.USSR.

VROCHINSKIY, K. K., Rybnoye Khozyaystvo, No 9, 1971, p 22

When determining the permissible quantities of pesticides in fish ponds and domestic bodies of water, it is essential, in addition to the generally accepted approach, to determine the relationship between the concentration of pesticides in the water and pesticide accumulation in fish. In doing this, maximum permissible concentrations of pesticides in the water should be established where there is no worsening of the organoleptic properties of the fish and the quantity of pesticides in the fish does not exceed permissible residue amounts in a food product.

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VROCHINSKIY, K. K., All Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev

"Accumulation of Pesticides in Hydrobionts"

Abstract: A review is presented of the Soviet and U.S. literature on the accumulation of pesticides in hydrobionts. Extensive use of pesticides, especially the organochlorine compounds such as DDT, lindane, aldrin, and heptachlor, poses a major threat to bodies of water all over the world. Residual effects vary according to the physicochemical properties of the substances (solubility in water, persistence, etc.), methods of use, and hydrological characteristics of the body of water which they enter. At certain concentrations these agents are toxic to hydrobionts. They may accumulate in substantial quantities in a variety of aquatic plants, invertebrates, and fishes. As a result of such accumulation in hydrobionts, pesticides may be included in trophic cycles and food chains and remain in ecological systems indefinitely. Pesticides have even been found in parts of the world in which they are not used, e.g., in the Antarctic.
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VROCHINSKIY, K. K.

"Symposium on the Application of Mathematical Methods in Estimation and Prediction of the Real Danger of Pesticide Accumulation in the Environment and in Organisms"

Kiev, Gidrobiologicheskiy Zhurnal, Vol 8, No 4, Jul-Aug 72, pp 133-134

Abstract: The symposium was held in Kiev on the 14th and 15th of December 1971. Prof. L. I. MEDVED opened the sessions stressing the importance of the introduction of mathematical research methodology to biological sciences. Several papers were devoted to chemical and pesticide migration, among which the most interesting one was by A.G. IVAKHNENKO and YE. I. SPYNU on "Mathematical basis for development of the methodology for prognostication of the stability of pesticides". In his paper on "Mathematical models of the migration of substances in the biosphere", V. M. PROKHOROV summarized experimental results on the migration of radioactive materials in various systems. L. N. IVANOVA reported on a mathematical model for pesticide transfer in the system soil-plants, and K. K. VROCHINSKIY discussed "The use of correlation analysis in water toxicology during the study of the accumulation of pesticides". Another series of papers covered the accumulation of chemical substances in living organisms. V. A. KHOKHLOVA and A. YA. BROYTMAN discussed "Evaluation of the indicators for cumulative hazards", V. A. FILOVA -- "Capabilities and

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VROCHINSKIY, K. K., Gidrobiologicheskiy Zhurnal, Vol 8, No 4, Jul- Aug 72,
pp 133-134

limitations of mathematical treatment of the kinetics of material accumula-
tion in organisms", N. S. GIZATULLINA -- "Quantitative evaluation of the
accumulation on thresh old level", and R. YE. SOVA, A. P. MINTSER, and L. I.
BYGOVSKA -- "Statistical evaluation of the accumulation on threshold level".
B. M. SHTABSKIY Proposed a new method of differential study of accumulation,
and G. N. KRASOVSKIY et al. reported on the determination of cumulative
properties by LD_{50}. YU. S. KAGAN, L. M. SASINOVICH and G. I. OVSEYENKO talked
about "The use of the correlation analysis in determination of the connection
between the indicators of toxicity and accumulation for wealth standardiza-
tion". YE. I. LYUBLINA discussed physical constants of organic substances in
relationship to their lethal doses. V. N. KUDRINA and B. M. SHTABSKIY's paper
covered "Approximation of experimental data by minimal theoretical error",
while V. O. SHEFTEL and Z. S. TSAM discussed "The use of the derivative
concept in the study of the effect of contact time and water temperature on
the intensity of the migration of chemical substances from plastics". M. A.
KLISENKO and T. N. PANSHINA talked about "Parallels of the mathematical
calculation and experimental data in prognosis of dangerous accumulation of
some pesticides in warm blooded organisms". The title of the paper by A. I.
OLEFIR, A. D. MINTSER and R. YE. SOVA was "Complex evaluation of cellular
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VROCHINSKIY, K. K., Gidrobiologicheskiy Zhurnal, Vol 8, No 4, Jul-Aug 72, pp 133-134

immunity in the study of the afteraction of substances with different cumulative properties", G. G. MAKSIMOV -- "Primary organism reaction as the basis for prognosis for the danger of poisoning by industrial poisons in the environment" and YE. N. LEVKOVSKAYA -- "Mathematical modelling of the functional state of the uterus caused by the action of organophosphorus compounds".

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USSR

UDC: 621.374.33

VRONSKIY, I. V., KLENOV, V. T.

"A Transistor Switch With Zero Residual Voltage"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Technical Electrical Communications--collection of works), Moscow, "Svyaz'", 1970, pp 191-194 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G269)

Translation: The authors discuss the circuit of a switch with zero residual voltage. The circuit does not require transistor selection since the value of an adjustable resistor is set during alignment. This makes the circuit highly practical. The circuit can be extensively used as a high-quality switch for reference voltages. In addition, it can be used as a modulator as well. In this case, the circuit gives lower residual resistances than the widely used compensated switch circuit. Resumé.

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USSR

UDC: 669.017:548.73

ALESHINA, L. A., VRUBLEVSKAYA, E. L., MOKROV, A. P., RYKOVA, L. L.,
SHIVRIN, O. N., RABINOVICH, Ye. M., Tula

"Temperature Dependence of the Process of Formation of a Solid Solution Upon
Sintering of Tungsten-Molybdenum Powder Pressings"

Moscow, Fizika i Khimiya Obrabotki Materialov [The Physics and Chemistry of
Materials Processing], No 6, Nov-Dec 73, pp 111-117.

Abstract: This article is primarily dedicated to the study of the temperature
dependence of sintering and its influence on the formation of a tungsten-
molybdenum solid solution. The minimum holding time is established for
various temperature modes of sintering. Free molybdenum disappears almost
completely after minimum holding (15 minutes) at 1300-2200° C, but a signi-
ficant quantity of almost pure tungsten is still present. As sintering
time and temperature are increased, this W gradually goes over into the solid
solution. The effective activation energy of the process is 64,000 cal/mol for
the 1300-1600° interval and 76,000 cal/mol for the 1600-1800° interval. The
solid solution did not achieve high homogeneity at any of the temperature-time
modes used. This was particularly true of the alloy containing 50 wt.% Mo +

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Aleshina, L. A., Vrublevskaya, E. L., Mokrov, A. P., Rykova, L. L.,
Shivrin, O. N., Rabinovich, Ye. M., Moscow, Fizika i Khimiya Obrabotki
Materialov, No 6, Nov-Dec 73, pp 111-117.

50 wt. % W. Increasing the temperature for this alloy leads to the formation
of concentration heterogeneities. The kinetics of sintering in the surface
layer differ from sintering in the volume of a specimen. The surface layers
are richer in W.

TITLE--CHANGE IN THE ELECTRICAL RESISTANCE OF COPPER DURING THERMAL
   FATIGUE -U-

AUTHOR--VRUBLEVSKAYA, E.L.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED, TERM. OBRAB. METAL, 1970, (1), 75-6

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--THERMAL SHOCK, METAL QUENCHING, GRAIN STRUCTURE, COPPER
   ELECTRIC CONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1997   STEP NO--UR/0129/70/000/001/0075/0076

CIRC ACCESSION NO--AP0054795
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0054795
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF THERMAL CYCLING ON
THE ELEC. RESISTIVITY OF CU IS STUDIES. IN THE RESISTIVITY INCREMENT
(DELTA RHO-RHO) VS. THE NO. OF THERMAL CYCLES (N) DEPENDENCE, 4 STAGES
CAN BE DISTINGUISHED. IN STAGE I, THE 1ST 2 QUENCHINGS INCREASE DELTA
RHO-RHO BY EQUIVALENT TO 0.7PERCENT; THIS IS ATTRIBUTED TO THE BUILD UP
OF THE QUENCHED DEFECTS AND THEIR INTERACTION WITH THE IMPURITIES.
AFTER THE 3RD AND 4TH QUENCH (STAGE II) DELTA RHO-RHO DECREASES BY
EQUIVALENT TO 0.5PERCENT AND IS ASSOCD. WITH THE RELAXATION OF THE
THERMAL STRESSES PROMOTED BY THE GRAIN BOUNDARY MIGRATION THAT TAKE
PLACE. THE EFFECT OF THE GRAIN BOUNDARY MIGRATION GRADUALLY DECREASES
AND AFTER 20 QUENCHINGS (STAGE III) MIGRATION OF THE BOUNDARIES IS
STOPPED. FURTHER INCREASE IN N (IS GREATER THAN 100; STAGE IV) CAUSES A
LINEAR INCREASE IN DELTA RHO-RHO THIS IS BELIEVED TO BE ASSOCD. WITH THE
FORMATION OF A MORE STABLE POLYGONIZATION STRUCTURE.

UNCLASSIFIED

USSR   UDC 632.95

BLIZNYUK, N. K., KOLOMIYETS, A. F., GOLUBEVA, R. N., GRANIN, Ye. F.,
FADEYEV, Yu. N., VRUBLEVSKAYA, L. S., VARSHAVSKIY, S. L., KOFMAN, L. P.,
VIKHANSKIY, K. N.

"A Method of Making Derivatives of Aryl Esters of β-Isothiuronium
Ethanesulfonic Acid"

Translation: Compounds of the general formula $RO_3SC_2H_4SC(NH_2)=NH \cdot HA$ (I)
(R = aryl unsubstituted or substituted by Cl, NO_2, Me; A = Cl or an organic
acid radical) are synthesized by reacting $Ch_2=CHSO_3R$ (II) with salts of
thiourea or a mixture of thiourea with inorganic or organic acids. Example.
Solutions of equimolar quantities of II and thiourea hydrochloride in
butanol which are saturated at 60-90°C are heated at 80-90°C for 1 hour,
cooled, and filtered, giving I with a yield of 85-96%. Evaporation of
the mother liquor gives an additional quantity of I. The overall yield of
I is 95-100%. The following compounds of type I (A = Cl) are synthesized
(given are R and the melting point in °C): Ph, 165-6; $4-ClC_6H_4$ (Ia),

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USSR

BLIZNYUK, N. K., et al., USSR Author's Certificate No 337381, filed 1 Aug 63, published 1 Jun 72

144-6; $3\text{-}ClC_6H_4$, 168-70; $2,4\text{-}Cl_2C_6H_3$, 157-9; $2,4,5\text{-}Cl_3C_6H_2$, 178-80; $2,4,6\text{-}Cl_3C_6H_2$, 184 (decomp.); $4\text{-}NO_2C_6H_4$, 155-8; $3\text{-}MeC_6H_4$, 160-2.   Saturated aqueous solutions of equimolar quantities of Ia and $2,4\text{-}Cl_2C_6H_3OCH_2COONa$ are mixed at 90-100°C, cooled, and filtered, giving compound I (A = $2,4\text{-}Cl_2C_6H_3OCH_2COO\text{-}$, R = $4\text{-}ClC_6H_4$), melting point 134-5°C, yield 99.5%. In concentrations of 3.1-25 mg per liter compound I suppresses the growth of the mycelium Botritis cinerea and Piricularia orysae by 50-100%; in concentrations of 0.25-1 mg per liter, compound I suppresses the growth of spores of Botritis cinerea and Piricularia orysae by 8-100%, and in a concentration of 0.1% the chemical suppresses rust of the wheat strain Puccinia graminis f. tritici by 42-58%.

