

USSR

UDC: 681.3.53.085.3

POPECHITELEV, Ye. P., BYKOV, R. Ye., Leningrad "Order of Lenin" Electrical Engineering Institute imeni V. I. Ul'yanov

"A Television Device for Classifying Colored Objects and Images"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 15, Apr 73, Author's Certificate No 374639, Division G, filed 8 Dec 70, published 14 Jul 73, p 113

Translation: This Author's Certificate introduces a television device for classifying colored objects and images. The device contains a black-and-white transmitting camera with a rotating light filter disc, and a vidicon camera which delays the video signal for the time of one half-frame. As a distinguishing feature of the patent, resolution is increased by connecting a first commutator between the black-and-white transmitting camera and the vidicon video signal delay camera, one of the outputs of this commutator being connected to the vidicon while the other is connected to the first inputs of four weighting adders. The commutator input is connected to the output of the black-and-white transmitting camera, while the second inputs of the four weighting adders are tied in pairs and connected through a

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POPECHITELEV, Ye. P., BYKOV, R. Ye., USSR Author's Certificate No 374639

second commutator to the output of the vidicon video signal delay camera, and the outputs of these adders are connected to corresponding coincidence gates. The signals from the outputs of these coincidence gates are sent through a third commutator to the input of an additional vidicon.

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UDC: 681.327

~~POPECHITSEV Ye. P.~~, Leningrad Electrical Engineering Institute imeni V. I. Ul'yanov (Lenin)

"A Device for Analyzing the Color of an Object"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, Mar 72, Author's Certificate No 330471, Division G, filed 3 Apr 67, published 24 Feb 72, p 159

Translation: This Author's Certificate introduces: 1. A device for analyzing the color of an object. The device contains a three-color video signal pickup with three colorimetric light filters, modules for display and for illumination of the object being studied, and a timer connected to the pickup and to the display module. As a distinguishing feature of the patent, the device is simplified and speed is increased by connecting an analysis module between the three-color pickup and the display module. 2. A modification of this device distinguished by the fact that the analysis module contains amplifiers, adders, threshold circuits, NOR logic circuits, and a two-coordinate matrix based on AND circuits. The amplifiers are joined into three groups with respect to the number of color channels, the inputs of

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the amplifiers in each group being connected to the corresponding input of the analysis module. The outputs of the amplifiers of each group are connected to the inputs of the adder of the same channel. The output of the adder of each channel is connected through an addition-subtraction circuit to the corresponding threshold circuit, which is connected, in turn, through a NOR logic circuit to the corresponding line of the two-coordinate matrix.

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UDC: 535.37

POPECHITS, V. I., KOZLOV, I. N., SARZHEVSKIY, A. M., SEVCHENKO, A. N.

"Investigation of the Effect of Temperature and Viscosity of a Solution on Concentration Depolarization of Fluorescence"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 18, No 4, Apr 73, pp 653-659

Abstract: The influence of the temperature and viscosity of a solution on concentration depolarization of fluorescence is theoretically studied on the basis of an examination of diffusion of fluorescing molecules. The computation is based on the "active sphere" model of Jablonski's theory (Acta Phys. Polon., Vol 14, 1955, p 295; Vol 17, 1958, p 481). Formulas are found for the anisotropy of emission as a function of concentration, temperature, and viscosity of the solution; these formulas are compared with Jablonski's formulas for stable solutions. This comparison is used as a basis for evaluating the influence of diffusion on the anisotropy of fluorescence emission. The theoretical relations are checked out on a high-precision photoelectric unit. Some of the causes of discrepancies between theory and experiment are discussed.

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CSO: 1862-W

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UDC 535.37

POPECHNITS, V. I., SARZHEVSKIY, A. M., SEVCHENKO, A. E., Academician of the Belorussian SSR Academy of Sciences, Belorussian State University imeni V. I. Lenin

"Concerning the Spectral Dependence of the Quantum Yield of Fluorescence of Solutions"

Minsk, Doklady Akademii Nauk BSSR, Vol 17, No 11, Nov 73, pp 993-995

Abstract: On the basis of the theory of universal intermolecular reactions with certain assumptions relative to the variation, with time, of the quantum yield in the presence of extinction of the second kind, the authors derive a general equation which describes the relative quantum yield as a function of fluorescence light frequency. The special case of fluorescence extinction by impurities is considered.

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1/2 027 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--CALCULATION OF LUMINESCENCE DEPOLARIZATION DURING CHANGES IN
TEMPERATURE AND CONCENTRATION OF FLORESCENT SUBSTANCES -U-
AUTHOR-(03)-SEVCHENKO, A.N., POPECHITS, V.I., SARZHEVSKIY, A.M.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 19(15), 1025-7
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--DEPOLARIZATION, TEMPERATURE DEPENDENCE, POLARIZED
LUMINESCENCE, MOLECULAR STRUCTURE, FLUID VISCOSITY, EXCITATION ENERGY,
LUMINESCENCE QUENCHING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/1638 STEP NO--UR/0020/70/191/005/1025/1027
CIRC ACCESSION NO--AT0133543

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0133543

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. VAVILOV'S FORMULAS FOR CONCN. DEPOLARIZATION OF FLUORESCENCE (CA 45: 453H) ARE MODIFIED TO INCLUDE AS VARIABLES TEMP. AND VISCOSITY. THE BASIC ASSUMPTIONS FOR THE DERIVATION OF THE FORMULAS ARE: (1) THE FLUORESCENT MOLS. FOLLOW THE EINSTEIN-SMOLUCHOWSKI'S THEORY; (2) THE FLUORESCENT MEDIUM HAS 2 TYPES OF FLUORESCENT MOLS. DEPENDING ON THEIR THERMAL STATE, ORIENTATION, ETC.; (3) EXCITATION ENERGY TRANSFER BETWEEN MOLS. OF EQUAL STATES DOES NOT LEAD TO QUENCHING. EXPLICIT FORMULAS ARE GIVEN FOR: (1) CASES WHERE THE QUENCHING IS NEGLIBLE (LOW CONCN.), AND (2) DECREASE IN FLUORESCENCE POLARIZATION TAKES PLACE IN THE COURSE OF QUENCHING. FACILITY: BELORUSS. GOS. UNIV. IM. LENINA, MINSK, USSR.

UNCLASSIFIED

USSR

UDC 061.3.621.791

P
POPEKHIN, M. M., Engineer

"Third All-Union Scientific-Technical Conference of Institutions of Higher Learning"

Moscow, Svarochnoye Proizvodstvo, No 7, Jul 70, pp 60-61

Abstract: "Scientific Bases of Technology and Progressive Technological Processes in Machine and Instrument Building" was the theme of the Third All-Union Scientific-Technical Conference of Institutions of Higher Learning. The conference was organized by the Ministry of Higher and Secondary Special Education and was held at the Moscow Higher Technical School on 10-13 March 1970. The agenda provided for 12 working sections. The "Welding, soldering, gluing" section opened with a report on ultrasonic welding, bone tissue built-up, and the cutting of biological tissues. This report, by G. A. Nikolayev, described the results of more than 340 successful experiments on animals. Thirty-seven reports and communications were presented in this section. Five reports dealt with problems related to the improvement of welded constructions. Others discussed ways of increasing reliability in spot welding, ultrasonic contact welding of plastics, electron beam welding, welding of steels and alloys, automatic welding, and the technology and equipment for welding electrovacuum apparatus and parts.

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Hematology

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UDC: 531/534:57

POPEL', A. S., and REGIRER, S. A.

"Basic Equations of Blood Hydrodynamics"

Nauchn. tr. In-t mekh. Mosk. un-ta (Scientific Works, Moscow University Institute of Mechanics) 1970, No 1, pp 3-20 (from RZh-Mekhanika, No 2, Feb 71, Abstract No 2A18)

Translation: Blood is a mixture of a liquid plasma and suspended particles the great majority of which are erythrocytes. The rheological characteristics of the blood depend essentially on the concentration of the erythrocytes and on the materials dissolved in the plasma which influence the deformation of the erythrocyte envelope and coagulation. Experimental investigations have shown that blood is not a Newtonian liquid since formation of zones free from particles (the wall effect) is observed in its flow through tubes, and there is a rise in concentration in some annular layer within the tube (the axial effect). In ordinary Poiseuille flow, the particle concentration does not vary over the tube cross section. From several assumptions of the characteristics of blood, a model has been constructed with internal degrees of freedom (Popel', A. S., Izv. AN SSSR, Mekhan. zhidkosti i gaza, 1969, No 4, 24-30,

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POPEL', A. S., et al, Nauchn. tr. In-t mekh. Mosk. un-ta, 1970, No 1, pp 3-20

RZh-Mekh, 1970, 4B1063). Here, the discussion is given from the point of view of conformity to the experimental data. A plane Poiseuille flow is considered. The problem is solved with an electronic computer by the method of finite differences. The results obtained for the concentration distribution show that the proposed theory indicates a drop in the concentration near the wall. With a proper choice of migration factor values, an axial effect can also be qualitatively obtained. In the same way, confirmation is obtained of the theoretical fact that at large particle concentrations only the wall zone is formed, while for small concentrations only an axial effect is observed. From investigations of the Couette flow, the conclusion is drawn that for large values of average particle concentration no phase stratification is produced, except for a slight drop in concentration close to the wall, which agrees with the experimental fact. A qualitative comparison of the results of the problem solutions on the basis of the given equations with the experimental data indicates that in the framework of the proposed theory, all the effects observed in the blood and in other suspensions of similar structure reinforce the description for stationary flows. The theory does not predict any side effects which might contradict experiment or existing concepts of suspension movement. Some ideas regarding improvement of the proposed model are offered. Bibliography of 21. R. A. Tkalenko

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1/2 C11 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--GAS ABUNDANCE OF MINE NO. 10 VELIKO-MOSTOVSKAYA -U-

AUTHOR--(04)-KUSHNIRUK, V.A., IVANOV, A.K., POPEL, B.S., KOTSKO, YA.N.

COUNTRY OF INFO--USSR

SOURCE--DOPLV. AKAD. NAUK UKR. RSR, SER. B 1970, 32(2), 106-10

DATE PUBLISHED-----70

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

TOPIC TAGS--MINING ENGINEERING, SAFETY ENGINEERING, METHANE, COAL, MINERAL DEPOSIT, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605060/F04 STEP NO--UR/0442/70/032/002/0106/0110

CIRC ACCESSION NO--AT0144414

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0144414

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE AMT. AND COMPN. OF GASES WAS
DETD. IN VARIOUS COAL LAYERS OF TITLE DEPOSIT FROM 174 GAS SAMPLES TAKEN
FROM RILL HOLES. THE CH SUB4 CONTENT IN GASES OF THE MINE WAS
EXCEPTIONALLY NONUNIFORM BOTH BY THE SECTION OF INDIVIDUAL LAYERS AND IN
THE ENTIRE AREA. FACILITY: INST. GEOL. GEOKHIM. GORYUCH.
KOPALIN, LVOV, USSR.

