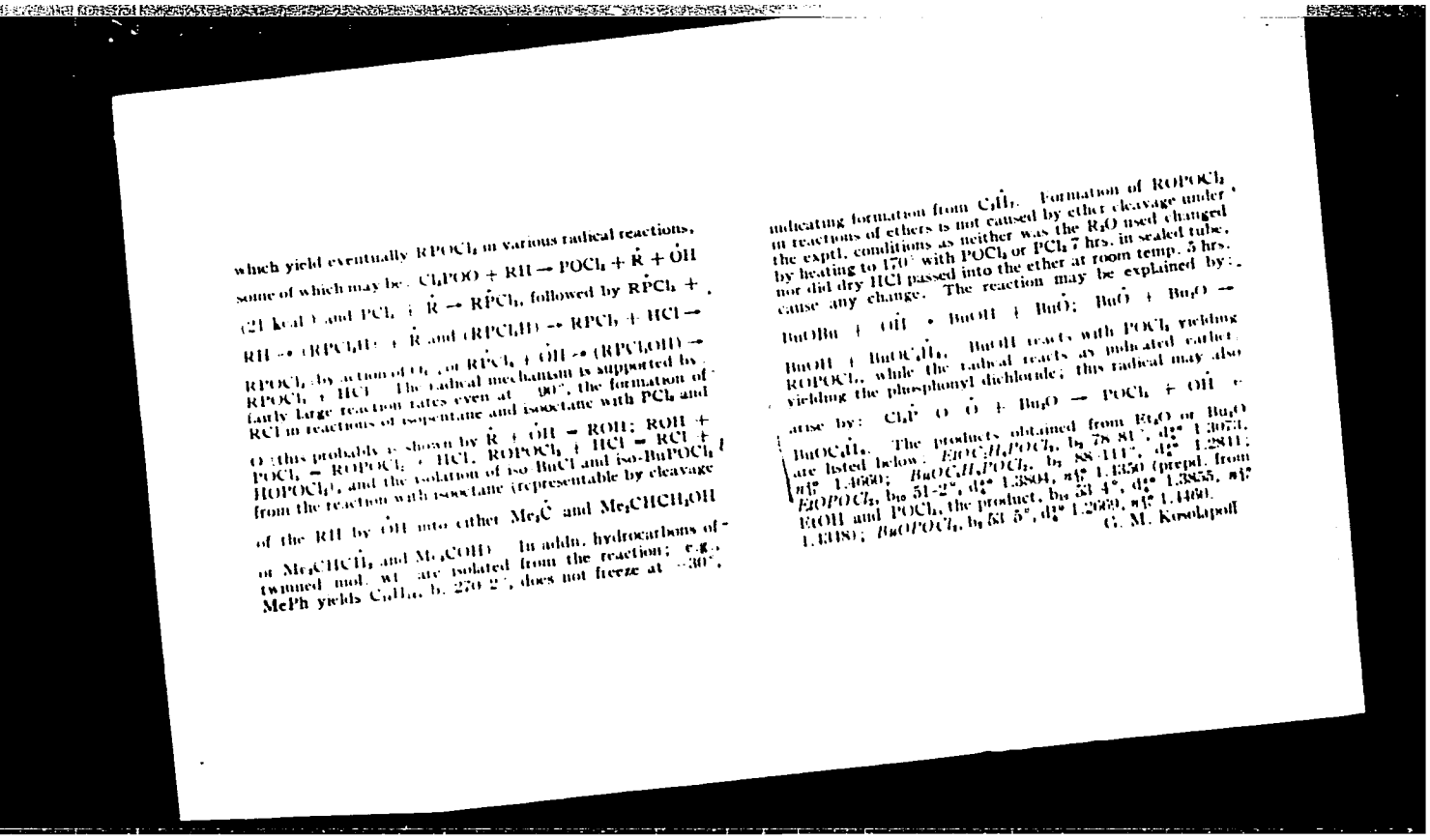
Formation of a phosphorus - carbon bond in the combined reaction of hydrocarbons, phosphorus trichloride, and oxygen. L. Z. Soborovskii, Yu. M. Zinov'ev, and M. A. Englin. *Doklady Akad. Nauk S.S.S.R.* **67**, 283-5(1949).—In the complete absence of O, PCl_3 does not react (with formation of a C - P bond) with paraffins, cycloparaffins, olefins, or their derivs. below 350-400° and the process is unaffected by irradiation (Hg lamp). Similarly the hydrocarbons do not react with $POCl_3$ either in the presence or the absence of O. However, simultaneous action of PCl_3 and O on the hydrocarbons yields $RPOCl_2$ and $POCl_3$ (as well as HCl) with paraffins, while olefins undergo addn., yielding chloroalkanephosphonyl dichlorides and $POCl_3$. The reaction is formulated as $2PCl_3 + RH + O_2 = RPOCl_2 + POCl_3 + HCl$, and $RCH{:}CH_2 + 2PCl_3 + O = RC_2H_4ClPOCl_2 + POCl_3$, resp. Since the paraffins are essentially unattacked by O under mild conditions, the reaction is probably initiated by PCl_3 oxidation, causing a simultaneous reaction with the hydrocarbon, probably by radical reaction. PCl_3 and the liquid hydrocarbons were treated with O (21 hr.), passed through a porous plate disperser, with a consequent temp. rise to 40-70°; gaseous hydrocarbons were passed simultaneously with O into PCl_3. Distn. of the mixts. gave 55-60°; yields of reaction products (olefin or paraffin types) calcd. on the reacted hydrocarbon, only C_2H_4 gave a very poor yield. The following were isolated (b.p., d_4^{20}, and n_D^{20} given, resp.): $C_2H_5POCl_2$ (from *butane*), b. 55.7°, 1.2930, 1.4091; CH_3POCl_2 (from *pentane*), b. 67.9°, 1.2180, 1.4001; CH_3POCl_2 (from *2-methylbutane*), b. 61.5°, 1.2210, 1.4208; $C_6H_{13}POCl_2$ (from *hexane*), b. 75.6°, 1.1754, 1.4515; $C_8H_{17}POCl_2$ (from *octane*), b. 93.4°, m. 39-40°, —, —; $C_7H_{15}POCl_2$ (from *heptane*), b. 98.8°, 1.1852, 1.4580; $C_6H_{13}POCl_2$ (from *2,2,4-trimethylpentane*), b. 81.2°, 1.1339, 1.4707; $ClCH{:}CHPOCl_2$ (from C_2H_2), b. 86.5-7°, 1.5416, 1.4998; $C_2H_5CPOCl_2$ (from C_2H_2), b. 85.7°, 1.4015, 1.4930; $C_2H_5CPOCl_2$ (from *butene*), b. 85.7°, 1.3020, 1.4901; $C_2H_5CPOCl_2$ (from *isobutylene*, product could not be freed from isobutylene polymers), b. 78-80°, —, —. Similarly, $ClCH_2CH_2Cl$ and $CHCl_3$ give low yields of the corresponding P derivs. Neither MeCN nor MeNO$_2$ reacts and both of them hinder oxidation of PCl_3 to $POCl_3$, but they do not prevent the normal reaction of the reactive hydrocarbons listed above. C_6H_6 does not react. The work is believed to be independent of that reported by Clayton and Jensen (C.A. **43**, 1315d). Styrene and octane derivs. are badly contaminated by polymers (no data). G. M. Kosolapoff

Translation W-16087, 3 Jan 51

CA SOKOLOVSKII, L. Z.

