

USSR

UDC 669.71.042.6

YEROFEYEV, A. T., KUZ'MIN, G. G., ZOLOTUKHIN, V. A.

"Casting of Large Aluminum Ingots Weighing Up to 2 t by Continuous Casting Methods"

Tekhnol. Legkikh Splavov. Nauchno-tekhn. Byul. VILSa [The Technology of Light Alloys, Scientific and Technical Bulletin of the All-Union Institute of Light Alloys], 1970, No. 6, pp. 93-94. (Translated from Referativnyy Zhurnal Metallur-giya, No. 5, 1971, Abstract No. 5 G140 by G. Svodtseva).

Translation: The technology developed for production of Al ingots weighing up to 2 t allows labor consumption to be reduced to 10.72 rubles per ton (as against 12.92 rubles per ton for 15-kg ingots). The losses to oxidation during melting are decreased by 10-15%, since the total surface area subjected to drop formation and oxidation is 5.8 times less than for the 15-kg ingots. A technological plan for production of large ingots is described.

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Miscellaneous

USSR

MAKHORIN, B. I., ZOLOTUKHIN, V. D., and GREVTSEV N. V.

"Effect of Electric Discharge Parameters on the Formation of Films During Their Deposition by Electric Explosion"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar/Apr 73, pp 60-64

Abstract: Experiments were carried out with silver-palladium foil $6 \times 15 \text{ mm}^2$ in size and 30μ thick in air. Films were deposited on glass substrate heated to $350\text{-}400^\circ\text{C}$ and which were located at a distance of 45 mm from the exploding foil. The power source varied from 32 to 128 microfarad, with a maximum voltage of 8 kV and stored energy of 4.1 kilojoule. The discharge inductance could be varied from 1 to 100 microhenry. Duration of the electric energy supplied to each sample was always 1 microsecond. Best films with respect to density and thickness were deposited starting with 1.8 kV . At this energy all foil samples exploded, producing very fine dispersed metal particles which uniformly cover the glass substrates. A further increase of voltage produced thin but very dense films. As a result, larger areas were covered with dense thin film without using additional material. Increase in voltage beyond 1.8 kV (which is called the "threshold" energy) decreased the mass of $1/2$

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MAKHORIN, B. I., et al, Fizika i Khimiya Obrabotki Materialov, No 2, Mar/Apr 73, pp 60-64

the condensed metal particles. This was attributed to increase in the intensity of impact waves reflected from the substrate. The reflected impact waves slow down the velocity of directed metal particles and they become scattered in the surrounding air. Inductance of the discharge profile had the greatest effect on the dispersity of exploded samples, mass of the dispersed particles, and the area of produced films. Films of high density and about 1 micron thick were obtained with the inductance of 1 to 10 microhenrys.

2/2

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1/2 008 UNCLASSIFIED
TITLE--CADMIUM TARTRATE AND CITRATE COMPLEXES -U- PROCESSING DATE--04DEC70
AUTHOR--ZOLOTUKHIN, V.K. Z
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(5), 1192-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CADMIUM COMPLEX, SULFATE, TARTARIC ACID, CITRIC ACID,
CARBOXYLIC ACID ESTER, POTENTIOMETRIC TITRATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/0739 STEP NO--UR/0078/70/015/005/1192/1195
CIRC ACCESSION NO--AP0136178
UNCLASSIFIED

2/2 008

CIRC ACCESSION NO--AP0136178

UNCLASSIFIED

PROCESSING DATE--04DEC70

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

ABSTRACT. FORMATION OF TARTRATE SOLN. AND OF
NA CITRATE SOLN. CONFIRMED BY POTENTIOMETRY AND SHOWN ON MICROFICHE.

UNCLASSIFIED

USSR

UDC 669 - 174.24

STEPANOVA, M. V., KOROLEV, F. V., ZOLOTKHINA, A. M., FIGUROVSKAYA, T. A., BOROK, B. A., and SHCHEGOLEVA, R. P., Moscow Institute of Steel and Alloys of MZOTsM (Moscow Plant for the Processing of Non-Ferrous Metals), Central Scientific Research Institute of Ferrous Metallurgy

"The Effect of Alloying of Carbonyl Nickel on its Recrystallization"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 150-152

Abstract: Carbonylnickel samples containing W, MgO, Al₂O₃, Zr, and ZrO₂ were cold-deformed with a terminal deformation of 70%. Recrystallization annealing was carried out at 160-800°C (20-degree intervals) with holding times at 30 min. The temperatures of the start and end of recrystallization I (t_r^s and t_r^e , respectively) were determined from the Vickers hardness as a function of annealing temperature, with an experimental error of $\pm 5^\circ\text{C}$. The t_r^s and t_r^e of carbonyl nickel without any additives were 330 and 400°C, respectively. These figures were 660 and 750°C with addition of 0.15% Zr; 500 and 730°C with 0.15% ZrO₂; 540 and 720°C with 4% W; 360 and 510°C with 0.2% MgO; and 400 and 540°C with 0.2% Al₂O₃, respectively. It is evident that the t_r^s increased by 330
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USSR

STEPANOVA, M. V., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 150-152

and 210°C with the addition of Zr and W, respectively. This can be attributed to a slow formation of the recrystallization centers because of the interaction of dislocations with Zr and W atoms. Due to the fact that the t_r^e

was increased from 400 to 750°C when 0.15% Zr was added to carbonyl nickel, it is recommended that the intermediate annealing temperature increased from 600 to 750-800°C.

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Metrology, Mapping, Surveying, Graphics

USSR

UDC 531.787.081(083.76)

BAKHVALOVA, V. V., ZOLOTYKH, YE. V., BOROVKOV, V. M.

"Special State Standard for a Unit of Pressure in the $2,500 \cdot 10^5$ to $15,000 \cdot 10^5$ Pa Range"

Moscow, Izmeritel'naya Tekhnika, No 11, 1973, pp 3-4

Abstract: A brief description is presented of the special standard for a unit pressure in the $2,500 \cdot 10^5$ to $15,000 \cdot 10^5$ Pa range. The metrologic characteristics of the standard contains a check circuit in the range to $40,000 \cdot 10^5$ Pa and the basic measures in the plan for its introduction are presented. A comparison of the standard with foreign manometers is made. The periodic monitoring of the variability of the standard parameters is described, the measurement equation is given, and the transfer of the measure of the unit of pressure is described. The transfer is made using resistance manometers with extrapolation of the calibration curves.

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1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--REFLECTION EFFECT IN DERIVATIVES OF
TETRAMETHYLTetrahydrothiopyran, 4,one -U-
AUTHOR--(04)-ARBUZOV, B.A., YULDASHEVA, L.K., ARSHINOVA, R.P., ZOLOVA, O.D.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 526-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC SULFUR COMPOUND, HETEROCYCLIC OXYGEN COMPOUND, DIPOLE
MOMENT, SULFUR OXIDE, SULFONE, MOLECULAR STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0738 STEP NO--UR/0062/70/000/003/0526/0529
CIRC ACCESSION NO--AP0124408
UNCLASSIFIED

272 010

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124408

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXPTL. DIPOLE MOMENT VALUE FOR 2,2,6,6,TETRAMETHYLTETRAHYDRO,4,PYRONE IS 1.49 D, SULFOXIDE 1.58 D, SULFONE 2.45 D, TETRAHYDROTHIS,4,PYRONE 1.51 D, AND ITS SULFONE 2.41 D. FROM THESE DATA IT WAS CONCLUDED THAT ALL THESE COMPS. HAVE THE PREFERRED CHAIN CONFORMATION. INTRODUCTION OF GEM ME GROUPS IN THE 3 POSITION RELATIVE TO THE CO GROUP CAUSES BUT SLIGHT DEFORMATION OF THE RING. FACILITY: KHIM. INST. IM. BUTLEROVA, KAZAN. GOS. UNIV. IM. UL'YANOVA LENINA, KAZAN, USSR.

UNCLASSIFIED

USSR

UDC 536.531

ZOLYAN, T. S.

"Nonlinearity of Voltampere Characteristics at the Liquid Semiconductor-Metal Interface"

Yerevan, Doklady Akademii Nauk Armyanskoy SSR, Vol LV, No 3, 1972, pp 171-173

Translation: This article is the follow-up of an earlier article by the author named above (FTT, 6, 1964, p 1520) in which he investigated the electrophysical characteristics of higher oxides of vanadium at high temperatures and found reverse conductivity in the liquid state. He also discovered a stable p-type region at temperatures about 100°C higher than the melting point of the V₂O₅ semiconductor. In view of this stable area, he devoted the present paper to an examination of the voltampere characteristic of the p-n junction formed in the semiconductor, along with the rectification characteristics of the back-biased barrier formed by the contacting electrodes and the surface of the liquid semiconductor. The specimens used for the experiments consisted of liquid V₂O₅ on a platinum substrate. The voltampere characteristic is plotted.

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UTC: 621.315.592

USSR

ZOLYAN, T. S.

"Nonlinearity of Volt-Ampere Characteristics at the Liquid Semiconductor-Metal Boundary"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2056--2057

Abstract: This brief communication follows up an earlier paper by the author named above (FTT, 6, 1964, p 1520) in which investigation of the electrophysical characteristics of higher vanadium oxides at high temperatures showed a reverse conductivity of V_2O_5 in the liquid state. The inversion of the sign of the thermal emf α indicates the presence of a stable p-type region in the liquid state, with a temperature of $668^\circ C$: such a region is of interest from the point of view of finding a unique p-p junction and comparing its volt-ampere characteristic with the rectifying characteristics of a cutoff layer formed by the contacting electrode and the liquid semiconductor surface. The curve for the volt-ampere characteristic of V_2O_5 , demonstrating the nonlinear, unipolar nature of the semiconductor-metal contact conductivity for the forward and inverse branches, is reproduced.

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1/2 027

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--NMR AND EPR SPECTRA OF EUCRYPTITE AND SPODUMENE SYNTHETIC CRYSTALS

-U-

AUTHOR--(03)-DMITRIYEVA, L.V., ZONIN, Z.N., SHAKHDINAROV, G.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1) 42-5

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--NUCLEAR MAGNETIC RESONANCE, ELECTRON PARAMAGNETIC RESONANCE,
CRYSTAL LATTICE STRUCTURE, IRON, LITHIUM, CRYSTAL IMPURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0239

STEP NO--UR/0131/70/012/001/0042/0045

CIRC ACCESSION NO--AP0048517

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0048517

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

ABSTRACT. NMR SPECTRA WERE INVESTIGATED OF PRIME7 LI IN BETA EUCRYPTITE AND THE PRESENCE IS SHOWN OF 2 PHYS. NONEQUIV. POSITIONS OF LI IN THE LATTICE. THE QUADRUPOLE INTERACTION CONSTS. FOR LI(I) ARE E PRIME2 QQ-H EQUALS 125 KHZ, ETA EQUALS 0.60 AND FOR LI(II) ARE E PRIME2 QQ-H EQUALS 57 KHZ, ETA EQUALS 0.72. THE AXES OF THE 2ND CENTER DO NOT COINCIDE WITH THE CRYSTALLOGRAPHIC AXES. INVESTIGATION OF THE CRYSTALS OF BETA EUCRYPTITE CONTG. FE IMPURITY SHOWS THAT FE PRIME3 PLUS IONS CAN ENTER INTO VARIOUS LATTICE POINTS. THREE CENTERS OF THE ORTHORHOMBIC SYMMETRY WERE OBSD. WHICH DIFFER BY THE CONSTS. OF THE SPIN HAMILTONIAN AND ORIENTATION OF THE MAGNETIC AXES. FOR FE PRIME3 POSITIVE(I); B SUB2 PRIME0 EQUALS 2.55 GHZ, B SUB2 PRIME2 EQUALS 0.42 GHZ, FOR FE PRIME3 POSITIVE(II): B SUB2 PRIME0 EQUALS 10.2 GHZ, B SUB2 PRIME2 EQUALS 9.5 GHZ; FOR FE PRIME3 POSITIVE(III): B SUB2 PRIME0 EQUALS 5.94 GHZ, B SUB2 PRIME2 EQUALS 4.37 GHZ. PRELIMINARY RESULTS WERE OBTAINED ON EPR OF FE PRIME3 POSITIVE IN BETA SPOUMENE.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--GROWING BETA EUCRYPTITE AND BETA AND GAMMA SPODUMENE SINGLE
CRYSTALS -U-
AUTHOR--(02)-IOFFE, V.A., ZONN, Z.N. Z
COUNTRY OF INFO--USSR
SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 397-8
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, PHYSICS
TOPIC TAGS--SINGLE CRYSTAL, MINERAL, CRYSTAL GROWING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/0911 STEP NO--UR/0070/70/015/002/0397/0398
CIRC ACCESSION NO--AP0116421
UNCLASSIFIED