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1/2   015   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--ON MINERAL (MEDICINAL) WATERS IN THE USSR IN THE SIGHT OF V. I.
  LENIN'S DIRECTIVES ABOUT DEVELOPMENT OF HEALTH RESORTS -U-
AUTHOR--VRUBLEVSKIY, M.I.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 6, GEOLOGIYA, GEOGRAFIYA,
  1970, NR 1, PP 31-35
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--WATER, MINERAL, PUBLIC HEALTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1585.   STEP NO--UR/0307/70/000/001/0031/0035
CIRC ACCESSION NO--AP0106331
                    UNCLASSIFIED

2/2   015   UNCLASSIFIED   PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0106331
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. V. I. LENIN'S DIRECTIVES ABOUT THE
DEVELOPMENT OF HEALTH RESORTS HAVE STIMULATED THE EXPLORATION OF MINERAL
(MEDICINAL) WATERS IN THE USSR. LARGE RESOURCES OF MINERAL WATERS WHICH
CAN BE USED AT HEALTH RESORTS HAVE BEEN FOUND IN OUR COUNTRY.

UNCLASSIFIED   89

USSR   UDC 621.762.001:669.27

TRET'YAKOV, V. I., PIVOVAROV, L. Kh., NOVIKOVA, M. B., LIDER, V. Ya.,
NOVIKOVA, T. A., VRZHESHCH, Ye. Ya., and KARASEV, G. F.

"Influence of Surface Layer on Plates of Titanium-Tungsten Hard Alloys
on Wear Resistance During Cutting"

Sb. tr. Vses. n.-i. i proyektn. in-t tugoplavk. met. i tverd. splavov
[Collected Works of All-Union Scientific Research and Planning Institute
for Refractory Metals and Hard Alloys], No. 10, 1970, pp. 55-60
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract
No. 2 G413 by the authors)

Translation: Results are described from determination of the resistance
factor to cutting of specimens of titanium-tungsten hard alloys, when
layers of altered composition and structure are formed on the cutting
edges with certain sintering modes. It is established that the presence
of surface layers on the cutting edges of the cutting plates increases
their wear resistance during cutting by an average of 1.6 times.
2 figures; 2 tables; 3 biblio. refs.

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USSR

UDC 621.371.029.55

VSEKHOSVYATSKAYA, I. S., GLADYSHEVA, M. V., GORSHKOVA, E. Z.,
DUMBRAVA, Z. F., YEROFEYEV, N. M., ZOLOTAREV, A. Ye., KIYANOVSKIY,
M. P., MAL'SHAKOV, V. N., NOVIKOVA, L. N., PEZHEMSKAYA, M. D.,
PODDEL'SKIY, N. I., and RUDYKA, L. V.

"Some Results of Investigations Into Tilted Short-Pulse Sounding
in Ranges up to 400 km Long"

Translation: Results are given of the selection of optimal operat-
ing frequencies for ranges of varying extent, the identification
of propaganda modes, and the determination of the spectral char-
acteristics of the fluctuations in signal level. A. L.

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USSR

UDC 537.324

OSIPOV, E.V., KORNYUSHIN, YU.V., VSEVOLODSKIY, P.F.

"Production Of Cooling Because Of Anisotropy Of Thermoelectric Properties"

Elektron.tekhnika. Nauch.-tekhn.sb. Kriogen.elektronika (Electronics Technology. Scientific-Technical Collection. Cyrogenic Electronics), 1971, Issue 1(3), pp 111-115 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B220)

Translation: In an analytical manner the possibility is determined of the production of a temperature difference because of anisotropy of the thermoelectric properties of crystals in the absence of a magnetic field. In contrast to a Peltier cooler in which cooling is achieved because of the flow of an electric current across a contact between two different materials, in the case considered the cooler can be made from one material. For single crystals of the solid solutions Bi-Sb at a temperature of $100°$ K the temperature difference amounts to $\sim 12.5°$ K

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Precision Mechanical and Optical

USSR

VSEVOLOZHSKAYA, T. A. and SIL'VESTROV, G. I., Institute of Nuclear Physics, Novosibirsk

"Optical Characteristics of Convergent Parabolic Lenses"

Abstract: The theory of focusing systems for converging the paths of secondary particles originating in a large solid angle, involving high illumination and small focal length, is discussed in this article. An example of such a focusing system is the parabolic lens system developed in the Institute of Nuclear Physics of the Siberian Division Academy of Sciences in 1962-1963, used for focusing positrons with an energy of 120 Mev in a solid angle of about 0.03 steradians, corresponding to a linear angle of about 0.1 radians. The basic idea of the parabolic lens is that, to achieve linear focusing with a magnetic field of the form $H_\psi = k/r$, where k is a proportionality constant, the particle covers a path proportional to r^2 in the field along the axis of symmetry. The theories of point and non-point sources are developed, and the chromatic aberration in various types of lenses is computed and plotted in curves.
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1/2   023
UNCLASSIFIED
TITLE--DETERMINATION OF THE QUANTITY OF MECHANICAL IMPURITIES IN ADDITIVES
AND OILS -U-
PROCESSING DATE--23OCT70

AUTHOR-(03)-BLAGOVIDOV, I.F., VSELYUBSKIY, S.B., RUTTER, A.A.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (3), 10-12

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, PROPULSION AND FUELS

TOPIC TAGS--GASOLINE, TECHNICAL STANDARD, TEST METHOD, QUANTITATIVE
ANALYSIS, LUBRICATING OIL, LUBRICANT ADDITIVE, FILTRATION/(U)GOST 637059
LUBRICANT STANDARD, (U)GOST 1227566 LUBRICANT STANDARD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1515
STEP NO--UR/0318/70/000/003/0010/0012

CIRC ACCESSION NO--AP0118502
UNCLASSIFIED

2/2   023
CIRC ACCESSION NO--AP0118502   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DETN. BY GOST 12275-66 OF MECH.
IMPURITIES IN OILS CONTG. AND LACKING ADDITIVES WAS ACCURATE ACCORDING
TO ELECTRON MICROGRAPHS OF THE PPTS. AND EVAPD. FILTRATES WHEN THE OIL
AND ADDITIVE WERE REMOVED FROM THE RESIDUE ON THE NO. 4 NITROCELLULOSE
MEMBRANE FILTER (PORE SIZE 0.9 MU) BY WASHING IT 3 TIMES WITH 30 ML
PORTIONS OF KALOSH GASOLINE. DETNS. BY GOST 6370-59 WERE INACCURATE.

UNCLASSIFIED

Computers: Programming & Applications

VASILENKO, Yu. A., VSELYUSTIY. A. J.

"Device for Determination of Reliability of Characteristics of Computer Ele-
ments and Units"

Translation: A method is described for obtaining areas, in a system of coor-
dinates of three parameters, in which the discrete functional elements tested
operate with fixed reliability, and a device realizing the algorithm for the
method suggested is described. The method consists of defining cross sections
in the two-dimensional space of two parameters with fixed values of the third
parameter. The required number of cross sections with respect to the fixed
parameter determines the desired area in the system of coordinates of the
three parameters. Block diagrams are presented and the operating principle
of the device for automatic production of cross sections using an economical
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USSR

algorithm is described in detail. The device described realizes the algorithm taking into consideration the confidence boundaries for a fixed value of re-liability. Five illustrations; nine tables, three biblio. refs.

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USSR

VSEVOLODOV, E. B., LITVINOVA, L. D., and VISHNEVSKAYA, S. S., Institute of Experimental Biology, Kazakh Academy of Sciences

"Efficacy of Chemical Protection Against Radiation Shortly After Exposure in Relation to Stages of the Mitotic Cycle"

Alma-Ata, Izvestiya AN KazSSR, Seriya Biologicheskaya, No 3, 1973, pp 84-90

Abstract: Rats were administered aminoethyl thiouranium (AET) 10 minutes before irradiation at 50 or 100 r and sacrificed 3 and 6 hours later to obtain smears of bone marrow suspensions for histoautographic examination. Cells irradiated in the S phase were better protected against interkinetic death than the other cells and better protected against chromosomal aberrations than those irradiated in the G_2 phase. AET provided no protection against aberrations in cells irradiated in the G_2 phase. The number of anaphases and telophases with chromosomal aberrations among the dividing cells irradiated in the S phase decreased 6 hours after a dose of 50 r by a factor of 1.7 and 3 and 6 hours after a dose of 100 r by a factor of 1.2 and 1.1 respectively. With an increase in the dose from 50 to 100 r and after the injection of AET, there was a change in the relative contribution of cells irradiated

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VSEVOLODOV, E. B., et al., Izvestiya AN KazSSR, Seriya Biologicheskaya, No 3, 1973, pp 84-90

in various phases of the mitotic cycle, in the index of aberrations, in the mitotic index, and in the number of interphase degenerating cells.

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USSR   UDC 547.238+547.435.2+632.954

VSEVOLOZHSKAYA, N. B., SVIRSKAYA, P. I., and BASKAKOV, Yu. A., All Union
Scientific Research Institute of Chemical Plant Protection Agents

"Herbicidal Derivatives of Hydroxylamine. XXXIX. N-Carbamoly-N-Arylhydroxy-
lamines and Their Reactions"

Abstract: N-carbamoyl-N-arylhydroxylamines (I) were synthesized by reacting
N-arylhydroxylamines with potassium cyanate in aqueous ether solution and
in presence of an equivalent quantity of hydrochloric acid. (I) Could also
be obtained in anhydrous medium using gasseous isocyanic acid produced by
pyrolysis of cyanuric acid. (I) Could be easily O-carbamoylated by alkyl
or arylisocyanates in anhydrous acetone in presence of catalytic amounts of
triethylamine; this reaction was not observed in aqueous medium. The hy-
droxyl group of (I) reacts with aryl chlorides and anhydrides, with esters
of chlorocarboxylic acids and with chloroacetylchlorides. All of the C-
derivatives of carbamoylhydroxylamines, with exception of the 3-4-dichloro-
and 3-nitrophenylhydroxylamine derivatives, when treated with HCl yield
N-arylureas with a chlorine substituent in the nucleus. O-carbalkoxy-N-
carbamoyl-N-arylhydroxylamines are used in synthesis of N(4) unsubstituted
2-aryl-1,2,4-oxadiazolidinediones-3,5.
1/1

USSR

UDC: 632.95

BASKAKOV, YU. A., SVIRSKAYA, P. I., SHVINDLERMAN, G. S., MALYSHEVA, N. N.,
VSEVOLOZHSKAYA, N. B., TIBANOV, P. V. and VASIL'YEV, A. F.

