RAYNOV, Yu. A.

SO: JPRS 59299
14 June 73

OBTAINING EPITAXIAL SILICON FILMS WITH THE APPLICATION OF HYDROGEN OF HIGH PURITY AND STUDYING THE ADMIXTURE DISTRIBUTION PROFILE

all- semiconductor materials

[Article by Yu. A. Raynov, A. L. Shimalinkina, A. S. Lyutovich, V. P. Prutkin, V. V. Kharchenko, E. Khodzhakhmedov; Novosibirsk, Protsessy Rosta i Struktura Monokristallicheskikh Sloyev Poluprovodnikov -- Trudy Simpoziuma, Russian, Part 2, 1969, pp 85-92]

The distribution profile of the admixtures in the epitaxial layers plays the decisive role in insuring the given operating characteristics of the semi-conducting devices.

The requirement on obtaining precision profiles is intensified sharply in connection with microminiaturization and the technology of solid state circuitry.

On the other hand, the nature of the admixture distribution in the epitaxial layers provides rich information permitting the discovery of the mechanism of the interaction of the admixtures with the growing crystal.

In practice, the admixture distribution depends on the effect of many chemical-physical factors among which the principal ones are the reaction kinetics in the gas phase, the capture and displacement of admixtures during the growth process, the phase equilibria and the diffusion over the surface and in the solid state.

There are several papers devoted to the admixture distribution during epitaxial growth [1-3, 5, 6]; however, in them the most important question is not investigated -- the distribution of the film in the body connected with purposeful alloying from the gas phase in the growth process.

Grove [1] investigated the admixture distribution in the film-substrate system for the case where the alloying admixture was evaporated from the solid phase and then was again crystallized from the vapor-gas mixture.

In the indicated paper a study was made of a distribution profile of the admixtures on the basis of the diffusion theory in the solid state, and special experiments were performed with antimony and boron. The author

USSR

UDC 621.382.002

RAYNOV, YU.A.

"Diamond Processing Of Semiconductor Materials"

Elektron.tekhnika. Nauch.-tekhn. sb. Tekhnol.,organiz. proiz-va i oborud. (Electronics Technology. Scientific-Technical Collection. Technology, organization of production and equipment), 1972, Issue 1(49), pp 74-80 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B424)

Translation: Problems of grinding silicon wafers with a combined abrasive are considered. The machine tools for cutting semiconductors and the cutting diamond disks are described, as well as equipment and tools for grinding. The quality of the processed wafers is evaluated. Recommendations are made with respect to the fitting out with apparatus of the process of grinding and polishing silicon substrates. Summary.

1/1

RAYNOVA, Yu. P.

JPRS 59263

6.73

6

IV-5. INTENSIFICATION OF THE GROWTH PROCESSES OF EPITAXIAL LAYERS BY PHOTO EXITATION AND THE APPLICATION OF ELECTROMAGNETIC FIELDS

[Article by Yu. D. Chistyakov, A. D. Gerasimov, Yu. P. Raynova, A. H. Paliyenko, V. A. Kiryukhin, V. I. Sharapov, Moscow; Novosibirsk, III Simpozium po Protsessam Rosta I [illegible] Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 46]

The effect on the system from photoirradiation and electromagnetic fields permits, in contrast to the thermal effect, stimulation of defined chemical reactions both in the volume and at the phase interface. Each chemical act, depending on the electronic transitions taking place in it requires irradiation by light of a strictly defined wave length. The photoirradiation offers the possibility of simple realization of a selective crystal growth with respect to area.

In the papers by Frazier and Kumazava it was demonstrated that irradiation by ultraviolet light lowers the autoepitaxy temperature of the silicon in the presence of hydrogen reduction of $SiCl_4$ and Si_2Cl_6 respectively, and with a constant temperature it increases the growth rate.