10

Preparation of phospho-organic compounds by a reaction of phosphorus trichloride and oxygen with hydrocarbons and their halogen derivatives and with ethers. L. Z. Sokolovskii, Yu. M. Zinov'ev, and M. A. Englin. *Doklady Akad. Nauk S.S.S.R.* 73, 333 (1950); cf. C.A. 44, 1401i. Aliphatic chlorides react with PCl_3 and O analogously to the hydrocarbons and yield the corresponding phosphonyl dichlorides, isolated as mixts. of the possible isomers; careful fractionation of the products from BuCl yielded all 4 possible isomers, whose distribution, expressed as moles/mole of total phosphonyl dichloride, is shown in parentheses: $ClCH_2CH_2CH_2CH_2POCl_2$ (0.16), b_4 110–13°, d_4^{20} 1.3952, n_D^{20} 1.4950; $CCH_3ClCH_2CH_2POCl_2Me$ (0.540), b_4 95–8°, d_4^{20} 1.3028, n_D^{20} 1.4963; $ClCH_2CHClPOCl_2Et$ (0.205), b_4 81.5–5.5°, d_4^{20} 1.3018, n_D^{20} 1.4910; $ClCHClPOCl_2Pr$ (0.055), b_4 78–9°, d_4^{20} 1.3570, n_D^{20} 1.4880. The hydrocarbons also yield isomer mixts. and the mobility of the replaced H atoms is deducible from the yields of the corresponding isomeric phosphonyl dichlorides; in studies with hydrocarbons, it was shown that the P-C link is most readily formed at the tertiary C atom, followed by secondary C, and least readily at the primary C atom. The following isomer distributions were found: C_3H_8 gave 0.731 $Me_2CHPOCl_2$, b_{10} 71.5–2.5°, d_4^{20} 1.2979, n_D^{20} 1.4750, and 0.269 P-$PrPOCl_2$, b_{10} 76–7°, d_4^{20} 1.2922, n_D^{20} 1.4680; Me_4CH gave an unstated distribution between Me_3CPOCl_2, b_{10} 78–80°, m. 116–16.5°, and $Me_2CHCH_2POCl_2$, b_4 61–2°, d_4^{20} 1.2003, n_D^{20} 1.4670 (this compd. was also prepd. by the conventional reaction of BuO_3PCl_2 with Me_2CHCH_2Cl, followed by hydrolysis and conversion to the chloride). $(Me_2CH)_2$ gave 0.918 $Me_2CHCHPOCl_2Me_2$, b_4 81.5–4°, d_4^{20} 1.1882, n_D^{20} 1.4728, and 0.082 $Me_2CHCHMeCH_2POCl_2$, b_4 85–7°, d_4^{20} 1.1796, n_D^{20} 1.4720. Reactions with the chlorides yielded the following products, the yields being those of mixts. of the possible isomers: from $(CH_2Cl)_2$, 3.8% $ClCH_2CHClPOCl_2$, b_4 70–2°; from EtCl, 8.1% $ClH_4ClPOCl_2$, b_4 65–75°; from PrCl, 27.3% $C_3H_6ClPOCl_2$, b_4 65–100°; from Me_2CHCl, 16.1% $C_3H_6ClPOCl_2$, b_4 80–95°; from BuCl 47.2% $C_4H_8ClPOCl_2$, b_4 85–120°; from Me_2CHCH_2Cl, 33.2% $C_4H_8ClPOCl_2$, b_4 80–100°; Me_2CCl_2 gave 3.3% $C_4H_8ClPOCl_2$, b_4 73°; $Me(CH_2)_3CH_2Cl$ gave 43.5% $C_5H_{10}ClPOCl_2$, b_4 110–70°. The reaction with ethers is more complex and reactions with Et_2O and Bu_2O gave 2 types of products: alkoxyalkanephosphonyl dichlorides and alkyl dichlorophosphates (with Bu_2O some BuCl was also found); thus, 1 mole Bu_2O with O and PCl_3 (3 moles) gave 0.13 mole $BuOPOCl_2$ and 0.2 mole $BuOC_4H_8POCl_2$, the latter product indicates a reaction similarity to that of the hydrocarbons and the basic process appears to be oxidation of PCl_3 (by O or air; the mechanism of this reaction is not clear at this time), apparently by addn. of O to form a highly active peroxide-type product having free radical properties and formulated as $Cl_2P{-}O{-}O$ (the reaction yields 18 kcal. mole calcd. (from bond energies of P—O and P=O links, 80 and 150 kcal., resp.; the adduct may also be a dipole ion, Cl_2P^+—O—O$^-$); this product reacting with PCl_3 yields $POCl_3$ (the only product of reaction of O and PCl_3 alone; heat of reaction, 117 kcal.). In the presence of hydrocarbons (or derivs.) the radical reacts with the latter, yielding new radicals



which yield eventually $RPOCl_2$ in various radical reactions, some of which may be: $Cl_2PO + RH \rightarrow POCl_3 + \dot{R} + \dot{O}H$ (21 kcal.) and $PCl_3 + \dot{R} \rightarrow R\dot{P}Cl_2$ followed by $R\dot{P}Cl_2 +$ $RH \rightarrow (RPCl_2H)\cdot + \dot{R}$ and $(RPCl_2H) \rightarrow RPCl_2 + HCl \rightarrow$ $RPOCl_2$ by action of O_2 on $R\dot{P}Cl_2$ + $\dot{O}H \rightarrow (RPCl_2OH) \rightarrow$ $RPOCl_2 + HCl$. The radical mechanism is supported by fairly large reaction rates even at 90°, the formation of RCl in reactions of isopentane and isooctane with PCl_3 and O_2 (this probably is shown by $\dot{R} + \dot{O}H \rightarrow ROH$; $ROH +$ $POCl_3 \rightarrow ROPOCl_2 + HCl$, $ROPOCl_2 + HCl \rightarrow RCl +$ $HOPOCl_2$), and the isolation of iso-BuCl and iso-$BuPOCl_2$ from the reaction with isooctane (representable by cleavage of the RH by $\dot{O}H$ into either $Me_2\dot{C}$ and Me_2CHCH_2OH or $Me_2CHC\dot{H}_2$ and $Me_2\dot{C}OH$). In addn. hydrocarbons of twinned mol. wt. are isolated from the reaction; e.g., MePh yields $C_{14}H_{14}$, b. 270-2°, does not freeze at −30°, indicating formation from $C_6H_5\dot{C}H_2$. Formation of $ROPOCl_2$ in reactions of ethers is not caused by ether cleavage under the exptl. conditions as neither was the R_2O used changed by heating to 170° with $POCl_3$ or PCl_3 7 hrs. in sealed tube, nor did dry HCl passed into the ether at room temp. 5 hrs. cause any change. The reaction may be explained by: $BuOBu + \dot{O}H \rightarrow BuO\dot{H} + Bu\dot{O}$; $Bu\dot{O} + Bu_2O \rightarrow$ $BuOH + BuOC\dot{H}_2$. BuOH reacts with $POCl_3$ yielding $ROPOCl_2$, while the radical reacts as indicated earlier, yielding the phosphonyl dichloride; this radical may also arise by: $Cl_2\dot{P}{=}O + \dot{O} + Bu_2O \rightarrow POCl_3 + \dot{O}H +$ $BuOC\dot{H}_2$. The products obtained from Et_2O or Bu_2O are listed below. *$EtOCH_2POCl_2$*, b_{10} 78-81°, d_4^{20} 1.3073, n_D^{20} 1.4660; *$BuOCH_2POCl_2$*, b_3 88-111°, d_4^{20} 1.2811; n_D^{20} 1.4650; *$EtOPOCl_2$*, b_{10} 51-2°, d_4^{20} 1.3804, n_D^{20} 1.4350 (prepd. from EtOH and $POCl_3$, the product, b_{10} 53-4°, d_4^{20} 1.3855, n_D^{20} 1.4380); *$BuOPOCl_2$*, b_3 81-5°, d_4^{20} 1.2669, n_D^{20} 1.4490.

G. M. Kosolapoff

Soborovskiy, L.Z.

USSR/Chemistry - Reaction processes

Card 1/1 Pub. 151 - 37/38

Authors : Zinovyev, Yu. M.; Muler, L. I.; and Soborovskiy, L. Z.

Title : Synthesis of organo-phosphorus compounds from hydrocarbons and their derivatives. Part 3.- Reaction of acetylene hydrocarbons with phosphorus trichloride and oxygen

Periodical : Zhur. ob. khim. 24/2, 380-385, Feb 1954

Abstract : The reaction of formation of organo-phosphorus compounds, which takes place during the reaction between acetylene hydrocarbons and their derivatives and phosphorus trichloride and oxygen, is described. The products obtained from such reaction, their structure and properties are listed. The effect of the oxygen on the reaction process is explained. Nine references: 4-USA; 3-USSR and 2-German (1932-1951). Tables.