"Herbicidal Derivatives of Hydroxyl Amine. XVII. Synthesis of N-Alkyl Carbamoyl-N-Arylhydroxyl Amines and Their o-Derivatives"

Biologicheski Aktivn. soyedin (Biologically Active Compounds -- Collection of Works), pp 70-76, Leningrad, Nauka Press, 1968 (from Referativnyy Zhurnal--Khimiya, No 2, 1970, Abstract No 2 N789)

Translation: Compounds with the general formula $3\text{-}X\text{-}4\text{-}Y\text{-}C_6H_3NHCOR$ (I), having fungicidal and herbicidal activity, are produced by the interaction of anilides or isomer chlorotoluidines and chloroanisidines with the corresponding acids in the presence of Zn powder or with their acid chlorides in the presence of HCl acceptors. Using the first method, 0.1 mol amine, 0.2 mol acid, and 0.001 g-atom Zn powder are heated several hours to complete distillation of the water; the reaction mixture is poured into ice water, the solid product is separated and crystallized. Synthesized are I (shown are R, X, yield in %, m.p. in ^{o}C):
Y = Cl: Et, Me, 91, 99-100; Pr, Me, 76, 76-8; iso-Pr, Me, 82, 132-2; Et, MeO,

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BASKAKOV, YU. A., et al, Referativnyy Zhurnal--Khimiya, No 2, 1970, Abstract No
2 N789)

39, 51-3; Pr, MeO, 43, 63-5, iso-Pr, MeO, 54, 99-100; Y = MeO: 53, Et, Cl, 53,
124-5; 78, PrCl, 78, 85-6; Pr, Cl, 65, 115-6.
Using the second method, 0.1 mol of the acid chloride of the corresponding acid
is added to 0.1 mol of amine, 0.1 mol Me_2NPh in 60 ml absolute ether with cooling
and agitation; mixing is performed for 2 hours at about 20°, the mixture is treat-
ed with water, the ether layer is washed with solutions of HCl (acid), alkali,
the solvent is removed and the product is crystallized from alcohol or a mixture
of petroleum ether and benzene. Produced are I (shown are R, yield in %, m.p.
in ^{o}C): X=Me, Y=Cl: Bu, 75.5, 70-1; iso-Bu, 80,8, 77-8; $CH_2=CH$, 75.6, 115-6;
MeCH=CH, 93, 100-1, 5; $2-ClC_6H_4$, 94, 134-5; CH_2ClCH_2Cl 84,4 97-8; $PhOCH_2$, 94,5,
108,5-9; $PhSCH_2$ 84, 96,5-7; X=Y=Cl:$Cl(CH_2)_3$, 67,6,86-7; $BuOCH_2CH_2$, 62, T. b.p.
224-5/2, $n^{19}D$ 1,5462; $PhOCH_2CH_2$, 96,7, 112-3; PhO $(CH_2)_3$, 51, 89-90; $4-Cl=C_6H_4O-$
$(CH_2)_3$, 79, 100; $PhSCH_2$, 92.5, 103-4; $BuSCH_2CH_2$, 53,5, dense mass; $PhSCH_2CH_2$,75,
80-1; X=Cl, Y=Me: $PhOCH_2$, 97, 105-6; $BuOCH_2CH_2$, 73,1, b.p. 202/2, $n^{20}D$ 1.5275;
$PhOCH_2CH_2$, 95,116-7; $PhO(CH_2)_3$, 60 80-1; $4-ClC_6H_4O(CH_2)_3$, 86, 115-6, $PhSCH_2$,

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USSR

BASKAKOV, YU. A., et al, Referativnyy Zhurnal--Khimiya, No 2, 1970, Abstract No 2 N789)

84, 85-6; BuSCH$_2$CH$_2$, 66, 50-1; PhSCH$_2$CH$_2$, 83, 85-6,5; Cl(CH$_2$)$_3$, 94,91-2; and I) (shown are R, X, Y, yield in %, m.p. in $^\circ$C): PhOCH$_2$, Cl MeO, 75, 106.5; PhOCH$_2$, MeO, Cl, 83, 159-60.5. The reactions of the anilides of chloro substituted acids with Na alcoholates and phenolates are studied. I (R = BuOCH$_2$, X = Y = Cl) is produced from 3,4-Cl$_2$C$_6$H$_3$NHCOCH$_2$Cl and BuONa in anhydrous acetone without using a catalyst, yield 27.5%, m.p. 75-5.5°. When a-halogen acid anilides and Na alcoholate are used under ordinary conditions, derivatives of diketopiperazing are formed. For example, 4.72 g 3,4-Cl$_2$C$_6$H$_3$NHCOCH$_2$Cl are added to a solution of BuONa produced from 35 ml BuOH and 0.46 g Na. The mixture is boiled for 4 hours and evaporated under a vacuum. From the reaction products, after treatment with water and filtration, 1.5 g 1,4-bis-(3,4-dichlorophenyl)-2,5-diketopiperazine are separated, m.p. 245-6 (acetone). The same method is used to produce 1,4-bis-(3-chloro-4-methylphenyl)-2,5-diketopiperazine, yield 44%, m.p. 237-8°. Under the conditions of the preceding experiments, β-chloropropionic acid arylamides are converted to the corresponding acrylic acid arylamides, while

3/4

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USSR

BASKAKOV, YU. A., et al, Referativnyy Zhurnal--Khimiya, No 2, 1970, Abstract No
2 N789)

the anilides of γ-chlorobutyric acid are converted to α-pyrrolidone derivatives.
Thus, 3.4 g N-3,4-dichlorophenyl- -pyrrolidone are produced from 5.32 g 3,4-
$Cl_2C_6H_3NHCO(CH_2)_3Cl$, m.p. 110-1° (alcohol), for which a mass spectrum is pre-
sented.

N. L. Poznanskaya

4/4

UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--ANALYSIS OF THE OPERATION OF A SULFURIC ACID ALKYLATION
   INSTALLATION -U-
AUTHOR-(04)-VSTAVSKAYA, L.I., POLYAKOVA, A.I., SOTSKOV, M.K., GARAYEVA,
   F.G.
COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. MOSCOW, 1970, (2), 25-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--SULFURIC ACID, ALKYLATION, PROPANE, CHEMICAL PURITY, CHEMICAL
   PLANT EQUIPMENT, CHEMICAL ENGINEERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0646
                                STEP NO--UR/0318/70/000/002/0025/0027
CIRC ACCESSION NO--AP0119558
                       UNCLASSIFIED

2/2   009
CIRC ACCESSION NO--AP0119558   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPROPANIZER WAS CONNECTED
WITH THE TOP OF THE RECTIFYING BLOCK TO OBTAIN C SUB3 H SUB8 OF HIGH
PURITY AND IMPROVE THE OPERATION OF THE DEBUTANIZER. THE OPTIMUM TEMP.
(MAX. 12DEGREES) OF THE CONTACTOR WAS OBTAINED WITH AN ADDNL. NH SUB3
CONDENSER COOLER OF 450 M PRIME2. SUCH APP. WERE ADDED TO THE
DEPROPANIZER AND DEBUTANIZER. FRESH AND SPENT H SUB2 SO SUB4 HAD 98
AND 85PERCENT CONCN., RESP. ISOBUTANE OLEFIN RATIOS IN THE INTAKE STOCK
AND IN THE REACTION ZONE WERE 1.2-1.3:1 AND 5.0:1.0, RESP. A FLOW
SHEET, PROPERTIES OF THE RAW MATERIALS AND PRODUCTS OBTAINED, AND
OPERATION DATA ARE PRESENTED.   FACILITY: KUIBYSHEV. NPZ,
KUIBYSHEV, USSR.

USSR

UDC 632.95

VTOROV, B. G., KALMANOVSKIY, V. I., CHULPANOVA, L. V., SHESHENIN, V. A., and YASHIN, YA. I.

"Some Particulars in the Analysis of Pesticides by a Recombination Rate Constant Detector"

Translation: A recombination rate constant detector is used to analyze the residues of chlorine-containing pesticides in various materials in place of electron capture detectors. The recombination rate constant detector has a linear dynamic range of $\sim$ 500 (with respect to lindane), and higher sensitvity and stability than the electron capture detector.

1/1

USSR   UDC 547.953

VTOROV, I. B., SEREBRENNIKOVA, G. A., and YEVSTIGNEYEVA, R. P., Moscow
Institute of Fine Chemical Technology imeni M. V. Lomonosov

"Studies of Complex Lipids. Synthesis and Structural Studies of cis-1-0-
(hexadecen-1-yl)-2-stearoyl-sn-glyceryl-3-N,N-dimethylaminoethyl phosphate,
phosphatidaldimethylethanolamine"

Abstract: A synthesis is described for complex plasmologens with natural
stereochemical configuration and tailored composition of fatty acids and
aldehydes. Condensation of cis-1-0-(hexadecen-1-yl)-2-stearoyl-3-bromo-3-
desoxy-sn-glycerine with the silver salt of dibenzylphosphate by refluxing
in xylene yields cis-1-0-(hexadecen-1-yl)-2-stearoyl-sn-glyceryl-3-dibenzyl
phosphate. The latter is debenzylated by refluxing with NaI in acetone in
presence of nitrogen bases; the sodium salt obtained is converted to the
silver salt and reacted with 2-chloroethyl-N,N-dimethylamine, yielding
cis-1-0-(hexadecen-1-yl)-2-stearoyl-sn-glyceryl-3-(N,N-dimethylaminoethyl)-
benzyl phosphate after chromatographic purification. Debenzylation of the
last product yields phosphatidaldimethylethanolamine. Infrared spectra of
the products are reported. The materials are optically pure.
1/1

1/2   018
UNCLASSIFIED
PROCESSING DATE--30OCT70
TITLE--LIPIDS. SYNTHESIS AND STUDY OF THE STRUCTURE OF
CIS,3,0,(OCTADECEN,1,YL),SN,GLYCIDOL -U-
AUTHOR-(03)-SEREBREENIKOVA, G.A., VTOROV, I.B., PREOBRAZHENSKIY, N.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 669-74

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LIPID, ORGANIC SYNTHESIS, GLYCEROL, IR SPECTRUM, EPR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2044
STEP NO--UR/0366/70/006/004/0669/0694