PROCESSING DATE--16OCT70

UNCLASSIFIED

2/2 019

CIRC ACCESSION NO--AP0116421
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. EUCRYPTITE SINGLE CRYSTALS WERE GROWN IN PT CRUCIBLES BY CRYSTN. FROM A SOLN. IN A FLUX MELT WHILE LOWERING THE TEMP. FROM 1200 TO 700DEGREES AT A RATE OF 2-5 DEGREES-HR. THE EUCRYPTITE CRYSTALS WERE OBTAINED WITH A YIELD OF 90-95PERCENT IN THE FORM OF LARGE, TRANSPARENT, HEXAGONAL PYRAMIDS, 6-15 MM LONG ALONG THE C AXIS. THE WT. OF A SINGLE CRYSTAL WAS 0.6-0.8 G. LARGER AND MORE DEVELOPED CRYSTALS COULD BE OBTAINED WITH A SEED. THE CHEM. AND X RAY STRUCTURAL ANALYSES AGREE WITH LITERATURE DATA. BETA SPODUMENE SINGLE CRYSTALS WERE GROWN FROM A FLUX MELT. THE ONSET OF CRYSTAL GROWTH WAS AT 1190-1195DEGREES AS THE TEMP. WAS DECREASED FROM 1220 TO 800DEGREES AT 3-3.5 DEGREES-HR. THE TRANSPARENT CRYSTALS IN THE FORM OF REGULAR OCTAHEDRA WITH A TETRAGONAL SYMMETRY WERE 6-8 MM LONG ALONG THE HEIGHT OF THE OCTAHEDRA. IF THE COOLING CONDITIONS WERE CHANGED TO A RATE OF 1 DEGREE-HR, THE GAMMA FORM WAS OBTAINED IN THE FORM OF TRANSPARENT PYRAMIDS OR PRISMS. THE LENGTH ALONG THE C AXIS WAS 5-6 MM. THE COMPN. WAS 3.63 SIG SUB2.1.00AL SUB3. 1.00LI SUB2 0 (WT. IMPURITIES OF FE PRIME3POSITIVE, NI PRIME2POSITIVE, CO PRIME2POSITIVE, CR PRIME3POSITIVE, TA, AND V. FACILITY: INST. KHIM. SILIKAT, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr:

AP0048297

Abstracting Service:
CHEMICAL ABST. 5-170

Ref. Code:

4R0181

94652a Magnetic properties of gadolinium, neodymium, and praseodymium aluminates with perovskite structure. ~~Staryov, A. T.; Ozhogin, V. I.; Bokov, V. A.; Zonn, Z. N.; Lokinov, G. M. (Inst. Poluprov., Leningrad, USSR). Fiz. Tverd. Tela 1970, 12(1), 301-3 (Russ). Results are given of the measurements of the temp. dependences of inverse susceptibility in static fields and the magnetization curves in pulsed fields of ≤ 230 kOe at 4.2 and 1.7°K of single-crystal aluminates of Gd, Nd, and Pr. GdAlO₃ is an antiferromagnet with Neel temp.~~

$T_N = 3.87^\circ\text{K}$ and the axis of antiferromagnetism directed along the orthorhombic axis [010]. Satn. of the magnetization curve of GdAlO₃ in a field of 42 kOe at 1.7°K corresponds to disruption of antiferromagnetic ordering. The ferromagnetic moment of Gd³⁺ is 8.57 μ_B . The magnetic susceptibility of NdAlO₃ at 80-300°K follows the Curie-Weiss law and antiferromagnetic ordering is present. For PrAlO₃, the susceptibility depends on temp. in a complex manner. A. Libackyj ↓

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REEL/FRA
19792019

UDC 576.858.2

USSR

ZONOV, G. B., and YAKUBA, V. N., Irkutsk State Scientific Research Antiplague
Institute of Siberia and the Far East

"Uninhabited Hollows as Places of Contact Among Animals in Foci of Tickborne
Encephalitis in the Baikal-Area"

Leningrad, Parazitologiya, Vol 5, No 3, May/Jun 71, pp 289-290

Abstract: In 1964-1968 trees were trimmed and felled in the southern Baikal area and 100 uninhabited tree cavities were discovered, most frequently in dry or partially dry aspens (70), pine trees (15), birches (11), and larches (4) at various heights from the ground. Most of these were woodpecker cavities and 13 of them contained ectoparasites. In all, 134 ectoparasites were collected, of which 51 were fleas and 83 gamasid mites. Almost all fleas and gamasid mites were mammalian parasites of rodents and bats except *Ceratophyllus zhovtyi*, a bird parasite. It is emphasized that in the region studied, the birds have very few ectoparasites in winter (only 4 of 120 birds observed in winter carried *C. zhovtyi* and gamasid mites). The authors believe that the ectoparasites adapt themselves easily to hosts which live in nests considerably longer than do birds, and that any study of tickborne encephalitis must include examination of uninhabited tree cavities.

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Steels

UDC: 621.742.4:66.046.51:669.741

SIDOROV, Yu. I., BAKHULEVICH, V. B., STARTSEV, V. A., MALGIN, Yu. N.,
KAZAKOVA, I. I., ZONOV, V. Ye., and UMRIKHIN, P. V., Ural Polytechnic
Institute

"Surface Alloying of Steel Castings With Boron"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 8, 1970,
pp 132-134

Abstract: A method of surface alloying of steel castings with boron regenerated from dehydrated borax ($\text{Na}_2\text{B}_4\text{O}_7$) in the process of filling the mold is discussed. The reducing agents are aluminum, calcium, and silicon. The mechanism of boron reduction from borax comprises two stages: a) decomposition of borax into Na_2O and B_2O_3 ; b) reduction of boron from its oxides. Data are given on changes in the free energy of boron reduction from borax. The results of a thermodynamics analysis and the study of kinetics regularities indicate silico-calcium and aluminum to be the most efficient reducing agents. The method of surface alloying with boron has been tested on experimental batches of low-carbon steel and has demonstrated its applicability under industrial conditions. The boron content on the surface of the casting was 0.5 to 0.7% and at a depth of 15 mm about 0.008 to 0.009%. The wear resistance of surface-alloyed parts was found to be two to three times that of ordinary parts.

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Acc. Nr.

AP0105540

Abstracting Service:
CHEMICAL ABST.

6-70

Ref. Code
UR0419

125458y Effect of water vapor on the dehydration of $\text{NiNa}_2\text{P}_2\text{O}_7 \cdot 12\text{H}_2\text{O}$. Pavlyuchenko, M. M.; Pysyak, Ya. S. ~~Znan.~~
Yu. G.; Prodan, E. A. (Inst. Obshch. Neorg. Khim., Minsk, USSR). Vestsi Akad. Navuk Belarus, SSR, Ser. Khim. Navuk
 1970, (1), 29-37 (Russ). The kinetics were studied of low-temp. dehydration of $\text{NiNa}_2\text{P}_2\text{O}_7 \cdot 12\text{H}_2\text{O}$ in an atm. of water vapor at pressures of 2.6, 4.6, 7.4, and 13.9 mm Hg. The process is studied by means of paper chromatographic, x-ray, and ir anal. Preliminary thermogravimetric expts. show that within the limits of the pressures studied an inhibiting action of water vapor predominates. The kinetic parameter, as also in the case of dehydration in vacuum, has 2 aspects: the beginning section of relatively rapid dehydration and the final section of slow loss of wt. Increase in vapor pressure leads to a broadening of the first section at the expense of a redn. of the final section. An increase in the pressure of the water vapor in the limits studied leads to a decrease in the rate of dehydration of $\text{NiNa}_2\text{P}_2\text{O}_7 \cdot 12\text{H}_2\text{O}$.

C. J. Steinberg

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REEL/FRAME
19880555

USSR

UDC: 620.197.3

ANOSHCHENKO, I. P., ZORCHENKO, A. P. and LUK'YANOVA, G. I., Novocherkassk Polytechnic Institute

"Effect of Antimony Trichloride on the Corrosion Behavior of Titanium in Sulfuric and Hydrochloric Acids"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 443-444

Abstract: Earlier research shows that the dissolution rate of titanium in 2 n. solution of HCl sharply decreases in the presence of triply charged Sb cations. This study involves their effect on the behavior of VTI-0 titanium in chemically pure 5 n. sulfuric and hydrochloric acids. Parallel tests (by gravimetry) were conducted on 3 specimens for each acid at 80°C. The duration of the experiment was 3 hours. Polarization measurements were made in open air in a cell with separated electrode spaces. A table in the original article shows that with a deficient content of $SbCl_3$, the dissolution rate increases, apparently due to the cathodic reaction $Sb^{3+} + 3e \rightarrow Sb$, $E_0 = +0.20v$ or $SbO^+ + 2H^+ + 3e \rightarrow Sb + H_2O$; $E_0 = +0.212 v$. Passivation sets in above the "critical"

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USSR

ANOSHCHENKO, I. P., et al, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70,
pp 443-444

concentration and the corrosion rate sharply drops. With cathodic polarization, metallic antimony separates and appears on the surface of titanium. In the presence of $SbCl_3$ the anodic polarization curve lies completely within the passive state region. The corrosion resistance of VT1 titanium, which equals zero in sulfuric and hydrochloric acid solutions at various temperatures, rises sharply in the presence of sufficient amounts of triply positively charged Sb cations, while the below-critical concentration the corrosion rate increases.

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USSR

UDC 621.373.826:621.317

ANGERT, N. B., BUTYAGIN, O. F., ZORENKO, V. P., KUDRYAVTSEVA, A. P., KUSHNIR, V. R., RUSTAMOV, S. R.

"Phase Matching Angles and Temperatures for Lithium Metaniobate Crystals with Different Stoichiometry"

V sb. Kvant. elektronika (Quantum Electronics—collection of works), Moscow, No 5, 1971, pp 128-129 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D454)

Translation: The results of measuring the phase matching angles and temperatures for generation of the second harmonic in LiNbO_3 crystals with stoichiometric coefficient from 0.9 to 1.2 are discussed. A helium-neon laser ($\lambda = 1152$ nm) and a YAG:Nd³⁺ garnet laser ($\lambda = 1064$ nm) were used for the measurements. The results obtained are in good agreement with the calculated results. There are 2 illustrations and a 6-entry bibliography.

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USSR

UDC 551.508.7.08

ZORGENFREY, V. G., DAYKER, A. L., BELOKUR, N. A.

"Lithium Chloride Self-Heating Electric Hygrometer"

Sb. Nauch. tr. Chelyabinsk. Politekhn. In-ta [Collected Scientific Works of Chelyabinsk Polytechnical Institute], 1971, No 105, pp. 206-208, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, 1972, No 5, Abstract No 5.32.1041, by V.S.K.).

Translation: A description is presented of a flow-through type absolute moisture content hygrometer developed by the Chelyabinsk Scientific Research Institute "Metallurg" in cooperation with "Teplopribor" plant for the measurement of the moisture content of non-corrosive gases and steam-air mixtures. A resistance thermometer is used to measure the equilibrium temperature. Any electronic automatic standard calibration 22 bridge can be used as the secondary instrument. The ranges of moisture content which can be measured are: dew point 0-40°C; 4.8-63.1 g/m (stp) dry; measurement error $\pm 1-4\%$; pressure of medium being measured 760 \pm 40 mm h.g. 4 Figures.

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USSR

UDC 681.333:519.2

ZORICH, A. Ye., KONOVALOV, V. N., and MAMEDOV, V. F.

