

USSR

ZOZ, N. N., and RAPOPORT, I. A., *Teoriya Khimicheskogo mutageneza (Theory of Chemical Mutagenesis)*, Moscow, "Nauka," 1971

and biochemical mutations. Special articles in this collection are devoted to these mutations.

Works dealing with the nature of induced mutations are of great interest.

The collection includes articles summarizing theoretical and practical questions in experimental mutagenesis, which present the most interesting problems of mutagenesis on the most important agricultural plants and show the practical achievements of utilizing mutagenetic factors in breeding.

The collection includes materials of the fourth All Union Conference on Chemical Mutagenesis which took place at the Order-of-Lenin-Institute of Chemical Physics of the USSR Academy of Sciences in March 1969.

Translation: Annotation: This collection is devoted to questions about the mechanism of the action of chemical mutagens on molecular and cellular levels, the mechanism of the genesis of mutagens, work methodology, cytogenetic study of mutagens, the development of the most effective methods of influencing mutagens in relation to a substance.

USSR

ZOZ, N. N., and RAPOPORT, I. A., Teoriya Khimicheskogo mutageneza (Theory of Chemical Mutagenesis), Moscow, "Nauka," 1971

The book is of interest to geneticists, breeders and biologists working in the field of experimental mutagenesis, as well as to teachers and students of the biological faculties of agricultural vuzes.

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ZOZ, N. N., and RAPOPORT, I. A., Teoriya Khimicheskogo mutageneza (Theory of Chemical Mutagenesis), Moscow, "Nauka," 1971

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Mutagenesis in Selective Breeding of Barley

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8/8

CSO: 1840-W

- END -

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Refractory Materials

USSR

UDC 546.623'21+546.74'21):541.123.2

GAVRISH, A. M., ZOZ, YE. I., ANSIMOVA, T. A., PITAK, N. V., and KARYAKIN, L. I., Ukrainian Scientific Research Institute of Refractory Materials

"Processes Taking Place in the Al_2O_3 -NiO System During Heating in Oxidizing and Reducing Media"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 6, Jun 72, pp 1175-1177

Abstract: An investigation was made of the change of phase composition of the carrier during heating in oxidizing and reducing media in the presence of a nickel catalyst. The specimens were prepared from the principal components of the carrier, electrocorundum (with 98.8% Al_2O_3 , grain size $< 50 \mu$), technical alumina (98.6% Al_2O_3 , grain size $< 50 \mu$), and nickel nitrate ($Ni(NO_3)_2 \cdot 6H_2O$). The corundum and alumina specimens had additions of 1, 10, 25, and 50% nickel nitrate. With an increasing concentration of nickel nitrate, there are only weak lines of spinel at $1500^\circ C$; at 10% the spinel develops at $1200^\circ C$, and at 25% it develops at $900^\circ C$. According to findings of other authors, the development of spinel was observed at $700^\circ C$ and up to $1500^\circ C$. The behavior of corundum and alumina specimens in the process of

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USSR

GAVRISH, A. M., et al., Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 6, Jun 72, pp 1175-1177

temperature increase up to 1500°C and during holding in air is discussed and compared with data of other authors. One table, eight bibliographic references.

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USSR

GERASIMENKO, Ye. P., ZOZULEVICH, D. M.

"Parallel Algorithms for Construction of Sections, Projections and Cross Sections in Digital Computers Using Receptor Matrices"

Izv. AN BSSR, Ser. Fiz.-Tekhn. N. [News of Academy of Sciences, BSSR, Physics-Technical Sciences Series], 1972, No 4, pp 84-88 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V680, by the authors).

Translation: In multiple-terminal automated planning systems utilizing the man-machine dialogue principle, the time required by the computer to perform operations should be as short as possible. Therefore, in addition to increasing the speed of the computer, new principles for problem solving must be sought, leading to effective algorithms and "fast" programs. This article suggests methods for approximate solution of the primary problems of graphic analysis, making it possible to construct algorithms with a high degree of parallelism of calculations and short object programs.

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USSR

UDC: 8.74

ZOZULEVICH, D. M.

"Concerning a Rational Structure for Mathematical Objects in Computer Processing of Geometric Information"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Technology in Machine Building. Scientific and Technical Collection), 1970, Dec, pp 3-16 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V651)

Translation: The author analyzes the basic stages of computer handling of geometric information with automatic or semiautomatic input, programmed analysis and synthesis, and output to display devices. The paper proposes a system of two- and three-dimensional objects on which software is constructed for procedures of input, processing and output of information as applied to problems of machine building design. Author's abstract.

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USSR

UDC: 8.74

ZOZULEVICH, D. M., MAKSIMOVA, L. G.

"Computer Execution of Certain Operations With Three-Dimensional Piecewise-Specified Objects"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Technology in Machine Building. Scientific and Technical Collection), 1970, Dec, pp 75-84 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V652)

Translation: Methods are considered for analyzing the incidence of a point of the surface or interior of a geometric object specified by a set of oriented faces and edges. Incidence procedures are also used for solving the metric problem -- computing the overall dimensions of the object in a given direction. Programming of all procedures is done in the FORTRAN language. Authors' abstract.

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USSR

UDC 681.32.06:744:621

ZOZHULEVICH, D. M.

"Theory of Computerized Construction of a Mechanical Drawing"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Engineering in Machine Building. Scientific and Technical Collection), 1970, September, pp 78-86 (from RZh--Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A619)

Translation: The concept of piece assignment of a three-dimensional geometric object in a digital computer memory is introduced. The basic relations required for algorithmic construction of the object as a general position plane are derived. A study was made of the implementation of the method for the problem of constructing the cross sections of machine parts on a digital computer. There are 4 illustrations and a 4-entry bibliography.

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USSR

GERASIMENKO, Ye. P., ZOZULEVICH, D. M.

"Minimization of the Computational Process Involved in Solution of Geometric Problems by Receptor Matrices"

Vychisl. Tekhn. v Mashinostr. Nauch-tekhn. sb. [Computer Technology and Machine Building, Scientific and Technical Collection], June, 1970, pp 26-40, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V523 by the author's).

Translation: An interpolation method of formation of receptor matrices describing curves or limited areas is studied. The realization of the method allows the number of computational and logic operations to be reduced in comparison with the method of scanning. A diagram of a homogeneous, built-in device is suggested, allowing the time of solution of the basic geometric problems to be reduced by two orders of magnitude.

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USSR

UDC: 8.74

ZOZULEVICH, D. M. and MAKSIMOVA, L. G.

"Performing Operations With Three-Dimensional, Piecewise-Specified Objects on An Electronic Computer"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Techniques in Machine Design, Scientific-Technical Collection) Dec. 1970, pp 75-84 (from RZh--Matematika, No 8, 1972, Abstract No 8V652)

Translation: Methods are considered for analyzing the incidence of a point on the surface or in the interior of a geometric object specified by the totality of the oriented facets and edges. With the help of incidence procedures, the metric problem of computing the dimensions of the object in a specified direction is solved. All the procedures are programmed in the FORTRAN language. Authors' abstract

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USSR

UDC: 6.74



DOBROVOL'SKAYA, M. K., ZOZULEVICH, D. M.

"One Method of Coding of Geometric Objects"

Vychisl. Tekhn. v Mashinostr. Nauch.-Tekhn. Sb. [Computer Equipment and Machine Building, Scientific and Technical Collection], 1971, pp 3-15 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V598, by the authors)

Translation: A special skeletal method is suggested for coding of flat objects, oriented toward performance of analysis of images during the process of planning of machines. The relationship between the skeleton and the circular coverage of an area is established, the existence and uniqueness of the skeleton are proven and the form of skeletal graphs of areas topologically equivalent to a circle is defined.

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USSR

UDC: 669.14:621.785:620.1

DORONIN, I. V., ZOZULYA, A. N., MAKHNEV, Ye. S., KHAPOV, V. A., and
CHERNUKHA, A. I.

"Method for Estimating the Mechanical Characteristics of Steels Subjected to
Thermomechanical Treatment"

Moscow, Zavodskaya laboratoriya, No. 5, 1971, pp 606-607

Abstract: A relatively simple method is described for modeling the thermo-
mechanical treatment process in high-alloy steels of the austenite and transi-
tional austenite-martensite classes characterized by high γ -phase stability.
The disadvantage of the method is the low deformation rate, which prevents it
from completely imitating the conventional thermomechanical treatment process.
The method has been successfully tested in processing steels of the Kh17N5M2,
Kh17N5M3, and Kh21N5T types.

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USSR

UDC: 621.317.784

ZHENDUBAYEV, V. N., KUKUSH, V. D., ~~ZOZULYA, I. I.~~

"A Transmitted Power Meter With Mixed Inductance-Capacitance Coupling"

Radiotekhnika. Resp. mezhved. temat. nauch. tekhn. sb. (Radio Engineering. Republic Thematic Interdepartmental Scientific and Technical Collection), 1971, vyp. 17, pp 47-53 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A336)

Translation: The paper describes an instrument for measuring power transmission in waveguide channels with arbitrary load (according to VSWR). The operating principle of the instrument is based on multiplication of microwave signals proportional to the transverse component of the electromagnetic field. The operating principle of the instrument is described and the results of studies are presented. It is concluded that the meter is feasible for use as a monitoring and measurement device in waveguide channels of radio devices. Five illustrations, bibliography of eight titles.

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USSR

ZOZULYA, Yu. I., CHERVOV, V. G.

"Model of the Neuron Network of a Visual Analyzer"

Probl. Bioniki. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Problems of Bionics. Republic Interdepartmental Thematic Scientific and Technical Collection], 1972, No 9, pp 28-36 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V727, by the authors).

Translation: A generalized mathematical model of a neuron network of a visual analyzer is suggested, then used to study processes of preliminary analysis, coding and synthesis of signals in the visual analyzers.