CIRC ACCESSION NO--AP0125632
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125632
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.
3,0,(2,TOSYLOXYOCTADECYL),SN,1,2,ISOPROPYLIDENEGLYCEROL WAS CONVERTED
STEPWISE INTO ME(CH SUB2) SUB14 CH SUB2 CHXCH SUB2 OCH SUB2 CH(OH)CH
SUB2 X (I) (X IS CONSECUTIVELY 4,MEC SUB6 H SUB4 SO SUB3, I, BR). THE
TREATMENT OF I (X EQUALS BR) WITH TERT BUOK IN TERT BUOH OR WITH
1,5,DIAZABICYCLO(5.4.0), UNDEC,5,ENE IN ME SUB2 SO GAVE CIS AND TRANS
ISOMERS OF 3,0,(1,OCTA, DECENYL),SN,GLYCIDOL. TOGETHER WITH SOME
3,0,(2,OCTADECENYL),SN, GLYCIDOL. IR AND EPR SPECTRA OF THESE GLYCIDOLS
ARE DISCUSSED.   FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM.
LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   012
UNCLASSIFIED
TITLE--MASS SPECTROMETRIC STUDY OF AMINODEOXY SUGARS -U-

PROCESSING DATE--30OCT70

AUTHOR-(05)-VULFSON, N.S., ZOLOTAREVA, G.M., BOCHKAREV, V.N., SMOLINA,
  Z.I., UNKOVSKIY, B.V.
COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM 1970, (2), 437-9

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MASS SPECTROMETER, SUCROSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0517

STEP NO--UR/0062/70/000/002/0437/0439

CIRC ACCESSION NO--AP0121191
UNCLASSIFIED

CIRC ACCESSION NO--AP0121191   UNCLASSIFIED   PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MASS SPECTRA WERE DESCRIBED BY LINE TABULATIONS FOR 10 3,AMINO,3,4,DIDEOXY SUGARS. IN THE MOL. IONS OF THESE SUGARS, A NEW FORM OF RING CLEAVAGE WAS FOUND IN WHICH THE 2-3 BOND IS RUPTURED ALONG WITH THE CYCLIC HEMIACETAL BOND, SO AS TO FORM AFTER MIGRATION OF THE H ATOM TO THE N FRAGMENT, AN ION R SUB2 N PRIME POSITIVE:CHCH SUB2 CHROH AS A RESULT OF ENERGETIC ADVANTAGE OF THIS FORM OF CLEAVAGE VS. THE CONVENTIONAL ONES OBSERVED FOR OTHER SUGAR DERIVS. FACILITY: INST. KHIM. PRIR. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

SCANNING OF SUCCESSIVELY FIXED TRACES
IN SHORT — TERM MEMORY

G. G. VUCHETICH and V. P. ZINCHENKO

S u m m a r y

The paper presents a scheme of successive information processing brought about by the visual system when constructing the image of an object or situation. The important components of the scheme are: the full storage in the short-term visual memory of the information obtained during 3—4 visual fixations and the subsequent scanning of several traces arranged in a card file order. The paper describes and discusses the expe-

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REEL/FRAME
19751807

AP0041918

riments which do not run counter to this scheme. The investigations car-
ried out by the partial report method reveal the mechanism of selective
retention of information obtained at each step of search. The investiga-
tions carried out by the missing component scan method (where series of
stimuli with short intervals were presented) show the possibility of for-
ming chains (card file) of traces. The development of experimental model,
in which both indicated methods of studying the short — term visual me-
mory would be combined, is necessary, in authors' opinion, for the refi-
nement of the proposed scheme.

2/2   19751808

USSR

UDC 621.371.332

AFRAYMOVICH, E. L., VUGMEYSTER, B. O., and KALIKHMAN, A. D.

"Effect of Lower-Placed Ionization on the Spectral Characteristics of a Signal Reflected from Layer 2"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 8 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 8--collection of works) "Nauka," 1972, p 154 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A395)

Translation: Computations are made of the spectral characteristics of a signal reflected from the F layer as from a mirror, with the E layer taken into account. It is shown that the signal analyzed on the ground undergoes marked modulation determined by the parameters of the E layer (velocity, half-thickness, dimensions of nonuniformities). Results of the computation agree closely with the dynamic spectra of the radio signal, given in the paper, obtained from the experimental data by simultaneous observations of the signal from the E and F layers. Resume
1/1

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USSR

UDC   621.371.332

AFRAYMOVICH, E. L., VUGMEYSTER, B. O., and KOROLEV, V. A.

"Spectral Characteristics of the Signal Reflected Sporadically from the E Layer"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 8 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 8--collection of works) "Nauka," 1972, pp 149-153 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A396)

Translation: Results of experimental research conducted by various authors are analyzed. As a result of the analysis, fundamental characteristics of the envelope of the signal reflected from the Es layer are derived. In particular, the relative stability of the placement of the spectral components over a period of about five minutes is established. The results are adequately explained in the framework of the radiation model of the signal reflected from large-scale heterogeneities in the ionization. One illustration, bibliography of nine.

1/1

1/2   012

UNCLASSIFIED

TITLE---DEHYDROGENATION OF ETHANOL TO ACETALDEHYDE ON A SKELETAL COPPER
CATALYST --U--

PROCESSING DATE--30OCT70

AUTHOR-(03)-VUKELSON, I.I., TEREKHIN, R.M., KVASHNINA, S.P.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(2), 83-7

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYTIC DEHYDROGENATION, ETHANOL, ALDEHYDE, COPPER, CATALYST
REGENERATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0817

CIRC ACCESSION NO--AP0124484

STEP NO--UR/0064/70/046/002/0083/0087

UNCLASSIFIED

2/2   012   UNCLASSIFIED   PROCESSING DATE---30OCT70
CIRC ACCESSION NO---AP0124484
ABSTRACT/EXTRACT---(U) GP-0- ABSTRACT. A CATALYST FOR THE DEHYDROGENATION
  OF ETOH TO ACH WAS PREPD. BY QUENCHIN A CU AL ALLOY CONTG. 56.5PERCENT
  CU AND LEACHING THE AL WITH 10PERCENT NAOH AT 15-80DEGREES. THE
  CATALYST HAD SP. SURFACE 27 M PRIME2-G, AND THE RATE CONST. OVER IT WAS
  0.41 AND 2.04 MIN PRIME1 NEGATIVE AT 190 AND 250DEGREES, RESP. OVER
  THIS CATALYST, THE REACTION WAS MORE SELECTIVE THAN ONCOM. CATALYST (CU
  ON DIATOMITE), I.E., THE DEGREE OF CONVERSION OF ETOH TO ETOAC DID NOT
  EXCEED 10-12PERCENT AND THE CONCN. OF ACH IN THE PRODUCT (AT
  210-70DEGREES 6 VOL-HR) WAS 21.2PERCENT, COMPARED WITH 18.6PERCENT ON
  THE COM. CATALYST. THE SERVICE LIFE OF THE CATALYST WAS GREATER THAN OR
  EQUAL TO 700 HR, AND IT COULD BE REGENERATED BY TREATMENT WITH ALK.
  SOLN.

UNCLASSIFIED

VUKOLOV, A. G., and KUTSENOGIY, K. P., Institute of Chemical Kinetics and Combustion, Siberian Branch, Academy of Sciences USSR

"Theoretical Basis for the Utilization of Insecticidal Aerosols in Pest Control"

Abstract: Using the example of monodispersive aerosol particles, an analysis has been carried out for the probability of death of pests sensitive to these chemical agents. It has been established that a satisfactory death rate of the pests is always dependent on the overdosage of chemical poison which is related to the ratio of drop size (d) to the lethal diameter (d_e). Lethal diameter is defined as the diameter of the drop which contains a lethal dose for a particular species. If $d < (d_e)$, then the overdosage is lowered with decreased drop size. Because of this, it is recommended to use fine aerosol particles.

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USSR

UDC 531.8

SPIVAKOVSKIY, A. O., GONCHAREVICH, I. F., VUKOLOV, E. A.

"Investigation of the Dynamics of a Vibration Feed-Sifter With a Motor of Limited Power Under Load"

V sb. Dinamika mashin (Machine Dynamics -- Collection of Works), Moscow, 1969, pp 239-247 (from RZh-Mekhanika, No 5, May 70, Abstract No 5A215)

Translation: Flow charts for an analog computer were developed to study the dynamics of vibration feed-sifters with an engine of limited power operating under a load. An elastic-viscous model of the load to be transported was used to take into account the effect of a load on the operation of the vibration feed-sifter. The application of an analog computer to study vibration feed-sifters makes it possible to select with maximum accuracy the design parameters of the load bearing elements, the elastic system, the vibrator and the drive to ensure a given productivity for a minimum power capacity and a maximum level of dynamic loads. An analog device was used to study the effect of the parameters of the vibration machine on the rate of vibration transporting and productive and unproductive expenditures of energy on transportation and by the machine as a whole. The basic advantages of an analog device in studying such

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USSR

SPIVAKOVSKIY, A. O., et al., Dinamika mashin, 1969, pp 239-247

machines is that it is possible to examine rapidly a large number of versions
that could be achieved in practice and review the results, and it is also possible
to study non-steady-state regimes as the machine passes through resonance during
acceleration and retardation. Authors abstract.

2/2

USSR

SOLYAKOV, S. P., BELKIN, G. I., TATAKIN, A. N., NACHAYEV, V. M., ZOBNIN, S, I.,
ZYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SVALOV, G. N., DEVYATKIN, V. N.,
ALEKSANDROV, V. A., GRIBOV, V. I.

"Method of Processing Slimes from Electrolytic Production of Magnesium"

Translation: In order to use the slime for production of Mg, it is fed from the
electrolyzers to chlorinators together with the depleted $MgCl_2$ electrolyte
in the form of a pulp containing 1-10% MgO and 5-25% $MgCl_2$. The chlorinators
also receive the Cl-Mg raw material and Cl_2, after which the electrolyte,
enriched with $MgCl_2$, is fed to the electrolyzers.

1/1

USSR

UDC 659.721.372

ZUYEV, N. M., IVANOV, A. B., VIKTOROV, V. V., SVALOV, G. N.,
IRTEGOV, N. N., GENKIN, Ya. M., AGALAKOV, V. A.,
SHCHELKONOGOV, A. A., SABUROV, V. F., and KIRILENKO, I. S.

"Flow Line for Magnesium Production"

Moscow, Tsvetnyye Metally, No 9, Sep 71, pp 36-37

Abstract: An experimental-industrial flow line which uses smelted carnallite
as the raw material for the production of magnesium has been established at a
Soviet plant. The operation of the flow line is described by reference to a
diagram and the distribution of slime (with 20% MgO) by electrolyzers showing
the maximum output of slime (up to 60% of its total amount) on the first 3-4
electrolyzers. It is shown that the centralized feeding of diaphragm-type
electrolyzers provides a 3-4% increase of magnesium output. To maintain normal
temperature conditions and compensate for heat losses, it is necessary to
provide for an increase of current intensity and electrolyzer output by 10-12%,
in comparison with electrolyzers with individual feeding. Two illustr.,
three biblio. refs.

1/1

USSR

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., GENKIN, Ya. N., SHARUNOVA, G. M.,
SVALOV, G. N.

