

USSR

UDC 542.953:661.713.1

IVANOV, B. YE., KUDRYAVTSEVA, L. A., ZYABLIKOVA, T. A., BYKOVA, T. G., and GOL'DFARB, E. I., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov of the Academy of Sciences USSR

"Condensation of Diethylphosphorous Acid with Formaldehyde and Triethyl Phosphite"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp 1497-1502

Abstract: Condensation was carried out in the ternary system triethyl phosphite (TEP)-formaldehyde-diethylphosphorous acid (DEP). The formation of the product, diethyl ester of ethylphosphonic acid (I), results from the partial isomerization of triethyl phosphite in the presence of diethylphosphorous acid. Other products formed included: diethyl ester of alpha-hydroxymethylphosphonic acid, diethylphosponomethyl diethyl phosphite, bis-(diethylphosphone) methyl ester, 2,5-dioxa-2,5-dihydroxy-1,4,2,5-dioxadiphospholenane, and a product with the gross formula $C_8H_{20}O_6P_2$. The latter is probably a mixture of esters of hypophosphoric and isohypophosphoric acids. The structure of each product was proven by chemical and physical methods. These included nuclear magnetic

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IVANOV, B. Ye, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7,
1971, pp 1497-1502

resonance spectra, melting-point tests, and infrared spectra. Different quantitative ratios of the ternary system components were combined to provide data for the corresponding multi-product yield percentages for each ternary component ratio used.

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UDC 542.91 + 661.718.1

IVANOV, B. Ye., and KUDRYAVTSEVA, I. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbutov, Academy of Sciences USSR

"Phosphorusmethylation of Acetoacetic Ester and Acetylacetone"

Moscow, Izvestiya Akademii Nauk, SSSR, Seriya Khimicheskaya, No 1, Jan 71, pp 125-131

Abstract: Acetoacetic ester reacts with trialkyl phosphites and formaldehyde or furfural by the usual phosphorusmethylation yielding 2-acetyl-2-carbalcoxyethylphosphonic acid esters. The reaction is carried out over several hours at 140-200°C, ethanol being distilled. Tetraline or excess triethyl phosphite are used as solvents. When acetoacetic ester reacted with triethyl phosphite and benzaldehyde propionaldehyde or butyraldehyde, the expected 1-alkyl (aryl) 2-acetyl-2-carbalcoxyphosphonic acid esters (I) were not isolated, instead the products obtained were 2-keto-2-ethoxy-3-alkyl(aryl)-4-carboethoxy-5-methyl-1-keto-2-phospholenes-4 and 1-alkyl-2-acetyloxyethylphosphonic acid esters. Obviously (I) are thermally unstable. Condensation carried out in the ternary system triethyl phosphite-formaldehyde-acetylacetone yields esters of 2-acetyl-ethylphosphonic acids in addition to the normal products of phosphorusmethylation -- the esters of 2,2-diacetyloxyethylphosphonic acids.

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USSR

UDC: 542.91+661.718.1

IVANOV, B. Ye., KUDRYANTSEVA, I. A., and ZYABLIKOVA, T. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbusov, Academy of Sciences USSR

"Formation of Oxaphospholane Derivatives in the Phosphonmethylation of Compounds with a Mobile Hydrogen Atom"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 70, pp 96-100

Abstract: Five-membered cyclic esters with oxaphospholane (I) structure, along with mixtures of dialkyl(Me,Et) 2,2-dicarbethoxyethylphosphonates(II), were synthesized by heating at 145-180° mixtures of di-Et malonate, tri-Me(Et) phosphite, and paraformaldehyde in excess. The yield of I was higher with trimethyl than with triethyl phosphite(33 versus 24%). But pure II was separated by redistillation from the products of the reaction with triethyl phosphite only. The products with oxaphospholane structure, where R=OMe, R'=Me, or R=Ac, R'=Et, were obtained (without any appreciable amounts of II), by similar reactions of two other compounds with a mobile H atom--Et cyanoacetate and Et acetylacetate, tri-Me or tri-Et phosphite, respectively, and paraformaldehyde. The I structure was confirmed by elemental analysis data.

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IVANOV, B. Ye., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1,
Jan 70, pp 90-100

IR, ESR, and NMR spectra of the products. Also, 2-methoxy-2-oxo-4,4-dicar-
bomethoxy-1,2-oxaphospholane was hydrolyzed by heating with diluted HCl to
2-carboxy-2,3-propylenylphosphonic acid.

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USSR

UDC 542.91+661.713.1

IVANOV, B. E., KUDRYAVTSEVA, L. A. Institute of Organic and Physical Chemistry
imeni A. Ye. Arbusov, Academy of Sciences, USSR

"Formation of Oxaphospholane Derivatives During Condensation of Phosphonate
Esters with Formaldehyde"

Moscow, Izvestiya Akademiyi Nauk SSSR, Seriya Khimicheskaya, No 5, May 70,
pp 1180-1181

Abstract: Derivatives of oxaphospholanes are formed by condensation of the
esters of 2,2-dicarbethoxy-, 2-cyano-2-carbethoxy- and 2-acetyl-2-carbethoxy-
ethyl-phosphonic acids, when heated with formaldehyde with continual removal
of ethyl alcohol.

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UDC 524.91+547.461.3+547.241

IVANOV, B. Ye., KHORYAVTSEVA, L. A., and BYKOVA, T. G., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences of the USSR

"Interaction of α -Hydroxymethylmalonic and Bis-(α -hydroxymethyl)malonic Esters With Trialkylphosphites"

Moscow, IAN SSSR, Seriya Khimicheskaya, No 9, Sep 70, pp 2,063-2,067

Abstract: The authors investigated interaction of α -hydroxymethylmalonic and bis-(α -hydroxymethyl)malonic esters with triethylphosphite, trimethylphosphite and diethylchlorophosphite. Diethyl ester of 2,2-dicarbethoxyethylphosphinic acid is produced by reacting α -hydroxymethylmalonic ester with triethylphosphite and diethylchlorophosphite. 2-Alkoxy-2-oxo-4, 4-dicarbethoxy-1-oxa-2-phospholans are synthesized by interacting bis-(α -hydroxymethyl)malonic ester with trialkylphosphites and diethylchlorophosphite.

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1/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--FORMATION OF OXAPHOSPHOLANE DERIVATIVES IN THE PHOSPHONOMETHYLATION
OF COMPOUNDS WITH A MOBILE HYDROGEN ATOM --U-
AUTHOR--IVANOV, B.YE., KUDRYAVITSEVA, L.A., ZYABLIKOVA, T.A.
COUNTRY OF INFO--USSR
SOURCE--AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 96-100
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--NMR SPECTRUM, ORGANIC PHOSPHORUS COMPOUND, FORMALDEHYDE,
MALONIC ESTER, ETHER, HETEROCYCLIC BASE COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1612 STEP NO--UR/0062/70/000/001/0095/0100
CIRC ACCESSION NO--AP0100222
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--APO100222

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEATING 24 G DI-ET MALONATE, 9 G
PARAFORMALDEHYDE, AND 18.6 G P(OMe)SUB3 TO 110DEGREES (EXOTHERM), AND
HEATING 3-4 HR AT 150DEGREES GAVE A FRACTION, B SUB0.001 120-30DEGREES,
CONTG. MIXED DI-ME 2,2-DICARBETHOXY ETHYLPHOSPHONATE (I) AND
2-METHOXY,2,7XO,4,4-DICARBETHOXY,1,2, OXAPHOSPHOLANE (II), SEPD. BY
REDISTN.: I B SUB0.03 125-60DEGREES, N PRIME20 SUB0 1.4390, D PRIME20
MINUS; II B SUB0.004 136-80DEGREES, 1.4535, 1.2492. SIMILAR REACTION
WITH P(OEt)SUB3 GAVE (EtO)SUB2 P(O)CH SUB2 CH(CO SUB2 Et)SUB2 AND III (R
EQUALS CO SUB2 Et, R PRIME1 EQUALS Et), B SUB0.001 120-1DEGREES, 1.4490,
1.2035, IN NEARLY EQUAL AMTS. SIMILAR REACTION OF NCC#H SUB2 CO SUB2 Et
AND P(OMe)SUB3 WITH PARAFORMALDEHYDE GAVE III (R EQUALS CH, R PRIME1
EQUALS Me), B SUB0.03 140-1DEGREES, 1.4630, 1.2738, WHILE ACCH SUB2 CO
SUB2 Et AND P(OEt)SUB3 WITH PARAFORMALDEHYDE GAVE III (R EQUALS AC, R
PRIME1 EQUALS Et), B SUB0.015 125DEGREES, 1.4630, 1.2271: II HEATED
WITH DIL. HCL GAVE HO SUB2 C(C:CH SUB2)CH SUB2 P(O) (OMe) SUB2, M.
148-51DEGREES. NMR SPECTRAL CURVES (2) WERE SHOWN. A REACTION SCHEME
WAS PROPOSED.

UNCLASSIFIED

USSR

UDC: 629.7.036.3:533.697.4

KUDRYAVTSEVA, L. I., MEZHIROV, I. I., PONOMAREV, S. P., YAKUSHEVA, V. L.

"Experimental Study of Axisymmetrical Profiled Supersonic Nozzles with Low Re Numbers"

Uch. Zap. Tsentr. Aerogidrodinam. In-ta [Scientific Writings of Central Institute of Aerodynamics and Hydrodynamics], 1973, 4, No 3, pp 125-126 (Translated from Referativnyy Zhurnal Aviatsionnyye i Raketyyye Dvigateli, No 11, 1973, Abstract No 11.34.85, from the resume)

Translation: Results are presented from experimental study of the flow into axisymmetrical profiled supersonic nozzles, designed considering the influence of viscosity on the production of a flow with $M=6$ and various design values of wall temperature. The Re_L number for both nozzles is $9.3 \cdot 10^3$, the thickness of extraction of the laminar boundary layer in the output cross section of the nozzle is comparable to the radius of the isentropic contour or even greater than it. It is shown that consideration of the influence of the viscosity, consisting in addition of the thickness of extraction of the boundary layer to the radius of the isentropic contour, leads to satisfactory results: in spite of the small dimensions of the nonviscous core, the M number in it, within the limits of the output characteristic rhombus, is practically constant and equal to its design value. 6 Figures; 3 Biblio. Refs.

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UDC 669.112.3

USSR

PEREVERSEVA, YE. G., SOKOLOV, K. N., ~~KUDRYAVTSEVA, L. N.~~, and
GRISHKO, V. F., Zhdanov Metallurgical Institute

"Effect of Arsenic on the Diffusion of Carbon in Austenite
and Ferrite of Low-Carbon Steel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Chernaya
Metallurgiyam No 2, 1970, pp 110-113

Translation: A study was made of the effect of arsenic on the
diffusion of carbon in austenite and ferrite. It was established
that arsenic increases the rate of carbon diffusion in these
structural constituents. With an increase in the content of
arsenic from 0 to 1%, the activation energy of St. 3 steel
in austenite changes from 35,900 to 31,600, respectively,
and in ferrite -- from 18,800 to 16,00 cal/g-atom.