"A Device for Determining the Probability Density of Extremal Values of Random Processes"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 25, Sep 71, p 193 (G 06 g 7/52, No 312274 (1361705/18-24 from 19 September 1969; Claimant: State Scientific Research Institute of Civil Aviation)

Abstract: This patent claims a device for determining the probability density of extremal values of random processes, containing a quantizer of the input signal for a given number of levels with impulse outputs and a block of registering counters; the device is distinguished in that for the purpose of increasing the error detection, it contains a multiple input coincidence block connected to the outputs of the quantizer, to which a control block is also connected that joins the two outputs with the input control coincidence block, connected to the block of registering counters.

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USSR

UDC: 681.327.12

KONOVALOV, V. N., ZORICH, Ye. M., METELKIN, Ye. V., State Scientific
Research Institute of Civil Aviation

"A Data Input Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 30, Oct 71, Author's Certificate No 317057, Division G, filed 8 Dec 69,
published 7 Oct 71, pp 172-173

Translation: This Author's Certificate introduces a data input device
which contains a control register connected to a tape-transport mechanism.
This register is also connected through an AND circuit to a recording and
reproducing module. The device also contains a mode-setting module, a
delay module, and logic elements. As a distinguishing feature of the patent,
the operational reliability of the device is improved by adding a beginning-
-of-cycle circuit and an end-of-cycle circuit. The inputs of these cir-
cuits are connected through the time delay module to the control register
and the mode-setting module, which is connected through an AND circuit to
the beginning-of-cycle and end-of-cycle circuits and to the recording and
reproducing module.

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1/3 024

TITLE--IMPROVEMENT OF METHODS FOR IMMUNODIAGNOSIS OF HUMAN ECHINOCOCCOSIS AND ALVEOCOCCOSIS -U-
AUTHOR--ZORIKHINA, V.I.

UNCLASSIFIED

PROCESSING DATE--13NOV70

COUNTRY OF INFO--USSR

Z

SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLENI, 1970, VOL 39, NR 2, PP 170-179
DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AGGLUTINATION, ANTIGEN, BLOOD SERUM, RABBIT, CANCER, CIRRHOSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1990/1421

STEP NO--UR/0358/70/039/002/0170/0179

CIRC ACCESSION NO--AP0109482

UNCLASSIFIED

PROCESSING DATE--13NOV70

UNCLASSIFIED

2/3 024

CIRC ACCESSION NO--AP0109482

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEGREE OF SENSITIVITY AND SPECIFICITY OF LATEX AGGLUTINATION TEST (LAT) PERFORMED BY THE TUBE AND DROP METHODS WAS STUDIED. AT THE SAME TIME THE EFFECTIVENESS OF NATIVE ECHINOCOCCAL ANTIGEN WAS COMPARED WITH THAT OF A DIAGNOSTICUM PRESERVED FOR A LONG TIME, AND RELATIONSHIP BETWEEN THE EFFECTIVENESS OF THE TEST AND THE TYPE OF LATEX USED AS AN ANTIGEN ADSORBENT WAS DETERMINED. IN TESTS WITH HYPERIMMUNE AND NORMAL SERA OF RABBITS AND HUMAN SERA FROM PATIENTS WITH THE DIAGNOSIS OF ECHINOCOCCOSIS OR ALVEOCOCCOSIS CONFIRMED BY OPERATION THE SENSITIVITY OF LAT WAS FOUND TO BE 98.5PERCENT, 96.7PERCENT, AND SPECIFICITY 96.8PERCENT. FALSE POSITIVE TESTS WERE OBSERVED IN 3.2PERCENT IN LIVER CIRRHOSIS, CANCER DISEASES AND NONPARASITIC CYSTS. ECHINOCOCCAL DIAGNOSTICUMS PRESERVED FOR A LONG TIME WERE FOUND TO BE EQUAL TO THE NATIVE ANTIGEN IN THE EFFECTIVENESS. DIFFERENT BATCHES OF THE NATIVE ANTIGEN AND DIAGNOSTICUM MAY VARY IN EFFECTIVENESS WHICH REQUIRES THAT EACH BATCH BE TESTED IN KNOWN POSITIVE AND NEGATIVE SERA. DIVINYLSYROL LATEXES SKS-65-GP AND POLYSTYROL MONODISPERSE LATEXES WITH PARTICLES OF 0.7-0.85 MU IN DIAMETER MAY BE USED IN THE TEST. THE DROP METHOD OF LAT IS AS EFFECTIVE AS THE TUBE METHOD, BUT IS SIMPLER TO PERFORM AND REQUIRES LESS ANTIGEN AND SERUM. ITS WIDE INTRODUCTION INTO PRACTICE IS LIMITED BY THE NECESSITY TO USE THE NATIVE ANTIGEN BECAUSE DIAGNOSTICUM IN THIS METHOD SHOWS LOW EFFICACY.

FACILITY: OTDELENIYE EKSPERIMENTAL'NOY GEL'MINTOLOGII
 GEL'MINTOLOGICHESKOGO OTUELA INSTITUTA MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDITSINY IM. YE. I.

UNCLASSIFIED

3/3 024

CIRC ACCESSION NO--AP0109482

ABSTRACT/EXTRACT--MARTSINOVSKOGO

MOSK.

UNCLASSIFIED

PROCESSING DATE--13NOV70

MINISTERSTVA ZDRAVOOKHRANENIYA SSSR,

UNCLASSIFIED

USSR

UDC 613.693



ZORILE, V. I. Maj Med Serv, Candidate of Medical Sciences, and KUPRIYANOV, A.A.,
Col Med Serv

"The Effect of Prolonged Longitudinal Accelerations on Steering Efficiency"

Moscow, Voenno-Meditsinskiy Zhurnal, No 6, 1972, pp 89-94

Abstract: Prolonged longitudinal acceleration reduces the efficiency of steering by changing the trajectory of movements and lengthening the latent period and the reaction time of motor activity. These observations were made on young, healthy individuals who, while being centrifuged at 2 to 5 G, with acceleration ranging from 0.1-0.5 G/sec, for a total of 30-360 sec had to perform a standard task: by moving a lever (flexion and extension of the arm) they were to keep the pointer of an altimeter at the 0 mark while this pointer was being deflected according to a preset program and the error in adjustment was continuously being fed back to the experimental subject. The number, amplitude, and duration of mistakes were greater the greater the uniform G force, and reached maxima during acceleration. The ability to comprehend and execute special orders was similarly reduced. The most frequent cause of the mistakes was premature or excessive force applied to the control lever. The performance of the subjects under normal conditions gave no clue as to their ability to operate under changing gravitational force.

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Surgery

UDC 616.12-089-059:616.12-008.315-021.6

USSR

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KROKHAEV, Yu. S., ZORIN, A. B., and ZHURAVLEV, Yu. N., Surgical Clinic for Advanced Training of Physicians imeni P. A. Kuprianov, and Chair of Anesthesiology and Reanimation, Military Medical Academy imeni S. M. Kirov

"Exclusion of the Circulation Five Times in an Open Heart Operation Performed Under Conditions of Hypothermia"

Moscow, Grudnaya Khirurgiya, No 4, 1970, pp 105-106

Abstract: The authors operated on a 22-year-old male for an interatrial septal defect with anomalous drainage of the pulmonary veins. The patient was chilled to 32°C just before surgery. Cardiac arrest occurred five times, once after the oxygen supply temporarily ceased, and four times after the defect was repaired. When the circulation was restored after the defect was sutured, the orifices of both venae cavae dropped part way into the left atrium. The circulation was halted four times to eliminate the complication and ensuring metabolic disturbances. The blood loss was replenished with transfusions of the patient's own blood (from the chambers of the heart) and bank blood. Despite postoperative cerebral edema and other complications, the patient made good progress and was discharged in satisfactory condition 28 days after the operation, without any neurologic disorders. Follow-up examination 5 months later revealed no adverse

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USSR

KROKHALEV, Yu. S., et al, Grudnaya Khirurgiya, No 4, 1970, pp 105-106

developments. The patient was leading a normal life, including participation in sports.

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1/2 015

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--ADSORPTION OF ARSINE AND PHOSPHINE ON SILICA GEL -U-

AUTHOR--(04)-ZORIN, A.D., DUDOROV, V.YA., ROGOZHNIKOVA, T.S., RYABENKO, YE.A.

COUNTRY OF INFO--USSR

Z

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 717-19

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ADSORPTION, ARSINE, SILICA GEL, PHOSPHINIC ACID, VAN DER WAALS FORCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1999/1228

STEP NO--UR/0076/70/044/003/0717/0719

CIRC ACCESSION NO--AP0123192

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123192

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADSORPTION OF PH SUB3 AND ASH SUB3 ON 3 SILICA GEL SAMPLES (PORE DIAM. 8 AND 16 ANGSTROM) WAS STUDIED IN THE TEMP. RANGE 20 TO MINUS 80DEGREES, USING CHROMATOG. TECHNIQUES. THE EXPTL. RESULTS COULD BE DESCRIBED BY USING THE LANGMUIR ADSORPTION ISOTHERM EQUATION. A COMPARISON OF THE HEATS OF ADSORPTION WITH THE HEATS OF CONDENSATION REVEALED THAT ASH SUB3 AND PH SUB3 INTERACT WITH THE SURFACE OF THE ADSORBENT AS A RESULT OF VAN DER WAALS FORCES.

FACILITY: NAUCH.-ISSLED. INST. KHIM., GORKI, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT79
TITLE--CHROMATOGRAPHIC ANALYSIS OF DIBORANE, SILANE, AND GERMANE FOR
ORGANIC IMPURITIES -U-
AUTHOR--(05)--ZORIN, A.D., FROLOV, I.A., KARABANOV, N.T., KEDYARKIN, V.M.,
BALABANOV, V.V.
COUNTRY OF INFO--USSR
SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 389-91
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--DIBORANE, SILANE, GERMANIUM COMPOUND, CHROMATOGRAPHIC
ANALYSIS, CHEMICAL PURITY, ALKANE, ALKENE, ALDEHYDE, METHANOL, ETHANOL
CENTREL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/2070 STEP NO--UR/0075/70/025/002/0389/0391
CIRC ACCESSION NO--AP0125657
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125657

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CHROMATOGRAPHIC METHOD WAS DEVELOPED FOR THE DETN. OF ORG. COMPS. IN DIBORANE, SILANE, AND GERMANE WITH A SENSITIVITY OF 2 TIMES 10 PRIME NEGATIVES-1.6 TIMES 10 PRIME NEGATIVE4 VOL. PERCENT. INZ-600, TND-FS-M, DIATOMITE BRICK WERE USED AS SOLID SUPPORTS FOR THE DETN. OF GERMANE, SILANE, AND DIBORANE, RESP.; THE LIQ. PHASE WAS SQUALENE, VASELINE OIL AND POLYETHYLENE GLYCOL-2000, TRICRESYL PHOSPHATE AND SQUALENE. N IS THE CARRIER GAS. INDUSTRIAL DIBORANE CONTAINS C SUB6 H SUB6, PROPYLENE, C SUB6 H SUB8, C SUB5 H SUB12, MECL, AND C SUB6 H SUB14. INDUSTRIAL SILANE CONTAINS C SUB4 H SUB10, ME SUB2 O, MEETO, ET SUB2 O, ETCL, ACETYLALDEHYDE, ME SUB2 CO, MEOD, ETOH, C SUB6 H SUB6, TRIETHOXY SILANE; INDUSTRIAL GERMANE CONTAINS CH SUB4, C SUB2 H SUB4, C SUB2 H SUB6, PROPYLENE, C SUB3 H SUB7, C SUB4 H SUB10, AND ISCBUTANE. FACILITY: SCI.-RES. INST. CHEM., GORKI STATE UNIV., GORKI, USSR.

