

USSR

UDC 669.715.620.1

PARKHUTIK, P. A., SELEZNEV, L. P., LUBENSKIY, M. Z., and
DUDETSKAYA, L. R.

"Effect of Zinc and Magnesium on the Mechanical Properties of
ALLOV Alloy"

Moscow, Tsvetnyye Metally, No 12, Dec 70, pp 52-55

Abstract: Impurities in the ALLOV include zinc, with a maximum GOST-permissible content of 0.6%. Such a rigid limitation reduces the potential use of waste and scrap in producing secondary aluminum alloys, thus requiring an additional expenditure of primary aluminum or very costly vacuum equipment for dezincification, involving high power consumption. A basic component in the ALLOV alloy is magnesium which, when combined with zinc, forms a number of chemical compounds. A magnesium content within 0.2-0.5% is readily controllable under production conditions. Earlier studies have shown that 0.15-0.35% Mg additions to ALLOV alloy increase its strength and hardness and decrease plasticity. This study attempts to determine the combined effect of both zinc (0.0-3.0%) and magnesium (0.0-0.5%)

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PARKHUTIK, P. A., et al., Tsvetnyye Metally, No 12, Dec 70,
pp 52-55

on the mechanical properties and plasticity of ALLOV alloy. The material was melted under flux consisting of equal amounts of NaCl and KCl. Zinc metal was introduced after melting at 730-740° C. The alloy was refined with MnCl₂ at 0.1% and was poured at 720-730° C. The experimental data show that extending the limit for zinc in ALLOV alloy to 1.4% is fully permissible and that such additions have no adverse effects on the hardness, strength, and plasticity of the alloy.

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1/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--REACTION OF FLUORINE WITH NITROGEN IN A BARRIER, SILENT, DISCHARGE

AUTHOR--(03)--DUDIN, A.V., NIKITIN, I.V., ROSOLOVSKIY, V.YA.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 710-11

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--FLUORINE, BOROSILICATE GLASS, NITROGEN, CHEMICAL REACTOR, GAS DISCHARGE, CHEMICAL DECOMPOSITION.

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1545

STEP NO--UR/0062/70/000/003/0710/0711

CIRC ACCESSION NO--A0125171

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125171

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN A COAXIAL BOROSILICATE GLASS REACTOR OZONIZER THERMOSTATED AT 20DEGREES AND OPERATED AT 15,000 V, PASSAGE OF 3:1 MIXT. OF F SUB2:N SUB2 RESULTED IN FORMATION OF NF SUB3 AS CONFIRMED BY IR ANAL. OF THE EFFLUENT. THE CONVERSION WAS 1.5-2PERCENT IN 1-6 HR RUNS. DECOMPN. OF NF SUB3 IN THE BARRIER DISCHARGE WAS EXAMD. DISSOCN. OF THE SUBSTANCE INCREASED WITH INCREASED DURATION OF EXPTS. AND WAS 95-8PERCENT IN CIRCULATION EXPTS. IN 5-6 HR. THUS, THE EASILY PROCEEDING REVERSE REACTION PREVENTS THE PREPN. OF NF SUB3 IN GOOD YIELD UNDER THESE CONDITIONS. THE CONVERSION WAS INCREASED BY PASSING THE GASES FROM THE OZONIZER INTO A TRAP CHILLED WITH LIQ. N AND THE CONC. OF NF SUB3 IN SUCH A TRAP LOCATED ABOUT 30 CM FROM THE OZONIZER RESULTED IN ABOUT 10PERCENT CONVERSION DURING 4 HR RUNS. FACILITY: INST. NOVYKH KHIM. PROBL., MOSCOW, USSR.

UNCLASSIFIED

1/2 031

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--SOME CHARACTERISTICS OF CRACK PROPAGATION IN QUENCHED CHROMIUM,
STEELS DURING DELAYED FAILURE -U-

AUTHOR--(03)-ROMANIV, G.N., DUDIN, V.A., ZIMA, YU.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (1), 25-30

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRON MICROSCOPY, CHROMIUM STEEL, CRACK PROPAGATION, STEEL
QUENCHING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0158

STEP NO--UR/0369/70/006/001/0025/0030

CIRC ACCESSION NO--AP0129414

UNCLASSIFIED

2/2 031

CIRC ACCESSION NO--AP0129414

UNCLASSIFIED

PROCESSING DATE--27NOV70

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

ABSTRACT. THE PROPAGATION OF DELAYED FAILURE CRACKS IN QUENCHED CR STEELS WITH A RELATIVELY HIGH C CONTENT WAS STUDIED. THE GROWTH OF THE DELAYED FAILURE CRACKS WAS SENSITIVE TO THE FORM AND NATURE OF THE HEAT TREATMENT APPLIED TO THESE MATERIALS, REACTING IN DIFFERENT WAYS, FOR EXAMPLE, TO HIGH TEMP. THERMOMECHANICAL TREATMENT AND THE PRESENCE OF AN ACTIVE MEDIUM. THE MECHANISMS ACTING AT TWO KEY STAGES OF THE PROCESS (INITIAL CRACK GROWTH AND ULTIMATE FAILURE OR COLLAPSE) ARE DISCUSSES ON THE BASIS OF ELECTRON MICROSCOPE EXAMINATION.

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UDC 532.57+532.137+536.51+532.14.08+531.757

KEFALIDI, S. G., DUDIN, V. F.

"On Vibration Methods for Measuring Viscosity, Density and the Viscosity-Weight Constant of Liquids on the Basis of Vibration Damping"

Tr. Groznen. neft. in-t (Works of Groznenskiy Petroleum Institute), 1971, Collection 33, pp 228-230 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B1631)

Translation: A theoretical analysis presented of the vibration method for measuring liquid viscosity on the basis of vibration damping at any Reynolds number. A differential equation is obtained for the damping oscillations for the case of a vibrational system with lumped parameters. Formulas are obtained from this equation for calculating the liquid viscosity and the viscosity-weight constant ($\mu\rho$) in the case of small ($R < 1$) and large Reynolds numbers. I. G. bulina.

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UDC 539.3/.5

PISKUNOV, YU. A., NEVSKIY, V. A., DUDIN, V. F.

"On the Question of the Breakdown of Concrete Under Cyclic Shock Loads"

Tr. Groznen. nef. in-t (Works of Groznenskiy Petroleum Institute), 1971, Collection 33, pp 216-217 (from RZh-Mekhaniki, No 12, Dec 71, Abstract No 12V1615)

Translation: The authors emphasize that analysis of rheological models of concrete and their equations describing cases of shock effects leads one to conclude that the inelastic properties of concrete have a considerable effect on the behavior of concrete under shock in addition to the elastic properties ordinarily taken into account. Experimental data are presented and discussed concerning a study of the effect of inelastic properties characterized by the coefficient of internal friction on the strength properties and the process of breakdown of concretes under shock loads. Samples of concrete with dimensions $7 \times 7 \times 7$ cm having the same static strength but differing in the type and strength (600 and 1200 kg/cm²) of the coarse filler were investigated. The samples were made with two flows of cement. The coefficient of internal

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PISKUNOV, YU. A., et al, Tr. Groznen. neft. in-t, 1971, Collection 33,
pp 216-217

friction was determined with the IKVT-2 device by transmitting longitudinal oscillations to the sample. The pulsed loads were supplied on a standard pile driver by applying a series of shocks up to breakdown. The experiments showed that the work necessary for breakdown of the samples rises with an increase in the coefficient of internal friction. The work of breakdown also rises with an increase in the expenditure of cement per m^3 of concrete with a fixed coefficient of internal friction. The authors indicate that for the breakdown of concrete with a stronger coarse filler under shock effects but with a lower coefficient of internal friction, less work is expended than in the case of concrete with a less strong filler (crushed stone or gravel) but with a greater coefficient of internal friction. It is thus more favorable with the same static strength of the concrete for structures subject to the action of shock loads to use concrete with a higher coefficient of internal friction, since greater work is required for the breakdown of this concrete. It is noted that one can increase the inelasticity of the concrete through selection of the components and not by using a higher mark of cement. A. I. Platov.

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USSR

UDC 621.762:669.018.44(088.8)

DUKARSKIY, S. M., RODCHENKO, M. I., TARABANOV, A. S., MAKHALOV, P. N., and
DUDIN, V. V.

"Press Powder for Manufacture of Heat Resistant Products"

USSR Author's Certificate No. 252165, Filed 14/06/67, Published 24/07/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract
No. 2 G457 P)

Translation: The press powder includes a carbon-containing filler, organic binder, metal oxide easily reduced by carbon, such as TiO_2 , and impurities.

In order to increase the strength of products upon silicizing, the powder contains a phenol formaldehyde resin as a binder, graphite as the carbon-containing filler, with the components of the press powder in the following weight parts: graphite 65-85, TiO_2 8-15 per 100 weight parts of the mixture, phenol formaldehyde resin 5-20, impurity 0.5-5.

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1/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--ELECTROCAPILLARY PHENOMENA IN INDIUM BISMUTH ALLOYS -U-
AUTHOR--KUZNETSOV, V.A., KONYUKHOVA, N.P., DUDINA, N.A.
COUNTRY OF INFO--USSR
SOURCE--ELEKTROKIMIYA 1970, 6(1), 108-10
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--SURFACE ACTIVE AGENT, INDIUM ALLOY, BISMUTH ALLOY, ELECTRODE
POTENTIAL, POTASSIUM CHLORIDE, LITHIUM CHLORIDE, ELECTRODE POTENTIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0681 STEP NO--UR/0354/70/006/001/0103/0110
CIRC ACCESSION NO--AP0105657
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105657

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTROCAPILLARY PHENOMENA WERE STUDIED AT 450 DEGREES BY USING AS ELECTROLYTE A EUTECTIC MIXT. OF LI₂Cl AND KCl. ADDN. OF BI TO IN LOWERED THE INTERFACIAL TENSION AND SHIFTED THE ZERO CHARGED POTENTIAL OF THE ALLOYS TOWARD THE POS. SIDE. AT POTENTIALS MORE NEG. THAN POSITIVE 0.2 V BI BEHAVED AS A SURFACE ACTIVE COMPONENT IN RELATION TO IN AND WAS ADSORBED ON THE SURFACES OF THE ALLOYS. AT POSITIVE 0.2 V THE INTERFACIAL TENSION IS INDEPENDENT OF THE ALLOY COMPN. AND THE ADSORPTION OF BI IS NIL. AT POTENTIALS MORE POS. THAN POSITIVE 0.2 V, IN BECOMES A SURFACE ACTIVE COMPONENT. THUS, THE CONCN. OF COMPONENTS IN THE SURFACE LAYER DEPENDS ON BOTH THE COMPN. OF THE ALLOY AND ON THE POTENTIAL, AND THEREFORE A CHANGE IN THE LATTER WILL CAUSE A CHANGE IN THE SIGN OF ADSORPTION. THE ZERO CHARGE POTENTIAL OF IN WAS NEGATIVE 0.52 V AND THAT OF BI NEGATIVE 0.18 V. THE RANGE OF COMPNS. WHERE A CHANGE IN COMPN. CAUSES A SHARP CHANGE IN INTERFACIAL TENSION IS CHARACTERIZED BY SHARP CHANGES OF THE ZERO CHARGE POTENTIALS. THIS INDICATES THAT THE ZERO CHARGE POTENTIALS ESSENTIALLY DEPEND ON THE COMPN. OF THE SURFACE LAYERS.