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1/2 019

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--LIQUID VAPOR EQUILIBRIUM IN THIOPHENE, NITROMETHANE, METHANOL,
THIOPHENE, AND METHYL ETHYLKETONE THIOPHENE SYSTEMS -U-
AUTHOR--(OZ)-KUDRYAVTSEVA, L.S., EYSEN, O.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 708-11

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE EQUILIBRIUM, THIOPHENE, NITROMETHANE, METHANOL, KETONE,
GAS CHROMATOGRAPHY, AZEOTROPIC MIXTURE, DISTILLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1420

STEP NO--UR/0080/70/048/003/0708/0711

CIRC ACCESSION NO--AP0116867

UNCLASSIFIED

PROCESSING DATE--23OCT70

UNCLASSIFIED

2/2 019

CIRC ACCESSION NO--AP0116867
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE EQUIL. IN SYSTEMS THIOPHENE (I) MENO SUB2 AT 75DEGREES, MEQH-I AT 55DEGREES, AND MECOET-I AT 75DEGREES WAS STUDIED BY GAS CHROMATOG. AND VACUUM DISTN. ALL 3 SYSTEMS ARE NONIDEAL AND SHOWED POS. DEVIATIONS FROM RAULT'S LAW. AZEOTROPIC MIXTS. WERE FORMED FOR I-MENO SUB2, B.P. 82.7DEGREES, CONTG. 0.817 MOLE FRACTION I AND FOR MEQH-I WITH A B.P. 59.4DEGREES, CONTG. 0.667 MOLE FRACTION III. ACTIVITY COEFF. GAMMA1 AND GAMMA2 FOR BOTH COMPONENTS WERE CALCD. ON THE BASIS OF THE EQUATION $\log \gamma_1 = \frac{A(1 - X_1)^2}{(1 - 2X_1) + B(1 - X_1)^2 + C(1 - X_1)^3}$ (X SUB1 IS MOLE FRACTION OF COMPONENT (1)); THE CONSTS. WERE (SYSTEM, B, C, AND D GIVEN): MENO SUB2, 4504, 0.0448, 0.0308; MEQH-I, 0.5782, MINUS 0.1491, 0.0992; MECOET-I, 0.0487, MINUS 0.0143, 0.0053. FACILITY: INST. KHIM., TALLIN, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--020CT70
 TITLE--LIQUID VAPOR EQUILIBRIUM IN BINARY SYSTEMS CONTAINING OLEFINS. 2.
 ISOTHERMAL LIQUID VAPOR EQUILIBRIUM IN BINARY SYSTEMS FORMED BY 1
 AUTHOR--(03)-KUDRYAVTSEVA, L.S., VIIT, H., EISEN, D.
 COUNTRY OF INFO--USSR
 SOURCE--EESTI NSV TEAD. AKAD. TION., KEEM., GEOL. 1970, 19(1), 22-9
 DATE PUBLISHED-----70
 SUBJECT AREAS--CHEMISTRY
 TOPIC TAGS--PHASE EQUILIBRIUM, HEPTENE, ALKENE, ETHANOL, PROPANOL,
 AZETROPE, GAS CHROMATOGRAPHY
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1989/0445 STEP NO--UR/0470/70/019/001/0022/0029
 CIRC ACCESSION NO--AP0107051
 UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--0200170

CIRC ACCESSION NO--AP0107051

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LIQ. VAPOR EQUIL. IN
ETH-1-HEPTENE, PRDH-1-HEPTENE MECDET-1-HEPTENE AT 75DEGREES C IN
ISO-BUDH-1-OCTENE, ISO-BUDAC-1-OCTENE, ISO-BUDAS-2-OCTENE AT 95DEGREES C
WAS STUDIED BY GAS CHROMATOG. TO OBTAIN CONSTS. OF REGELICH KISTER
EQUATION AND TO CALC. THE ACTIVITY COEFF. RATIO IN THE VAN LAAR-
EQUATION. ALL OF THESE SYSTEMS ARE NONIDEAL, HAVE AZETROPES, AND ARE
CHARACTERIZED BY POSL DEVIATIONS FROM RAULT'S LAW.

UNCLASSIFIED

1/2 014

UNCLASSIFIED

PROCESSING DATE--230CT70

TITLE--NQR NUCLEAR QUADRUPOLE RESONANCE SPECTRA OF ARSENIC 75 AND CHLORINE 35 OF CHLORINE CONTAINING ORGANARSENIC III COMPOUNDS -D-

AUTHOR--(05)-SHVEDOVA, G.N., SVERGUN, V.I., BABUSHKINA, T.A., KUDRYAVTSEVA, L.V., SEMIN, G.K.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 482-3

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--NUCLEAR RESONANCE, SPECTRUM, ARSENIC ISOTOPE, CHLORINE ISOTOPE, ORGANIC ARSENIC COMPOUND, MOLECULAR ORBITAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/0643

STEP NO--UR/0062/70/000/002/0482/0483

CIRC ACCESSION NO--AP0119560

UNCLASSIFIED

PROCESSING DATE--23OCT70

UNCLASSIFIED

2/2 014

CIRC ACCESSION NO--AP0119560

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NMR SPECTRA WERE REPORTED FOR
 PRIME75 AS AND PRIME35 CL IN ASCL SUB3, ME SUB3 AS, ET SUB3 AS, PH SUB3
 AS, PH SUB2 ASC SUB6 H SUB4 CO SUB2 H P AND M ISOMER, PH SUB2 ASCL,
 MEASCL SUB2, ETASCL SUB2, PRASCL SUB2, AND BUASCL SUB2. THE P CHARACTER
 OF THE SP HYBRIDIZED UNSHARED ELECTRONS OF AS INCREASES UNDER THE
 INFLUENCE OF DIVERSE SUBSTITUENTS ON AS; THIS CORRESPONDS TO INCREASED
 ANGLE BETWEEN METAL ORBITALS RELATIVE TO THE VALENCE ANGLE AND DEVIATION
 OF THE ORBITAL OCCUPIED BY THE LONE PAIR FROM THE PSEUDOAXIS OF THE 3RD
 ORDER.

FACILITY: INST. ELEMENTORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--DETERMINATION OF ISOBUTYLENE AND ETHYL ALCOHOL IMPURITIES IN ETHYL
CHLORIDE BY A GAS LIQUID CHROMATOGRAPHIC METHOD -U-
AUTHOR--(04)-KUDRYAVITSEVA, N.A., LULOVA, N.I., MARTYNOVA, N.V., CHESNOKOVA,
R.I.
COUNTRY OF INFO--USSR *K*
SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 58-60
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ISOBUTYLENE, ETHANOL, CHROMATOGRAPHIC ANALYSIS, CHEMICAL
LABORATORY APPARATUS, CHEMICAL PURITY, CHLORINATED ALIPHATIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0542 STEP NO--UR/0065/70/015/003/0058/0060
CIRC ACCESSION NO--AP0119461
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119461
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. IMPURITIES GREATER THAN
0.005PERCENT WERE DETD. WITH THE KHL-4 APP. BY USING HE AS CARRIER GAS.
ISOBUTYLENE WAS DETD. WITH A 6 M COLUMN PACKED WITH T2K MODIFIED WITH
LIQ. PETROLATUM AND SODA, BY USING PROPANE, BUTANE, OR ISOBUTANE AS
INTERNAL STDS. ETOH WAS DETD. WITH A 2 SECTION COLUMN, PACKED WITH
PEG-400 ON SPEROKHROM-1 (I) FOR THE 2-M SECTION AND 15PERCENT TRICRESYL
PHOSPHATE ON I FOR THE OTHER 3 M, WITH A C SUB6 H SUB6 SOLN. IN PHME AS
INTERNAL STD.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--ON THE CHARGE DENSITY ON THE SURFACE OF DISPERSED PHASE OF GOLD

HYDROGEL AT FAST COAGULATION THRESHOLDS -U-

AUTHOR--(05)-BARAN, A.A., GLAZMAN, YU.M., DERYAGIN, B.V., KUDRYAVTSEVA,
 N.M., STRAZHESKO, D.N.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 167-170

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GOLD COMPOUND, COAGULATION, MICROSCOPY, CALCIUM COMPOUND,
 YTRIUM COMPOUND, RUBIDIUM COMPOUND, HYDROXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0767 STEP NO--UR/0069/70/031/002/0157/0170

CIRC ACCESSION NO--AP0108968

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--02OCT70

2/2 012

CIRC ACCESSION NO--AP0108968

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE AMOUNTS OF ADSORBED RB POSITIVE, CA PRIME2 POSITIVE AND Y PRIME3 POSITIVE COUNTERIONS AT THE FAST COAGULATION THRESHOLDS OF RED GOLD HYDROSOL HAVE BEEN MEASURED BY A RADIO-METRIC METHOD. THE COAGULATION THRESHOLDS HAVE BEEN DETERMINED FROM KINETIC CURVES OBTAINED BY FLOW ULTRAMICROSCOPY. ON THE BASIS OF THE DATA ON THE COUNTERIONS ADSORPTION IT HAS BEEN POSSIBLE TO ESTIMATE THE CHARGE DENSITY ON DISPERSED GOLD FROM THE SURFACE AREA VALUE. IT IS SUGGESTED THAT IN GOLD HYDROSOL THE OH NEGATIVE IONS ARE POTENTIAL DETERMINING.

UNCLASSIFIED

USSR

UDC 612.82+612.821.7

KUDRYAVTSEVA, N. N., Institute of Cytology and Genetics, Academy of Sciences
USSR, Siberian Department, Novosibirsk

"Changes in Serotonin Content of the Forebrain During Hibernation"

Leningrad, Fiziologicheskij Zhurnal SSSR, No 4, 1973, pp 531-534

Abstract: The serotonin content of the hippocampus in ground squirrels (*Citellus erythrogenus*) was found to be almost 1.5 times greater in the winter while the animals were hibernating than in the summer. It began to increase in October before the start of hibernation, reached a peak at the time the animals fell asleep, gradually decreased toward spring, and dropped to very low levels the first days after awakening. There were no significant changes in the cerebral hemispheres. In other hibernating animals, golden hamsters, prolonged exposure to low temperatures during the summer had no effect on the serotonin content of the hippocampus; it was much lower than in the control kept at room temperature. Thus, the elevated serotonin level noted during hibernation is related not to the cold ambient temperatures but to sleep proper, for sustained wakefulness results in the directly opposite effect, a lowering of the serotonin level in the hippocampus. These findings confirm the fact that serotonin plays an important role in the physiological mechanisms of sleep and hibernation.

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USSR

UDC 612.82/83:822.5

DANILOV, I. V. and KUDRYAVTSEVA, N. N., Laboratory of Experimental Pathology of the Central Nervous System and Laboratory of Applied Neurophysiology, Institute of Experimental Medicine, Academy of Medical Sciences USSR

"Dynamics of Intercentral Relations in the Monkey Brain During Prolonged Rhythmic Photic Stimulation"

Leningrad, Fiziologicheskiy Zhurnal SSSR, No 8, 1971, pp 1,089-1,098

Abstract: In experiments with rhythmic light flashes at different frequencies, monkeys exhibited individual sensitivity to certain rhythms. Some animals recruited and transformed the lower frequencies better (7.9 flashes per sec), while others responded to the higher frequencies (18 and 25 per sec). The following variations in the cortical and subcortical responses to the stimuli were distinguished: (a) simultaneous recruitment of the given rhythm by cells of the motor and visual cortex and subcortex; (b) recruitment of the rhythm only by the visual cortex; (c) recruitment of the rhythm by the visual cortex and its transformation in the subcortical structures; (d) recruitment only by the subcortex and motor cortex; (e) transformation in the visual cortex and recruitment by the deeper structures of the brain and motor cortex; (f) simultaneous transformation of the rhythm by all the structures recorded; (g) transformation by the visual cortex. All or a combination of these variations in brain activity could occur in the same experiment (30 to 60 min).

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USSR

UDC: 539.1.01

KUDRYAVTSEVA, N. V., Siberian Physicotechnical Institute imeni V. D. Kuznetsov Affiliated With Tomsk University

"Concerning the Question of the Influence of Deformation on the Energy Spectra of Electrons in Crystals"

Tomsk, Izvestiya VUZov: Fizika, No 12(127), Dec 72, pp 61-64

Abstract: The energy spectra of electrons in deformed crystals are studied by the method of perturbations in the Pikus-Bir scheme. The previous model is supplemented by accounting for terms of order $k^2 e_{ij}$. An analytical expression is found for the effective mass of carriers as a function of deformation in the case in which there is no degeneracy. It is found that the difference in effective masses of N-type carriers decreases with compression and increases with tension. The opposite pattern holds for P-type carriers. The difference between the effective masses of N-type and P-type carriers under tension is most marked when the effective mass of the N-type carriers is less than the mass of the free electron.

