USSR

KOPERNIK, G. R., ZOLOTNITSKIY, Yu. S., Raschet prostranstv. sistem v stroit. mekh., Saratov, Saratov University, 1972, pp 32-37

that the least square criterion for the deviation of the unfulfilled conditions on the contour from zero (or a given value) be used. In studying the deformations and forces in a square cylindrical hollow panel under the action of a uniformly distributed normal load and under boundary conditions for a movable hinged support, it was found that the best point of collocation in solving the problem in the first approximation is a point with the coordinates $x = y = 0.4164a$, where a is the size of sides with the coordinate origin in the center of the panel. The solution obtained is compared with the solution of the same problem by the Bubnov method when all boundary conditions are satisfied exactly. E. I. Sokolov.

USSR
[redacted], NESTEROV, P. V.

UDC: 681.32.001

"Singularities of Continuous Measurement of Parameters and Sorting of Cylindrical Magnetic Films"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 4(30), pp 185-193 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B139)

Translation: The paper deals with the problem of the comprehensive study of cylindrical magnetic films throughout the length of specimens. Problems of continuous measurement of static parameters are illustrated by the example of a stand for registering obliquity of the axis of anisotropy and magnetostriction. The experimental set-up is briefly described. It is shown that when the magnetostriction of magnetic films differs from zero, twisting deformation of a specimen leads to an additional rotation of the preferred axis of magnetization of the film, and this additional obliquity is a measure of the magnetostriction. A description is given of the block diagram of a stand for automatic sorting of cylindrical magnetic films by dynamic parameters. Five illustrations, bibliography of two titles. Resumé.
1/1

Mechanical Properties

USSR UDC 620.18

KOPETSKIY, CH. V., ORZHEKHOVSKIY, V. L., PASHKOVSKIY, A. I., AMOSOV, V. M., BOBKOVA, N. N., and PAVLOVA, YE. I., Moscow

"Influence of Carbon on the Mechanical Properties and Structure of Molybdenum Crystals"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 67-74

Abstract: The structure and properties of molybdenum crystals with orientation of the <110> <100> growth axes, containing 0.02 and 0.03 wt. % carbon, are studied in the 77-293°K temperature interval. A decrease in the carbon content within these limits causes a sharp increase in plasticity of the crystals, particularly at low temperatures, a decrease in the yield point, and a decrease in the dependence of yield point on test temperature, as well as more even distribution of dislocations and superior crystal structure. The strong dependence of yield point, relative elongation, relative reduction in area, and nature of rupture of crystals on the orientation of the rupture axis is confirmed.

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USSR

UDC 534-8

KOPETSKIY, CH. V., ROKHLIN, L. I., and SHKIROV, V. S.

"Effect of Fine Structure of Aluminum Single Crystals on the Attenuation of Elastic Ultrasonic Vibrations"

V sb. Mekhanizmy vnutr. treniya v poluprovodn. i metal. materialakh (Internal Friction Mechanisms in Semiconductor and Metallic Materials -- Collection of Works), Moscow, "Nauka," 1972, pp 83-88 (from RZh-Fizika, No 8, Aug 72, Abstract No 8Zh557 from authors' abstract)

Translation: A study was made of the attenuation of elastic vibrations of ultrasonic frequency (10Mhz) in aluminum (99.97%) single crystals as a function of their plastic deformation (1-27%) and as a function of the content of alloying additions of iron and silicon (0.03-0.9 wt.%). It was established that the attenuation coefficient is unaffected by slight degrees of deformation or alloying. With high degrees of deformation (9-27%) the attenuation coefficient increases sharply. Data on ultrasonic attenuation are compared with the results of a study of single-crystal fine structure by the methods of X-ray diffraction topography and electron-microscopy and

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KOPETSKIY, CH. V., et al., Mekhanizmy vnutr. treniya v poluprovodn. i metal. materialakh, Moscow, "Nauka," 1972, pp 83-88

discussed on the basis of the dislocation theory of attenuation and the theory of ultrasonic scattering by blocks by virtue of elastic anisotropy of the crystal lattice. Bibliography with 14 titles.

2/2

USSR UDC 669.27.-172

KOPETSKIY, CH. V., ORZHEKHOVSKIY, V. L., PASHKOVSKIY, A. I., and CHUZHKO, R. K., Moscow

"Influence of Carbon on the Structure and Mechanical Properties of Tungsten Single Crystals"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 124-129

Abstract: Although the literature contains a number of works dealing with the investigation of the mechanical properties of tungsten crystals, the influence of carbon on these characteristics has not as yet been studied in detail. This work presents a study of the influence of various quantities of carbon on the structure and mechanical properties of tungsten crystals, with unchanged content of other impurities. The structure and mechanical properties were studied in extension in the 77-473°K temperature interval, using tungsten crystals with orientation of the growth axis < 110 > and < 100 >, containing 0.01 and 0.001 wt. % C. A decrease in the carbon content in tungsten causes: a) an increase in the ductility of the tungsten crystals, particularly at low temperatures; b) a decrease in the yield point; c) a decrease in the dependence of the yield point on temperature; d) more even distribution of dislocations and enlargement of subgrains in the tungsten crystals. The strong dependence of yield point, necking down, relative

USSR

KOPETSKIY, CH. V., et al., Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 124-129

elongation, and nature of rupture of tungsten crystals on the orientation of the extension axis was confirmed.

Mechanical Properties

USSR

UDC 620.18

KOPETSKIY, CH. V., ORZHEKHOVSKIY, V. L., PASHKOVSKIY, A. I., AMOSOV, V. M., BOBKOVA, N. N., and PAVLOVA, YE. I., Moscow

"Influence of Carbon on the Mechanical Properties and Structure of Molybdenum Crystals"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 67-74

Abstract: The structure and properties of molybdenum crystals with orientation of the <110> <100> growth axes, containing 0.02 and 0.03 wt. % carbon, are studied in the 77-293°K temperature interval. A decrease in the carbon content within these limits causes a sharp increase in plasticity of the crystals, particularly at low temperatures, a decrease in the yield point, and a decrease in the dependence of yield point on test temperature, as well as more even distribution of dislocations and superior crystal structure. The strong dependence of yield point, relative elongation, relative reduction in area, and nature of rupture of crystals on the orientation of the rupture axis is confirmed.

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USSR

UDC 669.27.-172

KOPETSKIY, CH. V., ORZHEKHOVSKIY, V. L., PASHKOVSKIY, A. I., and CHUZHKO, R. K., Moscow

"Influence of Carbon on the Structure and Mechanical Properties of Tungsten Single Crystals"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 124-129

Abstract: Although the literature contains a number of works dealing with the investigation of the mechanical properties of tungsten crystals, the influence of carbon on these characteristics has not as yet been studied in detail. This work presents a study of the influence of various quantities of carbon on the structure and mechanical properties of tungsten crystals, with unchanged content of other impurities. The structure and mechanical properties were studied in extension in the 77-473°K temperature interval, using tungsten crystals with orientation of the growth axis < 110 > and < 100 >, containing 0.01 and 0.001 wt. % C. A decrease in the carbon content in tungsten causes: a) an increase in the ductility of the tungsten crystals, particularly at low temperatures; b) a decrease in the yield point; c) a decrease in the dependence of the yield point on temperature; d) more even distribution of dislocations and enlargement of subgrains in the tungsten crystals. The strong dependence of yield point, necking down, relative

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KOPETSKIY, CH. V., et al., Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 124-129

elongation, and nature of rupture of tungsten crystals on the orientation of the extension axis was confirmed.

UNCLASSIFIED

TITLE--PHASE EQUILIBRIUMS IN A MAGNESIUM, MANGANESE, ALUMINUM AND TIN SYSTEM -U-

PROCESSING DATE--18SEP70

AUTHOR-(02)-KOPETSKIY, CH.V., SEMENOVA, YE.M.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 221-3

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MAGNESIUM ALLOY, MANGANESE ALLOY, ALUMINUM ALLOY, TIN ALLOY, ALLOY PHASE SYSTEM, INTERMETALLIC COMPOUND, X RAY ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1981/0460

STEP NO--UR/0370/70/000/001/0221/0223

CIRC ACCESSION NO--AP0050477

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0050477

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SECTIONS OF THE ISOTHERMAL TETRAHEDRA WERE PLOTTED FOR 4 COMPONENT ALLOYS AT A CONST. CONTENT OF 5 WT. PERCENT AL, 1.5 WT. PERCENT MN, AND 0.5-8 WT. PERCENT SN. THE FOLLOWING PHASES ARE IN EQUIL. WITH THE ALPHA SOLID SOLN.: MN, MG SUB2 SN, MG SUB17 AL SUB12, AND THE ZETA PHASE OF THE BINARY AL-MN SYSTEM. THE MN PHASE HAS A CUBIC LATTICE AND IS FOUND IN MN RICH ALLOYS, AS ALPHA AND BETA MODIFICATIONS, BUT AT RELATIVELY LOW AL CONTENTS. IT CONSISTS OF GRAY REGULAR CRYSTALS. THE MG SUB17 AL SUB12 PHASE HAS A CUBIC STRUCTURE, IS WHITE, WELL DIFFERENTIATED FROM THE OTHER PHASES AND IS FOUND IN THE GRAINS AND AT THE GRAIN BOUNDARIES. THE MG SUB2 SN PHASE HAS A CUBIC LATTICE AND AN ANTI ISOMORPHOUS STRUCTURE OF THE FLUORSPAR TYPE. IT BECOMES BLACK ON ETCHING. THE ZETA PHASE HAS A BODY CENTERED CUBIC LATTICE AND CONSISTS OF IRREGULAR GRAY CRYSTALS WITHIN THE GRAINS. THE 400DEGREES ISOTHERMAL SECTION AT CONST. 5PERCENT AL INTERSECTS THE 1 PHASE VOL. OF THE ALPHA SOLID SOLN. BASED ON MG AND AT 200DEGREES, IT IS SUPERSATD. WITH AL. X RAY PHASE ANAL. CONFIRMED THE PRESENCE OF THE PHASES FOUND BY MICROSTRUCTURAL ANAL. BUT DID NOT REVEAL ANY NEW PHASES.

UNCLASSIFIED

USSR

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UDC 669.71

KOPETSKIY, CH. V., MARKOV, A. M., ORZHEKHOVSKIY, V. L., Moscow

"Deformation and Mechanical Properties of Ni- and Ti-Based Compositions Reinforced with Tungsten Wire"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, 1970, pp 70-78

Abstract: An experimental study is made of the effect of tungsten wire reinforcement, in various volumetric proportions, on the mechanical properties (deformation, hardening, rupture) of nickel- and tungsten-based compositions. Temperature effects are studied. Tables, graphs, and photographs accompany the article.