UNCLASSIFIED

172 014 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--TEMPERATURE DEPENDENCE OF THE DAVYDOV SPLITTING IN ANTHRACENE +U-
AUTHOR--KURIK, M.V., PIRYATINSKIY, YU.P., POPEL, O.M., FROLOVA, E.K.
COUNTRY OF INFO--USSR
SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 8-3-806
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--TEMPERATURE DEPENDENCE, ANTHRACENE, PHOTOCONDUCTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/0221 STEP NO--GE/0030/70/037/002/0803/0806
CIRC ACCESSION NO--AP0106877
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106877

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DAVYDOV SPLITTING FOR PHOTOCONDUCTIVITY AND ABSORPTION IN ANTHRACENE HAS BEEN MEASURED IN A WIDE TEMPERATURE RANGE. A PHENOMENOLOGICAL THEORY IS DEVELOPED WHICH EXPLAINS QUALITATIVELY THE OBSERVED REGULARITIES.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--11
TITLE--TEMPERATURE DEPENDENCE OF THE DAVYDOV SPLITTING IN ANTHRACENE -
AUTHOR--KURIK, M.V., PIRYATINSKIY, YU.P., POPEL, O.M., FROLOVA, E.K.
COUNTRY OF INFO--USSR
SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 8-3-906
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--TEMPERATURE DEPENDENCE, ANTHRACENE, PHOTOCONDUCTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0221 STEP NO--GE/0030/70/037/002/0803/0R06
CIRC ACCESSION NO--AP0106877
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--11

CIRC ACCESSION NO--AP0106877

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DAVYDOV SPLITTING FOR PHOTOCONDUCTIVITY AND ABSORPTION IN ANTHRACENE HAS BEEN MEASURED IN A WIDE TEMPERATURE RANGE. A PHENOMENOLOGICAL THEORY IS DEVELOPED WHICH EXPLAINS QUALITATIVELY THE OBSERVED REGULARITIES.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--VISCOSITY OF FUSED SILICATES CONTAINING IRON, MANGANESE, AND
CALCIUM OXIDES -U-
AUTHOR--(03)-SEKULOV, V.I., POPEL, S.I., YESIN, O.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(4), 40-5
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--FLUID VISCOSITY, VISCOUS FLOW, SILICATE, IRON OXIDE, MANGANESE
OXIDE, CALCIUM OXIDE, ACTIVATION ENERGY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0820 STEP NO--UR/0148/70/013/004/0040/0045
CIRC ACCESSION NO--AF0132910

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UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0132910

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. VISCOSITY MEASUREMENTS WERE PERFORMED FOR MELTS IN THE FE₂-SiO₂ SUB₂, MnO-SiO₂ SUB₂, FeO-CAO-SiO₂ SUB₂, AND FeO-MnO-SiO₂ SUB₂ SYSTEMS, AS WELL AS FOR THE MELTS OF THE FeO-MnO-CAO-SiO₂ SUB₂ SYSTEM IN A CONTROLLED ATM. AND FOR A WIDE TEMP. RANGE. FROM THE TEMP. DEPENDENCE OF THE VISCOSITY, THE ACTIVATION ENERGY OF VISCOUS FLOW WAS DETD. FOR THE Mn-SiO₂ SUB₂ SYSTEM, THE VISCOSITY OF THE MELTS IS CONSIDERABLY LESS THAN THE ONE DETD. BY THE COAXIAL CYLINDERS METHOD. WITH INCREASING SiO₂ CONTENT IN THE Mn-SiO₂ SUB₂ AND FeO-SiO₂ SUB₂ SYSTEMS, THE VISCOSITY INCREASES MONOTONICALLY AND IS SIMILAR TO 3 TIMES LARGER FOR THE Mn SILICATES THAN IT IS FOR THE Fe SILICATES. THE ACTIVATION ENERGY FOR VISCOUS FLOW FOR MnO-SiO₂ SUB₂ MELTS INCREASES IN A REGULAR FASHION WITH INCREASING SiO₂ CONTENT, WHICH CANNOT BE STATED FOR THE FeO-SiO₂ SUB₂ SYSTEM. AT A CONTENT OF LESS THAN 50PERCENT SiO₂ SUB₂, MONAT. ANIONS OF O IN THE FeO-SiO₂ SUB₂ MELTS ARE THE UNITS OF VISCOUS FLOW. THE MEASUREMENTS SHOWED THAT AT EQUAL SiO₂ SUB₂ CONTENT THE D. OF THE FeO-MnO-SiO₂ SUB₂ MELTS IS HIGHER THAN THE D. OF THE FeO-SiO₂ SUB₂ SYSTEM. IN 4-COMPONENT FeO-CAO-MnO-SiO₂ SUB₂ MELTS, THE PARTIAL SUBSTITUTION OF CAO AND FeO BY MnO ONLY HAS A SLIGHT EFFECT ON THE VISCOSITY, THE MAGNITUDE OF WHICH AT THE SAME SiO₂ SUB₂ CONCN. IS CLOSE TO ITS VALUES IN THE BINARY AND THE TERNARY SYSTEMS.

FACILITY: URAL. POLITEKH. INST., SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--KINETICS OF THE SETTLING OF METALLIC INCLUSIONS IN SLAGS -U-
AUTHOR--(04)-PANFILOV, M.I., BARYSHNIKOV, V.G., DERYABIN, A.A., POPEL, S.I.
COUNTRY OF INFO--USSR
SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.--APR. 1970, (2), 106-115
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--REACTION KINETICS, DESULFURIZATION, STEEL, METAL INCLUSION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1446 STEP NO--UR/0370/70/000/002/0106/0115
CIRC ACCESSION NO--AP0130379

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0130379

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THE SETTLING OF METAL PARTICLES AND THE RISING OF GAS BUBBLES IN SLAGS DURING VARIOUS METALLURGICAL PROCESSES ARE DISCUSSED THEORETICALLY. ALLOWANCE IS MADE FOR THE COMBINED MOTION OF THE METAL PARTICLES AND THE GAS BUBBLES. IN THE DESULPHURIZATION OF STEEL, AS THE SIZE OF THE BUBBLES INCREASES THE RATE OF SETTLING OF THE METAL FALLS TO ZERO AND MAY EVEN CHANGE DIRECTION. THIS EFFECT WAS CONFIRMED EXPERIMENTALLY. THE FLOTATION OF METAL DROPS BY GAS BUBBLES GREATLY INCREASES THE PERIOD WHICH THEY SPEND IN THE SLAG AND TENDS TO INCREASE THE OVERALL LOSS OF METAL.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--TEMPERATURE DEPENDENCE OF DENSITY AND SURFACE TENSION OF
IRON, SILICON MELTS -U-
AUTHOR--(03)-POPEL, S.I., SHERGIN, L.M., TSAREVSKIY, B.V.
COUNTRY OF INFO--USSR P
SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 260-1
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--IRON ALLOY, SILICON ALLOY, SURFACE TENSION, HIGH PURITY METAL,
FERROUS LIQUID METAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1106 STEP NO--UR/0076/70/044/001/0260/0261
CIRC ACCESSION NO--AP0123098
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0123098
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE D. AND SURFACE TENSION OF THE
FE-SI MELTS WERE DETD. FROM THE LIQUIDUSLINE UP TO 1850DEGREES BY
MEASURING THE DIMENSIONS OF THE MELT DROPLETS IN A BEG CURCIBLE. THE
MAX. DEVIATIONS OF THE MOL. VOLS. FROM THE ADDITIVYT RULE (15PERCENT)
WERE FOUND AT SIMILAR TO 50 AT. PERCENT SI. SURFACE TENSION AT
1550DEGREES DECREASES FROM ABOUT 1750 MJ-M PRIME2 (FE) TO 700 MJ-M
PRIME2 (SI) ACCORDING TO AN S SHAPED CURVE. THE TEMP. COEFFS. OF
SURFACE TENSION D SIGMA-DT CHANGE FROM MINUS 0.35 FOR PURE FE TO MINUS
0.05 MJ-M PRIME2 FDEGREESC FOR PURE SI. FACILITY: URAL.
POLITEKH. INST. IM. KIROVA, SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THE SURFACE TENSION OF SiO₂ SUB2, BaO, H SUB2 O SUB3, ENAMEL, MELTS
AND THEIR ADHESION TO CHROMIUM, NICKEL STEELS -U-
AUTHOR-(03)-PERMINOV, A.A., POPEL, S.I., POLTARAK, A.M.
COUNTRY OF INFO--USSR
SOURCE--ZASHCHITA METALLOY, JAN.-FEB. 1970, 6, (1), 97-100
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--SURFACE TENSION, ENAMEL, FLUID PROPERTY, CERAMIC COATING,
CHROMIUM NICKEL STAINLESS STEEL, SILICA, BARIUM OXIDE, BIRON OXIDE,
ADHESION STRENGTH
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0309 STEP NO--UR/0365/70/006/001/0097/0100
CIRC ACCESSION NO--AP0129541

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129541

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DETERMINATIONS WERE MADE OF THE WETTING ANGLE (θ) AND THE SURFACE TENSION (σ) OF SiO_2 , BaO , B_2O_3 SiO_2 B_2O_3 MELTS ON THE SURFACE OF A STEEL CONTG. NI 54.65, CR 25.12, SI 0.49, AND MN 0.32PERCENT PREPARED BY HEATING THE POLISHED STEEL IN DRY H₂; THIS PROCESS LEFT SOME OXIDE WHICH WAS NOT REMOVED. DETERMINATIONS OF σ WERE MADE BY THE METHOD OF THE MAX. PRESSURE IN A BUBBLE, THE LOWEST VALUE BEING GIVEN BY BOROSILICATES CONTG. HIGH B_2O_3 SiO_2 B_2O_3 AND SiO_2 BUT INCREASING AS SiO_2 OR B_2O_3 WAS REPLACED BY BaO . ALL THE MIXTURES SHOWED GOOD WETTING OF THE STEEL. THE INTERFACIAL TENSION σ SUBSOLID AT THE METAL-MELT INTERFACE DECREASES ON REPLACING B_2O_3 OR SiO_2 BY BaO . THE PRESENT RESULTS GIVE ADHESION VALUES 1.5 TIMES HIGHER THAN THOSE USUALLY OBTAINED WITH ENAMELS ON PRIMED MILD STEEL. THE HIGHER BOND STRENGTH IS ONE OF THE CAUSES OF THE IMPROVED QUALITY OF BOROSILICATE MELTS THAT CONTAIN BaO . IT IS CAUSED BY THE LOWER POLARIZATION OF THE BOUNDARY O ANIONS BY THE BA PRIME(X3)PLUS CATIONS WHICH REPLACE SI PRIME(X1)PLUS AND B PRIME(X2)PLUS.