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BELOV, K. P., NIKITIN, S. A., TALALAYEVA, YE. V., CHERNIKOVA, L. A.,
KUDRYAVTSEVA, T. V., TIKHONOV, V. V., and IVANGYSKIY, V. I., Moscow State
University

"Determination of the Exchange Interaction of Ferrite-Gadolinium Garnet
Sublattices Based on the Magnetocaloric Effect"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 3,
Sep 71, pp 1101-1105

Abstract: Ferrite-rare earth garnets $R_3Fe_5O_{12}$ have a trisublattice magnetic structure. In the majority of cases within the framework of molecular field theory it is possible to examine such ferrite-garnets as having a bisublattice structure. In this case both a and d iron sublattices are examined as a single Fe_{a-d} -sublattice, in the effective exchange field of which are found rare earth ions. The author determined the effective exchange field acting on the R^{3+} ions from the side of the Fe^{2+} ions. Based on the measurement data of the magnetocaloric effect, the susceptibility of the paraprocess, and the specific heat in the region of the temperature of compensation, the authors determined the exchange field in the garnet structure. The measurements showed that for the $Gd_3Fe_5O_{12}$ garnet the field

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USSR

BELOV, K. P., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki,
Vol 61, No 3, Sep 71, pp 1101-1105

$H_{2eff} = 258$ kOe, and for $Gd_3Ga_{0.3}Fe_{4.7}O_{12}$ the field $H_{2eff} = 232$ kOe,
which is 10% less than for the gadolinium garnet. The article contains
3 illustration and 6 bibliographic entries.

72 020 UNCLASSIFIED
 TITLE--INDUCED NONCOLLINEAR MAGNETIC STRUCTURE IN RARE EARTH FERRITE
 GARNETS -U-
 AUTHOR--(05)-BELOV, K.P., CHERNIKOVA, L.A., TALALAYEVA, YE.V., LEVITIN,
 R.Z., KUDRYAVTSEVA, T.V.
 COUNTRY OF INFO--USSR
 SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
 NR 6, PP 1923-1927
 DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY
 TOPIC TAGS--FERRITE, GARNET, RARE EARTH METAL, MAGNETIC STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1998/0423 STEP NO--UR/0056/70/058/006/1923/1927

ERIC ACCESSION NO--AP0121097
 UNCLASSIFIED

272 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

IRC ACCESSION NO--AP0121097

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE APPEARANCE OF NONCOLLINEAR
MAGNETIC STRUCTURES IN RELATIVELY WEAK FIELDS (UP TO 20 KOE) COULD BE
OBSERVED AS A RESULT OF MAGNETOCALORIMETRIC EFFECT MEASUREMENTS IN Gd,
Dy, OR HO FERRITE GARNETS CARRIED OUT IN THE VICINITY OF THE
COMPENSATION TEMPERATURE. IT IS SHOWN THAT MEASUREMENT OF THE
MAGNETOCALORIMETRIC EFFECT OPENS A NEW POSSIBILITY OF INVESTIGATION OF
NONCOLLINEAR SPIN STRUCTURES INDUCED BY AN EXTERNAL FIELD.
FACILITY: MOSKOVSKIY GOSUDARSTVENNYY UNIVERSITET IM. M. V. LOMONOSOVA.

UNCLASSIFIED

KUDRYAVTSEVA, V. I.

COLZEN

29 Oct 71

106

FED: CYBERNETICS

95. USSR

UDC 612.821.6:612.821.2+371.302.2

KUDRYAVTSEVA, V. I. and CHERNYAYEVA, N. A.

SO: FOREIGN PRESS DIGEST

"Some Problems of Memory and Teaching"

29 OCT 1971

Kiberneticheskiye Aspekty v Iruchanii Raboty Mozga (Cybernetics Aspects of the Study of the Brain's Functioning), Moscow, Nauka Publishing House, 1970, pp 62-74

Abstract: This article examines some results of a study of the formation of time associations in man under the influence of stimuli of different functional importance.

It was shown that with a combination of stimuli having a weak functional effect, time associations that die down rapidly are formed. With a combination of stimuli having a strong functional effect, very stable time associations are formed. The first may be the basis of short-term memory, and the second -- the basis of long-term memory.

USSR

UDC 618.39:614(049.3)

KUDRYAVTSEVA, Ye. and KUZNETSOV, V. (Reviewers)

Sotsial'no-Gigiyenicheskiye Aspekty Regulirovaniya Razmerov Sem'i (Social and Hygienic Aspects of Regulation of Family Size), by Ye. A. Sadvakasova, Moscow, "Meditsina", 1969

Moscow, Zdravookhraneniye Rossiyskoy Federatsii, No 11, 1970, pp 39-41

Abstract: Data on abortion legislation, the number of abortions, and their effect on women's health, are presented and other facets of abortions in a number of nations are discussed. The first section, "The Abortion Problem Abroad and in the USSR", examines the problem from a historical perspective. The second section, "Abortion in the USSR after WW II," presents statistical data on the problem, showing that deaths resulting from abortions are declining. The USSR may not be giving enough publicity to birth control techniques. A questionnaire was sent to women who had had abortions, but only half were returned, indicating the difficulties of studying the problem. Data from medical institutions were also used, affording a more detailed breakdown. The reasons for abortions are analyzed.

1/1

USSR

UDC 543.878+547.26'118

BEL'SKIY, V. YE., KUDRYAVYSSVA, L. A., and IVANOV, B. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbutova, Academy of Sciences USSR

"Structure and Chemical Shift in the NMR Spectra of p^{31} of the Esters of Phosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2427-2431

Abstract: A study of the hydrolysis kinetics of substituted phosphonates having the general form $RP(O)CEt_2$ indicated a linear relationship between the size of δ_p and the logarithm of the constant of base hydrolysis velocity of these ethers. The δ_p also showed a linear relationship with the induction constant ω^* of the R radical in 37 compounds. However, the presence of π bonds or free electron pairs on the α -atom in the R radical allows for a $pd\pi$ interaction with the d orbitals of the phosphorus. The above linear relationships do not hold for such compounds and thus they were not included in the plot. The greatest $pd\pi$ interaction was observed for the $C \equiv C$, $C = O$ and $P = O$ groups.

1/1

KUDUKIS, A.R.

CONFIDENTIAL

N.C. *Calculator Plant Automating Production*
Candidate of Economic Sciences

1

The automated management system of the Vilnius Calculating Machine Plant has been developed specifically for the production and business sale of products in an industrial factory environment in the presence of labor-intensive production with complicated processing requiring long production cycles and high production accuracy. The automated management system is a coordinated set of tasks for managing basic production and includes certain functions of labor-management systems.

The interaction and functional structure of the Vilnius system includes analysis for standard information, basic production management, material and technical supply, and financial accounting. In character, the problems which were to be solved, the systems approach to the organization of production management and the structure of complex information processing were applied. Serious attention was given to the functions of managing basic production and supply of material resources. Moreover, the automated management system's specifications were written with consideration for continuity of production process, necessity to eliminate stoppage, ease among technical, economic, and operational management. The need to follow the principle of "one-time-only" data recording and the expediency of mechanizing the preparation of primary documentation and continuous data collection.

The system is based on the Buda-110 computer, which is equipped with a peripheral primary data collection and transmission system, three SPKs are used, and two ATC-20 units. Moreover, Minsk-22 and B25K-4 computers are used from other organizations and used to solve specific problems.

The files are used to solve operational production management problems and problems that can be handled on the basis of data obtained via the channels of the peripheral data collection system. The SPK, ATC-20, and Minsk-22 units are basically used for solving problems of financial accounting and of evaluating finished production.

Production of computer from the article "Automated Management System for the Vilnius Calculating Machine Plant" (Automated Management System for the Vilnius Calculating Machine Plant) is published in the journal "Automation of Production Management" No. 8, 1974, p. 24. Translated from the Russian by Steve Agnew.

Secret Operations Areas, April 1979

USSR

UDC 621.357.13:669.293

SMIRNOV, M. V., KUDYAKOV, V. YA., KHIDOLOZHEKIN, V. N., and SEMENOVICH, I.A.

"Volatile Components of Alloy Mixtures KCl-ThCl₄"

Tr. In-ta elektrokhemii. Ural'sk nauch. tsentr. AN SSR (Studies of the Institute of Electrochemistry. Ural Science Center, Academy of Sciences USSR) Vyp 18, 1972, pp 33-40 (from Referativnyy Zhurnal -- Khimiya, No 7, 1973, Abstract No 71426 by A. D. Davydov)

Translation: The volatiles were measured in saturated vapors of KCl and ThCl₄ containing 0-50 mole % ThCl₄, in the temperature range 690-990°C. The composition of the gas phase was determined relative to the liquid phase. Based on the experimental data, the conclusion was drawn that there is an equilibrium concentration of the two compounds of the type K₂ThCl₆ in the vapor phase.

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USSR

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UDC: 541.222.3-143

SMIRNOV, M. V., NUDYAKOV, V. YA., POSOKHIN, YU. V., and KUMASNOV, M. N.

"Electrochemical Behavior of Thorium in Fused Sodium Chloride and Equimolar Mixture of Chlorides of Potassium and Sodium"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, p 419

Abstract: The equilibrium potentials of thorium are measured for various concentrations and temperatures in fused NaCl and KCl-NaCl (50 mol.% NaCl). Empirical isotherm equations are produced, showing that a thorium electrode is reversible to mixtures of its ions Th^{2+} and Th^{4+} . Expressions are found for the temperature dependences of the apparent standard potentials of Th/Th (II) and Th/Th (IV) electrodes. Expressions are presented for the dependences of the equilibrium potential of thorium on its summary concentration.

1/1

Hematology

USSR

UDC 591.1

REFEDOV, V. P., SAMOYLOV, V. A., ~~KHIDYAKOVA, N. N.~~, DUBNYNIN, V. N., PETUSHKOV, V. N., YASNIKOV, I. L., NIKHAYLOV, V. I., and KERUSTALOV, V. F., Institute of Physics imeni L. V. Kirenskiy, Siberian Department USSR Academy of Sciences

"Culturing Bone Marrow in Vitro by the Method of Isolated Organ Perfusion"

Moscow, Izvestiya Akademii Nauk SSSR, No 2, Mar/Apr 71, pp 179-191

Abstract: The role played by the bone marrow in maintaining normal erythron series was studied. Blood was perfused through the isolated sternum by means of a pumping and oxygenating system which automatically regulated the perfusion pressure, pO_2 , HbO_2 , pH, and temperature of the perfused blood, partly in response to the feedback information on pO_2 , temperature, and impedance received from the bone marrow. Best results were obtained when the circulating blood was completely exchanged after 12 hours of perfusion. The maximum duration of perfusion was 20 hours. Histological examination of the sternum performed after 6, 11, and 17 hours of perfusion revealed a shift in the leukoerythroblast ratio toward the red series and a normal maturation of erythrocytes and granulocytes.

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USSR

K
UDC: 621.372.852.1:621.372.413

KHRAPKO, A. M., KUDYAN, G. F.

"Band Filters for the Millimeter Wavelength Range Based on Open Resonators"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, vyp. 3, pp 106-113 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7B141)

Translation: The authors consider an open resonator of the feed-through type with spherical reflectors, which is used as the simplest type of band filter in the millimeter wavelength range. Designs are given as well as the results of an experimental investigation of a tunable band filter for the 1.65-2.55 mm wavelength range. The band of the filter varies over a range from 100 to 30 MHz. Three illustrations, three tables, bibliography of eight titles. Resumé.

1/1

USSR

UDC 621.387

BELYAYEV, V.P., KUDYAN, N.F., ANIKINA, N.M., NEGIREVA, L.V.

"Recovery Time Of Discharger With Discharge Gap Shifted To The Wall Of A Waveguide"

Elektron.tekhnika. Nauch.-tekhn.sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1972, Issue 4, pp 108-109 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9A195)

Translation: It is established that with the shift of the discharge gap of a discharger to the wide wall of a waveguide, the recovery time is decreased in the case where the discharger is filled with electrically negative gas and increased when it is filled with electrically positive gas. Summary.