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1/2 024
UNCLASSIFIED
PROCESSING DATE--18SEP70
TITLE--PRINCIPLES OF THE GROWTH OF THIN SINGLE CRYSTAL LEAD CHALCOGENIDE
FILMS -U-
AUTHOR--(03)--PALATNIK, L.S., SOROKIN, V.K., ZOZULYA, L.P.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 224-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--LEAD SULFIDE, SINGLE CRYSTAL, SELENIUM COMPOUND, TELLURIUM
COMPOUND, SODIUM CHLORIDE, POTASSIUM CHLORIDE, SEMICONDUCTOR MATERIAL,
CRYSTAL DEFORMATION, CRYSTAL STRUCTURE, CONDENSATION REACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0557
STEP NO--UR/0363/70/006/002/0224/0229
CIRC ACCESSION NO--AP0105542
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

2/2 024

CIRC ACCESSION NO--AP0105542

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EARLY STAGE OF GROWTH OF SINGLE CRYSTAL THIN FILMS OF THE PB CHALCOGENIDES WAS STUDIED. PBS, PBSE, AND PBTE WERE CONDENSED ON NACL AND KCL SINGLE CRYSTALS UNDER VACUUM AT SUBSTRATE TEMPS. OF 90-200DEGREES AND CONDENSATION RATES OF 0.7-13 ANGSTROM-SEC. A NEW TYPE OF COMPACT EPITAXIAL FILM WAS FOUND, AT THE EARLY STAGE OF WHICH THERE APPEARS A BIDISPERSED STRUCTURE CONSISTING OF SMALL CRYSTALLITES WITH AN EQUIL. FACETING AND RATHER THIN ISLETS WITH ROUGH EDGES. THE SHAPE OF THE CONDENSATE PARTICLES IS DETC. BY THE RATIO BETWEEN THE RATE OF FACETING AND THE GROWTH RATE IN THE PLANE OF THE SUBSTRATE. THE APPEARANCE OF THE BIDISPERSED STRUCTURE IS EXPLAINED BY THE SPEEDING UP OF THE GROWTH OF THE ISLETS WITH ROUGH EDGES AND A SLOWING DOWN FOR PARTICLES WITH EQUIL. FACETING. DURING THE FORMATION OF THE COMPACT EPITAXIAL FILMS HAVING A BIDISPERSED STRUCTURE, ELASTIC DEFORMATION ARISES, WHICH CAN SIGNIFICANTLY INCREASE THE SCATTERING OF THE CURRENT CARRIERS IN THE SEMICONDUCTOR SINGLE CRYSTAL FILM.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--090CT70
TITLE--COALESCENCE IN EPITAXIAL FILMS OF LEAD CHALCOGENIDES -U-
AUTHOR--(03)--PALATNIK, L.S., SOROKIN, V.K., ZOZULYA, L.P.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 441-6
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--CRYSTAL LATTICE DEFECT, CRYSTALLIZATION, LEAD COMPOUND,
REACTION MECHANISM, ANISOTROPY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/1399
CIRC ACCESSION NO--AP0115718
STEP NO--UR/0363/70/006/003/0441/0446
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--09DCT70

CIRC ACCESSION NO--AP0115718

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

ABSTRACT. THE PRESENT WORK CONSTITUTES A SYSTEMATIC INVESTIGATION OF THE COALESCENCE IN THIN EPITAXIAL FILMS OF Pb CHALCOGENIDES. THREE FORMS OF COALESCENCE WERE ESTABLISHED: LIQ. LIKE CONFLUENCE WITH THE BREAK AWAY OF PARTICLES FROM THE SUBSTRATE; CONFLUENCE WITH RECRYSTN.; AND SINTERING, NOT AFFECTING THE SHAPE, ARRANGEMENT, AND DISORIENTATION OF THE PARTICLES. THE SHAPE OF THE CONFLUENCE OF THE PARTICLES ATTESTS TO THE SIGNIFICANT ROLE OF SURFACE DIFFUSION AND SELF DIFFUSION. THE PROPOSITION IS EXPOUNDED ON THAT THE EXPTL. OBSD. ANISOTROPY IN THE SINTERING IS PRODUCED BY THE HIGHER RATE OF MASS TRANSFER DURING SURFACE DIFFUSION ALONG THE STEPS OF THE SUBSTRATE AND THE STEPS AT THE SURFACE OF THE PARTICLES. THE FORMER CAUSE CONFLUENCE ALONG THE STEPS OF THE SUBSTRATE, AND THE LATTER IN THE (110) DIRECTION BETWEEN THE ANGLES OF RECTANGULAR ISLETS. THE DISLOCATION MODEL OF DIRECTED MASS TRANSFER, CAUSING THE INTENSE COALESCENCE, SINTERING, AND SEALING OF THE METASTABLE CANALS, IS EXAMD. IT IS SHOWN THAT EACH OF THE ABOVE EXAMD. COALESCENCE MECHANISMS BRINGS FURTH ITS OWN SP. DEFECT STRUCTURE.

POLITEKH, INST. IM. LENINA, KHARKOV, USSR. FACILITY: KHAR'KOV.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

173 030

TITLE--FORMATION OF THE STRUCTURE OF LEAD CHALCOGENIDE EPITAXIAL FILMS IN

MICA -U-

AUTHOR--(05)-KOSEVICH, V.M., PALATNIK, L.S., ZUZULYA, L.P., ZUZULYA, L.V.,

SOBKIN, V.K.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD, TELA 1970, 12(5), 1363-73

DATE PUBLISHED-----70

Z

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--MICA, EPITAXIAL GROWTH, CRYSTALLIZATION, CRYSTAL ORIENTATION,
ELECTRON MICROSCOPY, LEAD COMPOUND, TELLURIDE, SELENIDE, NUCLEATION,
POLYCRYSTALLINE FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3C04/C856

STEP NO--UR/C181/70/012/C05/1363/1373

CIRC ACCESSION NO--AP0131445

UNCLASSIFIED

2/3 030

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0151445

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY THE TRANSMISSION ELECTRON MICROSCOPY METHOD ORIENTATION, TYPE OF GROWTH, AND AGGREGATION OF ISOLATED PARTICLES AS WELL AS THE DEFECT STRUCTURE WERE STUDIED OF CONTINUOUS EPITAXIAL FILMS OF PBTE AND PBSE ON MICA. WHEN THE SUBSTRATE IS AT 150-400DEGREES THE PBSE FILMS NUCLEATE ON MICA CRYSTALS IN 2 ORIENTATIONS: (111) (110) AND (001) (110) (001) (010) OF MICA. IN PBTE FILMS ORIENTATION (001) (110) APPEARS ONLY AT THE TEMP. OF T SUBP GREATER THAN 280DEGREES. PARTICLES WITH ORIENTATION (111) ACQUIRE GOOD FACES STARTING WITH THE EARLIEST STAGES OF CONDENSATION AND INCREASE PRIMARILY UPWARD. PARTICLES WITH THE ORIENTATION (001) ARE PLANE, THIN, AND POSSESS AT THE INITIAL STAGES OF CONDENSATION ROUGH CONTOURS AND A LARGE NO. OF INTERNAL VOIDS. JOINING OF THESE PARTICLES WITH THE PLANES (001) WITH THE PLANE OF CLEAVAGE OF MICA (001) TAKES PLACE BY MEANS OF DISCONFORMITY DISLOCATIONS. IN PBSE AND PBTE ON MICA VARIOUS CASES ARE POSSIBLE OF AGGREGATION OF ISOLATED PARTICLES DEPENDING ON THEIR SHAPE AND LOCATION RELATIVE TO THE DIRECTION (010) OF MICA. AGGREGATION TAKES PLACE WITH THE FORMATION OF PORES ON THE CONTACT BOUNDARY. PORES ARE LOCATED AT THOSE POINTS OF THE DISTORTED LATTICE AT WHICH, ON FURTHER CONDENSATION, DISLOCATIONS APPEAR. THE SLOWING DOWN OF AGGREGATION WAS OBSERVED BY THE BOUNDARIES FORMED WHEN DISORIENTED EPITAXIAL PARTICLES JOIN. THE MAIN FORM OF THE DEFECTS IN THE STRUCTURE OF CONTINUOUS FILMS OF PBSE AND PBTE ON MICA ARE 2 DIMENSIONAL DEFECTS OF THE TYPE OF TWINNING BOUNDARIES (112) NORMAL TO THE PLANE OF THE FILM.

UNCLASSIFIED

3/3 030

CIRC ACCESSION NO--AP0131445

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--DURING RECRYSTN. A TRANSITION TAKES PLACE OF THESE
BOUNDARIES INTO SLOPING DISTORTIONS OF THE BOUNDARY OF CYLINDRICAL SHAPE
OF (100) TYPE.
FACILITY: KHAR'KOV, POLITEKH. INST. IM. LENINA,
KHARKOV, USSR.

UNCLASSIFIED

USSR

Z
UDC: 546.815'22:539.238PALATNIK, L. S., SOROKIN, V. K., and ZOZULYA, L. P., Khar'kov Polytechnic
Institute imeni V. I. Lenin"Regularities in the Growth of Thin Single-Crystal Lead Chalcogenide Films"
Moscow, Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 224-229

Abstract: This paper presents the results of a systematic study of epitaxial growth at initial stages in PbS films. A new method has been devised for producing a compact epitaxial film. With this method, a bidisperse structure emerges in the initial stages of growth. The structure consists of crystalline particles with balanced faceting and much finer islets with rougher edges. The shape of the condensate particles is determined by the correlation between faceting and growth rates in the substrate plane. The hypothesis on the formation of the bidisperse structure is based on a higher growth rate of islets with rough faceting and a lower growth rate of particles with balanced faceting. The formation of the compact epitaxial film from the bidisperse structure is followed by elastic deformations which may considerably increase the dispersal of current carriers in the semiconductor single-crystal film. Figures in the original article illustrate the epitaxial growth of PbSe on NaCl at 160 and 180°C and given rates, formation of a bidisperse structure in PbSe films on NaCl at 200°C and given rates, epitaxial growth of PbSe on KCl at 200°C and given rates and a defective structure of an epitaxial PbSe film on NaCl.

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USSR

UDC 612.5

ZOZULYA, H. D., Chair of Normal Physiology, Kiev Medical Institute

"Search for an Optimum Regimen of Work by Muscles on the Basis of Temperature Dynamics Produced by Muscular Activity"

Kiev, Fiziologichnyy Zhurnal, Vol 17, No 5, Sep/Oct 71, pp 615-621

Abstract: Rabbits 1.8-2.5 kg in weight under anesthesia of 0.5% solution of cocaine were used to determine the optimum regimen of muscular performance, and the relationship between temperature and muscle work capacity under conditions of repeated loading. The exposed sciatic nerve or its peripheral terminus was placed on plexiglass connected by silver electrodes with an electronic stimulator. Muscle temperature generated by muscular activity was thermoelectrically determined, and its dynamics recorded by an automatic electronic potentiometer in the form of a graduated curve. Muscle contraction was myographically recorded, calculated in ergograms, and expressed in percentages. The excitation force used in the experiments was 13 v, repetition frequency was 120 impulses a minute weight of load -- 400 grams; and duration of excitation -- 5 minutes. Five regimens were tested, with the power capacity and total work performed in the first regimen accepted as 100%, and the other four 1/2

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USSR

ZOZULYA, V. B. and CHERANOVSKIY, O. R., Khar'kov Aviation Institute

"Control of Laminar Flow Around a Wing in Free Flight"

Kiev, Gidromekhanika, No 20, 1972, pp 3-7

Abstract: Despite the marked advance which laminar flow-around control would bring to aviation technology, many underlying problems in this area remain unsolved. No systematic research is being conducted on the effects of important factors such as atmospheric turbulence, design vibrations, acoustic influences, and so on; while some accepted data are erroneous, such as L. F. Kozlov's figure for initial atmospheric turbulence (1969) (the true figure is significantly smaller). The authors obtained experimental verification of E. B. Schubauer and H. K. Skramstad's thesis that with sufficiently low turbulence (about 0.08%) the so-called upper critical Reynolds number comes into play for conditions of free atmosphere.