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DENSITY AND MOLAR VOLUME OF SLAGS -U-
AUTHOR--(03)-SOKOLOV, V.I., POPEL, S.I., YESIN, O.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(2), 10-15
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--SLAG, VISCOSITY, SILICATE, HELIUM, SURFACE TENSION, SPECIFIC DENSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0723 STEP NO--UR/0148/70/013/002/0010/0015
CIRC ACCESSION NO--AT0121382
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

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CIRC ACCESSION NO--AT0121382

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE D., VISCOSITY, AND SURFACE TENSION OF MELTS OF THE FEO-MNO-CAO-SIO SUB2 SYSTEM WERE DETD. FROM THE LIQUIDUS LINE TO 1690DEGREES IN AN ATM. OF HIGHLY PURE HE, TO REDEFINE EXISTING DATA AND TO OBTAIN NEW DATA. THE D. WAS DETD. FROM THE CHANGE IN THE MAX. PRESSURE IN THE HE BUBBLE. THE MELTS WERE PREPD. FROM CHEM. PURE REAGENTS. THE D. OF FEO AT 1400DEGREES, OF SIO SUB2 AT 1760DEGREES, AND OF MNO AT 1850DEGREES WERE 4.8, 2.07, AND 4.60 G-CM PRIME3, RESP. THE D. OF MNO, AS WELL AS THAT OF MNO-SIO SUB2 MELTS, HAS NOT BEEN DETD. PREVIOUSLY. THE PARTIAL MOLAR VOLS. OF THE COMPONENTS IN FEO-SIO SUB2 AND CAO-SIO SUB2 MELTS ARE PRACTICALLY CONST, WITHIN A WIDE CONC. RANGE, AND ONLY NEAR THE ORTHOSILICATE COMP. DO THEY UNDERGO CHANGES. DESPITE THE PRESENCE OF OTHER COMPS. IN THE SAMPLES, THE MIXING OF ORTHOSILICATES WITH PURE OXIDES AT THE EXPTL. TEMP. PROCEEDS WITHOUT MARKED CHANGE IN VOL.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70
 TITLE--DETERMINATION OF THE INTERFACIAL TENSION OF LIQUID METALS WITH
 SLA ACCORDING TO THE WEIGHT OF A DROP -U-
 AUTHOR--(03)-DERYABIN, A.A., SAIDULIN, R.A., POPEL, S.I.
 COUNTRY OF INFO--USSR
 SOURCE--ZAVOD. LAB. 1970, 36(3), 292-3
 DATE PUBLISHED-----70
 SUBJECT AREAS--MATERIALS
 TOPIC TAGS--SLAG, SURFACE TENSION, LIQUID METAL
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRA--1996/1885 STEP NO--UR/0032/70/036/003/0292/0293
 CIRC ACCESSION NO--AP0118847
 UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118847

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WEIGHT OF A DROP METHOD WAS USED TO DETD. THE INTERFACIAL TENSION OF FE IN CONTACT WITH A SLAG OF THE COMPN.: CAO 40, SID SUB2 40, AND AL SUB2 O SUB3 20PERCENT. ADDN. OF 7.05PERCENT OF FEO AND 3.22PERCENT OF FE SUB2 O SUB3 TO THE ORIGINAL SLAG LOWERED THE SURFACE TENSION FROM 1200 TO 750 MJ PER M PRIME2. THE SURFACE TENSION OF FE WAS NOT AFFECTED BY KEEPING IT FOR 2 HR AT 1570-1600DEGREES UNDER THE SLAG. THE INTERFACIAL TENSION OF FERROCHROME CONTG. 10 AND 15PERCENT CR IN CONTACT WITH A SLAG OF AL SUB2 O SUB3,CAO,MGO WAS ALSO DETD. BY THIS METHOD. THE RESULTS COINCIDED WITH THE ONES OBTAINED BY X RAY PHOTOGRAPHY. FACILITY: URAL NII CHERN. MET., SVERDLOVSK, USSR.

UNCLASSIFIED

UDC 547.245

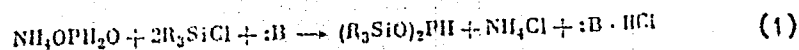
USSR

VORONKOV, M. G., MARMUR, L. A., DOLGOV, O. N., PESTUNOVICH, V. A.,
POKROVSKIY, Ye. I., and POPEL, Yu. I., Leningrad Institute of Textile and
Light Industry imeni S. M. Kirov; Institute of Organic Synthesis, Academy
of Sciences Latvian SSR

"Bis(trialkylsilyl) Hypophosphites"

Leningrad, Zhurnal Obshchey Khimii, Sep 70, Vol 41, No 9, pp 1987-1991

Abstract: This is the first report on the synthesis of organosilicon --
bis(trialkylsilyl) hypophosphites $(R_3SiO)_2PH$. One method is based on the
reaction of ammonium hypophosphite with trialkylchlorosilanes in the
presence of secondary and tertiary amines:



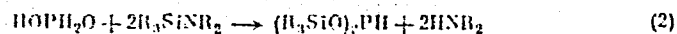
R = alkyl, : B = amine

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USSR

VORONKOY, M. G., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1987-1991

The hypophosphite yield reaches 35-45%. The second method produces a much higher yield (80-90%) and is based on the reaction of hypophosphorus acid with trialkyl(dialkylamino)silanes:



Some of the properties of these compounds are discussed. The compounds readily disproportionate in the presence of alkyl halides, transsilylate are oxidized by oxygen, and add to double bonds. The IR and NMR spectra of bis(trialkylsilyl) hypophosphites are presented in a table.

2/2

- 43 -

Acc. No: **AP0045430**

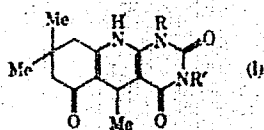
Abstracting Service:
CHEMICAL ABST.

4170

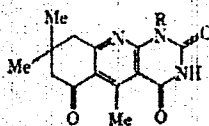
Ref. Code:

UR0409

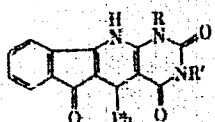
89602e Constants of the acid dissociation of some nitrogen-containing polynuclear systems. Stankevics, E.; Popelis, I.; Grimsteins, E.; Ozola, A.; Duburs, G. (Inst. Org. Sin., Riga, USSR). Khim. Geterotsikl. Soedin. 1970, (1), 122-4 (Russ).
The conventional spectrophotometric method was used to det.



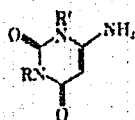
(I)



(II)



(III)



(IV)

the pK_a's of compds. I-IV (R and R' = H or Me). The results were presented in a table.
Michael K. Hrenoff

4
1

1144

REEL/FRAME
19780375

7

UDC 576.858.059.383:615.857.064.11

USSR

POPENA, B. A., Institute of Microbiology imeni Avgust Kirchenstein, Academy
of Sciences Latvian SSR

"The Effect of Thiamine on the Formation of Interferon and Influenza Virus
V-Antigen"

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, No 4 (285), 1971, pp 39-42

Abstract: Since literature data on the effects of thiamine and its mechanism of action during virus infections are scanty and contradictory, a study was performed to investigate the possible effects of thiamine on the formation of interferon and influenza virus V-antigen. The tests were done on 10-day old chick embryos. Doses of 0.1 mg of thiamine hydrobromide or thiamine pyrophosphate were introduced into the allantoic cavity 1 hour prior to, simultaneously with, and 1 hour after infection. Statistical analysis of the results revealed that neither thiamine hydrobromide nor thiamine pyrophosphate exerts any effects on the formation of either interferon or influenza virus V-antigen.

1/1

- 18 -

USSR

UDC: 621.315.4

SHVARTS BURD, Ye. Ya., TROFILEYEVA, G. K., POPENENKOV, V. A., PISAREV, A. V.

"Enameled Aluminum Wires With Polyimide Insulation"

Kabel'n. tekhnika. Nauchno-tekhn. sb. (Cable Technology. Scientific and Technical Collection), 1970, vyp. 61, pp 8-9 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6V320)

Translation: Polyimide insulation is of interest because of its high resistance to heat. The authors point out the technological difficulties which had to be encountered in developing aluminum wires with polyimide insulation (chiefly the poor adhesion between a polyimide film and aluminum). The characteristics of wires developed with a double layer of polyesterimidopolyimide insulation are given. Two tables. N. S.

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1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--HEAT STABLE POLISHING ABRASIVE CLOTHS -U-

AUTHOR--(05)-POPENKOVA, Z.N., ZAYTSEVA, M.A., KOGAN, L.A., DREBENTSOVA,
A.A., POLESHECHUK, I.P.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,752
REFERENCE--OTKRYTIYA, IZJBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ABRASIVE, CORUNDUM, LATEX, PATENT, POLYMER BINDER/(U)SKS30
STYRENE RUBBER, (U)SVKH7 SYNTHETIC RUBBER, (U)FM3 RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/1761 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137001

IMPACTED

2/2 013

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0137001

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEAT STABLE ABRASIVE POLISHING CLOTH CONSISTS OF A FIBER BASE FINISHED WITH SKS-30 AND SVKH-I LATEXES IN A 1:1 RATIO. ABRASIVE MATERIAL CONSISTING OF WHITE "MICROPOWDER" AND CR ELECTROCORUNDUM WITH A COARSE FRACTION CONTENT OF SMALLER THAN OR EQUAL TO 7PERCENT IS APPLIED TO THE BASE. SYNTHETIC RESIN FM-3 WITH A LOWERED STICKINESS OF 140-5 SEC IS USED AS A BINDER.

UNCLASSIFIED

USSR

UDC 621.396.677.83

POPERECHENCO, B. A., NOSOV, O. N., and BONDARENKO, V. K.

"Investigating the Frequency Characteristics of Selectively Reflecting Radio Screens"

Moscow, Antenny, No. 10, 1971, pp 27-47

Abstract: The principle of the method of selectively reflecting screens is briefly explained, and the authors attack the problem of finding their frequency characteristics by using the solution of the electromagnetic problem regarding the diffraction of an arbitrarily polarized plane wave slantingly incident on a fine, infinite metallic screen with a system of slots, of width a_1 and a_2 cut in two mutually perpendicular directions, at intervals of d_1 and d_2 . It is assumed that the width of the slots is much less than d_1 and d_2 , and that a_1 and a_2 are much less than the wavelengths throughout the range of investigated frequencies. A system of equations is derived for which an approximate solution can be found with an electronic computer, and the solution is found directly and analytically for the case of normal incidence of the wave. For the experimental part of the paper, a diagram of the equipment and an explanation of the experimental method are given. The results of the experiments, with inductance coils connected

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USSR

POPERECHENKO, B. A., et al, Antenny, No. 10, 1971, pp 27-47

between the metallic plates of the selectively reflecting screen, show that the steepness of the antenna's experimental curve increases in its transition region. The experimental curves for the antenna are plotted.