1/1

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USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERENOVA, Z. V., BOGDANOV, N. I.,
(Deceased), KUDYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., HALYKH, YU. A.,
NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V. and CHUSHKIN, YU. V.,
State Committee for the Use of Atomic Energy USSR

"Advancement of Research in the Field of Nuclear Power Engineering in the
USSR (Report Presented at the Fourth United Nations International Conference
on the Peaceful Uses of Atomic Energy held 6 to 16 September 1971 in
Geneva)"

Moscow, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

Abstract: This report cites data on the Soviet development of the thermo-
electric generators designed for feeding oceanographic and navigation
devices, hydrographic, automatic, radiometeorological, magnetic variation
stations, high-mountain cosmic ray stations, and other scientific research
land stations. The report covers the scientific and technical fundamentals
of such energy sources and cites the characteristics of some generators.
Discussed in some detail are various aspects of radio isotopic fuels,
selection, properties, distinctive characteristics, evaluation, requirements,
cost factors, availability, handling safety factors, and forms of applica-

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SSR

FRADKIN, G. M., et al, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

tion. The potential use of extraction separation of alkali-earth elements for obtaining pure strontium is noted. A table lists the comparative characteristics of various isotopes having potential use in thermoelectric generators. Much consideration is given to topics dealing with energy release in an isotopic unit, biological protection, radioactive decay energy conversion, thermal flow chart selection, and generator designs. Described and illustrated are some thermoelectric generators of various designations (using Ce^{144} , Cs^{137} , Sr^{90} , Pu^{238} , Cm^{242} (Po^{210})) including Beta-1, Beta-2, Beta-C, Efir, Penguin, MIG-67 (portable-type), and generators with cascade converters. (8 illustrations).

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USSR

UDC 541.138-185:621.315.592

KRIKSHTOPAYTIS, I. B., and KUDZHMANSKAYE, Zh. P., Order of the Red Banner of Labor Institute of Semiconductor Physics, Academy of Sciences Lithuanian SSR

"Appearance of Nonequilibrium Current Carriers in Interaction of Ge Single Crystal With Au^{3+} Ions in HF Solution"

Vil'nyus, Trudy Akademii Nauk Litovskoy SSR, Seriya B -- Khimiya, Tekhnika, Fizicheskaya Geografiya, Vol 2. 1971, pp 21-26

Abstract: The purpose of the article is to confirm the hypothesis that electrons from the valence band of Ge may be involved in the reduction of Au^{3+} ions on the single crystal, with the holes generated being injected into Ge. In other words, to detect the generation of nonequilibrium carriers in the interface bands during the reduction of Au^{3+} ions and the oxidation of surface Ge atoms. A specially prepared electrochemical cell was used for the experiments. The results indicate that in the contact exchange between Au and Ge ions in HF solutions there is reduction of the noble metal by electrons from the valence band of Ge. The diffusion of the nonequilibrium current carriers generated at the surface in the crystal is determined by measuring the kinetics of the electrode potential. Thus, the reduction of Au^{3+} ions on the surface of a Ge single crystal can be included among processes connected with the generation of electron-hole pairs. 1/1

- 46 -

UUC 541.13:315.592

USSR

KRIKSHTOPAYTIS, I. B., KUDZIMAUSKAYTE, ZH. P., Institute of Semiconductor Physics of the Lithuanian SSR Academy of Sciences, Vil'nyus

"Interaction of Monocrystalline Germanium with Trivalent Gold Ions in Concentrated Solutions of HF"

Moscow, Elektrokimiya, Vol VII, No 10, pp 1579-1581

Abstract: A study was made of the interaction of monocrystalline germanium with trivalent gold ions in concentrated solutions of hydrofluoric acid. An experiment was performed to discover the proposed generation of nonequilibrium carriers in the interphase zone during reduction of the trivalent gold ions and oxidation of the surface atoms of the germanium. The preparation of the electrochemical cell for this experiment is described. The reduction or illumination of it, has a clearly expressed effect on the bias of the stationary potential and determines the dependence of the variation of the electrode potential on the volumetric concentration of the carriers in it. The occurrence of minor carriers by diffusion on the measured surface generated by the three above-mentioned processes of excitation of the opposite

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USSR

KRIKSHTOPAYTIS, I. B., et al, *Elektrokhimiya*, Vol VII, No 10, pp 1579-1581

side of the thin monocrystalline sample makes the corresponding contribution to the potential jump at the phase interface expressed in the electrode potential bias. The appearance of the maximum effect of the electrode potential bias in the n-type region with minimum volumetric concentration of the minor carriers indicates that the reduction of the gold ions in the given concentrated solution takes place primarily by transport of charges through the valence zone of the electrode.

2/2

PROCESSING DATE--200410

UNCLASSIFIED
--U--

1/2 009

TITLE--AL'FIYA, A NEW HIGH QUALITY LIQUID SYNTHETIC DETERGENT
AUTHOR--(05)-BGLYANOVSKIY, D.M., GETMANSKIY, I.K., LOGIINOVA, N.I.,
MAYMLSHINA, A.A., KUDYASHOV, A.I.
COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970; (3), 34-5

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, MATERIALS

TOPIC TAGS--BIODEGRADABLE DETERGENT, AMIDE, FATTY ACID, PHOSPHATE, UREA,
BLEACHING AGENT/(U)ALFIYA DETERGENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0441

STEP NO--UR/0318/70/000/003/0034/0035

CIRC ACCESSION NO--A0128011
UNCLASSIFIED

PROCESSING DATE--20NOV70

UNCLASSIFIED

2/2: CCS

CIRC ACCESSION NO--AP0128011

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPONENTS OF AL'FIYA ARE
PRIMARY ALKYL SULFATES 8-13. SEC-ALKYL SULFATES 3-8, SYNTHONAL DT-7 (A
PRODUCT OF CXYETHYLATION OF C SUB10 NEGATIVE13 PRIMARY ALCS.) 0-3,
SYNTHAMID,5 (MONOETHANGLAMIDES OF SYNTHETIC FATTY ACIDS) 4, NA
HEXANETAPHOSPHATE 4, UREA 13, ISO-PROH 1, BLEACHING AGENT 0.15, PERFUME
0.1, AND H SUB2 0 TO 100PERCENT. ALL THE COMPONENTS OF AL'FIYA ARE
BIODEGRADABLE. THE WASHING POWER OF A 0.125PERCENT SOLN. OF AL'FIYA IN
HARD WATER (15DEGREES) AT 50DEGREES WITH WOOL IS 124-130PERCENT OF THAT
OF NA LAURYL SULFATE. AL'FIYA CAN BE USED EFFECTIVELY ALSO FOR SILK AND
SYNTHETIC FABRICS. THE STABILITY OF AL'FIYA AGAINST TURBIDITY AT
10DEGREES LASTS GREATER THAN 24 HRS.

UNCLASSIFIED

USSR

KUDZHMA, R. A.

"Optimal Stopping of Semistable Diffusion Processes"

Lit. Mat. Sb. [Lithuanian Mathematics Collection], 1972, Vol 12, No 4, pp 99-112 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V111, by the author).

Translation: For diffusion processes in $[0, \infty)$, generated by the operator

$$Mf(x) = ax^{2-\frac{1}{a}}f'(x) + bx^{1-\frac{1}{a}}f'(x), \quad x > 0;$$

$a > 0, b = \text{const}$,

are constants,

with the boundary condition

$$1) \quad \lim_{x \rightarrow 0} x^{\frac{b}{a}} f'(x) = 0, \quad \text{if} \quad a \left(1 - \frac{1}{a}\right) < b,$$

or

$$2) \quad \lim_{x \rightarrow 0} Mf(x) = 0, \quad \text{if} \quad b < a,$$

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USSR

Kudzhma, R. A., Lit. Mat. Sb., 1972, Vol 12, No 4, pp 99-112.

the problem of optimal stopping is studied. The value (when finite) of the following expression is found

$$s(x, y) = \sup_{\tau \in \mathcal{M}} E_{\lambda}(\tau) \delta (y + \tau)^{-\gamma},$$

where y, δ, γ are positive constants, while \mathcal{M} is the set of stopping moments, τ is the optimal stopping moment.

USSR

UDC 641.13:621.315.592

KRIKSHTOPAYTIS, I. D., and KUDZHNASKAYTE, ZH. F., Labor Red Banner Order Institute of the Physics of Semiconductors, Academy of Sciences Lithuanian SSR

"Isolation of Au on Ge Monocrystals in Hydrofluoric Acid Solutions"

Vilnius, Trudy Akademii Nauk Litovskoy SSR, Seriya B, Vol 3(62), 1970, pp 13-19

Abstract: A study is reported on the heterogeneous system Ge/HF-H₂O-HAuCl₄ at high concentrations of dissolved Au, concentrating on the interaction of Au³⁺ ions with a deformed, thin surface layer of Ge monocrystal in concentrated HF solutions. The quantity of the deposited Au and dissolved Ge was determined by a weight method. It has been determined that the surface structure of the deposited Au depends on the HF:H₂O ratio in the solution. As the Au continues to be deposited on the monocrystal, the equivalent character of the contact exchange is shifted. The basic components of the solution and the changes taking place during this heterogeneous

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USSR

KRIKSHTOPAYTIS, I. B., et al., Trudy Akademii Nauk Litovskoy SSR, Seriya B, Vol 3(62), 1970, pp 13-19

reaction lead to an excessive amount of the reduced Au. It is proposed that this phenomenon is due to the generation of holes in the interface due to the reduction of Au, some of which are trapped by the surface layers.

2/2

USSR

UDC 548.0:226.33

VOLNYANSKIY, M. D., KUDZEN, A. YU., SUKHINSKIY, A. N. , Dnepropetrovsk State University

"Relaxation of Phase Boundaries in SbSI Single Crystals"

Moscow, Kristallografiya, Vol 18, No 2, Mar-Apr 73, pp 325-327.

Abstract: Changes in dielectric permeability with time ($\Delta\epsilon_{\max} = f(t)$) are studied when a constant electric field acts on SbSI single crystals in the region of the phase transition. It is established that $\Delta\epsilon_{\max}$ approaches saturation with increasing field intensity and decreases by several times as frequency is varied from 1 to 40 KHz. The decrease time of ϵ is reduced by 4 to 6 times when the specimen is illuminated and increases with increasing frequency. The dependences produced can be explained by the contribution to the value of ϵ of newly developing phase boundaries, the attachment time of which amounts to some tens of seconds.

1/1

- 34 -

1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--FINE STRUCTURE OF BARIUM TITANATE SINGLE CRYSTALS -U-

AUTHOR--(04)-GUYENOK, YE.P., ZABARA, YU.V., KUDZIN, A.YU., FOMICHEV, O.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3) 956-8

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--BARIUM TITANATE, SINGLE CRYSTAL, CRYSTAL LATTICE DEFECT,
CRYSTAL LATTICE DISLOCATION, ETCHED CRYSTAL, CRYSTAL STRUCTURE ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0584

STEP NO--UR/0181/70/012/003/0956/0958

CIRC ACCESSION NO--AP0105567

UNCLASSIFIED

272 023

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105567

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FINE STRUCTURE OF BATIO SUB3 CRYSTALS GROWN FROM SOLN. IN A KF MELT WAS INVESTIGATED. DEFECTS AND DISLOCATIONS WERE DEVELOPED BY SELECTIVE ETCHING (NORTHPHOSPHORIC ACID AT 130-150DEGREES). CRYSTALS WERE CUT ALONG THE (100) OR (110) DIRECTION IN THE (001) OR (100) PLANE. ON THE (100) PLANE SQUARE ETCHING FIGURES WERE OBSD., AND ON THE (110) PLANES, ELONGATED FIGURES. THE ETCHING FIGURES WERE DISTRIBUTED NONUNIFORMLY ON THE SURFACE. THEIR CONC. WAS HIGHER IN THE REGION OF THE CRYSTAL THE FARTHER AWAY THEY WERE FROM THE POINT OF THE BEGINNING OF CRYSTAL GROWTH. SOMETIMES, THEY OCCURRED ALONG THE LINES OF THE SEPN. OF LAYERS. THE ETCHING FIGURES ARE RELATED TO THE STRUCTURAL INHOMOGENEITY OF THE BATIO SUB3 CRYSTALS, AND MOST PROBABLY APPEAR ON THE LINEAR DEFECTS OF THE DISLOCATION TYPE.