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1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SUBSTRUCTURE OF CRYSTALS STUDIED IN A CONVERGENT MICROBEAM -U-

AUTHOR-(03)-KOPETSKIY, CH.V., KLUYESKO, G.I., SHKIROV, V.S.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(4), 451-2

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--COPPER FOIL, CRYSTAL STRUCTURE, X RAY ANALYSIS, CRYSTAL LATTICE DISLOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0907 STEP NO--UR/0032/70/036/004/0451/0452

CIRC ACCESSION NO--AP0131493

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0131493
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD AND APP. ARE DESCRIBED FOR PHOTOGRAPHY OF SMALL REGIONS OF CRYSTALS WITH A CONVERGENT MICROBEAM OF WHITE X RADIATION. AN ANGULAR RESOLN. OF SIMILAR TO 5 PRIME IS ACHIEVABLE FOR THE ANGLE OF MISORIENTATION OF THE CRYSTAL BLOCKS. THE SIZE OF THE CRYSTAL BLOCKS, AS WELL AS THE D. OF DISLOCATIONS OF A GIVEN SIGN, CAN BE ESTD. THE METHOD WAS USED TO FOLLOW THE CHANGE OCCURRING DURING ANNEALING OF CU FOIL. THE MIN. BLOCK SIZE OBSD. WAS 3-5 MU, IN GOOD AGREEMENT WITH THE RESULTS OF METALLOGRAPHIC STUDIES.
FACILITY: INST. FIZ. TVERD. TELA, CHERNOGOLOVKA, USSR.

UNCLASSIFIED

USSR

ASLANOV, S. K., KOPEYKA, P. I.

"Gas Dynamics of Spin Detonation"

Tr. II Resp. Konf. po Aero-gidromekh., Teploobmenu i Massoobmenu. Sekts. "Aerodinamika Bol'sh. Skorostey" [Works of II Republic Conference on Aero-Hydromechanics, Heat Exchange and Mass Exchange. Section on "Aerodynamics of High Velocities"], Kiev University Press, Kiev, 1971, pp 186-191, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 B149 by O. K. Rozanov).

Translation: In contrast to existing models, a plan for the nucleus of spin detonation is suggested, the basic element of which is the finite front of self-sustaining detonation located between the following generalized configurations of shock-detonation discontinuities at its ends: binary with combustion in the direct self-sustaining wave and trinary with combustion in two waves (direct transverse self-sustaining and slanted supercompressed). The leading process in the propagation of detonation spin is considered to be the self-sustaining detonation front which accelerates the combustion products to the speed of sound relative to its leading edge, so that the rarefaction waves following it have no influence on the detonation front.

Generalization of the configurations arising at the ends of the primary detonation wave consists in supplementary introduction to the plan of intersection of the waves of the reaction fronts and the centered rarefaction wave.

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USSR

ASLANOV, S. K., KOPEYKA, P. I., Tr. II Resp. Konf. po Aero-gidromekh., Teploobmenu i Massoobmenu. Sekts. "Aerodinamika Bol'sh. Skorostey," Kiev University Press, Kiev, 1971, pp 186-191.

The problem of construction of the structure of detonation spin is solved under one additional condition: during propagation of spin detonation through the tube, due to the absence of a summary moment of external forces, the momentum should remain constant. In the planar case, this condition is reduced to the condition that the projection on the plane of the cross section of the summary momentum vector of the gas disappears in the area of the nucleus of spin detonation. The initial data for calculation used were the Mach number of the gas mixture and the slope of the trajectory of the trinary singular point to the transverse cross section.

The solution of the system of three transcendental equations with variable adiabatic indices formed was produced by a combination of the method of successive approximations with the coordination descent method. The results of calculation of the parameters of the spin detonation nucleus for a mixture of $2CO+O_2$, $2H_2+O_2$ and 6.7% C_2H_2+10% O_2+83.3% Ar are presented in a Table. Good correspondence is noted between calculated values of pressure in all areas of spin and experimental data produced by other authors. It is emphasized that the slope angle of the incident shockwave to the transverse cross section of

USSR

ASLANOV, S. K., KOPEYKA, P. I., Tr. II Resp. Konf. po Aero-gidromekh., Teploobmenu i Massoobmenu. Sekts. "Aerodinamika Bol'sh. Skorostey," Kiev University Press, Kiev, 1971, pp 186-191.

a tube was determined purely analytically for the first time. The values of slope agree satisfactorily with experimental data. 9 Biblio. Refs.

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USSR

ASLANOV, S. K., KOPEYKA, P. I.

UDC 534.222.2

"Problem of Constructing the Closed Theory of Spinning Detonation"

V sb. 3-y Vses. simpozium po goreniyu i vzryvu, 1971 (Third All-Union Symposium on Combustion and Explosion, 1971--collection of works), Chernogolovka, 1971, pp 200-202 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B131)

Translation: A two-dimensional model of detonation spin was constructed in the convolution plane of the inside surface of the detonation tube. It is proved that the requirements of the conservation laws are satisfied only by introducing a self-similar expansion wave into this model in addition to the system of compression shocks. The expansion wave is centered at the point of intersection of the shocks and directly follows the Chapman-Jouguet detonation. On the basis of this model, with the given initial state of the mixture, the axial propagation rate of the spinning detonation and the rotation frequency of the spinning detonation core, the angles of inclination of the shocks and other parameters of the two dimensional structure of the detonation wave are calculated. The calculated data are compared with the experimental data. Good comparison of these

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USSR

ASLANOV, S. K., KOPEYKA, P. I., 3-y Vses. simpozium po goreniyu i vzryvu, 1971, 1971 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B131)

data is indicated. A thermodynamic analysis is also performed for the combustion products behind the transverse wave, and the axial propagation rate of the detonation is calculated considering the dissociation of the combustion products and variation of the exponent of the adiabats in the compression shocks.

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USSR

UDC 534.222.2

ASLANOV, S. K., KOPEYKA, P. P., Odessa State University

"On Fulfillment of the Law of Conservation of Moment of Momentum in Spin Detonation"

Kiev, Dopovidi Akademiy nauk Ukrainskoy RSR, Seriya A. Fiziko-tekhnichni ta matematichni nauki, No. 9, Sep 71, pp 819-822

Abstract: Satisfaction of the law of conservation of moment of momentum is discussed for spin detonation proposed by the authors as a model of the nucleus that is an essentially generalized shock-detonation triple configuration. The generalization consists of introducing into the triple shock-detonation configuration a centralized rarefaction wave which follows the transverse detonation wave of Chapman-Jouguet. The additional use of the kinetic moment theorem made it possible to close the problem and determine theoretically the slope of the incident shock wave to the transverse cross section of the tube. A criterion for detonation yield was obtained for the spin regime. A computer calculation was made for the flow in the region of the triple point of the generalized shock-detonation configuration. All parameters of the gas flow

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USSR

ASLANOV, S. K., KOPEYKA, P. P., Dopovidi Akademiy nauk Ukrainskoy RSR, Seriya A. Fiziko-tekhnichni ta matematichni nauki, No. 9, Sep 71, pp 819-822

that were calculated are in good agreement with the results of B. V. Voytsekhoskiy, V. V. Mitrofanov and M. Ye. Topchiyan (Struktura fronta detonatsii v gazakh [Structure of the Detonation Front in Gases], Novosibirsk, Publishing House of the Siberian Department of the Academy of Sciences USSR, 1963). Especially good agreement was noted between the oscillograms and the pressures calculated theoretically.

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USSR

UDC 621.4/.6:533.6

KOPEYKA, P. I., ASLANOV, S. K.

"On the Condensation of Water Vapor in the Mixing Zone of Satellite Gas Flows of High Velocity and High Temperature"

Fiz. aerodispers. sistem. Mezhved. nauch. sb. (Physics of Aerodispersion Systems. Interdepartmental Scientific Collection), 1971, No. 4, pp 106-116 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B411)

Translation: The flow of gas from an axisymmetric nozzle of finite dimensions into a satellite gas flow using the simplified design of G. N. Abramovich excluding the transition segment is considered. A solution is found for the plane problem of turbulent mixing of satellite gas flows of high velocity and high temperature. An expression is obtained for the axial velocity in the problem of the turbulent mixing of a jet injected from a point source with the satellite gas flow. The solution of these problems is applied to the actual problem of the flow from a nozzle of finite dimensions into a satellite gas flow. The position of the source is at the point of intersection of the external boundaries of the initial segment. The region of turbulent mixing

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USSR

KOPEYKA, P. I., ASLANOV, S. K., Fiz. aerodispers. sistem. Mezhved. nauch. sb., 1971, No. 4 , pp 106-116

can be fully calculated on the basis of these formulas. The parameters for turbulent mixing that were found are applied to a calculation of the supersaturation function along the axis of the tube. Authors abstract.

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USSR

UDC 534.222.2

ASLANOV, S. K., KOPEYKA, P. I.

"Concerning the Characteristics of Detonation Spin Models in Different Hot Media"

V sb. Fiz. aerodispersn. sistem (Physics of Aerodispersion Systems -- Collection of Works), No. 5, Kiev, Kiev University, 1971, pp 101-106 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B222)

Translation: Theoretical models of two possible modes for detonation combustion in a spin regime are constructed on the basis of gasdynamic relationships in the plane of the involute of the inner surface of the tube. Models consist of the leading process of the transverse detonation front of Chapman-Jouguet of finite extent and of wave configurations adjoining the ends of the transverse front that were generalized by the authors. It is shown that additional combustion (more than the limiting combustion) in the oblique Mach wave of the trinary generalized configuration with the reflected wave as a transverse Chapman-Jouguet configuration leads to decay of this configuration with the formation of some other complex of waves and the formation of another stationary spin

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USSR

ASLANOV, S. K., KOPEYKA, P. I., Fiz. aerodispersn. sistem, No. 5, Kiev, Kiev University, 1971, pp 101-106

scheme. The magnitude of energy release in the oblique wave is strongly dependent on the composition of the mixture. A calculation of the parameters of the nucleus of the spin detonation is in good agreement with experimental data in the literature. 5 ref. Authors abstract.

2/2

USSR

UDC 532.517.4

KOPEYKA, P. I. and ASLANOV, S. K., Odessa State University imeni II Mechnikov

"On Turbulent Mixing at the Boundary of Adjacent High-Velocity, High-Temperature Gas Streams"

Kiev, Gidromekhanika, Akademiya Nauk Ukrainskoy SSR, No 21, 1972, pp 46-51

Abstract: Theoretical investigation of turbulent mixing of two semiinfinite high-velocity, high-temperature gas streams is performed. Compressibility is taken into account. Viscosity effects are neglected.

The analysis is based on the continuity equation and two energy equations. After several transformations the equations are put into the form of a Tollmin equation (21) and a differential equation (22), which are then solved using the boundary conditions.

The analysis results show that an increase of adjacent stream's velocity is equivalent to a decrease of its temperature and causes the decrease of the angle between the turbulent zone boundary and the line of contact.

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Biophysics

USSR

UDC 575.125-577.372.13.099

SHAKHBAZOV, V. G., KOTENKO, L. V., KOPEYKA, Ye. F., and NABOKOV, A. L., Khar'kov State University

"Changes in the Bioelectric Rest Potentials of Cells of Different Geno-types Under the Influence of High Temperatures"

Kiev, Tsitologiya i Genetika, Vol 4, No 4, Jul/Aug 70, pp 352-355

Abstract: It was previously established by the authors that there is a relationship between genetic differences in hybrid and inbred organisms and the bioelectric properties of their cells. It was also found that heterosis hybrid forms exhibited an increased resistance to the effects of high temperatures. In the present study, the effects of temperatures in the 40-50°C range on the cellular and surface bioelectric rest potentials (BERP) of hybrid and inbred corn seedlings were studied. After exposure of the seedlings to such temperatures for 10-20 min, the negative values of cellular and surface BERP decreased on the average from -80 to -20 mV and from -50 to +10 mV, respectively. The BERP values changed less for hybrids than for inbred plants, a fact which confirms the greater resistance of hybrids to high temperatures.