USSR

UDC: 621.396.677.833.2

POPERECHENKO, B. A., NOSOV, O. N., BONDARENKO, V. N.

"Investigation of the Frequency Responses of Selectively Reflecting Radio Shields"

V sb. Antenny (Antennas--collection of works), vyp. 10, Moscow, "Svyaz", 1971, pp 27-47 (from RZh-Radiotekhnika, No 5, May, 71, Abstract No 5B58)

Translation: The authors present the results of theoretical and experimental studies of some selectively reflecting shields used in multichannel parabolic antennas. Ten illustrations, bibliography of eight titles. Resumé.

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Acc. Nr:

AP0050568

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UR 0339

P

102065d Effect of the crystal content in massecuite on the crystallization rate of sugar in relation to the size of the crystals. Popereka, I. K.; Kot, Yu. D. (USSR). *Sakh. Prom.* 1970, 4(1), 25-7 (Russ). The sugar soln. was seeded with 20-50% in steps of 5% with dry sugar crystals heated to 60° with grain sizes of 0.25, 0.5, 1.0, and 1.5 mm. The temp. was decreased 60-40° in 2 hr. The specific growth rate (mg/m²/min) was greatest with the greatest seeding and decreased with increasing amt. of seeding. The total mass of crystd. sugar was greatest with the finest grain seeding, and decreased sharply with amts. of seeding >30%.

Olaf Thomsen

REEL/FRA
19810558

21

1/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--AMINO ACIDS AND PEPTIDES. IV. SYNTHESIS OF THE HEXAPEPTIDE AMIDE OF THE 1-6 SEQUENCE OF OXYTOCIN -U-
AUTHOR--(03)--KAUROV, O.A., MARTYNOV, V.F., POPERNATSKIY, O.A.

COUNTRY OF INFO--USSR

SCURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 904-8

DATE PUBLISHED--70

P

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HORMONE, PEPTIDE, AMIDE, CHEMICAL SYNTHESIS, MOLECULAR STRUCTURE, PITUITARY GLAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1963

STEP NO--UR/0079/70/040/004/0904/0908

CIRC ACCESSION NO--AP0127362

UNCLASSIFIED

2/2 019

CIRC ACCESSION NO--AP0127362

UNCLASSIFIED

PROCESSING DATE--300CT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BY PRODUCT FORMED IN THE AZIDE SYNTHESIS OF OXYTOCIN FROM CONDENSATION OF HEXA AND TRIPEPTIDES WAS SHOWN TO BE THE AMIDE (I) OF THE HEXAPEPTIDE OF 1-6 ACID SEQUENCE OF OXYTOCIN. SHOWN ON MICROFICHE. FACILITY: LENINGRAD. GOS. UNIV., LENINGRAD, USSR.

UNCLASSIFIED

USSR

POPESKU, A. N.

"Sequential Analysis During Automatic Text Attribution"

Chastnyye Vopr. Avtomat. Analiza Tekstov [Problems of Automatic Text Analysis -- Collection of Works], Minsk, 1972, pp 346-355 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V773, by V. Gushchin).

Translation: An approach involving sequential analysis of text fragments of length $H, 2H, \dots, nH, \dots$ is suggested for the problem of determination of a theme of a text by the method of statistical testing. A conclusion is drawn concerning the theme of the text after each test. The process ends either in the acceptance of one of two hypotheses with a defined risk, or in the acceptance of both hypotheses if the text has been fully inspected and the conditions of selection have still not been met. The method suggested is illustrated with examples. A method is given for analysis of the criteria of selection. A block diagram is presented for an algorithm for text attribution by the method studied.

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USSR

UDC 621.396.677.7

KINBER, B. YE., POPICHENKO, V. A.

"Sectoral Horn Radiation"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2035-2042

Abstract: A study was made to establish the correspondence between the two methods used to calculate the radiation of sectoral horns -- the Kirchhoff method and the method of the geometric theory of diffraction -- and also the correspondence between the two versions of the method of the geometric diffraction theory -- the method of successive diffractions [V. A. Borovikov, Difraktsiya na mnogougol'nikakh i mnogogrannikakh, Nauka Press, 1966] and the self-consistent field method [B. Ye. Kinber, Radiotekhnika i elektronika, Vol 9, No 9, 1594, 1964]. In both versions the solution of the problem is formed as the superposition of a set of diffraction problems of directional (standard) cylindrical waves on halfplanes -- the edges of a horn. The number of standard waves used defines the accuracy of describing the interaction of the edge waves and, in the final analysis, the accuracy of calculating the field. The effect of this factor is also evaluated. The results of some numerical calculations are presented indicating that the self-consistent field method is the best. The Kirchhoff method gives an error on the order of several percentages.

1/1

USSR

UDC 535.215.1

POPIK, Yu. V., and ZARIF'YANTS, Yu. A.

"Effect of Adsorption of Certain Gasses on the Electrical and Photoelectric Properties of Lead Sulfide Layers"

V sb. Poluprovodn. elektronika (Semiconductor Electronics -- Collection of Works), Uzhgorod, 1971, pp 131-145 (from RZh-Elektronika i yeye primeneniye, No 9, September 1971, Abstract No 9B397)

Translation: The effect is studied of the adsorption of acceptor gas NO, donor gas CO and water vapor on the electrical properties and the photoconductivity of PbS layers obtained by deposition in a vacuum on a mica substrate. It is discovered that chemisorption of CO and NO leads to a decrease of the photoconductivity. 7 ill. 13 ref. I.V.

1/1

172 015

TITLE--FORM OF THE BONDING OF CHEMISORBED MOLECULES OF NITRIC OXIDE WITH A
LEAD SULFIDE SURFACE -U-
AUTHOR--(02)-ZARIFYANTS, YU.A., POPIK, YU.V.

UNCLASSIFIED
PROCESSING DATE--23OCT70

P

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 777-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITRIC OXIDE, LEAD SULFIDE, CHEMISORPTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1894

STEP NO--UR/0076/70/044/003/0777/0778

CIRC ACCESSION NO--AP0118856

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118856

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF CHEMISORPTION OF NO ON THE COND. OF A PBS FILM WAS STUDIED. NO PROBABLY CAPTURES 1 ELECTRON AND SHARES IT WITH A SURFACE DEFECT ON THE PBS; LOSS OF THIS ELECTRON CREATES A CATIONIC DEFECT IN THE FILM. BY APPLICATION OF THE LAW OF MASS ACTION, THE CONC. OF CATIONIC DEFECTS PRODUCED IS PROPORTIONAL TO $(NO)^{1/2}$, WHERE (NO) REPRESENTS THE SURFACE CONC. OF UNREACTED NO. HENCE, BY ASSUMING A LINEAR ABSORPTION ISOTHERM OVER THE RANGE CONSIDERED, THE INCREASE IN COND. SHOULD BE PROPORTIONAL TO THE SQUARE ROOT OF THE NO PRESSURE. THE EXPTL. RESULTS AGREE WITH THIS MODEL. FACILITY: FIZ. FAK., MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 547.781.2.07

POFILIN, O. N., TICHSHENKO, V. G., Khar'kov Institute of Public Feeding,
All-Union Scientific Research Institute of Single Crystals, Scintillation
Materials and Highly Pure Chemicals, Khar'kov

"Synthesis of Some 1-Substituted 2,5-Diphenylimidazoles"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 9, 1972, pp 1264-1265

Abstract: Derivatives of 1,2,5-triphenylimidazole were prepared by the
reaction of ω -benzoylaminoacetophenone with primary aromatic amines in the
presence of phosphorus trichloride. For the ρ -substituted compounds the
yields were 50-60% and for the o -substituted compounds, 20-30%. An effort
to introduce an aliphatic amine (*n*-propylamine) into the reaction only gave
traces of the substituted imidazole.

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1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ABSORPTION SPECTRA AND STRUCTURE OF THIOACRIDONE -U-
AUTHOR--(02)--MAKSIMETS, V.P., POPILIN, O.N. *P*
COUNTRY OF INFO--USSR
SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (2), 191-3
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--UV SPECTRUM, ORGANIC SULFUR COMPOUND, HETEROCYCLIC NITROGEN
COMPOUND, ACRIDINE, MOLECULAR STRUCTURE, THIOL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2600/0829 STEP NO--UR/0409/70/000/002/0191/0193
CIRC ACCESSION NO--AP0124496
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124496

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UV SPECTRA OF THIOACRIDONE (I), 10 METHYL THIOACRIDONE (II) AND 9 (METHYLTHIO) ACRIDINE IN HEPTANE, ETOH, DIOXANE AND WATER DIOXANE, AND THEIR IR SPECTRA IN SOLID FORM ARE GIVEN. IN NEUTRAL MEDIA, I EXISTS IN 2 TAUTOMERIC (THIONE THIOL) FORMS. IN ACIDIC MEDIA, I AND II FORM THE MERCAPTOACRIDINIUM IONS. IN SOLID STATE, I MOLES. ARE ASSOCD. AND ARE IN THE THIONE FORM. FACILITY: KHAR'KOV, INST. OBSHCH. PITAN., KHARKOV, USSR.

UNCLASSIFIED

1/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--AMMONOLYSIS OF PHOSPHORUS PENTACHLORIDE BY AMMONIUM CHLORIDE IN THE
PRESENCE OF PYRIDINE -U-
AUTHOR-(04)-ZHIVUKHIN, S.M., KIREYEV, V.V., POPILIN, V.P., KOLESNIKOV,
G.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(5), 1229-33
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--AMMONOLYSIS, PHOSPHORUS CHLORIDE, PYRIDINE, AMMONIUM CHLORIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--3008/0937 STEP NO--UR/0078/70/015/005/1229/1233
CIRC ACCESSION NO--AP0137965
UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137965

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A 65PERCENT YIELD OF
CHLOROPHOSPHAZENES (I), (PNCL SUB2) SUBN, FORMED WITHIN A FEW MIN IN THE
REACTION OF PCL SUB5 WITH NH SUB4 CL IN MIXT. CONTG. 4 MOLES PYRIDINE
PER MOLE OF PCL SUB5. IN THE PRESENCE OF AN INERT SOLVENT, SUCH AS
PHCL, THE REACTION WAS SLOWER BUT THE YIELD OF CRYST. I WAS 80-5PERCENT
WITHIN 5-8 HR.