Tests were run on the wing of a pilotless flying laboratory, wing profile at the slotted portion being chosen in accordance with laminar profile models for slot blowing. Flights were made during morning hours, with almost no wind or updraft.

1/2

USSR

ZOZULYA, V. B. Fiziolozhicheskiy Zhurnal, Vol 17, No 5, Sep/Oct 71, pp 615-621

"APPROVED FOR RELEASE: 09/01/2001" CIA-RDP86-00513R002203820010-3

regimens expressed in percentages with relation to the first. An analysis of the data obtained established that the optimum regimen from the point of view of power capacity is the first, and of total work performed --- the fifth. It is assumed also that temperature dynamics generated by muscular activity carry information about the readiness of the muscles to carry on subsequent work, and variations in work capacity are due to and are correlated with the changes taking place in the working muscle.

2/2

USSR

ZOZULYA, V. B. and CHERANOVSKIY, O. R., Gidromekhanika, No 20, 1972, pp 3-7

With sphere blowing in flight of the laboratory, a Reynolds number of $Re_d = 385,000-401,000$ was obtained for the sphere, corresponding to flow turbulence of about 0.03%. With enclosed suction system and assigned suction intensity, laminar-turbulent transition was 80% of the chord, and profile drag dropped from 0.0070 to 0.0042. Some disparity was found between flight data and tunnel data, explained by the lower flow turbulence in the case of the former.

2/2

1/2 025 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--COMPARISON STUDY OF IRON FLUORIDE MATERIALS IN AIR AND VACUUM -U-
AUTHOR--(04)-ZUZUYA, V.D., MINDSHNIKOV, V.N., FEDORCHENKO, I.M., SHEVCHUK,
YU.F.
COUNTRY OF INFO--USSR
SOURCE--FIZIKO-KHIMICHESKAIA MEKHANIKA MATERIALOV, VOL. 6, NO. 2, 1970, P.
71-74.
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--CAST IRON, WEAR RESISTANCE, CALCIUM FLUORIDE, CHROMIUM
CONTAINING ALLOY, NICKEL CONTAINING ALLOY, IRON COMPOUND, IRON ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0060

STEP NO--UR/0369/70/006/002/0071/0074

CIRC ACCESSION NO--AP0125895

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125895

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE ANTI-FRICTION PROPERTIES OF WHITE CAST IRON, AND IRON BASED MATERIALS WITH ADDITIONS OF C, CR, NI, AND CaF_2 . THE TESTS WERE CARRIED OUT AT A FRICTION SLIDING RATE OF 0.28 M-SEC AND PRESSURES RANGING FROM 8 TO 25 KG-SQ CM. CERTAIN TECHNIQUES FOR INCREASING THE WEAR RESISTANCE OF MATERIALS ARE EXAMINED. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT PROBLEM MATERIALOVEDENIIA, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--FORMATION OF INDIVIDUAL REGIONS OF DAMAGE ON THE SURFACE OF A METAL
AS A RESULT OF THE COLLAPSE OF CAVITATION BUBBLES -U-
AUTHOR-(02)-GAVRANEK, V.V., ZOZULYA, V.F.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (1), 46-49
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--METAL SURFACE PROPERTY, CAVITATION, ULTRASONIC VIBRATION,
EROSION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1817 STEP NO--UR/0369/70/006/001/0046/0049
CIRC ACCESSION NO--AP0129185
UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129185

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF COLLAPSING CAVITATION BUBBLES ON THE SURFACE OF A METAL IS DISCUSSES WITH SPECIAL REF. TO THE CASE IN WHICH THE CAVITATION IN THE LIQUID MEDIUM IS PRODUCED BY ULTRASONIC VIBRATIONS. THE COLLAPSE OF THE CAVITATION BULLBES TAKES PLACE IN SEVERAL STAGES, AND EACH OF THESE LOAD THE SURFACE OF THE METAL IN A CHARACTERISTIC MANNER AND CREATE LOCAL REGIONS OF DAMAGE. THE ACTUAL FORM OF THE DAMAGE IS VERY COMPLICATED AND DEPENDS ON THE POSITION OF THE CAVITATION BUBBLE RELATIVE TO THE SURFACE OF THE METAL AT THE INSTANT OF COLLAPSE.

UNCLASSIFIED

USSR

UDC 51:155.001.57:612.82

ZOZULYA, Yu. I., CHERNOV, V. G., BUGAY, Yu. P.

"Mathematical Models of Detectors in the Frog Retina"

Probl. Bioniki. Resp. Mezhd. Nauchno-tekhn. Sb. [Problems of Bionics, Republic Interdepartmental Scientific and Technical Collection], No 4, 1970, pp 16-22, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V675 by the authors).

Translation: The construction and analysis of a statistical model of the detector for long-term contrast (contour detector) are studied.

USSR

UDC: 621.396.6.002.72(088.8)

SAVCHENKO, I. D., ZUZULYA, V. P., KAS'YANENKO, A. T.

"A Device for Straightening and Shaping the Axial Leads of Radio Elements"

USSR Author's Certificate No 265200, filed 5 Feb 69, published 23 Jun 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V336 P)

Translation: A device is proposed which contains a jig, a locator and a reciprocating slider. As a distinguishing feature of the patent, the slider is equipped with symmetrically located catchers made in the form of crescent-shaped fingers which rest on the lateral surfaces of the jig, and with rollers which have square grooves along the perimeter, and also with a spring-loaded locator which holds the bases of the leads against the bosses of the jig.

1/1

- 27 -

Stress Analysis and Stability Studies

USSR

UDC 539.377

BURAK, YA. I., ~~ZOZHLYAK, YU. D.~~, Physicomechanical Institute,
Academy of Sciences, Ukrainian SSR (L'vov)

"Extremal Temperature Fields and Stresses in the Case of Local
Heating of a Spherical Shell"

Kiev, Prikladnaya Mekhanika, Vol 6, No 12, Dec 70, pp 74-81

Abstract: The article deals with the problem of determination, in a closed spherical shell, of the optimal temperature fields which, within the limits of given conditions of axisymmetrical local heating, provide a comparatively low level of temperature stresses. The condition of the minimum of the functional of the elastic energy of the shell is adopted as the criterion of optimality. The optimal temperature fields and the temperature stresses corresponding to them are studied in order to find the simplest form of the conditions of local heating of the equatorial region. 3 figures, 5 bibliographic entries.

1/1

Miscellaneous

UDC 539.377

USSR

PIDSTRYGACH, Ya. S., Academician of the Academy of Sciences of the UkrSSR,
BURAK, Ya. Y., ZOZULYAK, Yu. D., Physicomechanical Institute, Academy of
Sciences of the UkrSSR

"On Determining the Optimum Force Load for the Case of Localized Heating of
a Cylindrical Shell"

Kiev, Dopovidi Akademii Nauk Ukrainskoi RSR: Seriya A, Fizyko-Tekhnichni
ta Matematychni Nauki, No 11, Nov 72, pp 1024-1028

Abstract: The authors formulate and solve the problem of determining the
optimum external normal load for the case of axisymmetric localized heating
of an infinite cylindrical shell. The condition of minimum elastic energy
of the shell is taken as the functional criterion of optimality. The ef-
fectiveness of the resultant solution is illustrated by a specific example.

1/1

Plant Pathology

USSR

UDC 632.4:582.285.2:633.11:581.14

LESOVOY, M. P., and ZRAZHEVSKAYA, T. G., Ukrainian Research Institute for Plant Protection, Kiev

"Histologic Features of the Development of *Puccinia triticina* Eriks. Strain 77 in Wheats Differing in Resistance"

Leningrad, Mikologiya i Fitopatologiya, Vol 7, No 4, 1973, pp 322-327

Abstract: Studies were conducted on the development of the fungus *Puccinia triticina* 77 on susceptible and resistant wheats. While the initial stages of infection in both cases were similar, histologic studies showed that with the development of haustoria there were differences in the resistant and susceptible wheat variants. In the former the cells died and formed a barrier around the pathogen, although living hyphae were found on careful examination 5 to 7 days after infection. The haustoria formed in the resistant wheat cells are largely underdeveloped and defective, and in the resistant wheat the fungus is unable to form reproductive organs. A significant difference in the resistant wheat cells is irregular thickening of the cell wall on the 8 to 10th postinfection day; such areas of thickening may range from 2 to 30 and vary in size from 1.7 to 30 μ . Such cells are most frequently encountered in mesophilic tissues and their significance has not been satisfactorily explained.

1/1

USSR

UDC 582.285.2:581.14

ZRAZHEVSKAYA, T. G., Ukrainian Institute of Plant Protection, Kiev

"A Technique for Studying the Germination of Rust Fungus Uredospores on Leaf Surfaces"

Leningrad, Mikologiya i Fitopatologiya, No 4, 1972, p. 365

Abstract: A suspension of uredospores is applied to the leaf blade which is kept in a moist chamber for a day or two. A 0.4 to 0.5% solution of collodium in ether is then quickly, thinly, and evenly spread over the entire surface of the leaf. The resulting film is removed and stained. On the film is an impression of the leaf blade with clearly visible epidermal cells, rows of stomata, uredospores and appressoria. The technique can be used to determine the total number of spores per unit of leaf surface, percentage germinating, number of appressoria formed, etc. and to study other matters relating to the initial stage of development of the fungus. It can also be used to study the germination of spores of other phytopathogenic fungi directly on leaf surfaces in situ.

1/1

USSR

UDC 621.396.678

ZRAKOVSKIY, A. G.

"An Antenna Equivalent"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 5, Feb 72, Author's Certificate No 327544, Division H, filed 3 Mar 69, published 26 Jan 72, p 156

Translation: This Author's Certificate introduces an antenna equivalent containing a hermetically sealed cabinet equipped with ventilation holes. The cabinet holds electrical coupling elements, a closed evaporative cooling system with heat exchanger and condenser tubing, an air cooling system, a power dissipation meter, and an interlock mechanism for the cabinet doors. As a distinguishing feature of the patent, the reliability of the device is improved and its overall dimensions are reduced by including separators in the heat-exchanger circuit which are connected to the following stage of the heat exchanger by a steam tube, and to the condenser line by a water seal connected to a vent tube.

1/1

USSR

UDC: 621.373.826:53

AGANBEKYAN, K. A., ZRAZHEVSKIY, A. Yu., KOLOSOV, M. A., SOLOLOV,
A. V.