Institution : ...

Submitted : July 29, 1953

Evaluation in B-76774, 7 July 54

Soborovskiy, L. Z.
USSR/Chemistry - Synthesis

Card 1/1 : Pub. 151 - 24/37

Authors : Soborovskiy, L. Z., and Zinovyev, Yu. M.

Title : Synthesis of organo-phosphorus compounds from hydrocarbons and their derivatives. Part 4.-Formation of dialkylphosphinic acid derivatives from alkyldichlorophosphines, hydrocarbons and oxygen

Periodical : Zhur. ob. khim. 24/3, 516-519, Mar 1954

Abstract : The formation of a C - P bond during the reaction of aliphatic hydrocarbons or their chloro-derivatives, with oxygen and alkyldichlorophosphines, was established experimentally. The synthesis of secondary (mixed) dialkylphosphinic acid chlorides is described. The reaction between methyl- or ethyldichlorophosphines and propane, cyclohexane and allyl chloride was investigated and the products obtained are listed. Seven references: 3-USSR; 2-USA and 2-German (1880-1954). Table.

Institution : .....

Submitted : July 29, 1953

ZINOV'YEV, Yu.M.; SOBOROVSKIY, L.Z.

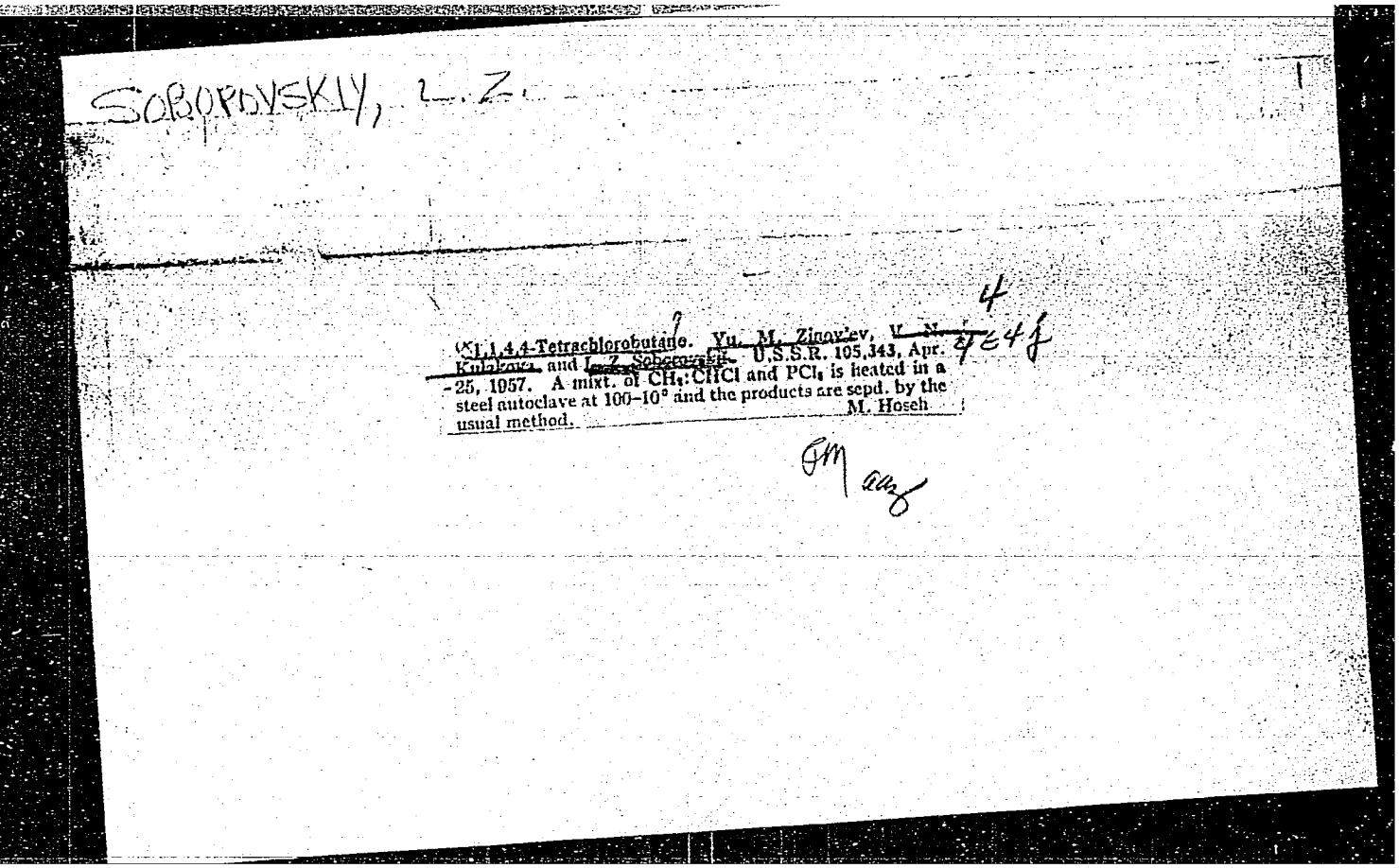
Synthesis of organophosphoric compunds form hydrocarbons and their derivatives. Part 6. Oxidizing chlorophosphination of cyclohexane and propylene by phenyldichlorophosphine. Zhur.ob.khim.26 no.11:3030-3032 N '56. (MLRA 10:1)
(Propylene) (Cyclohexane) (Phosphine)

"Oxidative Chlorophosphonation of Chlorine Substituted Olefins," by L. Z. Soborovskiy, Yu. M. Zinov'yev, and L. I. Muler, Doklady Akademii Nauk SSSR, Vol 109, No 1, Jul 56, pp 98-100

Oxidative chlorophosphonation is defined as the reaction between hydrocarbons (or their derivatives), oxygen, and phosphorous trichloride (or products where part of the chlorine is substituted by organic groups, e.g., PCl_2R or $PClR_2$). In the case of vinyl chloride, this reaction was found to proceed in two different directions:

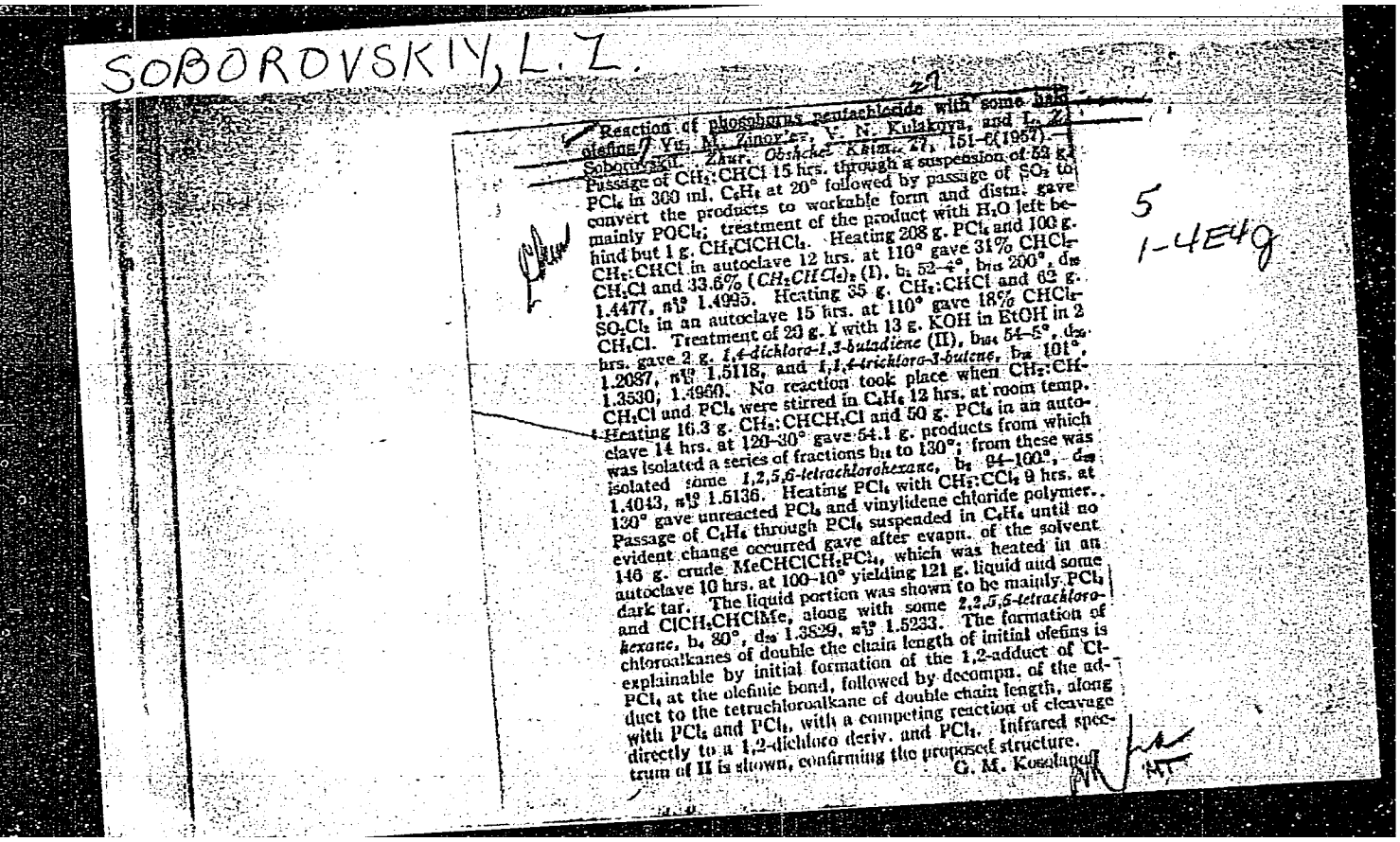
$$CH_2=CH\,Cl + 2\,PCl_3 + O_2 \rightarrow \begin{cases} CHCl_2CH_2POCl_2 \quad (30\text{-}35\%) \\ + \; POCl_3 \\ CH_2ClCHClPOCl_2 \quad (65\text{-}70\%) \end{cases}$$