"Development of a Continuous Technology for Production of Magnesium"

Translation: Results are presented from combined studies for the development of
technology and equipment for production of Mg by electrolysis in a continuous
system. This technology calls for a combination of the ordinary individually
operating units into a single technological line with centralized charging of
raw material, transmission of melt and Mg produced from unit to unit, and centralized
removal   of electrolysis products. The investigations established the influence
of the continuous method of production of Mg on such technological indicators as
the yield of Mg per unit current, the specific dc electric power consumption, the
quantity of slime removed, etc; the specific features of operation of the equip-
ment were determined. Testing of the technology and equipment for the continuous
line was performed   on   laboratory, large-laboratory, and pilot-plant scales, de-
monstrating the possibility and promise of the new technological plan.

1/1

USSR

UDC 669.721.472(088.8)

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., SVALOV, G. N.,
IRTEGOV, N. N., SABUROV, V. F., SHCHELKONOGOV, A. A., GRUDOVSKIY, N. P.,
and KISELEV, A. V., All-Union Scientific Research and Design Institute of
Aluminum, Magnesium, and Electrode Industry, Bereznikovskiy Titanium-Magnesium
Combine

"Method of Cutting-Off the Electrolyte Supply of a Production Line Magnesium
Electrolytic Reduction Cell"

USSR Author's Certificate No 260905, filed 21 Oct 68, published 5 May 70
(from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G135 P)

Translation: A method is proposed for switching-off the electrolyte supply
to a production line magnesium electrolytic reduction cell for subsequent
diffusion of scum by increasing the temperature of the electrolyte and the
concentration of magnesium chloride. To avert disruption of the operation
of the production line electrolytic reduction cell at the input into the
cathode cell of the electrolytic reduction cell, shields are placed, which
separate the working space of the electrolytic reduction cell from the elec-
trolyte flow in the distribution canal.

1/1

USSR

UDC 669.7/.8.472(088.8)

AGALAKOV, V. A., NIKOLOV, V. V., GENKIN, YA. N., ZUYEV, N. M.,
IVANOV, A. B., KLABUKOVA, G. I., LUK'YANOVA, YU. V., PAVLOVA,
S. A., SVALOV, G. N., SHARUNOVA, G. M., and YUMASHEV, V. D.,
Bereznikovskiy Titanium-Magnesium Combine, All-Union Scientific
Research and Design Institute of the Aluminum, Magnesium and
Electrode Industry

"Vacuum Ladle For Transporting and Proportioning Melted Salts"

USSR Author's Certificate No 255581, filed 7 Mar 67, published
30 Mar 70 (from RZh-Metallurgiya, No 11, No 70, Abstract No
11 G85 P)

Translation: A vacuum ladle is proposed for transporting and
proportioning melted salts. The device is made in the form of
a thermostat into which is placed a heating crucible with two
tap holes with closing devices. To ensure continuous operation
of the vacuum ladle and accurate proportioning of the melt, the
vacuum ladle is equipped with contact units which control the
level of melt in the batcher. The contact units are installed
at different levels and are connected to a device which records
the stability of the electrolyte level.
1/1

USSR

UDC 669.721.37

ZUYEV, N. M., VUKOLOV, V. V., and IVANOV, A. B.

"Selecting the Optimum Temperature for the Electrolysis of Magnesium Chloride"

Abstract: A review of earlier research indicates the lack of a concensus on the effect of temperature on current efficiency, points up the paucity of information on the effect of temperature on stuging, magnesium quality, and voltage, and demonstrates the need for a more accurate definition of relationships between the temperature of the electrolyte and technological characteristics. The current efficiency was checked as a function of temperature within 680-790°C. The experimental data on the performance of magnesium electrolyzers using a sodium-potassium electrolyte demonstrated that an increase in temperature favorably affects both current efficiency and power consumption only up to 710-720° C.   A further increase in temperature

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USSR

ZUYEV, N. M., et al, Tsvetnyye Metally, No. 12, Dec 70, pp 33-35

causes a marked drop in current efficiency and a rise in power consumption.
Heating the electrolyte to 720°C results in a significant increase in
sludging and lowers the quality of the produced magnesium. The contents
of Si, Mn, Cu, Ni, K, Ca, and Cl in crude magnesium are independent of
temperature and those for Mn, Cu, and Ni are determined by their contents
in the initial raw material. In feeding electrolyzers with magnesium
chloride of titanium production the content of these elements in magnesium
remains well below that specified by GOST.

Magnesium

USSR

UDC 669.721.472(088.8)

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., KASHKAROV,
A. Z., DONSKIKH, P. A., KOLESNIKOV, A. V., GOLUBEV, A. A., SPRYGIN, A. I.,
KOLESNIKOV, V. A., and KUZ'MIN, V. V., All-Union Scientific Research and
Planning Institute of the Aluminum, Magnesium and Electrode Industry, and
Berezniki Titanium-Magnesium Combine

"Device for Conveying Liquid Electrolyte and Magnesium"

USSR Authors' Certificate No 259396, Cl. 40c, 3/02; 40c, 3/08, (C 22d), filed
21 Oct 68, published 28 Apr 70 (from RZh-Metallurgiya, No 12, Dec 70, Abstract
No 12 G250 P)

Translation: In order to utilize the heat of the exothermic reactions taking
place during the mixing of reversible electrolyte with $MgCl_2$ and to preclude
the consumption of electric energy for heating the main conveyer lines, a
pipeline for conveying the reversible electrolyte and metallic magnesium was
installed inside a trough-shaped channel to convey a magnesium chloride-en-
riched electrolyte, the pipeline being connected at one end with the last
electrolyzer of the flow line, and at the other with a mixer, while the
trough-shaped channel is connected with the lead electrolyzer and the mixer.
1/1

USSR

UDC 669.71.053.24(088.8)

KHITRIK, S. I., GASIK, M. I., VUKOLOV, YE. A., KLIMKOVICH, N. A.,
PORADA, A. N., LAGUNOV, YU. V., POLONSKIY, S. M., IORDANOVA,
Z. A., MALYSHEV, V. I., YEMLIN, B. I., KASHKUL', V. V., MASHKOV,
V. P. TSEYMAKH, N. L., YEM, A. P., CHERNYSH, F. I., and KOLNOGU-
ZENKO, V. A., Dnepropetrovsk Metallurgical Institute

"Method of Smelting Abrasive Electrolytically Produced Corundum"

Translation: A method is proposed for smelting abrasive elec-
trolytically produced corundum in a thermal furnace which involves
deep fusion of alumina-containing charge with reducing agents.
To increase the abrasive properties of corundum and to obtain
in it a Ti oxide content of $\leqslant 1\%$, smelting is carried out on
kaolin presintered with Fe-ore additive or scale in the amount
of 20-30 wt % of the charge.

1/1

- 30 -

USSR

VUKS, M. F., ATAKHODZHAYEV, A. K., TUKHVATULLIN, F. Kh.   UDC 535

- "An Extremity of the Rayleigh Scattering Line of Light in Liquid and Relaxation Phenomena"

Translation: The distribution of intensity in the near region of the extremity of a Rayleigh scattering line of light was investigated for 18 liquids: CS_2, benzene, toluene, and a number of substitutes for benzene and toluene. It was shown that in determining the relaxation time τ from the broadening of the scattering line, the best results are given by measurements in the region where the intensity drops by a factor of 4-18. The effect of the dimensions and shapes of molecules on the width of the scattering line was investigated. Greater values of τ correspond to molecules of greater dimensions. Analysis of experimental data shows that the Debye relationship relating τ of the reorientation of the molecules with the viscosity of the medium is suitable for spherical molecules. The effect of solvents on the value of τ and the shape of the scattering line was investigated. Reasons for deviations of the intensity distribution from the dispersion distribution at the extremities of the line are discussed. Also investigated was the effect of temperature on the distribution of intensity in the shape of the Rayleigh scattering line. 26 ref. E. V. B.
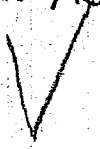
1/1

Acc. Nr.
$\mathcal{H}^{9}$0050455 —   Abstracting Service:
                    CHEMICAL ABST.5/70

Ref. Code
$\mathcal{H}\mathcal{R}$ 0851

105342c   Dielectric constant fluctuations and light scattering in solutions. Yuks, M. F. (USSR).   Opt. Spektrosk. 1970, 28 (1), 141-7 (Russ). An expression is derived for the fluctuation deriv. A comparison is made between exptl. and calcd. light-scattering intensity in the systems C_6H_6-MeOH, CCl_4-MeOH and CCl_4-EtOH.
                                    Boris H. Tytell

$\mathcal{Y}_1$

REEL/FRAME
19810434

$2/$ rd

USSR

UDC [537.226+537.311.33]:[537+535]

BIKTIMIROVA, V. V., VUL' A. YA., POLYANSKAYA, T. A., SIKHARULIDZE, G. A.,
TURKEVICH, V. M., UKHANOV, YU. I., and SHMARTSEV, YU. V.

"Production and Electrical Properties of Semiconducting Compound $CdSnAs_2$"

Translation: The authors describe a method of growing large single crystals of
the ternary semiconducting compound $CdSnAs_2$ by zonal recrystallization with seed
under special temperature conditions. The existence of holes with high mobility
is inferred from the investigation of the dependence of specific resistance and
Hall coefficient on magnetic field induction in p-specimens. The dependence of
magnetoresistance on the angle between current-density and magnetic-induction
vectors in n-specimens confirms the assumption regarding the sphericity of
isoenergetic surfaces in the conduction band.

1/1

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USSR

GOLUBEV, L. V., VUL', A. Ya., and SHMARTSEV, Yu. V.

UDC 621.315.598:546.28

"Growth of Single Crystals of Gallium Antimonide Doped With Tellurium or Sulfur"

V sb. Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 485-493 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B123)

Translation: The preparation of single crystals of GaSb by the Czochralski method is described. Te, S, Sb$_2$S$_3$, GaS, and Ga$_2$S$_3$ were used for doping. Seeding was performed in the (111) plane. In order to decrease the density of dislocations, the diameter of the initial part of the crystal was decreased to 1.5 ± 2 mm at a length of 15 ± 20 mm which assured emergence to the crystal surface of dislocations germinating from the seed. With the introduction of elemental Te into the melt, single crystals of the n type were obtained with concentrations of free electrons of 10^{17} -- 5 · 10^{18}. During doping by S, single crystals were obtained, 65-70 mm long with a diameter of 12-15 mm. The resistivity for p-type ingots amounted to 0.1--(2 ÷ 5) ohm.cm for different crystals. Crystals of the n-type had a resistivity from 0.1 to several tens of ohm.cm. The density of dislocations did not exceed 10^2--10^3 cm^{-2}. It is determined that S as a doping impurity is found in the lattice in active and nonactive states. Doping of the melt by elemental S from the gaseous phase or a compound leads only to an insignificant compensation of the material. In order to

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USSR

GOLUBEV, L. V., et al., Protessy rosta kristallov i plenok poluprovodn.
(Procedures for the Growth of Semiconductor Crystals and Films -- Collection
of Works), Novosibirsk, 1970, pp 485-493 (from RZh-Elektronika i yeye
primeneniye, No 7, July 1971, Abstract No 7B123)

obtain n-type GaSb it is necessary to introduce into the melt an excess of Ga, filling
vacant places in the sublattice of Ga. Use of the compounds GaS and Ga_2S_3 gives the
best results as alloys. 7 ref. N.Sh.