"Absorption of Submillimeter Radiation in Pure Water Vapor"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.
(Tenth All-Union Conference on the Propagation of Radio Waves;
Report Theses--collection of works) "Nauka," 1972, pp 35-38 (from
RZh--Radiotekhnika, No 10, 1972, Abstract No 10D362)

Translation: Results are given of the calculation on a computer of
the absorption in the submillimeter wavelength range as a function
of pure water vapor pressure. Comparison of the results of the
calculation with the experimental data in the transparency windows
of 0.73, 0.45, 0.36, and 0.29 mm shows that the computed values
are below the measured ones. One illustration, one table, biblio-
graphy of seven. A. L.

1/1

USSR

UDC: 532.526

GORLIN, S. M., ZRAZHEVSKIY, I. M., Moscow

"Effect of External Flow Turbulence on Flow in a Boundary Layer"

Moscow, Izv. AN SSSR: Mekhanika Zhidkosti i Gaza, No 4, Jul/Aug 72, pp 52-57

Abstract: Experimental data are analyzed to derive a universal relation for the turbulence in a boundary layer on a plate as a function of the distance to the plate. The relation is called the law of pulsation velocity component defect by analogy with the law of average velocity defect. Special experiments were conducted in wind tunnel A-6 at the Institute of Mechanics of Moscow State University to obtain data on the distribution of velocity and energy of turbulence in a boundary layer for various degrees of turbulence of the external flow. The parameters of the wind tunnel are given.

1/1

172 023 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--QUANTITY AND COMPOSITION OF THE SOLID PHASE IN FUELS AT
TEMPERATURES BELOW 0DEGREES -U-
AUTHOR--(02)-ZRELOV, V.N., BOYKO, L.V.
COUNTRY OF INFO--USSR
SOURCE--NEFTEPEKERAB. NEFTEKHIM. (MOSCOW) 1970, (4), 22-3
DATE PUBLISHED-----70
SUBJECT AREAS--PROPULSION AND FUELS
TOPIC TAGS--KEROSENE, DIESEL FUEL, LOW TEMPERATURE EFFECT, CATALYTIC
CRACKING, CHEMICAL COMPOSITON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1940 STEP NO--UR/0316/70/000/004/0022/0023
CIRC ACCESSION NO--AP0133784

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133784

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. LOW TEMP. SOLID RESIDUES OF
CRACKING KEROSENES CONTAINED ICE CRYSTALS AND HIGH CRYSTG. PRODUCTS C
SUB11 DIENE HYDROCARBON OXION. THE RESINOUS COMPONENTS WERE OBTAINED BY
POLYMG. THE OXION. PRODUCTS OF TETRA AND PENTACYCLIC AROMATIC
HYDROCARBONS. THE DIESEL FUEL RESIDUES CONTAINED ICE CRYSTALS AND HIGH
CRYSTG. N,ALKANES. THE RESIDUES CONTAINED INSIGNIFICANT AMTS. OF SOLID
IMPURITIES AND RESINOUS COMPS.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--STUDY OF THE COMPOSITION OF SOLID TAR IN REACTIVE FUELS -U-
AUTHOR--ZRFLOV, V.N., KALININ, L.L., BOYKO, L.V.
COUNTRY OF INFO--USSR Z
SOURCE--KHIMIJA I TEKHNLOGIJA TOPLIV I MASEL, VOL. 15, NO 2, 1970, P.
53-56
DATE PUBLISHED-----70

SUBJECT AREAS--PROPULSION AND FUELS
TOPIC TAGS--CHEMICAL COMPOSITION, HYDROCARBON FUEL, ETHER, FUEL STORAGE

CONTROL MARKING--NO PESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1990/2034 STEP NO--UR/0065/70/015/002/0053/0056
CIRC ACCESSION NO--AP0109966
ZZZZZZZZZZ UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109966

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE SOLID, INSOLUBLE TARS WHICH ARE THE END PRODUCT OF THE OXIDATION OF LOW STABLE HYDROCARBON FUELS. CHEMICAL COMPOSITION OF DEPOSITS FORMED ON THE BOTTOM OF THE STORAGE TANKS WAS DETERMINED. IT IS SHOWN THAT UNDER PROLONGED STORAGE CONDITIONS, THESE FUELS FORM AROMATIC, UNSATURATED POLYOXYETHERS.

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UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--FIREPROFF ALUMINA -U-

AUTHOR--(C4)-KISELEV, I.M., ZROZHEVSKIY, V.T., SHAKHNOVICH, I.G., SAZHIN,
V.S.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,211

REFERENCE--OTKRYTIYA, IZOBRET., PROM, OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, ALUMINA, CHEMICAL COMPOSITION, KAOLIN, FIRE
RESISTANT MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1830

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132095

UNCLASSIFIED

272 030

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0132095

ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. TO OBTAIN AN ALUMINA FIREPROOF MATERIAL EFFECTIVE TO 1950DEGREES, KAOLIN IS ROASTED AT 1050-1200DEGREES FOR 1-3 HR. THE RESULTING PRODUCT IS TREATED WITH AN ALK. SOLN. OF 100-40 G/LA SUB2 O-L. AT 95-105DEGREES FOR LARGER THAN 30 MIN, AND WASHED UNTIL THE RESIDUAL CONTENT OF ALKALI IS SMALLER THAN 1PERCENT.

UNCLASSIFIED

USSR

UDC: 613.645-07:612.822.3.014.421.7

AMIROV, N. Kh., ZUBAIROVA, G. O., MENDELEVICH, D. M., and KALPINA, G. A., Kazan Medical Institute

"EEG Changes in Persons Working Under Low-Intensity Red Light and in Complete Darkness"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 1, 1971, pp 13-16

Abstract: Bioelectric activity of the brain was studied in several groups of females working in a photographic and motion picture film factory under low-intensity red light or in complete darkness. The EEG's of those working under red light were in most cases characterized by an irregular alpha rhythm localized chiefly in the occipital and parietal regions. The amplitude ranged from 20 to 30 μ v and the frequency was between 8.5 to 12 osc/sec. All the subjects exhibited a distinct beta rhythm of different oscillation frequencies and amplitudes. The EEG's of the women who worked in darkness were characterized in half the cases by a pronounced and regular alpha rhythm (with an average amplitude of 15 to 20 μ v) in the central and temporal regions. In cases where the alpha rhythm was indistinct or absent, the beta rhythm was dominant. The results of functional tests with opening and closing of the eyes confirmed the decrease in level of cortical activity.

1/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--EFFECT OF SUPRAMOLECULAR STRUCTURE ON THE STRENGTH OF SINGLE FIBERS
OF VISCOSE RAYON CORD -U-
AUTHOR--(03)-SERKOV, A.T., ZUBAKHINA, N.L., GORBACHEVA, V.O.
COUNTRY OF INFO--USSR
SOURCE--KHIM. VOLOKNA 1970, (2), 60-1
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--MOLECULAR STRUCTURE, RAYON, POROSITY, MECHANICAL STRENGTH
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/2010 STEP NO--UR/0133/70/000/002/0060/0061
CIRC ACCESSION NO--AP0125598
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0125598
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SWELLING OF RAYON FIBERS IN
AQ. NAOH SOLNS. HAS A MAX. AT 5PERCENT NAOH CONCN. THE MAX. IS
CONSIDERABLY HIGHER FOR HIGH STRENGTH FIBERS. ALSO STRONGER FIBERS HAVE
LOWER DISSOLUTION RATES IN CONCD. NAOH SOLNS. AND HIGHER LIGHT
BIREFRENGENCE INDEXES. THE FIBER STRENGTH DEPENDS NOT ONLY ON THE
FIBER POROSITY AND THE PRESENCE OF DEFECTS, BUT ALSO ON THE FIBER
ORIENTATION.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--IRON NICKEL PHOSPHORUS MAGNETIC FILMS OBTAINED BY CHEMICAL
REDUCTION -U-
AUTHOR-(03)-MALOYEV, N.YA., ARNOLD, O.P., ZUBAKIN, A.M.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(3), 135-6
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS, PHYSICS
TOPIC TAGS--MAGNETIC MATERIAL, METAL FILM, IRON ALLOY, NICKEL ALLOY,
PHOSPHORUS ALLOY, CHEMICAL REDUCTION, MAGNETIC COERCIVE FORCE, MAGNETIC
HYSTERESIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/1031 STEP NO--UR/0139/70/013/003/0135/0136
CIRC ACCESSION NO--AT0121627
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0121627

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MAGNETIC ANISOTROPY OF FILMS
 OBTAINED BY REDN. OF SOLNS. CONTG. FESO SUB4. 7H SUB2 O 20 NISO SUB4. 78
 SUB2 O 30, KNAC SUB4 H SUB4 O SUB6. 4H SUB2 O 50, AND NAH SUB2 PO SUB4.
 H SUB2 O G,L. WAS STUDIED WITH FILMS PPTD. ON ROUND GLASS DISKS COATED
 WITH 500 ANGSTROM THICK CU AND ACTIVATED IN 0.1PERCENT PDCL SUB2 AT PH 9
 AND 75DEGREES. IN WEAK FIELDS, H IS SMALLER THAN H SUBC EQUALS 13 OE,
 THE CURVE OF MAGNETIC MOMENTS VS. H EXHIBITED 2 PI PERIODS IN THE
 INTERVAL OF 1.91-19.3 OE. THE CURVES IN FORWARD AND REVERSE DIRECTIONS
 INTERSECTED. ROTATIONAL HYSTERESIS LOSSES WERE ASCRIBED TO IRREVERSIBLE
 STRUCTURAL CHANGES. AT H GREATER THAN H SUBC, THE PERIODICITY VANISHED
 AND ROTATING MOMENTS WERE CONST. THIS AND THE ABSENCE OF TEXTURE
 INDICATED THAT ROTATIONAL ANISTROPY WAS ABSENT. SUCH FILMS WERE
 DESIGNATED AS HIGH COERCIVE ISOTROPIC FILMS. FACILITY:
 KRASNOYARSK, GOSPEDINST., KRASNOYARSK, USSR.

UNCLASSIFIED

ZUBAKIN, G.K.

Wind-Wave Research

WIND-WAVE SPECTRUM AT THE EDGE OF THE ICE
Article by G.K. Zubakin, ~~Chief~~ Hydro-meteorological Scientific Research Center, Moscow, ~~Исследования в гидрометеорологии~~, Russian, No 5, 1973, submitted 9 June 1972, pp 95-97

UDC 551.466.31
Wind-Wave Research
Rostovsk

Сери: АРР 59580
23 Сед 73
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Contd.