In the experiments of the authors by application of an electric field with an intensity of 3 kv/cm in the chloride process of silicon autoepitaxy, it was possible to increase the growth rate of the epitaxial layers and also to reduce the process temperature. In addition, the variation in intensity of the electromagnetic field permits variation of the alloying level without varying the composition of the vapor-gas mixture.

The indicated effects also open up new possibilities for integrating the technological processes.

USSR

UDC 621.315.592:546.28

CHISTYAKOV, YU.D., RAYNOVA, YU.P., MALININ, A.YU.

"Mechanism Of Formation Of Oxide Films Of Silicon From Vapor-Gas Mixture [$SiCl_4 + H_2 \longrightarrow CO_2$]"

Sb.nauch.tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1972, Issue 8, pp 174-183 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B84)

Translation: The principal kinetic characteristics are considered of the process of reaction of $SiCl_4$ with H_2 and CO_2, and conclusions are drawn concerning the reaction mechanism of the latter. The micromechanism of the formation of the oxide phase of the vapor-gas mixture [$SiCl_4 + H_2 + CO_2$] is considered in accordance with the phase diagrams in the system Si-O. 7 ref. Summary.

1/1

RAYNUS, A.S.

Acoustics

JPRS 57115

27 September 1972

UNDERWATER COMMUNICATIONS AND TOWED EQUIPMENT

Selected translations from the Russian-language periodical Sportsmen-Radyoshnik, No 29, 1972, DOSAAF Publishing House, Moscow, signed to press 17 January 1972, pp 26-30, 40-47.

CONTENTS

AA0043407

RAMS G.B.

(UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243214 ANALYZING POLARIZED LIGHT, from natural and artificial double-refracting substances, can be done with polarized prisms of Nicol, Glan-Thompson, Arens, etc., tupe, comprising two or three components cemented together with Canada balsam or other transparent cement. Under powerful illumination these compounds can fail; the proposal is for a design of better thermal stability. The diagram shows a prism of a bi-refringent crystal with an internal twinned plane $ABCDA_1B_1C_1D_1$. The plane $MEFNN_1F_1E_1M_1$ is the displacement plane in which lie the optical axes of the original and twinned

1/2

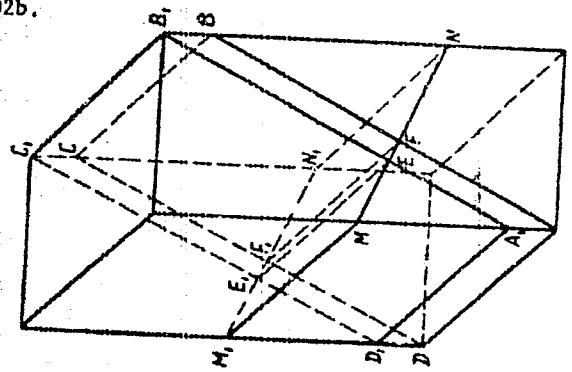
2 i

19761701

AA0043407

parts of the crystal. For an analogue of crossed Nicols, the polarizer is rotated until the polarization of the ordinary light inside the birefringent device. Then according to Malus' Law there will be only one ray in the original part of the twinned crystal, and since its angle of incidence on the twinning plane is the angle of total internal reflection, it is fully reflected; that is, the twinned crystal fulfils the function of a light analyser.

24.6.66 as 1087110/26-25.G.B.RAIS (15.9.69)Bul 16/ 5.5.69. Class 42h. Int.Cl.G 02b.



2/2

19761702

USSR

UDC 621.382.002

GAYSINSKIY, V.B., GAL'CHINETSKIY, L.P., GRIGOR'YEV, A.N., KOSHKIN, V.M., KULIK, V.N., NIKOLAYCHUK, L.I., PIVOVAR, L.I., RAYSKIN, E.K., SYSOYEV, L.A., FAYNER, M.SH.

