CIRC ACCESSION NO--AP0132394

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR MIXTS. IN WHICH 2 COMPONENTS PREDOMINATED, TEMP. RANGES CORRESPONDING TO ZONES OF MAX. SENSITIVITY TO AUTOMATIC CONTROL IN FRACTIONATING COLUMNS WERE DETD. FROM MAX. IN PLOTS OF CONCN. DIFFERENCES DELTA EQUALS Y MINUS X OF THE LOW BOILING COMPONENT IN THE VAPOR AND LIQ. PHASES AGAINST TEMP. T. THESE ZONES (FOR MIXTS. CONTG. MAINLY CS SUB2,C SUB6 H SUB6, C SUB6 H SUB6,PHME, AND PHME,ME SUB2 C SUB6 H SUB4) WERE BROADER THAN THOSE CALCD. (T EQUALS 54.5-71.5DEGREES, 88-103DEGREES, AND 118-32DEGREES, X EQUALS 0.65-0.17, 0.66-0.18, AND 0.67-0.19). THE CALCD. RANGES FOR THE MOST SENSITIVE PLATE WERE T EQUALS 60-4DEGREES, 93-7DEGREES, AND 123-7DEGREES, AND X EQUALS 0.48-0.36, 0.47-0.34, AND 0.48-0.34. FACILITY: BAGLEISKII KOKSOKHIM. ZAVOD, USSR.

2/2 017 UNCLASSIFIED PROCESSING DATE--09OCT70
IRC ACCESSION NO--AP0115897
BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DECARBURIZATION OF TRANSFORMER STEEL CONTG. 3.4PERCENT SI AND A MIXT. OF N, H, AND WATER VAPOR IN VARIOUS PROPORTIONS WAS INVESTIGATED. THE GAS WAS O PURIFIED TO 0.001PERCENT, AND DRIED TO A DEW POINT OF MINUS 40 TO MINUS 50DEGREES. DECARBURIZATION WAS STUDIED AT 650-1050DEGREES, AND AT RATIOS (H SUB2 O)-(H SUB2) EQUALS 0.2, 0.4, 0.6. THE DRY GAS CONTAINED 20PERCENT H SUB2. THE INITIAL C CONTENT IN THE METAL WAS 0.020-0.025PERCENT, AND THE HOLDING TIME IN THE ATM. WAS 5 MIN. THE BEST DECARBURIZATION RESULTS WERE OBTAINED AT 800-50DEGREES, AND AT (H SUB2 O)-(H SUB2) VALUES OF 0.4 AND 0.6. THE RATE OF DECARBURIZATION WAS DETD. AT 850DEGREES AND AT (H SUB2 O)-(H SUB2) EQUALS 0.5. THE METAL, 0.35 MM THICK, AND WITH 0.020-0.025PERCENT OF ITS INITIAL C CONTENT, WAS DECARBURIZED DURING 5 MIN TO A VALUE LESS THAN 0.005PERCENT, AND WITH 0.045-0.055PERCENT OF THE INITIAL C CONTENT TO THE SAME VALUE, BUT DURING 7 MIN. FACILITY: VERKH-ISETSKII MET. ZAVOD, USSR.

ZYKOV, I. D.

UDC 551.466.82:551.463.6

STATISTICAL ANALYSIS OF THE INTERNAL OSCILLATIONS OF WATER TEMPERATURE IN THE OCEAN ACCORDING TO PROLONGED OBSERVATION DATA

[Article by I. D. Zykov, Candidate of Geographic Sciences K. S. Pomeranets, Leningrad Division of the State Oceanographic Institute; Moscow, Meteorologiya i Gidrologiya, Russian, No 3, 1972, submitted 27 July 1971, pp 69-74]

The results of a statistical analysis of time series of isotherms lasting two months in the Faroe-Shetland region of the North Atlantic are discussed. The greatest fluctuations are noted in the layers of the seasonal and primary thermoclines. The deviations from the normal distribution law are most significant in the primary thermocline. Spectral analysis of the time series of isotherms revealed multi-hour and 12-hour cyclicity of meteorological and tidal origin.

In recent years, the expeditionary work in the ocean at long-term stations and in test areas [2, 10] have acquired significant dimensions. The information obtained as a result of such projects is required to solve various oceanological problems, in particular, to study internal waves. The actual information on this phenomenon is entirely inadequate, and direct measurements of the internal waves have not been realized up to now. The fluctuations of the oceanological elements at different depths serve as an indicator of these waves. The time structure and statistical characteristics of the internal waves can be determined by observations of such fluctuations at one fixed point of the ocean where the duration and discreteness of the observations must correspond to the investigated scales of the phenomena.

Let us consider the internal water temperature fluctuations with periods from several hours to several days, using standard hydrologic observations every three hours for two months obtained by the Fourth Atlantic Expedition of the Main Administration of the Hydrometeorological Service in the Faroe-Shetland District of the Atlantic Ocean in the summer of 1967 on the Okeanograf and Aysberg. Projects of this duration were performed for the first time in the Atlantic at that time [3]. Let us also note that the preliminary results of analyzing the observations in the test areas in the tropical Atlantic and the Indian Ocean [1, 2, 10] primarily pertain to the statistical structure of currents and, in part, the short-period internal waves.

JPRS 55899
5 May 72

Pediatric
Medical
Institute

[illegible]

UDC: 378.661:378.126

METHODS AND FORMS OF WORK ON FACULTIES FOR ADVANCED TRAINING OF MEDICAL VUZ INSTRUCTORS

[Article by M.P. Zykov, Leningrad Pediatric Medical Institute; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 4, 1972, submitted 23 July 1971, pp 34-40]

Improvement of the methodological training of medical VUZ instructors is the basis without which it would be difficult to expect significant and lasting success in improving their qualifications.

Didactics (or education theory) in classes with students on the faculty for advanced training (FPK) is based on several closely interrelated methodological principles which evolve from the decisions of the third plenum of the scientific and methodological council on higher school pedagogics (Moscow, 1968). The main didactical principle called upon to help instructors make new advances in the area of methodology of Marxist-Leninist philosophy as applied to each special field, is the principle of ideological and scientific content. During lectures it is important to make extensive use of examples and demonstration of methods with which the advances of science are pedagogically processed and introduced into educational activity. One cannot mechanically transfer everything available to a specialty into a subject of education. The subject of education is logically and pedagogically processed science. The objective of FPK is to arm the students [instructors] with the methodology of pedagogic processing of scientific achievements so that they could be included in the educational process expeditiously and with logical substantiation. "It is impossible to separate the educational from the scientific in a university. But science without education still shines and warms. While education without science, no matter how tempting its appearance, only glitters."*

The second methodological principle is extensive demonstration of the link between theory and practice. Everyone undergoing FPK must have a very clear idea about and be able to use all the diverse pedagogic procedures and methods that develop ability and skills in students, creative thinking, independence.

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*N.I. Pirogov, Izbrannyye Sochineniya (Selected Works), Moscow, 1953, p 302.

ZYKOV, M.P.

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EXPERIMENTAL TUBERCULOUS MENINGOENCEPHALITIS IN GUINEA PIGS AFTER INOCULATING THEM WITH VARIOUS STRAINS OF MYCOBACTERIUM TUBERCULOSIS VAR.

AUTHOR--ZYKOV, M.P.

COUNTRY OF INFO--USSR

SOURCE--PROBL TUBERK 48(1): 71-74. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MYCOBACTERIUM TUBERCULOSIS, MENINGITIS, GUINEA PIG, VIRULENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0451 STEP NO--UR/0000/70/048/001/0071/0074

CIRC ACCESSION NO--AP0134219

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 018
CIRC ACCESSION NO--AP0134219
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GUINEA PIGS WERE INJECTE
DINTRACEREBALLY WITH VARIOUS STRAINS OF M. UBERCULOSIS VAR. HOMINIS AND
THE CLINICO MORPHOLOGICAL CHARACTERISTICS OF DEVELOPING
MENINGOENCEPHALITIS WERE STUDIED. THESE CHARACTERISTICS DIFFERED
DEPENDING ON THE VIRULENCE OF THE MYCOBACTERIUM. FACILITY: DEP.
MICROBIOL., I. P. PAVLOV 1ST LENINGRAD MED. INST., LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr:
AP0047870

Abstracting Service:
INTERNAT. AEROSPACE ABST. 5-70

Ref. Code:
UR0057

A70-25119 Measurement of the gas flow rate by the repeated electric breakdown method (Izmerenie skorosti potoka gaza metodom mnogokratnogo elektricheskogo proboia). P. E. Suetin and P. G. Zykov (Ural'skii Politekhnicheskii Institut, Sverdlovsk, USSR). *Zhurnal Tekhnicheskoi Fiziki*, vol. 40, Feb. 1970, p. 355-359. In Russian.

Experimental investigation of the effectiveness and range of applicability of the spark method as applied to the measurement of gas flow rates. It is shown that the method is well suited for studying both stationary and nonstationary gas flows under complex experimental conditions, and makes it possible to obtain velocity diagrams for flows past surfaces of complex shape. The achievable gas flow rates range from 0.3 to more than 100 m/sec. The error of the method is 2 to 3 per cent.

V.P.

40

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REEL/FRAME
19791542

21

1/3 015 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--LARGE HYDROGEN BUBBLE CHAMBER BUILT FOR SERPUKOV -U-

AUTHOR--ZYKOV, S. Z

COUNTRY OF INFO--FRANCE, USSR

SOURCE--FBIS DAILY REPORT, SOVIET UNION, 25 MARCH 1970, VOL III, NR 58

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HYDROGEN BUBBLE CHAMBER, NUCLEAR EQUIPMENT PURCHASE,
INTERNATIONAL AGREEMENT, PERFORMANCE TEST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/0002 STEP NO--UR/9003/70/003/058/0002/0003

CIRC ACCESSION NO--AN0100602
UNCLASSIFIED

2/3 015 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AN0100602

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN ONE TALKS OF MIRABELLES ONE AUTOMATICALLY PICTURES TO ONESELF SMALL YELLOW PLUMS. EVEN IF ONE KNOWS THAT THIS IS THE NAME OF A SCIENTIFIC RESEARCH INSTALLATION, A HYDROGEN BUBBLE CHAMBER (CAN "BUBBLES" BE BIG?), THE UNINITIATED ARE READY TO BELIEVE THAT IT IS SOME MINIATURE APPARATUS. I BELIEVE THAT MANY JOURNALISTS WHO RECENTLY VISITED THE NUCLEAR RESEARCH CENTER AS SACLAY NEAR PARIS WERE SURPRISED WHEN THEY FIRST SAW THE MIRABELLE IN ITS COMPLETE STATE AND IN ITS NATURAL SIZE. THE MOUNTED INSTALLATION WEIGHS MORE THAN 2,000 TONS AND ITS HEIGHT EXCEEDS 15 METERS. WHEN, A FEW YEARS AGO, THE IDEA AROSE, TO CREATE AN APPARATUS WHICH WOULD PERMIT PHOTOGRAPHING THE TRACE OF ELECTRICALLY CHARGED PARTICLES IN A LIQUID MEDIUM, FRENCH RESEARCHERS, LED BY THE EMINENT SCIENTIST PROFESSOR ANDRE BERTHELOT, BEGAN CONSTRUCTING A REALLY MINIATURE CHAMBER. THE SACLAY FIRST BORN HAD A NET CAPACITY OF ONLY 3 LITERS OF LIQUID HYDROGEN. THE SIZE OF THE CHAMBER GREW FROM ONE MODEL TO THE NEXT. THE NET CAPACITY OF THE PRESENT MIRABELLE, WHICH IS EQUIPPED WITH EIGHT CAMERAS, IS 6,000 LITERS. IT IS A VERY COMPLEX INSTALLATION WITH A GREAT NUMBER OF VARIOUS UNITS NECESSARY FOR ITS CONSTANT FUNCTIONING. THEY SURROUND THE CHAMBER WITH A MAGNETIC FIELD, MAINTAIN A CONSTANT TEMPERATURE INSIDE IT, AND REMOVE THE SLIGHTIST OBSTACLES AND FLUCTUATIONS. THE LONG SEARCH BY THE ENTIRE COLLECTIVE OF SCIENTISTS, ABOVE ALL WORKERS IN THE ELEMENTARY PARTICLE PHYSICS SECTION OF THE NUCLEAR RESEARCH CENTER AT SACLAY, HAS BEEN BROUGHT TO FRUITION BY THE MIRABELLE.