UNCLASSIFIED

DUDINSKIY, I. (PROF.)

ECON

the economic integration of the socialist countries is predetermined by the entire course of socialist construction in the USSR. On the one hand, it is a result of the economic and social progress achieved in the socialist countries, and on the other hand, it is a result of the socialist countries' policy of peaceful coexistence with the capitalist countries. The economic integration of the socialist countries is a process that is taking place in the socialist countries and is being carried out by the socialist countries themselves. It is a process that is taking place in the socialist countries and is being carried out by the socialist countries themselves. It is a process that is taking place in the socialist countries and is being carried out by the socialist countries themselves.

The economic integration of the socialist countries is a process that is taking place in the socialist countries and is being carried out by the socialist countries themselves. It is a process that is taking place in the socialist countries and is being carried out by the socialist countries themselves. It is a process that is taking place in the socialist countries and is being carried out by the socialist countries themselves.

In working out their integration plans, the socialist countries should take into account the specific conditions of each country and the specific conditions of each country. They should also take into account the specific conditions of each country and the specific conditions of each country. They should also take into account the specific conditions of each country and the specific conditions of each country.

SECRET
 Foreign Ministry
 Department of Economic Relations
 1. Dudinskiy, Iosif Iosifovich
 2. Dudinskiy, Iosif Iosifovich
 3. Dudinskiy, Iosif Iosifovich

USSR

UDC 536.423.1

GRIGOR'YEV, V. A., ~~DUDKEVLICH, A. S.~~, Candidates of Technical Sciences,
Moscow Power Engineering Institute

"The Boiling of Cryogenic Liquids in a Thin Film"

Moscow, Teploenergetika, No 12, 1970, pp 54-57

Abstract: The results of experimental research on the boiling of nitrogen, oxygen, and hydrogen in a thin film are presented, and an approximate analysis of the heat-exchange mechanism is made for the case of developed nucleate boiling. 4 figures, 1 table. 2 bibliographic entries.

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UR 0482

Soviet Inventions Illustrated. Section II Electrical, Derwent,

243713 QUASI-BALANCED BRIDGE CIRCUIT FOR MEASURING PARAMETERS OF IMPEDANCE. In quasi-balanced circuit (1), in the arm of unknown impedance (2) of which only resistance (or only reactance) is to be measured, the auxiliary reactance (or resistance) (3) is modulated with a modulator (4) e.g. in the form of polarized relay. The potentials to be compared are fed to selective amplifiers (5) and (6) tuned to the frequency of power feed. Amplified potentials are compared in phase or amplitude in comparator (7) whose signal is amplified on frequency modulation by amplifier (8) received by detector (9) and fed to indicator (10).

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The standard parameter is adjusted until the output signal with frequency modulation vanishes and the direction of deviation from quasi-balance is determined by the phase sign of the vanishing

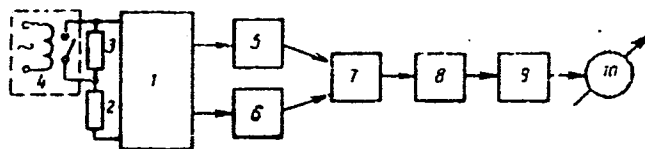
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29.9.67 as 1186251/18-10. B. N. DIDKEVICH. NOVOSIBIRSK ELECTROTECHNICAL INST. (1.10.69.) Bul 17/14.5.69. Class 21e. Int.Cl. G 01r.

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Novosibirskiy Elektrotekhnicheskiy Institut

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UDC 546.824-31'42':539.23:537.226

BULGAKOV, N. A., DUDKEVICH, V. P., BONDARENKO, V. S., ZAKHARCHENKO, I. N.,
and FESENKO, YE. G., Rostov State University

"Structure and Certain Dielectric Properties of Strontium Titanate Thin
Films Produced by Cathode Sputtering"

Moscow, Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1833-1834

Abstract: Strontium titanate (ST) films, 1-12 microns thick, were produced on titanium substrates by cathode sputtering. From this experimental work the optimum mode of ST film formation was selected: 900 v, 80 ma, residual air pressure of 0.6 mm Hg, distance between anode and cathode -- 12 c, distance between cathode and substrate -- 6 mm, and coating rate -- 0.2 micron/hour. It was determined that the dielectric strength of ST films in a constant filed amounts to about 500 kv/cm which is higher than for volume ceramic samples for which this value does not exceed 100 kv/cm. One figure, three bibliographic references.

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USSR

UDC: 612.822.3

DUDKIN, K. N., GAUZEL'MAN, V. Ye., Laboratory of Vision Physiology,
Institute of Physiology imeni I. P. Pavlov, Academy of Sciences
USSR, Leningrad

"Registration and Discrimination of Responses to Initiation and Termination of a Stimulus in the Pulsed Activity of Neurons"

Leningrad, Fiziologicheskii Zhurnal SSSR, Vol 58, No 8, Aug 72, pp 1312-1317

Abstract: The paper describes electronic instruments designed for recording and distinguishing on- and off-responses. Schematic diagrams are given for two devices. The first is a unit for mixing the investigated pulse flow (information carrier) with markers for the beginning and end of the stimulus. The resultant mixture can be recorded on a single-channel tape recorder. The other device is a unit for selecting signals in pulse processes. This instrument discriminates signals for stimulus actuation in the studied pulse stream. The proposed equipment can be used in conjunction with digital computers.

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USSR

UDC 621.374.32

DUDKIN, K. N.

"Device for Counting Number of Pulses in a Series"

USSR Author's Certificate No 280749, Filed 6/06/69, Published 25/01/71,
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, 1971, Abstract No 11 A53 P).

Translation: This device for counting the number of pulses in a series differs in that in order to separate series of pulses, the length of which is determined by the duty factor of the pulse sequence being analyzed, and to count the number of pulses in the sequence, the device contains an exponentially rising sawtooth voltage generator operating in the slave mode, a sawtooth voltage generator with an output voltage amplitude proportional to the duty factor of the pulse sequence analyzed, a threshold device which operates when the duty factor of the pulse sequence exceeds a fixed length, and a device forming an electrical signal, the amplitude of which is proportional to the number of pulses in the series. 1 Figure.

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1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--TECHNIQUE OF OBTAINING HISTOGRAMS OF IMPULSE NUMBER GROUPS, BURSTS,
DURING NEURONAL ACTIVITY ANALYSIS -U-
AUTHOR--DUDKIN, K.N.
COUNTRY OF INFO--USSR
SOURCE--FIZIOL ZH SSSR IM I M SECHENOVA 56(1): 126-129. ILLUS. 1970
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--NERVOUS SYSTEM, NEURON, ELECTROPHYSIOLOGY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1337 STEP NO--UR/0239/70/056/001/0126/0129
CIRC ACCESSION NO--AP0133293
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0133293
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD FOR OBTAINING HISTOGRAMS OF IMPULSE NUMBER IN GROUPS WAS DEVELOPED FOR A STUDY OF IMPULSE ACTIVITY OF NEURONS. A DETAILED DESCRIPTION IS GIVEN FOR A THEORY AND A SCHEMA IS PRESENTED OF THE CONSTRUCTION OF MORE COMPLICATED ELECTRONIC EQUIPMENT. THE SUGGESTED METHOD MAY BE APPLIED IN THE ANALYSIS OF BOTH ARTIFICIALLY EVOKED OR UNEVOKED IMPULSE ACTIVITY. FACILITY: I. P. PAVLOV INST. PHYSIOL., ACAD. SCI. USSR, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC: 612.822.3.08

DUDKIN, K. N. and SHPERL, L. V., Physiology of Vision Laboratory (Headed by V. D. Glezer) and the Scientific-Technical Division (Headed by N. S. Slepchuk) of the I. P. Pavlov Institute of Physiology, USSR Academy of Sciences, Leningrad

"Construction of Poststimulus Histograms on the 'Neuron-1' Analyzer"

Leningrad, Fiziologicheskii zhurnal SSSR im. I. M. Sechenova, No 10, vol 58, 1972, pp 1636-1638

Abstract: Histograms of the poststimulus time (PST) are used in many neurophysiological investigations in the analysis of neuron responses to stimuli, these histograms being obtained through measurement of the time of the pulses in response to the stimulus, and the accumulation of the measured time intervals repetition of the same stimulus. The purpose of this article is to show how such histograms can be constructed with the "Neuron-1" analyzer. A block diagram of this instrument in the mode of time interval synchronous summation, the mode in which poststimulus histograms are constructed, is given together with a description of the equipment's operation. A sample of the poststimulus histogram of a

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UDC: 612.822.3.08

DUDKIN, K. N., et al, Fiziologicheskiy zhurnal SSSR im. I. M. Se-
chenova, No 10, vol 58, 1972, pp 1636-1638

light-stimulated neuron is shown.

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UDC: 621.362.2(088.8)

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

"A Commutation Line"

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

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

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1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--EFFECT OF A BISMUTH TELLURIDE IMPURITY ON THE BAND STRUCTURE OF TIN
TELLURIDE -U-
AUTHOR-(05)-BOROVIKOVA, R.P., DUDKIN, L.D., YERASOVA, N.A., KAZANSKAYA,
O.A., KAYDANOV, V.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, ^D4(1) 231
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--BISMUTH, ELECTRICAL CONDUCTIVITY, TIN COMPOUND, TELLURIUM
COMPOUND, ACTIVATION ENERGY, ENERGY BAND STRUCTURE, HALL CONSTANT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0578 STEP NO--UR/0449/70/004/001/0231/0231
CIRC ACCESSION NO--AP0105561
UNCLASSIFIED

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PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105561

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. DEPENDENCE OF ELEC. COND.; THERMAL EMF., THE HALL CONST., AND THE TRANSVERSE NERNST ETTINGSHAUSEN EFFECT WAS STUDIED EXPTL. IN SN SUBI NEGATIVEX BI SUBX TE (0 SMALLER THAN OR EQUAL TO TIMES SMALLER THAN OR EQUAL TO 0.1) SOLID SOLNS. AT 80-500DEGREES K. IN COMPARISON TO PURE SNTE, A DECREASE IN HALL MOBILITY IS NOTICED AND A MAX. APPEARS ON THE TEMP. DEPENDENCE CURVE OF THE HALL CONST. THERE ARE 2 POSSIBLE EXPLANATIONS FOR THESE AND OTHER OBSO. CHANGES: (1) THE ADDN. OF BITE LOWERS THE ENERGY GAP BETWEEN REGIONS OF LIGHT AND HEAVY HOLES; (2) IMPURITY (DONOR) LEVELS OF BI SPLIT INTO AN IMPURITY BAND LOCATED BELOW THE VALENCE BAND. IN BOTH CASES, THE ADDN. OF BI HAS LITTLE INFLUENCE ON THE CONC. OF HOLES.