UNCLASSIFIED

USSR

UDO[621.362.538.4].017.001.24

KUPA, E.N., BAZAROV, G.P.

"Terminal Losses in Montard Magnetohydrodynamic Generator"

V sb. Teplotekhn.probl.pryamogo preobrazov.energii (Heat-Engineering Problems Of Direct Energy Conversion--Collection Of Works), Issue 2, Kiev, "Nauk.dumka," 1971, pp 103-106 (from RZh--Elektrotehnika i energetika, No 12, Dec 1971, Abstract No 12A187)

Translation: An evaluation is made of the magnitude of the terminal losses at the output of the channel of a magnetohydrodynamic (MHD) generator and the effect of these losses on the efficiency of a MHD electrical power plant. An analysis is made of the channel and diffuser in a one-dimensional approximation, and the distribution of the parameters obtained is used for determination of the currents and potentials (plane problem). An analysis is made of the diffuser with electrostatics taken into account. 2 ill. [Voronezh Polytechnical Institute]

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USSR

UDC: 620.171.2

SKLYAROV, N. M., KONONCHUK, N. I., ISHCHENKO, I. I., POGREBNIYAK, A. D.,
LOZITSKIY, L. P., SHIPIL', V. Ya., LAPITSKIY, Yu. A., SINAYSKIY, B. N.,
KUFAYEV, V. N., Kiev

"Determination of Durability of Heat-Resistant Alloys in Unstable Operating Modes Considering Brief Overloads"

Kiev, Problemy Prochnosti, No 3, Mar 73, pp 100-104.

Abstract: The specific features of application of the linear hypothesis of addition of damage during calculation and accelerated experimental determination of the guaranteed durability of parts operating with brief overloads during individual stages in the program of unstable loading with static and variable loads are studied, as well as problems of adjustment of the corresponding calculation characteristics for heat-resistant alloys. The concept developed by the authors is in that the phase of durability depends at any moment is determined by successive addition of its parts for stages of the program under the combined influence of loads and temperatures in a quasi-stable mode for each stage; the sets of long-term static strength and endurance characteristics are utilized, considering the influence of the loading prehistory and the corresponding limiting curves for various

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USSR

SKLYAROV, N. M., et al, Kiev, Problemy Prochnosti, No 3, Mar '73, pp 100-104

temperatures and durabilities. The spectrum of loads is studied in combination with the sequence of their application, i.e., in time.

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USSR

UDC 620.178.38

KUFAYEV, V. N., Kiev

"Study of the Fatigue Strength of Heat-Resistant Materials with Unstable Loading"

Problemy Prochnosti, No 3, 1972, pp 13-16.

Abstract: Results are presented from fatigue testing of heat-resistant blade alloys at high temperatures with programmed changes in load. The dependence of fatigue strength and damage to alloys on stress level in the program is demonstrated, as well as the possibility of approximating the distribution of durabilities in stabilized and programmed tests with a logarithmic normal distribution.

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USSR

UDC 629.7.036.3.002.4

PEN'KOV, A. M., POGREVNAYAK, A. D., KUFAYEV, V. N., SINAYSKIY, V. N.

"Use of Complex Method of Estimating Reliability to Study Heat-Resistant Materials for Gas Turbine Engine Parts"

Sb. Nauch. Tr. Kiev. In-t Insh. Grazhd. Avnatsii, [Collected Scientific Works of Kiev Civil Aviation Engineering Institute], 1971, No 4, pp 69-75. (Translated from Referativnyy Zhurnal Aviatsionnye i Raketnyye Dvigateli, No 1, 1972, Abstract No 1.34.77 from the resume).

Translation: Fatigue tests were performed in order to estimate the durability of alloy EI617 under variable temperature conditions. The tests reproduced a temperature program imitating the temperature changes of blades in operation. The test results are presented as a fatigue curve. The points on the curve express the mean durabilities from the results of testing of 8 to 10 specimens at each level. To evaluate the behavior of the material under near actual conditions, the variable components of the power and temperature programs were reproduced. As before, the stresses in the program were decreased in stages from 39 to 31.5 kg/mm², then increased to 39.5 kg/mm². The damage to the alloy

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USSR

PEN'KOV, A. M., et al., Sb. Nauch. Tr. Kiev. In-t. Inzh. Granid. Avnatsii, 1971, No 4, pp 69-73

was evaluated on the basis of the values of the durability criterion with combined loading a_k . Testing of a series of specimens indicated the value of $a_k=0.70$, indicating intensive damage to EI617 alloy under the combined influence of variable temperatures and stresses. The application of the static component $\sigma_{st}=20\text{kg/mm}^2$ caused a slight increase in the durability criterion with combined reproduction of stresses and temperatures up to $a_k=0.09$. 5 figs.

2/2

8

UDC 620.171.2

USSR

SKLYAROV, N. M., KONONCHUK, N. I., ZHUKOV, S. L., ZHUKOV, N. D., VASIL'EV, B. N., AKINOV, L. M., LAPITSKIY, Yu. A., BELYAYEV, M. S., KRIVONOGOV, G. S., ISHCHENKO, I. I., POGREBNIYAK, A. D., and KUFAYEV, V. N. (Moscow, Kiev)

"Estimating the Heat Resistance of Heat-Resistant Alloys Under Actual Operating Conditions"

Kiev, Problemy prochnosti, No 1, 1971, pp 13-21

Abstract: Problems concerned with estimating the endurance of heat-resistant materials under unstable loading conditions are analyzed. A method is suggested for producing and using "secondary" endurance characteristics, increasing the accuracy of estimation and calculation of guaranteed durability under operating conditions and forced equivalent loading modes. These secondary characteristics represent the dependence of the durability of materials on combinations of preceding programmed and subsequent stationary loads in various proportions. The formula of linear addition of damage applies. The secondary characteristics are produced by accelerated testing over limited test periods with extrapolation to the area of increased durability.

1/1

USSR

K UDC 621.791.3.052:542.63:539.214:669.295

KUFAYKIN, A. YA., Engineer, PETRUNIN, I. YE., Candidate of Technical Sciences,
and SHIBALOV, M. V., Engineer

"Welding of Titanium in the Solid State at Low Contact Pressure"

Moscow, Svarochnoye Proizvodstvo, No 5, May 70, pp 29-30

Abstract: A study was made of the possibility of welding titanium by the process of welding in the solid state at low contact pressure. It was established experimentally that the maximum strength of the joints produced was attained by abrasive treatment of the surfaces to a degree of 8-9 and by creating conditions which increased the contact area of the joined surfaces. Application of the method contributes to a higher degree of preservation of the plastic properties of titanium than is possible with brazing.

1/1

USSR

UDC 621.372.543.2:621.372.543.3(088.8)

KUFLEVSKIY, YE. I., KHRISTICH, V. V.

"Active Band or Band-Elimination RC-Filter"

USSR Author's Certificate No 296228, filed 12 Jun 1969, published 8 Apr 1971
(from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D114P)

Translation: A filter is proposed which contains an amplifier and a double T-type bridge in a negative feedback circuit. In order to improve the temperature stability of the filter parameters, a temperature compensation device is included in parallel to the double T-type bridge. The temperature compensation device comprises a series-connected phase-shifting circuit and a Wheatstone bridge one arm of which is formed by a heat-sensitive element, for example, a thermoresistor, and the emitter-base junction of a semiconductor triode is included in the output diagonal. This triode together with the resistor in the collector circuit constitutes a dynamic load of the complex emitter repeater. The input of the latter is connected directly to the output of the double T-type bridge. The feedback voltage proportional to the algebraic sum of the output voltages of the double T-type bridge and the Wheatstone bridge is picked up from the collector of the semiconductor triode, which is the dynamic load of the complex emitter repeater.

1/1

USSR

UDC 546.271

KUGAY, L. N., and NAZARCHUK, T. N., Institute of Problems of Material Sciences, Academy of Sciences, Ukrainian SSR

"The Chemical Resistance of Diborides of the Transition Metals of Groups IV-V in the Periodic Table"

Poroshkovaya Metallurgiya, No 3, Mar 71, pp 51-55.

Abstract: The authors studied the decomposition of diborides of the transition elements in Groups IV and V of the periodic table by several acids in a medium of nitrogen by determining the composition of the gaseous decomposition products and compared the chemical resistance of the diborides to the corresponding metals under the same conditions. Similar studies were performed in air. The diborides of the transition metals of Group IV were found to be less stable than those of Group V. The chemical stability in Group IV increased from hafnium to titanium. In Group V, stability increased with increasing ordinal number of the element from vanadium to tantalum. The decomposition of diborides by acids which are not oxidizers is accompanied by significant liberation of hydrogen, at 4-5 moles per mole of boride decomposed. The borides are strong reducers, stronger than elementary boron and the metal of which they are formed. They are less stable than the corresponding metals.

1/1

USSR

UDC 546.271

KUGAY, L. N., and NAZARCHUK, T. N., Institute of Problems of Material Sciences, Academy of Sciences, Ukrainian SSR

"The Chemical Resistance of Diborides of the Transition Metals of Groups IV-V in the Periodic Table"

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1/1

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UDC 621.762.001

USSR

FEDORUS, V. B., KOZOLAPOVA, T. YA., KUZ'MA, YU. B., and KUGAY, L. N.,

"Investigation of the Reaction of Zirconium Oxide With Carbides of Group VI Metals"

V sb. Tugoplavk. karbidy (The Refractory Carbides -- Collection of Works), Kiev, "Nauk. Dumka," 1970, pp 244-250 (from *EZh-Metallurgiya*, No 3, Mar 71, Abstract No 30378 by authors)

Translation: An investigation is made of the character of the reaction of zirconium oxide with carbides of Group VI metals -- Cr_3C_2 , Mo_2C and WC -- by the methods of x-ray, chemical, and metallographic analyses. The authors determine the nature of the intermediate and final reaction products, and establish the dependence of the phase composition of the reaction products on sintering temperature. A study is made of the stability of Mo and W carbides and ZrO_2 in acids and in mixtures of acids with oxidizing and complexing agents. A method is suggested for chemical phase separation of the above-indicated compounds. Four tables. Bibliography with 21 titles.

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USSR

UDC 521.3:629.793

EL'YASBERG, P. YE., ~~KUGAYENKO, B. V.~~

"Influence of Day-Night Effect in the Distribution of Atmospheric Density on the Retardation of Artificial Earth Satellites"

V sb. Mat. metody modelir. v. kosmich. issled. (Mathematical Methods of Modeling in Space Research -- Collection of Works), Moscow, "Nauka", 1971, pp 73-105 (from RZh-62. Issledovaniye kosmicheskogo prostranstva, No. 4, Apr 72, Abstract No. 4.62.285)

Translation: The influence of day-night effect in the distribution of atmospheric density on changes in the period of rotation and the eccentricity of an artificial earth satellite is investigated. Approximate formulas are obtained for determining these changes. It is shown that if the parameters of the upper atmosphere are determined on the basis of the retardation of satellites using formulas obtained without considering the influence of the day-night effect considerable errors may occur. An estimate of these errors is given. 5 ref.
Resume.

1/1

USSR

UDC 521.3:629.783

KUGAYENKO, B. V., EL'YASBERG, P. YE.