3/3 015 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AN0100602

ABSTRACT/EXTRACT--DESIGNERS AND ENGINEERS OF DOZENS OF FRENCH INDUSTIRAL ENTERPRISES ALSO PARTICIPATED IN THE CHAMBER'S CONSTRUCTION. MIRABELLE IS A UNIQUE AND EXPENSIVE APPARATUS FOR NUCLEAR RESEARCH WHICH IS INTENDED FOR USE ONLY IN A COMPLEX WITH THE VERY LATEST ACCELERATOR. A CIRCULAR ACCELERATOR OF THIS TYPE HAS BEEN IN OPERATION IN THE HIGH ENERGY PHYSICS INSTITUTE AT SERPUKOV SINCE 1967. IT IS THE MOST POWERFUL IN THE WORLD. IT WAS FOR ITS USE THAT THE MIRABELLE WAS CREATED, THIS VISIBLE FRUIT OF THE CLOSE COOPERATION BETWEEN SOVIET AND FRENCH SCIENTISTS, WHICH WAS BEGUN BY THE AGREEMENT ON JOINT SCIENTIFIC RESEARCH WORK IN THE HIGH ENERGY PHYSICS FIELD CONCLUDED BETWEEN THE USSR AND FRANCE IN THE FALL OF 1966. THE INSTALLATION WILL SOON BE SENT TO LENINGRAD BY MOTOR SHIP AND THEN BY RAIL TO ITS DESTINATION.

UNCLASSIFIED

ZYKOV, S.A.

JPRS 57492
13 Nov 72

UDC 621.312.25:621.039

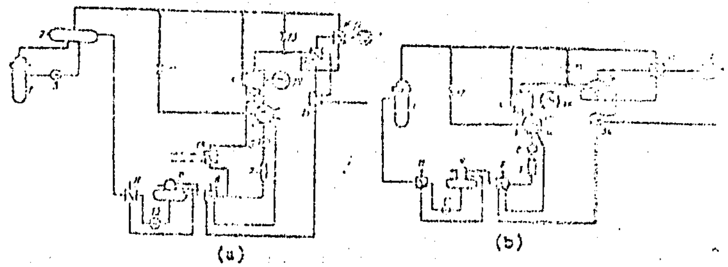
ATOMIC ELECTRIC POWER FOR HEAT SUPPLY

[Article by S. A. Zykov, doctor of technical sciences, A. Ye. Sajchar, candidate of engineering sciences, and O. P. Zelenyck and V. B. Eshalin, engineers: "Application of Atomic Electric Power Stations for Centralized Heat Supply to Cities and Industrial Complexes"; Kiev, Energetika i Elektrifikatsiya, Russian, No 3, May-June 1972, pp 28-29]

Atomic power plants providing for heat supply to industrial complexes and cities and generation of electric power on a condensation regime for delivery of it to a power system (ATETs) have advantages over ATETs (atomic-powered thermal electric-power stations). At an ATETs units of large capacity may be applied and the load factor of the reactor may be increased to the maximum, regardless of the number of hours of use of the maximum heat load during the year.

Diagrams of atomic units of such power plants are given in the figure: (a) represents an industrial heating ATETs; (b) and (c) are industrial ATETs. In the atomic blocks of (a) and (b), respectively, one condensation turbine is installed, with heat-supply and production steam takeoffs or with a production steam takeoff alone.

In block (c) with one reactor, two turbines are installed: one back-pressure turbine for distribution of industrial steam, and a second condensation turbine for the generation of electric power.



Acc. Nr. AP0036351

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code
UR 0007

69131z Use of lead isotopes for metallogenic analysis of the sources of ore-forming substances. Volobuev, M. I.; Zykov, S. I.; Stupnikova, N. I. (Moscow State Univ., Moscow, USSR). *Geokhimiya* 1970, (1), 22-34 (Russ). By taking into account the geol. situation and data on a comparative characteristics of the isotopic compn. of S of ore occurrences and of Pb dispersed in country rocks, it proved possible to single out sources of ore-forming matters of polymetallic deposits. With the 1st source of ore-forming matters (granitic rocks) the formation of deposits and ore shows of the Enisei Mountain Ridge of the eastern Sayany and the Kuznetsk Alatau is connected. At the expense of the 2nd source (i.e. mobilization of dispersed Pb from country rocks) polymetallic deposits and ore shows of Tuva were formed. Ore shows connected with the migration of Pb from radioactive minerals (3rd group of sources) are rarely met. BLJR

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REEL/FRAME
19721189

18

USSR

UDC 533.9

ATAMANOV, N. S., ZALKIND, V. M., ZYKOV, V. G., IL'YENKO, B. P., LATS'KO, Ye. M., and TOLOK, V. T., Physicotechnical Institute of the Academy of Sciences UkrSSR, Khar'kov

"Capture of Plasma Injected Into an Injector-Divertor Device of a Stellarator in the Case of a Short- and Long-Term Modulation of the Confining Magnetic Field"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 3, Mar 72, pp 368-371

Abstract: The experimental investigation of the capture of plasma by the magnetic field of an injector-divertor device of a stellarator is described. The capture of the plasma was investigated by modulation durations of the confining magnetic field lesser and greater than the duration of plasma injection. By the use of a short-term pulse of the counter magnetic field, the forward part of the plasma flux, which is more valuable for the injection, can be trapped and, in the meanwhile, the rear part will split off by entering into the injection chamber. The length of the plasma flow captured in the trap can be controlled by changing the pulse duration of the magnetic field opposed to the field of the trap. The results are discussed by reference to an oscillogram of the probe saturation current of the captured plasma and dependence of the total number of captured charged particles and the density of captured plasma on the counter magnetic field intensity. Four illustr., six biblio. refs.

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USSR Z

UDC 533.0

ZYKOV, V. G., KARPUKHIN, V. I., RUDNEV, N. I., TOLOK, V. T., Physicotechnical Institute, Academy of Sciences, Ukrainian SSR, Khar'kov

"Investigation of the Motion Stability of a Plasma Stream in the Magnetic Field of a Diverter"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 15, No 7, July 1970, pp 1135-1141

Abstract: Research has shown that the plasma in a longitudinal magnetic field is in a state of unstable equilibrium. Placing a diverter on a straight-line sector of the racetrack brings about considerable changes in the topology of the magnetic field of the track. The article deals with an experimental investigation of the motion stability of the plasma stream in the magnetic field of the diverter, which is an important unity of a race-track stellarator. It is shown that the magnetic field of the diverter is effective in stabilizing plasma motion in a longitudinal magnetic field.

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USSR

UDC: 533.92:621.039.61

ZYKOV, V. G., KARPUKHIN, V. I., LONIN, Yu. F., RUDNEV, N. I., TOLOK, V. T., Physicotechnical Institute of the Academy of Sciences of the UkrSSR, Khar'kov

"Investigation of Plasma Containment in the Magnetic Field of a Racetrack With Diverter"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 5, May 72, pp 939-945

Abstract: An experimental study is made of the time of containment of plasma particles in a racetrack with a diverter. The trap was filled with plasma by injection from a coaxial source through magnetic slits in the diverter. It was found that the diverter configuration ensures plasma equilibrium in a toroidal magnetic field without rotational transformation of the lines of force of the magnetic field. Two traps can be distinguished in the system: a corkscrew trap in the diverter, and a toroidal trap. The particles drift more rapidly in the diverter magnetic field because of plasma drift in the magnetic slits. The lifetime of the plasma in the diverter τ_1 is independent of the magnetic field H. In the toroidal magnetic field the lifetime $\tau_2 \sim H$, losses being due both to drift in the diverter and the development of instabilities. Since in this experiment a classical diverter with a continuous metal barrier between the central coil and the wall of the

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chamber was used, all charged particles which drift into the magnetic slits of the diverter are neutralized by this barrier. To reduce plasma losses in the diverter, the central diverter coil should be held by local supports with a minimum cross sectional area. Plasma losses on the toroidal sections can be reduced by increasing the number of diverter cells.

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USSR

UDC 533.92:621.039.61

ZYKOV, V. G.

"Methods for Injecting Plasma Into Closed Magnetic Traps"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb. (Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No 3, pp 161-189 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G293)

Translation: This paper is a survey of studies concerning methods for injecting plasma into a stellarator, a toroidal multipole, and other closed magnetic traps. The various methods and versions of external injection, methods of capturing the plasma, and studies in which processes arising in a plasma upon injection were investigated are systematized and analyzed. The potentialities of each injection method are evaluated.

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1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--SOLUBILITY OF FURFURAL IN WATER IN THE PRESENCE OF SODIUM PERCHLORATE -U-

AUTHOR--ZYKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 932-3

DATE PUBLISHED---------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FURFURAL, SOLUBILITY, SODIUM COMPOUND, PERCHLORATE, HIGH TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1974 STEP NO--UR/0080/70/043/004/0932/0933

CIRC ACCESSION NO--AP0132235

UNCLASSIFIED

2/2 020

UNCLASSIFIED

CIRC ACCESSION NO--AP0132235 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. OF FURFURAL (I) IN AQ.
NACLO SUB4 SOLNS. OF VARYING CONCN. WAS DETD. AT 25DEGREES BY VISUAL
OBSERVATION (EXCESS I LED TO THE APPEARANCE OF TURBIDITY DUE TO THE
EMULSION FORMED). THE RESULTS ARE (THE NACLO SUB4 CONCN. IN THE
STARTING AQ. SOLN. (G-EQUIV.-L.), NACLO SUB4 CONCN. IN THE I-SATD. SOLN.
(G-EQUIV.-L.), AND THE SOLY. OF I (VOL. PERCENT) GIVEN): 0.00, 0.00,
7.8; 0.25, 0.23, 8.9; 0.5, 045, 10.0; 1.0, 0.86, 14.1; 1.5, 1.17, 21.6;
1.75, 1.28, 31.1; 2.0, 1.22, 40; 2.25, 1.09, 51.8; 2.5, 1.04, 58.3;
2.75, 0.72, 73.7; AND 3.0, MINUS, INFINITY. THE SYSTEMS COMPRISING I
(IN ANY AMT.) AND AN AQ. NACLO SUB4 SOLN. (HAVING AN INITIAL NACLO SUB4
CONCN. IS GREATER THAN 2.8 G-EQUIV.-L.) ARE QUITE STABLE AT SMALLER THAN
OR EQUAL TO 250DEGREES (AT VERY HIGH TEMPS. I IS CONVERTED TO RESINOUS
SUBSTANCES). FACILITY: KRASNODAR. POLITEKH. INST., KRASNODAR,
USSR.

UNCLASSIFIED

USSR

UDC 620.179.15

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KONONOV, B. A., DERGOBUZOV, K. A., YEVSTIGNEYEV, V. V., ZYKOV, V. M., RUDENKO, V. N., and STEPANOV, Yu. M., Scientific Research Institute of Electron Introscopy, Tomsk Polytechnic Institute imeni S. M. Kirov

"Experimental Evaluation of the Possibilities of Electron Defectoscopy" (Paper presented at the Sixth International Conference on Nondestructive Control Methods, June 1-5 1970, Hannover, GFR)

Sverdlovsk, Defektoskopiya, No 2, 1971, pp 94-98

Abstract: The status and prospects for fast electron defectoscopy are discussed. An account is given of investigation results of the use of betatron electron beams for defectoscopy of layer materials. It is demonstrated that radiographic and radiometric (including spectrometric) methods of electron defectoscopy can be applied successfully for solutions of many tasks with a sensitivity of 0.5%. The experimentally derived dependence of the intensity of a reflected electron flux on the thickness of the aluminum coating on the backing of different materials shows that with increasing thickness of the coating the intensity of the flux decreases or increases, depending on whether the atomic number of the coating is smaller or greater than that of the backing. Three figures, 11 bibliographic references.

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USSR

UDC 621.319.4

GOL'DBERG, I. L., CHEBONENKO, L. I., VAYSBERG, I. I., ZYKOV, V. S.

"A Method of Making Film Capacitors"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 36, Soviet Patent No 288153, class 21, filed 14 Sep 68, published 3 Dec 70, p 85

Translation: This Author's Certificate introduces a method of making film capacitors with fixed capacitance. The capacitors contain a multilayered dielectric in the form of oxides produced by the method of vacuum deposition. As a distinguishing feature of the patent, the specific capacitance, working voltage and percent yield of usable capacitors are increased by using successively deposited layers of silicon monoxide and germanium monoxide as the oxides.