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PROCESSING DATE--18SEP70

CIRC ACCESSION NO--A0054943

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LOW TEMP. THERMO ELEC. MATERIALS, N TYPE BI SUB2 (TE, SE) SUB3 AND P TYPE (BI,SB) SUB2 TE SUB3, WERE STUDIED. THE CHANGE IN THE TEMP. DEPENDENCE OF THESE MATERIALS TO THE TEMPS. AT WHICH THEY ARE USED IN PRACTICE (300DEGREES) WAS EXAMD. FOR THIS PURPOSE, PRESSED N AND P TYPE SAMPLES, 10 TIMES 10 TIMES 10 MM, WERE PREPD., AND THE THERMAL EXPANSION COEFF. (ALPHA), THERMAL COND. (KAPPA), AND ELEC. RESISTIVITY PARALLEL AND PERPENDICULAR TO THE PRESSING DIRECTION WERE MEASURED AT ROOM TEMP. TO 350DEGREES USING AN APP. ANALOGOUS TO THE PREVIOUSLY DESCRIBED ONE. FOR BOTH TYPES OF MATERIALS, ALPHA AND KAPPA REMAIN THE SAME OVER THE ENTIRE TEMP. RANGE EXAMD. A SIGNIFICANT RESULT OF THE PRESENT INVESTIGATION IS THE FINDING OF ANISOTROPY IN P TYPE MATERIAL WITHIN THE INTRINSIC REGION. AT THE SAME TIME, THE THERMAL EMF. OF THE N TYPE MATERIAL IS PRACTICALLY ISOTROPIC OVER THE ENTIRE TEMP. RANGE INVESTIGATED. SOME EXPLANATION IS OFFERED FOR THE PHENOMENA OBSO. ROOM TEMP. DATA ARE NOT SUFFICIENT TO CHARACTERIZE THERMOELEC. MATERIALS RELATIVE TO THEIR THERMAL AND ELEC. PROPERTIES, BUT SUCH PROPERTIES SHOULD BE MEASURED ALSO AT ELEVATED TEMPS.

UNCLASSIFIED

Mechanical Properties

USSR

UDC 537.32

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

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

Moscow, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 127-133

Abstract: In connection with the fact that powder metallurgy methods are basic procedures in manufacturing thermocouples, the authors have investigated the anisotropy of the electrical characteristics in pressed samples, the creation of whose texture is determined by the anisotropy of the mechanical properties. It is known that low-temperature thermoelectric materials $\text{Bi}_2(\text{Te, Se})_3$ -- n-type -- and $(\text{Bi, Sb})_2\text{Te}_3$ -- p-type -- on the basis of the peculiarities of their crystal chemical structure, have an anisotropy of electrical and thermal conductivity at room temperature both in monocrystalline and polycrystalline pressed samples. The thermoelectric efficiency z in the direction of the layers (the direction perpendicular to pressing) is higher than in the direction perpendicular to it. This also determines the directionality of operations connected with optimizing the thermoelectric effectiveness of these materials and converters. The variation in temperature dependence of the anisotropy of the thermoelectric characteristics of the indicated materials to the temperature of their practical utilization

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

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

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USSR

UDC 621.362.2(088.8)

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

"A Thermocouple"

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

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

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USSR

UDC 51

BAKHMET'YEV, M. M., BAKHUTINSKIY, I. YA., DUDKIN, L. M., LIVSHITS, V. N., and POZAMANTIR, E. I.

"A Block Method of Calculating the Optimal National Economic Plan"

Tr. 4-y Zimn. shkoly po mat. programmir, i smezhn. vopr.. Drogobych. 1971
(Proceedings of the Fourth Winter School of Mathematical Programming and
Related Questions, Drogobych, 1971), No 3, Moscow, 1972, pp 74 - 98 (from
RZh Matematika. No 12, 1973, item No 12 V 576)

Translation: The problem of optimally planning the national economy, represented in the form of a model of nonlinear programming, is broken down into individual subproblems, related by global boundaries. An iterative process for its solution is described, based on the solution of subproblems and the adjustments of resource evaluations proportional to discrepancies in the global boundaries without a solution at the center of some optimization problem. The plan of solution is close to the method of B. T. Polyak and N. V. Tret'yakov (First Conference on Optimal Planning and Management of the National Economy, Thesis Reports, Section 4, TsEMI [Central Institute of Mathematical Economics] USSR Academy of Sciences, Moscow, 1971) and differs from the latter in the fact that the goal functions of the subproblems are designed without the use of "global" information about expenditures of common resources throughout the system, but with information about the state of individual subsystems. The

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USSR

BAKHMET'YEV, M. M. et al, Tr. 4-y Zimn. shkoly po mat. programmir. i smezhn. vopr., Drogobych, 1971, No 3, Moscow, 1972, pp 74 - 98

convergence of the method and the local optimality of the solution are demonstrated.

The model considers material balances of labor resources at each point and in the nation as a whole--by trade-wage groups, balances of capital investment, and natural resources. Simplifying assumptions with respect to the transport network are made: for example, the uniqueness of the transport method in each direction. Expenditures for nonproductive purposes are considered in functions of production expenditures. Prices are assumed fixed. The criterion of optimality for the national economic plan is taken to be the maximum level of income for workers in the base group.

Abstract by S. Lebedev

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USSR

UDC: 51

VAKSMAN, T. F., DULKIN, I. M.

"Mathematical Economics Problems With Explicit and Implicit Beak"

Tr. 4-y Zimn. shkoly po mat. programmir. i smezh. voprosam, 1971, vyp. 1
(Works of the Fourth Winter School on Mathematical Programming and Related Problems, 1971, No 1), Moscow, 1971, pp 166-174 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V445)

Translation: A beak is defined as the solution of a system of linear inequalities of intersectoral balance which is smaller with respect to all components than the other solutions of this system.

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USSR

UDO 621.387.322

DMITRENKO, L.P., DUDKIN, R.I.

"Method For Control Of Thyatron"

USSR Author's Certificate No 261552, filed 30 Mar 66, published 14 May 70 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A119P)

Translation: An improvement of the method of control is proposed for a thyatron which is fired by a current pulse of arbitrary form and duration, during which arcing of the thyatron is maintained as a consequence of feeding the anode circuit from two sources, one being a source of a-c and the other of d-c. By hypothesis the source of d-c is quantized with respect to time and the power supply of the anode circuit is accomplished from the two sources simultaneously. Such a circuit assures simplification and expansion of the limits of control of the thyatron. V. M.

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- 111 -

USSR

UDC 62-533.65

DUDKIN, R.I., DMITRENKO, L.P.

"Two-Position Temperature Regulator"

USSR Author's Certificate No 257171, Filed 10/07/68, Published 2/04/70
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 12, 1970, Abstract No 12 A289P by K.M.)

Translation: The two-position temperature regulator suggested contains a thermal resistor which controls, connects and disconnects thyatrons (T) connected to the coil of the actuating electromagnet in a resonant circuit. The grid of the connecting T is connected to the plate circuit of the control T through a divider capacitor, while the grid of the disconnecting T is connected to a photoresistor, optically coupled to the controlling T. The presence of the divider capacitor eliminates repeated switching of the connecting T. One figure.

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- 22 -

USSR

UDC 621.317.78.023

KOTOSONOV, N. V., DUDKIN, V. P., PETROV, YU. N.

"Some Means of Improving the Sensitivity of a Superhigh Frequency Power Indicator by Using the Hall Effect"

Tr. Voronezh. un-ta (Works of Voronezh University), 1971, No 77, pp 44-49 (from RZh-Radiotekhnika, No 10, Oct 71, Abstract No 10A179)

Translation: A study was made of the basic characteristics of a superhigh frequency power indicator in the Hall effect and certain means of improving its sensitivity. The theoretical possibility of improving the sensitivity of the wattmeter in the Hall sensor using a ring resonator is demonstrated. Results are presented from an experimental study of the sensitivity of the cooled Hall sensor in the superhigh frequency range. There are 3 illustrations and a 5-entry bibliography.

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ENGINEERING
Aeronautical

USSR

UDC 533.6:621.4

KOSTERIN, V. A., DUDKIN, V. T., and FADEYEV, L. V.

"Effect of Air Bypass Aft of the Compressor Into the Jet Nozzle on Indicators of Gas Turbine Jet Engines"

Tr. Kazan. aviats. in-ta (Transactions of the Kazan' Aviation Institute), Vypusk (Issue) 114, 1970, pp 58-76 (from RZh-Mekhanika, No 12, Dec 70, Abstract No I2B482, by M. A. Peshkin)

Translation: The least-squares method, given several simplifying assumptions and hypotheses, was used to evaluate the effect that air bypass aft of the compressor into the afterburner chamber has on the performance indicators of turbojet engines, allowing for the work in the expansion of air and changes in gas enthalpy aft of the turbine. Calculation results are given as Mach number functions of the relative specific fuel consumption and thrust, for a 1% change in the heat release factor and a 1% change in the afterburner chamber pressure due to change in air bypass. Taking the energy of the bypassed air into account markedly improves engine indicators compared with the case when this energy is neglected.

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1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--INTERACTION OF HIGH ENERGY ALPHA PARTICLES WITH NUCLEI -U-
AUTHOR--(04)-DUDKIN, V.E., PVANOV, I.I., SYSOYEVA, O.V., VIKHROV, A.I.
COUNTRY OF INFO--USSR **D**
SOURCE--YAD. FIZ. 1970, 11(1), 36-42
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ALPHA INTERACTION, HIGH ENERGY PARTICLE, MONTE CARLO METHOD,
ALPHA BOMBARDMENT, ALUMINUM, SILVER, NITROGEN, NIOBIUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0172 STEP NO--UR/0367/70/011/001/0036/0042
CIRC ACCESSION NO--AP0048464
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0048464

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTERACTION OF 105-MEV ALPHA PARTICLES WITH PRIME17 AL AND PRIME108 AG, AND 380-MEV ALPHA PARTICLES WITH PRIME14 N, PRIME27 AL, AND PRIME93 MB WAS CALCD., BY USING THE MONTE CARLO METHOD ON THE BASIS OF CASCADE EVAPN. MODEL. COMPARISON OF THE CALCU. RESULTS WITH THE EXPTL. DATA SHOWS THAT THE MODEL USED PERMITS A REASONABLE DESCRIPTION OF THE GENERAL CHARACTERISTICS OF THE INTERACTION.

FACILITY: INST. MED.-BIOL. PROB., MUSCOW, USSR.