UNCLASSIFIED

USSR

Popilov, L. Ya.

"New Materials for Shipbuilding"

Novyye materialy dlya sudostroyeniya [English version above], Part III, Leningrad, Sudostroyeniye Press, 1972, 623 pp.

Translation of Annotation: This third part of the monograph "New Materials for Shipbuilding" studies the properties of several groups of technical materials which are or can be used in shipbuilding, marine machine building, marine electronics and electrical engineering, communications, and other areas. The book can be used as a reference work for planning and design of ship parts and units, in the construction and operation of ships, and also in ship repair. This third volume studies elastomers, foam plastics, adhesives, sealers, packing and lining materials, paint and varnish materials, engineering fluids, solvents, oils, lubricants, self-lubricating materials, and many other special-purpose materials.

The book is intended for designers, planners, technologists, workers at laboratories of enterprises and organizations in the shipbuilding industry, and can also be used by specialists in other branches of industry.

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USSR

Popilov, L. Ya., *Novyye materialy dlya sudostroyeniya*, Part III, Leningrad, Sudostroyeniye Press, 1972, 623 pp.

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USSR

Popilov, L. Ya., *Novyye materialy dlya sudostroyeniya*, Part III, Leningrad, Sudostroyeniye Press, 1972, 623 pp.

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USSR

Popilov, L. Ya., *Novyye materialy dlya sudostroyeniya*, Part III, Leningrad, Sudostroyeniye Press, 1972, 623 pp.

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USSR

UDC 669:26.053.4(088.8)

POPIL'SKIY, M. Ya., KISIL', Yu. K., and DEMINA, L. R.

"Method of Making Calcium Chromate"

USSR Authors' Certificate No 305136, Cl. C 01 g 37/14, filed 13 Feb 70, published 14 Jul 71 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No 1G212P by G. Svodtseva)

Translation of Abstract: The method of obtaining CaCrO_7 from a solution of $\text{Na}_2\text{Cr}_2\text{O}_7$, Ca(OH)_2 and CaCl_2 with subsequent separation of CaCrO_7 from the mother liquor is unique in that, in order to decrease the content of harmful impurities in the product, $\text{Na}_2\text{Cr}_2\text{O}_7$ is decomposed with CaCl_2 at a temperature $\leq 60^\circ$ with subsequent treatment of the resultant CaCr_2O_7 with Ca hydroxide at $\text{pH} \leq 6.5$. In order to raise the Cr and Ca content of the intended product, the mother liquor is acidulated with H_2SO_4 , HCl or chromic acid up to $\text{pH} \leq 4.5$, evaporated to partial precipitation of NaCl crystals, and returned to the $\text{Na}_2\text{Cr}_2\text{O}_7$ decomposition stage. The method makes it possible to produce CaCrO_7 with minimal impurity content: C 0.01%, S 0.04%, as well as to raise the Cr and Ca content of the product (CrO₃ 63.8%, CaO 34.8%).

1/1

Refractory Materials

USSR

POPIL'SKIY, R. Ya., and SMIRNOV, V. A., Moscow Institute of Chemical Technology
imeni D. I. Mendeleev

"High-Temperature Scandium Oxide Ceramic"

Moscow, Ogneupory, No 12, Dec 70, pp 31-35

Abstract: A description is given of a procedure for obtaining a high-temperature ceramic from OS-99 (TU 4854-57) brand Sc_2O_3 . The easily flaking white powder has a bulk density of 0.75 g/cm^3 with less than 0.3% impurities. The density of samples calcined at 1900°C substantially increases with pressures up to 4000 kg/cm^2 ; the density of samples calcined at 2100°C increases up to 2000 kg/cm^2 . The relative density of samples made with a 1% bond of a 5% solution of polyvinyl alcohol, pressed with a pressure of 4000 kg/cm^2 and calcined in a vacuum at 2100°C with 2 hours holding time was 0.96-97 with zero open porosity. It is assumed that with improved grinding technology, pressure and temperature can be reduced. The results of investigations of the mechanical, thermal, electrical, and chemical properties are presented and discussed. Scandium oxide ceramics show great promise as construction and electric insulating materials. Under certain operating conditions,
1/2

USSR

POPIL'SKIY, R. Ya., and SMIRNOV, V. A., Ogneupory, No 12, Dec 70, pp 31-35

these ceramics may have substantial advantages over such highly refractory oxides as MgO, ZrO₂, Al₂O₃ and BeO.

2/2

USSR

UDC 539.385

GRINBERG, N. M., BOYCHUK, V. M., TSURIKOV, N. A., SOLOGUB, P. S., GLADKIKH,
B. V., POPIRNYI, V. Ye., Khar'kov, Leningrad.

"Durability of Titanium Alloy in a Vacuum at Low and High Temperatures"

Kiev, Problemy Prochnosti, No. 4, Apr 71, p. 36-40.

Abstract: Results are presented from a study of the durability of titanium alloy under cyclical twisting in the range from 133 to 432°K under a vacuum of 10^{-7} mmHg. A significant (approximately 7 times) increase in durability of unrolled specimens is discovered for loading under a vacuum in comparison with the same loading in air. When the surface is hardened by rolling, the vacuum has almost no influence on the durability of the alloy under cyclical deformation. An increase is noted in the durability of the alloy at low temperatures, as well as in increase in static strength under these conditions. The durability as a function of temperature above room temperature follows a complex curve. Certain specifics of the fatigue rupture are studied by electron microscopy and electron fractography. An attempt is made to explain the phenomenon observed.

1/1

USSR

UDC: 534.232

SHIBAYEVA, A. V., POPKO, G. I., SHCHERBAK, Yu. M., Belorussian "Order of the Red Banner of Labor" State University imeni V. I. Lenin

"A Method of Making Thin-Film Ultrasonic Transducers"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar 72, Author's Certificate No 329653, Division H, filed 11 Apr 70, published 9 Feb 72, p 221

Translation: This Author's Certificate introduces a method of making thin-film ultrasonic transducers. The procedure is based on vacuum vaporization of material. As a distinguishing feature of the patent, the reliability of the transducers is improved and their resistance to mechanical effects is increased while simplifying the manufacturing technique at the same time by using selenium as the initial material.

1/1

- 147 -

1/2 013 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--WELDING CONNECTING PARTS TO THIN WALLED TUBES WITH SPIRAL SEAMS -U-
AUTHOR--(04)--ZINOVYEV, A.G., SHKURENKO, A.A., PRIMAK, A.A., PLPKO, N.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO. 5, 1970, PP 41-42
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--WELDING MACHINE, PIPE WELDING/(U)MSHP200 WELDING MACHINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605041/D09 STEP NO--UR/C135/70/000/005/0041/0042
CIRC ACCESSION NO--AP0142742
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0142742

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE IT IS IMPOSSIBLE TO CUT
THREAD INTO THESE FINE WALLED TUBES, THERE IS NEED FOR FILLING OUT THE
TUBE ENDS WITH THICKER WALLED TUBES OR SPECIAL CONNECTING ELEMENTS.
ALTHOUGH THE WELDING OF THESE CONNECTING ELEMENTS HAS BEEN DONE ON
MACHINES OF THE MSHP-200 TYPE, THE WORK IS COMPLICATED BY EXCESSIVE WEAR
AND TEAR OF THE ELECTRODES AS WELL AS THE NECESSITY FOR CLEANING AND
DRESSING THE WELDED SURFACES. THIS ARTICLE DESCRIBES A NEW MACHINE FOR
DOING THIS WELDING, A PHOTOGRAPH OF THE MACHINE BEING SUPPLIED. A SHORT
LIST OF ITS TECHNICAL SPECIFICATIONS IS ALSO PROVIDED. THE OPERATION OF
THE MACHINE IS EXPLAINED, AND THE RESULTS OF EXPERIMENTS PERFORMED WITH
IT IN THE LABORATORY ARE GIVEN. IT IS ASSERTED THAT TUBES SO WELDED CAN
BE SUCCESSFULLY USED IN QUICKLY COLLAPSIBLE IRRIGATION SYSTEMS OPERATING
UNDER PRESSURES 6-12 TIMES ATMOSPHERIC. FACILITY: VNITI.

UNCLASSIFIED

USSR

UDC 535.361.1

ZUYEV, V. Ye., KREKOV, G. M., POPKOV, A. I., Institute of Optics of the Atmosphere, Siberian Department of the Academy of Sciences of the USSR

"Statistical Evaluation of Deformation of a Light Pulse in Laser Ranging of Plane-Stratified Clouds"

Tomsk, Izvestiya VUZov: Fizika, No 2(129), 1973, pp 50-53

Abstract: Statistical sampling techniques are used to analyze the information contained in the reflected pulse when lasers are used for cloud ranging. The proposed Monte Carlo algorithm can be used to account for (1) the complex boundary conditions which arise when a divergent, spatially bounded light beam propagates in a laminar, nonhomogeneous scattering medium, and (2) for the nonstationary nature of the process. The results of the study show that converting measured time functionals to the properties of the scattering system investigated requires a preliminary detailed analysis of direct relations by numerical experiments and asymptotic methods.

1/1

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ПОПКОВ, А.Н.

SPRS 59268
6-73

5

IV-4. MASS SPECTROMETRIC STUDIES OF THE EVAPORATION PROCESS OF $ZnSiAs_2$

Article by K. M. Antonova, A. G. Breginskaya, E. P. Kochukarev, A. N. Popkov, V. S. Kutsev, Moscow; Novosibirsk, III Simposium po Protekaniyu Reaktsii Sintesa Poluprovodnikov Khimicheskii Khabarovsk, Khabarovsk, Russian, 12-17 June 1972, p 2151

A mass spectrometric study is made of the process of thermal expansion of the compound $ZnSiAs_2$, a representative of wide-sense compounds of the II-IV-V class. It is demonstrated that on decomposition of $ZnSiAs_2$ in the gas phase over $ZnSiAs_2$ and so on, zinc and arsenic vapor occur, the molecular composition of the vapor and the absolute values of the zinc and arsenic pressures in the temperature range from 285° C to 900° C are determined. The function $\lg K = f(1/T)$ is found by the experimental data, and the partial heats of the decomposition process are determined for two sections of the curve. The isobaric-isothermal potentials and entropies in the investigated temperature range were calculated. The activation energy of the process was determined, and the reaction rate constant was found as a function of temperature.

POPKOV, A.N.