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USSR

UDC: 621.791.011:669.295

POLYAKOV, D. A. (Cand. of Techn. Sciences), ABRAMOVA, V. N. (Engineer), SEDYKH, K. V. (Engineer), ZYKOV, YE. V. (Engineer), and ZACHESOVA, O. A. (Engineer)

"Weldability of the Cast VT14L Titanium Alloy"

Moscow, Svarochnoye proizvodstvo, Oct 71, no 10, pp 22-24

Abstract: This study has been prompted by problems related to replacement of stamping and forging in the fabrication of parts from quench-hardened VT14 alloy with castings from the VT14L alloy. It is shown that the welding technology of VT14L alloy and its combinations with the formable VT14 alloy is practically no different from that of VT14 and other well known titanium alloys. In argon-arc welding of VT14L as annealed and of that in combination with VT14 as hardened (aging after welding) or in welding of both as annealed and as aged, the welds feature a strength equal to the VT14L base metal, while plasticity and impact toughness of the welds are much lower than those of the base metal. Both the plasticity and impact toughness

USSR

POLYAKOV, D. A. (Cand. of Techn. Sciences), et al, Svarochnoye proizvodstvo, Oct 71, no 10, pp 22-24

may be considerably increased by annealing. In resistance spot welding optimum properties of welds of VT14L plus VT14 alloys are ensured by quenching and aging the plates prior to welding without quench-hardening the weld. Tables in the original article cite data on the mechanical properties of base materials VT14L and VT14 alloys used per se and data on the mechanical properties of welds from VT14L-VT14 combinations in a variety of states, data on the strength of spot welds in shearing tests and as well as those after holding at 300°C, and finally strength properties of welds after annealing in repeated static loading.

2/2

1/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--ADENOMA OF THE LARGE DUODENAL PAPILLA -U-

AUTHOR-(02)-ZYKOV, YU.A., NIKITCHENKO, S.A.

COUNTRY OF INFO--USSR

Z

SOURCE--KHIRURGIYA, 1970, NR 2, PP 81-84

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUMOR, DUODENUM, PAIN, LIVER FUNCTION, SURGERY, PANCREAS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1329 STEP NO--UR/0531/70/000/002/0081/0084

CIRC ACCESSION NO--AP0054213

UNCLASSIFIED

CIRC ACCESSION NO--AP0054213

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS REPORT ON OBSERVATIONS OVER 9 PATIENTS WITH A RARE DISEASE, ADENOMA OF THE LARGE DUODENAL PAPILLA, WHO WERE OPERATED DURING THE LAST TEN YEARS (1958-1968). PROBLEMS OF THE CLINICAL PICTURE, DIAGNOSIS AND TREATMENT ARE DISCUSSED. THE MAIN SYMPTOMS OF THIS DISEASE ARE INTERMITTENT OR UNDULATING JAUNDICE WITH A MARKED PAIN SYNDROME, A POSITIVE COURVOISIER'S SYMPTOM, A SHARP IMPAIRMENT OF FUNCTIONAL TESTS OF THE LIVER. A CORRECT DIAGNOSIS BEFORE THE OPERATION WAS ESTABLISHED IN 2 PATIENTS, IN 6 CASES, ON THE OPERATION TABLE AND IN ONE, DURING AUTOPSY. THE OPERATION OF CHOICE IS TRANSDUODENAL PAPILLECTOMY WHICH WAS PERFORMED IN 6 PATIENTS WITH ONE LETHAL OUTCOME. IN 2 PATIENTS WITH SUSPECTED DEGENERATION OF THE TUMOR AN ECONOMICAL PANCREATODUODENAL RESECTION WAS PERFORMED.

ZYKOVA, A. A.

JPRS 55687
10 Apr 1972

UDC 612.461.6:546.32"52"-06:612.821.7-064

DIURNAL DYNAMICS OF POTASSIUM EXCRETION IN HUMAN URINE DURING PROLONGED WAKEFULNESS

[Article by A. A. Zykova, L. A. Lugovoy and V. P. Krotov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, pp 62-66, 1972, submitted for publication 5 July 1971]

Abstract: Diurnal variations in human urine potassium excretion were investigated in ten test subjects confined to an isolation chamber but adhering to a normal work-rest cycle during a 72-hour period of continuous wakefulness. Sleep deprivation brought about considerable disturbances in diurnal potassium excretion which varied in their pattern and level from subject to subject. In some cases a displacement of minimum and maximum points prevailed; in others there was a decrease in the amplitude of diurnal variations. The results reveal an appreciable variability in functioning of circadian periodic systems in different subjects. This result can be applied in spacecrew selection with respect to biorhythmological parameters.

It has been established that the excretion of potassium in the urine transpires with a clearly expressed endogenous diurnal cyclicity with maximum values during the daytime hours and minimum values during the nighttime hours (O'Connor; Mertz; Simpson and Lobban; Lyaonau and Dreuizevich, and others). That it is of an endogenous nature is indicated by the prolonged retention of the initial period of this cyclicity when the length of day is changed; under such conditions a restructuring of the diurnal rhythm of potassium excretion has been observed relatively rarely and transpired over a long period (Lewis, et al.; Lobban; Mills and Stanbury; Simpson and Lobban). In such cases the rhythm of potassium excretion is far more stable than the rhythm of change in body temperature (Lobban; Mills and Stanbury), diuresis, and excretion of sodium and chlorides (Simpson and Lobban; Mills and Stanbury). After transmeridional flights the restructuring of the diurnal rhythm in potassium excretion occurs more easily and transpires relatively more rapidly than in cases with a modified duration of day (Lafontaine, et al.). During a 45-day experiment with the use of accumulated social time sensors it was

Radiobiology

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USSR

UDC 614.73:621.311.25

KOZLOV, V. M., ZYKOVA, A. S., ZHAKOV, Yu. A., and YAMBROVSKIY, Ya. M.

"Radiation Safety of the Population Living in the Vicinity of an Atomic Power Plant"

Moscow, Gigiyena i Sanitariya, No 4, 1970, pp 54-56

Abstract: Due to careful treatment of waste gases and liquids, installation of special facilities for long-term storage of highly active liquid and solid wastes, and creation of an extensive health zone, the Beloyarsk (uranium-graphite thermal reactor) and Novovoronezh (water-cooled thermal reactor) plants have not increased radioactivity in the atmosphere and waters of the area during the three years that they have been in operation. The amount of Sr^{90} and Cs^{137} in locally produced foods (potatoes, cabbage, milk, etc.) does not exceed the average levels for the country as a whole.

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USSR Z UDC 614.73(47-25)"1962-1967"

ZYKOVA, A. S., TELUSHKINA, Ye. L., RUBLEVSKIY, V. P., YEFREMOVA, G. P., and KUZNETSOVA, G. A.

"The Content of Artificial Radioactive Isotopes in the Air of Moscow in 1962-1967"

Moscow, Gigiyena i Sanitariya, No 4, 1970, pp 50-53

Abstract: The content of radioactive isotopes in 1962-1967 was highest throughout 1962 and early 1963, i.e., while nuclear weapons were being tested and during the first few months after the tests were halted. Even at the time of the most intense fallout, the mean concentration in the atmosphere was about $3 \cdot 10^{-15}$ curie/liter, or below the maximum permissible level established by Soviet health legislation. The level of radioactivity began to drop in the fall of 1963, and it continued to do so in all the years that followed. The mean annual concentration of radioactive aerosols from 1962-1967 decreased 40-fold, and that of Cs^{137} and Sr^{90} approximately 10-fold

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1/2 026 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--RADIATION SAFETY OF THE POPULATION IN THE DISTRICT OF AN ATOMIC
POWER PLANT -U-
AUTHOR--KOZLOV, V.M., ZYKOVA, A.S., ZHAKOV, YU.A., YAMBROVSKIY, YA.M.

COUNTRY OF INFO--USSR

Z

SOURCE--GIGIYENA I SANITARIYA, 1970, NR 4, PP 54-56

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NUCLEAR SAFETY, NUCLEAR POWER PLANT, INDUSTRIAL HYGIENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1679 STEP NO--UR/0240/70/000/004/0054/0056

CIRC ACCESSION NO--AP0101734

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0101734

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ATOMIC POWER PLANTS BELONG TO RAPIDLY DEVELOPING BRANCHES OF INDUSTRIES. CONSEQUENTLY A STUDY OF RADIATION SAFETY OF THE POPULATION IN THE DISTRICT OF AN ATOMIC POWER PLANT (APP) IS AN IMPORTANT HYGIENIC PROBLEM. THE PAPER CONTAINS INVESTIGATION DATA ON THE NOVOVORONEZHSKAYA AND BELOYARSKAYA APP, PROVING THE LATTER TO HAVE NO EFFECT ON THE SANITARY RADIATION CONDITION OF THE DISTRICT OF THEIR LOCATION. ON THE BASIS OF THESE DATA IT IS PERMITTED TO USE SANITARY PROTECTION ZONE AROUND APP FOR AGRICULTURAL PURPOSES.

UNCLASSIFIED

USSR

UDC 591.1.15

ZYKOVA, L. YU., Institute of Biological Physics, Academy of Sciences of the USSR

"Succinic Acid and the Course of Radiation Sickness in Rats"

Pushchino, Moskovskaya Oblast, Yantarnaya kislota i techeniye luchevoy bolezni u krys (cf. English above), 1972, 5 pp, bibl. of 6 titles (manuscript deposited in VINITI 1 Mar 73, No 5586-73 Dep.) (from RZh-Biologicheskaya Khimiya, No 14, 25 Jul 73, abstract No 14F1299 Dep by the author)

Translation: An investigation was made into the influence of succinic acid on the survivla rate of white rats when exposed to various doses of radiation. It is shown that peroral administration of succinic acid in an amount of 150 mg (25 mg per day for 4 days preceding exposure, and 50 mg on the day of exposure) shortens the life of the animals and impairs their growth in exposure to a sublethal dose of 775 roentgens (dose rate of 237 roentgens perminute). When the exposure is 500 roentgens the same amount of succinic acid accelerates the growth of the experimental animals and has a radioprotective effect (survival rate of the experimental animals 92%, survival rate of the of the control animals 68%).

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(7)

Sov: JPRS 59279
14 June 73

STUDY OF THE GROWTH CONDITIONS AND PROPERTIES OF SILICON FILMS DEPOSITED BY THE CHLORIDE METHOD

All - semiconductor materials

[Article by Z. I. Kir'yashkina, D. I. Bilenko, V. K. Demidov, Yu. N. Galishnikova, N. G. Zykova, L. D. Zorina, V. N. Ten'kaeva; Novosibirsk, Protsessy Rosta i Struktura Monokristallicheskikh Sloyev Poluprovodnikov -- Trudy Simpoziuma. Russian, Part 2, 1969, pp 62-68]

Polycrystalline semiconducting films are of defined interest. The structural imperfection characteristic of them can be successfully used: the intercrystallite barriers insure a high specific resistance (to 10^6 ohm-cm) of the silicon films serving as insulating in the integrated circuits, and the surface roughness permits the creation of a stable contact which is the basis for certain types of diodes. On the other hand, the low deposition temperature (by comparison with the epitaxial growth) facilitates the realization of the multilayered semiconducting structures during the first period after significant reduction of the admixture diffusion from the substrate.

Below, there is a discussion of the results of studying the effect of the technological conditions of the polycrystalline silicon film growth on their electrophysical parameters.

Procedure for Obtaining and Studying Melts

The silicon films were obtained by the chloride method [1-3] in the horizontal open tube with an electric furnace as the heater. The temperature distribution along the furnaces appears in Figure 25. The substrates made of molten quartz and polycrystalline graphite were placed in two parallel rows along the deposition zone. The thermostatted evaporators of two structural designs were used: bubbling and nonbubbling. The total hydrogen flow was 60 liters/hours (with a reactor diameter of about 20 mm); here, the evaporator with the $SiCl_4$ usually passed a flow of 20 liters/hour, and 10 liters/hour went through the evaporator with BBr_3.

The thickness of the grown layers of silicon was estimated by the gravimetric method. A study was also made of the electrophysical, the optical and structural properties of the films.

ZYKOVA, N.G.

USSR UDC 537.32

DUDKIN, L. D., ZYKOVA, N. P., and LYUSKIN, S. N.