UNCLASSIFIED

USSR

UDC 615.371:576.851.49].036.8.074:541.24

MOSKVICHEVA, I. V., DUDKINA, M. I., ZUYEV, A. S., CHERKASOV, A. N., and SHAPIRO, N. I., Leningrad Institute of Vaccines and Sera

"Relationship Between the Immunological Properties of *S. typhi* Antigen Fractions and Their Molecular-Weight Parameters

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1972, pp 82-86

Abstract: Antigens isolated from *S. typhi* cultures by tryptic proteolysis or by treatment with hydrogen peroxide were characterized by considerable polydispersity. They contained components with diffusion coefficients ranging from $0.45 - 0.6 \times 10^{-7}$ to $10 - 11 \times 10^{-7}$ cm^2/sec with mean square radii $[(\bar{R}_g^2)]^{1/2}$ from 560 - 590 to 30 - 40 Å. The high-molecular-weight fractions of the preparations induced the formation of O and Vi antibodies in high titers; the antigen activity of the low-molecular-weight fractions was 2 to 3 orders lower. The high-molecular-weight fraction of the peroxide preparation also induced the formation of H antibodies. A relationship was observed between the molecular-weight parameters of the antigen preparations and the level of their biological activity (protective properties, toxicity, and antigenic specificity). The high-molecular-weight components exhibited the greatest biological activity in rabbit serum.

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USSR

UDC 615.372:576.851.49].07

SHAPIRO, N. I., VASIL'YEVA, T. G., MOSKVICHEVA, I. V., DUDKINA, M. I.,
KRUGLIKHINA, Z. M., SAZONETS, G. I., OZERETSKOVSKIY, N. A., BALAYAN, V. D.,
and KOVAL'SKAYA, S. Ya., Leningrad Institute of Vaccines and Sera and State
Control Institute of Medical Biological Preparations imeni Tarasevich, Moscow

"Molecular Heterogeneity of Endotoxins Extracted From the Typhoid-Paratyphoid
Group of Bacilli. Report II. Antigenic Structure and Biological Activity of
High and Low-Molecular-Weight Fractions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971,
pp 35-39

Abstract: By means of sepharose 2B columns, endotoxin extracts from typhoid
(4446) and paratyphoid B (50602) bacilli can be separated into a high-molecular-
weight and a low-molecular-weight fraction. Components of the latter fraction
retain some serological specificity but are nontoxic, exert a low protective
activity, and display no stressor activity. On the other hand, components of
the high-molecular-weight fraction have a full antigenic structure, are highly
immunogenic and toxic, and display pronounced stressor activity. The high-
molecular-weight fraction is the carrier of the biological properties of
typhoid and paratyphoid endotoxins.

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USSR

UDC 541.183:661.183.9

DUDKINA, V. G., and BOYCHINOVA, Ye. S.

"The Sorption of Transition Metal Ions on Zirconium 'Pyrophosphate'"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 45, Vyp 9, 1972, pp 1982-1985

Abstract: For the desorption of Cu(II), Ni(II), and Co(II) from zirconium pyrophosphate (ZP), the curing time of the initial gel is related to the coefficient of diffusion. The volume of ZP increases about 15% to an equilibrium value in 30 minutes. The coefficient of diffusion of water was determined from expansion data and it was shown that the mobility of water in ZP was less than in organic sulfonate-cation exchange resins. Equilibrium of ZP and solution with respect to the distribution of ions takes longer, on the order of a day. Temperature, pH, anions, and the number of adsorption-desorption cycles influence the cation exchange capacity of the ZP. The shape, as well as the magnitude of the sorption isotherm is different for the three ions, Cu(II), Ni(II), and Co(II) in the order of decreasing concentrations of the metals on the ZP at equilibrium. This is related to the energies of activation: 2.38, 0.46, and 0.16 Kcal/mol respectively.

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AA0040514

Dudko, D. A.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

239780 ARC DISCHARGE EXCITER has a switching control to increase the cathode area simultaneously with disconnection of the heating source. Prior to ignition a plasma forming gas (2) is passed through the burner (1), contactor (3) is closed, connecting branches (A,B) of the cathode in series. Cathode heating uses one section of the power source, the anode voltage being taken from section (D). When the arc discharge (7) develops current relay (8) opens contacts (9) and closes contacts (10), connecting the cathode branches in parallel, and both sections of the power source in series to give the required anode voltage. Variable resistance (11) controls the heating current and the current/voltage characteristics of the arc power source. This system can be used in arc welding under vacuum or in an inert atmosphere.

1.4.68 as 1229230/25-27. D.A.DUDKO et alia.E.A.
 PATON ELECTRIC WELDING INST. (24.7.69) Bul 11/18.3.69
 Class 49h. Int.Cl.B 23k.

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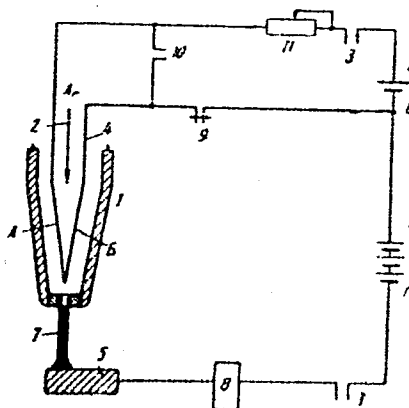
4

19750018

AA0040514

AUTHORS: Dudko, D. A.; Lakiza, S. P.; Lapchinskiy, V. F. and Masalov, Yu. A.

Institut Elektrosvarki imeni Ye. O. Patona



2/2

19750019

AA0040651

DUDKO

D.A.

UR 0482

5

Soviet Inventions Illustrated, Section I Chemical, Derwent,

1-70

240726 ELECTROSLAG REMELTING in a syphon bottom pouring operation: the consumable electrode is inserted so that its base is clear of the bottom by one third of the slag bath depth. Voltage is applied and the molten slag syphoned into the mould, or else imported via a tundish and orifice in the bottom of the mould. The slag rises and makes the circuit. The idea is to raise the slag sharply and thus avoid any skull or crusting on the mould bottom or walls. Once the slag reaches project height, syphoning stops and remelting proceeds normally.

5.3.66 as 1060334/22-2. PATON.B.E.et al.E.O.PATON ELECTROWELDING INST. (26.8.69) Bul 13/1.4.69. Class 18b. Int.Cl.C 21 c.

18

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19750234

AA0040651

AUTHORS: Paton, B. Ye.; Medovar, B. I.; Latash, Yu. V.; Dudko, D. A.;
Yemel'yanenko, Yu. G.; Klyuyev, M. M.; Pryanishnikov, I. S.;
Laktionov, V. S.; Butskiy, V. N.; and Kosyrev, L. K.

Ordena Trudovogo Krasnogo Znameni Institut Elektrosvariki
imeni E. O. Patona

19750235

2/2

Semiconductor Technology

USSR

UDC 548.526:548.4

DUDKO, G. V., and CHEREDNICHENKO, D. I., Taganrog

"Raising the Diffusion Activity of Germanium Treated With An Electron Beam"

Kishinev, Elektronnaya Obrabotka Materialov, No 2, 1970, pp 29-31

Abstract: An anomalous increase of the diffusion activity of electrically active impurities in germanium, exposed to low-energy electrons ($E < 30$ kev), is established. The germanium diffusion coefficients increase fourfold for the acceptors (In, Ga) and 1.5-2-fold for the donors (Sb, As). The coefficients of diffusion are determined experimentally by the method of p-n-transitions on the basis of available concepts concerning the diffusion along the boundaries. The increase of the diffusion activity is related to the formation of the developed network of dislocations along which the migration of impurities is considerably facilitated.

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USSR

UDC: 536.4:621.792.85:620.18

D
DUDKO, G.V., KOLEGAYEV, M.A., and CHEREDNICHENKO, D.N., Taganrog

"Possible Mechanisms in the Formation and Distribution of Defects in Silicon and Germanium During Electron-Beam Heating"

Moscow, Fizika i Khimiya Obrabotka Materialov, No 2, Mar-Apr 70, pp 25-29

Abstract: The effects of electron-beam processing on material structure are important in view of the intensive use of this technique at the present time. The authors studied the actual structure of Ge and Si single crystals treated with an electron beam (4-8 kv, 2 ma, 0.5-2.0 sec, vacuum of $5 \cdot 10^{-5}$ mm Hg). Defects $5 \times 5 \times 0.5$ μ m were produced in the $\{111\}$ planes. There was no disturbance of crystalline structure even upon surface fusion. The sharp increase in dislocation density at points of treatment is believed to be due primarily to thermal stresses.

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1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--DIFFUSION OF INDIUM AND ANTIMONY IN GERMANIUM IRRADIATED BY LOW
ENERGY ELECTRONS -U-
AUTHOR--(04)-DUDKO, G.V., MARUNINA, N.I., SUKHOV, G.V., CHEREDNICHENKO,
D.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1292-4
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--METAL DIFFUSION, ANTIMONY ALLOY, GERMANIUM ALLOY, INDIUM
ALLOY, CRYSTAL DISLOCATION, RADIOACTIVE ISOTOPE, ELECTRON, LOW ENERGY
NEUTRON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0476 STEP NO--UR/0181/70/012/004/1292/1294
CIRC ACCESSION NO--AP0126228
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126228

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE DIFFUSION OF IN AND SB IN GE ORIENTED IN THE (111) PLANE AND TREATED OVER THE ENTIRE SURFACE WITH LOW ENERGY ELECTRONS (SMALLER THAN 30 KEV) WAS STUDIED AT 650-850DEGREES USING RADIOACTIVE ISOTOPES. THE DIFFUSION PARAMETERS ARE D SUBO EQUALS 5.8 TIMES 10 PRIME3 CM PRIME2-SEC, Q EQUALS 57 KCAL-MOLE FOR IN AND D SUBC EQUALS 21 CM PRIME2-SEC AND Q EQUALS 48 KCAL-MOLE FOR SB. ACCELERATED DIFFUSION IS RELATED APPARENTLY TO THE FORMATION OF A NETWORK OF DISLOCATIONS BY IRRADN. FACILITY: TAGANROG. RADIOTEKH. INST., TAGANROG, USSR.