"Long-Range Prediction of the Motion of an Artificial Earth Satellite in Almost Circular Orbits Considering an Arbitrary Number of Zonal Harmonics"

V sb. Mat. metody modelir. v kosmich. issled. (Mathematical Methods of Modeling in Space Research -- Collection of Works), Moscow, "Nauka", 1971, pp 106-119 (from RZh-62. Issledovaniye kosmicheskogo prostranstva, No. 4, Apr 72, Abstract No. 4.62.286)

Translation: A system of analytical relationships are obtained for determining the long-range changes in elements of almost circular orbits of artificial earth satellites. With these relationships one can determine the elements in the ascending nodes of the orbits as a function of the number of the loop. One can then study the effect of an arbitrary number of zonal harmonics in the expansion of the earth gravity potential and the effect of gravitational perturbations from the moon and sun and of air resistance. It is shown that the effect of these higher zonal harmonics (beginning with the 5th) can be studied with the aid of six congruence parameters which enter into the calculation as corrections to the values of the coefficients at the third and fourth harmonics. These parameters, which are functions of the elements of the orbit, can be found either

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USSR

KUGAYENKO, B. V., EL'YASBERG, P. YE., Mat. metody modelir. v kosmich. isled.,
Moscow, "Nauka", 1971, pp 106-119

theoretically on the basis of given values of the expansion coefficients of the
gravity potential or on the basis of observations on the motion of the satellite
by matching the results of the calculation with experimental data. 7 ref.
Resume.

2/2

- 9 -

USSR

UDC: 621.319.4

KUGAYEVSKIY, A. F. SEROV, A. V.

"A Capacitor With Variable Losses"

Tr. Sib. NII metrol. (Works of the Siberian Scientific Research Institute of Metrology), 1971, vyp. 12, pp 93-97 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V380)

Translation: The paper describes one of the modifications of design of capacitors with variable losses. The operating principle lies in alternate placement of dielectric materials with different loss tangents in the capacitor field. The capacitance of the device remains constant as the losses vary. Resumé.

1/1

USSR

UDC: 621.317.411.023

GERBER, A. A., KUGAYEVSKIY, A.

"Measurement of Reversible Permeability on High Frequencies"

Tr. Sib. NII metrol. (Works of the Siberian Scientific Research Institute of Metrology), 1971, vyp. 12, pp 53-60 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A302)

Translation: A description is given of a two-circuit permeameter and a coaxial resonator designed for high-frequency and superhigh-frequency measurements of the magnetic characteristics of materials under the effect of constant magnetic fields. Resumé.

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USSR

UDC: 621.317.44

BELYUSHKIN, G. A., KUGAYEVSKIY, A. F.

"Radio Spectrometers for Studying the Permeability of Magnetic Thin Films"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. S. 1 (Re-ports of the All-Union Scientific and Technical Conference on Radio Engineer-
ing Measurements. Vol. 1), Novosibirsk, 1970, pp 122-124 (from RZh-Radiotekh-
nika, No 1, Jan 71, Abstract No LA373)

Translation: The authors briefly outline the results of works on the method of susceptibility, which is extensively used for studying ferrites and magnetic thin films. Installations have been developed for studying sus-ceptibility in the region of ferromagnetic resonance and in the region of radio frequency losses, which are essentially radio spectrometers of permeability. Various diagrams of such installations are considered, various types are evaluated and circuits are recommended for construction of wide band radio spectrometers of permeability. Special attention is given to problems involved in measurement of the permeability spectra of magnetic thin films. A method is proposed for regulating the magnetic characteristics of magnetic thin films. Bibliography of six titles. E. L.

1/1

USSR

UDC 621.372.413(088.8)

KUGAYEVSKIY, A. F., YATSYNINA, N. L., KARIKH, N. M., IVANNIKOV, YE. A.

"Coaxial Resonator"

USSR Author's Certificate No 252430, Filed 27 May 68, Published 6 Feb 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B117P)

Translation: The proposed resonator is designed for measuring the electrical parameters of materials. It consists of two sections connected to each other. In order to improve the Q-factor of the resonator and increase the accuracy of the measurements, one section of the resonator is fastened on a moving spring-loaded carriage. The internal conductor of the resonator is equipped with a tip which is supported on a threaded bushing of a bracket which is fastened to the base of the carriage. There is one illustration.

1/1

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--MICROSYNTHESIS OF HYDROCARBONS FOR DETERMINING GAS CHROMATOGRAPHIC
PARAMETERS -U-
AUTHOR--(02)-KUGUCHEVA, YE.YE., ALEKSEYEVA, A.V.
COUNTRY OF INFO--USSR *K*
SOURCE--ZAVOD. LAB. 1970, 36(3), 271-3
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HYDROCARBON SYNTHESIS, GAS CHROMATOGRAPHY, DEHYDRATION,
ALCOHOL, ISOMERIZATION, ALKENE, ZEOLITE, HYDROGENATION, CATALYSIS

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0729 STEP NO--UR/0032/TQ/036/003/02T1/0273
CIRC ACCESSION NO--AP0119636
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119636

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. C SUB5 C SUB6 HYDROCARBONS FOR USE AS GAS CHROMATOG. STDS. WERE PREPD. BY CATALYTIC REACTIONS, E. G., DEHYDRATION OF AMYL ALCS. OVER MODIFIED CA SUB3 (PD SUB4) SUB2 AND AL SUB2 O SUB3. ISOMERIZATION OF OLEFINS ON CAA ZEOLITE OR OF HEXENES ON PD-C, AND BY HYDROGENATING HEXENES. THE REACTIONS WERE CARRIED OUT UNDER DYNAMIC CONDITIONS IN A GLASS TUBE MICROREACTOR. FACILITY: NII SIN. SPIRT. ORG. PROD., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 51

KUGURAKOVA, N. K.

"Generalization of the Biehl Method for an Arbitrary Convex Function"

V sb. Chisl. metody v tekhn.-ekon. zadachakh (Numerical Methods in Technical and Economic Problems--collection of works), Kazan', Kazan' University, 1971, pp 99-112 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V833)

Translation: In connection with the Biehl method, see RZh-Mat, 1966, 1V278K.

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- 17 -

USSR

KLEPOV, I. F.; KUGUSHEV, G. I. (Institute of Theoretical and Experimental Physics, Moscow)

"Formation of Complex Magnetic Cycles in a 7-BeV Proton Synchrotron"

Moscow, Pribory i Tekhnika Eksperimenta; January-February, 1971; 19-21

ABSTRACT: The principles of developing general-purpose control systems for ignitron rectifiers are described. The systems are designed for the alternate formation of basic magnetic cycles with one or two continuous shifts from positive values of the derivative of the field $dH/dt = 4 - 9$ koe/sec to any given value other than zero (for slow direction of the beam on the target) as well as of shortened triangular cycles for producing a proton beam with an energy of approximately 200 Mev in the intervals between the basic cycles. The process of forming such cycles in supplying power to the annular magnet in the 30-cycle/minute mode is indicated.

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K
USSR

UDC 621.311.25:621.362:538.43.001.2

KUGUSHEV, N. M., SLATIN, D. A., PETROV, Yu. A., MAXIN, S. A.

"Design and Construction of Electric Power Plants With Magnetohydrodynamic Generators"

Tr. Vses. proyekt. in-ta "Voploektroproyekt" (Works of the All-Union State Institute for the Design and Planning of Electrical Equipment for Heat Engineering Installations), 1970, vyp. 9, pp 95-110 (from RZh-Elektrotehnika i energetika, No 9, Sep 70, Abstract No 9A119)

Translation: A brief exposition is given of the characteristics of practical utilization of the MHD method of energy conversion. Possible technological diagrams of electric power plants with MHD generators are described as well as methods for further developments along these lines. Consideration is given to the planning of new non-standard equipment, a brief description of the characteristics of systems for control, automation and protection of equipment, as well as basic solutions for putting together the main building. Four illustrations, bibliography of four titles.

1/1

USSR

UBC 534.539.376

KOZYRSKIY, G. YA., KONONENKO, V. A., KUIKOVA, O. M., LEVYTER, V. V., MOROZUK, N. S., and ORZHITSKAYA, L. K., Institute of Metal Physics, Academy of Sciences, Ukrainian SSR, and Ukrainian Scientific Research Institute of Special Steel.

"Durability and Substructure of a Heat-Resistant, Precipitation-Hardened Alloy Subjected to Ultrasonic Treatment"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 4, 1973, pp 867-870

Abstract: The effect of ultrasonic irradiation on the structure and durability of KhN77YuR industrial alloy was studied on samples quenched after eight hours at 1080°C, which were subjected to irradiation at 700°C with ultrasonic oscillation amplitude varied between 10 and 17 millivolts. After irradiation the samples were aged at 700°C for one or two hours and then creep tested at 700°C under a load of 46 kg/mm². It was determined that ultrasonic treatment of this alloy promotes a more uniform distribution of the carbide phase, increases ductility owing to removal of carbide from the grain boundaries, blocks dislocation sources, and intensifies aging in weak areas. The result is increased durability and decreased creep rate. 2 figures, 1 table, 4 bibliographic references.

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USSR

KUK, Yu. V., PETUNIN, Yu. I.

"Asymptote of Dispersion of Best Unbiased Linear Estimate of Unknown Mathematical Expectation of a Stable Random Process Produced with Even Subdivision of the Interval of Observations"

Ukr. mat. zh. [Ukrainian Mathematics Journal], 1973, 25, No 2, pp 214-227 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V213 by the author)

Translation: The stable random process $x(s)$, $t \in [0, T]$ with unknown mathematical expectation m is studied. The asymptote of dispersion D_n of the best linear estimate m_n^* , constructed on the basis of the observations $x(t_0), x(t_1), \dots, x(t_n)$ is studied, where t_0, t_1, \dots, t_n is the even division of the observation interval $[0, T]$.

Suppose D is the dispersion of the best linear estimate of mathematical expectation m of process of $x(t)$. It is shown that for the stable Markov process $x(t)$

$$D_n - D = O(n^{-2}).$$

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USSR

KUK, Yu. V., PETUNIN, Yu. I., Ukr. mat. zh., 1973, 25, No 2, pp 214-227

If $x(t)$ is an elementary Dub process, the sequence D_n-D approaches zero no slower than $O(n^{-1})$.

2/2

1/2 010 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--POTASSIUM OXIDE AND BORON OXIDE AND POTASSIUM CHLORIDE AND WATER
SYSTEM AT 25PERCENT -U-
AUTHOR-(02)-KUKA, P., GODE, H. **K**
COUNTRY OF INFO--USSR
SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, KIM. SER. 1970, (1), 23-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--AQUEOUS SOLUTION, POTASSIUM CHLORIDE, BORATE, POTASSIUM OXIDE,
BORON OXIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/0612 STEP NO--UR/0464/70/000/001/0023/0025
CIRC ACCESSION NO--AP0105595
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105595

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. OF K BDRATE IN SOLNS. CONTG. 10 AND 20PERCENT KCL AND IN SATD. KCL SOLNS. WAS STUDIED AT 25PERCENT. IN SATD. KCL SOLNS. WHEN THE K SUB2 O CONTENT WAS 0.024PERCENT K DECABORATE APPEARED IN THE SOLID PHASE. AT THIS POINT, THE B SUB2 O SUB3 :K SUB2 O RATIO WAS 144. AS THIS RATIO DECREASED, THE SOLY. OF THE DECABORATE 1ST DECREASED AND THEN INCREASED. THE SOLY. OF THE TETRABORATE PASSED THROUGH A MIN. AFTER WHICH IT INCREASED SHARPLY AND ATTAINED A POINT OF SIMULTANEOUS CRYSTN. OF THE TETRA AND THE DIBORATES. IN 10 AND 20PERCENT KCL SOLNS., THE SOLY. ISOTHERMS RAN PARALLEL BETWEEN THE ISOTHERMS FOR THE SOLNS. WITHOUT KCL AND THE KCL SATD. SOLNS. THE SOLY. MIN. OF DECA AND TETRABORATES WERE RETAINED. THE SOLY. OF KCL DECREASED AS THE K SUB2 O CONTENT INCREASED, AND THUS, IN THE 10PERCENT KCL SOLN. THE ISOTHERM TERMINATED AT A K SUB2 O CONTENT OF 16.60PERCENT, AND FOR THE 20PERCENT KCL SOLN. THE ISOTHERM TERMINATED AT A K SUB2 O CONTENT OF 6.40PERCENT. AT THESE POINTS THE ISOTHERMS MERGED WITH THE ISOTHERMS OF A KCL SATD. SOLN.