"Anisotropy of the Electrical Properties of Low-Temperature Thermoelectric Materials"

Moscow, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 127-128

Abstract: In connection with the fact that powder metallurgy methods are basic procedures in manufacturing thermocouples, the authors have investigated the anisotropy of the electrical characteristics in pressed samples, the creation of whose texture is determined by the anisotropy of the mechanical properties. It is known that low-temperature thermoelectric materials $Bi_2(Te, Se)_3$ -- n-type -- and $(Bi, Sb)_2Te_3$ -- p-type -- on the basis of the peculiarities of their crystal chemical structure, have an anisotropy of electrical and thermal conductivity at room temperature both in monocrystalline and polycrystalline pressed samples. The thermoelectric efficiency z in the direction of the layers (the direction perpendicular to pressing) is higher than in the direction perpendicular to it. This also determines the directionalness of operations connected with optimizing the thermoelectric effectiveness of these materials and converters. The variation in temperature dependence of the anisotropy of the thermoelectric characteristics of the indicated materials to the temperature of their practical utilization

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DUDKIN, L. D., et al, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 127-128

(330°C) was investigated. The results of this study are presented in graphical form. Both for electron and hole materials the anisotropy is retained throughout the entire investigated temperature range. The essential result of the study was confirmation of the anisotropy of the thermal emf in p-type materials in the natural conductivity range (increase in thermal conductivity as a result of bipolar diffusion indicates the occurrence of natural conductivity above 100°C). At the same time, the thermal emf of the electron material is, in practice, isotropic in the entire investigated temperature range. A figure is also presented showing the temperature dependence of anisotropy of the thermoelectric properties of low-temperature materials calculated on the basis of the results of the investigation. The essential changes in anisotropy of the thermoelectric properties of the low-temperature materials indicate that the optimal crystallographic direction of utilization of anisotropic thermoelectric materials cannot be adequately judged from the data for one temperature.

USSR UDC: 621.362.2(088.8)

KHANIN, M. A., DIDORENKO, N. S., DUDKIN, L. D., MAZUR, V. A., KOLOMOYERS, N. V., ZYKOVA, N. P.

"A Commutation Line"

USSR Author's Certificate No 256002, filed 2 Jan 68, published 19 Mar 70 (from RZh-Elektrotekhnika i Energetika, No 10, Oct 70, Abstract No 10A163 P)

Translation: This Author's Certificate introduces a commutation line for a thermocouple produced by combined hot powder pressing. As a distinguishing feature of the patent, the line is made from aluminum powder which is partially oxidized (by 5-20 percent). This makes it possible to increase the working temperature to 600°C.

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USSR

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UDC 621.362.2(088.8)

BEYLIN, A. Yu., DUDKIN, L. D., ZYKOVA, N. P., KOLOMEYETS, N. V. MAZUR, V. A., TARTAKOVSKIY, D. L., KHANIN, M. A.

"A Thermocouple"

USSR Author's Certificate No 227428, Filed 6 Jul 67, Published 20 Jan 70 (from RZh-Electrotekhnika i energetika, No 8, Aug 70, Abstract No 8A127 P)

Translation: The proposed thermocouple contains a P-branch of germanium telluride, a commutation bus of iron, and a commutation substrate. A mechanical mixture of tungsten and tin telluride, or tungsten and lead telluride is used as the commutation substrate. This is to improve mechanical strength and reduce power lost in commutation.

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USSR

UDC 615.281.221.1:547.547.831.6

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VASIL'YEVA, V. F., ZAGRUTDINOVA, R. A., SHCHUKINA, M. N., PERSHIN, G. N., and ZYKOVA, T. N., All Union Scientific Chemical-Pharmaceutical Research Institute imeni S. Ordzhonikidze, Moscow

"Synthesis and Biological Properties of 6-Arylaza Derivatives of Substituted 1,2,3,4-Tetrahydroquinoline"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 7, No 9, Sep 73, pp 19-21

Abstract: A series of arylazo derivatives of 1,2,3,4-tetrahydroquinoline was synthesized; 1-alkyl- (from C_1 to C_4) and 1-benzyl-1,2,3,4-tetrahydroquinolines were obtained by reduction of 1-substituted quinolinium iodides or bromides with formic acid; reduction of 2-benzylquinoline with metallic sodium in butanol gave the respective tetrahydroderivative (I), which condensed with γ-dimethylaminopropyl chloride gave 1-(γ-dimethylaminopropyl)-2-benzyl-1,2,3,4-tetrahydroquinoline; (I) also yielded 1-benzoyl-2-benzyl-1,2,3,4-tetrahydroquinoline. All of these compounds were diazotized with phenyldiazonium, p-chlorophenyldiazonium, and p-nitrophenyldiazonium salts to yield the respective 6-arylazo derivatives. Subjected to the assay against the tuberculine baccillus $H_{37}Rv$, three derivatives showed pronounced tuberculo-

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USSR

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VASIL'YEVA, V. F., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 7, No 9, Sep 73, pp 19-21

static activity; 6-phenylazo-2-bensyl-1,2,3,4-tetrahydroquinoline; 6-phenylazo-1-(γ-dimethylaminopropyl)-2-benzyl-1,2,3,4-tetrahydroquinoline hydrochloride, and 6-(p-nitrophenylazo)-1-(γ-dimethylaminopropyl)-2-benzyl-1,2,3,4-tetrahydroquinoline.

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USSR

UDC 547.752

4

VINOGRAD, L. KH., SHALYGINA, O. D., BULATOVA, N. N., KOSTYUCHENKO, N. P., ZYKOVA, T. N., MIKERINA, A. L., ARUTYUNYAN, G. S., and SUVOROV, N. N., All-Union Scientific Research Chemical and Pharmaceutical Institute imeni Sergo Ordzhonikidze, Moscow

"Indole Derivatives. Report 72. Addition of Sulfur-Containing Reagents to Nitrovinylindole"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 5, No 12, Dec 71, pp 15-17

Abstract: The addition of sulfur-containing nucleophilic reagents to unsaturated nitro-compounds of the indole series was studied. The addition reactions of seven new indole derivatives are detailed and the addition products identified. In-vitro therapeutic tests revealed a weak germistatic activity (500-250 mcg/ml) in 1-benzylmercapto-1-(1'-acetylindolyl-3)-2-aminoethane chloralhydrate relative to 17 microorganism strains. The study included general effects, effects on smooth muscles, circulation and respiration body temperature, interaction with hexenal and iprazid, antihistaminic, antispasmodic and anesthetic effects. The compound revealed weak pharmacological activity, weak spasmogenic action and slightly increased capillary permeability. It appears to promote the somnifacient effect of hexenal. The LD_{50} in intravenous administration to mice is 45 mg/kg. (1 table, 1 biblio. reference)

1/1

1/2 020

UNCLASSIFIED

TITLE--PROPERTIES OF 2,NITROBENZIMIDAZOLES -U-

PROCESSING DATE--02OCT70

AUTHOR-(05)-POZHARSKIY, A.F., PERSHIN, G.N., ZVEZDINA, E.A., ZYKOVA, T.N., MILOVANOVA, S.N.

COUNTRY OF INFO--USSR

SOURCE--KHIM. FARM. ZH. 1970 4(1) 14-16

Z

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--ORGANIC NITRO COMPOUND, BENZIMIDAZOLE, BACTERICIDE, FUNGICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1520

STEP NO--UR/0450/70/004/001/0014/0016

CIRC ACCESSION NO--AP0112514

UNCLASSIFIED

2/2 020
CIRC ACCESSION NO--AP0112514 UNCLASSIFIED PROCESSING DATE--02OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 2, NITROBENZIMIDAZOLE (I) (0.163
G), 0.08 G NAOH, 4 ML ETOH, AND 0.35 ML MEI YEILDED 0.15 G 1,METHYL,2,
NITROBENZIMIDAZOLE (II), M. 170DEGREES (ETOH); 79.3PERCENT 1,ETHYL
DERIV., M. 105DEGREES (MEOH), WAS ALSO PREPD. II (0.27 G) WAS ALSO
PREPD. FROM 0.26 G I AND 0.156 G CH SUB2 N SUB2 IN 40 ML ET SUB2 O. A
MIXT. OF 0.163 G I, 0.1 G NAOH, 0.25 G PHME SUB2 (PHCH SUB2)N PRIME
POSITIVE CL PRIME NEGATIVE, AND 3 ML H SUB2 O GAVE 0.13 G
1,BENZYL,2,NITROBENZIMIDAZOLE, M. 107DEGREES (MEOH). II (0.15 G),
ETONA (FROM 0.08 G NA), AND 7 ML ETOH YIELDED
1,METHYL,2,ETHOXYBENZIMIDAZOLE (0.12 G), PICRATE M. 163-4DEGREES (ETOH).
II (0.25 G), 0.32 G PHCH SUB2 NH SUB2, AND 5 ML XYLENE YIELDED 0.25 G
1,METHYL,2,(BENZYLAMINO)BENZIMIDAZOLE, M. 167DEGREES (MEOH). THE
COMPDS. WERE TESTED FOR ANTIBACTERIAL (11 STRAINS) AND ANTIFUNGAL (6
STRAINS) ACTIVITY.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--A NEW INJECTABLE MEDICINAL FORM OF ETHOXIDE -U-

AUTHOR-(04)-PERSHIN, G.N., ZYKOVA, T.N., SHAROVA, S.A., KUTCHAK, S.N.

2

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(1), 101-5

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUBERCULOSIS, ANTITUBERCULAR DRUG, MOUSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1159 STEP NO--UR/0390/70/033/001/0101/0105

CIRC ACCESSION NO--AP0115178

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0115178
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ETHOXIDE (4, 4 PRIME DIETHOXYDITHIOCARBANILIDE) IN OIL AND H SUB2 O SUSPENSIONS ADMINISTERED I.M. TO MICE WAS 10 FOLD MORE EFFECTIVE THERAPEUTICALLY THAN WHEN ADMINISTERED ORALLY. THE INOCULATION INDEX FOR TUBERCULOSIS BACILLI FROM THE LUNGS OF MICE INJECTED I.M. WITH ETHOXIDE SUSPENSION ONCE A WEEK AT 80 OR 40 MG WAS HALF THAT IN CONTROLS OR IN MICE RECEIVING ETHOXIDE DAILY ORALLY. ETHOXIDE IN A 20PERCENT H SUB2 O AND 20PERCENT OIL SUSPENSION HAD NO OVERALL TOXIC OR LOCAL IRRITATING ACTION. AQ. SUSPENSIONS CAUSED MORE GRADUAL AND MORE ABUNDANT DEVELOPMENT OF CONNECTIVE TISSUE, BUT OIL SUSPENSIONS FACILITATED DEPOSITION AND CAUSED LESS SIGNIFICANT REACTIVE CHANGES IN THE DEVELOPING GRANULOCYTIC TISSUE. AT 20PERCENT OIL SUSPENSION OF ETHOXIDE IS RECOMMENDED FOR CLIN. STUDIES ON TUBERCULOSIS PATIENTS. FACILITY: LAB. KHIMIOTER. INFEKTS. ZABOL., VSES. NAUCH.-ISSLED. KHIM FARM INST. IM. ORDZHONIKIDZE, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 547.341

KHARRASOVA, F. M., RAKHIMOVA, G. I., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical Technological Institute imeni S. M. Kirov

"The Action of Carbon Tetrachloride and Chloral on Some β-Chloroethyl Esters of Arylphosphonous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1930-1934

Abstract: The reaction of some arylphosphonous acid bis-β-chloroethyl esters with carbon tetrachloride and chloral was investigated, showing that with chloral the β-chloroethyl-β', β'-dichlorovinyl esters of arylphosphonous acids are obtained. The formation of β-chloroethyl esters of aryltrichloromethylphosphinous acids in the reaction of bis-β-chloroethylphosphonites with carbon tetrachloride is accompanied by the oxidation of these esters to arylphosphonates. The NMR ^{31}P spectra of the products obtained have been studied.

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USSR

UDC 547.341 3

NURTDINOV, S. KH., ISMAGILOVA, N. M., NAZAROV, V. S., ZYKOVA, T. V., SALAKHUTDINOV, R. A., SULTANOVA, R. B., and TSIVUNIN, V. S., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reaction of Aryl- and Diarylchlorophosphites With Cyclic Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, pp 1251-1254

Abstract: Phenyl- and diphenylchlorophosphites react with equimolar quantities of cyclohexanone and cyclopentanone upon heating to 130-150° for 17-20 hrs in a closed system, yielding the respective esters of cyclohexen-1-yl(cyclopenten-1-yl)phosphonic acids. The diphenyl ester of cyclohexen-1-ylphosphonic acid (I) reacts with phosphorus pentasulfide converting to the thiophosphonic acid derivative. Bromine adds across the double bond of (I) producing a dibromide which can be dehydrobrominated to diphenyl ester of 2,6-cyclohexadiene-1-ylphosphonic acid.