The yield of the reaction product in the oxidative chlorophosphonation of allyl chloride was too low to say for sure that the reaction proceeded in one direction only. (U)



SOBOROVSKII, L. Z.

(1,1,4,4-Tetrachlorobutane. Yu. M. Zinov'ev, V. N. Kuleboya, and L. Z. Soborovskii. U.S.S.R. 105,343, Apr. 25, 1957. A mixt. of CH_2:$CHCl$ and PCl_5 is heated in a steel autoclave at 100–10° and the products are sepd. by the usual method. M. Hoseh



SOBOROVSKIY, L. Z.

Reaction of phosphorus pentachloride with some halo olefins. Yu. K. Yuror'ev, V. N. Kulakova, and L. Z. Soborovskii. Zhur. Obshchei Khim., 27, 151–6(1957).—Passage of CH_2:CHCl 15 hrs. through a suspension of 52 g. PCl_5 in 300 ml. C_6H_6 at 20° followed by passage of SO_2 to convert the products to workable form and distn. gave mainly $POCl_3$; treatment of the product with H_2O left behind but 1 g. $CH_2ClCHCl_2$. Heating 208 g. PCl_5 and 100 g. CH_2:CHCl in autoclave 12 hrs. at 110° gave 31% $CHCl_2CH_2Cl$ and 33.6% $(CH_2CHCl_2)_2$ (I), b_5 52–4°, b_{10} 200°, d_{20} 1.4477, n_D^{20} 1.4995. Heating 35 g. CH_2:CHCl and 62 g. SO_2Cl_2 in an autoclave 15 hrs. at 110° gave 18% $CHCl_2CH_2Cl$. Treatment of 20 g. I with 13 g. KOH in EtOH in 2 hrs. gave 2 g. *1,4-dichloro-1,3-butadiene* (II), b_{64} 54–5°, d_{20} 1.2037, n_D^{20} 1.5118, and *1,1,4-trichloro-1-butene*, b_{64} 101°, 1.3530, 1.4960. No reaction took place when CH_2:$CHCH_2Cl$ and PCl_5 were stirred in C_6H_6 12 hrs. at room temp. Heating 16.3 g. CH_2:$CHCH_2Cl$ and 50 g. PCl_5 in an autoclave 14 hrs. at 120–30° gave 54.1 g. products from which was isolated a series of fractions b_{14} to 130°; from these was isolated some *1,2,5,6-tetrachlorohexane*, b_6 94–100°, d_{20} 1.4043, n_D^{20} 1.5136. Heating PCl_5 with CH_2:CCl_2 9 hrs. at 130° gave unreacted PCl_5 and vinylidene chloride polymer. Passage of C_6H_6 through PCl_5 suspended in C_6H_6 until no evident change occurred gave after evapn. of the solvent 146 g. crude $MeCHClCH_2PCl_4$, which was heated in an autoclave 10 hrs. at 100–10° yielding 121 g. liquid and some dark tar. The liquid portion was shown to be mainly PCl_5 and $ClCH_2CHClMe$, along with some *2,2,5,6-tetrachloro-hexane*, b_4 80°, d_{20} 1.3829, n_D^{20} 1.5233. The formation of chloroalkanes of double the chain length of initial olefins is explainable by initial formation of the 1,2-adduct of $Cl-PCl_4$ at the olefinic bond, followed by decompn. of the adduct to the tetrachloroalkane of double chain length, along with PCl_5 and PCl_4, with a competing reaction of cleavage directly to a 1,2-dichloro deriv. and PCl_5. Infrared spectrum of II is shown, confirming the proposed structure.

G. M. Kosolapoff

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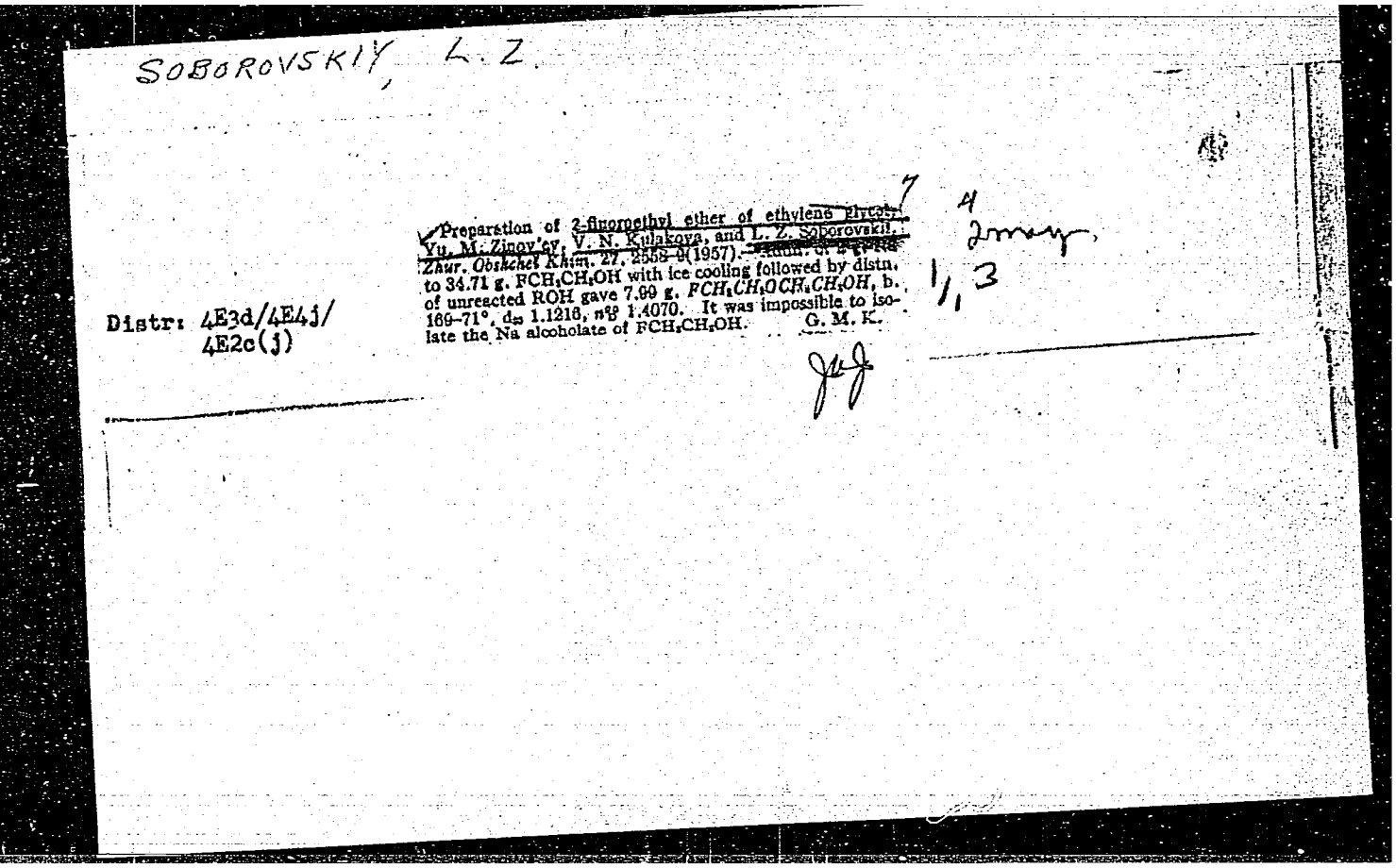