UNCLASSIFIED

USSR

UDC 547.587.21

KUKALENKO, S. S., GRACHEVA, N. A., CHILIKIN, L. G.

"Chemistry of Organic Pesticides. III. Synthesis of 4-Phthalimidobutanoic Acid"

Zhurnal Organicheskoi Khimii, vol 9, No 7, July 1973, pp 1401-1404

Abstract: 4-Phthalimidobutanoic acid was made by reacting gamma-butyrolactone with dry potassium phthalimide at 180-200°C (84% yield). Cis-Tetrahydrophthalimidobutanoic acid was obtained by a similar procedure. A number of esters, acid chlorides, amides, and anilides of the first compound were prepared and their properties determined. Of the products tested, the most active fungicide (against tomato phytoflora) was 4-phthalimidobutanoic monoethylamide.

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Pesticides

USSR

UDC 547.745:541.69

KUKALENKO, S. S. and GRACHEVA, N. A., Scientific Research Institute of Fertilizers and Insectofungicides imeni Prof. Ya. V. SAMOYLOV, Moscow

"A New Synthetic Method for N-Aryl and N-Alkylpyrrolidones and Some of Their Properties"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 71, pp 773-774

Abstract: A simple method was developed for synthesis of N-aryl and N-alkylpyrrolidones based on the reaction of gamma-butyrolactone with primary amine hydrochlorides. The reaction takes place upon heating equimolar amounts of the starting materials at 60-210° for 4-20 hrs. Aryl derivatives form in 85-90% yield, alkyl products can be obtained in 20-33% yield. The products synthesized were found to have fungicidal activity.

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USSR

UDC 632.95

BUROVA, M. S., KUKALENKO, S. S., SAKADYNSKIY, K. I., NOSTOVSEVA, YE. YE.,
MALYSHEV, A. I.

"Study of the Halogenation of α -Epichlorhydrine"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection -- collection of works), No 1, Moscow, 1970, pp 263-269 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N415)

Translation: During chlorination of α -epichlorhydrine (I), β, γ -dichlorohydrine, α, α', α' -trichloracetone and α, α', α' -trichlorisopropyl alcohol are formed. During bromination of I, α, γ -chlorobromohydrine is isolated as the primary product. The process of halogenation of I in the presence of scattered light and cooling, with heating and ultraviolet or radiation was investigated. A Cl_2 current flows into 207 grams of I at a rate of 0.2-0.4 liters/min at 10-15^o; after 84 hours the HCl and Cl_2 are blown off the solution, and it is fractionated. Then 82.5 grams of Br_2 are added dropwise to 48 grams of I heated to 90-100^o, and kept at 100^o for 5 hours and the HBr is blown off and fractionated by gas chromatography.

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USSR

UDC 632.95

KUKALENKO, S. S., BUROVA, M. S., KARGAPOLOVA, F. V.

"Reaction of Chlorohydrin Ethers With Amines, Phenols, Thiophenols, and Carboxylic Acids"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection -- collection of works), vyp. 1, Moscow, 1970, pp 256-262 (from RZh-Ehiniya, No 12, Jun 72, Abstract No 12N474)

Translation: In searching for pesticides, ordinary methods were used to synthesize derivatives of chlorohydrin with the general formulas: $RXCH_2CH(OH)CH_2Cl$ (I), $RXCH_2CH(OH)CH_2NR'R''$ (II), $RXCH_2CH(OOCR''')CH_2Cl$ (III) $RXCH_2CHClCH_2Cl$ (IV) (everywhere R is Ph, substituted Ph, R' and R'' = H, C₁-C₈-alkyl, Ph, substituted Ph; R''' = C₁-C₃-alkyl, halogen; X = O, S). A mixture of 128.5 grams of *o*-chlorophenol, 92.5 grams of freshly redistilled epichlorohydrin and 1 ml of 40% aqueous solution of NaOH is heated in a boiling water bath for 15 hours, generating 150.32 grams of I (R = 4-ClC₆H₄, K = O) (Ia), C₉H₁₀ Cl₂O₂, yield 40%, boiling point 131-2°/2, n²⁰_D 1.5513, d₄²⁰ 1.3202. I (X = S) is obtained analogously,

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USSR

KUKALENKO, S. S., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 256-262

but with heating of the reaction mixture for 6 hours at 115-120°. The I are obtained (R, X, the molecular formula, the yield in %, the boiling point in °C/mm or the melting point in °C, n_D^{20} , d_4^{20} are given): 2-ClC₆H₄, O, C₉H₁₀Cl₂O₂, 50, 133/2, 1.5519, 1.3260; 3-ClC₆H₄, O, C₉H₁₀Cl₂O₂, 68.4, 154-6/2, 1.5532, 1.3210; 2,4-Cl₂C₆H₃, CO, C₉H₉Cl₃O₂, 65, 184-5/4, 1.5450, 1.4303; 2,4,5-Cl₂C₆H₂, O, C₉H₈Cl₄O₂, 30, 58-1, --, --; Ph, S (Ib), C₉H₁₁ClOS, 79, 142/2, 1.5889, 1.2427; 4-ClC₆H₄, S, C₉H₁₀Cl₂OS, 50, 156-7/2, 1.6010, 1.3437; 4,5-Cl₂C₆H₃, S, C₉H₈Cl₃OS, 77, 185-7/2, 1.6100, 1.4571. To a mixture of 22.1 grams of Ia and 10.12 grams of Et₃N, 12.32 grams of o-anisidine are added at 30° for 30 minutes. The mixture is mixed for 15 hours at 85-100°, separating 8.8 grams of II (R = 4-ClC₆H₄, R' = H, R'' = 2-HeOC₆H₄, X = O), C₁₆H₁₈ClNO₃, yield 54%, boiling point 133-7/4; n_D^{20} 1.5933, d_4^{20} 1.2455. The II are obtained analogously (R, R', R'', X, the molecular formula, the yield in %, the boiling point in °C/mm or the melting point in °C, n_D^{20} , d_4^{20} are given): 4-ClC₆H₄, H, Ph, O, C₁₅H₁₆ClNO₂, 2/5

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USSR

KUKALENKO, S. S., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 256-262

45, 78-80, --, --; 4-ClC₆H₄, H, 3-MeC₆H₄, O, C₁₆H₁₈ClNO₂, 20, 69-70, --, --;
 4-ClC₆H₄, H, 2,4-Me₂C₆H₃, O, C₁₇H₂₀ClNO₂, 33, 86-7, --, --; 4-ClC₆H₄, Me, Ph,
 O, C₁₆H₁₈ClNO₂, 33, 203-5/10, 1.5925, 1.2183; 4-ClC₆H₄, Et, Ph, O, C₁₇H₂₀ClNO₂,
 25, 203-5/5, 1.5872, 1.2414; 4-ClC₆H₄, H, n-C₈H₁₇, O, C₁₇H₂₃ClNO₂, 13, 174-5,
 --, --; Ph, H, n-C₈H₁₇, S, C₁₇H₂₉NOS, 20, 66-7, --, --; Ph, Et, Et, S, C₁₃H₂₁NOS,
 60, 147-3/2, 1.5480, 1.0722; Ph, H, 2-MeC₆H₄, S, C₁₆H₁₉NOS, 30, 214-6/2, 1.6160,
 1.1486; h, H, 3-MeC₆H₄, S, C₁₆H₁₉NOS, 30, 46-8, --, --; Ph, H, Ph, S, C₁₅H₁₇NOS,
 42.4, 56-8, --, --; Ph, H, 2,3-Me₂C₆H₃, S, C₁₇H₂₁NOS, 42, 46-7, --, --; Ph, H,
 2-MeOC₆H₄, S, C₁₆H₁₉NO₂S, 35, 233-5/5, 1.6150, 1.1852; Ph, H, 4-ClC₆H₄, S, C₁₅
 H₁₆ClNOS, 34, 64-5, --, --; Ph, Me, Ph, S, C₁₆H₁₉NOS, 41, 200-2/2, 1.6210,
 1.1444; Ph, Et, Ph, S, C₁₇H₂₁NOS, 30, 213-15/4, 1.6090, 1.1709; Ph, n-C₈H₁₇, Ph,
 S, C₂₃H₃₃NOS, 25, 238-40/3, 1.5670, 1.0522. The III is obtained by heating a
 mixture of I and the corresponding carboxylic acid in an organic solvent in the
 presence of H₂SO₄ with continuous redistillation of the water in the form of
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the azeotrope (R, R^m, X, the molecular formula, the yield in %, the melting point in °C or the boiling point in °C/mm, n²⁰_D, d²⁰₄ are given): 2-ClC₆H₄, CCl₃, O, C₁₁H₉Cl₅O₃, 42, 184-5/3, 1.5401, 1.4731; 4-ClC₆H₄, CH₂Cl, O, C₁₁H₁₁Cl₃O₃, 58, 180-1/3, 1.5385, 1.3823; 4-ClC₆H₄, Et, O, C₁₂H₁₄Cl₂O₃, 51, 160-1/5, 1.5194, 1.2471; 4-ClC₆H₄, Pr, O, C₁₃H₁₆Cl₂O₃, 50, 170-2/5, 1.5180, 1.2230; 2,4-Cl₂C₆H₃, CH₂Cl, O, C₁₁H₁₀Cl₄O₃, 51, 163-5/4, 1.5493, 1.4556; 2,4-Cl₂C₆H₃, CCl₃, O, C₁₁H₈Cl₆O₃, 50, 190-3/3, 1.5510, 2.5178; 2,4-Cl₂C₆H₃, Et, O, C₁₂H₁₃Cl₃O₃, 46, 170-60/2, 1.5380, 1.3465; 2,4-Cl₂C₆H₃, Pr, O, C₁₃H₁₅Cl₃O₃, 40, 163-90/2, 1.5253, 1.3103; Ph, Me, S (IIIa), C₁₁H₁₃ClO₂S, 57, 166-9/3, 1.5520, 1.2203; Ph, Et, S, C₁₂H₁₅-ClO₂S, 50, 163-5/3, 1.5402, 1.1751; Ph, Pr, S, C₁₃H₁₇ClO₂S, 42, 163-5/8, 1.5335, 1.1546; Ph, CH₂Cl, S, C₁₁H₁₂Cl₂O₂S, 40, 178-80/2, 1.5740, 1.2900; Ph, CCl₃, S, C₁₁H₁₀Cl₄O₂S, 40, 215-20/34, 1.5650, 1.2528. Ten grams of SO₂Cl₂ are added to 14 grams of IIIa in 30 ml of dry CCl₄ in one hour at 20-25°, the mixture is held for 6 hours at 20°, separating 6.5 grams of III (R = 4-ClC₆H₄, R^m = Me, X = S).

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$C_{11}H_{12}Cl_2O_2S$, yield 41%, boiling point, $138-40^\circ/2$, n_D^{20} 1.5785, d_4^{20} 1.2612.