SPKS 59208
6-73

4

II-9. STUDY OF THE MICROHARDNESS OF THE COMPOUND $ZnSiAl_2$ AND ALLOYS BASED ON IT
Article by E. P. Kocherzhev, A. G. Braginikava, A. N. Popkov, G. B. Smokhova,
N. M. Novosibirsk, III Stiposium po Proleterskim Kosti i Studeca Poluprovod-
nikovam Krasnodar i Plensk, Krasnodar, 12-17 June 1972, p 153

A study was made of the effect of the method of obtaining $ZnSiAl_2$ crys-
tals on the magnitude of microhardness. The advantage of the method of horizon-
tal directional crystallization by comparison with the vertical method was
demonstrated. The microhardness of $ZnSiAl_2$ measured on large-block crystals
with block dimensions of 3 x 5 mm is 480 kg/mm². The results of studying micro-
structure and the microhardness of the alloys based on $ZnSiAl_2$ demonstrated the
presence of two-phase regions in the $ZnSiAl_2$ and Si and $ZnSiAl_2$ -ZnAl₂ sections
and the region of limited solubility from the ternary compound side to 12 per-
cent ZnAl₂.

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USSR

UDC 542.61:546.791

PUSHLENKOV, M. F., KUZNETSOV, G. I., SHCHEPETIL'NIKOV, N. N., POPKOV, G. P.,
and ZELENIN, L. I.

"Study of the Extraction Rates in Systems Containing Tributyl Phosphate. IV.
Extraction of $UO_2(NO_3)_2$ While Mixing it in a Centrifugal Field"

Leningrad, Radiokhimiya, Vol 14, No 2, 1972, pp 235-241

Abstract: A study was carried out on the extraction rate of uranium in the system $UO_2(NO_3)_2-HNO_3-H_2O$ -tributyl phosphate-solvent in a centrifugal field. It has been shown that under these conditions the kinetics of mass transfer depends to a great extent on the rotation rate. With a 4000 rpm rate the extraction process is practically completed in 0.8 sec. The effectiveness of the extraction is about 1.3 times greater when carbon tetrachloride is used as a solvent instead of the usual mixture of saturated hydrocarbons boiling in the range 110-270°C. Hydrodynamic properties of the centrifugal extraction apparatus have been studied; formulas were developed for the calculations in layer separation chamber. It has been established that the completeness of phase separation is determined by the velocity of phase flows, rotation rate of the apparatus, and the difference in phase densities.

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1/2 035 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--MEASUREMENT OF THE ELECTRON CONCENTRATION OF THE IONOSPHERE BY THE
HIGH FREQUENCY IMPEDANCE PROBE METHOD -U-
AUTHOR--(04)-KOMRAKOV, G.P., IVANOV, V.P., POPKOV, I.V., TYUKIN, V.N.
COUNTRY OF INFO--USSR
SOURCE--KOSMICHEKIE ISSLEDOVANIIA, VOL. 8, MAR-APR 1970 P. 278-283
DATE PUBLISHED-----70
SUBJECT AREAS--ATMOSPHERIC SCIENCES
TOPIC TAGS--ELECTRON DENSITY, IONOSPHERE, HIGH FREQUENCY, ANTENNA,
VERTICAL SOUNDING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1994/1751 STEP NO--UR/0293/70/008/000/0278/0283
CIRC ACCESSION NO--AP0115580
MICROFILMED

2/2 035

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0115580

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BRIEF DESCRIPTION OF THE EQUIPMENT USED FOR MEASURING THE ELECTRON CONCENTRATION IN THE IONOSPHERE BY THE HIGH FREQUENCY IMPEDANCE PROBE METHOD. USING THE EQUIPMENT DESCRIBED, THE ELECTRON CONCENTRATION IN THE IONOSPHERE IS DETERMINED BY MEASURING CHANGES IN ANTENNA CAPACITANCE AS A FUNCTION OF CHANGES IN THE DIELECTRIC CONSTANT OF THE IONOSPHERE AT TWO FIXED FREQUENCIES. THE ELECTRON CONCENTRATION PROFILE AT ALTITUDES FROM 80 TO 170 KM, OBTAINED WITH THE AID OF THIS EQUIPMENT, IS PRESENTED.

USSR

BRODER, D. L., PLATOVSKIKH, Yu. A., POPKOV, K. K., SERGEYEV, I. V.

"Use of Jacobi Polynomials to Describe Propagation of Gamma Radiation"

Minsk, Vestsi Akademii Navuk BSSR: Seryya Fizika-Energetychnykh Navuk,
No 1, 1973, pp 13-18

Abstract: It is shown to be possible to obtain an approximating kinetic equation in cylindrical geometry by Jacobi polynomial expansion of the angular relation containing two arbitrary parameters. The distribution function and scattering kernel are expanded by polynomials having different parameter values. A multigroup system of equations is obtained. By using Jacobi polynomials for the approximate solution of the kinetic equation written in a modified coordinate system it is possible to describe satisfactorily the space-energy relation of the radiation flux even in the first approximation.

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USSR

UDC 621.039.512.4

BRODER, D. L., ZHILKIN, A. S., KUTUZOV, A. A., POPKOV, K. K.,
SHESTOPALOV, Ye. V.

"Reactor Neutron Spectra in Water and Iron"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics --
Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 79-90 (from
RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.59)

Translation: The change in the spectrum of the scalar flux of neutrons with
energies above 0.1 Mev in water and iron shields is of interest from the
viewpoint of establishing quantitative characteristics of the attenuation of the
flux by the shielding substance and determining the accuracy of certain
methods for calculating the passage of neutrons, particularly the semi-
empirical method based on calculations of fluxes of intermediate neutrons
in lower approximations of the spherical harmonics method and the assignment
of a group of fast neutrons in accordance with experimental data. 12 ill.,
11 ref.

1/1

USSR

UDC 621.396.6-181.5

KUTUZOV, O. I., POPKOV, O. I.

"On a Method of Estimating Power When Designing a Microcircuit for Commutating and Conversion Devices in Multichannel Telemetry Systems"

Tr. Leningr. in-t aviats. priborostr. (Works of the Leningrad Institute of Aircraft Instrument Building), 1971, vyp. 70, pp 327-329 (from RZh-Radiotekhnika, No 8, Aug 71, Abstract No 8V237)

Translation: This paper considers a method of evaluating the power dissipated in a microcircuit with regard to the statistical scatter of determining parameters. Resumé.

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POPKOV, O.V.

CAROL

JPRS 60590

20 November 1973

(8)

UDC 533.98+37.312.62

DISCUSSANCE OF A SUPERCONDUCTING STORAGE DEVICE THROUGH AN INVERTER

Article by V. V. Andrianov, V. B. Zerkhovich, O. V. Popkov, B. N. Serezhnikov, A. G. Sukhorukov, Y. Y. Buzhnev, V. A. Fargin and V. S. Shchegolev reported by Academician V. A. Kuznetsov on 16 June 1970. Moscow, Doklady Akademii Nauk SSSR, Russian, Vol 196, No 2, 1971, published 9 June 1970, pp 320-323.

Superconductive inductive power storage devices are promising for use in a number of scientific and engineering fields as emergency sources of electric power, power sources for covering peak loads in power systems, and as high power electric pulse sources.

The amount of energy stored in this type of a device can be quite large. In particular, a storage device for covering peak loads of 10¹³ joules is discussed. As compared to other possible methods, superconducting storage devices have a number of technical and economic advantages for storing relatively high energies. Frequently, a necessary condition for the efficient utilization of the storing device is the use of an inverter for transferring the energy stored in the magnetic field to the AG network. There is no information at present on any attempts for the practical realization of a process for transferring the energy from a superconducting storage device to an electric power system.

The inversion of energy stored in a superconducting coil can be accomplished at a constant average value of the inverted energy as well as at a constant average value of the voltage applied to the coil terminals equal to the average value of the counter electromotive force of the inverter.

In the latter case, the velocity of energy transfer is maximal for a given limiting value of the voltage. It should be noted in this connection that it is possible to use the inverter as an external load when transferring the energy from large superconducting magnetic systems for various purposes (power hydroelectric generators, electric motors, bubble chambers, etc.) in emergency situations (for example, when the normal phase appears in the winding). As compared to load resistances usually used in such cases, semiconductor inverters are incomparably more compact, do not require high power cooling systems, etc.

USSR

UDC: 534.2

IL'KOV, V. K., POPKOV, V. I.

"Vibrations of Complex, Active Mechanical Systems"

Moscow, Akust. dinamika mashin i konstruktsiy--sbornik (Acoustic Dynamics of Machines and Structural Elements--collection of works), "Nauka", 1973, pp 32-38 (from RZh-Fizika, No 5, May 73, abstract No 5Zh579 by the authors)

Translation: An active mechanical system with a finite number of contact sections is considered. The system is made up of a vibrationally active mechanism, together with insulating and foundation elements. The oscillations of each contact section are characterized by six generalized velocities caused by the action of six generalized forces. For the case in which it is not necessary to know all the particulars of interaction between the forces generated in the working units and the structural elements of the mechanism, the sources of vibration are characterized by the forces on the sections of contact between the mechanism and the supports and by the resistance of the mechanism with respect to the forces acting on these sections.

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USSR

UDC: 621.31.043:006.12

KOSTENKO, M. P., KOSTENKO, M. V., NEYMAN, L. R., PETROV, G. N., POPKOV, V. I.,
SLONIM, N. A., Leningrad, Moscow

"Goals of the Scientific Council of the Academy of Sciences of the USSR on
Theoretical and Electrophysical Problems of Electric Power Engineering, and
the Work of the Council in 1969-1970"

Moscow, Izvestiya Akademii Nauk SSSR, Energetika i Transport, No 2, Mar/Apr 71,
pp 28-33

Abstract: The goals of the Council and its activities for the years 1969-1970
are explained by the chairman of the five sections of the Council: Academician
M. P. Kostenko, chairman of the first section on theoretical problems of genera-
tion of electromagnetic energy, Corresponding Member of the Academy of Sciences
of the USSR G. N. Petrov, chairman of the second section on problems of electro-
magnetic field theory in electric power and electrophysical devices, Academician
L. R. Neyman, chairman of the third section on problems in the theory of non-
linear electric circuits of complex electric power and electromechanical de-
vices, Corresponding Member of the Academy of Sciences of the USSR M. V. Kos-
tonko, chairman of the fourth section on theoretical problems of electrophy-
sically high voltages, and Academician V. I. Popkov, chairman of the fifth

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USSR

KOSTENKO, M. P., et al, Izvestiya Akademii Nauk SSSR, Energetika i Transport, No 2, Mar/Apr 71, pp 28-38

section on electrophysical processes in gases under high pressure, and scientific problems associated with creating transfers and equipment with insulation by compressed gases. A historical review is given of the aims of each section, its future goals are outlined, and the work done by each section in 1969-1970 is outlined together with plans for 1971.