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USSR

UDC 547.241

KRASIL'NIKOVA, Ye. A., ZYKOVA, T. V., RAZUMOV, A. M., STARSHOV, I. M., ORLOVA, G. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Investigation of the Series of Phosphinic and Phosphinous Acid Derivatives. XC. Effect of the Structure of Alkyl Halide on the Reaction With Esters of Ethyl(Phenyl)dithiophosphonous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 8, Aug 73, pp 1701-1705

Abstract: The study included reactions of normal and branched alkyl halides with dipropyl esters of ethyl- and phenyldithiophosphonous acids. The normal alkyl halides react much faster in this reaction than the branched alkyl reagents. The reaction can be described by the equation $RP(SC_3H_7)_2 + R'Br \rightarrow RR'P(S)(SC_3H_7) + RR_2'P(S) + RP(S)(SC_3H_7)_2 +$

$$C_3H_7Br + R'SC_3H_7$$

as supported by NMR ^{31}P data. It was shown that changing from normal alkyl halides to the branched isomers increases the tendency of this reaction to occur via the sulfur atom rather than through the phosphorus atom.

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USSR

UDC 547.341 + 546.185'131

ISMAILOV, V. M., ZYKOVA, T. V., MOSKVA, V. V., NOVRUZOV, S. A., RAZUMOV, A. I., AKHMEDOV, SH. T., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov, and Azerbaydzhan State University Imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XVI. Schematic for the Phosphorylation of Alkylacetates With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, pp 1247-1250

Abstract: Reactions of phosphorus pentachloride with ethylacetate have been investigated using different reagent ratios. It has been established that the reaction products consist of β-chloro-β-ethoxyvinylphosphonic acid dichlorides and phosphonodichloroacetic acid trichlorides. The first step in this reaction is the replacement of the carbonyl oxygen atom with two chlorine atoms yielding α, α-dichloroethylalkyl ether, which upon dehydrochlorination yields α-chlorovinylalkyl ether. The latter reacts with PCl_5 yielding the final products. On the basis of NMR data, it has been shown that the β-chloro-β-ethoxyvinylphosphonic acid dichloride forms in two geometric isomers.

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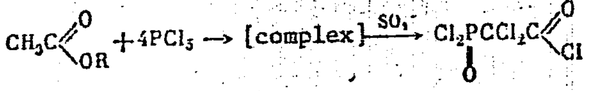
USSR UDC 547.241+546.185'131 (3)

ISMAILOV, V. M., MOSKVA, V. V., NOVRUZOV, S. A., RAZUMOV, A. I., AKHMEDOV, SH. T., ZYKOVA, T. V., and SALAKHUTDINOV, R. A.

"Interaction of Phosphorus Pentachloride with Alkyl Acetates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 212

Abstract: Under mild conditions (neutral solvent, 15-20°), the interaction of phosphorus pentachloride with alkyl acetates takes place with the formation of phosphorylation products, the nature of which depends on the reagent ratio. With a quadruple excess of phosphorus pentachloride, depending on the alkyl radical in the initial esters (R = Me, Et), the basic product can be the trichloranhydride of cihlorophosphonacetic acid (I)



$$CH_3C(O)OR + 4PCl_5 \rightarrow [\text{complex}] \xrightarrow{SO_2} Cl_2P(O)CCl_2C(O)Cl$$

I

With smaller amounts of phosphorus pentachloride, more complex mixtures of products of phosphorylation are formed in which the proportion of the pro-

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ISMAILOV, V. M., et al., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 212

duct (I) decreases with a decrease in the phosphorus pentachloride taken. This indicates that product (I) is the final product of the presented interaction. The experimental procedure for obtaining the product and infrared and other data confirming its structure are presented.

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USSR

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UDC 547.341 + 546.185'131

ISMAILOV, V. M., MOSKVA, V. V., BABAYEVA, T. A., RAZUMOV, A. I., AKHMEDOV, SH. T., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov, and Azerbaydzhan State University Imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XV. Reaction of Phosphorus Pentachloride With α,β-Dichlorovinyl Alkyl Ethers"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 5, May 73, pp 1011-1113

Abstract: It was shown that α,β-dichlorovinyl alkyl ethers react with phosphorus pentachloride in an inert solvent such as benzene or carbon tetrachloride at 0-5° forming a complex which after decomposition with hydrogensulfide yields α,β-dichloro-β-alkoxyvinylphosphonic or thiophosphonic acid dichlorides. The reaction is sensitive to temperature; increased temperature lowers the phosphorylation products and increases the byproducts. Analogous derivatives may be obtained by high temperature chlorination of β-alkoxyvinylphosphonic acid dichlorides.

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USSR

UDC 547.341.07

FRIDLAND, S. V., DMITRIYEVA, N. V., VIGALYUK, I. V., ZYKOVA, T. V., and SALAKHUTDINOV, R. A.

"Phosphorylation of Olefins With Phosphorus Trichloride in Presence of Perchloryl Fluoride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1494-1497

Abstract: The reaction of phosphorus trichloride with phenylacetylene, styrene, vinyl ethers, vinyl formate, and hexene-1 was studied in presence of perchloryl fluoride. Only hexene-1 yielded identifiable products: 2-chlorohexylphosphonic acid fluoridechloride and 2-chlorohexylphosphonic acid dichloride.

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USSR UDC 547.341:547.52/59,023

KHARRASOVA, F. M., ZYKOVA, T. V., SALAKHUTDINOV, R. A., and RAKHIMOVA, G. I.,
Kazan' Chemical Technological Institute imeni S. M. Kirov

"Data of ^{31}P NMR Spectroscopy of the Acid Chlorides and Esters of Some Arylphosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 12, Dec 73, pp 2642-2644

Abstract: The NMR ^{31}P spectra of the acid chlorides and esters of phenylphosphonic acid and its p-substituted derivatives were studied showing that the effect of conjugation between the aromatic nucleus and tetracoordinated phosphorus atom exceeds considerably the inductive effects. This leads to increased shielding of the phosphorus atom nucleus as compared to alkylphosphonic esters of analogous structures.

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(3)

USSR

UDC 547.241 + 546.185.131

MOSKVA, V. V., ISMAILOV, V. M., NOVRUZOV, S. A., RAZUMOV, A. I., ZYKOVA, T. V., AKHMEDOV, Sh. T., and SALAKHUTDINOV, R. A., Kazan' Chemical Technological Institute imeni S. M. Kirov and Azerbaydzhan State University imeni S. M. Kirov

"Phosphorylation of α,α-Dichlorodiethyl Ether With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 2085-2086

Abstract: The reaction of α,α-dichlorodiethyl ether with PCl_5 leads to the formation of a complex which upon decomposition yields dichlorophosphoneacetic acid trichloride, and β-chloro-β-ethoxyvinylphosphonic acid dichloride in two geometric isomers.

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USSR

UDC 547.26'118 + 546.185'131

MOSKVA, V. V., BASHIROVA, L. A., RAZUMOV, A. I., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reaction of Phosphorus Pentachloride With Aldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 677-678

Abstract: It has been shown that a prolonged mixing (5 days) of the acetaldehyde with phosphorus pentachloride in benzene solution at room temperature yields α-chloroalkylphosphoric acid dichloride, b.p. 53°/12 mm, d_4^{20} 1.4810, n_D^{20} 1.4570. Using chloral in an analogous reaction gives the dichloroanhydride of α,β,β,β-tetrachloroethylphosphonic acid, b.p. 107°/12 mm, d_4^{20} 1.7730, n_D^{20} 1.5006.

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USSR UDC 547.341.07

FRIDLAND, S. V., DMITRIYEVA, N. V., VIGALOK, I. V., ZYKOVA, T. V., and SALAKHUTDINOV, R. A.

"Phosphorylation of Olefines With Phosphorus Trichloride in Presence of Perchloryl Fluoride. I. Phosphorylation of Cyclohexene"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 572-577

Abstract: It has been shown that the reaction of phosphorus trichloride with cyclohexene in presence of perchloryl fluoride yields the fluorochloro- and dichloroanhydrides of 2-chlorocyclohexylphosphonic acid (I). The fluorochloro anhydride is a new compound with following properties: b.p. 72°/0.1 mm, d_4^{20}1.3693, n_D^{20} 1.5050. By means of alcohol esterification a series of esterfluoroanhydrides of (I) has been obtained. Dehydrochlorination of fluorochloro and of the dichloro anhydrides of (I) yields fluorochloro and dichloro anhydrides of cyclohexen-1-yl phosphonic acid which can be then converted to a series of esters. It has been shown that bromination of the chloro anhydride of 2-chlorocyclohexylfluorophosphonic acid occurs with a substitution of the hydrogen.

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(C4)

UDC 547.241

USSR

RAZUMOV, A. I., LIORBER, B. G., SOKOLOV, M. P., MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., CHEMODANOVA, L. A., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reactivity and Structures of Phosphorylated Carbonyl Compounds. XI. Study of the Aldol-Enol Equilibrium of Phosphorylated Aldehydes as a Function of Temperature"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 568-572

Abstract: The aldol-enol equilibrium of a series of alkyl substituted and non-substituted phosphorylated aldehydes has been investigated as a function of temperature using IR, NMR-^{1}H and NMR-^{31}P spectroscopical analyses. With increasing temperature the nonsubstituted compounds go from the trans-enol form through the aldol form into the cis-enol form. In case of the alkyl substituted phosphorylated aldehyde only the conversion from trans-enol form into the aldol form has been observed. Quantitative determination of the ratios of aldol to trans-enol form has been made.

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UDC 547.341

USSR

ZYKOVA, T. V., MOSKVA, V. V., RAZUMOV, A. I., NAZVANOVA, G. F., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XIV. Study of the Derivatives of Substituted Vinylphosphonic Acids by the NMR-spectroscopic Methods"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1913-1916

Abstract: Compounds of the type $RR'P(O)C(X) = CHOC_2H_5$ were studied by high resolution NMR^{31}P and ^{1}H method. The effects of individual atoms have been discussed and the geometric structures of the investigated compounds have been determined. In general, changes in chemical shifts of the phosphorus atom of various derivatives of vinylphosphonic acids are identical to the shifts observed with alkylphosphonic acids. The derivatives of β-alkoxyvinylphosphonic acids have the alkoxy group always in trans position with respect to the phosphorus atom.

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UDC 547.26'118 + 547.292.6

USSR

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., OSTANINA, L. P., SHAKIROV, I. Kh., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reaction of Dialkyl Chlorophosphites With Acetic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 12, Dec 72, pp 2634-2638

Abstract: It was shown that alpha-chloroethers formed in the reaction of dialkyl chlorophosphites with acetic acid acylals undergo secondary reactions with dialkyl chlorophosphites forming ester-acid chlorides of α-alkoxyethylphosphonic acids. It was shown by IR spectroscopy that the ester-acid chlorides of α-alkoxyethylphosphonic acids exist in two conformations resulting from different orientation of the polar bonds P:O and C-O: conformation A with parallel (cis) or nearly parallel (gauche) orientation of P:O and C-O, and the conformation B with the antiparallel trans orientation of these bonds. Purification methods were proposed for α-chloroethers and dialkyl chlorophosphites by treatment with catechol chlorophosphite and with acetyl chloride respectively to remove the acetal and trialkyl phosphite impurities.

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USSR

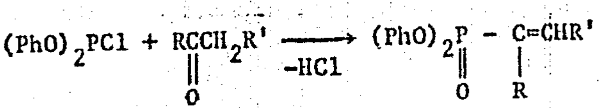
UDC 547.26'118

NURTDINOV, S. KH., KHAYRULLIN, R. S., TSIVUNIN, V. S., ZYKOVA, T. V., KAMAY, G. KH.