SOBOROVSKIY, L. Z.

Preparation of 2-fluoromethyl ether of ethylene glycol. Yu. M. Zinov'ev, V. N. Kulakova, and L. Z. Soborovskii. *Zhur. Obshchei Khim.* 27, 2558–9(1957). [illegible] of FCH_2CH_2OH with ice cooling followed by distn. to 34.71 g. FCH_2CH_2OH with ice cooling followed by distn. of unreacted ROH gave 7.09 g. $FCH_2CH_2OCH_2CH_2OH$, b. 169–71°, d_{20} 1.1218, n_D^{20} 1.4070. It was impossible to isolate the Na alcoholate of FCH_2CH_2OH. G. M. K.

Distr: 4E3d/4E4j/ 4E2c(j)

SOBOROVSKIY L.Z.

79-2-5/64

AUTHORS: Yakubovich, A. Ya., Soborovskiy, L. Z., Muler, L. I., Fayermark, V. S.

TITLE: Syntheses of Vinylmonomers. 1. α-Substituted Derivatives of Vinylphosphinic Acid (Sintezy vinilovykh monomerov. 1. α-zameshchennyye proizvodnyye vinilfosfinovoy kisloty)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 317-319 (USSR)

ABSTRACT: Of the alkenylphosphine derivatives the α-methylvinylphosphinic acid (reference 1), the diethylether of α-carbomethoxyvinylphosphinic acid (reference 2) and the diethylether of cyanovinylphosphinic acid (reference 3) are known. The authors synthesized some derivatives analogous to the above-mentioned compounds by the method of phosphinoxidation. In the oxidation of the mixture of methyl acrylate and phosphorus trichloride by means of oxygen the chlorine anhydride of chlorocarbomethoxyethylphosphinic acid forms. The attempts to produce an analogous chlorine-substituted derivative of vinylphosphinic acid, which was not described in publications, according to the method by Pudovik (reference 6) from vinylidene chloride and dialkylphosphite failed. Chlorocyanoethylphosphine derivatives by whose dehydrochlorination the compounds of cyanovinylphosphine can be obtained were synthesized by means of phosphinoxi-

Card 1/2

79-2-5/64

Syntheses of Vinylmonomers. 1. α-Substituted Derivatives of Vinylphosphinic Acid

dation of vinyl cyanide. The liquid isomer under the influence of triethylamine easily separates the hydrogen-chloride elements and forms the dimethylester of cyanovinylphosphinic acid; the position of the cyanogen group has not yet been determined for this compound. The attempts of synthesizing the chlorocyanoethylphosphine derivatives by addition of phosphorus pentachloride to vinyl cyanide did not yield any positive results. The chlorination of acrylonitryl with the formation of dichloropropionitryl can even be observed at -(15 - 20°C). The dimethylether of vinylphosphinic acid, not described earlier, was synthesized according to the usual method. The ethers of the substituted vinylphosphinic acid form polymers and copolymers with other vinylmonomers. Summary: 1) By phosphinoxidation of methylacrylate and acrylonitryl, chlorine anhydrides of the corresponding chlorocarbomethoxy- and cyanochloro-substituted ethylphosphinic acids were obtained. On treatment of the latter their ether was obtained. 2) By dehydrochlorination of the above-mentioned ethers the cyanogen chloride and carbon chloride methoxy-substituted ethers of vinylphosphinic acids were synthesized. There are 6 references, 4 of which are Slavic.

SUBMITTED: April 25, 1957
AVAILABLE: Library of Congress
Card 2/2

SOBOROVSKIY, L. Z.

TS-3-15/51

AUTHORS: Bruker, A. B., Spiridonova, I. G., Soborovskiy, L. Z.

TITLE: Investigation of the Reaction of Tetrafluoroethylene With Trichloroarsenic in the Presence of Aluminum Chloride (Issledovaniye reaktsii tetraftoretilena s trekhkhloristym myshyakom v prisutstvii khloristogo alyuminiya)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 350 - 355 (USSR)

ABSTRACT: In the present work the authors investigated the reaction of trichloroarsenic with tetrafluoroethylene. The interaction between trichloroarsenic and unsaturated compounds is only investigated in the example of the reaction with acetylene (references 2 - 7). It is less thoroughly investigated with ethylene. Renshou, Uor and Bekrasov (references 8 and 9) showed that on saturation of trichloroarsenic with ethylene in the presence of dehydrated aluminum chloride, under atmospheric pressure and at an ordinary temperature the formation of β-chloroethyldichloroarsine with a small yield takes place. The authors originally tried to perform the interaction between tetrafluoroethylene and trichloroarsenic under conditions analogous as in the reaction with ethylene. The results were negative. Just as negative were the attempts which were performed in an autoclave under pressure, but without aluminum chloride. Upon

Card 1/4

Investigation of the Reaction of Tetrafluoroethylene With Trichloroarsenic in the Presence of Aluminum Chloride

closer examination of this reaction it was found that in the interaction between trichloroarsenic and tetrafluoroethylene in the presence of aluminum chloride a substance is produced which contains carbon, fluorine, chlorine and arsenic. This substance was identified as the hitherto unknown pentafluoroethyldichloroarsine. Beside it another substance was eliminated from the reaction mixture which corresponds to 1,1-difluoro-2,2-dichloroethylene described in publications (reference 10). The theoretical yield of pentafluoroethyldichloroarsine according to the trichloroarsenic reacted through amounts to 70 %, according to the tetrafluoroethylene used in the reaction to 50-60%;

$$5CF_2 = CF_2 + 2AsCl_3 \xrightarrow{AlCl_3} 2CF_3CF_2AsCl_2 + CF_2 = CCl_2 \qquad (1)$$

The formation of pentafluoroethyldichloroarsine, as a result of reaction (1), instead of the expected tetrafluoro-β-chloroethyldichloroarsine indicated the difference of this process from the usual reaction in which trichloroarsenic is added to unsaturated compounds. The explanation for this lies in the capability of aluminum chloride to exchange the chlorine atom with fluorinated organic hydrocarbons against fluorine (references 11-15). It seems probable that in the observed case at first an exchange of halides between

Card 2/4

Investigation of the Reaction of Tetrafluoroethylene With Trichloroarsenic in the Presence of Aluminum Chloride

tetrafluoroethylene and aluminum chloride takes place.

$$CF_2 = CF_2 + AlCl_3 \longrightarrow AlF_2Cl + CF_2 = CCl_2 \quad (2)$$

As a confirmation of this may be considered the fact that in all these tests simultaneously with pentafluoroethyldichloroarsine, difluorodichloroethylene was separated in a ratio corresponding to that in equation (1). Further the formation of pentafluoroethyldichloroarsine and aluminum fluorodichlorides under interaction of tetrafluoroethylene with trichloroarsenic and aluminum difluorochloride takes place,

$$CF_2 = CF_2 + AlF_2Cl + AsCl_3 \xrightarrow{AlCl_3} CF_3CF_2AsCl_2 + AlFCl_2 \quad (3)$$