On the basis of the spectral representation of the structure of wind-driven waves a study was made of the experimental results in the vicinity of the edge of the ice. The contribution of the long-wave components arising from the rafted ice to the total wave energy in the open water has been discovered. A procedure has been proposed for calculating the wave height in the vicinity of the edge of the ice in situations analogous to the experiment performed.

In recent years a number of papers have appeared devoted to the interaction of gravity waves with the ice cover of the seas and oceans. Among them made [9, 11, 12, 13]. In which the authors present the results of investigations of the free and forced oscillations of the ice cover in the Arctic and Antarctic. The instrument surveys of the ice cover in the Arctic and on drift ice [14] are of especial interest. A survey of the Arctic by D. Ye. Knyazh [9].

In all the listed experimental papers, a study was made of situations where the wind "works" from the open water side. In this paper a study is made of the opposite problem where the wind "works" from the edge into the sea and is quite stable in time and direction. The theoretical studies [9] and the data from the ice air surveys indicate that between the ice of great density and the open water there are always in practice strips of brash with force 2-3 compaction. Here in the millim. ice conditions strips of brash are extinguished by the effect of wind. The short waves obviously are greater than the dimensions of the ice cakes, and the waves without any obstacles. Consequently, the sailing ice is a natural filter which passes long-wave components of the wind-driven wave spectrum and extinguishes the short-wave components.

Refractory Materials

USSR

UDC 666.764.62

ANTONOV, G. I. and YAN'SHINA, A. P., Ukrainian Scientific Research Institute of Refractories, and ZUBAKOV, S. M., and MENZHULINA, F. M., Institute of Metallurgy and Ore Dressing of the Academy of Sciences Kazakh SSR

"Periclase-Spinel Refractories Made of Natural-Brine Magnesium Oxide and Concentrated Chromite"

Moscow, Ogneupory, No 9, 1971, pp 35-40

Abstract: Periclase-spinel refractories made of pure materials (brine magnesium oxide and kimpersayskiy chromite) are compared with the corresponding refractories made of ordinary-grade magnesium oxide and chromite. Experimental articles fabricated in the test comparison were 230 x 115 x 65 mm in size and were molded on a hydraulic press at a pressure of 1200 kg/cm². For articles made from ordinary grade materials, silicate impurities were found to clearly affect compaction. In contrast, a high temperature for the onset of deformation under load (upwards of 1750°) was found to characterize articles made of brine magnesium oxide and concentrated kimpersayskiy chromite. These articles showed less linear (at a load of 2 kg/cm²) and less additional (10 hr at 1750° exposure) shrinkage. The microstructure of articles made from pure materials showed a sizable fraction of periclase bonds not across silicates, but across secondary spinel. Two illustrations: six tables.

1/1

USSR

ZUBAKOV, V. D.

"Approximate Solution of Statistical Games Arising in the Games Classification of Signals"

Teoriya Igr [Games Theory -- Collection of Works], Yerevan, 1973, pp 173-180 (Translated from Referativnyy Zhurnal Kbernetika, No 10, 1973, Abstract No 10V438)

Translation: Approximate solutions are found for a number of statistical games arising in the games classification of signals, by replacement of set S of the equivalent S-game with a finite number of points, allowing approximate reduction of a statistical game to a finite (matrix) game.

Resume

1/1

USSR

2
UDC: 621.396.967

KUCHEROV, A. S., KRUCHENETSKIY, V. Z., MOLCHANOV, A. N., ZUBANOV, M. A.

"Doppler Shift Imitator on an Intermediate Frequency"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 1, pp 39-47 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6G46)

Translation: The authors consider a method of simulating the Doppler shift on intermediate frequencies by means of phase-variable circuits. The signal spectrum at the output of the imitator is determined by the amplitude of the phase shift during the sawtooth voltage period. The minimum phase lead for obtaining a monochromatic signal is equal to 2π . The proposed method permits variation of the Doppler frequency over a broad range without disrupting signal monochromaticity. Five illustrations, bibliography of two titles. A. M.

1/1

1/2 016

TITLE--CONTINUOUS PROCESS FOR COOKING AND PRODUCING LEAD CRYSTAL TABLEWARE
UNCLASSIFIED PROCESSING DATE--30OCT70

-U-

AUTHOR--(05)-MOKHNIN, N.F., FIGUROVSKIY, I.A., SAVONICHEV, G.V., ZUBANDV,
V.A., YUDIN, N.A.

COUNTRY OF INFO--USSR

SOURCE--STEKLO KERAM. 1970, 27(2), 8-10

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LEAD, METAL CRYSTAL, GLASS



CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/1991

STEP NO--UR/0072/70/027/002/0008/0010

CIRC ACCESSION NO--AP0118950

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118950

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. COM. TECHNOLOGY FOR CONTINUOUS PRODUCTION OF TABLEWARE ARTICLES MADE FROM LEAD CRYSTAL WAS WORKED OUT FOR THE 1ST TIME. A BRIEF HISTORY OF THE PROBLEM AT HAND IS PRESENTED. AN ATTEMPT WAS ALSO MADE TO OBTAIN THE NECESSARY DATA FOR DESIGNING FUTURE FURNACES WITH A LARGER CAPACITY. THE BOUNDARY CONDITIONS WERE DETD. FOR THE CASE OF HEATING THIN AND MASSIVE BODIES SIMULTANEOUSLY BY RADIATION AND CONVECTION. THE COMPLEX HEAT TRANSFER IN THE UPPER CHAMBER WAS ALSO INVESTIGATED. PB OXIDE LOOSES FROM THE MELT ARE DECREASED BY USING AIR PREHEATED AND SATD. BY VOLATILE COMPONENTS IN A REGENERATIVE HEAT EXCHANGER. THIS METHOD ALSO IMPROVES THE HEAT TRANSFER IN THE FURNACE. FURTHERMORE, SUCH A PRODUCTION SETUP IS MUCH MORE ECONOMICAL.

FACILITY: UPR. VLADIMIRSTEKO, VALIDIMIR, USSR.

UNCLASSIFIED

USSR

UDC 669.187.4.001.6

ZUBAREV, A. G.

"Intensification of Electric Smelting"

Intensifikatsiya Elektroplavki [English Version Above], Moscow, Metallurgiya Press, 1972, 208 pages.

Translation of Introduction: One characteristic peculiarity of the past few decades is the sharp increase in the production of steel. For example, in 1920 some 74,000,000 tons of steel were produced in ingots, while in 1967 the figure reached 498.7 million tons [1]. Together with the increase of the production of steel, the process of improvement of technology also continues -- the share of production of open hearth steel is being reduced as the share of oxygen-converter and electric steel increases. The world capacity for production of oxygen-converter steel was over 180,000,000 tons as of 1968. It is assumed that by 1972 it will increase to 310,000,000 tons.

The broad development of the converter method of steel production will probably lead to a sharp increase in the reserves of scrap, and electric furnaces are ideal for processing of scrap. Therefore, the production of steel is currently being expanded by construction of shops with oxygen converters and electric arc furnaces.

1/7

USSR

ZUBAREV, A. G., Intensifikatsiya Elektroplavki, Moscow, Metallurgiya Press, 1972, 208 pages.

We outline below the primary advantages of the development of the electric melting of steel:

1. The electric furnace method, in contrast to all other methods of melting of steel, allows pure scrap to be used, without the addition of cast iron or liquid metal.

2. Arc furnaces can melt steels of all types, including high-quality special steels, facilitating fine analysis and improving reproducibility of the melting process.

3. In comparison with all other processes for melting of steel, this method requires the lowest specific capital investments, particularly with a narrow range of steels mass produced and installation of units for continuous casting.

One of the main trends in the development of modern electric steel production is the continuous increase in the capacity and specific power of arc steelmaking furnaces. Recently, arc electric furnaces have been constructed with capacities of 100-200 t with transformers operating at up to 80 mva and higher.

This is explained primarily by the fact that as the capacity and specific power of arc furnaces increase, the primary technical and economic

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USSR

ZUBAREV, A. G., Intensifikatsiya Elektroplovki, Moscow, Metallurgiya Press, 1972, 208 pages.

indicators of the production of electric steel improve significantly. In the USSR, the capacity and specific power of arc electric furnaces are being increased both by means of construction of new, large shops, and by reconstruction of operating shops at increased capacity and power.

At the present time, large arc furnaces with capacities of 60, 100 and 200 t are in operation in the USSR. Together with the increased capacity of arc furnaces, various methods of intensification of the production of electric steel are being increasingly used; these methods can be divided into energetic, technological and organizational methods.

The energetic methods (increases in the power of transformers, use of fuel-oxygen burners, introduction of additional heat with liquid charge components) are of primary significance for reduction of the melting time; the technological methods (improvement of the technology of the oxidation and reduction periods, refining of metal outside the furnace, etc.), are most important for reduction of the oxidation and reduction periods and improvement of the quality of the metal; organizational methods (improvement of design of furnaces, mechanization of production processes, improvement of working conditions, etc.) can reduce downtime, increase productivity of labor and reduce the number of personnel required.

3/7

USSR

UDC 621.438-226:536.24

YEFIMCHUK, L. A., ZUBAREV, A. P., BLYUMIN, Ya. I.

"Experimental Study of Film Protection of Output Edges of Nozzle Apparatus Blades"

Teplofiz. i Teplotekhnika, Resp. Mezhved. sb. [Heat Physics and Thermal Engineering, Republic Interdepartmental Collection], No 20, 1971, pp 116-120, (Translated from Referativnyy Zhurnal Aviatsionnye i Raketnye Dvigateli, No 12, 1971, Abstract No 12.34.32, from the Resume).

Translation: Materials are presented from an experimental study of the effectiveness of the film protection of the output edges of the blades in a gas turbine engine nozzle apparatus, as well as comparative study of various versions of air flow over the protected surface.

1/1

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USSR

ZUBAREV, B. M., Deputy Minister of Geology RSFSR

"The Automated Administration System for Geological Exploration of the Ministry of Geology, RSFSR"

Moscow, Razvedka i Okhrana Nedr, No 3, Mar 73, pp 7-11

Abstract: The Ministry of Geology RSFSR has instituted an automated system for administration and information processing, as part of the system of the Ministry of Geology USSR, in order to increase the effectiveness of geological exploration. The system is used for the study of raw materials, long-range planning and to mechanize laborious tasks in all aspects of information. Five subsystems have been developed: geology, geophysics, marine geology, administration and economics, and scientific and technical information. A flow diagram indicating the resources and equipment available on various organizational levels is presented. The system was developed in three stages. During the first stage, from 1967 to 1970, the first four separate computer centers were organized and utilization began. In the second stage, from 1971 to 1975, the network of computer centers was expanded (to 10 at the end of 1972), and important problems were solved with it. Methodological 1/2

USSR

ZUBAREV, B. M., Razvedka i Okhrana Nedr, No 3, Mar 73, pp 7-11

studies were performed, training was conducted, and the problems soluble under the administration and economics subsystem were listed. Practical solutions to problems of geology and geophysics began in 1973. The third stage, from 1975 to 1980, will be complete automation and partial modernization. As an example of the use of the present system a problem in the prospects for finding tin in northern Sikhote-Aline is considered. The computer system allowed the field of likely prospects to be considerably narrowed.