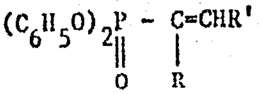
"Interaction of Diarylchlorophosphites with Saturated Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 123-125

Abstract: It was demonstrated earlier [S. Kh. Nurtidinov, et al., USSR Author's Certificate No 249386, Byull. Izobr., No 25, 1969; ZhOKh, No 40, 36, 1970; ZhOKh, No 40, 2377, 1970] that halogenophosphines react comparatively smoothly with saturated ketones with the formation of cyclic oxaphospholenes. As a continuation of this research, a study was made of the reaction of diphenylchlorophosphite with acetone, methylethyl, methylpropyl, methylbutylketone and acetophenone. The indicated components react with heating to 100-160° for 10-20 hours with the formation of the vinyl derivatives of pentavalent phosphorus:



$$(PhO)_2PCl + R\underset{\underset{O}{\|}}{C}CH_2R' \xrightarrow[-HCl]{} (PhO)_2\underset{\underset{O}{\|}}{P} - \underset{\underset{R}{|}}{C}{=}CHR'$$



$$(C_6H_5O)_2\underset{\underset{O}{\|}}{P} - \underset{\underset{R}{|}}{C}{=}CHR'$$

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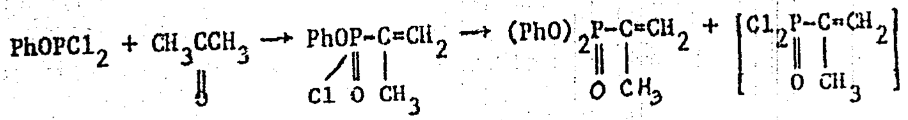
NURTDINOV, S. KH., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 123-125

The primary aryldichlorophosphites react with saturated ketones as follows:



$$PhOPCl_2 + CH_3\underset{\underset{O}{\|}}{C}CH_3 \rightarrow PhO\underset{Cl\ \underset{O}{\|}}{P}-\underset{CH_3}{\underset{|}{C}}=CH_2 \rightarrow (PhO)_2\underset{\underset{O}{\|}}{P}-\underset{CH_3}{\underset{|}{C}}=CH_2 + \left[Cl_2\underset{\underset{O}{\|}}{P}-\underset{CH_3}{\underset{|}{C}}=CH_2\right]$$

Infrared spectra are presented confirming the structure of the diphenyl esters of butene-g-ylphosphonic-1 acid and x-phenylvinylphosphonic acid. The paramagnetic resonance spectrum is presented for the diphenyl ester of propenylphosphonous-2 acid.

UDC 547.241

USSR

KRUTSKIY, L. N., ZYKOVA, T. V., SALAKHUTDINOV, R. A., TSIVUNIN, V. S., Kazan' Institute of Chemical Technology imeni S. M. Kirov; Kuzbass Polytechnical Institute

"reaction of Diethylaminoethylchlorophosphine with Allyl Iodide"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1493-1496

Abstract: Equimolar quantities of diethylaminoethylchlorophosphine and allyl iodide were mixed, and the resultant adduct was decomposed with hydrogen sulfide in ether. The solid adduct changed into a liquid (insoluble in ether) which was then dissolved with simultaneous formation of an ammonium salt. After removing the salt from the filtrate, ethylallylthiophosphonyl chloride was obtained, yield: 42%. Reaction of the acid chloride with alkoxides gives ethylallylthiophosphinates. Sulfur dioxide treatment of the adduct in ether produces a liquid which is insoluble in ether. The liquid dissolves upon hydrochlorination with simultaneous formation of diethylamine hydrochloride and liberation of elemental iodine. Ethylallylphosphonyl chloride heavily contaminated with iodine is isolated from the filtrate in 25% yield. Chemical shifts of a series of trivalent phosphorus chlorides are examined, and the π-contributions to the shielding constant of the phosphorus nucleus are calculated. The results of the study indicate an increase in the positive

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KRUTSKIY, L. N., et al., Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1493-1496

charge on the phosphorus atom and a reduction of donor properties with corresponding substitution of the alkyl radical by electronegative nitrogen and chlorine atoms.

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USSR UDC 547.26'118+547.29'26

GAZIZOV, M. B., SULTANOVA, D. B., OSTANINA, L. P., ZYKOVA, T. V., SALAKHUTDINOV, R. A., RAZUMOV, A. I., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Reaction of Monochlorophosphites With Acylals of Acetic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2167-2171

Abstract: The mechanism of the reactions of aromatic chlorophosphites with α-alkoxyalkyl acetates was studied by physicochemical analysis of the high-boiling fraction of the reaction products. Heating o-phenylene- or o-benzoylene chlorophosphites with α-ethoxyethyl acetate at 50° gave α-ethoxyethylphosphonates which were identified by their IR, ESR, and NMR spectra. Analogous reactions of the cited cyclic chlorophosphites with α-chloroethyl ether or diethyl acetal gave the same products with a phosphonate structure. Thus, the cited reactions proceed by a stepwide mechanism leading to formation of phosphonate and not a phosphite structure. The reaction mechanism involving an intercyclic

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GAZIZOV, M. B., et al, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2167-2171

electron transfer is outlined. Analysis of the ESR spectrum of one of the products, 2-(α-ethoxyethyl)-2,4-dioxobenzo-1,3,2-dioxaphosphorene, revealed the existence of two stable conformational isomers of the compound, which differ in orientation of methyl protons in relation to the benzene ring and the oxygen of the carbonyl. The ESR spectra of the two compounds are shown and their physical constants are tabulated.

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USSR UDC 547.241

NURTDINOV, S. KH., KHAYRULLIN, R. S., BURMAKINA, T. V., ~~ZYKOVA, T. V.~~,
SALAKHUTDINOV, R. A., TSIVUNIN, V. S., and KAMAY, G. KH. (DECEASED), Kazan'
Institute of Chemical Technology

"Reaction of Aryldichlorophosphines with Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1685-1688

Abstract: Continuing their study of the condensation of primary chlorophosphines with ketones, the authors investigated the reaction of phenyl- and tolyldichlorophosphine with saturated ketones. It was found that these components react on heating for 10-20 hours at 90-130° to give cyclic oxaphospholenes, which react with alcohols to give corresponding esters of aryl-γ-ketophosphinic acids. IR, NMR, and PMR spectroscopy methods were used to study the mechanism of the interaction of aryldichlorophosphines with ketones. The results confirm that at one of the stages of the reaction γ-ketophosphinic acid chlorides are formed.

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UDC 547.476.053

USSR

NURTDINOV, S. Kh., ISMAGILOVA, N. M., ZYKOVA, T. V., SALAKHUDINOV, R. A., TSIVUNIN, V. S., and KAMAY, G. Kh., Kazan' Chemico-Technological Institute imeni S. M. Kirov

"Reaction of Alkyldichlorophosphines With Chlorides of Carboxylic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,486-2,490

Abstract: The reactions of phosphines and other phosphorus derivatives with various acids and acid derivatives have been studied, but no information on alkyldichlorophosphines has thus far been published. The authors studied six members of this group in reactions with acyl chlorides of carboxylic acids. Products in the case of acetyl and benzoyl chlorides, following treatment with the adducts with alcohols, consisted of the esters of the alkylketophosphinic acids; in the case of di- and trichloracetyl chlorides, they consisted of vinyl esters of pentavalent phosphorus acids. Procedural details of tests and physical constants of end-products are given.

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USSR

UDC 547.341

MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., RAZUMOV, A. I., and SALAKHUTDINOV, R. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XII. nmr Spectra of P^{31} and H^1 in Substituted Vinylthionophosphonic and Vinylthionophosphonous Acid Dichlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 314-317

Abstract: The acid dichlorides of β-ethoxyvinyl- and 1-ethoxy-1-buten-2-ylthionophosphonic acids were subjected to reductive desulfurization by tributylphosphine to produce the corresponding phosphonous acid dichlorides. Addition of sulfur to these acid dichlorides gives pure substituted vinylthionophosphonic acid chlorides suitable for spectral studies. The nmr spectra of the P^{31} and H^1 in the given substituted vinylphosphonous and vinylthionophosphonic acid dichlorides were studied. The geometric structure of the compounds is determined from nmr data, and the mutual influence of the tri- and tetracoordination atom of phosphorus with the substituents is discussed.

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USSR

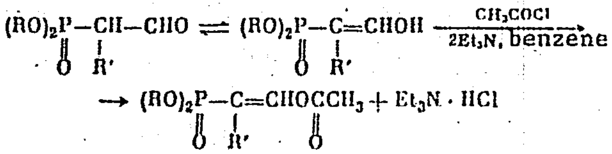
UDC 547.341

MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., RAZUMOV, A. I., REMIZOV, A. B., and SALAKHUTDINOV, R. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XII. Acylation of Phosphorylated Aldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 498-501

Abstract: In an attempt to prove keto-enol equilibrium in phosphorylated aldehydes by chemical methods, the authors studied the aldehyde acylation with acetyl chloride in benzene in the presence of triethyl amine, resulting in the synthesis of α-alkyl-β-acyloxyvinylphosphonates from α-phosphorylated propionaldehyde and butyraldehyde.



$$\underset{\substack{\| \\ O}}{(RO)_2P}-\underset{\substack{| \\ R'}}{CH}-CHO \rightleftharpoons \underset{\substack{\| \\ O}}{(RO)_2P}-\underset{\substack{| \\ R'}}{C}=CHOH \xrightarrow[2Et_3N,\ \text{benzene}]{CH_3COCl} \underset{\substack{\| \\ O}}{(RO)_2P}-\underset{\substack{| \\ R'}}{C}=CHO\underset{\substack{\| \\ O}}{C}CH_3 + Et_3N \cdot HCl$$

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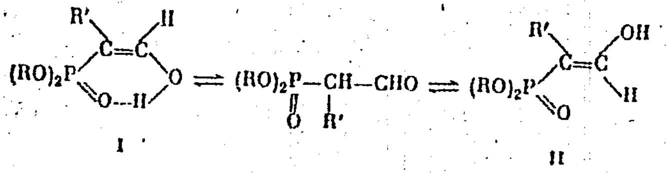
MOSKVA, V. V., et al., Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 498-501

It was found that keto-enol equilibrium with a high concentration of the cis-enol form (I) stabilized by the hydrogen bond between the phosphoryl oxygen and the enol hydroxyl is typical of the starting phosphorylated aldehydes. Spectral data gave no direct proof of the presence of the trans-enol form (II) in the mixture, thus it is only assumed to be present, but in low concentration.



In the products of acylation, nmr spectra show that the phosphorus atom and the alkoxy group are in trans-position relative to the double bond. Since only acylation of the trans-enol form (II) could yield products of such structure, this constitutes chemical proof of its presence. Spectral analysis shows rotational isomerism in α-alkyl-β-acyloxyvinyl phosphonates.

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USSR

UDC 547.341

FRIDLAND, S. V., CHIRKUNOVA, S. K., ZYKOVA, T. V.

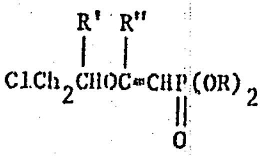
"Interaction of Phosphorus Pentachloride with 1,3-dioxocyclopentanes. III"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 117-120

Abstract: The interaction of phosphorus pentachloride with 2-methyl-1,3-dioxolanes leads to the synthesis of acid dichlorides of β-(β-chloraloxy)vinylphosphonic acids [S. V. Fridland, et al., ZhOKh, No 41, 554, 1971]. This reaction was studied further to discover the laws of its occurrence. It was demonstrated that 1,3-dioxolanes substituted in position 2 enter into an interaction with phosphorus pentachloride with the formation of the acid dichlorides of the corresponding phosphonic acids. The properties of the compounds with the general formulas

$\mathrm{ClCh_2}\underset{R}{\mathrm{CH}}\mathrm{O}\underset{R'}{\mathrm{C}}\mathrm{{=}CHP(O)Cl_2}$

and



$\mathrm{ClCh_2}\overset{R'}{\mathrm{CH}}\mathrm{O}\overset{R''}{\mathrm{C}}\mathrm{{=}CH}\underset{\underset{O}{\|}}{\mathrm{P}}\mathrm{(OR)_2}$

are tabulated.

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USSR

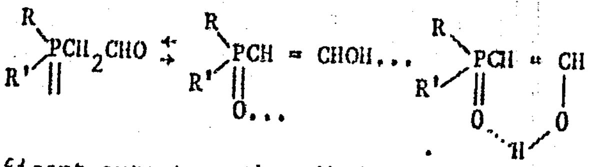
UDC 547.241

RAZUMOV, A. I., SOKOLOV, M. P., ZYKOVA, T. V., LIORBER, B. G., SAVICHEVA, G. A., SALAKHUTDINOV, R. A.

"Reactivity and Structure of Phosphorylated Carbonyl Compounds. IX. Ketoenol Equilibrium of Phosphorylated Acetaldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 47-51

Abstract: Tautomeric conversions of dialkoxyphosphonyl and arylalkoxyphosphinyl acetaldehydes have been described previously (A. I. Razumov, et al., ZhOKh, No 41, 1954, 1971; No 41, 2164, 71]. The study of alkylalkoxyphosphinyl acetaldehydes from this point of view is a logical development of this pervious work. The methods of infrared and nuclear magnetic resonance ^1H and ^{31}P spectroscopy has been used to show that the ketoenol equilibrium of phosphorylated acetaldehydes



depends to a significant extent on the alkalinity of the P=O radical, spatial

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RAZUMOV, A. I., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 47-51

effects and the effects of solvents. The calculated ketoenol equilibrium constants of both the undeveloped substances and 20, 10 and 5 percent molar solutions of them in carbon tetrachloride and the free energy ΔF are tabulated. In the aliphatic series, with an increase in the alkalinity, successive shifting of the equilibrium toward the enol form is observed. The values of ΔF found correlate satisfactorily with the Kabachnik constants [T. A. Mastryukova, M. I. Kabachnik, Usp. khim., No 38, 1751, 1969]. On dissolving the investigated substances in carbon tetrachloride (20, 10 and 5% molar solutions) a gradual shift in the aldo direction takes place.