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- 158 -

USSR

UDC: 621.31.043:006.12

KOSTENKO, M. P., KOSTENKO, M. V., NEYMAN, L. R., PETROV, G. N., POPKOV, V. I.,
SLONIM, M. A., Leningrad, Moscow

"Goals of the Scientific Council of the Academy of Sciences of the USSR on
Theoretical and Electrophysical Problems of Electric Power Engineering, and
the Work of the Council in 1969-1970"

Moscow, Izvestiya Akademii Nauk SSSR, Energetika i Transport, No 2, Mar/Apr 71,
pp 28-38

Abstract: The goals of the Council and its activities for the years 1969-1970
are explained by the chairmen of the five sections of the Council: Academician
M. P. Kostenko, chairman of the first section on theoretical problems of genera-
tion of electromagnetic energy, Corresponding Member of the Academy of Sciences
of the USSR G. N. Petrov, chairman of the second section on problems of electro-
magnetic field theory in electric power and electrophysical devices, Academician
L. R. Neyman, chairman of the third section on problems in the theory of non-
linear electric circuits of complex electric power and electromechanical de-
vices, Corresponding Member of the Academy of Sciences of the USSR M. V. Kos-
tenko, chairman of the fourth section on theoretical problems of electrophy-
sically high voltages, and Academician V. I. Popkov, chairman of the fifth

1/2

• USSR

KOSTENKO, M. P., et al, Izvestiya Akademii Nauk SSSR, Energetika i Transport, No 2, Mar/Apr 71, pp 28-38

section on electrophysical processes in gases under high pressure, and scientific problems associated with creating transfers and equipment with insulation by compressed gases. A historical review is given of the aims of each section, its future goals are outlined, and the work done by each section in 1969-1970 is outlined together with plans for 1971.

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- 158 -

USSR

UDC: 612.766.2

KOVALENKO, Ye. A., POPKOV, V. L., KONDRAT'YEV, Yu. I., MAILYAN, E. S., GALUSHKO, Yu. S., PROKHONCHUKOV, A. A., KAZARYAN, V. A., MOROZOVA, R. S., SEROVA, L. V., POTAPOV, A. N., ROMANOV, V. S., and PISHCHIK, V. B.

"Shifts in the Functions of the Organism During Prolonged Hypolinesia"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 3-9

Abstract: Rats kept immobilized for up to 170 days in special cages showed an increase in general gas exchange and rate of oxygen utilization in the muscles, and a slowing of the rate of tissue metabolism in the liver and myocardium. The level of phosphorylation in the myocardium and, to some extent, in the skeletal muscles and liver dropped. Prolonged hypokinesia also stunted the animals' growth, prevented them from gaining weight, and in some cases caused them to lose weight. Besides disturbing mineral and protein metabolism, immobilization resulted in exhaustion of the hypothalamus - pituitary - adrenal cortex system.

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USSR

UDC 612.2+612.76

POPKOV, V. L., MAILYAN, E. S., GALUSHKO, Yu. S., KOVALENKO, Ye. A., ZAYTSEVA, Ye. I., NITCCHKINA, I. A., STULOVA, L. V., and RYAZHSKIY, A. V., Institute for Biomedical Problems

"Shifts in Gas Exchange, Gas Homeostasis, and Tissue Respiration In Rats During Prolonged Hypokinesia"

Leningrad, Fiziologicheskii Zhurnal USSR imeni I. M. Sechenov, Vol 41, No 12, 1970, pp 1,808-1,812

Abstract: General gas exchange, pO_2 , and pCO_2 did not change significantly in the tissues of rats kept immobilized in special cages for 60 days. However, during the second month of the experiment, there were periods when the intensity of respiration increased in the liver and decreased in the myocardium. After two months of hypokinesia, the weight of experimental rats was substantially less than that of the control (273 ± 10 g and 392 ± 18 g, respectively). Also the physical fitness of the experimental animals declined sharply with respect to both dynamic and static work. The duration of maximum dynamic work decreased more than 2.5-fold while the capacity for static work decreased 9-fold.

1/1

USSR


UDC 541.183.12

TUNITSKII, N. N., KALININA, M. D., POPKOV, YU. M., NIKOLAYEV, N. I.,
Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov,
Moscow, State Committee for Chemistry

"Ion-Exchange Kinetics on Ion-Exchange Resins in Solutions of
Medium Concentrations"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 3, 21 Jul 70,
submitted 6 Jan 70, pp 649-652

Abstract: A simple equation is introduced for the mean desorption
time and experiments are described, on the basis of which the de-
pendence of the diffusion coefficients of ions in a cationic ion-
exchange resin on the concentration of the solution can be cal-
culated. The steady flow method was used for calculation of the
mean desorption time. The calculations were tested in an experi-
ment of self-diffusion of sodium and copper ions on a cation-
exchange resin of 0.6 mm particle diameter in the swollen state.
It was found that the self-diffusion coefficients of Na^+ and Cu^+
increase with increasing concentration of the surrounding solution.
1/1

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--KINETICS OF THE ABSORPTION OF OXYGEN DISSOLVED IN WATER BY REDOX
ANION EXCHANGER -U-
AUTHOR-(02)-POPKOV, YU.M., NIKOLAYEV, N.I. 
COUNTRY OF INFO--USSR
SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 261-2
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--REDOX REACTION, ANION EXCHANGE RESIN, GAS DIFFUSION, GAS
ABSORPTION, OXYGEN, CHEMICAL KINETICS, CHEMICAL REACTION RATE, SULFITE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1263 STEP NO--UR/0076/70/044/001/0261/0262
CIRC ACCESSION NO--AP0116725
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116725

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REDOX ANION EXCHANGER IN ITS SULFITE FORM WAS USED TO FOLLOW THE KINETICS OF SORPTION OF O₂ DISSOLVED IN H₂O. THE DIFFUSION OF O₂ INTO THE EXCHANGER IS NOT A RATE CONTROLLING STEP. THE RATE OF SORPTION OF O₂ IS DETERMINED BY THE RATE OF CHEM. REACTION ON THE SURFACE OF THE EXCHANGER AND BY THE RATE OF DIFFUSION OF O₂ THROUGH THE SOLN. ORG. ADDITIVES STRONGLY INHIBIT THE REACTION OF OXIDN. OF SULFITES BY THE MOL. O₂. WHEN A CATALYST IS ADDED, THEN THE SORPTION RATE IS DEPENDENT ONLY ON THE DIFFUSION THROUGH THE FILM OF LIQ. ENCLOSING EXCHANGER PARTICLES. FACILITY: NAUCH. ISSLED. FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

POPKOV, Yu. S., YAKOVLEV, P. V.

"Stochastic Optimization of Tracking Process"

Kibernet. i Vychisl. Tekhn. Resp. Mezhd. Sb. [Cybernetics and Computer Technology. Republic Interdepartmental Collection], 1972, No 16, pp 10-17 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V316, by the authors).

Translation: A model of a tracking process on a plane is studied for the case when the tracked object does not react to the attacking object. It is shown that the equations describing the tracking process are the equations of a closed system. Problems of optimization of the process in such a system are formulated. The procedure for seeking the optimal trajectory consists of two stages: selection of the optimal estimate of the trajectory of the target and determination of the corresponding control algorithm. An example is studied.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--SUFFICIENT CHARACTERISTICS OF NONLINEAR SYSTEMS -U-

AUTHOR--POPKOV, YU.S. *P*

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEXHANIKA, 1970, NR 3, PP 55-64

DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--NONLINEAR SYSTEM, PERTURBATION METHOD, ALGORITHM, STOCHASTIC
PROCESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1467

STEP NO--UR/0103/70/000/003/0055/0064

CIRC ACCESSION NO--AP0106223

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106223

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE IS GIVEN THE DEFINITION OF SUFFICIENT CHARACTERISTICS OF A NONLINEAR SYSTEM WHICH REFLECT THE SYSTEM PROPERTIES AT A RANDOM DISTURBANCE AT THE INPUT. THE SYSTEM PROPERTIES ARE CHARACTERIZED BY A SEQUENCY OF SEVEN RELATIVE INVARIANTS. THERE IS SOLVED THE PROBLEM OF DEFINING THE NUMBER OF SUFFICIENT CHARACTERISTICS OF AN ALGORITHM WHICH UTILIZES THE REALIZATION FOR THE STOCHASTIC PROCESSES OBSERVED. EXAMPLES ARE GIVEN.

UNCLASSIFIED

Acc. No. **AP0048485** Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code:
2R0070

104778n Selective etching on dislocations in metals (bismuth). Ponkova, E. G.; Predvoditelev, A. A. (Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR). Kristallografiya 1970, 15(1), 91-7 (Russ). A no. of etching compns. were studied as well as the mechanism of selective etching on dislocations in metals with a pos. normal potential. Bi was the object of the investigation, and the etching process was done on [0001] planes, resulting from splitting single crystals cooled in liq. N. The following etchants could be used for Bi: HNO₃, H₂SO₄, H₃PO₄, FeCl₃, (NH₄)₂SiO₃, (NH₄)₂Cr₂O₇, K₂Cr₂O₇, AgNO₃, Hg(NO₃)₂, Cu(NO₃)₂, and CuSO₄ solns. Solvents play an important role in this process and should be polar compds. of the alc. type: e.g., EtOH, MeOH, BuOH, HOAc, or MeCHOHCO₂H. Because of the tendency of the Bi salt to hydrolyze, the use of aq. solns. is not recommended. The rate of metal etching depends on the type of solvent, and mutual quant. ratios of components exert a pos. effect on the clearness of the etch image. Increased concn. of the oxidizing component such as HNO₃ gives rise to the effect of surface polishing and disappearance of etch pits (holes). The rate of etching and the shape of etch figures can be controlled by adding corrosion inhibitors and surfactants, e.g. dibutylaniline hydrobromide. J. Pabis-Machej

VI

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POPKOVA, L. I.

UDC 550.83.08
ERRORS IN A DEVICE FOR MEASURING DECLINATION AND INCLINATION ANGLES

[Article by L. I. Popkova, A. Ya. Rotshlyon, and S. F. Farmakovskiy, Leningrad, Coiffizicheskaya Apparatura, Russian, Vol 46, 1971, pp 20-23]

Errors in the device for measuring angles of declination D and inclination I, based on the method of electrical stabilization of the auxiliary magnetic field vector HB [Farmakovskiy, Rotshlyon, Popkova, 1969] are due to a series of independent causes of a random character [Popkova, 1970]. Making use of the central boundary theorem [Venttsel', 1964], we shall consider the law of distribution of the total device error to be normal. Then the mean square error of the device is determined by the expression

$$\sigma = \sqrt{\sum_{i=1}^n \sigma_i^2} \quad (1)$$

where σ_i is the error produced by the i-th random cause; n is the number of random causes.