UNCLASSIFIED

1/2 038 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--POSSIBLE MECHANISMS OF THE FORMATION AND DISTRIBUTION OF DEFECTS IN
SILICON AND GERMANIUM DURING ELECTRON BEAM HEATING -U-
AUTHOR--(03)-DUDKO, G.V., KOLEGAYEV, M.A., CHEREDNICHENKO, D.I.
COUNTRY OF INFO--USSR D
SOURCE--FIZ. KHIM. OBRAB. MATER. 1970, (2), 25-9
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--ELECTRON BEAM, METAL HEATING, SINGLE CRYSTAL, SILICON,
GERMANIUM, METAL MELTING, MICROSCOPY, CRYSTAL LATTICE DEFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0946 STEP NO--UR/0472/70/000/002/0025/0029
CIRC ACCESSION NO--AP012154B
UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121548

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STRUCTURAL DEFECTS PRODUCED IN GE AND SI SINGLE CRYSTALS (SECTIONED ALONG THE (111) PLANES) DURING LOW ENERGY ELECTRON BEAM BOMBARDMENT WAS STUDIED. THE SAMPLES MAINTAINED THEIR SINGLE CRYSTALLINITY IN SPITE OF SOME SURFACE MELTING. THE DISLOCATIONS WERE REVALED BY CHEM. ETCHING AND COUNTED UNDER A MICROSCOPE. THERE WAS A ZONE OF DISLOCATIONS, EXTENDING INTO THE BODY OF THE CRYSTAL, AT THE POINT WHERE THE BEAM STRIKES THE CRYSTAL. THE PRESSURE OF THE ELECTRON BEAM IS TOO LOW TO CAUSE THE DISLOCATIONS; INSTEAD, THE DEFECTS ARE PROBABLY DUE TO THERMAL STRESSES AND POSSIBLY TO BENDING OF THE CRYSTALS DURING HEATING.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--FLOPPING OF MAGNETIC SUBLATTICES OF UNIAXIALLY COMPRESSED MANGANESE
FLUORIDE -U-
AUTHOR--(03)-DUDKO, K.L., YEREMENKO, V.V., FRIDMAN, V.M.
COUNTRY OF INFO--USSR **D**
SOURCE--FIZ. TVERD. TELA 1970, 12(1), 83-8
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--ANTIFERROMAGNETIC MATERIAL, FLUORIDE, MANGANESE COMPOUND,
CRYSTAL LATTICE STRUCTURE, MAGNETOSTRICTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0232 STEP NO--UR/0131/70/012/001/0033/0088
CIRC ACCESSION NO--AP0048511
UNCLASSIFIED

272 019

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0048511

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT WAS STUDIED OF UNIAXIAL COMPRESSION ON THE CRIT. FIELD OF FLOPPING OF MAGNETIC SUBLATTICES OF ANTIFERROMAGNETIC MNF SUB2 AT 4.2DEGREESK. THE METHOD USED MAKES IT POSSIBLE TO ESTABLISH AN EXTERNAL PULSED MAGNETIC FIELD ALONG THE AXIS OF SYMMETRY OF THE CRYSTAL WITH AN ACCURACY OF ANGLE LESS THAN OR EQUAL TO 5 PRIME OF ARC AND TO CARRY OUT A COMPARATIVE INVESTIGATION OF H SUBC ON COMPRESSED AND FREE SPECIMENS. THE MIN. WIDTH OF THE REGION OF TRANSITION CLOSE TO H SUBC EQUALS 91.7 KOE IS SIMILAR TO 300 OE AND IS DOUBLED AT ANGLE IS CONGRUENT TO 20 PRIME. IN UNIAXIAL COMPRESSION ALONG THE 4 FOLD AXIS, THE REGION OF THE TRANSITION IS BROADENED AND H SUBC INCREASES ALMOST LINEARLY WITH PRESSURE. THE MAGNITUDE OF THE EFFECT AGREES WITH THE PREVIOUSLY MEASURED JUMP OF MAGNETOSTRICTION IN THE CRIT. FIELD. EVALUATIONS OF THE CONTRIBUTIONS OF MAGNETODIPOLE INTERACTION AND CLASSICAL MAGNETOSTRICTION SHOW THAT THE EFFECT IS PARTIALLY DUE TO THE DEPENDENCE OF THE EXCHANGE INTEGRALS BETWEEN IONS OF OPPOSITE SUBLATTICES ON INTERAT. DISTANCES.

USSR

UDC 681

KUNAYEV, I. P., DUDKIC, L. D., Moscow Higher Technical School imeni N. E. Bauman

"Procedure for Studying the Dynamics of Clockworks for Random External Effects"

Leningrad, Priborostroyeniye, No 10, 1973, pp 74-77

Abstract: A procedure is presented for studying the noiseproofness of clocks. A system of statistical equations of clocks is found and investigated to determine the parameters of the regime of autooscillations of amplitude and frequency under the effect of high-frequency interference of different intensity. In analyzing the noiseproofness of the clock mechanism, the structural schematic known from starting regulator theory [V. A. Shpolyanskiy, et al., Spuskovyye regulatory priborov vremeni, Moscow, Mashgiz, 1963] was used which is valid for the investigated mechanism of any type and the differential equation describing the dynamics of its autooscillations in general form.

The system of transcendental equations obtained permits investigation of the noiseproofness of the starting regulator, determination of the values of the amplitude and frequency of the autooscillations for different values of the interference and also discovery of the effects of the values of individual parameters of the starting regulator and its autooscillatory mode on the investigated noiseproofness. The most effective method of solving the desired

USSR

KUNAYEV, I. P., et al., Priborostroyeniye, No 10, 1973, pp 74-77

system of equations is the method of successive approximations; however, in view of the complex nature of the equations, the desired parameters of the autooscillatory regime can be found in practice only on a computer.

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1/2 010 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ACTIVITY OF MITOCHONDRIAL MONOAMINE OXIDASE AND CATECHOL AMINE
LEVEL IN THE PLACENTA OF WOMEN IN NORMAL LABOR AND IN PRIMARY UTERINE
AUTHOR--(02)-GRISHCHENKO, V.I., DUDKO, L.V.
COUNTRY OF INFO--USSR
SOURCE--AKUSH. GINEKOL. (MOSCOW) 1970, 46(4), 65-8
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--MITOCHONDRION, OXIDASE, CATECHOLAMINE, PLACENTA, OBSTETRICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605003/F02 STEP NO--UR/0580/70/046/004/0065/0068
CIRC ACCESSION NO--AP0139574
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139574

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PLACENTAS FROM TWO GROUPS OF WOMEN IN NORMAL LABOR (32) AND IN PRIMARY UTERINE INERTIA (18) WERE ANALYZED FOR MONOAMINEOXIDASE (MAO) ACTIVITY AND CONTENT OF CATHECHOL AMINES. THERE WAS A POS. INTERRELATION BETWEEN MAO ACTIVITY AND THE DURATION OF LABOR. IN PRIMARY UTERINE INERTIA THERE WAS A STATISTICALLY SIGNIFICANT RISE IN THE MAO ACTIVITY IN THE PLACENTA IN COMPARISON WITH PHYSIOL. LABOR. THE CATECHOL AMINE CONTENT WAS LOW IN THE PLACENTAS IN BOTH NORMAL LABOR AND IN UTERINE INERTIA. THE LEVELS WERE NOT DIFFERENT IN THE TWO CLIN. GROUPS. FACILITY: PEDIAT. FAK., KHARKOV. MED. INST., KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC 615.38.014.4

DUDKO, N. Ye., Professor, DASHKEVICH, V. P., ZVERKOVA, A. S., and PYASTA, A. N.,
Kiev Institute of Hematology and Blood Transfusion

"Some Data from Studies of Blood Preserved with TsOLIPK-13 Solution for Different
Periods of Storage"

Moscow, Problemy Gematologii i Perelivaniya Krovi, No 3, 1970, pp 18-20

Abstract: A study was made of morphological and biochemical changes, serological properties and therapeutic effectiveness of blood preserved at high dilution (1:1) with TsOLIPK-13 solution. Indices measured included the amount of erythrocytes and leukocytes, hemoglobin, latent hemolysis, blood pH resistance of erythrocytes and their morphological changes, and blood inorganic phosphorus and sugar content. Tests were conducted on the day the blood was taken, and then on every sixth day until the 30th day of preservation. Twenty series of experiments were conducted, and in all series the results were similar. Serological characteristics of blood stored at 4-6°C were investigated every fifth day. Study of erythrocyte morphological changes showed that erythrocytes almost completely lose the ability to form rouleaux on the sixth storage day. However, the first spherocytes appear only on the 18th day of storage, and on the 30th day comprise 18-25%. Shift in the osmotic resistance of erythrocytes in blood preserved with citric acid occurred, mainly,

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DUDKO, N. Ye., et al., Problemy Gematologii i Perelivaniya Krovi, No 3, 1970,
pp 18-20

because of minimal resistance. In all series of experiments, the minimal resistance decreased on an average from 0.7 on the day the blood was taken to 0.85 on the 30th day of storage. Traces of latent hemolysis were detected on the 18th day of storage, and by the 30th day hemolysis did not exceed 0.65-0.75%. There were two exceptions where hemolysis on the 30th day was higher than 1%. Blood sugar content gradually decreased during the 30 days of storage. During the first 15 days, this decrease was more intensive than in the latter days. Analysis of inorganic phosphorus content in the blood revealed a gradual 3.5-fold increase with the passage of storage time. This was analogous to blood stored with other preservatives. Results of serological investigations showed that erythrocytes containing antigen A lowered their agglutination activity by the 30th day. The agglutinability of erythrocytes containing agglutininogen B dropped much more sharply. A significant decrease in agglutination activity was also noted in erythrocytes containing antigens M and N. Patients of different ages and different medical problems received blood transfusions of this preserved blood at varying intervals, and in various amounts. The blood storage time varied from 8 to 35 days. A therapeutic effect was observed in all patients. There was an improvement in the general condition, increase in hemoglobin content and number of erythrocytes, and cessation of hemorrhage. It was especially effective in cases of third and fourth degree traumatic shock.

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USSR

UDC 669.71.053.4.094

AKSEL'RUD, G. A., ABRAMOV, V. YA., REYFMAN, E. D., SEMENISHIN, YE. M.,
DUDKO, T. A.

"Mathematical Model of the Diffusion Counter Flow Process of Leaching Alumina-
Containing Cakes"

Tr. Vses. n.-i. i proyekt. in-ta alumin., magn. i elektrokhim. prom-sti
(Works of the All-Union Scientific Research and Planning and Design Institute
of Aluminum, Magnesium and Electrode Industry), 1979, No 70, pp 96-102 (from
KZh-Metallurgiya, No 4, Apr 71, Abstract No 4G137)

Translation: A mathematical model of the diffusion counter-flow process of
leaching large-fraction cakes is proposed. A method and an example of cal-
culating the diffusion counter-flow process of leaching bauxite cakes in a
percolation unit are presented. There are 3 illustrations and 1 table.

1/1

USSR

UDC 669.71.053.4.094

AKSEL'RUD, G. A., ABRAMOV, V. YA., DUDKO, T. A., REYFMAN, E. D., SEMENISHIN, YE. M.

"Kinetics of Leaching Bauxite Cakes"

Tr. Vses. n.-i. i proyekt. in-ta alumin., magn. i elektrod. prom-sti
(Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 91-95 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G140)

Translation: The kinetics of extracting sodium aluminate from various fractions of bauxite cakes in the 45-95° temperature range are investigated. The diffusion coefficients of sodium aluminate are determined, and their dependence on the temperature variation is found. The characteristics of the mechanism of leaching of the cakes are established. The values of the diffusion coefficient found in this study can be used when calculating counterflow processes and equipment. There are 3 illustrations and 1 table.

1/1

USSR

UDC: 621.372.86(088.8)

DUDKOVSKIY, E. A., BARANOVSKIY, Ye. I.