The resulting aluminum fluorodichloride may also enter an interaction with tetrafluoroethylene and again form aluminum difluorochloride.

$$CF_2 = CF_2 + 2AlFCl_2 \longrightarrow CF_2 = CCl_2 + 2AlF_2Cl \quad (4)$$

The schemes given sufficiently show that comparatively small amounts of aluminum chloride are sufficient for converting considerable amounts of tetrafluoroethylene to pentafluoroethylenedichloroarsine and difluorodichloroether (see table). Summary: 1) The authors

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79-2-15/64

Investigation of the Reaction of Tetrafluoroethylene With Trichloroarsenic in the Presence of Aluminum Chloride

realized the reaction of tetrafluoroethylene with trichloroarsenic in the presence of aluminum chloride at elevated temperatures and under pressure. They expressed their opinion on the mechanism of this process. The pentafluoroethyldichloroarsine not described was separated as main products. 2) Pentafluoroethyldifluoroarsine, pentafluoroethylarsine and pentafluoroethylarsenic acid hitherto not discribed in publications were produced and characterized. There are 1 table, and 16 references, 1 of which is Slavic.

SUBMITTED: February 2, 1957

AVAILABLE: Library of Congress

Card 4/4

AUTHORS: Zinov'yev, Yu. M., Kulakova, V. N., Soborovskiy, L. Z. SOV/79-28-6-25/63

TITLE: The Synthesis of Organophosphorus Compounds of Hydrocarbons and Their Derivatives (Sintez fosfororganicheskikh soyedineniy iz uglevodorodov i ikh proizvodnykh) VII. Oxidizing Chlorophosphination With Alkoxy- and Dialkylamidodichlorophosphines (VII. Okislitel'noye khlorfosfinirovaniye alkoksi-i dialkilamidodikhlorfosfinami)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 6, pp. 1551 - 1554 (USSR)

ABSTRACT: Contrary to the method (Ref 1) employed in an earlier paper by the authors they now prove that alkoxydichlorophosphines and dialkylamidodichlorophosphines can be used as phosphination agents, i.e. compounds in which the hydrocarbon radical is combined with the phosphorus by means of a third element: $RH+2R'XPCl_2+O_2 \longrightarrow RP(O)(XR')Cl+R'XP(O)Cl_2+HCl$, where R and R' are hydrocarbon radicals and where X is equal to O or to N. By means of the mentioned reagents the oxidizing chlorophosphination of cyclohexane with ethoxydichlorophosphine and vinylchloride

Card 1/3

The Synthesis of Organophosphorus Compounds of Hydrocarbons and Their Derivatives. VII. Oxidizing Chlorophosphination With Alkoxy- and Dialkylamidodichlorophosphines SOV/79-28-6-25/63

with methoxydichlorophosphine and dimethylamidodichlorophosphine was carried out. The corresponding chlorine anhydrides containing a phosphorushydrocarbon bond were separated as final products. The chlorophosphination of cyclohexane with ethoxydichlorophosphine lead to a mixture of compounds the separation of which by fractionation was difficult. In order to prove that this reaction actually takes place according to the above mentioned scheme the mass obtained was hydrolized and the cyclohexanephosphinic acid was separated from the products of hydrolysis. Also with the compounds of the ethylene series oxidizing chlorophosphination with alkoxydichlorophosphines takes place in a manner similar to the reaction carried out with phosphorus trichloride; the vinyl chloride was used for this purpose. The chlorine anhydride and the ethyl ester of dimethylamidodichloroethanephosphinic acid, the dimethyl ester of dichloroethanephosphinic acid and the methyl ester of dichloroethanechlorophosphinic acid were synthetized. There are 3 references, which are Soviet.

SUBMITTED: May 12, 1957

Card 2/3

The Synthesis of Organophosphorus Compounds From Hydrocarbons and Their Derivatives. VIII. The Investigation of Oxidation of Phosphorustrichloride With Oxygen

aryl- and alkyl radicals, alkoxyl-, dialkylamine- and other monovalent organic groups) with a single passage of gaseous oxygen or air can be obtained by means of the mentioned reagents. Earlier the assumption was made that the oxidation chlorophosphination as well as the oxidation of phosphorus trichloride have radical character. According to this assumption in the oxidation of phosphorus trichloride first the binding of oxygen to this substance takes place. The formed compound can be either regarded as biradical ($Cl_3\dot{P}O\dot{O}$) or as bipolar ion ($Cl_3\overset{+}{P}O\bar{O}$):$PCl_3 + O_2 \longrightarrow Cl_3\dot{P}O\dot{O}$. This adduct converts immediately with a second molecule PCl_3 and forms phosphoroxychloride: $Cl_3\dot{P}O\dot{O} + PCl_3 \longrightarrow 2POCl_3$. When a hydrocarbon (RH) is present in the reaction mixture it can be included in the reaction. The biradical $Cl_3\dot{P}O\dot{O}$ forms the organic radical R· and the radical $\dot{O}H$:$Cl_3\dot{P}O\dot{O} + RH \longrightarrow POCl_3 + R\cdot + \dot{O}H$ on the occasion of the collision with the molecule RH. Either of these radicals can lead to the formation of the chlorine anhydrides of the corresponding alkanephosphinic acids. The initial stage of the oxidation of phosphorus tri-

The Synthesis of Organophosphorus Compounds From Hydrocarbons and Their Derivatives. VIII. The Investigation of Oxidation of Phosphorustrichloride With Oxygen SOV/79-28-6-45/63

chloride with oxygen is a heterogeneous process dependent on the velocity of solution of the oxygen. The oxidation velocity of phosphorus trichloride with gaseous oxygen does in no case depend on the temperature. The activation energy of this oxidation is very small which fact points to the assumed free-radical character of this process. There are 4 figures and 11 references, 1o of which are Soviet.

SUBMITTED: May 29, 1957

1. Phosphorus chlorides--Oxidation

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SOV/79-28-7-30/64

AUTHORS: Soborovskiy, L. Z., Gladshteyn, B. M., Kiseleva, M. I., Chernetskiy, V. N.

TITLE: Investigation in the Series of Organosulfur Compounds (Issledovaniye v ryadu organicheskikh soyedineniy sery) I. The Synthesis of the Fluoranhydrides of Alkanesulfo Acids and Their Halogen Derivatives (I.Sintez ftorangidridov alkansul'fokislot i ikh galoidoproizvodnykh)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 7, pp. 1866-1870 (USSR)

ABSTRACT: The fluoranhydrides of aliphatic sulfo acids are little investigated. Some of them are of practical value, as, for instance, methane sulfofluoride which is an effective insecticide. In the present paper the authors realized the synthesis of some alkane sulfofluorides and their halogen derivatives (comprising some not yet described in publications); they do so according to the general scheme

$RSO_2Cl \xrightarrow{RF,\ Zn\text{-}F_2} RSO_2F$. The synthesis of the first member,

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Investigation in the Series of Organosulfur Compounds. I. The Synthesis of the Fluoranhydrides of Alkanesulfo Acids and Their Halogen Derivatives SOV/79-28-7-30/64

of methane sulfofluoride, according to the method by Davis, Dick (Devis, Dik) cannot be carried out. The authors succeeded in obtaining in good yield methane sulfofluoride from methane sulfochloride by the action of potassium fluoride on it; the fluoride could be distilled off by means of steam without any admixtures. The same way the authors synthesized the hitherto unknown n.- and isopropane sulfofluorides, as well as the iodomethane sulfofluoride which could not be obtained according to the method by Davis. Thus the authors synthesized the hitherto unknown fluoranhydrides n-propane-, isopropane-, iodomethane, β-fluorethane-, β-chlorethane-, β-bromethane-, β-nitroethane- and β,β-dichlorethane sulfo acids. It was shown that the heating of the methane-, n.-propane-, isopropane- and iodomethane sulfochlorides with a saturated solution of potassium fluoride and with uninterrupted distillation of the forming sulfofluoride by means of steam represents a convenient preparative method for the synthesis of the above mentioned compounds. There are 14 references, 6 of which are Soviet.