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0115393

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIGITAL MEASURING SYSTEM (DMS) IS INTENDED FOR CHECKING HATCHED MEASURES OF LENGTH UNDER DYNAMIC CONDITIONS. THE ESSENCE OF THE METHOD OF MEASUREMENTS OF THE LENGTH OF THE SUBDIVISIONS OF HATCHED MEASURES CONSISTS IN THE FACT THAT REGISTRATION OF THE ORDER OF INTERFERENCE AND FIXATION OF THE MEASUREMENT RESULTS (AT THE MOMENT THAT THE CENTER OF THE HATCH PASSES UNDER THE AXIS OF THE SLIT OF A PHOTOELECTRIC MICROSCOPE) TAKES PLACE DURING A CONSTANT CHANGE OF THE OPTICAL DIFFERENCE OF THE COURSE OF RAYS IN THE INTERFEROMETER. IN ACCORDANCE WITH THIS, THE FUNCTIONAL LAYOUT OF THE DMS CONSISTS OF A PHOTOELECTRIC DEVICE FOR MEASURING THE ORDER OF INTERFERENCE AND A DEVICE FOR REGISTERING THE MOMENT THAT THE CENTER OF THE HATCH PASSES UNDER THE AXIS OF THE SLIT OF THE PHOTOELECTRIC MICROSCOPE FOR OUTPUT OF THE SIGNAL OF RECORDING OF THE MEASUREMENT RESULT. THE BASIC METROLOGICAL AND TECHNICAL PARAMETERS OF THE DMS ARE PRESENTED.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF IODOBROMINE WATERS ON RESTORATION OF THE FUNCTIONAL STATE
OF THE SKIN IN PSORIASIS -U-
AUTHOR--(02)-POTGTSKIY, I.I., ZORIN, P.M. Z
COUNTRY OF INFO--USSR
SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 123-125
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--WATER, IODINE, BROMINE, SKIN DISEASE, PROPHYLAXIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3002/1715 STEP NO--UR/0475/70/000/005/0123/0125
CIRC ACCESSION NO--AP0129083
UNCLASSIFIED

272 018

CIRC ACCESSION NO—AP0129083

UNCLASSIFIED

PROCESSING DATE--30OCT70

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

ABSTRACT. A STUDY IS PRESENTED OF 116 PATIENTS WITH PSORIASIS WHICH WERE TREATED WITH IODOBROMINE MINERAL WATERS (15 BATHS PER COURSE). IT WAS FOUND THAT THESE BALNEOPROCEDURES FAVORED NORMALIZATION OF REACTIVITY OF THE ORGANISM. FACILITY: KAFEDRA DERMATOLOGII, KIJEVSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

USSR

UDC: 548.0:538.22

AL'SHIN, B. I., ZORIN, R. V., DROBYSHEV, L. A., and STEPANISHCHEV, S. V.

"Magnetic Characteristics of Lead Manganate Monocrystals"

Moscow, Kristallografiya, vol 17, No 3, 1972, pp 562-565

Abstract: The monocrystals whose magnetic characteristics are investigated in this paper have the formula $PbMn_2O_4$ and were grown from the solution $PbMn_{2/3}W_{1/3}O_3$ in a $PbO-PbF$ melt in the form of a truncated hexagonal pyramid with a height of about 1 mm and a length of 1.5-2.0 mm along a side of the hexagon. Magnetic measurements of the crystals were made by the Faraday method with twisting weights on a quartz thread in a cryostat to provide a temperature range of 1.5 to 300° K. The measurement results indicated that the material transformed to a weakly ferromagnetic state at a temperature of 63° K, with the spontaneous magnetic moment lying in the base plane of the crystal. Curves are given for the magnetization as a function of the magnetic field in which the crystals were placed and as a function of the field at various temperatures ranging from 30 to 53° K. Investigation of the effect of an electric field on the crystal's magnetic characteristics showed that for an electric field intensity

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USSR

AL'SHIN, B. I., et al, Kristallografiya, vol 17, No 3, 1972, pp 562-565

greater than the critical value, no marked change occurs in the magnetization curves, which fact is interpreted to mean that at temperatures below 39° K the spontaneous magnetic moment is maintained in a definite position by the internal antiferroelectric fields of the crystal.

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USSR

ZORIN, V. A.

"Certain Functionals Fixed in the Set of Poisson Processes"

Uch. zap. Gor'kov. Un-t. Ser. Mat. [Scientific Writings of Gor'kiy University, Mathematics Series], 1972, No 158, pp 15-17 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V138 by B. Kharlamov).

Translation: The set $\{\xi_k, k = 1, \dots, L\}$ of independent point processes, in which process ξ_k ($k = 1, 2, \dots, L$) is a Poisson process with random parameter

$\lambda_k: P(\lambda_k = \lambda_{sk}) = c_{sk} > 0, \sum_{s=1}^K c_{sk} = 1.$ is studied. Suppose $v_k(n, t)$ is an indicator of set $\{\zeta_k(t) = n\}$ and $\alpha(n, t) = \sum_{k=1}^L f_k(v_k(n, t))$, where f_k ($k = 1, \dots, L$) is an arbitrary set of measurable functions. The derivatives of order m ($m = 0, 1, 2, \dots$) with respect to t of the mathematical expectations and dispersions of the values of $\alpha(n, t)$ are estimated. The results produced are applicable for proof of the consistency and effectiveness of certain estimates of the parameters of the given set of processes. Applications are discussed.

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UNCLASSIFIED
72 019
TITLE--PREPARATION OF GAS TURBINE FUELS OF IMPROVED QUALITY FROM
DISTILLATES FROM COKING PETROLEUM RESIDUES AT HIGH PRESSURE -U-
AUTHOR--(05)-ROGACHEVA, O.I., SYUNYAYEV, Z.I., GIMAYEV, R.N., DAVYDOV,
G.F., ZORIN, V.I.
COUNTRY OF INFO--USSR
SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (2), 6-8
DATE PUBLISHED-----70
SUBJECT AREAS--PROPULSION AND FUELS, MATERIALS
TOPIC TAGS--COKE, PETROLEUM PRODUCT, VANADIUM, SULFUR, KEROSENE, GAS
TURBINE FUEL, INDUSTRIAL PRODUCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1519
STEP NO--UR/0318/70/000/002/0006/0008
CIRC ACCESSION NO--AP0118506
UNCLASSIFIED

2/2 019

CIRC ACCESSION NO--AP0118506

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KEROSENE GAS OIL DISTILLATES WERE IMPROVED WHEN DELAYED COKING WAS CARRIED OUT AT 6 ATM. FUELS CONTG. 0.0004PERCENT ASH AND 0.000072PERCENT V WERE THUS OBTAINED EVEN WITH COKING INTAKE STOCK FROM HIGH S PETROLEUMS. THE YIELDS OF COKE WERE ALSO INCREASED 6-9PERCENT. CHARACTERISTICS OF THE RESIDUES AND FUELS OBTAINED AND EXPTL. DATA ARE PRESENTED. 7 REFERENCES.
FACILITY: UFIM. NEFT. INST., UFA, USSR.

UNCLASSIFIED

ZORIN, V. M.

IMPROVING THE THERMAL CIRCUITRY OF SINGLE-LOOP ELECTRIC POWER SYSTEMS WITH CHANNEL-TYPE REACTORS

UDC 621.311.2:621.039

Article by G. N. Korozov, candidate of technical sciences, and V. M. Zorin, engineer, Teplotekhnika, Russian, No 3, 1972, pp 4-8)

Handwritten: 1975 52318
21 June 1972

The authors have considered the possibilities of improving the existing thermal systems of the K-500-65/1000 turbine installation of the existing atomic electric stations with uranium-graphite channel-type reactor parameters ahead of the turbine $P_0 = 6.59 \text{ MPa}$, $t_0 = 250.4^\circ\text{C}$. Allowance was made for the specific features of this type of system, viz., the high requirements with respect to the feedwater quality; the large flow of condensate from the separator and from the intermediate steam superheater, which are characteristic for turbine installations using saturated steam; the specific features of the operation of the steam-generating equipment; and the appreciable electricity consumption of the circulating pumps of the reactor loop.

The proposed atomic electric station is shown schematically in Fig. 1. The results of the optimization of the regenerator system in the low-pressure part, with allowance for the requirement of the water supply system, were reported earlier [1]. Installation of a slightly-acid cation filter past the low-pressure heater PND-4 has made it possible to forgo condensed discharge system the coolant for the turbine separator, this flow being directed to the PND-4 heater.

In the existing variant, the drainages of stages I and II of the intermediate steam superheater of the turbine installation are discharged in parallel streams into the deaerator, and this exceeds out the bleeding at the lower pressure. In addition, owing to the heat introduced into the deaerator by the bleed steam, the flow of the main condensate is heated by less than 2°C at a total heating in the deaerator of 11.2°C , and therefore even slight deviations from the rated operating conditions (increasing the enthalpy of the discharge drainages or of the main condensate as it leaves the low-pressure heater PND-5, etc.) can lead to an increase of the pressure in the deaerator and as a

USSR

UDC: 621-529-525

YEGOROV, L. R., ZORIN, V. M., KON'KOV, Yu. A., YAKOVLEV, A. B.

"A Pneumatic Analog Signal Converter"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331396, Division G, F, filed 21 Apr 69, published 7 Mar 72, p 155

Translation: This Author's Certificate introduces a pneumatic analog signal converter which contains a "nozzle-baffle" unit with free baffle in a stable suspended state above the nozzle, which is connected to the input channel. As a distinguishing feature of the patent, the functional possibilities of the device are extended by equipping it with additional nozzles which are connected to a signal source and by locating the openings of the additional nozzles between the input nozzle and the edge of the throttling surface of the "nozzle-baffle" unit.

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USSR

UDC: 621.398.694.3:538.652

ABRAMOV, V. M., BARSKIY, B. R., VERTUSHKIN, B. A., GOLOVIN, V. V.,
ZORIN, V. M., KRINKIN, A. A.

"A Pneumatic Computer"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 8, Mar 71, Author's Certificate No 296091, division G, filed 17 Oct 68,
published 12 Feb 71, p 148

Translation: This Author's Certificate introduces a pneumatic computer which contains a single-diaphragm element with two nozzles which are coaxial with each other in the flow chamber of the element. The dead-end chamber of the element is connected to a multiplicand pressure source, and the inner nozzle is connected through a choke to a multiplier pressure source and directly to the output channel of the device, the annular channel formed by the nozzles being open to the atmosphere. As a distinguishing feature of the patent, the functional possibilities of the computer are extended by connecting the flow chamber of the element through a choke to a divisor pressure source.

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USSR

UDC 621.039.51.001.5

MARGULOVA, T. Kh., ZORIN, V. M.

"Study of the Thermal and Water-Flow Design of a Single-Loop Atomic Power Station"

Tr. Mosk. energ. in-ta (Works of Moscow Power Engineering Institute), 1972, No. 126, pp 71-78 (from RZh-50. Yadernyye reaktory, No 11, Nov 72, Abstract No 11.50.85)

Translation: The thermal design of a single-loop atomic power station is investigated. Features of selecting the thermal design considering water requirements are determined. Ensuring the durability and reliability of the operation of the shells of the fuel elements and of the water-vapor regime of the turbine and reducing the extent of activity in all elements of the circuit lead to requirements imposed on the quality of the reactor in the feedwater in a single-loop atomic power station in terms of determining these requirements in organizing the thermal design of the station. Expenditures on equipment and assembly, transportation and storage expenses, and other expenditures considering economy measures were taken into account in the power station design. 1 ill., 2 tables, 3 ref.

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USSR

UDC: 681.325:65.525

YEGOROV, L. R., ZORIN, V. M., KON'KOV, Yu. A.

"A Pneumatic Element"

USSR Author's Certificate No 309354, filed 2 Jun 69, published 2 Dec 71
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7,
Jul 72, Abstract No 7A61 P)

Translation: A pneumatic element is proposed which contains a moving gate with a recess and an open central aperture, and a housing with an annular input channel. To increase the operational reliability of the element, the recess in the gate is coaxial with the central aperture and is made in the form of an annular groove with middle diameter equal to the middle diameter of the groove of the annular input channel and with a width equal to the width of the groove for this channel, or twice the width of this groove. One illustration.

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- 8 -

UNCLASSIFIED

PROCESSING DATE--11,SEPT70

1/2 023

TITLE--SOME FEATURES OF INFLUENZA EPIDEMIC IN THE TOWN OF GLAZOV -U-

AUTHOR--AKSENOV, V.A., ORLOVA, N.N., SELIDOVKIN, D.A., ARSENOV, I.A.