Fifteen grams of $POCl_3$ are added to 20.22 grams of Ib; the mass is mixed for 5 hours at 60° , separating 19 grams of VI (R = Ph, X = S), $C_9H_{10}Cl_2S$, yield 86.4%,

boiling point $122-4^\circ/2$, n_D^{20} 1.5630, d_4^{20} 1.2591. Thirteen grams of $SOCl_2$ are dropped into a mixture of 22 grams of II and 13 grams of C_5H_5N at $-20-0^\circ$; the mass is held for 6 hours at 100° , 300 ml of dilute HCl is added, it is extracted with ether, the ether layer is washed with water and a sulfur solution, it is dried, yielding 19 grams of IV (R = 4- ClC_6H_4 , X = O), $C_9H_9Cl_3O$, yield 79.80,

boiling point $133.5-4^\circ/1$, n_D^{20} 1.5527, d_4^{20} 1.3455. The IV is obtained analogously (X = O) (R, the molecular formula, the yield in %, the boiling point in $^\circ C/mm$, n_D^{20} , d_4^{20} are given): Ph, $C_9H_{10}Cl_2O$, 82.2, $106/1$, 1.5417, 1.2429; 2,4-

$Cl_2C_6H_3$, $C_9H_8Cl_4O$, 65, $145-7/1$, 1.5629, 1.4317; 2,4,5- $Cl_3C_6H_2$, $C_9H_7Cl_5O$, 50, $158-61/1$, 1.5775, 1.5250. Thirty-six milliliters of 30% H_2O_2 are added to a mixture of 18 grams of Ib and 43 ml of ice AcOH; the mixture is heated for 5 hours at $50-75^\circ$, isolating 20 grams of 1-phenylsulphonyl-3-chloropropanol, yield 95%, melting point 69° (petroleum ether). The I-IV have herbicidal and fungicidal activity.

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USSR

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KUKALENKO, S. S., and KARGAPOLOVA, F. V., All Union Scientific Institute of
Chemical Plant Protective Agents

"Chemistry of Organic Pesticides. II. Chloromethylation of 3-Arylbutyric Acids
and Some of Their Properties"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 7, No 9, Sep 71, pp 1816-1819

Abstract: In a search for new pesticides, chloromethylated 3-arylbutyric acids were synthesized. A mixture of 3-phenylbutyric acid, 30% formaldehyde and concentrated hydrochloric acid was saturated with gaseous HCl at 20-25° and then poured into ice water; 3-(4-chloromethylphenyl) butyric acid (I), m. p. 113-114° crystallized. 3-(2-Methyl-4-chloromethylphenyl)-butyric acid, m. p. 94-95° was similarly obtained. (I) reacts with thionyl chloride to yield an acid chloride, b. p. 135-136°/3 mm. d_4^{20} 1.1211, n_D^{20} 1.5444, which when treated with butylamine in absolute ether gave a butylamide of (I), m.p. 77-78°. Refluxing (I) with ammonium thiocyanate and anhydrous acetone gave 3-(4-thiocyanylmethylphenyl)butyric acid, m.p. 62-63°. Compound (I) reacted with potassium diethyl dithiophosphate, to give 3-(4-diethylidithiophosphous methylphenyl) butyric acid, a viscous oil, d_4^{20} 1.2068, n_D^{20} 1.5448. Refluxing (I) with

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No 9, Sep 71, pp 1816-1819

thiourea in anhydrous acetone gives 3-(4-isothiuroniummethylphenyl)butyric
acid hydrochloride, m. p. 250°. Similarly the aminomethylphenyl, formylphenyl-,
and carboxyphenyl derivatives were obtained, mp 230°, 27-29°, and 204°,
respectively.

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USSR

UDC 632.952

KUKALENKO, S. S., and DVOYCHENKOVA, E. A., All-Union Scientific Research
Institute of Chemical Plant Protectants

"New Systemic Fungicides (Survey of Soviet and Foreign Literature)"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 6, 1971, pp 31-37

Abstract: The article reviews work done in the field of the 1,4-oxathiin derivatives (Vitavax, Plantvax, Sidvax and G-696). The authors deal almost exclusively with the foreign literature. The only Soviet reference is to I. M. POLYAKOV et al., who established that the development of brown rust of wheat decreases in direct relation to the exposure time for seeds in a solution of Vitavax and the content of the active ingredient. In plot experiments seeds immersed in a one-percent solution of the chemical for 60 minutes showed four times less rust than control. The article considers the mechanism of the systemic fungicidal action of 1,4-oxathiin derivatives.

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USSR

UDC: 632.934.1

KUKALENKO, S. S., and DVOYCHENKOVA, E. A., All-Union Scientific Research Institute of Chemicals for Plant Protection

"Fungicide Properties of Benzimidazole Substitutes"

Moscow, Khimiya v Sel'skom Khozyaystve, no 11, Nov 70, pp 36-41

Abstract: A review is presented of 85 reference items on the fungicide properties of benzimidazole substitutes, namely thiabendazole, furydazole, and benlat. Extensive laboratory and field tests show thiabendazole to have a wide spectrum of fungicide systemic effects against a multitude of vegetative plant and fruit diseases during the post-larvent period. The compound is particularly active against the green mould of citrus fruits -- *Penicillium digitatum*, *Diplodia natalensis*, *Botrytis cinerea*, *Penicillium coprolicum*, and others. Furydazole in mixture with mancochloro-benzene is a component of voronit which is widely used abroad as a disinfectant for treating wheat and rye grain against *Fusarium nivale* causing snow mould and the common bunt of wheat. Benlat is the most promising of all known systemic fungicides. Its specific characteristics are the

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KUKALENKO, S. S., et al, Khimiya v Sel'skom Khozyaystve, no 11, Nov 79,
pp 36-41

absence of phytotoxicity and a very low toxicity to warm-blooded animals. Its fungicide activity in vitro correlates well with that in vivo in plant diseases with the same pathogens. Further studies on the properties and the mechanism of the action of benzimidazole derivatives will undoubtedly be of great theoretical and practical value.

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USSR

UDC 538.14

KUKANOV, A. B., GRISA, B. D., Department of Theoretical Physics, Moscow University

"On the Problem of Energy Losses by a Charged Particle in a Gyrotropic Medium"

Moscow, Vestnik Moskovskogo Universiteta, Seriya III, Fizika, Astronomiya, Vol 12, No 4, Jul/Aug 71, pp 363-369

Abstract: The solution of the Fresnel equation for a gyrotropic medium is taken as a basis in deriving general expressions for the vectors of electromagnetic field polarization in this medium. A relation is established between two known approaches to solution of the problem of radiation by a charged particle in the given medium. The resultant general formulas are applied to the case of radiation by a charged particle moving in a helical line in a gyrotropic medium. The authors thank A. A. Sokolov for discussing the results. Bibliography of fifteen titles.

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USSR

UDC 538.30

K
KUKANOV, A. B. (Moscow State University)

"Expression for the Integral for Charged Particle Energy Loss Due to Vavilov-Cerenkov Radiation in a Uniaxial Gyrotropic Crystal"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy: Fizika; No. 1, 1970; pp 47-54

Δ Δ Δ

ABSTRACT: In a previous article the author suggested a simple method for calculating Vavilov-Cerenkov radiation energy loss by a charged particle moving at an arbitrary angle to the optical axis of a transparent uniaxial (nongyrotropic) crystal. The present article attempts to apply the considerations of the earlier article to the solution of the problem of Vavilov-Cerenkov radiation by a charged particle moving at an arbitrary angle to the optical axis in a medium whose electrical and magnetic permittivity tensors $\epsilon_{ik} = \epsilon_{ik}(\omega)$, $\mu_{ik} = \mu_{ik}(\omega)$ take the form

$$\epsilon_{ik} = \begin{pmatrix} \epsilon_1 & -i\epsilon_2 & 0 \\ i\epsilon_2 & \epsilon_1 & 0 \\ 0 & 0 & \epsilon_3 \end{pmatrix}, \quad \mu_{ik} = \begin{pmatrix} \mu_1 & -i\mu_2 & 0 \\ i\mu_2 & \mu_1 & 0 \\ 0 & 0 & \mu_3 \end{pmatrix}.$$

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KUKANOV, A. B., Izvestiya Vysshikh Uchebnykh Zavedeniy: Fizika; No. 1, 1970;
pp 47-54

A new expression is found for the energy loss integral. Some cases are considered in which the results of integration by variables in a wave space can be expressed in analytic form.

The author thanks A. A. SOKOLOV for his interest in the work and for discussing the results.

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TITLE--EXPRESSION FOR THE INTEGRAL FOR CHARGED PARTICLE ENERGY LOSS DUE TO
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AUTHOR--KUKANOV, A.B.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN A PREVIOUS ARTICLE THE AUTHOR SUGGESTED A SIMPLE METHOD FOR CALCULATING VAVILOV CERENKOV RADIATION ENERGY LOSS BY A CHARGED PARTICLE MOVING AT AN ARBITRARY ANGLE TO THE OPTICAL AXIS OF A TRANSPARENT UNIAXIAL (NONGYROTROPIC) CRYSTAL. THE PRESENT ARTICLE ATTEMPTS TO APPLY THE CONSIDERATIONS OF THE EARLIER ARTICLE TO THE SOLUTION OF THE PROBLEM OF VAVILOV CERENKOV RADIATION BY A CHARGED PARTICLE MOVING AT AN ARBITRARY ANGLE TO THE OPTICAL AXIS IN A MEDIUM WHOSE ELECTRICAL AND MAGNETIC PERMITTIVITY TENSORS ϵ_{SUBIK} EQUALS $\epsilon_{SUBIK}(\Omega)$, μ_{SUBIK} EQUALS $\mu_{SUBIK}(\Omega)$ TAKE THE FORM (FORM SHOWN ON MICROFICHE). A NEW EXPRESSION IS FOUND FOR THE ENERGY LOSS INTEGRAL. SOME CASES ARE CONSIDERED IN WHICH THE RESULTS OF INTEGRATION BY VARIABLES IN A WAVE SPACE CAN BE EXPRESSED IN ANALYTIC FORM. THE AUTHOR THANKS A. A. SOKOLOV FOR HIS INTEREST IN THE WORK AND FOR DISCUSSING THE RESULTS. FACILITY: MOSCOW STATE UNIVERSITY.

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KUKARKINA, M.A.

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1973

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(2)

a-T". A brief analysis is given of the calculation results (presented in 10 figures), as well as a comparison with experimental and other theoretical data.

Kukarkina, M. A. and Yu. B. Radvugin.

Application of a divergent scheme for solution of flow problems. Trudy II Respublikanskoy konferentsii po aerodinamicheskoy teorii i massoobmenu. Seriya "Aerodinamika vol'nikh shirokoy" Kiyev, Kiyevskiy universitet, 1971. 66-72. 22 stb., 3 fig., 22 ref.

A modification is proposed of a known method of calculating supersonic gas flow (Gubenko, Voshrensenskiy, Lyubimov, and Rusakov. Prostranstvennoye obrasheniye gladih i ideal'nym gazom. Tretse. dimentsional flow around smooth bodies by an ideal gas. Moscow, Nauka, 1964. RZMZh, 1965. 4B207K). The modified equations of gas dynamic are written in divergent form and in a conversion to new independent variables which permit the interval length of the difference grid, in terms of physical units, to be decreased without difficulty in regions of acute change of the parameters. Examples of flow around two complex bodies at $M \approx 10$ show that the method may be used for the calculation of flow with large gradients of gas-dynamic values.

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(5)

Dabenko, M. I., V. N. Ivanova, E. P. Kasandzhan, M. A. Kukarkina, and Yu. N. Rarvagin. Instability flow around the leading section of a blunt body. Part II. Respal'tnikansky konferentsii po aerodinamicheskoy teorii i obratnoy zadache. Seriya "Aerodinamika bol'shikh skorostey". Kiyev, Kiyevskiy universitet, 1971, 29-43. (RZhTekhn, 5/72, no. 5D125)

A numerical solution is given for the problem of supersonic flow around the leading section of a blunt body with a plane of symmetry in inert gas flow. A normalizing system of curvilinear coordinates is used, in which the calculated region has fixed boundaries. A finite-difference method is generalized and developed similar to an established one. The principal variation of the proposed method is associated with calculation of the frontal shock wave and the construction of a well-defined system of difference equations. Finite-difference approximation is employed for the derivatives together with the corresponding equation coefficients. The nonlinear system of difference equations obtained is solved by an iteration method, the complete system being divided into subsystems pertaining to each of the three spatial variables. The indeterminate form of the difference equations on the zero radial line is shown. The algorithm developed is used for the determination of steady supersonic flow around triaxial ellipsoids and ellipsoids of revolution. Results of numerical calculations are presented.