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UDC: 681.325.65

PRANCISHVILI, I. V., POPOVA, G. M., USKACH, M. A., FETISOVA, E. V., MOSKOV, B. A., RUDERMAN, L. Z., KOPEYKIN, G. A., Institute of Automation and Remote Control (Technical Cybernetics)

"An Element of Homogeneous Structure"

USSR Author's Certificate No 287115, filed 11 Mar 69, published 18 Feb 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B169 P)

Translation: Elements are known which can be used as cells of homogeneous structure in addition to other applications. A multifunctional element used as a cell of homogeneous structure has the disadvantage that only the outputs are commutated in such an element, and the logic inputs are not commutated. This limits its functional possibilities: e. g., the cell cannot be used for high-speed homogeneous structures with feed-through current lines through which signals propagate with practically no delay (bus structures). For coupling to the lines, the cells must have commutatable inputs and outputs: i. e., they must receive signals from the line and transfer signals to the line. In addition, in the case of external interference the information must be periodically transferred to the cell flip-flops to correct

USSR

PRANGISHVILI, I. V. et al., Soviet Patent No 267115

failures which may occur. In a multifunctional logic circuit in the multiple-transfer mode, all flip-flops are preset to the zero state each time, regardless of the presence of failures. This interrupts the function being realized by the structure each time, which is a considerable disadvantage of the logic circuit. The purpose of this invention is to extend the functional possibilities and increase the speed of the homogeneous structure. In the proposed element, this purpose is achieved by redistributing the control circuit between the inputs and outputs of the element without increasing the total number of components: i. e., some of the inputs and outputs are made commutatable, and some are not. Only the commutatable inputs and outputs are used in connecting the element to the lines. In connecting the elements to one another, the noncommutatable inputs of one element are connected to the commutatable inputs of the other, and vice versa. Thus between any elements of the structure (between adjacent cells or between the cells and the lines) a controllable data transmission channel is formed which may be switched on or off depending on the debugging code. The circuit for setting and resetting the flip-flops is made in such a way that when information is being transferred, the flip-flops are set immediately to a predetermined state without presetting to the zero state in order to correct failures. This procedure makes it possible to use a logic cell in high-

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USSR

[illegible], I. V. et al., Soviet Patent No 287115

-speed bus structures, as well as to improve the interference suppression of the structure by means of multiple transfer. One illustration.

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USSR UDC 681.3.056

PRANGISHVILI, I. V., POPOVA, G. M., USKACH, M. A., FETISOVA, S. V., MOSKOV, B. A., RUDERMAN, L. Z., KOPEYKIN, G. A., Institute of Automation and Remote Control (Technical Cybernetics)

"An Element of Homogeneous Structure"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 35, Soviet Patent No 287115, class 21, filed 11 Mar 69, published 19 Nov 70, pp 62-63

Translation: This Author's Certificate introduces an element of homogeneous structure which contains AND, OR, AND-NOT and NOT circuits, flip-flops, commutated inputs, noncommutated inputs, and inputs for horizontal and vertical tuning lines. As a distinguishing feature of the patent, the functional possibilities of the element are extended and the speed of the homogeneous structure is increased by connecting the inputs of the AND circuits for setting the flip-flops to one, to the horizontal and vertical tuning lines, while the inputs of the AND circuits for setting the flip-flops to zero are connected to the horizontal tuning lines, and through the NOT circuits to the vertical tuning lines. The outputs of the first two flip-flops are connected to the inputs of the OR circuits, which are

USSR

PRANGISHVILI, I. V., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 35, Soviet Patent No 287115, class 21, filed 11 Mar 69, published 19 Nov 70, pp 62-63

also connected to the commutated inputs of the element. The outputs of these OR circuits are connected together with the noncommutated inputs of the element through an AND circuit to the input of a "mod 2 addition" circuit. Also connected to this addition circuit are the outputs of a third flip-flop. The outputs of the remaining flip-flops are connected to AND-NOT output circuits, whose inputs are also connected to the output of the "mod 2 addition" circuit and through a NOT element to one of the outputs of the structure element.

USSR

ABIBOV, A. L., et al., Mekhanika Polimerov, No 1, Jan-Feb 73, pp 162-164

of prehardening of the fiberglass strip is presented. Five figures, three bibliographic references.

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JPRS 59268

6-73

3

VIII-12. INTERRELATION BETWEEN THE GROWTH CONDITIONS, THE MORPHOLOGY AND CERTAIN ELECTROPHYSICAL PROPERTIES OF BiI_3 SINGLE CRYSTALS

[Article by D. I. Bletskan, I. A. Cryadikh', I. F. Kopinets, Uzhgorod; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 114]

Single BiI_3 crystals were obtained from the gas phase under various temperature conditions. Depending on the manufacturing conditions, differences in their morphology and electrophysical properties are clearly observed in the investigated crystals.

A study was also made of the effect of various impurities (Bi, I, Te) on the growth conditions of the crystals and some of their electrophysical parameters.

The morphology of the crystals was investigated using metallographic and electron microscopes. Among the electrophysical properties of BiI_3 crystals studied were the conductivity, the thermally stimulated conductivity, photo conductivity and photoluminescence.

A defined correlation was established between the growth conditions of the real structure of the crystals and some of their electrophysical properties which offers the possibility of growing crystals with properties given in advance.

KOPINETS, I.F.

USSR

UDC 541.13.183

KOPINETS, I. F., KOVACH, Ye. T., MIKULANINETS, S. V., RUBISH, I. D., and CHEPUR, D. V., Uzhgorod University

"Effect of Adsorption on Electrical and Photoelectric Properties of CdS_xSe_{1-x} Thin Films"

Tomsk, Izvestiya VUZ, Fizika, No 4, 1970, pp 41-44

Abstract: The effect of adsorption (as one of the factors effecting the state of the surface of thin films) of oxygen, water vapors, benzene, ethyl alcohol, and acetone on the electrical and photoelectric properties of a solid solution of CdS_xSe_{1-x} thin films was investigated. Experiments showed that the effect of adsorption on conductivity is a function of the thickness of the film, increasing as the thickness decreases. The adsorption kinetics also depends on the thickness of the layer: the thinner the layer, the more rapidly adsorption-desorption equilibrium occurs. Adsorption kinetics as a function of temperature was also noted: the rate of adsorption increases with temperature, probably indicating activated adsorption. The photocurrent and dark current increase under the absorption of oxygen and decrease under the absorption of benzene, acetone, ethyl alcohol, and water. The following explanation is given for these

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401430007-1"

USSR

KOPINETS, I. F., et al, Izvestiya VUZ, Fizika, No 4, 1970, pp 41-44

results: the increase in the thermoelectron work function under chemisorption of oxygen indicates that the chemisorbed oxygen is bonded with a "strong" n-bond or acceptor bond with the surface of the samples. Adsorption of benzene, acetone, ethyl alcohol, and water leads to a decrease in the thermoelectron work function, which fact is explained by their chemisorption of the "strong" p-bond type. This chemisorption leads to a charging on the surface for the positive charge and to a bending of the zones downward in the region near the surface, which condition leads to a decrease in the thermoelectron work function under chemisorption. These results are said to agree with the electron theory of catalysis of Vol'kenshteyn and with experimental results previously obtained by the authors.

2/2

USSR UDC 669.12-154.046.5:669.717

VLADIMIROV, L. P., and KOPITSA, N. M., Kommunarsk Mining Metallurgical Institute

"Theoretical and Experimental Determination of the Deoxidizing Ability of Aluminum by the Newest Investigation Methods"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 11, 1971, pp 18-22

Translation of Abstract: The interaction of Al and O_2 dissolved in liquid Fe was investigated in the 1,550-1,650 °C temperature interval. A new single-step method was applied for the calculation of the equilibrium by using the thermodynamic functions M and N which take into account the process of smelting Al, the dissolution of O_2 in Al and liquid Fe, and the effect of concentrations of reacting media. Parallel with it $\lg K$ was determined experimentally by the electromotive force method with measurement of the temperature and sampling of the metal for analysis. Calculated and experimentally derived values of the deoxidizing ability of Al are compared with investigation results of Soviet and non-Soviet authors. The new theoretical method and the emf method are reliable means for determining the thermodynamic principles of the metal deoxidation process. Four illustrations, two tables, five biblio. refs. 1/1

USSR UDC 538.113

LARIN, G. M., SOLOZHENKIN, P. M., DYATKINA, M. Ye., and KORIKOVA, N. I., Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of Sciences USSR, and Institute of Chemistry Academy of Sciences TadzhSSR

"Study of the Superfine Structure of Ligands of Complexes in EPR Spectra. Communication V. Investigation of Divalent Copper Dithiophosphinates and Dithiophosphates"

Moscow, Zhurnal Strukturnoy Khimii, Vol 12, No 1, Jan-Feb 71, pp 26-33

Abstract: EPR spectra were taken of copper (II) diethyldithiophosphinate (I), diethyl dithiophosphate (II), and dixylyl dithiophosphate (III). It has been shown that the radical bound to the phosphorus atom has a characteristic effect on EPR spectra. The spinhamiltonian parameters of (I) differed from those of (II) and (III) [they were identical for (II) and (III)], leading to the conclusion that this difference was due to the change in the immediate area surrounding the phosphorus atom. On the basis of experimentally determined values for g-factors, SFS constants, and ΔE, the MO coefficients were calculated and reported. The mechanism of the effect of the radical on the axial-symmetric spin-hamiltonian is discussed.

1/1

USSR UDC 538.113 + 541.49 + 661.718.1 + 546

SOLOZHENKIN, P. M., KOPITSYA, N. I., and GRISHINA, O. N., Institute of Chemistry, Academy of Sciences TadzhSSR

"EPR of the Divalent Copper O-Alkyl Alkyldithiophosphonate Solutions"

Moscow, Zhurnal Strukturnoy Knimii, Vol 12, No 1, Jan-Feb 71, pp 167-170

Abstract: Complexes between divalent copper and O-alkyl alkyldithiophosphonates (I) were obtained by treating copper sulfate in aqueous solution with the appropriate phosphonic acid in organic solvents. When the complexes were studied in different solvents at room temperature, no effect was noted on the EPR spectra. The superfine structure and complimentary superfine structure from the interaction of copper and phosphorus atoms was analyzed and contrasted with the structures of dithiophosphates and dithiophosphinates. Considerable dislocation of the unpaired electron is observed in (I) which results in the interaction with P^{31}. The bonding to copper is of a covalent character.

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UDC: 541.183

USSR

GURFEYN, N.S., DOBYCHIN, D.P., KOPLIYENKO, L.S., All-Union Scientific Research Institute of Petrochemical Processes, Leningrad, State Committee for the Fuel Industry USSR

"Computation of the Increase in Adsorption Energy in Pores of Molecular Dimensions for the Model Case of Nonspecific Nonlocalized Adsorption"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 3, Mar 70, pp 741-746

Abstract: A method is proposed for calculating the energy of nonspecific adsorption in pores of molecular dimensions for an idealized model, and the corresponding computer calculations and solutions are given. The picture of change in the shape of the potential curves is followed as the size of the pores approaches that of the molecules. It is shown that the bottom of a potential well shifts as a result of a change in adsorption energy, as well as a change in the distance of the molecule from the wall. A conclusion is drawn on the possibility of effects of apparent reduction in the pore volume and nonhomogeneity of pore dimensions when the molecular probe method is used. It is noted that the calculated value of the maximum energy in pores of molecular dimensions coincides satisfactorily with the experimentally observed values. The effect which nonhomogeneity of pore distribution with respect to size has on the integral energy of nonspecific adsorption on molecular sorbents is studied.