ZORIN, V.S.
COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 97-101

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EPIDEMIOLOGY, INFLUENZA, BLOOD SERUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0063

STEP NO--UR/0402/70/000/001/0097/0101

CIRC ACCESSION NO--AP0103743

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103743
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. AN EPIDEMIC OF INFLUENZA WITH A TWO WAVE COURSE WAS OBSERVED IN THE TOWN OF GLAZOV. THE OUTBREAK WAS DEVELOPING AGAINST THE BACKGROUND OF FAVOURABLE CONDITIONS WITH REGARD TO INFLUENZA IN THE SURROUNDING TERRITORY, A FEW WEEKS BEFORE THE ONSET OF INFLUENZA EPIDEMIC IN THE USSR. THE FIRST WAVE OF THE EPIDEMIC WAS REGISTERED IN NOVEMBER DECEMBER 1966; THE SECOND IN FEBRUARY 1967. THE FIRST WAVE INVOLVED PREDOMINANTLY CHILDREN IN KINDERGARTENS AND SCHOOL CHILDREN, IN THE SECOND WAVE THE MORBIDITY OF INFLUENZA WAS RELATIVELY UNIFORMLY DISTRIBUTED BETWEEN ADULT AND CHILD CONTINGENTS. A RISE OF ANTIBODY TO INFLUENZA A SUB2 VIRUS WAS OBSERVED IN THE SERA OF PATIENTS IN THE FIRST WAVE OF THE EPIDEMIC. A STRAIN OF INFLUENZA VIRUS WAS ISOLATED MORPHOLOGICALLY AND SEROLOGICALLY CONSIDERED TO BE AN ATYPICAL A SUB1 STRAIN WITH ALTERED ANTIGENIC STRUCTURE. THE STRAIN HAD NO EPIDEMIC SPREAD.

UNCLASSIFIED

USSR

UDC 621.316.(001.1+004.15)

KHOLMSKIY, V. G., ZORIN, V. V., MALIY, N. O.

"Optimization of the Maintenance Schemes and Voltage Conditions in Municipal Networks with the Aid of a Computer"

V sb. Tekhn. progress v elektrosnabzh. gorodov (Technical Progress in Electric Power Supply of the Cities -- collection of works), Leningrad, Energiya Press, 1970, pp 97-101 (from RZh-Elektrotehnika i Energetika, No 4, Apr 71, Abstract No 4 Ye 275)

Translation: The characteristics of the EPOS-1 and EPOS-2 programs for the Ural-2 digital computer for choosing optimal breakdown points are presented. The minimal power loss during the greatest loads of the network is taken as the purpose function in the EPOS-1 program. For optimization, restrictions on the allowable current and fixing of certain sections by reliability conditions are considered. In the EPOS-2 program, the load charts of the consumers are considered for optimization, and the minimum power loss for the defined period is taken as the purpose function. Optimization of the network is realized considering the voltage conditions; the optimal voltage regulation law in the power supply systems is selected, and an efficient arrangement of the distribution transformer branches is found. [Kiev Polytechnical Institute]

1/1

ZORIN, YE. I.

SPR 5 59008
L-73

5

YE-8. STUDY OF THE FORMATION OF THE LEAD SULFIDE FILM STRUCTURE ON SUBSTRATES OF ROCK SALT SUBJECTED TO BOMBARDMENT BY He⁺, Ar⁺, Br⁺ IONS

[Article by Ye. I. Zorin, B. V. Kudryavtseva, N. A. Kochalova, P. V. Pavlov, S. A. Smolitor, G. K. Ly, Cor. V. Ly Research Physicochemical Institute under Gosstatiz University, Novosibirsk, 111 Sibirskiy Pr. Prokhamn. Kozts. I Sibirsk. Poliprovodnikoviy Khimicheskii Plant, Krasnoy. Karsk. 17-17' June, 1977, p. 49]

There are various opinions regarding the effect of substrate defects on the nature of the orientation and the structure of continuous films. Therefore, describing the growth films of the films on the substrates with automatically created defects is of scientific and practical interest.

In this paper the methods of electron diffraction and electron microscopy were used to study the law of the formation of thin films of lead sulfide obtained by condensation in a vacuum on the order of 5·10⁻⁶ torr on rock salt cleavage irradiated in advance by He⁺, Ar⁺, Br⁺ ions in equal doses (from 3·10¹⁶ to 10¹⁵ ions/cm²).

It was established that:

- 1) Irradiation of the NaCl substrate with He⁺, Ar⁺ and Br⁺ ions leads to the fact that the film formation proceeds much more rapidly than on the control substrate, that is, the formation process is shifted in the direction of smaller thicknesses.
- 2) The magnitude of the critical thicknesses for which one growth stage or another takes place is less the greater the mass of the ions and the irradiation dose.
- 3) Upon determining the irradiation dose, depending on the type of ion, the epitaxial growth of the film is disturbed; irradiation by Br⁺ ions with doses on the order of 10¹⁵ ions/cm² leads to the formation of polycrystalline films.
- 4) In the films, grown on irradiated substrates, defects of the crystal structure occur which are the same as on the control substrates (dislocations, dislocation grids, growth configurations), but with higher concentration.

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USSR

UDC 621.382.3

PAVLOV, P. V., VASIL'YEV, V. K., VOLOD'KO, V. G., ZORIN, Ye. I., TETEL'-
BAUM, D. I., TULOVCHIKOV, V. S., CHIGIRINSKAYA, T. Yu.

"Peculiarities of Concentration Profiles in Ion Implantation and Their
Use for Creating Varicaps and Bipolar Transistors"

Kiev, IVUZ, Radioelektronika, Vol 14, No 11, Nov 71, pp 1353-1364

Abstract: The authors consider the principal technically important singularities of concentration profiles in the case of ion-beam alloying both without distillation and after diffusion distillation of dopants. Problems of calculating the principal sections and depths of PN junctions on silicon as a function of conditions of irradiation and annealing are discussed. A description is given of the use of the ion-beam method for making a varicap with an inverse impurity gradient in the base, and also for making a binary PNP transistor. The basic parameters of the varicap are calculated. Nine figures, one table, bibliography of nine titles.

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1/2 038 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--USE OF THE ION BOMBARDMENT METHOD TO DOPE GERMANIUM -U-
AUTHOR-(04)-VOLODKO, V.G., ZORIN, YE.I., PAVLOV, P.V., TELEBAUM, D.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(4), 812-13
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--ION BOMBARDMENT, GERMANIUM, DOPED ALLOY, BORON, ION, VOLT
AMPERE CHARACTERISTIC

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0930 STEP NO--UR/0449/70/004/004/0812/0813
CIRC ACCESSION NO--AP0121532
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

212 038

CIRC ACCESSION NO--AP0121532

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SURFACE RESISTIVITY OF THE INVERSION LAYER IN P TYPE GE BOMBARDED AT 50 KEV WITH P IONS AND ANNEALED 30 MIN AT 200-800DEGREES WAS STUDIED. THE ION BEAM WAS ORIENTED NORMAL TO THE (111) PLANE, AND THE ION DOSE WAS 0.1-1000 MICROCOULOMBS-CM PRIME2. THE SURFACE RESISTIVITY DEPENDS MONOTONICALLY ON ANNEALING TEMP. THE INVERSION N TYPE LAYER IS FORMED AFTER ANNEALING AT GREATER THAN 450 AND 350DEGREES FOR ION DOSES OF 10-100 AND 1000 MICROCOULOMBS-CM PRIME2, RESP. NO INVERSION LAYER WAS OBSD. FOR DOSES SMALLER THAN 1 MICROCOULOMB-CM PRIME2. CURRENT VOLTAGE CHARACTERISTICS OF P,N JUNCTIONS FORMED IN N TYPE GE BY BOMBARDMENT AT 50 KEV WITH B IONS AND ANNEALING AT 400DEGREES EXHIBIT A RECTIFICATION COEFF. OF SIMILAR TO 10 PRIME4 AT 1 V. FACILITY: GOR'K. ISSLED. FIZ.-TEKH. INST., GORKI, USSR.

UNCLASSIFIED

USSR

UDC 532.696

ZORIN, Z. M., SOBOLEV, V. D., CURAYEV, N. V., Institute of Physical Chemistry, Acad. Sc., USSR, Moscow

"The Effect of Polymolecular Adsorption on the Diffusion of Vapors in Microcapillaries. II. Experimental Data"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1127-1129

Abstract: Experiments were carried out to check on the theory of vapor diffusion in fine cylindrical capillaries reported in the preceding paper. Quartz microcapillaries with internal diameter 10^{-5} - 10^{-3} cm were used. A 10-15 cm long capillary sealed on both ends was placed horizontally, with one end immersed in liquid nitrogen bath. The other end was then immersed in a bidistillate, the movement of the liquid being observed through a microscope. When the water reached the cold zone it froze and the movement stopped. Then the other end of the capillary was sealed off and the system placed in a thermostatically controlled container to reach an equilibrium. Experimental data obtained agreed well with those calculated from proposed theoretical considerations.

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- 2 -

USSR

UDC 543.123.11+532.74

SPITSTN, V. I., GLAZUNOV, M. P., MULYAR, V. M., DERYAGIN, B. V., CHURAYEV, N. V., and ZORIN, Z. M., Institute of Physical Chemistry Academy of Sciences USSR, Moscow

"Study of the Anomalous Water by the Method of Neutron Activation Analysis"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 132-135

Abstract: Samples of anomalous water were studied for their content of admixtures which could possibly be leached out of the glass; particularly Si and Na, after irradiation with thermal neutrons. As a preliminary experiment quartz glass itself was examined. The Na impurities were found to be low, and irregularly distributed throughout the capillary. The anomalous water samples were compared to double distilled water. It was established that the admixture concentration was much higher in the anomalous samples than in the double distilled material. The content of Si and Na was inversely proportional to the volume of the sample studied. This could be due to the evaporative procedures used, the impurities being introduced from the surface layer of the capillaries, from the evaporation equipment, etc. Temperature doesn't seem to have any particular effect on the content of impurities. The quantity of the anomalous components in the samples of anomalous water varied in the range of $5 \cdot 10^{-3}$ to $5 \cdot 10^{-8}$ g.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THERMAL STABILITY OF MODIFIED WATER --U--
AUTHOR--(05)--DERYAGIN, B.V., ZORIN, Z.M., RABINOVICH, YA.I., TALAYEV, M.V.,
CHURAYEV, N.V.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(4), 859-61
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--WATER, THERMAL STABILITY, DISTILLATION, BOND ENERGY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0697 STEP NO--UR/0020/70/191/004/0859/0861
CIRC ACCESSION NO--AT0124369
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124369

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL STABILITY OF MODIFIED WATER WAS STUDIED BY USING THE METHOD OF DISTN. THROUGH A THERMAL BARRIER (D., 1967). THE RESULTS SHOW THAT THE ANOMALOUS COMPONENT OF THE MODIFIED WATER DECOMPS. TO FORM ORDINARY WATER. THE BOND ENERGY FOR THE MOLS. OF THE ANOMALOUS COMPONENT WAS EVALUATED BY MEANS OF THE BATLER-POLYANI EQUATION (1962) AND FOUND TO BE 50 KCAL-MOLE. THE HIGH THERMAL STABILITY OF THE ANOMALOUS COMPONENT MOLS. EXPLAINS THE STABILITY OF THE MODIFIED WATER, THE PROPERTIES OF WHICH DO NOT CHANGE EVEN DURING PROLONGED STORAGE. FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

USSR

Z UDC: 541.12.013.5

DERYAGIN, B. V., Corresponding Member Academy of Sciences USSR, ZORIN, Z. M., RABINOVICH, YA. I., TALAYEV, M. V., (DECEASED) and CHURAYEV, N. V., Institute of Physical Chemistry, Moscow, Academy of Sciences USSR

"Thermal Stability of Modified Water"

Moscow, Doklady Akademii Nauk, SSSR, Vol 191, No 4, Apr 70, pp 859-861

Abstract: The authors confirmed the results obtained in preliminary experiments that at temperatures $\geq 700^{\circ}$ modified water (M.W.), which consists of two components -- anomalous component (A.C.) and normal water -- decomposes converting to normal water. Initially changes in expansion of water columns were studied in temperatures of 250 and 400 $^{\circ}$ and both cases gave similar curves, separated in accordance with the temperature difference. Next distillation of the M. W. across a heat barrier was carried out and it was shown that up to 500 $^{\circ}$ no noticeable changes occur. At 700 $^{\circ}$ the condensate looked like normal water, indicating that thermal decomposition of M.W. occurs at $t \geq 700^{\circ}$. On the basis of their experimental data the authors calculated the bond energy of A.C. molecules to be about 50 kcal/mole.