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USSR

UDC 547.341

RAZUMOV, A. I., MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V.

"Derivatives of Substituted Vinylphosphonic Acids. XI. Deuterated Substituted Vinylphosphonates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 51-53

Abstract: For more complete proof of the structure of phosphorylated ketene acetals and the proposed interaction scheme [V. V. Moskva, et al., ZhOKH, No 41, 1495, 1971] including dehydrohalogenation of phosphonate with subsequent addition of alcohol to the alkoxyethinylphosphonate formed, acetaldehyde dimethyl-d_6-acetal was phosphorylated by phosphorus pentachloride to obtain the deuterated dichloroanhydride of β-methoxy-d_3-vinylphosphonic acid which was converted to the acid dichloride of α-bromo-β-methoxy-d_3-vinylphosphonic acid by bromination. The interaction of α-bromo-β-methoxy-d_3-vinylphosphonate with sodium methylate-d_3 leads to the formation of deuterated phosphonoketene acetal. Paramagnetic resonance spectra are presented confirming the scheme for the given reaction and the structure of all the mentioned products. The successive conversion scheme is represented as follows:

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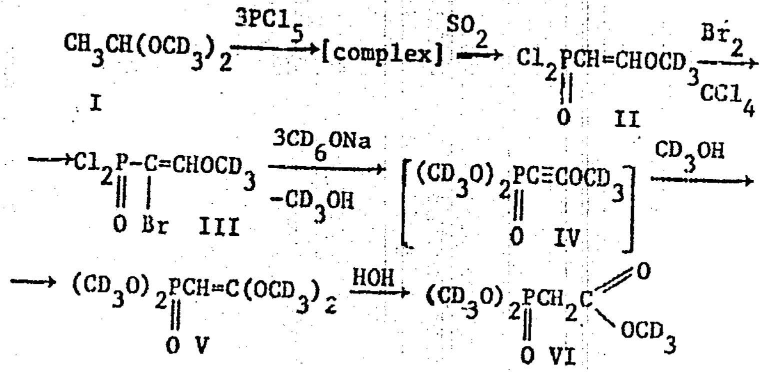
RAZUMOV, A. I., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 51-53



$$\underset{I}{CH_3CH(OCD_3)_2} \xrightarrow{3PCl_5} [complex] \xrightarrow{SO_2} \underset{II}{Cl_2\underset{\substack{\|\\ O}}{P}CH{=}CHOCD_3} \xrightarrow[CCl_4]{Br_2}$$

$$\longrightarrow \underset{III}{Cl_2\underset{\substack{\|\\ O}}{P}-\underset{\substack{|\\ Br}}{C}{=}CHOCD_3} \xrightarrow[-CD_3OH]{3CD_6ONa} \left[\underset{IV}{(CD_3O)_2\underset{\substack{\|\\ O}}{P}C{\equiv}COCD_3}\right] \xrightarrow{CD_3OH}$$

$$\longrightarrow \underset{V}{(CD_3O)_2\underset{\substack{\|\\ O}}{P}CH{=}C(OCD_3)_2} \xrightarrow{HOH} \underset{VI}{(CD_3O)_2\underset{\substack{\|\\ O}}{P}CH_2C(=O)OCD_3}$$

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USSR

UDC 547.241

RAZUMOV, A. I., SAVICHEVA, G. A., ZYKOVA, T. V., SOKOLOV, M. P., SMIRNOVA, G. G., LIORBER, B. G., SALAKHUTDINOV, R. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Reactivity and Structure of Phosphorylated Carbonyl Compounds. 8. NMR and IR Spectra of Arylalkoxyphosphinylacetaldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2164-2167

Abstract: In a continuation of the previous study of dialkoxyphosphorylacetaldehydes, tautomerism in alkoxyarylphosphorylacetaldehydes (I) was studied on the theory that an aryl substituent at the P atom may affect the aldol-enol equilibrium. Measurements of the P-31 chemical shift in compounds I hinted at a shift in equilibrium toward the enol form. This was confirmed by NMR spectra of 20% I solutions in carbon tetrachloride: the NMR band of α-ethylenic proton revealed the presence of the enol form. The IR spectra of nondiluted I compounds indicated simultaneous existence of two enol forms: B with intermolecular and

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RAZUMOV, A. I., et al, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2164-2167

C with strong intramolecular hydrogen bonds in addition to aldol form. The IR spectra of 5-20% I solutions in carbon tetrachloride reflected a sequential shift toward the aldol form with increasing dilution, so that practically only the aldol form existed in the 5% solutions. The IR spectral data showed that in triethylamine solutions of I, in contrast to carbon tetrachloride solutions, the equilibrium shifts toward the B chelated enol form which incorporates triethylamine.

USSR

UDC 547.241.284

NURTDINOV, S. KH., KHAYRULLIN, R. S., ZYKOVA, T. V., TSIVUNIN, V. S., KAMAY, G. KH. (deceased), Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Reaction of Diethylchlorophosphine With Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2158-2162

Abstract: Continuing their studies of chlorophosphine reactions with saturated ketones, the authors synthesized a series of tertiary phosphine oxides by heating (at 100-110°) chlorodiethylphosphine with aliphatic ketones or acetophenone. The chemical structure of the products was confirmed by their IR and NMR spectra and conversion to some other compounds. α-Chloroisopropyldiethylphosphine oxide when treated with alcoholic alkali or acetic anhydride yielded diethylisopropenylphosphine oxide or α-acetoxyisopropyldiethylphosphine oxide. Diethyl-α-phenylvinylphosphine oxide with alcoholic alkali gave sodium dialkylphosphinate. The elemental analysis data and physical constants of the synthesized compounds are given.

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USSR

UDC 547.341

MOSKVA, V. V., ISMAILOV, V. M., ZYKOVA, T. V., and TAZUMOV, A. I., Kazan'
Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. IX. Study of the Possibility of Thione-thiol Isomerization of β-Alkcxyvinylthiophosphonic Acid Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1676-1679

Abstract: In an earlier article the authors reported that they found no thione-thiol isomerization in the synthesis of β-alkoxyvinylthionophosphonic acid esters. The present article gives additional data, on the basis of which a thione structure is assigned to the synthesized esters. The possibility of thione-thiol isomerization was studied in the esters themselves, as well as products of their subsequent conversions. For this purpose the diethyl ester of β-ethoxyvinylthionophosphonic acid was compared with its thiol isomer the O,S-diethyl ester of β-ethoxyvinylphosphonic acid, obtained by parallel synthesis. The conversion products of these esters were also compared. The results, as well as IR and NMR spectral and thin-layer chromatography data confirm the resistance of the reaction products to thione-thiol isomerization, at least under the conditions of their synthesis and identification.

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USSR

UDC 547.341

MOSKVA, V. V., RAZUMOV, A. I., SAZONOVA, Z. YA., and [redacted], Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Reaction of Phosphonoacetic Aldehydes with Secondary Amines"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, p 1874

Abstract: The reaction of phosphonoacetaldehydes with secondary amines in toluene in the presence of catalytic quantities of p-toluenesulfonic acid gives β-dialkylaminovinylphosphonates (phosphorylated enamines) in good yields. The structure of the phosphorylated enamines is confirmed by IR and PMR spectral data.

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USSR

UDC 547.341+547.26'118

MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., RAZUMOV, A. I., and CHEMODANOVA, L. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. X. α-Alkyl-β-alkoxyvinylphosphonic and -thiophosphonic Acid Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1680-1684

Abstract: For purpose of a more complete study of α-alkyl-β-alkoxyvinylphosphonic and -thiophosphonic acid derivatives, dialkyl esters of these acids were synthesized by the reaction of their dichlorides with alcohols in the presence of triethylamine or with alkoxides. Hydrolysis of the esters of α-alkyl-β-alkoxyvinylphosphonic and -thiophosphonic acids (7 percent HCl, 80°, 3 hours) gives corresponding phosphorylated aldehydes, which were identified from elemental analysis, by IR and NMR spectra, as well as in the form of their 2,4-dinitrophenylhydrazones. IR and NMR spectroscopy data indicate the presence of keto-enol tautomerism in the aldehydes.

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USSR

UDC 547.341+547.381

MOSKVA, V. V., BASHIROVA, L. A., ZYKOVA, T. V., and RAZUMOV, A. I.

"Reaction of Phosphorus Pentachloride With Acrolein Acetals"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, p 2764

Abstract: The unsymmetrical double bond and acetal group, and the two reaction centers of acrolein acetal (I), can be phosphorylated with phosphorus pentachloride. The reaction is assumed to begin with replacement of the alkoxy group by a halogen, to form the α-chlorallyl ethyl ether (II), which may be either directly phosphorylated by the phosphorus pentachloride, or else isomerized γ-chloro-α-propenyl ethyl ether (III). Owing to some polarization of the double bond in (II) and (III), electrophilic attack is directed in both cases to the β-carbon atom with formation of a single complex, decomposition of which with gaseous sulfur dioxide leads to formation of α-chloromethyl-β-ethoxyvinylphosphonic acid dichloride (V).

Heating of (I) in 80 ml of benzene at 8-10° for 1 hr, followed by addition of phosphorus pentachloride, heating to room temperature, agitation at 30° for 12 hr, decomposition by gaseous sulfur dioxide and finally removal of solvent and volatile products, yielded 65.6% of $C_5H_8Cl_3O_2P$.

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USSR

UDC 547.341

RAZUMOV, A. I., LIORBER, B. G., SOKOLOV, M. P., and ZYKOVA, T. V., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Reaction of Phosphorylated Acetaldehydes With Allyl Phosphonous Acid Diamides"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2106-2107

Abstract: Studies on the conversion of phosphorylated aldehydes indicate that in reactions with allyl phosphonous acid diamides they yield enamines. It is assumed that the reaction passes through the enolic form since the presence of basic agents (in this case allyl phosphinous acid diamides) moves the keto-enol equilibrium of the phosphorylated acetaldehydes toward the enol forms. The structure of the synthesized compounds is supported by both IR and PMR spectra. They show absorption bands at 1616 cm^{-1} ($\nu C=C$), 1227 cm^{-1} ($\nu P=O$), 1170 and 1030 cm^{-1} ($\nu P-O-C_2H_5$). The NMR spectra show peaks for CH_3, CH_2 and OCH_2.

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USSR

UDC 547.241+547.26'118

RAZUMOV, A. I., SAVICHEVA, G. A., ZYKOVA, T. V., SOKOLOV, M. P., LIORBER, B. G., and SALAKHUTDINOV, R. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Reactivity and Structure of Phosphorylated Carbonyl Compounds. Part VII. NMR and IR Spectra of Dialkoxyphosphonylacetaldehydes"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1954-1957

Abstract: The considerable value of phosphorylated carbonyl compounds lies in the fact that they, like β-carbonyl compounds, exhibit keto-enolic tautomerism. The application of polarography and IR spectroscopy (in earlier studies) indicates that some β-phosphorylated aldehydes are mixtures of keto- and cis-enolic forms whose equilibrium depends on both the solvents and the pH of the aqueous solutions. This paper reports on tautomeric transformations of diethoxy- (I) and diisopropoxyphosphonylacetaldehydes (II) using NMR and IR spectroscopy. The tautomerism of both compounds was studied from the NMR spectra of (I) and its 5, 10 and 20% solutions in carbon tetrachloride, 30 and 50% solutions in triethylamine and from the NMR spectra of aldehyde (II) and its 10% solution in triethylamine at 20°C.

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RAZUMOV, A. I., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1954-1957

Readings of the NMR spectra were made on a YaMR-5535 spectrometer, the P31 NMR spectra were read on the RYa-2303 spectrometer and the IR spectra were read on UR-10 and UR-20 units. Both NMR and IR spectra indicate that dialkoxyphosphenylacetaldehydes and their solutions in CCl_4 are an aldo-form with a small admixture of the enolic structure. In triethylamine, the chelated enolic structure is predominant.