Card 2/2

Submitted May 57

SOV/79-28-7-31/64

AUTHORS: Soborovskiy, L. Z., Gladshteyn, B. M., Chernetskiy, V. N., Kiseleva, M. I.

TITLE: Investigation in the Series of Organic Sulfur Compounds (Issledovaniya v ryadu organicheskikh soyedineniy sery) II. The Synthesis of the Fluoranhydrides of Alkenesulfo Acids and Their Halogen Derivatives (II. Sintez ftorangidridov alkensul'fokislot i ikh galoidoproizvodnykh)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 7, pp. 1870-1873 (USSR)

ABSTRACT: Continuing the previous paper (Ref 1) on the effect of potassium fluoride on some alkane sulfochlorides under the convenient preparative production of alkane- and halogen-alkane sulfofluorides the authors carried out the investigation of the reaction of potassium fluoride with halogen substituted ethanesulfochlorides; it was found that besides the substitution of the chlorine anhydride by fluorine another dehydration and dehalogenation takes place with unsaturated sulfo chlorides being obtained as final products

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Investigations in the Series of Organic Sulfur Compounds. II. The Synthesis of the Fluoranhydrides of Alkenesulfo Acids and Their Halogen Derivatives

(see scheme 1). The property of potassium fluoride to cleave off the hydrogen halide from two adjacent carbon atoms made it possible to realize the direct transition from the halogen derivatives of alkane sulfochloride to the sulfo fluorides of the unsaturated series in one stage in good yields. Hitherto only one such representative has been known, the vinyl sulfofluoride (Ref 3). This reaction was used for the synthesis of the fluoranhydrides of the unsaturated aliphatic sulfo acids and their halogen derivatives, the constants of which are given in table 1. The halogenalkane sulfochlorides (as given in scheme 2) served as initial products for the synthesis of the sulfofluorides of the unsaturated type and their halogen derivatives, although the yield of the obtained β-chlorethane sulfochloride was small. Concluding it may be said that the vinyl sulfofluoride and the β-chlorovinyl sulfofluoride (in two stereoisomeric forms) were synthesized in the way described. There are 11 references, 4 of which are Soviet.

GLADSHTEYN, B.M.;CHERNETSKIY, V.N.;KISELEVA, M.I.;SOBOROVSKIY, L.Z.

Sulfur organic compounds. Part 3: Properties of haloalkene, alkene and haloalkenesulfofluorides. Zhur. ob. khim. 28 no. 8:2107-2111 Ag '58. (MIRA 11:10)

(Sulfur organic compounds)

BRUKER, A.B.; FRENKEL', R.I.; SOBOROVSKIY, L.Z.

Preparation of esters of fluoantimonic and fluotitanic acids by reacting antimony trifluoride with complete esters of these acids. Zhur.ob.khim. 28 no.9:2413-2416 S '58. (MIRA 11:11)
(Titanic acids) (Antimony fluorides)

GLADSHTEYN, B.M.; KULYULIN, I.P.; SOBOROVSKIY, L.Z.

Sulfur organic compounds. Part 4: Synthesis of β-chloroethane-chlorosulfonate. Zhur.ob.khim. 28 no.9:2417-2419 S '58. (MIRA 11:11)
(Chlorosulfonates)

AUTHORS: Zinov'yev, Yu. M., Soborovskiy, L. Z. SOV/79-29-2-55/71

TITLE: Synthesis of Phospho-organic Compounds From Hydrocarbons and Their Derivatives (Sintez fosfororganicheskikh soyedineniy iz uglevodorodov i ikh proizvodnykh). IX. Oxidizing Chlorophosphination of Butene-1, Butene-2, and Cyclohexene (IX. Okislitel'noye khlorfosfinirovaniye butena-1, butena-2 i tsiklogeksena)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 2, pp 615-619 (USSR)

ABSRACT: In their earlier paper dealing with the reaction of hydrocarbons with PCl_3 and oxygen the authors pointed out that butene-1 is transformed by the reaction into chloric anhydride of the chlorobutane phosphinic acid (Ref 1) with the structure remaining open. In the present paper this anhydride is shown to be a mixture of isomeric compounds. On expelling relatively large amounts of this product (500 gr) fractions were separated having the same composition but different boiling temperatures. Oxidizing chlorophosphination of butene-2 led to the same chloric anhydride. However, it boiled within narrow limits. Constants and

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probably apply to it. For this reason in these compounds the structure of chloric anhydride must be ascribed to 2-chlorobutane phosphinic acid-3. Thus in the oxidizing chlorophosphination of butene-1 the above compound may form only according to scheme 2. The other fraction is apparently a mixture from the chloric anhydrides of 2-chlorophosphine-1 and 1-chlorophosphinic acid-2, forming according to scheme 1. The table shows that reaction 2 predominates. Also isomeric chloric anhydrides of cyclohexene-and chlorohexane phosphinic acid were synthesized. There are 1 table and 7 references, 5 of which are Soviet.

SUBMITTED: January 3, 1958

Synthesis of Organo-phosphorus Compounds From Hydrocarbons and Their Derivatives. X. Oxidation Chlorophosphination of Some Ethylene Derivatives

of vinyl chloride under the formation of isomers which differ from one another by the relative position of chlorine and the radical $POCl_2$ (Ref 2). These acid chlorides synthesized in this paper apparently form also a mixture of two isomers of the structure $CH_2ClCHXP(O)Cl_2$ and $CHClXCH_2P(O)Cl_2$. In particular for the product of the reaction of vinyl fluoride with phosphorus trichloride and oxygen experimental data are available on the occurrence of isomers, the separation of which will be the subject of a special report. The reaction product of the oxido-chlorophosphination of vinyl bromide was divided by fractionation into two fractions which differ not only by the boiling temperature but also by their composition. The low-boiling fraction proved to be the acid chloride of bromo-vinyl-phosphinic acid, while the higher boiling one was the acid chloride of chloro-bromo-ethane phosphinic acid. The formation of the first compound probably results

from the second dehydrogenation reaction of the acid chloride of chloro-bromo-ethane phosphinic acid in the distillation. Reference 2 confirms that the low-boiling product is the 2-bromine-substituted substance, while forms the higher boiling one the 1-chloro-2-bromo-derivative, and accordingly their formulae are $BrCH{=}CHP(O)Cl_2$ and $CH_2BrCHClP(O)Cl_2$ (Table). As by-product of the reaction of chlorine with vinyl bromide the 1,2-dichlorobromide ethane hitherto unknown was obtained. Consequently, the synthesis covered the acid chlorides of 1-chloro-2-bromo-, 1,2,2,-trichloro-, fluorochloro-, fluorodichloro- and chloro-(fluorosulfo)-ethane phosphinic acid. There are 1 table and 5 Soviet references.

SUBMITTED: March 3, 1958

5 (5)

AUTHORS: [illegible] 1-24/77

TITLE: Difluor Monochlor Methane as a Difluoromethylating Agent (Diftorkhlormetan kak diftormetilirovochnyy agent). I. Reaction of Difluor Monochlor Methane (Freon 22) With Alcoholates and Sodium Phenolates (I. Reaktsiya diftorkhlormetana s alkogolyatami i fenolyatami natriya)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol [illegible] pp 1142-1145 (USSR)

ABSTRACT: The chemical properties of difluor monochlor methane synthesized already in 1931 (Ref 1) have not yet been described in detail. Only its pyrolytic transformation into tetrafluoroethylene (Ref 2) and the formation of fluoroform by its reaction with $AlCl_3$ at low temperature are known. It is generally assumed that the freons, among them also difluor monochlor methane are very inert compounds from the chemical point of view. The authors, however, found that the chlorine atom in the molecule of difluor monochlor methane is comparatively mobile. It could be seen that freon-22 reacts already at room temperature with alcoholates and sodium

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Difluor Monochlor Methane as a Difluoromethylating Agent. I. Reaction of Difluor Monochlor Methane (Freon-22) With Alcoholates and Sodium Mercaptides

SOV/79-29-1-22/77

mercaptides in anhydrous alcohol, yielding fluorinated ether and fluorinated sulfides according to the scheme: $CHF_2Cl + NaOR \longrightarrow CHF_2OR + NaCl$ $CHF_2Cl + NaSR \longrightarrow CHF_2SR + NaCl$. These reactions proceed very smoothly already when passing freon-22 through alcoholic solutions of sodium alcoholates. In this way methyl-difluoromethyl- and n.-butyl difluoromethyl ether were obtained. In the reaction of sodium-β oxyethylmercaptide with freon-22 in an alcoholic medium the β-oxyethyl-difluoromethyl sulfide hitherto unknown resulted in good yield according to the scheme $CHF_2Cl + NaSCH_2CH_2OH \longrightarrow$ $\longrightarrow CHF_2SCH_2CH_2OH + NaCl$. Furthermore, the difluoromethyl ether of the acetoxime, so far unknown as well, was synthesized by O. I. Volskova according to reference 4 (last scheme). There are 4 references, 3 of which are Soviet.