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USSR

BABICHEV, B. I., ZOLOTFOREVSKIY, YU. S., ZORINA, A. YA., IVANOV, V. V.

"Properties of An Aluminum Alloy Strengthened With Fiberglass"

V sb. Metallurgiya (Metallurgy -- collection of works), No 14, Sudostroyeniye Press, Leningrad, 1971, pp 133-137 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 41648)

Translation: A study was made of the properties of an aluminum alloy strengthened with fiberglass. It is demonstrated that the theoretical data on the strength of a two-layer composite agree with the actual data. The variation in temperature from +142 to -180°, cyclic loading, and corrosive environment have no effect on the mechanical properties of the two-layer composite. 1 illustration, 2 tables, and a 3-entry bibliography.

1/1

USSR

UDC: 629.78.017.2

BORSHCHEVSKIY, M. Z., ZORINA, E. S., IOSLOVICH, I. V.

"Optimum Deceleration of the Rotation of an Asymmetric Satellite About its Center of Mass"

Moscow, Upr. dvizhushchimisya ob'yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik (Control of Moving Objects. Works of the Fourth All-Union Conference on Automatic Control Tbilisi, 1968--collection of papers); 1972, pp 293-294 (from RZh-Raketostroyeniye, No. 10, Oct 72, abstract No 10.41.69)

Translation: The paper deals with the variational problem of optimum braking of the rotation of a satellite about its center of gravity, i. e. the problem of optimum prestabilization. The controlling action is provided by two pairs of rocket engines rigidly fixed in the body of the satellite so that in the coordinate system associated with the principal moments of inertia of the satellite the moment of the controlling action is directed along a fixed straight line. This straight line does not coincide with any single principal axis of the ellipsoid of inertia. The optimality criterion is taken as the expenditures of reaction mass for an undetermined braking time.

Résumé.

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USSR

BORSHCHEVSKIY, M. Z., ZORINA, E. S., IOSLOVICH, I. V.

"Optimal Braking of Rotation of an Asymmetrical Satellite About its Center of Mass"

Upr. Dvizhushchimisya Ob'yektami. Tr. IV Vses. Soveshch. po Avtomat. upr. Tbilisi, 1968 [Control of Moving Objects, Works of Fourth All-Union Conference on Automatic Control, Tbilisi, 1968 -- Collection of Works], Moscow, 1972, pp 293-294, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 A49).

Translation: The variational problem is studied of optimal braking of the rotation of a satellite about its center of mass, i.e., the problem of optimal preliminary stabilization. The control actions are applied using two pairs of reaction engines, immobily attached to the body of the satellite, so that in the system of coordinates coupled to the main moments of inertia of the satellite the force of the control action is directed along a fixed straight line, and this line does not coincide with any of the main axes of the ellipsoid of inertia. The optimality criterion used is the total consumption of working fluid with variable time of the braking process. It is assumed that the satellite is a solid, performing Euler-Poinsot motion about its center of mass when no control actions are applied. The ellipsoid
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USSR

BORSHCHEVSKIY, M. Z., ZORINA, E. S., IOSLOVICH, I. V., Upr. Dvizhushchimisya Ob'yektami. Tr. IV Vses. Soveshch. po Avtomat. upr. Tbilisi, 1968. Moscow, 1972, pp 293-294.

of inertia of the satellite may be arbitrary, but it is considered that the moments of inertia do not change during braking. Sufficient conditions of optimality are used to synthesize the optimal control. As a result of analytic and partially numerical solution of the Bellman equation, switching surfaces and zero proximity lines are produced, allowing a solution consisting of cyclical slipping modes to be constructed. These modes sometimes do not convert to pulse solutions with unlimited motor thrust, which is the first example of modes of this type.

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ZORINA L. D.
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501 JPRS 53279
14 June 75

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

Article by Z. I. Kir'yankina, D. I. Blizhenko, V. N. Denisov, Ya. V. Chelishchikova, N. G. Zhukova, L. B. Zorina, V. N. Len'kova, Novosibirsk, Institute of Silicon Chemistry, Siberian Division of the Academy of Sciences of the USSR, Novosibirsk, Part 1, 1969, pp 21-23

Polycrystalline semiconducting films are of defined interest. The structural imperfection characteristic of them can be successfully used: the intercrystalline barriers insure a high specific resistance (in the absence of surface roughness) serving as insulation in the integrated circuits, and the surface roughness permits the creation of a stable contact which is the basis for certain types of diodes. On the other hand, the low deposition temperature (by comparison with the epitaxial growth) facilitates the realization of efficient production of the admixture diffusion during the first period after sintering.

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

Procedure for Obtaining and Studying Films

The silicon films were obtained by the chloride method [1-3] in the horizontal open tube with an electric furnace as the heater. The temperature distribution along the furnace appears in Figure 25. The substrates made of molten quartz and polycrystalline graphite were placed in two parallel rows along the deposition zone. The thermostatted evaporators of two structural designs were used: bubbling and nonbubbling. The total hydrogen flow was 10 liters/hour (with a reactor diameter of about 20 mm); here, the evaporator with the SiCl₄ normally passed a flow of 20 liters/hour, and 10 liters/hour went through the evaporator with BBr₃.

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

ZORINA, S. N.

SO:JPEJ 5340A
19 JUNE 71

UDC: 361.11

MORE EFFICIENT USE OF AVAILABLE BEDS IN PROLONGED HOSPITALIZATION OF PATIENTS

(Article by S. N. Zorina, Department of Social Hygiene, Organization and History of Public Health (headed by G. M. Gulezinskaya, candidate of medical sciences), Kiev Scientific Research Institute of Central and Municipal Hygiene (senior Academician A. N. Barzayev; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 5, 1971, submitted 10 December 1970, pp 13-17)

The purpose of the present work was to investigate the composition of patients hospitalized for more than 30 days, as well as the causes of prolonged hospitalization for the purpose of finding reserves for more efficient use of available beds. According to data in the domestic literature, the incidence of cases of prolonged hospitalization ranges from 14 to 27 percent of the total number of individuals hospitalized (Ye. A. Loginova, 1965; Ye. I. Tarnovskaya, 1966; S. Ya. Freydlin and A. L. Kozan, 1969).

We investigated 7,294 cases of hospitalization for periods of over 30 days in the therapeutic and surgical departments of Kiev hospitals in 1967.

Most of the patients (61.5%) treated for long periods in therapeutic departments were hospitalized for active rheumatism, myocardial infarction, essential hypertension, arterosclerotic cardiosclerosis, peptic ulcers, cholecystitis and cholelithiasis, and pneumonias. In the surgical departments, 79.6 percent of all cases of prolonged hospitalization were referable to peptic ulcers, cholecystitis and cholelithiasis, endocarditis and vascular thrombosis of the lower extremities, malignant neoplasms, severe trauma, and accidents.

Women made up 56.3 percent of the patients hospitalized in therapeutic departments for more than 30 days, and 51.3 percent of those in the surgical departments. Senior citizens made up over half of all those treated for more than 30 days (51.7% in therapeutic departments, and 50.7% in surgical cases).

The greatest number of prolonged hospitalization cases (as well as number of bed-days) was observed in clinical hospitals which is attributable to the concentration in them of the most seriously ill, to the need of submitting them to more complex diagnostic tests and, in part, to the interests of the pedagogic process.

1/3 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--CONNECTION BETWEEN ELECTRIC EXCITABILITY OF THE HIPPOCAMPUS AND THE DEVELOPMENT OF INHIBITION IN THE PROCESS OF ACOUSTIC EPILEPSY -U-
AUTHOR-(03)-FLESS, D.A., ZORINA, Z.A., ZININA, S.S.

COUNTRY OF INFO--USSR

Z

SOURCE--ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI, 1970, VOL 20, NR 1, PP 139-143

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HIPPOCAMPUS, EPILEPSY, INHIBITION, ACOUSTIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1982/0724

STEP NO--UR/0247/70/020/001/0139/0143

CIRC ACCESSION NO--AP0052182

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

2/3 018

CIRC ACCESSION NO--AP0052182
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. ELECTRICAL EXCITABILITY OF THE HIPPOCAMPUS, THE CAUDATE NUCLEUS, THE MEDIAL GENICULATE BODY AND THE DORSAL COCHLEAR NUCLEUS WAS COMPARED IN TWO GROUPS OF RATS OF THE KM LINE, REACTING WITH SEIZURES TO ACOUSTIC STIMULATION, BUT DIFFERING IN THE DEGREE OF ACTIVE INHIBITION (PRESENCE OR ABSENCE OF AN INHIBITORY PHASE IN THE MOTOR EXCITATION PRECEDING THE SEIZURES), AND IN RATS OF THE WISTAR LINE INSENSITIVE TO SOUND. THE THRESHOLDS WERE DETERMINED OF THE SEIZURES TYPICAL OF EACH OF THE STRUCTURES (FACIAL MYOCLONIC SEIZURES, ADVERSION OF THE HEAD, GENERAL DRASTIC MOTOR EXCITATION). DIFFERENCES WERE FOUND ONLY IN IN TWO GROUPS OF RATS OF THE KM LINE, REACTING WITH SEIZURES TO ACOUSTIC STIMULATION, BUT DIFFERING IN THE DEGREE OF ACTIVE INHIBITION (PRESENCE OR ABSENCE OF AN INHIBITORY PHASE IN THE MOTOR EXCITATION PRECEDING THE SEIZURES), AND IN RATS OF THE WISTAR LINE INSENSITIVE TO SOUND. THE THRESHOLDS WERE DETERMINED OF THE SEIZURES TYPICAL OF EACH OF THE STRUCTURES (FACIAL MYOCLONIC SEIZURES, ADVERSION OF THE HEAD, GENERAL DRASTIC MOTOR EXCITATION). DIFFERENCES WERE FOUND ONLY IN THE HIPPOCAMPUS, THE THRESHOLD OF THE TYPICAL MYOCLONIC SEIZURES WAS ALMOST 2.5 TIME LOWER IN THE SENSITIVE RATS WITHOUT AN INHIBITORY PHASE THAN IN THOSE WITH AN INHIBITORY PHASE AND THAN IN NON-SENSITIVE ONES. THE LATTER TWO GROUPS, ALONG WITH A SIMILARITY OF THE THRESHOLDS OF ELECTRICAL SEIZURES, CONSIDERABLY DIFFERED IN THE RATE OF THEIR GENERALIZATION.

UNCLASSIFIED

3/3 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0052182

ABSTRACT/EXTRACT--IT HAS BEEN ASSUMED THAT ENHANCED SEIZURE READINESS OF THE HIPPOCAMPUS DISTURBS ITS INHIBITING FUNCTION AND CAUSES A WEAKNESS OF INHIBITION; ONE OF THE CONDITIONS OF ENHANCED SEIZURE READINESS OF THE RAT BRAIN TO THE ACOUSTIC STIMULATION.

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UNCLASSIFIED

USSR

UDC: 539.2.01

ZORKHIY, P. M., BEL'SKIY, V. K.

"The Structure of Crystals Made up of Centrally Symmetric Molecules"

V sb. Sovrem. probl. fiz. khimii (Modern Problems of Physical Chemistry-- collection of works), T. 4, Moscow, Moscow University, 1970, pp 379-406 (from RZh-Fizika, No 9, Sep 70, Abstract No 9Ye301)

Translation: In order to classify molecular structures with the aid of the method of potential functions, structural classes and subclasses are derived and the degree of probability of realizing them is evaluated for crystals made up of centrally symmetric molecules. The energy of interaction between individual pairs of molecules is computer-calculated for 21 materials, which operation made it possible to assign real crystal structures definitely belonging to one of the derived classes in 12 cases out of the 21. Additional data were required for the remaining 9 structures. It is shown that the given molecular structures are "island" structures. Bibliography of 21 titles. R. V. Baranova.

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USSR

UDC 621.372.853.2.092.22

ZORKIN, A. F., KARTAVTSEVA, L. F.