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12

UDC: 632.95

USSR

KABACHNIK, M. I., MASTRYUKOVA, T. A., SHIPOV, A. E., ANDRIANOVA, L. V., VARSHAVSKIY, S. L., and KOPMAN, L. P.

"A Method for Preparing N-Acyl-S-(o-Alkylmethylthiophosphonyl) Cysteine Ester Derivatives"

USSR Author's Certificate No 253063, filed 18 July 68, published 3 Apr 70 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N650 P by G. V. Kusnetsova)

Translation: The indicated substances with the general formula ROPMe(S)SCH_2-$CH(NH\text{-}COR')COOR''$ (I) (R, R' and R'' = alkyls) are obtained from the reaction of ROPMe(S)Cl with $HSCH_2CH(NHCOR')COOR''$ in an organic solvent medium in the presence of an HCL acceptor. A solution of 1,7 g of iso-PrOPMe(S)Cl in 10 ml of absolute C_6H_6 is added to a solution of 2 g of $HSCH_2CH(NHAc)COOEt$ and 1,1 g of Et_3N in 50 ml of absolute C_6H_6 in an inert gas atmosphere while being mixed. The mixture is stirred for 1 hour at 20-5° and then at 50-5°. The precipitated Et_3N hydrochloride is filtered off and the filtrate washed with cold 2% Na_2CO_3 solution and water. The solution is evaporated and by chromatography on SiO_2 (hexane-acetone 3:2) 1.38 g (42.2%) of I (R=iso-Pr, R'=Me,

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KABACHNIK, M. I., et al, USSR Author's Certificate No 253063, filed 18 July 68, published 3 Apr 70 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N650 P by G. V. Kusnetsova)

R"=Et), $C_{11}H_{22}NO_4PS_2$, is obtained. The next I (R'=Me; R, R", yield in %, d_4^{20}, and $n^{20}D$ are given) is prepared in a similar fashion: Me, Me, 42.6, 1.2446, 1.5296; Me, Et, 48.7, 1.2068, 1.5210; Me, iso-Pr, 66.8, 1.1694, 1.5108; Et, Me, 40.5, 1.2041, 1.5152; Et, Et, 51.5, 1.1780, 1.5138; Et, iso--Pr, 23.5, 1.1608, 1.5082; Pr, Me, 54.4, 1.1948, 1.5151; Pr, Et, 38.3, 1.1477, 1.5050; Pr, Pr, 45.2, 1.1497, 1.5140; Pr, iso-Pr, 1.1490, 1.5069; iso-Pr, Me, 45, 1.1560, 1.5029; and iso-Pr, iso-Pr, 22.5, 1.1506, 1.4990. I can be used as physiologically active substances and as intermediate products in organic synthesis.

USSR

UDC 621.791.756.011

KOPMAN, YA. YU., NOVIKOV, YU. K., and CHERNENKO, I. A. (Electric Welding Institute imeni YE. O. PATON, Academy of Sciences Ukrainian SSR)

"Characteristics of Electrode Metal Transfer in Slag Welding With a Titanium Electrode of Large Cross Section"

Kiev, Avtomaticheskaya svarka, No 4, Apr 72, pp 29-30

Abstract: The objective of the study was to determine the effect of plate electrode feed rate, voltage, and slag bath depth on the transfer rate and the dimensions of electrode metal droplets. The base metal involved in the study was VT1 alloy with a 40-mm edge thickness, and the plate electrode metal was from the same titanium alloy and measured 35 x 8 mm in cross section. AN-T4 flux was used for preparing the slag bath. The optimum plate electrode feed rate for refining the weld metal is shown to be at about 4.2 m/hr. The nature of metal transfer in plate-electrode welding is governed primarily by the interphase tension at the droplet-electrode boundary and the force of gravity. (1 illustration, 2 bibliographic references)

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USSR

UDC 621.396.6-181.48

KOPNIN, YU. I. and KHODZHAYEV, K. F.

"Generators With Nanosecond Fronts for Dynamic Studies of Integrated Circuits"

Sb. nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection of Scientific Works on Problems in Microelectronics. Moscow Institute of Electronics Technology), 1972, vyp. 10, pp 182-187 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 V220)

Translation: The authors study two generator circuits based on a multivibrator with a time allotting capacity in the emitter circuit and in the shaper circuit. The generators are based also on current switches for the dynamic study of high speed, digital, integrated DTL, TTL, ECL, E2SL type circuits. Resume.

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Acc. Nr. AP0048379 Abstracting Service: INTERNAT. AEROSPACE ABST. 5-70 Ref. Code: UR0293

A70-24304 # Approximate analysis of a class of single-impulse orbital transfers with allowance for the finite time of the thrust action (Priblizhennyi analiz odnogo klassa odnoimpul'snykh perekhodov mezhdu orbitami s uchetom konechnogo vremeni deistviia tiagi). Iu. M. Kopnin. *Kosmicheskie Issledovaniia*, vol. 8, Jan.-Feb. 1970, p. 19-25. 8 refs. In Russian.

Minimization of the characteristic velocity of a single-impulse transfer between coaxial coplanar elliptical orbits, taking into account the finite time of the thrust action. Assuming that the powered section of the trajectory is of small length, an approximate solution is obtained which describes a given change in the geometrical shape and angle of rotation of the orbital plane. The angular displacement of the line of apsides on the powered section of the trajectory, which requires an additional small increment of the characteristic velocity for a correction in the plane of the final orbit, is determined. A comparison is made between the approximate solution and a solution calculated on a computer. A.B.K.

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REEL/FRAME
19800087

UDC 539.374

USSR

KOPNOV, V. I., YAKOVLEV, V. I.

"Evaluation of the Susceptibility of Materials to Damage Under a Load With the Aid of Ultrasonic Waves"

V sb. Issled. i kontrol' mekhanich. svoystv materialov nerazrushayushch. metodami (Study and Control of the Mechanical Properties of Materials by Nondestructive Methods -- Collection of Works), Vologograd, 1972, pp 144-147 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V504)

Translation: It is proposed that one can evaluate the buildup of susceptibility to damage in the loading process with the aid of ultrasonic waves by determining their absorption coefficient at different frequencies, using the UDM or DUK-6 instruments. The intensities of ultrasonic waves were determined before (f_0) and after (f) their passage through the material. A nomogram was constructed for the calculations in which the values of the absorption coefficients of the ultrasonic waves were represented as a function of the ratio f/f_0 for different thicknesses of the material being studied. Samples of AMG-6 aluminum alloy was studied that were deformed by stretching in the temperature range 20-500°. The change in the damping coefficient α as a function of the degree of deformation and the temperature was studied. It was shown that this

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USSR

KOPNOV, V. I., YAKOVLEV, V. I., Issled i kontrol' mekhanich. svoystv materialov nerazrushayushch. metodami, 1972, pp 144-147

relationship is considerably nonlinear. There is a particularly strong increase in α in the temperature range 280-500°, which is associated with the formation of defects in the form of pores along the grain boundaries. Yu. V. Suvorova.

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USSR

UDC 669.71.017:539.43.01

STEPNOV, M. N., MIKLYAYEV, P. G., KOPNOV, V. I., KALUGINA, A. A., and FOMIN, K. N.

"The Effect of Structural Microinhomogeneity on the Fatigue Resistance of the D1 Alloy"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970, pp 42-49, resume

Translation: A method is suggested for the quantitative rating of the microstructure of aluminum alloys by the inhomogeneity of the microplastic deformation. The relation between the inhomogeneity factor of microplastic deformation and the fatigue resistance of rods and stampings of the D1 alloy is demonstrated. Seven figures, one table, four bibliographic reference.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PHASE DIAGRAM OF A REFRIGERANT AQUEOUS SALT SOLUTION SYSTEM -U-

AUTHOR-(03)-KOSTYUK, V.I., KOPOSOV, V.N., CHEPTSOV, A.S.

COUNTRY OF INFO--USSR

SOURCE--KHOLOD. TEKH: 1970, 47(1), 34-5

DATE PUBLISHED--------70

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

TOPIC TAGS--PROPANE, SODIUM CHLORIDE, AQUEOUS SOLUTION, REFRIGERATION SYSTEM, EUTECTIC TEMPERATURE, PHASE DIAGRAM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0527 STEP NO--UR/0066/70/047/001/0034/0035

CIRC ACCESSION NO--AP0126275
UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126275

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EQUATIONS ARE PRESENTED FOR DETG. THE HYDRATE EUTECTIC TEMP. WHICH WITH EXISTING RELATIONS CAN BE USED TO FIND THE POINTS OF THE COMPLETE PHASE DIAGRAM OF REFRIGERANT AQ. SALT SOLN. SYSTEMS. THE PROPANE NACL SOLN. SYSTEM IS USED AS EXAMPLE.

FACILITY: VSES. NAUCH.-ISSLED, PROTEK.-KONSTR. NEFTEKHIM. INST. USSR.

UNCLASSIFIED

KOPP, I. Z.

JPRS 59266

12 June 1973

UDC: 621.313.12:538.4:5[illegible]

THERMODYNAMIC CYCLES OF ATOMIC POWER PLANTS WITH MHD-GENERATORS

[Article by V. L. Dekhtyarev, V. N. Khaloydzhi, Yu. V. [illegible], and I. Z. Kopp, Moscow, Teplofizika Vysokikh Temperatur, Russian, Vol 11, No 2, 1973, pp 385-389]

The possibility in principle of achieving high temperatures of the coolant in high-temperature gas-cooled reactors leads to a need for investigation of the prospects of use of gaseous MHD-generators at atomic power plants [1-3]. The first stage in solving this task is the selection of very rational thermodynamic cycles.

Usually considered are temperature levels insufficient to obtain the thermal ionization needed to assure electric conductivity of the working medium. Therefore MHD-generators based on non-equilibrium plasma are primarily investigated.

To create the necessary electric conductivity the coolant pressure at the reactor outlet must be lower than the optimal from the point of view of the planning of the reactor, the compressor and the heat exchangers.

In the present work helium with an ionized additive at a pressure of 1.0 mn/m^2 and temperatures of 2000, 2200 and 2500°K was taken as the working medium of the MHD-generator. When argon is used its pressure in the reactor can be increased to 3.0-4.0 mn/m^2 [3]. However, because of heat-transfer properties much worse than those of helium, the increase of pressure does not lead to reduction of the heat-exchange surfaces.