"A Coaxial Measurement Line"

USSR Author's Certificate No 263698, filed 25 Apr 68, published 4 Jun 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A305 P)

Translation: This Author's Certificate introduces a coaxial measurement line which contains a coax section to which the inner cavity of a movable probe is coupled. As a distinguishing feature of the patent, measurement accuracy is improved by using a tube as the central conductor of the coax and making the probe in the form of several radially converging pins located in the same transverse plane, passing through longitudinal slots in the walls of the tube.

1/1

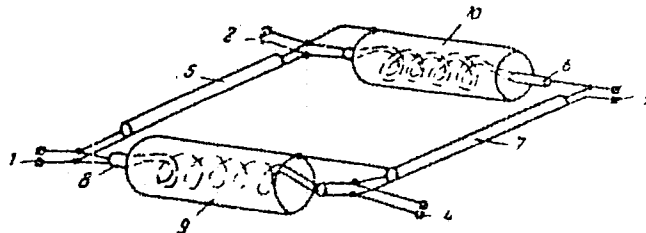
AA0043376

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

242252 WIDE BAND BRIDGE SYSTEM used in aerial feeding makes use of two generators. Two quarter wave-length cylinders (9) and (10) contain spiral coaxial cables. Such construction improves bandwidth of the bridge. The terminals (1,2,3,4) are interconnected by quarter wavelength coaxial lines (5,6,7,8).

2/70



9.12.67 as 1201986/26-9. E.A. DUDKOVSKI. (23.9.69) Bul 15/25.4.69. Class 21a⁴. Int. Cl. H 01p.

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8

19761643

USSR

UDC: 621.316.174:625.21

BESSONOV, K. S., ~~DUDNICHENKO, A. I.~~, GAMBURG, B. M., KITUSHIN, V. G., MYSLIN, D. A., Siberian Department of the All-Union State Design and Planning and Scientific Research Institute "Energoset'proyekt"

"A Portable Substation"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331464, Division H, filed 19 Jan 68, published 7 Feb 72, p 174

Translation: This Author's Certificate introduces: 1. A 220/110/6 kV portable substation containing an open 220 kV distribution device, an autotransformer connected by the 220 kV line to the supply network transformer, an open 110 kV distribution device and a self-contained 6 kV distribution device. As a distinguishing feature of the patent, the device is made more compact and portable by making the autotransformer of the incomplete-phase type and connecting it to the supply network by two phase conductors of the 220 kV line and connecting the neutral of the supply network transformer to the ungrounded neutral of the autotransformer, the neutrals being connected by an ungrounded cable of the 200 kV line. 2. A modification of this substation in which voltage asymmetry at consumer points is eliminated by connecting a booster transformer in the circuit break.

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AA0043553

DUDNIK A.S. UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

242425 INSTRUMENT FOR MEASURING THE PITCH OF A SCREW
has a pointer contacting the threads. The
pointer is mounted on a micrometric screw coupled
with an indicating hand providing a direct reading

after the contacting pointer has moved from one
thread recorded as a zero to the next one.

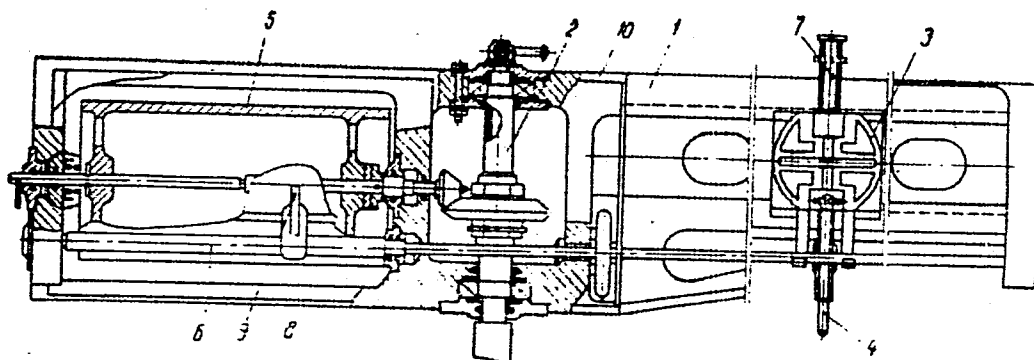
8.12.67 as 1202182/25-28.G. KH. CHERNOBAI & A.S. DUD-
NIK. (3.10.69.) Bul 15/25.4.69. Class 42b.Int.Cl.
G 01b.

1/2

18

19761999

AA0043553



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19762000

JC

1/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--PREPARATION AND STUDY OF BARIUM STRONTIUM NIOBATE SINGLE CRYSTALS
-U-

AUTHOR--(05)--DUDNIK, O.F., GROMOV, A.K., KRAVCHENKO, V.B., KOPYLOV, YU.L.,
KUZNETSOV, G.F.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 386-8

DATE PUBLISHED-----70

D

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MIBIUM COMPOUND, BARIUM COMPOUND, STRONTIUM COMPOUND, CURIE
POINT, SINGLE CRYSTAL GROWTH, DIELECTRIC CONSTANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1566

STEP NO--UR/0070/70/015/002/0386/0388

CIRC ACCESSION NO--AP0125192

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--A0125192

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

ABSTRACT. SINGLE CRYSTALS OF BA SUBX SR SUB1-X NB SUB2 O SUB6 WERE GROWN BY THE CZOCHRALSKI METHOD IN AN INDUCTION FURNACE FROM POWD. MIXTS. OF NB SUB2 O SUB5, SRCO SUB3, AND BACO SUB3. WHEN USING PT CRUCIBLES, COLORLESS CRYSTALS WERE OBTAINED, AND IN IR CURCIBLES, DARK AMBER ONES. THE HABIT OF THE CRYSTALS WAS DETD. BY 24 FACES OF 4 PRISMS: (110), (120), (100), AND (130), THESE FACES BEING DIFFERENTLY DEVELOPED FOR CRYSTALS OF DIFFERENT COMPN. TEMP. DEPENDENCES OF DIELEC. CONSTS. ALONG THE C AXIS (EPSILON SUBC) AND ALONG THE ALPHA AXIS (EPSILON SUBALPHA) WERE DETD., AS WELL AS CURIE TEMPS.: FOR BA SUB0.25 SR SUB0.75 NB SUB2 O SUB6, 56 PLUS OR MINUS 30DEGREES; FOR BA SUB0.5 SR SUB0.5 NB SUB2 O SUB6, 119 PLUS OR MINUS 30DEGREES; FOR BA SUB0.75 SR SUB0.25 NB SUB2 O SUB6, 205 PLUS OR MINUS 30DEGREES. WITH INCREASING CURIE TEMP., AN INCREASE IN PEAK EPSILON SUBC VALUES WAS OBSD., AND DECREASE IN EPSILON SUBC VALUES AT ROOM TEMP. THE EPSILON VALUE ALONG THE ALPHA AXIS IS MUCH LESS THAN ALONG THE C AXIS, AND THE DIELEC. ANOMALY ALONG THE ALPHA AXIS IS VERY SLIGHT.

FACILITY: INST. RADIOTEKH. ELECTRON., MOSCOW, USSR.

UNCLASSIFIED

Radar

1

USSR

VASIN, VLADIMIR VASIL'YEVICH, VLASOV, OLEG VALERIANOVICH, GRIGORIN-RYABOV, VIKTOR VALERIANOVICH, DUDNIK, PAVEL IVANOVICH DUDNIK, and STEPANOV, BORIS MIKHAYLOVICH

"Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

Abstract: The book presents radar principles, co-ordinate measurement methods, and scanning. Problems of radar signal detection, the accuracy in measuring their parameters, and solutions are examined. The principles for constructing radar equipment of different types are given, as well as their main characteristics are analyzed.

In conclusion, considerations for construction of radar systems, which are intended for solving concrete problems (aerial and marine target detection, radar observation of ground objects, etc.) are presented.

The book is intended for students of higher institutes of learning and may serve as a manual for specialists working in the field of radar. The book has two tables, 343 figures, and 69 citations.

1/4

USSR

VASIN, VLADIMIR VASIL'YEVICH, et al., "Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

The chapter headings are as follows:

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Chapter 2. Methods of Measuring the Co-ordinates and Speed of Moving Targets	14
Chapter 3. Characteristics of Radar Targets	40
Chapter 4. Radar Scanning	81
Chapter 5. Radar Signal Detection	96
Chapter 6. Effective Range of Radar Stations	146
Chapter 7. Resolution of Radar Signals	167
Chapter 8. Accuracy in Measuring Co-ordinates and Radial Velocities of Targets	216
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2/4

USSR

VASIN, VLADIMIR VASIL'YEVICH, et al., "Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

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Radar Equipment		
Chapter 13.	Single-Channel Pulsed Radar Stations	329
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Chapter 16.	Multichannel Radar Stations	426
Chapter 17.	Passive Radar	471
Chapter 18.	Interference Immunity of Radar Stations	485
Peculiarities of Radar Equipment for Different Purposes		
Chapter 19.	Primary Types of Ground Radar Stations	522

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USSR

VASIN, VLADIMIR VASIL'YEVICH, et al., "Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

Chapter 20.	Primary Types of Ship Radar Stations	542
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Chapter 22.	Aircraft Panoramic Radar	591
Chapter 23.	Radar Systems With Active Response	654

USSR

UDO 535.376

ZHOLKEVICH, G.A., DUDNIK, V.P.

"Thermoluminescent Analysis Of Infrared-Electroluminescence Of Sublimated Films Of Zinc Sulphide"

V sb. Elektrolyuminestsentsiya tverd. tel. (Electroluminescence Of Solid Bodies-- Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 190-193. Discussion: p 193 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11B386)

Translation: An attempt is made to clarify, with the aid of thermally stimulated luminescence (TSL) and current (TSC), the sign of the carriers which provide emissive junctions in the infrared region of the spectrum. A record was simultaneously made of the TSL curves in the infrared and visible regions of the spectrum. It is shown that the infrared TSL, repeating the form of the visible TSL, is highly smoothed and structureless. Together with this individual peaks are observed, characteristic either of infrared radiation only or visible emission [svecheniye] only. The conclusion is made that the divergence of the curves of infrared and visible TSL, and also the spread of the curves of the infrared TSL, points to a p-type nature of the radiative recombinations in the infrared region of the spectrum. 3 ill. 5 ref. Summary.

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- 54 -

PHYSICS

Crystals and Semiconductors

USSR

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

SINYAKOV, YE. V., DUDNIK, YE. F., and FLEROVA, S. A.

"Effect of External Forces on Polarization Reversal Processes of Single Crystals of Barium Titanate"

V sb. Segnetoelektriki i oksidnyye poluprovodniki (Ferroelectrics and Oxide Semiconductors -- Collection of Works), Dnepropetrovsk, 1971, pp 34-40 (from RZh-Fizika, No 1, Jan 72, Abstract No 1YE1286 by YE. DUDNIK)

Translation: The authors studied the polarization reversal parameters of single crystals of BaTiO₃ acted upon by a transverse electric field and uniaxial mechanical pressure. The method of making the measurements and constructing the holders is described. It was found that a weak biased (transverse) field under 170 v/cm and transverse contraction up to loads of 40-50 kgf/sq cm result in an increase in maximum current and switching time. As shown by study of domain structure, action of a weak transverse field (pressure) leads to c-domainization of a crystal in the (001) plane, and therefore even strongly fixed domains are switched in the direction of the polarization reversing field, causing an increase in t_s and I_{max} . Maximum current and switching time decline with further increase of transverse contraction (field). It is assumed that this variation in switching parameters is caused by "pinching" and by the exclusion of part of the domains from the process of polarization reversal.