"Dispersion Properties of a Rectangular Wave Guide with Partial Ferrite Filling"

Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb. (Radio Engineering. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 15, pp 44-49 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B131)

Translation: Approximate formulas are obtained for the critical frequencies, dispersion and fields of the fundamental and closest to fundamental types of waves of the system. There are 4 illustrations and a 2-entry bibliography.

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USSR

UDC 621.372.824

KOSTYCHEV, YU. G., ZORKIN, A. F.

"Calculation of a Rectangular Coaxial in the Presence of a Longitudinally Magnetized Ferrite"

Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb. (Radio Engineering. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 15, pp 38-44 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B139)

Translation: The effect of the geometry of a coaxial on the propagation and loss constants of quasi-TEM and quasi-LE₀₁-waves is analyzed. There are 5 illustrations and a 4-entry bibliography.

1/1

USSR

UDC: 621.984.3

SMIRNOV, V.S., DANILEVSKIY, O.F., ALEKSANDROV, A.A., KAGAN, E.S., STOL'NIYY, V.I.,
and ZOR'KIN, YE.F.

"Stamping of Thick Two-Layer Steel-Titanium Sheets"

Moscow, Kuznechno-Shtampovochnoye Proizvodstvo, No 1, Jan'70, pp 18-19

Abstract: The Izhorskiy Plant imeni A.A. Zhdanov produces elliptical bottoms with 900-, 1000-, and 1600-mm diameters by the hot stamping of VMst3sp - VT1-0 sheets 20 mm thick. The bimetallic steel-titanium sheets were obtained by vacuum pack rolling. In the hot stamping of bimetallic steel-titanium sheets, the correct selection of billet heating conditions is very important. Repeated heating of the steel-titanium bimetal, generally leads to a growth of the transition diffusion zone between the layers and increases its hardness, thus leading to lower bimetal quality. In heating the bimetallic billets, no material titanium gas saturation should be permitted, owing to the difficulty of removing the gas-saturated layer. If the billet heating temperature before stamping does not exceed 900°C, no noticeable growth of the transition diffusion zone between the layers occurs, and at the same time, the metal possesses adequate plasticity. Good surface quality is obtained in the stamped products. The technique, conditions, and equipment used in hot stamping of the bottoms are described. Investigations of specimens cut from various sections of the bottoms showed that heating and stamping under the conditions given do not worsen the bimetal properties. An increase in the thickness of the

USSR.

SMIRNOV, V.S., et al, Kuznechno-Shtampovochnoye Proizvodstvo, No 1, Jan 70, pp 18-19

transition zone was not observed. The hardness of the transition zone did not change. Metallographic sections established that the thickness of the titanium gas-saturated layer did not exceed 0.05 mm. To obtain high-quality welded seams, it is first necessary to clean the titanium surface with an abrasive disk.

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Acc. Nr:

AP0053752

Abstracting Service:

CHEMICAL ABST.

Ref. Code:

UR0032

6/70

115636r Obtaining x-ray diffraction patterns of liquids. Zorkina, S. A.; Bulgadaev, A. V. (USSR). *Zavod. Lab.* 1970, 30(1), 47-8 (Rus.). A method for obtaining x-ray diffraction patterns of liqs. was developed in which the patterns are obtained from a free drop of the liq. examd. Thus, the superimposing of patterns of the hitherto used capillaries is avoided, and the diffracting surface of the liq. is increased. The scheme and description of the app. are stated. Successful expts. with castor oil and oleic acid using Cu and Fe radiation are stated. The exposition time was 50 min without filters and 1.5 hr with filters. The diffraction max. were 10°9' for castor oil and 9°39' for oleic acid using Cu radiation and 12°10' for castor oil and 12°48' for oleic acid using Fe radiation. The periods were 4.590 ± 0.001 and $4.36^\circ \pm 0.002 \text{ \AA}$ for castor oil and oleic acid, resp.

M. Kalfus J

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CRYSTAL CHEMICAL ANALYSIS OF STRUCTURES FORMED FROM
CENTROSYMMETRICAL MOLECULES. II. STRUCTURAL SUBCLASS OF
AUTHOR--(02)-BELSKIY, V.K., ZORKIY, P.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 75-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--MOLECULAR STRUCTURE, CRYSTAL, BROMINATED ORGANIC COMPOUND,
BENZENE DERIVATIVE, ORGANOMERCURY COMPOUND, ANTHRAQUINONE, NAPHTHALENE,
ORGANIC NITRO COMPOUND, NITRILE, CALCULATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1233 STEP NO--UR/0192/70/011/001/0075/0079
CIRC ACCESSION NO--AP0116695
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116695

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ATOM ATOM APPROXN., INTERACTION ENERGIES OF SEP. PAIRS OF MOL. IN CRYSTALS OF TETRABROMOBENZENE, PH SUB2 HG, DICHLOROANTHRAQUINONE, DINITRONAPHTHALENE, AND MUCONONITRILE WERE CALCD. A SIMILAR CORRELATION OF THE OBTAINED VALUES ALLOWED THE STRUCTURES TO BE ATTRIBUTED TO THE SAME STRUCTURAL SUBCLASS. IN THESE STRUCTURES, MOL. CHAINS ARE PRESENT AND LAYERS ARE ABSENT. MOL. COORDINATION NOS. WERE DETD., AND A METHOD OF NOTATING THEM IS PROPOSED. FOR TETRABROMOBENZENE AND PH SUB2 HG, THE STRUCTURES BASED ON ENERGETICAL CALCNS. ARE COMPARED WITH PUBLISHED STRUCTURAL ANAL. RESULTS. FACILITY: MUSK. GOS. UNIV. IM. LOMGNOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PACKING OF MOLECULES IN CRYSTALS OF ANTHRAQUINONE AND ITS
1,5,DIHALO DERIVATIVES -U-
AUTHOR-(04)-BELSKIY, V.K., CHETKINA, L.A., ZORKIY, P.M., GOLDER, G.A.
COUNTRY OF INFO--USSR
SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 262-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CRYSTAL, ANTHRAQUINONE, MOLECULAR INTERACTION, MOLECULAR
STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/1410 STEP NO--UR/0070/70/015/002/0262/0267
CIRC ACCESSION NO--AP0116857
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116857

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTERMOL. INTERACTION ENERGY WAS CALCD. BY USING THE ATOM ATOM APPROXN. (A. KITAIGORODSKII AND MIRSKAYA, 1961; ZORKII, ET AL., 1967), AND THESE VALUES WERE USED IN COMBINATION WITH AN ANAL. OF THE INTERMOL. CONTACTS TO COMPARE THE STRUCTURES OF ANTHRAQUINONE AND ITS 1,5,DIHALO DERIVS. THE INTRODUCTION OF EVER BIGGER SUBSTITUTING GROUPS INTO THE MOL. RESULTS IN A SMOOTH CHANGE IN THE STRUCTURE. IN THE 2 EXTREME CRYSTALS (ANTHRAQUINONE AND ITS I DERIV.), THERE IS A SIMILAR MOTIF FOR THE MOL. PACKING, WHICH DIFFERS FROM THE OTHER STRUCTURES. THE RESULTS SHOWS HOW THE GEOMETRIC CHARACTERISTICS OF THE MOL. AFFECT THE MOL. PACKING AND, CONSEQUENTLY, THE PHYS. PROPERTIES. FACILITY: NAUCH. ISSLED. FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr.:

AN0104033

ZOROASTROV V

Ref. Code: UR9030

AUTHOR-- BELIKOV, V., CORRESPONDENT

TITLE-- A SPEED BOAT ON THE SURA

NEWSPAPER-- NEDELYA, MAY 25-31, 1970, NR 22, P 4, COLS 1-2

ABSTRACT-- THE FIRST SOVIET WATER-JET PROPELLED AIR-CUSHION CRAFT, CAPABLE OF DOING 35 KMS PER HOUR, ITS HULL AND ALL OF ITS MACHINERY, WAS MADE BY THE TRAINING PILOT PLANT OF THE GOR, KIY INSTITUTE FOR WATER TRANSPORT ENGINEERS. THE WORKING BLUE PRINTS OF THE GOR, KOVCHANIN WERE PRODUCED BY THE "VOLGOBALTSUDOPROYEKT", AND ITS CHIEF DESIGNER WAS V. ZOROASTROV. THE PROPOSAL TO CONSTRUCT THE "GOR, KOVCHANIN" WAS SUBMITTED FIVE YEARS AGO. PRIOR TO THAT SEVERAL WORKING MODELS WERE CREATED AT THE GOR, KIY INSTITUTE FOR TRANSPORTATION ENGINEERS UNDER THE DIRECTION OF PROFESSOR V. ANDRYUTIN. V. ZOROASTROV, GRADUATE STUDENT AT THAT TIME, PARTICIPATED IN THE DEVELOPMENT PROGRAM. THE 9-METER AIR FAN OF THE CRAFT HAS BEEN DESIGNED BY THE STUDENT DESIGN BUREAU OF THE INSTITUTE.

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REEL/F
19870386

4

Acc. Nr.: AN0104033

IN ITS TRIALS, THE "GOR, KOVCHANIN" WAS ABLE TO NAVIGATE RAPIDS LESS THAN HALF A METER DEEP AND TO LAND ON A BEACH WITHOUT ANY LANDING FACILITIES.

ANOTHER AIR CUSHION CRAFT, THE FIRST ONE IN THE SERIES KNOWN AS THE "ZARNITSA" IS BEING CURRENTLY EXHIBITED IN MOSCOW.

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REEL/FRAME

19870387

Acc. Nr.: AN0104033

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Ref. Code: UR9030

AUTHOR-- BELIKOV, V., CORRESPONDENT

TITLE-- A SPEED BOAT ON THE SURA

NEWSPAPER-- NEDELYA, MAY 25-31, 1970, NR 22, P 4, COLS 1-2

ABSTRACT-- THE FIRST SOVIET WATER-JET PROPELLED AIR-CUSHION CRAFT, CAPABLE OF DOING 35 KMS PER HOUR, ITS HULL AND ALL OF ITS MACHINERY, WAS MADE BY THE TRAINING PILOT PLANT OF THE GOR, KIY INSTITUTE FOR WATER TRANSPORT ENGINEERS. THE WORKING BLUE PRINTS OF THE GOR, KOVCHANIN WERE PRODUCED BY THE "VOLGOBALTSUDOPROYEKT", AND ITS CHIEF DESIGNER WAS V. ZOROASTROV. THE PROPOSAL TO CONSTRUCT THE "GOR, KOVCHANIN" WAS SUBMITTED FIVE YEARS AGO. PRIOR TO THAT SEVERAL WORKING MODELS WERE CREATED AT THE GOR, KIY INSTITUTE FOR TRANSPORTATION ENGINEERS UNDER THE DIRECTION OF PROFESSOR V. ANDRYUTIN, V. ZOROASTROV, GRADUATE STUDENT AT THAT TIME, PARTICIPATED IN THE DEVELOPMENT PROGRAM. THE 9-METER AIR FAN OF THE CRAFT HAS BEEN DESIGNED BY THE STUDENT DESIGN BUREAU OF THE INSTITUTE.

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K2

REEL/FRAME

19870387

USSR

UDC 542.91:547.572:547.1'118

ARBUZOV, B. A., ZOROASTROVA, B. M., TUDRIY, G. A., FUZHENKOVA, A. V.

"Interaction of Dibenzal Acetone with Trimethyl Phosphite and Dimethyl Phosphorus Acid"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2581-2585

Abstract: A study was made of the interaction of dibenzal acetone with tri-alkyl phosphites. Trimethyl phosphite reacts with dibenzal acetone with the formation of 2,2-trimethoxy-3phenyl-5 5-(β -phenyl)vinyl-1,2-oxaphospholene-4(II). When (II) is washed with water, the phosphorane ring breaks at the P=O bond with the formation of two keto phosphonates, probably S-cis- and S-transconformers. Phosphorane (II) reacts with dibenzal acetone by the diene-synthesis reaction. A thermogram is presented for a mixture of dibenzal acetone with $(\text{CH}_3\text{O})_3\text{P}$ and the reaction of dibenzal acetone with $(\text{CH}_3\text{O})_3\text{P}$ in the presence of CH_3COOH .