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USSR

VUL, B. M., ZAVARITSKAYA, E. I., VORONOVA, I. D., and ROZHDESTVEN-
SKAYA, N. V.

UDC: 621.315.592

"Hot Electrons at Low Temperatures in Compensated Gallium Arsenide"

Abstract: This paper is a continuation of an earlier article by the
same authors and published in the same journal noted above (5, 1971,
p 943) investigating the electrical conductivity of compensated
GaAs at low temperatures, in a weak electric field with a maximum
intensity of 10^{-2} v/cm, when the electron temperature was practi-
cally the same as the crystal temperature. The present paper de-
scribes experiments designed to broaden this early research to
cover stronger electric fields and to clarify the effects of heat-
ing up the electrons under conditions of energy boundary distor-
tions. The measurements in this work were conducted at tempera-
tures of 290, 77, 20.4, 4.2, and 1.8° K. To avoid heating the
crystal, it was given square pulses of 20 μs duration with a repetition
rate of 100-200 pps. The results are given in the form of curves
1/2

USSR

VUL, B. M., et al, Fizika i tekhnika poluprovodnikov, No.9, Sep-
tember 1973, pp 1766-1770

UDC: 621.315.592

of the current density as a function of the electric field inten-
sity for various temperatures, of the electron mobility as a func-
tion of the square of the electric field intensity, and of the
electron temperature as a function of the square of the electric
field intensity. It is found that the described phenomena can be
explained by the Boltzmann kinetic energy equation on the assump-
tion that the electrons are scattered in dipoles.

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1/2   022

TITLE--FIELD EFFECT AT A SEMICONDUCTOR C DOMAIN FERROELECTRIC CONTACT -U-

PROCESSING DATE--23OCT70

AUTHOR-(03)-VUL, B.M., GURO, G.M., IVANCHIK, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 162-6

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FIELD EFFECT, FERROELECTRIC MATERIAL, FORBIDDEN ZONE WIDTH,
SEMICONDUCTOR PROPERTY, FREE ELECTRON, ELECTROMAGNETIC INDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1991

STEP NO--UR/0449/70/004/001/0162/0166

CIRC ACCESSION NO--AP0105065

2/2   022

CIRC ACCESSION NO--AP0105065   UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTACT BETWEEN A SEMICONDUCTOR AND A C DOMAIN FERROELEC. WAS EXAMD. THEORETICALLY. IF THE FORBIDDEN BAND WIDTH OF THE SEMICONDUCTOR IS SMALLER THAN THE CORRESPONDING VALUE OF THE FERROELEC.; A LAYER OF FREE CARRIERS IS BUILT UP IN THE ADJACENT REGION OF THE SEMICONDUCTOR, REFLECTING THE FIELD OF SPONTANEOUS INDUCTION (D SUB0) OF THE FERROELEC. SOME FERROELECS. (E.G. BATIO SUB3 AND PBTIO SUB3 WOTH D SUB0 IS SIMILAR OR EQUAL TO 10 PRIME8 V-CM) SHOW A CONCN. OF FREE CARRIERS IN THIS LAYER OF APPROX. 10 PRIME21-CM PRIME3; THE FREE CARRIER GAS EXHIBITS A DISTORTION OF 1-2 EV. IF THE FORBIDDEN BAND THE FERROELEC., THE SEMICONDUCTOR REMAINING UNDISTURBED.
FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   024

UNCLASSIFIED

TITLE--DEPENDENCE OF THE VOLTAGE CURRENT CHARACTERISTICS OF A TUNNEL DIODE
ON THE FERMI LEVELS IN N AND P REGIONS -U-   PROCESSING DATE--23OCT70

AUTHOR-(03)-VUL, B.M., ZAVARITSKAYA, E.I., IVANCHIK, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 329-36

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--VOLT AMPERE CHARACTERISTIC, TUNNEL DIODE, FERMI LEVEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0500

CIRC ACCESSION NO--AP0121174

STEP NO--UR/0449/70/004/002/0329/0336

UNCLASSIFIED

CIRC ACCESSION NO--AP0121174   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   PROCESSING DATE--23OCT70

THE E-I CHARACTERISTICS OF A TUNNEL DIODE WERE CALCD. IN THE INTERVAL 4 IS SMALLER THAN T IS SMALLER THAN 400DEGREES K (B. M. VUL, ET AL., (1969) FOR THE CASE WHEN THE POSITION OF FERMI LEVEL (F SUBN) OF ELECTRONS IN THE N REGION CHANGES SHARPLY WITH TEMP. WHILE THE POSITION FO THE FERMI LEVEL (F SUBP) OF HOLES IN THE P REGION CHANGES ONLY SLIGHTLY. IN THE TEMP. INTERVAL INDICATED AND OVER A WIDE REGION OF VALUES OF F SUBN AND F SUBP, THE FORM OF THE E-I CURVES CHANGES ONLY SLIGHTLY. FROM CALCD. DATA THE TEMP. DEPENDENCE OF THE RATIO V SUBP-V SUBV WAS ESTABLISHED, WHERE V SUBP IS THE POTENTIAL DIFFERENCE FOR WHICH TUNNEL CURRENT BECOMES MAX. AND V SUBV EQUALS (F SUBN PLUS F SUBP)-Q TIMES V SUBP-V SUBV CHANGES VERY SLOWLY IN THE INTERVAL FROM 0.33 AT T IS LARGER THAN 250DEGREESK TO 0.38 AT T IS SMALLER THAN 50DEGREESK. CALCNS. SHOW THAT AS DISTINCT FROM HIGHER TEMPS. AT LOWER TEMPS. THE FORM OF THE E-I CURVES DEPENDS NOT ONLY ON THE SUM BUT ALSO ON THE RATIO OF FERMI ENERGIES OF N AND P PARTS.   FACILITY: /FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

VUL, B. M., IVANOV, V. S., RUKAVISHNIKOV, V. A., SAL'MAN, V. M.,
and CHAPNIN, V. A., P. N. Lebedev Physics Institute, Moscow

UDC: 621.315.592

"Characteristics of Cadmium Telluride Doped With Iron"

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp
1264-1267

Abstract: The electrical characteristics, photoconductivity, ab-
sorption, and electrical absorption in CdTe doped with Fe are con-
sidered. The iron impurity was introduced, in the experiments de-
scribed, into the CdTe by diffusion annealing at 950° C for 50-100
hours in quartz ampoules exhausted to a pressure of 10^{-4} mm Hg or
under the pressure of saturated Cd vapors. To investigate the ef-
fect of the iron impurity, measurement of the Hall constant and
electrical conductivity was made in the 80-400° K temperature
range, and the photoconductivity and absorption as well as the
electrical absorption as functions of the photon energy were
studied. Curves are plotted for the absorption coefficient as a
function of photon energy at temperatures of 300, 90, and 20° K,
and for electron concentration and mobility as functions of the
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USSR

VUL, B. M., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1264-1267

temperature. The electron mobility curve shows an anomalous characteristic in the 150-250° K range, where the mobility takes a sharp jump. The authors note that this peculiarity cannot be explained by traditional mechanisms and should be further explored.

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USSR

KOLKER, I. I. and VUL' S. M., Institute of Surgery imeni A. V. Vishnevskiy,
Academy of Medical Sciences USSR

UDC 616.5-001.17-097.2

"Simplification of the Antigenic Structure of Burned Human Skin (Eschar)
Compared With That of Normal Human Skin"

Abstract: The antigenic structure of burned and normal human skin was studied
by the double gel precipitation method. Tests of two systems (serum against
eschar - antigen from eschar and serum against normal skin - antigen from
normal skin) revealed the presence in the eschar of antigens qualitatively
different from these in normal skin. Moreover, normal skin contained antigens
qualitatively different from those in the eschar. These findings suggest that
some antigens characteristic of normal human skin are missing in burned skin.
The phenomenon of "antigenic simplification" was confirmed by an experiment
involving the use of anti-eschar serum and gamma globulin from anti-normal
skin serum. The gamma globulin fraction did not react with antigen from the
eschar, indicating that normal organ-specific skin antigens are lost in burned
skin.
1/1

USSR

UDC 576.851.252.097.29:576.851.252.097.21

VUL', S. M., Laboratory of Microbiology and Immunology, Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR

"Correlation of Plasma-Coagulating and Deozyribonuclease Activity With Staphy- lococcal Toxigenicity"

Moscow, Laboratornoye Delo, No 3, 1971, pp 168-170

Abstract: Study of coagulase and DNAse activities in 197 strains of Staphy- lococci isolated from patients who died of severe thermal burns showed that 143 strains (72.6%) were coagulase-positive, 129 (65.4%) synthesized DNAse and 127 (64.5%) were toxigenic. The great majority of coagulase-positive strains were characterized by the presence of DNAse and toxigenicity, contained hemolysin and lecithinase, and fermented mannite. In the coagulase-negative strains, such properties as the presence of hemolysin and lecithinase and ability to ferment mannite were much less pronounced. Comparative study of the presence of DNAse and toxigenicity in the plasma-coagulating strains revealed that the great majority of coagulase-positives (76.9%) possessed both DNAse and toxigenicity; 6.3% elaborated only DNAse, 7.7% possessed only toxicogenic properties, and 9.1% did not synthesize DNAse and were not toxi- genic. On the other hand, 79.6% of the coagulase-negative strains possessed

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USSR

VUL', S. M., Laboratornoye Delo, No 3, 1971, pp 168-170

neither toxigenicity nor the ability to synthesize DNAse, while 20.4% of the
strains elaborated DNAse and possessed toxigenicity or had one of these
characteristics. This high correlation between plasma-coagulating, deoxyri-
bonuclease production, and toxigenic activities indicates that the patho-
genicity of a given Staphylococcus strain cannot be established solely from
a single property.

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MEDICINE
Burn Studies

USSR

UDC 616.5-001.17-097.2

KOLKER, I.I., VUL', S.M., and NEVINNAYA, A.P., Laboratory of Microbiology Institute of Surgery imeni A.V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow

"Study of the Antigenic Structure of Burned Human Skin"

Abstract: A comparison was made of unexhausted antisera from burned and undamaged skin. Common antigenic components were identified in the burn scab, normak serum, skin, and other tissues of healthy persons. Diffusion precipitation in agar was used; water-soluble extracts served as antibodies. The optimum antibody concentration was 5-10 mg/ml. Solutions of bacteria isolated from the burn wounds were used as bacterial antibodies. Antibodies found in the burned human skin included varieties which are different from those found in the serum of normal skin. These varieties are not of a microbial nature and are not produced by bacteria occupying the burn wounds. It is probable that elements characteristic of inflammatory processes in the organism participate in the formation of these different antibody complexes.