Card 2/2

5 (3)

AUTHORS: Soborovskiy, L. Z., Baina, N. F. SOV/79-29-4-23/77

TITLE: Dichloromethane as Difluoromethylating Agent (Diftorkhlormetan kak diftormetiliruyushchiy agent). II. Reaction of Difluor Monochlor Methane With Sodium-dialkyl-phophites (II. Reaktsiya diftorkhlormetana s natriydialkilfosfitami)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1144-1146 (USSR)

ABSTRACT: In the present paper the attempt is made to use difluor monochlor methane in the reaction of Michaelis-Becker with the sodium derivatives of dialkyl-phosphorous acids in order to obtain the corresponding difluoromethyl phosphinates. Difluor monochlor methane was found to react with the sodium derivatives of dialkyl-phosphorous acids in an inert solvent under the formation of difluoromethylphosphinates:

$$CHF_2Cl + NaOP(OR)_2 \longrightarrow CHF_2-P(=O)(OR)_2 + NaCl$$

This reaction proceeds the most readily in the sodium derivatives of the highest dialkyl-phosphorous acids, in

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particular in the case of dibutyl phosphite which is known to be easily soluble in liquid hydrocarbons (Ref 4). On the passing of difluor monochlor methane through the benzine solution of sodium dibutyl phosphite the dibutyl-difluoro-methyl phosphinate was thus formed (70 % yield). In the same way the dimethyl-, diethyl- and diisopropyl-difluoromethyl phosphinate were obtained. The anomaly observed in the reaction of difluor monochlor methane with sodium dimethyl phosphite, where instead of the dimethyl-difluoro methyl phosphinate to be expected dimethyl phosphite and a small account of the expected ester are separated, is due to the fact that the system sodium-dimethyl phosphite in the methanol solution is equilibrated with sodium dimethyl phosphite and methanol (Scheme 2). The equilibrium is usually shifted to the right and the reaction proceeds according to scheme 3. The reaction of dibutyl difluormethyl phosphinate with phosphorus pentachloride yielded the hitherto unknown acid dichloride of difluoromethyl phosphinic acid. A cleavage of the P-C-bond was thus found to take place due to the influence exercised by PCl_5 upon difluoromethyl phosphinates

Dichloromethane as Difluoromethylating Agent. SOV/79-29-1-23/77
II. Reaction of Difluor Monochlor Methane With Sodium-dialkyl-phosphites

in addition to the formation of the acid dichloride of difluoromethyl phosphinic acid, with the formation of the corresponding alkyl phosphates. There are 5 references, 1 of which is Soviet.

SUBMITTED: March 6, 1958

Card 3/3

AUTHORS: Bystrova, R. I., Zinov'yev, Yu. M., Soborovskiy, L. Z. SOV/79-29-6-68/72

TITLE: Synthesis of Organo-phosphoric Compounds From Hydrocarbons and Their Derivatives (Sintez fosfororganicheskikh soyedineniy iz uglevodorodov i ikh proizvodnykh). XI. Oxidizing Chlorophosphination of Nitriles (XI. Okislitel'noye khlorfosfinirovaniye nitrilov)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 6, pp 2088-2092 (USSR)

ABSTRACT: In the reaction of the oxidizing chlorophosphination of hydrocarbons and their derivatives the C-P-linkage results; at the same time acid chlorides of corresponding alkane-phosphinic acids are formed. The reaction was carried out by halogen substituted paraffin hydrocarbons and by halogen olefins. The oxidizing chlorophosphination of alkoxy substituted hydrocarbons of ethers (Refs 1,2) is also possible. In the present paper the authors analyzed the reaction of phosphorus trichloride and oxygen with cyano substituted paraffins (nitriles of carboxylic acids). It was shown, that the oxidizing chlorophosphination of nitriles may proceed in two directions. The acid nitriles with 4 and more C-atoms per molecule form acid

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chlorides of the cyan alkane phosphinic acids $C_nH_{2n}(CN)P(O)Cl_2$, i.e. of compounds containing a C-P-linkage. The first links of the nitrile series (acetonitrile, propionitrile), as well as benzonitrile, form in the reaction with PCl_3 and O_2, compounds which contain the P-N-linkage, i.e. derivatives of acid chlorides of the imido-N-phosphoric acids, which correspond to the formula $RCCl{=}NP(O)Cl_2$. Acid chlorides of the cyanopropane and the cyanobutane-phosphinic acids have been synthesized. Two acid chlorides of the imido-N-phosphoric acid have been obtained whose structure corresponds probably to the formulas $C_2H_5CCl{=}NP(O)Cl_2$ and $C_6H_5CCl{=}NP(O)Cl_2$. The acid chloride of the imido-N-phosphoric acid, which is formed from acetonitrile, could not be separated in pure state. For the nitriles of carboxylic acids, which contain more than three C-atoms, the oxidizing chlorophosphination is carried out according to scheme (1), and for the acetonitrile, propionitrile, and benzonitrile according to scheme (2), and leads to the P-N-linkage. The spectroscopic analyses have been carried out by

Synthesis of Organo-phosphoric Compounds From Hydro- SOV/79-29-6-68/72
carbons and Their Derivatives. XI. Oxidizing Chlorophosphination of Nitriles

N. P. Rodionova, S. S. Dubov, and V. V. Fedotova. There are 1 table and 5 Soviet references.

SUBMITTED: March 3, 1958

Card 3/3

5(3)
AUTHORS: Soborovskiy, L. Z., Zinov'yev, Yu. M. SOV/79-29-7-10/83

TITLE: Allyl Esters of Some Alkane-, Alkene-, and Chloroalkane Phosphinic Acids (Allilovyye efiry nekotorykh alkan-, alken- i khloralkanfosfinovykh kislot)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 7, pp 2152-2154 (USSR)

ABSTRACT: Allyl alkane phosphinates are of importance as initial products for the synthesis of various polymer products. Up to now some alkane and alkene phosphinates have been obtained by causing allyl alcohol to react with acid chlorides of the corresponding phosphinic acids (Refs 1, 2) or, according to Arbuzov (Ref 3), from triallylphosphite and alkane halides. Allyl octane phosphinate was synthesized according to reference 4. Kamay and Kukhtin (Ref 5) described allyl chloroalkane phosphinates. In the present paper some allyl alkane, allyl alkene, and allyl chloroalkane phosphinates were synthesized. The acid dichlorides of the corresponding acids which had been obtained by oxidizing chlorophosphination of paraffin and olefin hydrocarbons (heptane, cyclohexane, propylene, butene-1) were used as initial substances. As far as some acid dichlorides obtained by this

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Allyl Esters of Some Alkane-, Alkene-, and Chloroalkane Phosphinic Acids

method were mixtures of isomeric compounds, the resultant esters also consisted of isomers which differed by the position of the phosphorus-containing residue in the hydrocarbon radical (Refs 7, 8). Moreover, the acid chloride of propene phosphinic acid was obtained by dehydrochlorination of the acid chloride of chloropropane phosphinic acid. This acid chloride could be transformed into allyl propene phosphinate which probably contains an admixture of isomeric compounds. The constants of the compounds synthesized are tabulated. There are 1 table and 8 references, 6 of which are Soviet.

SUBMITTED: May 15, 1957