2/2

USSR

UDC: None

ZUBAREV, D. N. and KHON'KIN, A. D.

"Method of Obtaining Normal Solutions to Kinetic Equations Using the Boundary Conditions"

Moscow, Teoreticheskaya i Matematicheskaya Fizika, vol. 11, No 3, 1972, pp 403-412

Abstract: The authors define normal solutions as distribution functions which are sought as functionals of such hydrodynamic parameters as density, average-mass velocity, and temperature. In this paper, they propose a method for finding such solutions with an approach similar to that of earlier methods but with certain advantages over them. The equation for which the solutions are obtained is the Boltzmann kinetic equation. The equation is put in the integral form, in which the boundary conditions are taken into account, to provide a selection of normal solutions only. This form of the equation is used to determine various approximations in constructing the normal solutions as well as to solve other problems in the kinetic theory of gases. As an example of how this method is applied, the transfer laws in a single-component gas and the distribution functions in the first approximation for low gradients are considered.

1/1

- 88 -

1/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CONSTRUCTION OF STATISTICAL OPERATORS FOR NONEQUILIBRIUM PROCESSES
-U-
AUTHOR--(02)-ZUBAREV, D.N., KALASHNIKOV, V.P.
COUNTRY OF INFO--USSR 2
SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 1, PP
126-134
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATHEMATICAL SCIENCES
TOPIC TAGS--MATHEMATIC OPERATOR, STATISTIC ANALYSIS, HAMILTONIAN,
THERMODYNAMIC ANALYSIS, KINETIC EQUATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1031 STEP NO--UR/0646/70/001/001/0126/0134
CIRC ACCESSION NO--AP0130066
UNCLASSIFIED

212 020

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0130066

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN THAT THE NONEQUILIBRIUM STATISTICAL OPERATOR (NSO), WHICH IS VALID FOR A DESCRIPTION OF A SYSTEM IF TIME INTERVALS ARE MUCH LARGER THAN THE FORGETTING TIME OF THE INITIAL DISTRIBUTION, CAN BE CONSTRUCTED AS THE INVARIANT PART OF THE QUASI EQUILIBRIUM STATISTICAL OPERATOR IN RELATION TO THE EVOLUTION OF A SYSTEM WITH GIVEN HAMILTONIAN H . GENERAL FORMULA ARE OBTAINED FOR THIS FORM OF THE NSO, WHICH RELATE THERMODYNAMIC COORDINATES AND THERMODYNAMIC FORCES; THE GENERAL EXPRESSION FOR THE ENTROPY PRODUCTION AND GENERALIZED KINETIC EQUATIONS DESCRIBING THE TIME EVOLUTION OF THERMODYNAMIC VARIABLES ARE ALSO OBTAINED. IT IS SHOWN THAT THIS SCHEME OF THE THEORETICAL DESCRIPTION OF NONEQUILIBRIUM PROCESSES IS EQUIVALENT UP TO SECOND ORDER TERMS TO THE METHOD OF QUASI INTEGRALS OF MOTION PROPOSED BY ONE OF THE AUTHORS (1). FACILITY: MATEMATICHESKIY INSTITUT IM. V. A. STEKLOVA, AKADEMII NAUK SSSR.

UNCLASSIFIED

1/2 024
UNCLASSIFIED
TITLE--BOUNDARY CONDITIONS FOR STATISTICAL OPERATIONS IN THE THEORY OF NON
EQUILIBRIUM PROCESSES AND QUASI AVERAGES -U-
AUTHOR--ZUBAREV, D.N.
COUNTRY OF INFO--USSR
SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 2, PP
276-286
DATE PUBLISHED-----70
SUBJECT AREAS--MATHEMATICAL SCIENCES
TOPIC TAGS--QUANTUM THEORY, BOUNDARY LAYER EQUATION, SCHRROEDINGER EQUATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0668
STEP NO--UR/06467/0/003/002/0276/0286
CIRC ACCESSION NO--AP0129833
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129833

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN THAT THE BOUNDARY CONDITIONS FOR THE NON EQUILIBRIUM STATISTICAL OPERATORS CAN BE FORMULATED BY MEANS OF INTRODUCING INTO THE LIOUVILLE EQUATION FOR THE STATISTICAL OPERATOR (OR THE LOGARITHM OF THE LATTER) OF INFINITESIMAL SOURCES DESTROYING THE SYMMETRY UNDER THE TIME INVERSION. THESE BOUNDARY CONDITIONS ARE VERY SIMILAR TO THOSE OF THE QUANTUM SCATTERING THEORY BY WHICH THE RETARDED SOLUTIONS OF SCHRODINGER EQUATION ARE SINGLED OUT. FACILITY: MATEMATICHSEKIY INSTITUT IM. V. A. STEKLOVA AKADAMI NAUK SSSR.

UNCLASSIFIED

1/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--DERIVATION OF THE NONEQUILIBRIUM STATISTICAL OPERATOR FROM THE
EXTREMUM OF THE INFORMATION ENTROPY -U-

AUTHOR--(021)-ZUBAREV, D.N., KALASHNIKOV, V.P.

COUNTRY OF INFO--USSR

2

SOURCE--PHYSICA (NETHERLANDS), VOL. 46, NO. 4, P. 550-4 (1970)

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--STATISTIC ANALYSIS, ENTROPY, THERMODYNAMIC EQUILIBRIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1992/0488

STEP NO--NE/0000/70/046/004/0550/0554

CIRC ACCESSION NO--AP0111681

UNCLASSIFIED

2/2 022

CIRC ACCESSION NO--AP0111681
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. IT IS SHOWN THAT THE NONEQUILIBRIUM STATISTICAL OPERATOR WHICH WAS OBTAINED PREVIOUSLY CAN BE DERIVED FROM THE REQUIREMENT THAT THE INFORMATION ENTROPY OF THE NONEQUILIBRIUM SYSTEM MUST HAVE AN EXTREMUM WITH A SET OF ADDITIONAL CONDITIONS. THE LATTER CONDITIONS IMPLY THAT THE AVERAGE VALUES OF DYNAMICAL VARIABLES WHICH DETERMINE THE MACROSCOPIC STATE OF THE SYSTEM ARE GIVEN AT ANY MOMENT OF THE PAST T_{SUB1} IN THE TIME INTERVAL INFINITE IS MUCH LESS THAN T_{SUB1} IS MUCH LESS THAN T .

FACILITY: AC.

SCI. USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 617.755.1:616-058.9:355.3:612.223.3

DASOV, N. Ya., Major, Medical Corps, ZUBAREV, F. G., Lieutenant Colonel, Medical Corps, and RUBTEL', L. T., Lieutenant Colonel, Medical Corps

"Adaptation Disturbances in Soldiers Due to Climatological Changes"

Moscow, Voenno-Meditsinskiy Zhurnal, No 4, 1973, pp 60-62

Abstract: Physiological and psychological studies were conducted on 2 groups of soldiers, 200 men in all, transported from northern to warmer southern regions, and back, during summer (June-July) and autumn (October-November) months. Summer air temperatures in the northern and southern regions were, respectively, 10 to 15° and 28 to 30°. Autumn temperatures varied from -1 to 5° in the north and from 10 to 12° in the south. In the summer, the mean weight loss after 2 weeks in the south was 1.7 kg. The pulse rate was accelerated throughout the stay in the south, reaching a peak at the end of the 2d week (a mean increase of 9 beats/min); while both systolic and diastolic blood pressures were decreased, the fall in the latter was much more pronounced ($P < 0.001$). On orthostatic tests the mean increase in the pulse rate was 10.6/min ($P < 0.001$). In addition, memory and attention spans of the soldiers improved during their stay in the south. Following return to the northern regions, the weight, pulse, and diastolic pressure did not immediately return

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USSR

DASOV, N. Ya., et al., *Voyenno-Meditsinskiy Zhurnal*, No 4, 1973, pp 60-62

to previous levels. In autumn, the change to the southern climate was accompanied by a mean weight increase of 1.5 kg, which was retained following return to the northern region, as well as an insignificant increase in pulse rate; the mean increase in systolic and diastolic pressure was 4.5 mm Hg ($P < 0.001$). On orthostatic tests pulse frequency increased by 7.6/min. Psychological tests revealed improvements similar to those observed during the summer trip. During the summer excursion the soldiers complained of excessive perspiration, decreased work capacity, loss of appetite, and somnolence in the afternoon. Only individual complaints of this nature occurred in autumn. The functional changes attendant to the transfer to the south were apparently due to the higher temperature in the southern climate, solar radiation, and hypodynamia due to inaction during the train ride. During the trip to the south the soldiers became deacclimatized to the conditions in the north and, for that reason, results of functional tests did not immediately return to former levels. Improvements in memory and attention may have been due to the fact that the soldiers became accustomed to the method of testing. The fact that results of psychological tests did not change on return to the northern regions would suggest that the psyche is relatively resistant to climatological changes.

2/2

USSR

UDC 621.375.82

ZUBAREV, I. G., MULIKOV, V. F.

"Single-Frequency, Neodymium Glass Lasers in Non-Spiking, Free Oscillation Mode and in the Mode with Modulated Q-factor"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 3, Moscow, Soviet Radio, 1972, pp 13-17 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D915)

Translation: Oscillation of a Nd-glass laser with a broad radiation line $\Delta 5 \cdot 10^{-3} \text{ cm}^{-1}$ operating in the non-spiking free oscillation mode with a pulse duration of ~ 700 microseconds was obtained. The radiation energy with a triple increase in pumping above the threshold value is equal to ~ 30 joules. The radiation of this laser was used to capture the radiation of another Nd-glass laser with modulated Q-factor. The modulation of the Q-factor was realized by a rotating prism. Here, the second laser emitted single pulses with a duration of 30 nanoseconds, an energy of 0.4 joules, and a line width of $7 \cdot 10^{-3} \text{ cm}^{-1}$. The natural line width of the laser radiation with modulated Q-factor was $\sim 14 \text{ cm}^{-1}$. The bibliography has 9 entries.

1/1

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USSR

UDC: 621.373.826

VOLKOV, V. N., ZUBAREV, I. G.

"On an Auxiliary Mechanism of Formation of Excited Atoms of Iodine in a Photodissociation Laser"

Kratkiye soobshch. po fiz. (Brief Reports on Physics), 1972, No 6, pp 24-29
(from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12D231 by A. K.)