The device being examined utilizes information on the object rotation angles from the orienting systems whose minimum mean square error is β' . Its creation is justified if all the remaining errors of the device will not augment the total error in measuring angles D and I by more than 20% in comparison to the error of orienting systems.

The basic components of the device error (with the exception of the orienting system's error) are: 1) errors in computing components of \vec{H} in the computer-solver, which is the coordinate converter (CC) on the sine-cosine revolving transformers (SCRT); 2) error of producing vector \vec{H} in the Helmholtz rings; 3) error of the quantum magnetometer

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DURING MEASUREMENTS OF VECTOR COMPONENTS OF THE TERRESTRIAL MAGNETIC
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE CASE OF INDIRECT STABILIZATION OF MAGNETOMETERS ON A MOVING OBJECT (AIRCRAFT) THE VECTOR COMPONENTS OF THE MAGNETIC FIELD ARE MEASURED IN A COORDINATE SYSTEM ASSOCIATED WITH THE MOVING OBJECT. UPON SIGNALS FROM THE NAVIGATIONAL SYSTEMS ON THE OBJECT'S DEFLECTION ANGLES A COMPUTER CONVERTS THE COMPONENTS FROM THE MOVING OBJECT'S (AIRCRAFT) COORDINATE SYSTEM INTO THE GEOGRAPHIC. WHEN USING QUANTUM MAGNETOMETERS IT MUST BE REMEMBERED THAT THE MEAN VALUE OF THE COMPONENT DURING THE TIME OF A SINGLE MEASUREMENT IS GIVEN. THE NAVIGATIONAL SYSTEMS TRANSMIT CONTINUAL INFORMATION ON THE OBJECT'S DEFLECTION ANGLES. THE PROBLEM OF RELATING THE MEASURED COMPONENTS WITH THE DEFLECTION ANGLES IS EXAMINED THEORETICALLY. IT IS SHOWN THAT AVERAGING THE OSCILLATION ANGLES OF THE AIRCRAFT DURING A SINGLE QUANTUM MAGNETOMETER MEASUREMENT IS POSSIBLE IN THE CONVERSION OF THE SHIP'S VECTOR COMPONENTS OF THE TERRESTRIAL MAGNETIC FIELD INTO THE GEOGRAPHIC COMPONENTS. FACILITY:
LENINGRADSKIY INSTITUT TOCHNOY MEKHANIKI I OPTIKI.

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FARMAKOVSKIY, S. F., POPKOVA, L. I.

"Possibility of Averaging Rocking Angles of a Moving Object During Measurement of Components of the Earth's Magnetic Field Vector"

Leningrad, IVUZ Priborostroyeniye, Volume 13, No. 2, 1970, pp 91-96.

Abstract: When quantum magnetometers are used, one must consider that they output the average value of the corresponding component over the time of one measurement. Navigation systems output continuous information on the angles of rotation of the object. When conversions are made using computers, the problem arises as to which values of angles correspond to the measured components. In this article, the possibility is proven in principle of using the averaged angles of rotation of an object over the time of one measurement of the quantum magnetometer in converting ship components of the earth's magnetic field vector to its geographic components.

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USSR

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BELOUSOV, N. N., MIKHEYEVA, Ye. N., ZHOLOBOVA, Ye. P., KASHEVNIK, L. Ya.,
DODONOV, A. A., YEGOROVA, V. A., YEVSTRATOV, Yu. A., POPKOVA, V. A., BOTYANOVSKIY,
M. G.

"Aluminum-Based Casting Alloy"

USSR Author's Certificate, No. 253375, Filed, 19/06/67, Published, 8/10/70.
(Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5
I670P).

Translation: The alloy has the following composition (%): Mg 8-9.5, Be 0.03-0.15,
Ti 0.05-0.15, Zr 0.05-0.2, Mn 0.1-0.3, Cr 0.05-0.15, remainder Al. The alloy has
high technological properties, corrosion resistance, and stability of properties.
In the cast state, the alloy, when cast in a sand mold, has σ_b 18-23 kg/mm², δ 0.7
- 2.5%, a_{Hl} 0.2-0.4 kgm/cm²; when cast in a chill mold - σ_b 27-33 kg/mm², δ 4 -
12%, a_{Hl} 0.4 - 1.2 kgm/cm².

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P UDC 621.039.623 13

ALEKSIN, V. F., BIRYUKOV, O. V., GEORGIYEVSKIY, A. V., KITAYEVSKIY, L. KH., KOMAR, YE. G., LOGINOV, A. S., MALYSHEV, I. F., MONOSZON, N. A., POPKOVICH, A. V., ROZHDESTVENSKIY, B. V., SAKSAGANSKIY, G. L., SINEL'NIKOV, the late K. D., SOKOLOV, YU. A., SUPRUNENKO, V. A., TOLOK, V. T., CHURAKOV, G. F., and SHABEL'NIKOV, L. A.

"The Experimental Thermonuclear Device 'Uragan'"

Moscow, Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

Abstract: An urgent task of stellarator research is a definitive elucidation of the reasons for anomalous diffusion in a stellarator, as well as the effect of the shear and magnetic well on the confinement of a hot and dense plasma. These questions will be studied on the "Uragan" stellarator. Construction of the "Uragan" stellarator was begun at the suggestion of I. V. KURCHATOV and completed in 1967. The physical substantiation and technical assignment of developing and constructing the complex were developed at the Physicotechnical

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Institute of the Academy of Sciences Ukrainian SSR under the direction of K. D. SINEL'NIKOV, who took an active part in the solution of theoretical and technical questions. Organizations taking part in the development of the project and the construction of the complex included the Scientific Research Institute of Electrophysical Equipment imeni D. V. Yefremov, the Elektrosila Electrical Engineering Combine, the Khar'kov Polytechnic Institute imeni V. I. Lenin, the Electromechanical Plant and NII Elektroapparat [Scientific Research Institute of Electrical Equipment] in Khar'kov. A considerable amount of work on the development, manufacture, and adjustment of the systems and components of the "Uragan" was done at the Physicotechnical Institute of the Academy of Sciences Ukrainian SSR.

The principal feature of the "Uragan" is high shear (of the order of 0.02 and 0.1) at a high level of magnetic field strength

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ALEKSIN, V. F., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

H_0 (35 and 10 koe respectively). The stellarator is in the shape of a racetrack and uses a high-shear triplex helical field. The vacuum chamber of the trap consists of two semi-tori with an average radius $R = 1100$ mm and two rectilinear sectors, each 1725 mm long. The internal diameter of the chamber is 200 mm. On the outside of the chamber on the toroidal sectors are two helical windings and longitudinal magnetic field coils, distributed evenly along the device. The maximum strength of the magnetic field is 10 koe under steady-state conditions and 35 koe under pulsed conditions. Three windings are used; viz., longitudinal magnetic field, helical, and transverse magnetic field. All metallic elements are made of low-magnet steel 1Kh18N9T. The toroidal sectors of the vacuum chamber and part of the rectilinear sectors are made of stainless nonmagnetic alloy EP-125. The article gives a detailed description of the windings, cooling system, electric power supply system, vacuum system, and plasma diagnostic and heating system.

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UDC: 8.74

POPLACHEVSKIY, N. N.

"Mathematical Methods in Geological and Geophysical Studies in Western Siberia (Programs and Instructions)"

Matematicheskiye Metody Pri Geologicheskikh i Geofizicheskikh Issledovaniyakh v Zapadnoy Sibiri (Programmy i Instruktsii) [English version above] (Works of Western Siberian Scientific Research and Geological Prospecting Petroleum Institute, No 55), Tyumen', 1972, 227 pp (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V583K)

Translation: This collection contains a series of programs for solution of a range of problems on the Minsk-22 computer. Some of these programs are broad-purpose programs and can be used in various practical applications. A number of programs are specialized for problems of petroleum geology and seismic prospecting. Only a few programs have narrowly specialized purpose. All programs are accompanied by complete information, sufficient for immediate practical application of the programs. The text of the program itself is written in the instruction system of the Minsk-22 computer with true addresses. The collection is designed for a broad range of geologists, geophysicists, geochemists, hydro-

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Poplachevskiy, N. N., Matematicheskiye Metody Pri Geologicheskikh i Geofizicheskikh Issledovaniyakh v Zapadnoy Sibiri (Programmy i Instruktsii), Tyumen', 1972, 227 pp

geologists, as well as specialists in related and other sciences involved in the application of mathematical methods in their studies using the Minsk-22 computer.

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UDC 669.295

SHAPOVALOV, V. P., and POPLAVKO, V. G.

"Titanium Coating of Reactors for Magnesium Thermal Production of Titanium"

Tsvetnyye Metally, No 3, Mar 71, pp 64-66

Abstract: Contactless diffusion titanium coating of reactors from the vapor phase in a vacuum is studied. The rate of heating of the metalizer, temperature of removal of impurities, and residual pressure are noted. A mode is presented for titanium coating of reactors of Kh18Ni0T steel in the case of use of a fresh metalizer and after performance of one or two processes.

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USSR

UDC 669.295

SHAPOVALOV, V. P., and POPLAVKO, V. G.

"Titanium Coating of Reactors for Magnesium Thermal Production of Titanium"

Tsvetnyye Metally, No 3, Mar 71, pp 64-66

Abstract: Contactless diffusion titanium coating of reactors from the vapor phase in a vacuum is studied. The rate of heating of the metalizer, temperature of removal of impurities, and residual pressure are noted. A mode is presented for titanium coating of reactors of Kh18N10T steel in the case of use of a fresh metalizer and after performance of one or two processes.

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USSR

UDC 621.315.612.5

KARGOPOLOVA, N. P., POPLAVKO, Yu. M., ISUPOV, V. A.

"Investigation of the Anisotropy of a Piezoelectric Ceramic"

Vestn. Kiyev. politekhn. in-ta. Ser. radioelektron. (Kiev Polytechnical Institute Herald. Radio Electronic Series), 1971, No 8, pp 15-17 (from RZh-Radiotekhnika, No 12, Dec 71, Abstract No 12V646)

Translation: A study is made of the tensor of permittivity ϵ of polarized piezoelectric ceramic materials of various compositions. The anisotropy of ϵ was measured on frequencies of 1 kHz and 27.3 GHz. As was to be expected, anisotropy of ϵ at 1 kHz was observed for all investigated compositions of the ceramic. On superhigh frequencies, ϵ does not retain its anisotropy in all materials. The results are explained by means of notions of the movement of domain boundaries in an electric field. Resumé.

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