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USSR   UDC: 621.315.592

VUL', S. P., PROCHUKHAN, V. D., SHMARTSEV, Yu. V., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences of the USSR, Leningrad

"Thermodefects in CdSnAs$_2$"

Abstract: A standard method of research which consists in "freezing" the high-temperature equilibrium state of the class of $A^{II}B^{IV}C_2^V$ semiconductor compounds was used to study point defects in CdSnAs$_2$. Single crystals grown by the method of zone crystallization were used with electron concentration of $4.5 \cdot 10^{17}$-$6.9 \cdot 10^{18}$/cc at room temperature. Carrier concentration and mobility of charges before and after heat treatment were calculated from measurements of the Hall coefficient and resistivity. The coefficient of diffusion of point defects was found to be of the order of $2 \cdot 10^{-7}$ cm^2/s, which is typical of the vacancy mechanism of diffusion. It was found that as annealing time increases, the electron concentration first falls to a certain minimum and then increases. The ratio of the annealing time for minimum concentration to the logarithm of the initial electron concentration is a constant. This behavior of electron concentration is attributed to the effect of two competing processes. In the first stage the arsenic va-

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USSR

cancies formed during crystal growth are healed, and in the second stage tin replaces the vacant sites of cadmium. States produced by quenching after annealing from a temperature of 300°C in arsenic vapor are stable at room temperature. The authors thank I. I. Kozhina for performing the x-ray structural analysis of the crystals.

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USSR

VUL', S. P., POLYANSKAYA, T. A., and SHMARTSEV, Yu. V.

UDC 621.315.592

"Production and Study of Single Crystals of CdSnAs$_2$"

V sb. Protsessy rosta kristallov i plenok poluprovodn. (Procedure for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novo-sibirsk, 1970, pp 476-484 (from RZh-Elektronika i yeye primeneniya, No 7, July 1971, Abstract No 7B37)

Translation: The method of zone crystallization with seeding was used for production of single crystals of CdSnAs$_2$. The compound, synthesized at a temperature of 750°C in an atmosphere of spectrally pure argon, was subjected to zone refinement. The method of horizontal zone crystallization with seeding proved to be most effective in comparison with other methods which were used for production of CdSnAs$_2$. The results of a study of the physical properties of CdSnAs$_2$ are also presented. 22 ref. A. Eydenzon

1/1

TITLE--ON A TYPE OF SINGULARITY IN MODELS OF THE ISING TYPE -U-

UNCLASSIFIED

PROCESSING DATE--20NOV70

AUTHOR-(02)-VUL, YE.B., SINAY, YA.G.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 6, PP 2121-2126

DATE PUBLISHED------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--MODEL, PROBABILITY, ANALYTIC GEOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0536

STEP NO--UR/0056/70/058/006/2121/2126

CIRC ACCESSION NO--AP0121208

UNCLASSIFIED

2/2   008
CIRC ACCESSION NO--AP0121208   UNCLASSIFIED   PROCESSING DATE--20NOV70
ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. SOME GEOMETRICAL PROPERTIES OF
TYPICAL CONFIGURATIONS IN MODELS OF THE ISING TYPE ARE CONSIDERED. THE
PROBABILITIES INVOLVED ARE INVEATIGATED AS FUNCTIONS OF THE GIBBS
DISTRIBUTION PARAMETERS. IT IS SHOWN THAT THE PROBABILITIES POSSESS
SINGULARITIES ON THE SEGMENT MU EQUALS 0, MINUS BETA SUBKP LESS THAN
BETA LESS THAN BETA SUBKP.   FACILITY: INSTITUT PRIKLADNOY
MATEMATIKI AN SSSR.

UNCLASSIFIED

USSR

VUL', YU. I., and INYAKIN, V. F.

UDC 681.3.053

"Prime Number Method for the Coding of Search Patterns of Objects in Information Retrieval Systems"

Abstract: The article describes a method for coding the search patterns of objects and interrogations which, in the authors' opinion, because of the simplicity of the search algorithm can be used to program information retrieval problems which use a limited number of descriptors to categorize objects (up to 100-150). Each descriptor of the dictionary is uniquely assigned a numeric code, chosen from a series of prime numbers.

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USSR

VUL', Yu. I., INYAKIN, V. F.

"The Method of Simple Numbers for Coding the Search Patterns of Objects in Information Retrieval Systems"

Translation: The paper describes an original method of coding descriptors when synthesizing information retrieval systems. The authors recommend the use of simple numbers as descriptor codes. The described method may be of interest in various special cases.

1/1

USSR

VITOSLAVSKIY, E. P., VUL'CHIN, Yu. G., IMSHENETSKIY, V. V.,
MARTYNIV, M. S., and SOLYANKO, B. V.

UDC 621.317.761

"UHF Frequency Meter"

Abstract: This frequency meter contains an electronic counter,
tuned oscillators, a mixer, and two AFC circuits. To simplify
the circuit and the measuring process, the reference frequency
inputs of both phase detectors are connected to the output of
one of the time-base divider stages of the counter. The input
of this stage is connected to the mixer output.

USSR

VUL'F, A. R., BRATANCHUK, A. I., GORBANOV, A. S., VOLYNSKIY, V. V.

UDC: 624.131.43+539.21.084-492.3

"Experimental Studies of the Interaction between Piles and Horizontally Moving Ground"

Sb. Nauchn. tr. Gos. proyektn. i n.-i. in-t Donetskiy PromstroyNIIproyekt (Collection of Scientific Works of the Donetsk PromstroyNIIproyekt State Scientific Research and Planning Institute), 1970, No 9, pp 170-174 (from RZh-Mekhanika, No 9, Sep 70, Abstract No 9V570)

Translation: This paper gives the results of experimental studies of the interaction between a piling and the soil into which it is driven, where the soil moves horizontally. A description is given of the construction of a stand which simulates the conditions of lateral pressure of the soil on a piling when the head is securely fastened in a grillage foundation. Expressions are derived for the contact stresses on the lateral surface of the piling at various depths, and deflections of the piling as functions of the soil pressure and the magnitude of its compression with respect to the length of the piling. A basis is given for application of the Winkler model to calculation

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USSR

VUL'F, A. R., et al., Sb. Nauchn. tr. Gos. proyektn. i n.-i. in-t Donetskiy Promstroyhliproyekt, 1970, No 9, pp 170-174

of a piling in the case of lateral pressure, and studies are carried out in this connection on the change in the bed factor with depth where there is lateral pressure, using a special installation, and the corresponding relationship is found. Authors' abstract.

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USSR   UDC: 8.74

VUL'F, G. N.

"Determining the Set of Concomitant Parameters for Prognosis"

Riga, Metody i modeli upr.--sbornik (Control Methods and
Models--collection of works), vyp. 3, 1972, pp 102-106 (from
RZh-Kibernetika, No 5, May 73, abstract No 5V834 by E. Vagner)

Translation: The problem of defining the prognosis for the
state of a dynamic system can be formulated as a problem in
coordinate-wise reconstruction of the vector function of
state $X(t)$ and making a decision on the membership of $X(t_k)$
in one of the classes of states ω_r, $r = 1, 2, \ldots, P$ for moments
of time T_2; T_2 is the set of future moments of time.
     Ordinarily in the classical approach the future value of
a function is defined only according to its eigenvalues in
the past. However, more improved methods utilize concomitant
parameters in addition to the predicted parameter in the past,
i. e. the parameters most closely associated with it. A pro-
cedure is proposed for preselecting the parameters with the
use of a topological model of the object. Among the essential
1/2

USSR

VUL'F, G. N., Metody i modeli upr., vyp. 3, 1972, pp 102-106

parameters are those whose change in time precedes the change
in the investigated parameter. In addition, account is taken
of such properties of parameters as informational distance
and diagnostic value.

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USSR

VUL'F, G. N.

"Adaptive Procedure for Prediction of the State of Complex Systems"

Adaptiv. Sistemy [Adaptive Systems -- Collection of Works], No 1, Riga, Zinatne Press, 1972, pp 49-54 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V233, by the author).

Translation: The possibility is studied of solving the problem of predicting the state of complex systems when there is insufficient a priori information on the statistical characteristics of the functioning process. A method is presented for determination of the optimal length of the learning sequence of the process, necessary for adaptation of the predicting filter.

1/1

USSR

BORISOV, A. N., VUL'F, G. N., OSIS, Ya. Ya.

"Prediction of the State of Complex Systems Using the Theory of Eroded
Sets"

Kibernetika i Diagnostika [Cybernetics and Diagnosis -- Collection of
Works], No 5, Riga, Zinatne Press, 1972, pp 79-84 (Translated from Refera-
tivnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V885 by the
authors).

Translation: The possibility is studied of using the theory of eroded
sets in problems of predictions of the states of complex systems. The
vector function of state X(t) in this case is replaced by a function of
membership in class $f_{\omega r}(X, t)$. As an example, prediction of the state
of a cylinder-piston group in an internal combustion engine is studied.

1/1

VUL'F, I. R. (Moscow)

"The Oscillation of a Rigid Beam, Lying Upon an Elastic Base, With the Action of a Movable Load"

Abstract: The article deals with the problem of the oscillation of an infinitely rigid beam, which rests upon an elastic Winkler base while a concentrated load, possessing mass, moves along it. The differential equations of the movement of the beam are solved on an electronic computer. The results of calculations are presented, which permit determination of the translational and angular components of the shifts of the beam, as well as the bending moments in its cross sections. 6 figures, 2 bibliographic entries.

1/1

Biophysics

USSR

BUSHUYEV, V. N., VUL'FIUS, Ye. A., GAGLOYEV, V. N., GOLOVANOV, I. B., and CHEREMISIN, A. N., Institute of Biological Physics, Academy of Sciences USSR, Pushchino, Moskovskaya Oblast

"Physiologically Active Compounds. Correlation Between the Physiological Activity Data of Compounds and Their Molecular Spectroscopy. I. Nuclear Magnetic Resonance Spectra and Physiological Activity of Some Cholinomimetic Compounds"

Abstract: The electron distribution (which was determined from NMR spectra) and biological activity of the following cholinomimetic (CM) compounds was correlated: acetylcholine chloride, acetylcholine bromide, acetylcholine iodide, acetylthiocholine bromide, acetylthiocholine iodide, propionylcholine iodide, propionylthiocholine iodide, butyrylcholine iodide, methacholine chloride, carbaminoylcholine chloride, succincholine iodide, suberylcholine iodide, arecoline bromine hydrate, and methylfurmethide iodide. The obtained results indicated that all compounds of type $R \cdot CO - O - CH_2 - CH_2 - \overset{+}{N}(CH_3)_3$ and suberylcholine iodide have practically identical shifts of the group $- CH_2 - CH_2 - \overset{+}{N}(CH_3)_3$ and their electronic distribution should be identical. Difference in

1/2

USSR

BUSHUYEV, V. N., et al., Biofizika, Vol 18, Vyp 2, Mar/Apr 73, pp 216-222

their physiological activity are related to different interaction with cholino-
receptors. Models suggested by other authors regarding the muscarine and
nicotine cholinoreceptors are discussed.