Translation: Experimental research is done which confirms the hypothesis of a chemical reaction in the active medium of a photodissociation laser resulting in the formation of iodine in the $2P_{1/2}$ state. It is shown that the effectiveness of the auxiliary process of iodine formation in the $2P_{1/2}$ is greater than 15% relative to photodissociation.

1/1

USSR

UDC: 621.373:530.145.6

GRASYUK, A. Z., ZUBAREV, I. G., MULIKOV, V. F.

"Stretching a Giant Pulse of a Neodymium Glass Laser by Means of the Forced Raman Scattering Effect in Liquid Nitrogen"

Kratkiye soobshch. po fiz. (Brief Reports on Physics), 1971, No 2, pp 27-31
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D162)

Translation: The authors report on use of the method of stretching a pulse of Q-switched laser emission by introducing nonlinear losses into the cavity thanks to forced Raman scattering in a neodymium laser. Silicate and phosphate glass rods were used as the active media. Pulse stretching was achieved only for a phosphate glass laser, which yields a considerably narrower emission spectrum. A comparison of experimental data shows that introducing a cell with liquid nitrogen into the cavity causes stretching of each of three initial pulses until they merge into a single pulse, which is due to cessation of amplification in the pulse peak region as a consequence of nonlinear losses with continued amplification of the pulse edges. A. K.

1/1

USSR

UDC: 539.4

ZUBAREV, P. V., DEMENT'YEV, L. N., Moscow

"Influence of Type of Loading on High-Temperature Creep of Zirconium Carbide"
Kiev, Problemy Prochnosti, No 8, Aug 73, pp 61-64.

Abstract: The influence of the type of loading on creep of fine-grained zirconium carbide $ZrC_{0.940}^{O_{0.005}N_{0.003}}$ at temperatures of 2150-2630° C and stresses of 0.2-2.0 kg/mm² is studied. It is demonstrated that during extension, compression and bending, the creep curves agree with each other satisfactorily, with the exception of the section of accelerated creep. It is established that the form of loading has no influence on the mechanism of creep. It is assumed that creep is controlled by diffusion processes along grain boundaries.

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USSR

UDC 669.01.29.82.8+539.376.219

ZUBAREV, P. V., and DEMENT'YEV, L. N., Moscow

"The Relationship Between the Activation Energy of High-Temperature Creep and the Diffusion in Carbides of Transition Metals"

Kiyev, Problemy Prochnosti, No. 9, Sep 71, pp 47 -51

Abstract : The creep rates and values of the creep activation energy for $ZrC_{0.92}$ and $ZrC_{0.97}$ have been determined for temperatures higher than 0.5 of the fusing temperature. Based on the analysis of published creep and diffusion data in inclusion phases, it is demonstrated that the creep activation energy of metals of the fourth group of the Periodic System and monocompounds of uranium, that is, of materials with a high binding energy Me - C, can be equal both, to the diffusion activation energy of the metal and the carbon activation energy in carbides. In carbides of metals of the fifth group of the Periodic System of stoichiometric composition, where the binding energy Me - Me increases, the creep activation energy is equal to the diffusion activation energy of the metal in carbide. Three illustr., one table, 33 biblio. refs.

1/1

USSR

UDC 632.95

ZUBAREV, S. B., IGOSHEV, A. D., LUKASHENOK, V. N., and SOBOLEV, A. S.,
Ufa Chemical Plant

"A Method for Separating 2,4-Dichlorophenol"

USSR Author's Certificate No 250154, filed 29 May 67, published 15
Jan 70 (From RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N707 P
by I. M. Mil'shteyn)

Translation: A method is proposed for separating 2,4-dichlorophenol (I), a half-finished product used in the manufacture of herbicides, from a mixture of chlorophenol isomers involving the use of multistage alkaline extraction in an organic solvent medium. The two-column system consists of two rotary-disk extractors possessing 27 and 22 disks rotating at 100 and 200 rpm, respectively. A NaOH solution is the extracting agent in both columns, 0.9 N for the first and 0.367 N for the second. A mixture of 4.13 N of commercial I is perchloroethylene is supplied to the first column from above while the NaOH enters from below. The raffinate of the first column is 99.8% I. The extract of the first column is acidified with HCl acid. Commercial I is extracted with perchloroethylene, diluted to 0.745 N, and supplied to the second column. The resulting 91.1% I is returned to the first column. 1/1

- 20 -

Pesticides

USSR

UDC: 632.95

ZUBAREV, S. V., SHITOVA, E. N., and KALUZHSKAYA, I. N.

"Synthesis and Analysis of the Acaricide Benzylbenzoate"

Dokl. Neftekhim. sektsiya. Bashkir. resp. pravl. Vses. khim.o-va im. D. I. Mendeleyeva (Reports of the Petrochemical Section. Bashkir Republic Executive Committee of the All-Union Chemical Society im. D. I. Mendeleev), 1969, vyp 5, pp 98-100 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N614 by G. V. Kuznetsova)

Translation: An economical method of preparing the acaricide benzylbenzoate (I), which is suitable for medical purposes, is described. It involves an ester interchange of PhCOOBu (instead of the PhCOOMe previously used) with PhCH₂OH. The mixture of PhCOOH and BuOH (in a molar ratio of 1:1.5) is heated in the presence of 0.5% H₂SO₄ until the water is no longer distilled off. After distillation of the excess BuOH, the resulting PhCOOBu is neutralized with Na₂CO₃ and treated with 15% excess PhCH₂OH with 1% Na₂CO₃ for 10 hours at 180 to 220° with distillation of the BuOH formed (at the end with 100 to 150 mm). The Na₂CO₃ is filtered from the chilled mixture, producing I with a yield of 80%. Gas chromatography was used for the analysis.

1/1

USSR

UDC 632.95

SOBOLEV, A. S., KALUZHSKAYA, I. N., and ZUBAREV, S. V.,

"Auxiliary Chromatographic Method of Analyzing the Butyl Ester of 2,4-Dichlorophenoxyacetic Acid"

Dokl. Neftekhim. Sektsiya. Bashkir. resp. pravl. Vses. khim. o-va im. D. I. Mendeleyeva (Reports of the Petrochemical Section. Bashkir Republic Executive Committee of the All-Union Chemical Society im. D. I. Mendeleev), 1969, vyp 5, pp 242-245 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N700 by I. A. Revel'skiy)

Translation: To determine the butyl ester of 2,4-D obtained from pure BuOH, 3 to 5 ml of the commercial product is analyzed by gas chromatography with a detector from heat conduction in a stainless steel column (2 X 0.6 cm) filled with teflon with 15% silicone fluid, 1322/300 photometer, with the temperatures of the evaporator and column 240 and 180°, respectively. Under these conditions it is also possible to determine the content of chlorinated phenols in the finished product.

1/1

- 3 -

USSR

UDC: 535.14

DEMENT'YEV, V. A. and ZUBAREV, T. N.

"Crammed Operation in Single-Mode Quantum Lasers"

Moscow, Doklady Akademii Nauk SSSR, vol 204, No 1, 1 May 1972, pp 66-69

Abstract: Interest has been aroused in the analysis of single-mode laser operation in connection with the publication of experimental data indicating that the condition known as "crammed" operation, an unstable state, may arise. So far, these experimental results have been given no theoretical explanation, an omission this article sets out to rectify by analyzing the single-mode equations of laser operation. Consisting of a system of three, these equations are given in terms of the field, the polarization, the inverse population of the material, the parameter characterizing the pumping power, the effective density, and the frequency and dipole moment of the transition between the operating levels of the active luminescence centers. It is shown that crammed operation may not be connected with instabilities in the monochromatic laser mode for small disturbances.

1/1

Water Treatment

USSR

UDC 541.18:538+548.51

ZUBAREV, V. A., Chemistry Faculty, Moscow University

"The Role of Colloidal Ferric Hydroxide in the Process of Magnetic Water Treatment"

Moscow, Kolloidnyy Zhurnal, Vol 33, No 4, Jul-Aug 71, pp 536-538

Abstract: On the basis of an analysis of the literature dealing with the effect of a magnetic field on water and its solutions, the article considers the process of magnetic water treatment and subsequent changes in water in heating devices, specifically the effect of the magnetic field on the kinetics of crystallization of carbonate salts from aqueous solutions containing iron impurities. It is shown that the question boils down to a study of transformations of colloidal nonequilibrium systems under the effect of magnetic and possibly other fields, and no hypotheses concerning changes in the structure of the water need to be introduced, as was done by V. B. YEVDOKIMOV. The author thanks N. I. KOBOZEV for valuable comments in discussing the material of the article.

1/1

USSR

UDC 615.477.24:616.12-089.28

SHUMAKOV, V. I., MOGILEVSKIY, E. B., KROL, A. D., ZUBAREV, V. A., SHIRKINA, T. V.,
and YUGEN, A. A., Scientific Research Institute of Clinical and Experimental
Surgery, Moscow

"Model of an Artificial Heart for Intrapericardial Implantation"

Moscow, Meditsinskaya Tekhnika, No 5, Sep/Oct 70, pp 5-10

Abstract: A model is presented of an implantable artificial heart which consists of two mirror halves (right and left), each containing an artificial auricle and an artificial ventricle. The median surfaces of the ventricles are flat so that they may be easily connected after implantation. The overall dimensions of the unit and the volume of its cavities depend upon the heart dimensions of the animal for which the artificial heart is intended. Information is provided concerning the design, development, and testing of the artificial heart unit. Stand tests of implantable models developed by the authors and of control systems for them have made it possible to determine their functional parameters and to select the optimal operating conditions. It has been determined that the models can be used for experiments with total substitution of the pump function of the natural heart. Experiments on calves and dogs have been already initiated.

1/1

1/2 034

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--MANOMETER FOR MEASURING THE DENSITY OF MOLECULAR BEAMS IN THE OGRA II INSTALLATION -U-

AUTHOR--ZUBAREV, V.F.

Z

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, 1, 168-70

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MANOMETER, MOLECULAR BEAM, SPECIFIC DENSITY, ELECTRON GUN, PLASMA MEASUREMENT/(U)OGRA 2 THERMONUCLEAR DEVICE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAHE--1988/1479

STEP NO--UR/0120/70/001/000/0168/0170

CIRC ACCESSION NO--AP0106235

UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106235

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN IONIZATION MANOMETER IS DESCRIBED FOR MEASURING THE D. OF THE MOL. FLOW OF GAS PASSING THROUGH THE AREA OF PLASMA ACCUMULATION. THE MONOMETER CONSISTS OF AN ELECTRON GUN BLOCK AND A COLLECTOR BLOCK PLACED ON BOTH SIDES OF THE PASSING FLOW. THE MANOMETER HAS LINEAR CHARACTERISTICS IN THE RANGE OF 10 PRIME NEGATIVE 10 MINUS 10 PRIME NEGATIVE 5 TORR WITH A SENSITIVITY OF 10 PRIME 3-TORR.