A thermodynamically very simple cycle with an MHD-generator can be organized much like the cycle of a closed-cycle gas-turbine power plant, in which an MHD-generator is included in place of the gas turbine. In such a cycle the power regeneration factor $\varnothing$ - Q_{reg} [4] has high values. Therefore to

AA0044791 - KOPP L.N. UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 2/70

243222 SUPERSONIC DIFFUSER FOR A WIND TUNNEL provides more versatility by making use of interchangeable revolving sections formed in a drum and cooled by a common supply of water. In the diagram, the diffuser consists of inlet and outlet portions 1,2, with the centre sections 3 built into drum 4 and forming the working tract. To allow for thermal deformation, the section 3 is fastened to the front end 5 of drum 4 with the bellows connector 6. Each section 3, in the working position, is sealed to parts 1,2 by means of an annular plunger on each of its ends, provided with a rubber O-ring packing and forced against the mating end surface of 1 or 2 by a diaphragm in an annular intensifier chamber fed with compressed air. 18.12.67 as 1204562/40-23.L.N.KOPP et al.(24.9.69) Bul 16/5.5.69. Class 42k. Int.Cl.G 01m.

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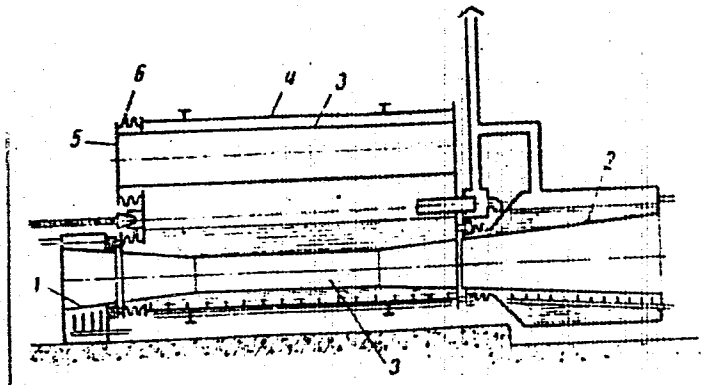

AUTHORS: Kopp, L. N.; Kuleshov, V. I.; Mezhirov, I. I.; Safronov, L. A.

2/2

19771614

1/2 040 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--REDISTRIBUTION OF COMPONENTS IN SOLID SOLUTIONS STUDIED BY X RAY SPECTRAL MICROANALYSIS AND ELECTRON MICROSCOPY -U-

AUTHOR-(05)-KIYEVSKAYA, N.KH., KOPP, L.P., BRUK, B.I., NYRKOVSKAYA, V.V., KOROLEVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL METALLOVED. 1970, 29(2), 409-13

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRON MICROSCOPY, SOLID SOLUTION, TRACE ANALYSIS, CRYSTAL LATTICE, ALUMINUM ALLOY, IRON ALLOY, COPPER ALLOY, GRAIN BOUNDARY, SURFACE ENERGY, X RAY SPECTRUM, MOLYBDENUM CONTAINING ALLOY, TUNGSTEN CONTAINING ALLOY, TIN CONTAINING ALLOY, COPPER CONTAINING ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0324 STEP NO--UR/0126/70/029/002/0409/0413

CIRC ACCESSION NO--AP0126081

UNCLASSIFIED

2/2 040 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0126081

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING 6 ALLOYS WERE INVESTIGATED: FE PLUS 0.75PERCENT CU; FE PLUS 8.25PERCENT MO; FE PLUS 7.63PERCENT W; CU PLUS 1.78PERCENT FE; CU PLUS 11.2PERCENT SN; AND AL PLUS 2.1PERCENT CU. THE SAMPLES WERE SUBJECTED TO HIGH TEMP. DIFFUSION ANNELAING, THEN TO SEOCNDARY ANNEALING AND QUENCHING. IN ALLOYS QUENCHED FROM THE HOMOGENEOUS REGION THE GRAIN BOUNDARIES ARE MARKEDLY ENRICHED WITH THE SECONDARY COMPONENT AS COMPARED TO THE INTERNAL VOL. OF THE GRAINS. THE EXTENT OF THIS ENRICHMENT, AS A RULE, INCREASES AS THE ALLOY IS CLOSER TO THE SOLY. LIMIT. THE CONCNS. OF THE COMPONENTS AT THE GRAIN BOUNDARIES IN THE ABSENCE OF PPTS. OF THE SECONDARY PHASE ALMOST ALWYAS WXCEEDS THE LIMITING SOLY. OF THE ELEMENT (WHEN FAR REMOVED FROM THE SOLY. LIMIT), THIS POINTS TO THE FORMATION OF AT. GROUPS ALONG THE GRAIN BOUNDARIES. THE NONREPRODUCBILITY OF THE RESULTS ATTESTS TO THE NONUNIFORM DISTRIBUTION OF THE ELEMENT ALONG THE GRAIN BOUNDARIES. THE REASON FOR THIS MUST PROBABLY BE TRACED BACK TO THE DIFFERENCE IN THE MUTUAL ORIENTATION ANGLE OF THE CRYST. LATTICES AT VARIOUS POINTS OF THE TOUCHING GRAINS. WHEN THIS ANGLE IS 45DEGREES, THE FREE SURFACE ENERGY IS AT ITS MAX., AND THE POINT CONCN. OF THE ELEMENT IS THE MOST PROBABLE. ON THE OTHER HAND, AT THOSE POINTS WHERE THE ANGLE IS CLOSE TO 0 OR TO 90DEGREES, THE FREE SURFACE ENERGY IS AT ITS MIN. AN ATTEMPT IS MADE TO EXPLAIN THESE ANOMALIES.

FACILITY: SEV.-ZAPAD. ZAOCH. POLITEKH. INST., LENINGRAD, USSR.

UNCLASSIFIED

KOPPA, Yu. V.

JPRS 55818

27 April 1972

UDC: 62-50.23

A METHOD OF MATHEMATICAL MODELING OF COMPLEX ECOLOGICAL SYSTEMS

[Article by P. G. Lymkhynko, Yu. V. Koppa, M. M. Todua, and G. Fetrake: Kiev. Avtomatika, Ukrainian, No 4, 1971, pp 49-54]

Problem Statement for Modeling of the Water Ecological System

Automatic control-computer centers will be created in the near future which will be coupled by means of telemetering systems with sensors operating as control elements of conditions in water reservoirs. Since water reservoirs will be objects of automatic control the mathematical modeling of the ecological system of water reservoirs becomes increasingly necessary.

An attempt is made below to apply to this purpose a new approach of an heuristic self-organization where instead of differential equations particular use is made of nonlinear equations of higher power in finite differences (a "polynomial description"). This approach is more adequate for simulation of problems of complicated processes and it is capable of producing not only qualitative but accurate estimates of variables.

Models which were constructed until present are applicable only to a qualitative investigation of processes as it is stated by the authors of these models. For example, in [2] where the best determined model has been described one can read: "Investigation results of the created model of the water ecosystem may be considered only from the qualitative standpoint, more work is necessary in order to obtain valid qualitative data." In contrast to this the authors of the present paper claim that their mathematical model produces in addition to qualitative also valid quantitative estimates.

Accuracy of Simulating Complicated Objects Requires Increased Complexity of Mathematical Description

There is a definite inconsistency between the complexity of mathematical simulation and the simplicity of the apparatus utilized for this purpose. Until present the simulation was performed either by determined methods (based on investigation of simple differential equation, for example, linear equations of convective diffusion), or statistical methods of ordinary regression

USSR

UDC 51:155.001.57:612.82

KOPPA, Yu. V.

"Self-Organizing Extremal Control System Using Method of Group Consideration of Arguments"

Tekhn. Kibernetika, Vyp. 2, [Engineering Cybernetics, No 2--Collection of Works], Kiev, 1970, pp 6-22, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V690 by E. Vagner).

Translation: Optimal control of an object requires that the data of normal operation be used to determine the coefficients of the equations of the dynamics and statics of the object.

The deterministic approach, based on analysis of the "inputs" and "outputs", is suitable only for solution of comparatively simple problems. Solutions of more complex problems requires another, new approach, called self-organization, and the algorithms of heuristic self-organization are more adequate for solution of complex problems. The systems (or programs) of heuristic self-organization are defined as those which include generators of random combinations (or hypotheses) and several series of threshold self-selectors for useful information. The method of group consideration of arguments contains random combination generators and threshold selectors using various heuristic criteria. This method requires replacement of the full description of the quantity being regulated with a set of "partial" descriptions, in which the intermediate variables produced in the (k-1) th series of selection are used in the kth series of selection. The

UDC 51:155.001.57:612.82

USSR

KOPPA, Yu. V., Tekhn. Kibernetika, Vyp. 2, Kiev, 1970, pp 6-22.

coefficients of the "partial" descriptions are calculated using the solutions of small systems of normal Gaussian equations. At first, the "richest" combinations of arguments are selected, that is, those containing the greatest number of independent arguments, after which combinations are selected yielding the least mean square error. An example of investigation of an object using this method is presented.

UDC 62-50

USSR

IVAKHNENKO, G. G., KOPPA, Yu. V., and VU XUAN MINH, Kiev

"Polynomial and Logic Theories of Dynamic Systems. II"

Kiev, Avtomatyka, No 4, Jul-Aug 70, pp 17-41

Abstract: Continuing their discussion of the idea of constructing new polynomial and logic theories of dynamic systems for complex problems in place of existing theory based on the use of differential equations, the authors describe the elements of the polynomial theory of stochastic systems and consider the derivation of polynomial descriptions for stochastic components. An example is given of the derivation of polynomial descriptions of a stochastic system: viz., the dynamics of economic change in England for the last 15 years, and an algorithm is shown for the vector of optimal control with information storage, using the MDHG method. The characteristic vector used in the example is taken from the works of P. C. Parks and F. G. Pyatt. An algorithm is given for situation analysis for the 16th year (1969) and for situation forecasting for several years ahead. Forecasting formulas are used as a certain general description of a system, bypassing the stage of coefficient restoration and dynamic equation solution. Identification of differential dynamic equations is not

USSR

IVAKHNENKO, O. G., et al, Avtomatyka, No 4, Jul-Aug 70, pp 17-41

necessary. The polynomial theory of dynamic systems requires less information about an object and hence is more suitable for complex control problems, especially in optimal control with information storage.

The authors thank I. K. Tymchenko and O. A. Golomoizina for their assistance in the calculations.

1/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--REGULARIZATION OF DECISION FUNCTIONS IN THE METHOD OF DATA HANDLING
BY GROUPS -U-
AUTHOR-(02)-IVAKHNENKO, O.G., KOPPA, YU.V.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA, VOL. 15, MAR.-APR. 1970, P. 56-67

DATE PUBLISHED--------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, MATHEMATICAL SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--OPTIMAL AUTOMATIC CONTROL, DATA PROCESSING SYSTEM, ALGORITHM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0329 STEP NO--UR/0102/70/015/000/0056/0067

CIRC ACCESSION NO--AP0134133
UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134133

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF TIKHONOV'S (1965) REGULARIZATION TECHNIQUES FOR OPTIMUM CONTROL PROBLEMS. TWO OF THESE TECHNIQUES ARE SHOWN TO BE PARTICULARLY WELL SUITED FOR USE IN POLYNOMIAL ALGORITHMS OF THE METHOD OF DATA HANDLING BY GROUPS. (1) AVAILABLE DATA (SET OF INTERPOLATION POINTS) ARE ARRANGED ACCORDING TO THE VARIANCE VALUES AND ARE DIVIDED INTO A TEACHING SEQUENCE AND AN APPROXIMATELY EQUAL CHECKING SEQUENCE. (2) USE IS MADE OF STANDARDIZED READINGS OF VARIABLES IN DEVIATIONS FROM THE CONSTANT OR MOVING AVERAGE. A METHOD OF ARTIFICIALLY INCREASING THE NUMBER OF INTERPOLATION POINTS FOR SMOOTH PLANTS IS PROPOSED. EACH OF THESE TECHNIQUES IS SHOWN TO PROVIDE A UNIQUE AND STABLE SOLUTION. THE USE OF THE TECHNIQUES IS DEMONSTRATED BY A PRACTICAL EXAMPLE.