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USSR

UDC: 547.341

FRIDLAND, S. V., ZYKOVA, T. V., CHIRKUNOVA, S. K., KATAYEVA, V. A. and KAMAY, G. Kh. (deceased), Kazan Chemical-Technological Institute imeni S. M. Kirov

"Reaction of Phosphorus Pentachloride with 2-Methyl-1,3-dioxycyclopentanes. II"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1041-1044

Abstract: On the basis of NMR spectra, it was established that the reactions of phosphorus pentachloride with 2-methyldioxolan, 2,4-dimethyl-dioxolan and β-chloroethylvinyl ether are stereospecific. The acid dichloride of β-(β-chloroalkoxy)vinylphosphonic acid is formed only as the trans-isomer. This acid dichloride was further treated with alcohols to form a series of esters, the physical constants of which are presented in the article.

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USSR

UDC: 547.341

MOSKVA, V. V., ZYKOVA, T. V., ISMAILOV, V. M., and RAZUMOV, A. I., Kazan Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. IV. Geometric Isomerism in Substituted Vinylphosphonic Acid Dichlorides with One Proton at the Double Bond"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Jan 71, pp 93-95

Abstract: Using the NMR method, the authors studied the acid dichlorides of substituted vinylphosphonic acids containing a proton at the double bond in the α- or β-position, viz. α-chloro-β-ethoxyvinylphosphonic, α-bromo-β-ethoxyvinylphosphonic, α-bromo-β-ethoxyvinylthiophosphonic, β-chloro-β-ethoxyvinyl phosphonic and β-methoxy-α-propenylphosphonic acids. Their geometric structure is assigned on the basis of the NMR spectra.

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USSR

UDC 547.341

MOSKVA, V. V., ISMAILOV, V. M., ZYKOVA, T. V., and RAZUMOV, A. I., Kazan Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. V. Alcoholysis of Substituted Vinylphosphonic and -thiophosphonic Acid Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Kan 71, pp 96-99

Abstract: The action of alcohols on α-halo-β-alkoxyvinylphosphonic and -thiophosphonic acid dichlorides in the presence or absence of a tertiary amine results in the formation of dialkyl esters of these acids. Alcoholysis of α-chloro-β-alkoxyvinylphosphonic acid dichlorides in excess ethanol gives the corresponding full esters, in which the position of substituents at the double bond is retained. Alcoholysis of β-chloro-β-ethoxyvinylphosphonic acid dichloride with excess ethanol gives the ethyl ester of diethylphosphonoacetic acid. The structure of the resultant compounds was proposed on the basis of IR and PMR spectra.

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USSR

UDC 543.422.25:546.19

ZYKOVA, T. V., KAMAY, GIL'M (deceased), CHERNOKAL'SKII, E. D., SALAKHUTDINOV, R. A. and ABALONIN, B. Ye., Kazan Chemical-Technological Institute imeni S. M. Kirov

"PMR Spectra and Structures of Arsonium Salts"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1044-1047

Abstract: PMR spectrum analysis was used to study the structures of alkylarsonium salts. The chemical shifts as caused by the nature of the arsenic atom environment, an anion, and the nature of the solvent and the concentration of the salts were examined. Thus, a change in the magnitude of the chemical shift of the methyl or methylene groups at the arsenic atom increases the positive charge on the latter in arsonium salts under the action of iodine, the phenyl group, and the possibility of the salt to ionize.

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USSR

UDC 547.241

RAZUMOV, A. I., LIORBER, B. G., ZYKOVA, T. V., BAMBUSHEK, I. YA., Kazan' Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"Studies in the Series of Phosphinous and Phosphinic Acids. LXXIV. Intermediate Products of Arbuzov's Rearrangement of the Esters of Monoalkylphosphinous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 2009-2010

Abstract: In the reaction of methyl iodide with saturated monoalkylphosphinous esters having branched alkoxyl groups, intermediate products may be isolated provided the reaction is carried out at a cold temperature. These compounds are colorless crystalline materials which can be stored for prolonged periods in cold. They are soluble to a limited extent in benzene and more soluble in chloroform and methylene chloride. At room temperature or on heating they decompose according to the second phase of the Arbuzov rearrangement, forming esters of alkylmethylphosphinic acids. According to the data from NMR spectroscopy these intermediate products exist in the ionized form in both polar and nonpolar solvents.

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USSR

UDC 538.27:547.341

RAZUMOV, A. I., LIORBER, B. G., ZYKOVA, T. V., BAMBUSHEK, I. YA., Kazan' Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"Studies of the Derivatives of Phosphinic and Phosphinous Acids. LXVI. The Problem of Interaction Between the Double Bond and the Phosphorus Atom in Allylphosphinates and Phosphonites"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1704-1707

Abstract: As a continuation of earlier studies, the previously synthesized derivatives of allylphosphinous- and -phosphinic acids were subjected to NMR spectroscopic analysis and compared with propyl analogues. It was determined that for all pairs examined the chemical shift of the phosphorus nucleus in the allyl derivatives was higher than in propyl analogues. Introduction of another allyl group resulted in a further shift of δ_p towards the stronger field. Since the symmetry around the phosphorus atom was retained, the effect observed was due exclusively to the double bond introduced. Evidently the π-electrons of the C:C bonds interacted with

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RAZUMOV, A. I., et al, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1704-1707

free phosphorus electrons from the d-orbitals, thus increasing its electron density. This was accompanied by delocalization of the electron cloud in the allyl radical, and the C:C bond electrons affect the d-orbitals.

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UDC 547.242

ABALONIN, B. YE. CHERNOKAL'SKIY, B. D., SHAGIDULLIN, R. R., IZOSIMOVA, S. V., ZYKOVA, T. V., KAMAY GIL'M (DECEASED), Kazan' Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR, and Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"The Products of the Reaction of Arsinous Acid Esters With Alkyl Halides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1812-1817

Abstract: The reactions were carried out by one of two methods: a) ethyl ether of diethylarsinous acid and ethyl iodide were kept in an ampule under CO_2 atmosphere for 120 hours at room temperature, the precipitated tetraethylarsonium iodide was recrystallized from an etheralcohol mixture and showed a m.p. of 291°; or b) the same mixture was heated to 100° for 2 hours in an ampule under CO_2 atmosphere, yielding the same product. By these reactions other alkyl halides reacted with esters of dialkyl- and phenylalkylar-

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USSR

ABALONIN, B. YE., et al, Zhurnal Obshchey Khimii, Vol 40, No 8,
Aug 70, pp 1812-1817

sinous acids. Examination of the products by means of IR and PMR spectroscopy showed that no alkoxy groups are present in these products. It was determined that in the above reactions only the tetraalkyl- and trialkylphenylarsonium salts are formed. Tetraethyl arsonium iodide reacted with magnesium perchlorate underwent an exchange reaction yielding tetraethylarsonium perchlorate m.p. 291°.

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USSR

UDC: 547.241

NURTDINOV, S. Kh., KHAYRULLIN, R. S., TSIVUNIN, V. S., ZYKOVA, T. V., NURTDINOV, G. Kh., KAMAY, G. Kh. (deceased), Kazan' Institute of Chemical Technology imeni S. M. Kirov

"On the Interaction of Chlorides of Trivalent Phosphorus With Saturated Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 40 (102), No 11, Nov 70, pp 2377-2382

Abstract: The authors studied reactions of phosphorus trichloride, ethyldichlorophosphine and phenyldichlorophosphine with acetone, methylethylketone, acetophenone and methylbutylketone. It was found that all of these components react smoothly with heating to 90-170°C for 16-20 hours. The reaction products in most instances were purified by vacuum distillation, resulting in colorless liquids with a slight characteristic odor. In the case of acetophenone, the products were isolated by recrystallization from alcohols. Infrared and paramagnetic resonance spectroscopic studies were used to determine the reaction mechanism for chlorides of trivalent phosphorus with ketones. Some of the properties of the resultant cyclic oxaphospholenes are tabulated.

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Acc. Nr: AP0053450 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR0366

110714e **Structure of products of the alkaline alkylation of aliphatic aldoximes.** Kamai, G.; Nikolaeva, A. D.; Perekhod'ko, V. S.; Zykova, T. V. (Kazan. Khim.-Tekhnol. Inst. im. Kirova, Kazan, USSR). *Zh. Org. Khim.* 1970, 6(2), 394-5 (Russ). The basic alkylation of RCH:NOH gave RCH:NOR^1 (syn- and anti-forms by NMR spectroscopy) and the anti-form of RCH:N(O)R^1.

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USSR

FRIDLAND, S. V., CHIRKUNOVA, S. K., and ZYKOVA, T. V.

UDC 547.341

"Interaction of Phosphorus Pentachloride with Some 1,3-dioxolanes. V"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 51-54

Abstract: A study was made of the interaction of phosphorus pentachloride with 2-methyl-4-chloromethyl-1,3-dioxolane in which a 2-step process of the reaction was discovered. A series of esters of β-(bischloromethylmethoxy)vinylphosphonic acid and β-(α-chloromethylvinyloxy)vinylphosphonic acid were synthesized. The esters obtained were subjected to alkaline dehydroxychloridation which was achieved by an alcohol solution of alkali. In the infrared spectra of the dehydroxychlorided esters, two bands were observed in the absorption band of the valence oscillations of the C=C bonds at 1610 and 1621 cm^{-1}.

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USSR

UDC: 621.385.001.5

ZYKOVA, Ye. G., KUCHERENKO, Ye. T., YUDINSKAYA, I. V.

"Operation of Pressed Cathodes in Helium-Neon Lasers"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 115-117

Abstract: The operation of pressed cathodes based on barium scandate and refractory metal was studied in OKG-11 helium-neon lasers. A comprehensive investigation was made of the variation in gas composition, electron temperature in the discharge plasma, and cathode emission during the service life of the device. It is shown that conditions for laser emission remain unchanged over a period of 1600 hours of operation. In this connection, the cathode can operate at a temperature approximately 100°C lower than what is considered nominal under vacuum conditions (1070°C [brightness temperature]). Two illustrations bibliography of six titles.

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Refractory Materials

USSR

UDC 666.76:620.1

BLUVSHTEYN, M. N. (deceased), ZYKOVA, Z. K. (All-Union Institute of Refractories), DAUKNIS, V. A., PERAS, A. Ya., YURENAS, V. L., YANULYAVICYUS, A. I. (Institute for Physical and Technical Problems of Power Engineering, Academy of Sciences Lithuanian SSR), and RABINOVICH, M. A. (Snigirevskiy Plant of Refractory Articles)

"Strength of Ultralight-Weight Refractories"

Moscow, Ogneupory, No 2, June 72, pp 43-47

Abstract: The Institute for Physical and Technical Problems, Academy of Sciences Lithuanian SSR has designed, built, and adapted for practical application an LV-1 set-up for testing the tensile, compressive, and bending strength of ultralight-weight refractories at temperatures up to 1200°C. A BV-662 inductance pickup is used for both measuring and recording the deformation values for the latter two types of stress tests. The test materials were ShLB-0,4 and ShLB-0,6 ultralight-weight refractory bricks. Curves are shown to illustrate the strength values of the bricks as a function of temperature and apparent density. There is only a slight variance in strength values up to 700-800°C. At 900°C there is a marked increase in strength for all types of load tests. At 1000-1100°C and higher

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BLUVSHTEYN, M. N., et al, Ogneupory, No 2, June 72, pp 43-47

the refractories begin to soften and change to viscoelastic state. The strength drops with an increase in temperature. (7 illustrations, 7 bibliographic references)

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USSR

UDC 539.293.011.75

VLASENKO, V.A., ZYN'KO, S.A., PUKHLIY, ZH. A.

"Change Of Color Of The Glow Of Film Electroluminescent Devices With Use Of Interference Radiation"

Poluprovodn. tekhn. i mikroelektronika. Resp. mezhved. sb. (Semiconductor Technology And Microelectronics. Republic Interdepartmental Collection), 1970, No 4, pp 33-38 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8B251)

Translation: A new method is proposed for change of the color of the glow of film electroluminescent devices, which is based on the use of interference radiation. The method is tested on elements [yacheyka] on the base of a ZnS.Mn film with highly reflecting metal electrodes (of Au, Al). In such elements it is possible to obtain different colors from the green (λ_{max} = 555 nm) to the red (λ_{max} = 645 nm) by a change of the luminophor thickness. A change of the angle of observation (above 30°) causes an analogous effect. During this the luminance level of the electroluminescence is sufficient for practical use of the effect. A method is proposed to make it possible to obtain multicolor electroluminescent devices (mnemo circuits, character indicators, and others) on one substrate with the aid of a single technological process. 5 ill. 1 tab. 4 ref. Summary.

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