2/2

- 2 -

1/2   020   UNCLASSIFIED   PROCESSING DATE--30OCT70

TITLE--CALIBRATION OF BALLISTIC PULSED PHOTOMETERS -U-

AUTHOR-(03)-VULFSON, K.S., GUREVICH, I.M., CHARNAYA, F.A.

COUNTRY OF INFO--USSR

SOURCE--PRIBORY I TEKHNIKA EKSPERIMENTA, JA.-FEB. 1970, P. 186, 187

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, METHODS AND EQUIPMENT

TOPIC TAGS--PHOTOMETER, INSTRUMENT CALIBRATION, LIGHT PULSE, LIGHT
RADIATION EFFECT, ERROR MEASUREMENT, GALVANOMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/1550
                              STEP NO--UR/0120/70/000/000/0186/1087
CIRC ACCESSION NO--AP0106296
                    UNCLASSIFIED

2/2   020   UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0106296
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OUTLINE OF A METHOD OF CALIBRATING
BALLISTIC PHOTOMETERS WITHOUT USING AN ETALON LIGHT PULSE. THE
BALLISTIC SENSITIVITY OF THE PHOTOMETER IN QUESTION IS DETERMINED FROM
ITS SENSITIVITY TO STEADY RADIATION, AND FROM THE OSCILLATION PERIOD AND
THE DEGREE OF DAMPING OF THE GALVANOMETER FRAME.   FACILITY:
VSESOIUZNYI NAUCHNO-ISSLEDOVATEL'SKII SVETOTEKHNICHESKII INSTITUT,
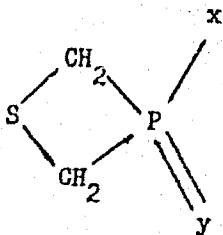MOSCOW, USSR.

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ARBUZOV, B. A., ARSHINOVA, R. P., VERESHCHAGIN, A. M., and VUL'FSON, S. G., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzova, Academy of Sciences, USSR, Chemical Institute imeni A. M. Butlerov, Kazakstan State University imeni V. I. Ul'yanova-Lenina

"Steric Configurations Containing Phosphorus Heterocyclics. 3. Gauche Conformation of the Alkoxy Group in 3-Alkoxy-1-thia-3-phosphethanes"

Abstract: A four-membered ring containing two heteroatoms -- one of S and one of P -- of the type below for the given sets of x and y was examined:

(I) $x = OMe$, $y = O$
(II) $x = OPh$, $y = O$
(III) $x = OMe$, $y = S$
(IV) $x = OPh$, $y = S$
(V) $x = OC_6H_4\text{-}p\text{-}NO_2$, $y = S$

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ARBUZOV, B. A., et al., Seriya Khimicheskaya, 9, 1973, pp 1964-1967

The molecules can have either a bent or a flat configuration. The dipole moments and Kerr constants were determined for all five compounds and shown both as graphs and in tables. On the basis of these graphs it was shown that these compounds occur in the bent configuration and have angles of less than 140 to 165°. The phosphoryl or thiophosphoryl group occupies a pseudoequatorial position while the methoxy and phenoxy groups have a gauche orientation.
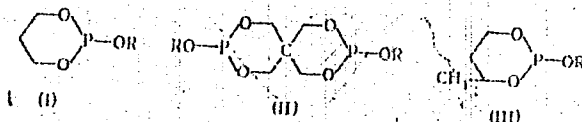
2/2

USSR

UDC 541.63:541.67:547.1'118:547.8

AR'UZOV, B. A., ARSHINOVA, R. P., VUL'FSON, S. G., MUKMENEV, E. T.

"Steric Structure of Phosphorus-Containing Heterocycles. 4. Axial Arrangement of the Alkoxy Group in 1,3,2-dioxaphosphorinanes by the Dipole Moment Data"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2426-2431

Abstract: A study was made of the conformation of two classes of compounds: 2-alkoxy-1,3,2-dioxaphosphorinanes (I) and the corresponding dialkoxypentaery-thitdiphosphites (II)

(I) R=Et(a), Ph(б); (II) R=Et(a), Ph(б); (III) R=Me(a), n-Pr(б)

Data are compared on the structure of 1,3,2-dioxaphosphorinanes which are derivatives of trimethylene glycol and 1,3-butylene glycol.
    The dipole moments are determined for 2-alkoxy and 2-phenoxy-1,3,2-dioxaphosphorinanes and their spiro analogs with a three-coordinated phosphorus
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USSR

atom. A graphical procedure is proposed for the analysis of the dipole moment data for cyclic compounds. In all of the investigated compounds, conformation of the chair configuration with the axial (or diaxial for the spiro compound) arrangement of the alkoxy group with gosh-orientation of the methoxyl and ethoxyl radicals and with cis-orientation of the phenoxy group. The proposed graphical procedure permitted not only establishment of the steric structure of the spirane molecules but also certain conclusions regarding the structure of the corresponding monocyclic molecules.

2/2

USSR   UDC 541.67;547.879

VERESHCHAGIN, A. N., ARSHINOVA, R. P., VUL'FSON, S. G., CHERKASOV, R. A., and
OVCHINNIKOV, V. V., Institute of Organic and Physical Chemistry imeni A. Ye.
Arbuzov, USSR Academy of Sciences, at Kazan', and Kazan' State University imeni
V. I. Ul'yanov-Lenin

"Steric Structure of Phosphorus-Containing Heterocycles. II. Dipole Moments
and Kerr Constants of Certain 2-Thiono-1,3,2-Dioxaphosphorinanes"

Abstract: Continuing their earlier research on the steric structure of this
group of heterocycles, the authors studied four of the 2-thiono-1,3,2-dioxa-
phosphorinanes with use of the dipole-moment and Kerr-effect methods, along
with nuclear magnetic resonance (P^{31}) data. The steric interactions in these
four compounds, the Kerr constants of possible structures of compound IV, and
the dipole moments of the four, were all determined experimentally. The 2,4-
dimethyl- and 2-chloro-2-thiono-1,3,2-dioxaphosphorinanes have chair configura-
tion with the equatorial thionophosphoryl group; the 2-methyl derivative exists
in the form of an equilibrium mixture of the axial and equatorial conformers,
with predominance of the former.

1/1

USSR

UDC: 539.376+532.135

VULFSON, S. Z.

"On the Stressed State of Structural Elements of a Viscoelastoplastic Material"

Tr. TsNII stroit. konstruktsiy (Works of the Central Scientific Research Institute of Structural Elements), 1970, vyp. 13, pp 40-50 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7V467)

Translation: The law of deformation of a viscoelastoplastic material is taken in the form

$$E\dot{e} = \dot{\sigma} \quad (\sigma < \sigma_T)$$
$$nE\dot{e} = n\dot{\sigma} + \sigma - \sigma_T \quad (\sigma > \sigma_T)$$

where σ_T is the yield stress, E is the modulus of elasticity, n is the coefficient of viscosity. Statically indeterminate problems are considered for a three-rod form and bending of a rod of rectangular cross section. It is shown that in these examples under constant external loads with increasing time the stressed state changes from the initial elastic state to the steady state $(t = \infty)$. G. S. Shapiro.

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1/2   014   UNCLASSIFIED   PROCESSING DATE--23OCT70
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AUTHOR--VULFSON, V.I.

COUNTRY OF INFO--USSR

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TOTAL MASS AND PARTIAL
PRESSURE OF FREE OXYGEN BELONG TO THE MOST IMPORTANT PARAMETERS OF THE
OUTER SPHERES OF THE EARTH'S CRUST RELATED TO NUMEROUS NATURAL OXYGEN
EQUILIBRIA. THEIR DISTURBANCE IS FRAUGHT WITH SERIOUS CONSEQUENCES FOR
MARINE AND TERRESTRIAL ORGANISMS. THE SCALE ON WHICH OXYGEN IS EXPENDED
NOWADAYS ON FUEL COMBUSTION AND THE EVER INCREASING RATES OF OXYGEN
CONSUMPTION ARE SO LARGE THAT BY THE END OF OUR CENTURY THEY WILL BECOME
COMMENSURABLE WITH THE AMOUNT OF OXYGEN PRODUCED BY THE
PHOTOSYNTHESIZING ORGANISMS. HENCE THERE IS A REAL DANGER THAT THE
NATURAL OXYGEN EQUILIBRIUM OF THE EARTH'S CRUST MAY BE DISTURBED BY MAN
IN THE NEAR FUTURE. ALL THIS MEANS THAT FREE OXYGEN AS ONE OF THE
MARINE CHEMICAL RESOURCES SHOULD BECOME AN OBJECT OF THE CLOSEST
ATTENTION IN SEARCH OF THE WAYS OF INCREASING THE GLOBAL SCALE OF ITS
BIOTIC REPRODUCTION AND IN THE DEVELOPMENT OF METHODS OF ITS MORE
ECONOMICAL CONSUMPTION IN THE WORLD'S ECONOMICS. IT IS HIGH TIME WE
WERE SOLVING THIS IMPORTANT SCIENTIFIC INTERNATIONAL PROBLEM.
FACILITY: LENINGRADSKOYE VYSSHEYE INZHENERNOYE MORSKOYE UCHILISHCHE
IMENI ADM MAKAROVA.

Explosives and Explosions

USSR

3

UDC 542.91:547.722

NIKOLAYEVA, A. D., MATYUSHIN, YU. N., PEPEKIN, V. I., SHEVOV, V. S.,
VULFOROV, V. V., BULIDOROVA, T. I., and APIN, A. YA., Institute of Chemical
Physics, Acad. Sc. USSR

"Synthesis and Study of the Detonation Properties of 3-Methyl-4-nitrofuroxane"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 72,
pp 965-967

Abstract: A safe and simple synthesis of 3-methyl-4-nitrofuroxane (MNF) has
been developed. The synthesis is based on the reaction of sodium nitrite
mixed with light with a solution of metacrylic acid in dichloroethane at 50°.
MNF can also be obtained in a 24% yield from a mixture of acetone, nitro-
acetone, and nitropropylene treated with a mixture of nitrogen tetroxide and
nitric acid. ... Mainly the thermochemical and detonational properties
of MNF have been determined: heat of combustion $\Delta E^\circ_{comb} - 406.7 \pm 0.2$ kcal/mole;
... with a 1.40 ... density of the charge was found to be $D_{1.6} = 7850$ m/sec.
With charge densities 0.84 and 1.64 g/cm³ the heats of explosive detonation of
... were ... 1 ... g/cm respectively. MNF is a crystalline material,
m.p. 37-38°; it has high thermal stability and can be recrystallized from
hot water.
1/1