1/1

DUDNIK, YE. P.

5 Pks 57008
6.72

III-5. EFFECT OF SUPERCOOLING OF A MELT ON THE STRUCTURE OF SINGLE GERMANIUM CRYSTALS

[Article by E. S. Pal'kevich, Yu. M. Saitov, N. V. Resonova, Ye. P. Dudnik, Zaporozh'ye: Novosibirsk, III Sbornik po Protsessam Rosta i Struktural'nym Poluprovodnikovym Kristallov I Pismok. Kuznetsk, 13-17 June, 1972, p. 29]

The morphology of the phase interface of an growing single Germanium crystals from a melt characterizes the mechanism of the crystallization process [1].

The degree of supercooling of the melt has an effect on the formation of the crystal and its property.

Data have been obtained which indicate the presence of the interaction of supercooling and the crystal lattice during growth from a molten layer. During isochronal drawing, the dislocationless structure as a rule is formed with a radial gradient close to zero in the melt at the crystallization front [2]. By varying the degree of supercooling it is possible to achieve the formation of a dislocationless structure with a radial gradient differing significantly from zero.

BIBLIOGRAPHY

1. I. V. Saiti, E. S. Pal'kevich, Problemy teorii poluprovodnikovogo kristalla (Production of Semiconductor Silicon), Metallurgiya, 1970.
2. Yu. M. Saitov, Izv. AN SSSR, ser. fizicheskaya (News of the USSR Academy of Sciences, Physics Series), Vol. 33, No. 12, 2001, 1969.

USSR

UDC 621.382.2

DUDNIK, YE. P., YEREMIN, V.K., LEVINSON, D.I., RYVKIN, S.M., STROKAN, N.B.
SUBASHIYEVA, V.P., TISNEK, N.I. [Physico-Technical Institute imeni A.F. Ioffe,
Academy Of Sciences, USSR, Leningrad]

"High-Resolution Counters Of Germanium With Radiation-Induced Defects"

Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 779-781

Abstract: The characteristics are presented of counters obtained as usual on the basis of germanium with $N_D - N_A \sim 10^{12} \text{ cm}^{-3}$ but with a decrease of more than one order of magnitude of the background of impurities and defects N_f . The amplitude spectrum of a specimen of ^{137}Cs is shown. The resolution of the counters at this line is less than $R = 1.2$ percent. The dependence is shown of the constant capture time on the electrical field intensity. 2 fig. 13 ref. Received by editors, 5 Nov 1971.

1/1

- 192 -

USSR UDC 619.611.9-022.6 + 636.1 + 636.2 + 636.4 + 636.52/.58

ONUFRIYEV, V. P.; DUDNIKOV, A. I.; MURAVYEV, V. K.; SHVETSOV, Yu. F.; CHUNAYEV, Yu. V.; KRAVCHENKO, V. M.; ZAKHAROV, V. M.; PRONIN, I. A.; NIKITIN, A. Y.

"Diatelic Immunization of Cows with Foot-and-Mouth Disease and Prospects for Obtaining Immune Milk"

Vladimir, V sb. Yashchur. T. 1 (Foot-and-Mouth Disease, Vol 1 -- Collection of Works), 1970, pp 160-172 (from RZh-58. Zhivotno-vodstvo i Veterinariya, No 4, Apr 71, Abstract No 4.58.573)

Translation: Diatelic immunization of cows with foot-and-mouth disease antibodies provides lactoserum and immunolactone with a high concentration of foot-and-mouth disease antibodies. The foot-and-mouth disease immunolactone has pronounced preventive properties in research with baby mice, guinea pigs, bull calves, and suckling pigs. Polyvalent foot-and-mouth disease immunolactone has a more pronounced virus-neutralizing activity with respect to heterologous strains of foot-and-mouth disease virus

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USSR

ONUFRIYEV, V. P., et al, V sb. Yashchur. T. 1, 1970, pp 160-172

than the monovalent one. The high specific activity of the foot-and-mouth disease lactone, obtained under biological production conditions by immunization of cows with inactivated foot-and-mouth disease virus, indicates a promising use of the diatelic immunization method under industrial conditions.

2/2

DUDNIKOV, V.G.

12
12/2/73
12/2/73

12/2/73

OBTAIING AN INTENSE BEAM OF
H⁻ IONS FROM A DISCHARGE
IN CROSSED FIELDS

BY

YU.I. BEL'CHENKO, G.I. DIMOV AND V.S. DUDNIKOV
Bel'chenko, G.I.; Dimov, G.I.; Dudnikov, V.S. / 12/2/73

Translated (January 1973) from the Russian
Izvestiya Akademiya Nauk SSSR Seriya Fizicheskaya
No. 1, 1973, p. 100-102, 10 figs. Preprint
No. 66-77, Institute of Nuclear Physics,
Siberian Division of the Academy of Sciences
of the USSR, Novosibirsk (1972), 15 pages.

UNIVERSITY OF CALIFORNIA
LAWRENCE LIVERMORE LABORATORY
LIVERMORE, CALIFORNIA

Translated from Russian by

444 TRANSLATION International
Post Office Box 407
Washington, California 94082
(415) 885-1100

12/2/73

DUDNIKOV, V.G.

(M)

LA-72-73-1
Institute Leningrad Fiziki
Akademika Nauk SSSR, Sibirskoe
Otdelenie 1972
Preprint IIF 66-72

AE/LA IFR-73-1
Translated from the Russian

(3)

PRODUCTION OF AN INTENSE H⁻ ION BEAM FROM A DISCHARGE IN
CROSSED FIELDS

5/10/72 B-02/v

2-72/20/1

D-05/1

NY

by G.I. Bel'chenko, G.I. Dimov, V.G. Dudnikov

Original Title:

ПОЛУЧЕНИЕ ИНТЕНСИВНОГО ПУЧКА
ИОНОВ H⁻ ИЗ РАЗНИЦА В СКРЕЩЕН-
НЫХ ПОЛЯХ
Институт Ленинградских
Физиков, Отделение, Предprint
IIF 66-72, Новосибирск, 1972

Translated from:

Good Russian Physics
1972 6/10/72

Translated by Anna Yaker
Los Alamos Scientific Laboratory
December 1972

2328 - 22 - 18

USSR

UDC: 681.325.5

DUDNIKOV, V. I.

"Device for Addition of Numbers"

USSR Authors' Certificate No 251252, Filed 29 March 1968, Published 4 February 1970 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B218P, by N. V.)

Translation: The device suggested, containing two half adders and a logic circuit for development of carry signals, contains an additional half adder in each bit position in order to allow storage of the result of the operation directly in the adding device so as to combine the time of addition with the time of recording of the result of the operation. The first outputs of the AND circuit of the additional half adder are connected to the forward and inverse outputs of the half adder of the partial sum, while the second inputs of the AND circuit are connected to the forward and inverse carry code buses of the preceding digit, and the third inputs of the AND circuit are connected to the control bus. The output of the additional half adder is connected to the input of an OR circuit in the half adder of the result, the output of which is connected to the input of the OR circuit in the additional half adder. One illustration.

1/1

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USSR

UDC: 621.382.3

~~LUDNIKOV, V. P.~~, ZAYTSEV, B. D., PEREL'MAN, A. A., and SHVEDOV, Ye. Ye.

"Drift Time of MOS Transistors"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 13, No 11, 1970, pp 1358-1361

Abstract: it is asserted that data regarding the drift time of MOS (metal oxide semiconductor) transistors is rather exiguous although such data is important since the stability requirements of linear circuits involving such components are much stricter than present-day integrated digital circuits. This paper gives the results of measurements made of 40 MOS transistors, with induced p-channel, of either SiO_2 or Si_3N_4 films. Both these films were 0.17 μ thick. The parameter chosen for the drift time criterion was the increase in voltage applied to the gate corresponding to the ratio of the measured increment in the drain current to the transconductance of the transistor under measurement for a given drain current. A block diagram of the measuring equipment is shown. It was found, in the course of the measurements, that the drift time of the MOS with SiO_2 is fully reproduced even after the gate is deprived of its voltage. The results of an experiment performed on the basis of that fact indicated that the drift of the MOS transistor is basically caused by the migration of ions and the charge of the surface states.

1/1

USSR

UDC: 51

DUDNIKOV, Ye. Ye., RYBASHOV, M. V.

"Analog Computer Solution of Operational Production Control Problems"

V sb. Avtomaty, gibridn. i upravlyayushch. mashiny (Automata, Hybrid and Control Computers--collection of works), Moscow, "Nauka", 1972, pp 211-222 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V587)

Translation: Various problems of using analog computers for solving operational control problems are considered. Important in this regard are the accuracy of the solution, the maximum dimension of the problems solvable on standard analog computers, and the speed of obtaining the solution. Economic schemes are proposed for analog computer solution of certain problems. These schemes are based on the use of both general purpose and specialized analog computers. The paper gives the analog computer solution for two practical problems in operational control -- optimum compounding of liquid fuels, and optimum constitution of the raw material in a cement plant.

Authors' abstract

1/1

USSR

UDC: 51

DIDNIKOV, Ye. Ye. and RYBASHOV, M. V.

"Solving Operative Production Control Problems on an Automatic Computer"

Moscow, V sb. Avtomaty, gibriddn. i upravlyayushch. mashiny
(Automatons, Hybrid and Control Machines--collection of works)
1972, pp 211-222 (from RZh--Matematika, No 8, 1972, Abstract No
8V587)

Translation: Various problems in the use of automatic computers for solving operative control problems are considered. The important ones are the accuracy of the solution, the maximum dimensions of the problems solvable on standard automatic computers, and the rapidity with which the solution is obtained. Economic systems are proposed for solving vector problems on the computer, based on the use of general-purpose machines as well as special analog equipment. With the aid of the automatic computer a solution is given for two practical problems in operative control: the optimal compounding of liquid fuels, and the optimal makeup of raw-material mixtures for the refining section of a cement plant.
Authors' abstract

1/1

USSR

UDC 533.95

BEREZIN, Yu. A. and DUDNIKOVA, G. I.

"The Influence of Thermal Conductivity Upon the Structure and Critical Parameters of Shock-waves in Plasma"

Novosibirsk, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 2, March-April 1972, pp 8-14

Abstract: The results are presented of a numerical solution of the problem of the propagation of stationary and unsteady shock waves in cold rarefied plasma across a magnetic field in the presence of finite conductivity and electronic thermal conductivity, and a comparison is conducted with the results of a solution with thermal conductivity not taken into account. It is shown that at small Mach numbers ($M < 2.5$), the influence of thermal conductivity may be disregarded. For Mach numbers $2.8 \leq M \leq 3.3$, an isomagnetic density jump is obtained. Increasing the amplitude of the magnetic shield at the plasma boundary brings about destruction of the isomagnetic jump. The critical Mach numbers characterizing the shock wave are $M_* > 3.4$. 5 figures. 6 references.