FACILITY: INST. ATOM. ENERG., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 541.183:546.59+541.128.1

YAGODOVSKIY, V. D., STEPANOV, V. M., and ZUBAREV, Yu. A., Patrice Lumumba
Friendship University, Moscow

"Effect Which the Adsorption and Catalytic Dissociation of Formic Acid Have
on the Absorption Spectrum of Thin Gold Films"

Moscow, Kinetika i Kataliz, Vol 12, No 4, Jul/Aug 71, pp 942-947

Abstract: A film of gold was produced by vapor deposition of gold wire onto the window of a sealed quartz cell at a residual pressure of $1 \cdot 10^{-6}$ - $5 \cdot 10^{-7}$ mm Hg. The resultant films were thermally aged for 30 minutes at temperatures from 125 to 200°C in a krypton atmosphere. The absorption spectrum was recorded on a ZMR-2 monochromator and the adsorption isotherms were determined by leakage through a capillary. The rate of dissociation of formic acid was measured from the change in hydrogen pressure (with periodic freezing of the reaction mixture with liquid nitrogen) in the interval from $1 \cdot 10^{-4}$ - $2 \cdot 10^{-2}$ mm Hg. The hydrogen pressure was recorded by an LT-2 tube calibrated with respect to a McLeod gage. In five films which were made, a broad peak was observed in the 5500-6700 Å range, which is evidence of the granular structure of the films. A change in the absorption spectra of the metal was observed in the case of strong adsorption

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YAGODOVSKIY, V. D., et al., Kinetika i Kataliz, Vol 12, No 4, Jul/Aug 71, pp 942-947

of formic acid on granular gold films, indicating an increase in the concentration of the conduction electrons of the metal. A study is made of the kinetics of dissociation of formic acid on these films with simultaneous registration of the absorption spectrum of the metal. The observed changes in the spectrum are interpreted with the aid of the theory of plasma vibrations of electrons. The reaction rate is compared with the rate of change in the number of conduction electrons during the reaction.

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USSR

UDC: 621.397.61

KATAYEV, S. I., MAKOVEYEV, V. G., ZUBAREV, Yu. B.

"On Some Technical Facilities for Enrichment of Television Programs"

V sb. Televizion. tekhnika (Television Technology--collection of works),
Moscow, "Svyaz", 1971, pp 253-265 (from RZh-Radiotekhnika, No 6, Jun 71,
Abstract No 6G193)

Translation: Data are given on a number of devices developed at the
Moscow Electrical Engineering Institute of Communications for extending
the possibilities of TV transmissions. Among these are: equipment for
combining image and sound signals, a converter of TV standards, equip-
ment for combining an actor's image with an artificial background, and a
TV frame stopper. Five illustrations, bibliography of nineteen titles.
N. S.

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USSR

2
UDC: 621.397.238

KATAYEV, S. I., UL'YANOV, V. N., ZUBAREV, Yu. B., MAKAROV, V. V., KHITROVO, N. G.,
Moscow Electrical Engineering Institute of Communications

"A Device for Transmitting a Television Image and Accompanying Audio Signals"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrabotki, Tovarnyye Znaki, No 19,
1970, Author's Certificate No 272354, filed 19 Nov 68, p 39

Abstract: This author's certificate introduces a device for transmitting a television image and accompanying audio signals within the limits of the video signal frequency spectrum. The unit contains a sound signal source, a phase shifter, two pulse modulators, a combined video signal shaper, a driven selsyn, and a special synchronism shaper. As a distinguishing feature of the device, combination distortions are reduced by inserting a series-connected electronic key and memory element between the output of the sound signal source and the input of one of the pulse modulators, as well as inserting the same combination (series-connected electronic key and memory element) between the input of the other pulse modulator and the phase shifter. Voltage from a cadence pulse generator is sent to both electronic keys.

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1/2 029

TITLE--HISTOCHEMICAL CHANGES

UNCLASSIFIED

PROCESSING DATE--20NOV70

POISONING -U-

IN ADRENAL GLANDS DURING POTASSIUM DICHROMATE

AUTHOR--ZUEAREVA, L.A.

2

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL (MOSCOW) 1970, 33(2), 234-6

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--POTASSIUM COMPOUND, CHROMIUM COMPOUND, TOXICITY, ADRENAL GLAND, HISTOCHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/F-RAME--3002/0662

STEP NO--UR/0390/70/033/002/0234/0236

CIRC ACCESSION NO--AP0131267

UNCLASSIFIED

Z/2 029

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0131267

ABSTRACT/EXTRACT--(U) CP-C- ABSTRACT. GASTRIC DOSAGE WITH K SUB2-CR SUB2
O SUB7 IN RABBITS, 0.5 MG-KG DAILY FOR 7 DAYS, STIMULATES ADRENAL
ACTIVITY. PERMEABILITY OF VASCULAR WALLS INCREASES; ACID
MUCCPOLUSACCHARIDES ACCUMULATE IN VESSEL WALLS. AT CONCN. OF 10 PRIME
NEGATIVE10-10 PRIME NEGATIVE8, K SUB2 CR SUB2 O SUB7 ACTIVATES
NONSPECIFIC ESTRASES; AT 10 PRIME NEGATIVE5-10 PRIME NEGATIVE3 IT
INHIBITS. AT DILNS. TO 10 PRIME NEGATIVE7, IT INHIBITS THE ACTIVITY OF
SUCCINATE DEHYDROGENASE. FACILITY: AKTYUBINSK, MED. INST.,
SKTYUBINSK, USSR,

UNCLASSIFIED

1/2 009
UNCLASSIFIED
TITLE--STRUCTURE AND CHEMICAL REACTIONS OF CARBAZOLE AND ITS DERIVATIVES.
34. CHLOROSULFONATION OF CARBAZOLE -U-
AUTHOR--(03)-SHISHKINA, V.I., PROSHECHKINA, T.I., ZUBAREVA, L.N.
PROCESSING DATE--04DEC70
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2),
269-70
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--MOLECULAR STRUCTURE, ORGANIC AZOLE COMPOUND, SULFONATION,
CHLORINATION, SULFONIC ACID
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1129
STEP NO--UR/0153/70/013/002/0269/0270
CIRC ACCESSION NO--AT0134815
UNCLASSIFIED

2/2 009

CIRC ACCESSION NO--AT0134815

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN CCL SUB4, A GREAT EXCESS OF
 CLSO SUB3 H (II) IS REQUIRED FOR THE CHLOROSULFONATION OF CARBAZOLE (II).
 THUS, BY BOILING 4 HR IN CCL SUB4 THE YIELD OF CARBAZOLESULFONYL
 CHLORIDE IS NEGLIGIBLE WITH 8:1 I-II, 36PERCENT WITH 15:1 I-II, AND
 85PERCENT WITH 30:1 I-II. THE K SALTS OF CARBAZOLE, 3,6,DISULFONIC AND
 1,3,6,TRISULFONIC, AND THE NA SALT OF CARBAZOLE, 3,6,8,TETRASULFONIC
 ACID WERE CHLOROSULFONATED IN 86-94PERCENT YIELD WITH 30 FOLD EXCESS OF
 I. IN MENO SUB2 OR DIOXANE, I IS NOT CHLOROSULFONATED. IN THE ABSENCE
 OF CCL SUB4, A GOOD YIELD OF CARBAZOLESULFONYL CHLORIDE IS OBTAINED BY
 HEATING 0.024 MOLE I 4 HR WITH 0.432 MOLE II AT 100-10DEGREES.
 FACILITY: URAL. POLITEKH. INST. IM. KIROVA, SVERDLOVSK, USSR.

UNCLASSIFIED

ZUBAREVA, L.V.

And / R 140 / 5.11.1972
L. V. Zubareva

where $h_0 = 50$ m. For $h > 3$ km, it becomes

$$C^2(h) = C^2(h_0) \exp\left(\frac{h-h_0}{h_0}\right)$$

(3)

Using the foregoing expressions for $C_n^2(h)$ in a dimensionless fashion, the authors compare their calculated results with those of several other authors for altitudes up to about 10 km; these results are given graphically. A further analysis shows that less turbulence broadening is suffered when transmitting downward than upward through the atmosphere; this however is not contradictory if the finite dimensions of the transmitter aperture are considered, rather than the point source assumed in the theoretical calculations. It is also shown that for downward propagation, the maximum turbulence scattering will consistently occur at the same transmitter altitudes the authors' data put this at approximately 2 km.

Tsaplin, V. S. and L. V. Zubareva.
Transient and spatial intensity distribution of excess radiation in the vicinity of the equator. *GIA*, no. 3, 1972, 536-537.

Satellites of the Kosmos series were launched from July 1965 through March 1967, into orbits with apogees of about 350 km, perigees of about 200 km, and a 65° inclination to the equatorial plane, i. e. such that over 80% of the time the satellites were well below the radiation belts of the earth. A gasdischarge counter installed on each spacecraft registered on the basis of a direct passage, electrons with an energy of $E_e > 8$ Mev and protons with an energy of $E_p > 50$ Mev. The

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UDC: 621.372.544(088.8)

SHCHERBAKOV, N. S., TIKHONOV, G. A., ZUBAREVA, N. A., GVOZDEV, S. A.

"A Flip-Flop Device"

USSR Author's Certificate No 263665, filed 18 Nov 68, published 8 Jun 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G300 P)

Translation: A flip-flop device based on potential AND-OR logic elements is proposed. The device contains main and auxiliary setting flip-flops and four controlling circuits. To improve the operational reliability of the device, the outputs of the controlling circuits of the main setting flip-flop are connected to dissimilar inputs of the auxiliary setting flip-flop, and the outputs of the controlling circuits of the auxiliary setting flip-flop are connected to identical inputs of the main setting flip-flop. The inputs and outputs respectively of each of the controlling circuits of the main and auxiliary flip-flop are interconnected.

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1/2 018
UNCLASSIFIED
TITLE—INHIBITION OF CUMENE OXIDATION BY A CO DH SUB2 PYCL COMPLEX -U-
AUTHOR—(02)—DENISOV, YE.T., ZUBAREVA, N.G. PROCESSING DATE—30OCT70
COUNTRY OF INFO—USSR
SOURCE—IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 575-80
DATE PUBLISHED—70
SUBJECT AREAS—CHEMISTRY
TOPIC TAGS—CUMENE, CHEMICAL REACTION KINETICS, OXIDATION INHIBITION,
COBALT COMPLEX, PEROXIDE
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—2000/0744
CIRC ACCESSIGN NO—AP0124414
STEP NO—UR/0062/70/000/003/0575/0580
UNCLASSIFIED