UNCLASSIFIED

USSR

KOPPE, V.T., KOVAL', A.G., FIZGEYER, B.M., FOGEL', Ya.M., IVANOV, S.I.,
Kharkov State University

"Measurement of the Effective Cross Sections and Excitation Functions for Bands of the First Negative System of the N_2^+ Molecular Ion With the Excitation of Nitrogen by Fast Electrons"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 12, 1970, pp 1878-1883

Abstract: The effective cross section for the (0-0), (0-1), (0-2), (0-3), (1-2) (1-3), and (1-4) bands of the first negative system of the N_2^+ ion and the multiplet lines $\lambda = 5001 - 5005$ Å in the NII spectrum were measured at energies between 0.5 and 20 kev. The nitrogen was excited by electrons with energies between 0.5 and 20 kev. In the region of overlapping energies the experimental effective cross sections are in good agreement with the data of quoted sources. A formula is presented which satisfactorily describes the course of the excitation functions of the bands and lines investigated at energies between 0.8 and 20 kev. 3 figures, 1 table, 10 bibliographic entries.

1/1

AN0012615

UR 9017

AUTHOR-- PUSTYL,NIK, I., JUNIOR SCIENCE ASSOCIATE, THE INSTITUTE OF PHYSICS AND ASTRONOMY OF THE ESTONIAN ACADEMY OF SCIENCES /IPA/, CANDIDATE OF PHYSICAL-MATHEMATICAL SCIENCES

TITLE-- ELECTRONICS IN THE SERVICE OF ASTRONOMERS

NEWSPAPER-- SOVETSKAYA ESTONIYA, JANUARY 16, 1970, P 4, COLS 4-7

ABSTRACT-- THE AUTHOR BRIEFLY REVIEWS THE ACTIVITIES OF THE ASTROPHYSICAL OBSERVATORY AT TYRAVERA. SEVERAL YEARS AGO, ITS ENGINEERS E. MAAZIK AND R. KOPPEL DESIGNED PHOTOELECTRIC PHOTOMETERS AND THE CONTROL PANEL FOR A DOUBLE TELESCOPE. THE PROJECT WAS DIRECTED BY U. VEYSMAN, JUNIOR SCIENCE ASSOCIATE.

YU. IBRUS, JUNIOR SCIENCE ASSOCIATE, SECTION OF THE EXPERIMENTAL PHYSICS OF THE IPA, AND L. UTTER, SENIOR ENGINEER, DESIGNED AN ELECTRO-SPECTROPHOTOMETER.

19571503

AN0012615

YA. OYASTE, JUNIOR SCIENCE ASSOCIATE, AND R. LAYGO, SENIOR DESIGN ENGINEER, ARE ABOUT TO COMPLETE THE DESIGN OF A SPECTROGRAPH WITH AN ELECTRONIC-OPTICAL CONVERTER, WHICH IS KNOWN AS "OMIKRON".

THE TYRAVERA OBSERVATORY IS SLATED TO RECEIVE THE 1.5 METER AZT-12 TELESCOPE WHEN ITS CONSTRUCTION IS COMPLETED AT THE LENINGRAD OPTICAL-MECHANICAL PLANT.

THE INSTITUTE,S CALCULATIONS ARE MADE IN THE COMPUTER VNIEM-3.

THE SECTION OF EXPERIMENTAL ASTROPHYSICS, WHICH HAS BEEN RECENTLY FORMED AT THE IPA, IS HEADED BY L. LUUD, SENIOR SCIENCE ASSOCIATE, CANDIDATE OF PHYSICAL-MATHEMATICAL SCIENCES.

19571504

USSR

UDC 669.18.658.562

KOPPISHON, E. Yu., NOVITSKIY, V. K., ROMANOV, P. A., SOBOLEV, V. V., SOBOLEV, Yu. V.

"Smelting of Steel for the Rotors of Large Turbine Generators"

Moscow, Stal', No 2, Feb 73, pp 116-117.

Abstract: Large ingots for the manufacture of powerful turbine generator rotors can be produced by mixing of acid open-hearth steel in the required quantities with basic electric steel in an evacuated ingot mold. The study of the mechanical properties of the metal taken from various parts of the resulting ingot, contaminated with nonmetallic inclusions, segregations of the basic elements, macrostructures, etc., has shown that this type of mixed ingot satisfies all the basic quality requirements.

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UDC 621.039.51.001.8

USSR

KOPRIVITSA, S.

"Evaluation of and Selection of Criteria for Approximation Expressions for the Probability of Escape for a Single Cylinder"

Tr. Mosk. energ. in-ta (Works of Moscow Power Engineering Institute), 1972, No. 126, pp 155-164 (from RZh-50. Yadernyye reaktory, No 11, Nov 72, Abstract No 11.50.92)

Translation: The method of the probability of the first impact used in the theory of the lattice of heterogeneous nuclear reactors is described. The article analyzes certain approximation expressions for the probability of the first impact as applied to problems of the simplest geometry. A comparative evaluation of these expressions is given. Approximation formulas are given for the probability of escape from a cylinder. 3 ill., 2 tables, 10 ref.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401430007-1"

USSR

UDC 629.78:526.2+525.7

BOLDYRYEV, V. G. and KOPROVA, L. I.

"The Influence of Cloudiness Upon the Variability of Departing Radiation"

Tr. Gidrometeorol. N.-I. Tsentr SSSR (Works of the Hydrometeorological Scientific Research Center, USSR), No 89, 1972, pp 26-34 (from Referativnyy Zhurnal, Issledovaniye Kosmicheskogo Prostranstva, No 5, May 72, Abstract No 5.62.281, Resume)

Translation: Some results of statistical processing of actinometric measurements from the "Meteor" artificial earth satellite are presented. The latitudinal course of the radiation-temperature values (on the basis of measurements in the 18-12 micron "transparency window") was obtained in relation to the cloud situation, together with the intensity of short-wave radiation (on the basis of measurements at 0.3 -- 3 microns), as well as their mean-square deviation; empirical curves of distribution of the radiation temperature were also obtained. The data give a conception concerning the limits of variability of the studied radiation characteristics.

1/1

KOPROVA L. I.

Acc. Nr.: AP0042561 Ref. Code: UR0362

JPRS 50162

Vertical Structure of Temperature and Humidity Fields

(Abstract: "Statistical Characteristics of the Vertical Structure of the Temperature and Humidity Fields to Great Altitudes," by L. I. Koprova and V. G. Boldyrev, Institute of Physics of the Earth and Hydrometeorological Center USSR; Moscow, Izvestiya Akademii Nauk SSSR, Fizika Atmosfery i Okeana, Vol VI, No 2, 1970, pp 154-167)

On the basis of detailed data from a special systematic series of soundings to great altitudes the authors determined the statistical structure of the vertical temperature field to the 5-mb level and the specific humidity field to the 60-mb level. The authors also computed the mean profiles, standard deviations, autocorrelation and cross-correlation matrices, eigenvalues and eigenvectors of the vertical temperature and humidity fields. The results agree with data obtained for the troposphere and lower stratosphere in earlier studies. Rocket data were used in determining temperature field correlations to an altitude level 0.9 mb. The dependence of the specific humidity correlation coefficients and the cross-correlation coefficients for specific humidity and temperature on latitude was determined. The first eigenvectors of temperature and humidity make it possible to evaluate the statistical characteristics of the

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Reel/Frame 19760535

AP0042561

temperature and humidity fields for different stations and different seasons of the year.

19760536

1/2 032 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SOME STATISTICAL CHARACTERISTICS OF THE BRIGHTNESS INDICATRIX AT AN ALTITUDE OF 17.5 KM, STATISTICAL CHARACTERISTICS OF BRIGHTNESS
AUTHOR-(03)-SANDOMIRSKIY, A.B., KOPROVA, L.I., TRIFONOVA, G.I.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ATMOSFERY I OKEANA, VOL VI, NO 6, 1970, PP 577-584
DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--PHOTOMETER, AIRCRAFT MEASUREMENT, OPTIC BRIGHTNESS, INDICATRIX, EIGENVECTOR, ATMOSPHERIC OPTICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0009 STEP NO--UR/0362/70/006/006/0577/0584

CIRC ACCESSION NO--AP0135509
UNCLASSIFIED

2/2 032 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135509

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE STATISTICAL CHARACTERISTICS OF THE BRIGHTNESS INDICATRIX FOR THE DAYTIME SKY MEASURED USING AN AIRCRAFT PHOTOMETER AT AN ALTITUDE OF 17.5 KM SIMULTANEOUSLY AT THREE WAVELENGTHS IN THE VISIBLE PART OF THE SPECTRUM. FOR EACH WAVELENGTH THE AUTHORS COMPUTED THE MEAN VALUES OF THE INDICATRIX, THEIR DISPERSIONS AND AUTOCORRELATION MATRICES AND CONSTRUCTED A SYSTEM OF EMPIRICAL ORTHOGONAL VECTORS. THERE IS A BREAK IN THE CORRELATION NEAR A SCATTERING ANGLE PHI IS APPROXIMATELY EQUAL TO 50DEGREES WITH A MARKED INCREASE IN THE VALUES OF THE CORRELATION COEFFICIENTS WHEN PHI GREATER THAN 50DEGREES. FOR THE INDICATRIX AT DIFFERENT WAVELENGTHS NEAR PHI IS APPROXIMATELY EQUAL TO 50DEGREES THERE IS A MINIMUM OF THE CROSS CORRELATION COEFFICIENT. THE AUTHORS GIVE A POSSIBLE INTERPRETATION OF THE CHARACTERISTICS OF BEHAVIOR OF THE CORRELATIONS. IT IS SHOWN THAT THE FIRST THREE EIGENVECTORS ENSURE OPTIMUM APPROXIMATION OF THE INDICATRIX. FACILITY: INSTITUTE OF ATMOSPHERIC PHYSICS.

UNCLASSIFIED

AA0043440

KOPTELOV U.D.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 3-78

226257 ROLL MILL comprises uprights 1 and 2 with screw 3 and shaft 4 supporting carriage 5. The carriage is fitted with nut 6 meshing screw 3, while the shaft mounts a free driven roller 7. In addition, the carraige has an articulared roller 9 and guide rollers 10 which may be set at an angle. The rubber layer is stripped by knives 13 when it is fed by roller 7, the transfer of the rubber mix along the rollers is ensured by motor 11 driving the screw, the rotation of the shaft is provided by motor 12

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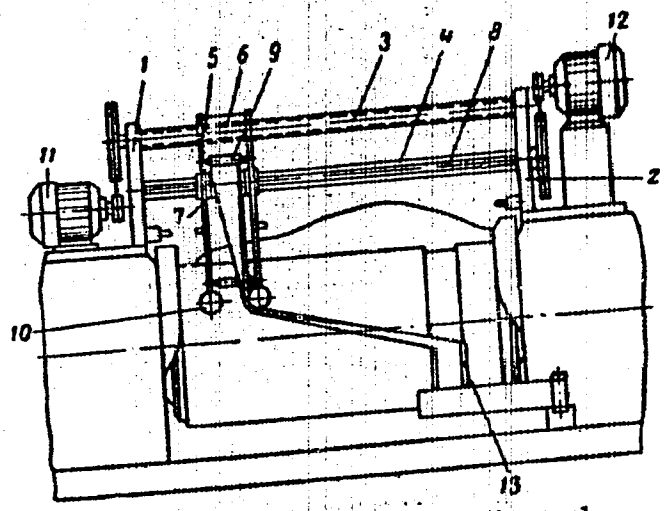
AA0043440



7.1.67. as 1125649/23-5, KOPTELOV, V.N. et al. Moscow Tyre Factory. (16.5.69) Bul. 31/8.10.68. Class 39a[1] Int. Cl. B 29b.