1/1

- 7 -

Water Treatment

USSR

UDC 632.954.2:628.35

DUDNIKOVA, R. V., IOAKIMIS, E. G., KOVAL'CHUK, A. N.

"Biochemical Purification of the Waste Water from Pesticide Production"

Moscow, Khimicheskaya Promyshlennost', No 5, 1971, pp 340-344

Abstract: An industrially feasible system for effectively purifying the waste water from the production of some pesticides is outlined. It utilizes aeration and biochemical action to lower the biological consumption of oxygen rating from about 600 to about 20 mg of oxygen per liter. The process is currently in operation in a plant which produces 2,4,-dichlorophenoxyacetic acid, its esters and amine salts, copper trichlorophenoxide, hexachlorobutadiene, 2,4,5-trichlorophenoxyacetic acid, 2-methyl-4-chlorophenoxyacetic acid, and others.

1/1

1/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--PURIFICATION OF WASTE IN BIOFILTERS -U-
AUTHOR--(03)--SAYFUTDINOV, K.Z., IOAKIMIS, E.G., DUDNIKOVA, R.V.
COUNTRY OF INFO--USSR **D**
SOURCE--KHIM. PRGM. (MOSCOW) 1970, 46(1) 14-16
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--WASTE WATER CONVERSION, WATER PURIFICATION, FILTRATION

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1753 STEP NO--UR/0064/70/046/001/0014/0016
CIRC ACCESSION NO--AP0109714
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109714

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NEUTRALIZED AND FILTERED WASTE WATERS FROM VARIOUS PETROCHEM. PROCESSES (WITH A TOTAL BOD OF UP TO 500 MG-L.) WERE PURIFIED BY PASSING THROUGH A BIOCHEM. FILTER 2 M HIGH IN WHICH THE TOTAL BOD WAS REDUCED TO 16-80 MG O-L. AFTER 5 DAYS. THE BIOFILM IN THE UPPER LAYER OF THE FILTER CONSISTED OF ZOOGLDIA AND A DENSE NETWORK OF FUNGIN HYPHA; THE UPPER FILM CONTAINED DIFFUGIA AND CALLIDINE, WHILE FLAKES OF OOZE AS WELL AS NEMATODES AND PINNULARIA WERE FOUND AT A DEPTH OF 0.75 M AND EUGLYPHA WERE FOUND AT A DEPTH OF 1.45 M. THE MAX. OXIDN. CAPACITY OF A FILTER WITH A CROSS SECTION OF 25 TIMES 25 CM WAS 156 G O-(M PRIME3 DAY).

UNCLASSIFIED

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UDC: 539.4:621.81

GULIDOV, A. I., DUDOLALOV, A. S., NIKIFOROVSKIY, V. S., SERYAKOV, V. M.

"Effect of a One-Dimensional Slit in the Walls of Multilayered Cylindrical Structures on the Thermal State and on the Stressed and Deformed State"

V sb. Chisl. metody mekh. splosh. sredy. T. 2. No 5 (Numerical Methods of the Mechanics of a Continuous Medium--collection of works, Vol 2, No 5), Novosibirsk, 1971, pp 78-84 (from RZh-Mekhanika, No 7, Jul 72, Abstract No 7V871)

Translation: The paper discusses possibilities of a slit developing in an infinite two-layer tube, and the influence of the slit on the thermal and stressed state. The materials of the layers are isotropic, homogeneous and elastic. At time zero the tube has a given temperature and is free from stresses. Then the temperature of the medium inside the tube rises abruptly while the outside temperature remains at the initial value, and convective exchange takes place with constant heat-transfer coefficients. If the temperature expansion of the outside layer is greater than that of the inner layer, then radial tensile stresses arise and the layers may separate in the area of the joining. In the reverse

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GULIDOV, A. I. et al., Chisl. metody mekh. splosh. sredy. T. 2. No 5,
Novosibirsk, 1971, pp 78-84

situation a slit develops due to loss of stability of the inner shell from compressive stresses. The problem is numerically solved in the approximation of unconnected quasistatic thermoelasticity. Ideal thermal and tight mechanical contact is assumed on the boundary of the layers without a crack. The thermal resistance of the air gap is introduced at the crack, and its borders are freed from stresses. Examples of three pairs are considered: 1) W -steel, 2) W -copper, 3) W -graphite, where W is the inner layer. In examples 1 and 2 the compressive stresses rapidly change to tensile stresses and a slit (0.01-0.1mm) appears due to separation of layers in the sixth second (in example 1). In example 3, a slit (up to 2 mm) is formed by the abrupt change from loss of stability in the fifth second, and the inner layer quickly heats up. In example 1, inside, middle and outside radii of 100, 103 and 106 mm are assumed with the temperature inside the tube 10^3 °C, and the coefficient of heat transfer from the tube 10^3 kcal·m⁻²·hr⁻¹·deg⁻¹ ($1.16 \cdot 10^3$ W·m⁻²·K⁻¹).

M. S. Povarnitsyn.

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USSR

UDC 612.82/.83-053.6.796

TSONEVA, T. M., AL'OKHINA, G. F., DANYLYUK, V. P., and
DUDNYK, A. I., Laboratory of Age Physiology of Sports, and
Chair of Human Anatomy and Physiology, Odessa Pedagogical
Institute

"Shifts in the Functional Activity of the Central Nervous System
in Young Sportsmen"

Kiev, Fiziologicheskii Zhurnal, Vol 17, No 1, Jan/Feb 71, pp 33-
37

Abstract: The youths -- 11-12 years of age -- participating in
the investigations were divided into two groups, with group one,
the experimental group, consisting of young people engaged in
training for light athletics, and a control group consisting of
youths not engaged in sports except for exercises prescribed in
the school program. The reactivity of the central nervous system
in group one was determined by shifts in the bioelectric activity
of the cerebral cortex as recorded by the electroencephalograph
in the 1st, 5th, 10th, and 15th minute after a ten-second run
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TSONEVA, T. M., et al., Fiziologicheskiy Zhurnal, Vol 17, No 1, Jan/Feb 71, pp 33-37

at maximum tempo or exercises on a bicycle stand. The condition of the neurodynamics under conditions of muscular activity was assessed by shifts in the rapidity of development of sensori-motor reactions. The investigations established that the young athletes are able to endure physical loads greater than those endured by the young people not participating in light athletics, mainly due to activation of cortical structures and improved basic neurodynamic indexes. There is an improvement in the reactivity of the central nervous system permitting the performance of a maximum volume of physical activity at a moderate tempo, which also indicates the greater endurance of young sportsmen as compared with that of the control group.

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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. D
COUNTRY OF INFO--USSR
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/FRAME--1999/1228 STEP NO--UR/0076/70/044/003/0717/0719
CIRC ACCESSION NO--AP0123192
UNCLASSIFIED

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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

Acc. Nr.

AP0049830

Abstracting Service:
CHEMICAL ABST.

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Ref. Code

4R0035

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106748b Gas-chromatographic analysis of hydrogen chloride for trace impurities of organic substances. Dudorov, V. Ya.; Arinlov, N. Kh. (Sci. Res. Inst. Chem., Gorki State Univ., Gorki, USSR). *Zh. Anal. Khim.* 1970, 25(1), 162-5 (Russ). The sensitivity of the detn. of trace org. impurities in gaseous HCl is $(1-7) \times 10^{-3}$ vol. %. A column, 4 m long and 4.5 mm in diam., packed with 20% dimonyl phthalate on INZ-600 brick was used with N carrier gas at 2.7 l./hr. Gaseous HCl obtained by the reaction of H_2SO_4 and HCl (soln.) contains $(1-2) \times 10^{-3}$ vol. % of CH_4 , C_2H_6 , C_3H_8 , isobutane, and CH_2Cl_2 .

Chaim Weiner

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USSR

UDC: 539.4

DUDUKALENKO, V. V., IVANISHCHEVA, O. I., and LEGENYA, B. I.

"Effect of the Structure of Composition Material on its Elastic Characteristics"

Moscow, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 153-159

Abstract: The composition material considered in this paper is a microscopically heterogeneous elastic body with a given elastic modulus tensor. The bulk and shear moduli figuring in this tensor expression are assumed uniform and isotropic ergodic functions of the space coordinates, and the stress-deformation state of the material is described by Hooke's law, which connects the stress and deformation factors through the equations of equilibrium and the Cauchy relationships. The problem of this theoretical paper is to determine the limits of the elastic macroscopic characteristics of the material. To determine the limits of the shear modulus, the authors consider the uniform state of a pure shear of the material in which the phase regions are right circular continuous cylinders with parallel generatrices and arbitrary transverse cross sections. Here, it is assumed that the material is macroscopically uniform

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UDC: 539.4

DUDUKALENKO, V. V., et al, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 153-159

and transversally isotropic. The authors conclude that the assertion that not only the concentration and moduli of the components of the material but its internal geometry as well are valuable in determining its shear modulus, is confirmed.

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USSR

UDC 519.2

DUDUKALENKO, V. V., CHAN LAP

"Two Procedures for Solving the Problems of Oscillations with Random Parameters"

Tr. NII mat. Voronezh. un-ta (Works of the Scientific Research Institute of Mathematics of Voronezh University), 1972, vyp. 6, pp 14-16 (from RZh-Kiber-
netika, No 12, Dec 72, Abstract No 12V78)

No abstract

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USSR

UDC: 539.376+532.135

DUDUKALENKO, V. V., CHERNYSHEV, V. I.

"On the Theory of Unsteady Creep"

Tr. NII mat. Voronezh. un-ta (Works of the Scientific Research Institute of Mathematics, Voronezh University), 1970, vyp. 2, pp 100-108 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7V452)

Translation: In constructing a model of a body which has creep properties, it is assumed that total deformations ϵ_{ij} consist of elastic ϵ_{ij}^e and momentary plastic ϵ_{ij}^p deformations, and creep deformations -- ϵ_{ij}^v :

$$\epsilon_{ij} = \epsilon_{ij}^e + \epsilon_{ij}^p + \epsilon_{ij}^v$$

while the tensor of stresses σ_{ij} , which satisfies the equilibrium equations, is made up of two tensors:

$$\sigma_{ij} = T_{ij} + S_{ij}$$

It is assumed that

$$S_{ij} = \frac{\partial \psi}{\partial (\epsilon_{ij}^p + \epsilon_{ij}^v)}; T_{ij} = \mu \epsilon_{ij}^v; \dot{\epsilon}_{ij}^p = \lambda \frac{\partial f}{\partial T_{ij}}; \dot{\epsilon}_{ij}^v = \frac{\partial \psi}{\partial \sigma_{ij}}$$

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