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USSR

UDC 542.91.547.1'118

ARBUZOV, B. A., ZOROASTROVA, V. M., NEKLESOVA, I. D., KIERINA, M. A., YEGOROVA, N. V., and tudriy, g. a., Chemistry Institute imeni A. M. Butlerov of Kazan' State University imeni V. I. Ul'yanov-Lenin and Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov of the Academy of Sciences USSR

"Derivatives of Phosphorus Acids and α -Chloroallyl Alcohol. 2. Synthesis of Mixed α -Chloroallyl Esters of Phosphoric Acid and Some of their Biological Properties"

Moscow, Izvestiya Akadenii Nauk SSSSR, Seriya Khimicheskaya, No 5, May 72, pp 1155-1159

Abstract: A previous article by the authors described some phosphorous, phosphoric, thiophosphoric and phosphinic acid esters containing an α -chloroallyl radical. A study of biological properties of the synthesized compounds showed that they have a selective fungicidal and antimicrobial effect. Low toxicity and significant activity towards the dermatophytes *Trichophyton gypseum* and *Epidermophyton Kaufmann-Wolf* were noticeable in mixed phosphoric acid esters containing one α -chloroallyl radical. Preliminary data showed that the fungicidal activity of the mixed esters increases with lengthening of the hydrocarbon radicals at the phosphorus atom, while toxicity declines.

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USSR

ARBUZOV, B. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, May 72, pp 1155-1159

The present article gives a more detailed study of the biological effect of this type of compound. The alkyl radical in the series of compounds

$(RO)_2P(O) - OCH_2 - \overset{Cl}{C} = CH_2$ was lengthened from C_1 to C_6 . An improvement in

the synthesis, viz. conducting the reaction between dialkylphosphoric acid chlorides and α -chloroallyl alcohol in an absolute benzene (instead of ether, as before) and at room temperature, increased the yields considerably. The results indicate that the selectivity of the action of the compounds on the dermatophytes is sharply increased by lengthening the alkyl radical from C_1 to C_6 . Further lengthening of the radical reduces the antifungal activity of the compounds. The top selectivity index is found in di-n-amyl- α -chloro-allyl phosphate.

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USSR

UDC 541.67:547.879

ARBUZOV, B. A., ARSHINOVA, R. P., and ZOROASTROVA, V. K., Scientific-Research Institute imeni A. M. Butlerov, under the Kazan' State University imeni V. I. Ul'yanov-Lenin

"Steric Structure of Certain 2-Oxa-Derivatives of 1,3,2-Dioxaphosphorinanes"

Moscow, Doklady Akademii Nauk SSSR, Vol 199, No 5, 11 Aug 71, pp 1061-1062

Abstract: The steric structure of 6-member heterocycles with a phosphorus ring atom is a current object of intensive research, with use of roentgenography and other techniques. However, the dipole-moment method and the Kerr effect have so far not been used systematically in the case of the 2-X-oxa-1,3,2-dioxaphosphoryls, despite the promising prospects of this approach.

The authors measured the dipole moments and Kerr constants of these particular compounds, and studied derivatives of trimethylglycol in the process, measurements being taken in dilute CCl_4 . Assuming the existence of these compounds in ring form to be definitely established, they calculated moments and Kerr molar constants with allowance for two possible ring forms -- axial and equatorial. Butyleneglycol derivatives were also studied.

Values for probable variation in the proportions of these two forms were

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USSR

ARBUZOV, B. A., et al., Doklady Akademii Nauk SSSR, Vol 199, No 5, 11 Aug 71, pp 1061-1062

arrived at on the basis of the experimental data obtained, and also theoretical figures. One general conclusion reached is that for 2-oxa-derivatives of the 1,3,2-dioxaphosphorinanes, phosphorus atom substitutes in the ring are "available" in this ascending order: $H < Cl < CH_3 < CPh_3$. Some measurement data and structural formulas are included in the paper.

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USSR

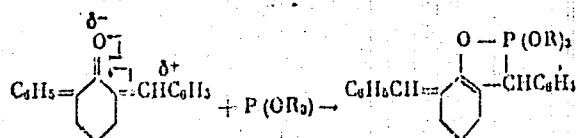
UDC 661.718.1

ARBUZOV, B. A., Academician, ZOROASTROVA, V. M., TUDPIN, G. A., and FUZHENKOVA, A. V., Chemical Institute imeni A. M. Butlerov, Kazan' State University imeni V. I. Ul'yanov-Lenin

"Reaction of 2,6-Dibenzylidenecyclohexanone With Trialkyl Phosphites"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 847-849

Abstract: Trialkyl phosphites react with 2,6-dibenzylidenecyclohexanone during heating in a sealed ampoule (100°, 4-10 hours) to give 1:1 adducts of phosphorane structure (Ia) and (Ib).



Ia (R=CH₃), Ib (R=C₂H₅). The structure of the resultant phosphoranes was confirmed by IR and NMR spectra and study of their chemical properties. Phosphorane (Ia) is hydrolyzed in benzene with an equimolar quantity of water to give the dimethyl ester of 2-(6-benzylidenecyclohexanone)-benzylphos-
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USSR

ARBUZOV, B. A., Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 847-849

phonic acid. Phosphorane (Ib) is readily saponified in an ether solution with atmospheric moisture.

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USSR

UDC: 542.91+661.718.1

ARBUZOV, B. A., ZOROASTROVA, V. M., and TUDRIY, G. A., Scientific Research Institute of Chemistry imeni A. M. Butlerov, Kazan, Kazan' State University imeni V. I. Ul'yanov-Lenin

"Effect of Dialkyl Phosphorous Acids on 9-Chloro-10-anthracenealdehyde, 9-Anthracenealdehyde, and 9-Butylmercapto-10-Anthracenealdehyde"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 70, pp 90-95

Abstract: Three series of dialkyl anthranil-alpha-hydroxyphosphonates were prepared by heating 9-chloro-10-anthracenealdehyde(I), 9-anthracenealdehyde, or 9-butylmercapto-10-anthracenealdehyde with dialkyl phosphorous acids (RO) 2OPH (R=Me, Et, iso-Pr, iso-Bu) in C₆H₆ in the presence of a catalyst (sodium alcoholate or triethylamine). Yields of the products varied from 60-100% in the presence of a sodium alcoholate. A low yield of diethyl 9-chloroanthranil-alpha-hydroxy-methylphosphonate was obtained in the presence of Et₃N. It was shown that I does not react with (MeO) 2OPH in the absence of a catalyst, even under extreme conditions (at 200-300° for 15hr.). All the products but one were solids with m.p. in the 80-177°C range. An attempt to obtain acids from prepared esters by hydrolysis with diluted HCl failed.

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USSR

UDC 542.91:547.1'118

ARBUZOV, B. A., ZOROASTROVA, V. M., TUDRIY, G. A., GUZHENKOVA, A. V.,
Chemical Institute imeni A. M. Butlarov of Kazan State University imeni
V. I. Ul'yanov-Lenin

"Interaction of 2-6-dibenzylidene-cyclohexanone with trialkylphosphite and
dialkylphosphorous Acids"

Moscow, Izvestiya Akademii Nauk SSR -- Seriya Khimicheskaya, No 11, 1972,
pp 2545-2549

Abstract: The interaction of trimethyl and triethylphosphite with 2,6-
-dibenzylidenecyclohexanone was found to lead to the formation of cyclic
phosphorane (Ia), (Ib). The structure of the phosphoranes was checked
by the nuclear magnetic resonance and infrared spectral data. The properties
of these spectra are discussed. The interaction of 2,6-dialkylphosphites
forms dialkyl esters of 2-(6-benzylidenecyclohexanone)benzylphosphonic acid
and also cyclic esters depending on the temperature. The experimental pro-
cedures and results are given for the interaction of 2,6-benzylidenecyclo-
hexanone with trialkylphosphites, the saponification of the phosphoranes, the
interactions of phosphorane (Ia) with acetic anhydride, the interaction of
2,6-benzylidenecyclohexanone with trialkylphosphites in the presence of
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USSR

ARBUZOV, B. A., et al., Izvestiya Akademii Nauk SSR - Seriya Khimicheskaya, No 11, 1972, pp 2545-2549

$(\text{CH}_3\text{CO})_2\text{O}$, the interaction of phosphorane (Ia) with CH_3COOH , the interaction of 2,6-dibenzylidenecyclohexanone with trialkylphosphites in the presence of CH_3COOH , the interaction of 2,6-dibenzylidenecyclohexanone with $(\text{CH}_3\text{O})_2\text{POH}$, 2,6-dibenzylidenecyclohexanone with $(\text{C}_5\text{H}_2\text{O})_2\text{POH}$, 2,6-dibenzylidenecyclohexanone with $\text{P}(\text{OCH}_3)_3$ in the presence of methanol, and thermographic analysis of the enol derivative of phosphorane (Ib).

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USSR

UDC 538.113:541.515:547.63'118

IL'YASOV, A. V., LEVIN, Ya. A., MOROZOVA, I. D., VAFINA, A. A., GOZMAN, I. P., and ZOROATSKAYA, Ye. I., Institute of Organic Chemistry, imeni A. Ye. Arbuzov, USSR Academy of Sciences, Kazan'

"Delocalization of the Unpaired Electron in Phosphorus-Containing Anion-Radicals"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 108-111

Abstract: It is of current interest whether elements of the third period function as barriers in conjugated systems, or are able to participate in conjugation.

The distribution of spin density in the anion-radical of triphenylphosphine and its oxide were studied. The compounds were prepared by electrochemical reduction. For a more rigorous picture of delocalization of the unpaired electron, completely and partially deuterated Ph_3P and Ph_3PO were synthesized and studied. Dimethylformamide and acetonitrile solutions of the anion-radicals were studied at concentration of ca. $5 \cdot 10^{-3}$ M, using epr spectroscopy.

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L'YASOV, A. V., et al., Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 108-111

Based on preliminary results, it is concluded that, unlike compounds of elements of the second period, the electron structure of phosphorus anion-radicals cannot be described by a simple π -electron theory; the so-called d-model must be rejected. The concepts of completely delocalized molecular orbitals and multi-center bonds must be used, with allowance for all valence electrons.

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USSR

UDC: 51:621.391

ZOROKHOVICH Yu. I.

"Improving the Reliability of Information Transmission Systems
With Interrogation by Analysis of Blocked Combinations"

Moscow, v sb. Peredacha diskretn. soobshch. po kanalam s grupp-
ruiushchimisya oshibkami (Discrete Information Transmission Along
Channels with Grouped Errors--collection of works) 1972, "Nauka,"
pp 53-56 (from RZh--Matematika, No 6, 1972, Abstract No 6V334)

Translation: Results are given of the development of a system with
interrogation in which a combination following blocked combinations
is erased without verification of error detection if errors are de-
tected in at least one blocked combination. It is shown that this
method permits reductions in the probability of error nondetection
by an order of two, in many cases, without essentially reducing the
speed of the information transmission. Author's abstract.

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USSR

UDC: 51:621.391

ZOROKHOVICH, Yu. L.

"Improving the Reliability of Data Transmission in Systems With Interrogation Exchange by Analysis of Suppressed Combinations"

V sb. Peredacha diskretn. soobshch. po kanalam s gruppiruyushchimiya oshibkami (Transmission of Discrete Messages Over Channels With Grouped Errors-- collection of works), Moscow, "Nauka", 1972, pp 53-56 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V334)

Translation: The paper presents the results of development of a system with interrogation exchange in which combinations following suppressed combinations are erased without checking for error detection if errors are detected in at least one suppressed combination. It is shown that this procedure in many instances reduces the probability of an undetected error by approximately two orders of magnitude without appreciable reduction in the rate of data transmission. Author's abstract.

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1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--LUMINESCENCE AND STRUCTURE OF PHENOXAZINE DYES -U-
AUTHOR--(04)-VACLAV, S., GOLOVINA, A.P., ALIMARIN, I.P., ZOROV, N.B.
COUNTRY OF INFO--USSR
SOURCE--VESIN. MOSK, UNIV., KHIM. 1970, 11(1), 74-8
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--LUMINESCENCE, DYE, MOLECULAR STRUCTURE, CHEMICAL INDICATOR
CONTROL MARKING--NO RESTRICTIONS
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