19761775

AA0043440

AUTHORS: Koptelov, V. N.; Labunskiy, M. F.; Gordeyev, I. D.; Dorfman, O. A.

Moskovskiy Shinnyy Zavod

19761776

3/3

AN0012630

UR 9022 26 5 32

AUTHOR-- KOPTELOV, YE., ENGINEER-PHYSICIST

TITLE-- ATOMS UNDER WATER

NEWSPAPER-- SOVETSKAYA ROSSIYA, JANUARY 10, 1970, P 4, COLS 3-7

ABSTRACT-- ACCORDING TO THE AUTHOR, SEVERAL CESIUM-37 THERMO-GENERATORS WERE DEVELOPED IN THE SOVIET UNION IN 1963-1967 FOR UNDERWATER APPLICATIONS, SUCH AS POWER PLANTS IN SUBMERSIBLES.

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19

19571525

USSR UDC 616.155.392-036.11-07:[616.157+616.419]-078

KAGAN, G. Ya., GOLOSOVA, T. V., MARTYNOVA, V. A., CHUMAKOVA, L. P., KORTELOVA, Ye. I., and RASKOVA, T. M., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Sciences USSR, and Central Institute of Hematology and Blood Transfusion

"Isolation and Identification of Microbial Agents From Bone Marrow and Blood of Acute Leukemia Patients"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971, pp 72-76

Abstract: Four types of microorganisms can be isolated directly from blood and bone marrow of acute leukemia patients. Two of them are streptomicrococci and diphtheria-like microbes unlike the classical streptococci and diphtheroids. They are probably altered variants of the patient's microflora. Microbial agents of the third type are either a phase of induction of the L-form in the patient's body or a phase of bacterial reversion from the L-form. Polymorphic agents of the fourth type resemble the Mycoplasmataceae in several respects and they can be tentatively regarded as "mycoplasma-like" organisms.

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1/2 054 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--DEFORMATION AND MECHANICAL PROPERTIES OF COMPOSITES BASED ON NICKEL AND TITANIUM REINFORCED WITH TUNGSTEN WIRE -U-

AUTHOR--KOPETSKIY, CH.V., MARKOV, A.M., ORZHEKHOVSKIY, V.L.

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. OBRAB. MATER. 1970, (1) 70-8

DATE PUBLISHED--------70

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

TOPIC TAGS--MECHANICAL PROPERTY, COMPOSITE MATERIAL, NICKEL ALLOY, TITANIUM ALLOY, TUNGSTEN ALLOY, WIRE, METAL DEFORMATION, MATERIAL FRACTURE, REINFORCED MATERIAL, FIBER METALLURGY, METAL FIBER/(U)UT31 TITANIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0633 STEP NO--UR/0472/70/000/001/0070/0078

CIRC ACCESSION NO--AP0105612
UNCLASSIFIED

2/2 054 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105612

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TENSILE STRENGTH, THE DEFORMATION, AND THE FRACTURE CHARACTERISTICS OF UNIDIRECTIONAL NI OR TI ALLOY (VTZ-1) COMPOSITES REINFORCED WITH W WIRE WERE INVESTIGATED AS A FUNCTION OF TEMP. (20DEGREES TO 800DEGREES IN 200DEGREES STEPS) AND FIBER CONTENT (0-45 VOL. PERCENT) AND COMPARED WITH THOSE OF THE COMPONENTS. THE TENSILE STRENGTH OBEYED THE RULE OF MIXTS. IS GREATER THAN 200DEGREES FOR W-NI AND IS GREATER THAN 600DEGREES FOR THE W-TI ALLOY COMPOSITES; IN THE LATTER NO REINFORCEMENT OCCURRED UNTIL 600DEGREES. THE FAILURE STRAIN INCREASED RAPIDLY WITH DECREASING FIBER CONTENT AND SHOWED A MAX. AT 200DEGREES FOR THE W-NI AND AT 600DEGREES FOR THE W-TI ALLOY, AT WHICH POINT THE W WIRE DEFORMED UNIFORMLY. AT IS GREATER THAN OR EQUAL TO 400DEGREES FOR W-NI AND IS GREATER THAN OR EQUAL TO 800DEGREES FOR W-TI ALLOY, RESP., MULTIPLE NECKING OF THE W REINFORCEMENT WAS OBSD. PRESENCE OF A 10-15 MU INTERMEDIARY LAYER OF WNI SUB4 DECREASED THE STRENGTH TO APPROX. ONE HALF, IF THE COMPOSITE WAS BELOW THE BRITTLE DUCTILE TRANSITION TEMP., T SUBG, OF THE W, BUT HAD NO EFFECT AT TEMP. IS GREATER THAN T SUBG. THE FAILURE CHARACTERISTICS OF THE COMPOSITE AND THE COMPONENTS AT VARIOUS TEMPS. AND FIBER CONTENTS ARE DISCUSSED IN DETAIL.

UNCLASSIFIED

UDC: None

USSR

KALASHNIKOV, N. P. and KOPTELOV, E. A.

"Theory of the Shadow Effect in the Scattering of Fast Charged Particles in Fine Single Crystals"

Leningrad, Fizika Tverdogo Tela, No 6, 1973, pp 1668-1673

Abstract: The shadow effect is here defined as a reduction in the output of particles emitted from a crystal in the direction of tight packing, where the angular distribution of the particles leaving the crystal is definitely anisotropic. This effect is analyzed in this paper for the elastic scattering of fast charged particles at large angles in a single crystal whose thickness is specified between given limits. The thickness of the crystal is such that the effect of channelization on the motion of the particles can be neglected. The amplitude of the scattering, the minimum output in the direction of the crystallographic axis, and the angular anisotropy of the shadow effect are investigated. It is found that the theoretical results of this article agree closely with the experimental data of such studies. The authors thank M. I. Ryazanov and A. F. Tulinov for their discussions.

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USSR

UDC 621.375.127(088.8)

KOPTEV, G. I.

"Two-Cycle Power Amplifier"

USSR Author's Certificate No 254574, Filed 13 May 68, Published 11 Mar 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D90P)

Translation: The author's certificate introduces a two-cycle power amplifier executed from transistors with a grounded base. The amplifier is distinguished by the fact that in order to correct the nonidenticalness of the transistors and increase the degree of suppression of the higher harmonics, the emitters of the mentioned transistors are connected via counter-included diodes with a mass, and the emitter of one of the transistors is connected to the input signal source via an inductance, and the emitter of the other transistor, via a capacitance.

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1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--SIMPLIFIED METHOD FOR DETERMINING THE SENSITIVITY OF THE FRACTIONATING COLUMN ZONE TO REGULATION -U-

AUTHOR-(03)-MIKHNO, S.I., KUPTEV, G.P., ZYKOV, D.D.

COUNTRY OF INFO--USSR

SOURCE--KOKS KHIM. 1970, (5), 42-5

DATE PUBLISHED--------70

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

TOPIC TAGS--AUTOMATIC CONTROL, AUTOMATIC CHEMICAL PROCESS CONTROL, FRACTIONATION, BENZENE, CARBON DISULFIDE, TOLUENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0101 STEP NO--UR/0068/70/000/005/0042/0045

CIRC ACCESSION NO--AP0132394

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

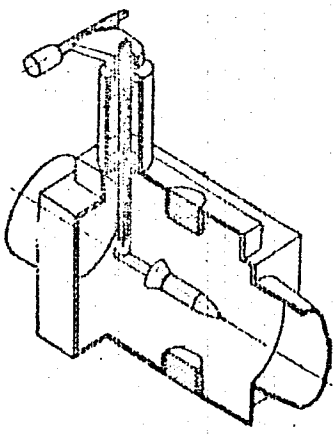
CIRC ACCESSION NO--AP0132394

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR MIXTS. IN WHICH 2 COMPONENTS PREDOMINATED, TEMP. RANGES CORRESPONDING TO ZONES OF MAX. SENSITIVITY TO AUTOMATIC CONTROL IN FRACTIONATING COLUMNS WERE DETD. FROM MAX. IN PLOTS OF CONCN. DIFFERENCES DELTA EQUALS Y MINUS X OF THE LOW BOILING COMPONENT IN THE VAPOR AND LIQ. PHASES AGAINST TEMP. T. THESE ZONES (FOR MIXTS. CONTG. MAINLY CS SUB2,C SUB6 H SUB6, C SUB6 H SUB6,PHME, AND PHNE,ME SUB2 C SUB6 H SUB4) WERE BROADER THAN THOSE CALCD. (T EQUALS 54.5-71.5DEGREES, 88-103DEGREES, AND 118-32DEGREES, X EQUALS 0.65-0.17, 0.66-0.18, AND 0.67-0.19). THE CALCD. RANGES FOR THE MOST SENSITIVE PLATE WERE T EQUALS 60-4DEGREES, 93-7DEGREES, AND 123-7DEGREES, AND X EQUALS 0.48-0.36, 0.47-0.34, AND 0.48-0.34. FACILITY: BAGLEISKII KOKSOKHIM. ZAVOD, USSR.

UNCLASSIFIED

USSR

KOPTEV, V. I. et al., Soviet Patent No 324536



2/2

UNCLASSIFIED PROCESSING DATE--30OCT70

1/2 027 TITLE--DIRECT COPPERING OF ALUMINUM AND ALUMINUM BASED ALLOYS -U-

AUTHOR-(04)-LUKOMSKIY, YU.YA., ALEKSANDROVA, A.N., TIKHOMIROVA, G.S., KUPTEVA, R.V.

COUNTRY OF INFO--USSR

SOURCE--KIEV, TEKHNOLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP 73-75

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM ALLOY, ALUMINUM BASE ALLOY, BIBLIOGRAPHY, COPPER PLATING, METAL COATING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1331 STEP NO--UR/0418/70/000/001/0073/0075

CIRC ACCESSION NO--AP0123289

UNCLASSIFIED

USSR UDC 612.17.014.21:06:612.766.2

KOPTEVA, L. A., BIRYUZOVA, V. I., and SHUL'ZHENKO, Ye. B., Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, and Institute of Molecular Biology, Academy of Sciences USSR, Moscow

"Biochemical and Electron-Microscopic Characteristics of Dog Heart Mitochondria During Hypokinesia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 8, Aug 70, pp 21-24

Abstract: After dogs had been kept in a state of hypokinesia for 15 days, their heart weight was reduced by 20-25% and the quantity of heart mitochondria decreased. The concentration of high-polymer RNA in the mitochondria decreased by 50.8% in the left ventricle and by 27.5% in the right ventricle. The capacity of mitochondrial proteins to incorporate C^{14}-labelled amino acids (proline, valine, arginine, serine, and threonine) decreased by a factor of 4.5 for the left ventricle and 2.5 for the right ventricle. An electron-microscopic study indicated that there was only slight deterioration of the structure of mitochondria of the ventricles. Mitochondria of the general type were mainly affected, and those of the muscle type were well preserved.

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UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 027

CIRC ACCESSION NO--AP0123289

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PRACTICAL RECOMMENDATIONS ARE GIVEN FOR DIRECT COPPERING OF ALUMINUM AND ALUMINUM BASED ALLOYS. REASONS FOR POSSIBLE SPOILAGE ARE INDICATED AND MEANS FOR THEIR ELIMINATION ARE GIVEN.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--NONPLANAR VIBRATIONS OF THE ENOL FORM OF ACETYLACETONE -U-

AUTHOR--GASTILOVICH, YE.A., KOPTEVA, T.S., VIKTOROVA, N.M.

K

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970. 28(2), 241-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--KETONE, IR SPECTRUM, DIPOLE MOMENT, QUANTUM CHEMISTRY, VIBRATION FREQUENCY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1909 STEP NO--UR/0051/70/028/002/0241/0247

CIRC ACCESSION NO--AP0100477
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 032

CIRC ACCESSION NO--AP0100477

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROPORTION OF THE KETO AND ENOL FORMS OF ACETYLACETONE (I) AND ITS DEUTERO DERIV. (II) WAS ESTD. FROM THE IR BAND SEPN. THE FREQUENCIES AND THE SHIFTS FROM THE ATOM EQUIL. POSTIONS IN OUT OF PLANE VIBRATIONS WERE CALCD. BY ASSUMING C SUB2V SYMMETRY. THE DYNAMIC CONSTS. AND THE SINGLE BOND DIPOLE MOMENTS ARE TABULATED. THE DISTRIBUTION OF DIPOLE MOMENTUM VALUES AGREES WITH THE QUANTUM MECH. CALCNS. A DISCUSSION OF THESE FACTS IS PRESENTED.

UNCLASSIFIED

AA0051857

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

242238 PULSE CONTROLLED COMMUTATING COMPONENT has two coils wound on the magnetic core. The holding coil provides a big enough magnetic field for supporting the making contacts. The de-energising coil is also operated by a pulse. Both coils have independent ampere-turns and their on and off operation can be adjusted so that the contacts make and brake without hesitation. The component is applicable to the telephony. 8.1.68. as 1208072/26-9. I.D.KOPTSEV et al. (16.9.69.) Bul.15/25.4.69. Class 21a^3. Int.Cl. H04m.

AUTHORS: Koptsev, I. D.; Koblents, Ya. G.; Konovskiy, A. G.

MT

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19820292

Parasitology

USSR UDC: 576.895.775

KIR'YAKOVA, A. N., KOPTSEV, L. A., and KOPTSEVA, Z. G., All-Union Order of Labor Red Banner Scientific Research Antiplague Institute "Mikrob" and the Saratov and Karakalpakskaya Antiplague Stations, Nukus

"Number of Annual Generations of Fleas of the Genus Xenopsylla in Northern Kyzyl=kum"

Leningrad, Parazitologiya, Vol 4, No 6, Nov/Dec 70, pp 528-536

Abstract: A study was conducted to determine the life cycle and number of generations per year in Xenopsylla hirtipes and Xenopsylla conformis fleas the principal plague vectors. The object of the study was to determine the reason for the periodicity of epizootic outbreaks of plague, which occur in the spring, decline in the summer, and increase again in the fall but with lesser intensity than in the spring. This periodicity is explained on the basis of changes in generations. The old fleas die in the spring, while the emerging new population which has matured during the winter months has not as yet been infected by plague bacteria. By fall, the young fleas have received the pathogen, and the epizooxic outbreak of the disease is resumed. Fleas for the study were gathered from

USSR

KIR'YAKOVA, A. N., et al, Parazitologiya, Vol 4, No 6, Nov/Dec 70, pp 528-536

gerbils in all phases of their development and during all seasons of the year. Laboratory and field studies showed that Xenopsylla fleas are univoltine, with a single generation per year (from June or July of one year to the same period in the next year). These results also reflect the natural sequence of the rodents and the bacteria expressed in the triad: rodent -- flea -- plague bacteria.

2/2

USSR UDC: 576.895.775

KIR'YAKOVA, A. N., KOPTSEV, L. A., and KOPTSEVA, Z. G., All-Union Order of Labor Red Banner Scientific Research Antiplague Institute "Mikrob" and the Saratov and Karakalpakskaya Antiplague Stations, Nukus

"Number of Annual Generations of Fleas of the Genus Xenopsylla in Northern Kyzyl=kum"

Leningrad, Parazitologiya, Vol 4, No 6, Nov/Dec 70, pp 528-536

Abstract: A study was conducted to determine the life cycle and number of generations per year in Xenopsylla hirtipes and Xenopsylla conformis fleas the principal plague vectors. The object of the study was to determine the reason for the periodicity of epizootic outbreaks of plague, which occur in the spring, decline in the summer, and increase again in the fall but with lesser intensity than in the spring. This periodicity is explained on the basis of changes in generations. The old fleas die in the spring, while the emerging new population which has matured during the winter months has not as yet been infected by plague bacteria. By fall, the young fleas have received the pathoden, and the epizootic outbreak of the disease is resumed. Fleas for the study were gathered from

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KIR'YAKOVA, A. N., et al, Parazitologiya, Vol 4, No 6, Nov/Dec 70, pp 528-536

gerbils in all phases of their development and during all seasons of the year. Laboratory and field studies showed that Xenopsylla fleas are univoltine, with a single generation per year (from June or July of one year to the same period in the next year). These results also reflect the natural sequence of the rodents and the bacteria expressed in the triad: rodent -- flea -- plague bacteria.

2/2

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

GAVRILOVA, N. D., NOVIK, V. K., KOPTSIK, V. A., and IVANOVA, S. V.

"Pyroelectric Study of the Behavior of Domain Structure in Triglycine Sulfate (TGS) and Rochelle Salt Crystals"

Elektron. tekhnika. Nauch.-tekhn. sb. Materialy (Electronic Engineering: Collection of Scientific and Technical Works on Materials), 1970, vyp 8, pp 19-21 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE612 from summary)

Translation: The authors investigated the formation of domain structure in TGS and $BaTiO_3$ crystals during phase transition under various electrical boundary conditions at the moment of crossing through the Curie point. The difference in the behavior of closed and open specimens is discussed from the viewpoint of domain topography and the presence of charged domain boundaries.

1/1

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

GAVRILOVA, N. D., MELESHINA, V. A., NOVIK, V. K., KOPTSIK, V. A.

"Peculiarities in the Behavior of Pyroelectric Coefficients of Triglycine Sulfate (TGS) Crystals With Varying Domain Structure in the Region of the Phase Transition Point"

Elektron. tekhnika. Nauch.-tekhn. sb. Materialy (Electronic Engineering: Collection of Scientific and Technical Works on Materials), 1970, vyp. 8, pp 15-18 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE613 from summary)

Translation: The article presents results of experimental research on the pyroelectric coefficients of TGS crystals for naturally unipolar specimens with varying domain structure and bias fields.

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1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--EFFECT OF THE ADSORPTION OF A TUNGSTATE MELT ON THE SHAPES AND GROWTH MECHANISM OF CORUNDUM CRYSTALS -U-

AUTHOR-(03)-VORONKOVA, V.I., YANOVSKIY, V.K., KOPTSIK, V.A.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 362-6

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS, CHEMISTRY

TOPIC TAGS--TUNGSTATE, CORUNDUM, CRYSTAL GROWTH, ADSORPTION, EPITAXIAL GROWTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AP0116401
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0116401

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF EPITAXIAL ADSORPTION OF THE SOLVENT IN GROWING ALPHA AL SUB2 O SUB3 FROM ALKALI AND ALK. EARTH TUNGSTATE MELTS WAS STUDIED AT 1100-1250DEGREES. THE HEXAGONAL DIPYRAMID WITH (22BAR43) EDGES WERE RETAINED AT GROWTH RATES OF 0.1-25 MM-DAY, REGARDLESS OF THE ALKALI OR ALK. EARTH OXIDE PRESENT IN THE SOLVENT, WITH THE EXCEPTION OF CRYSTALS OBTAINED BY SPONTANEOUS CRUSTN. FROM SRWO SUB4 ABOVE 1400DEGREES. IN THIS CASE, RHOMOHEDRAL CRYSTALS WITH (10BAR11) EDGES WERE OBTAINED. THE ADDN. OF CRYOLITE CALCD. ON THE BASIS OF NA SUB6 W SUB8 O SUB27 PLUS XNA SUB3 ALF SUB6 YIELDS YNA PRIME POSITIVE PLUS (X-2)AL SUB2 O SUB3 PLUS ZWO SUB4 PRIME NEGATIVE NEGATIVE PLUS UWO SUB3 F GAVE TRUNCATED PYRAMIDS AND BIPYRAMIDS WITH HEIGHT:DIAGONAL RATIOS FROM 1:1 TO 1:10. THE SIDE PLANES (22BAR43) AND (10BAR11) REMAINED. THE (22BAR43) PLANES GREW IN LAYERS STARTING PRIMARILY FROM THE SHARP APEXES. THESE LAYERS END IN RECTILINEAR MACROSCOPIC STEPS IN THE (BAR1100) DIRECTION. AT SUFFICIENTLY HIGH TEMPS. ADSORPTION DECREASED, GROWTH BECAME RHOMBOHEDRAL, AND THE DECOMPN. OF POLYMER ANIONS ON ISOLATED WO SUB4 PRIME NEGATIVE NEGATIVE TETRAHEDRONS, IN THE PRESENCE OF FLUORIDES, DEVELOPED BASAL PINACOIDS.

FACILITY: MOSK. GOS. UNIV., IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--RELATIVE MIGRATION TENDENCIES OF P SUBSTITUTED PHENYL GROUPS IN CARBONIUM ION DOUBLY DEGENERATE REARRANGEMENTS -U-

AUTHOR-(05)-SHUBIN, V.G., KORCHAGINA, D.V., BORODKIN, G.I., DERENDYAEV, B.G., KOPTYUG, V.A.

COUNTRY OF INFO--USSR

SOURCE--J. CHEM. SOC. D 1970, (11), 696-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZENE DERIVATIVE, NUCLEAR MAGNETIC RESONANCE, UV SPECTRUM, FLUORINATED ORGANIC COMPOUND, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0989 STEP NO--UK/0000/70/000/011/0696/0697

CIRC ACCESSION NO--AP0136419
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2/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136419

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ORDER OF THE MIGRATION OF P,X,PHENYL GROUPS IN THE DOUBLY DEGENERATE REARRANGEMENT OF STABLE (I) IONS, FORMED BY PROTONATION OF NEUTRAL PRECURSORS, IS X EQUALS ME LARGER THAN F SIMILAR TO H LARGER THAN CL LARGER THAN CF PRIME3. THE NMR AND UV SPECTRA OF I ARE DISCUSSED. FACILITY: INST. ORG. CHEM., NOVOSIBIRSK, USSR.

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