"Ion Implantation Of Single Crystals Of Cadmium Sulfide"

V sb. Monokristally i tekhnika (Single Crystals And Technology--Collection Of Works), Issue 6, Khar'kov, 1972, pp 109-112 (from RZh:Elektronika i yeye primeneniye, No 11, Nov 1972, Abstract No 11B459)

Translation: The effect was studied of the dose and energy of irradiation by lithium ions in the temperature range from minus 70 to plus 180° C on the conductivity of cadmium sulfide. A divergence is found between the theoretically calculated value of the depth of penetration of lithium ions and the experimental results. These divergences are accounted for by the marked differences of the structures of the surface layer and the volume of the crystal. With the aid of ion implantation piezosemiconductor transducers were produced based on a high-resistance layer in CdS. Summary.

1/1

USSR

UDC 615.216.5.015.45:612.13

RAYSKIY, V. A., ROZONOV, Yu. B., and CHICHKANOV, G. G., Moscow Institute of Psychiatry, RSFSR Ministry of Health, and Institute of Pharmacology, Academy of Medical Science USSR

"Nature and Mode of Action of Diazepam on Some Parameters of the Blood Circulation"

Moscow, Terapevticheskiy Arkhiv, No 8, 1973, pp 35-39

Abstract: Peroral administration of diazepam had no significant effect on the pulse rate, blood pressure, or EKG of cardiac patients with or without postinfarction neurotic manifestations. However, parenteral injection of the drug produced moderate hypotension, weak or moderate bradycardia and, in some cases, tachycardia. Experiments on cats showed that the hypotensive effect of diazepam is caused by a decrease in vascular tone resulting mainly from inhibition of the central regulation of sympathetic tone. The drug also relaxed briefly the smooth musculature of the vascular walls.

1/1

USSR

UDC 615. 14.03

RAYSKIY, V. A.

Psikhofarmakologicheskiye sredstva v meditsinskoy praktike (Psychopharmacological Agents in Medical Practice), Moscow, 1972, 128 pp

Translation:

Abstract

A great deal of experience has been gained in recent years with the use of new psychopharmacological (psychotropic) agents to treat mental diseases. These agents not only affect the human psyche, they can also lower arterial pressure, diminish convulsions, relax muscles, act on the metabolic processes, etc. In view of this wide range of activity, the psychopharmacologic agents have come to be used in the treatment of a variety of pathological conditions outside of the psychiatric clinic.

The book examines the problems connected with the use of psychotropic drugs in internal, surgical, gynecological, infectious, and other diseases.

The author briefly describes the characteristics of the principal drugs and their so-called side effects. He analyzes in detail the indications for their use in various diseases, the advantages and disadvantages of the different drugs, the doses and methods of administration. Emphasis is placed on the possibility of using psychopharmacotherapy in broad medical practice, especially in districts handled by doctor's assistants with a minimum amount of

1/3

USSR

RAYSKIY, V. A., Psikhofarmakologicheskiye sredstva v meditsinskoy praktike, 1972, 128 pp

equipment at their disposal and simple medical supervision. The specific indications and results of treatment are illustrated with clinical examples. The book is intended to familiarize junior medical personnel with new possibilities of treating many diseases.

Contents

USSR

RAYSKIY, V. A., Psikhofarmakologicheskiye sredstva v meditsinskoy praktike, 1972, 128 pp

3/3

USSR

3

UDC 539.213.1

ALEKSANDROV, S.B., BALODE, D.R., BELKIND, A.I., NEYLAND, O.YA., RAYSUMA, I.K., SILIN'SH, E.A., TURE, L.F.

"Photoelectronic Properties And Energy Structure Of Transbisbindonilen"

V sb. Poluprovodniki i ikh primeneniye v elektrotekh. (Semiconductors And Their Application To Electrical Engineering--Collection Of Works), No 5, Riga, "Zinatne," 1971, pp 221-230 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A20)

Translation: The results are discussed of a study by the method of photoconductivity and photoelectronic emission of the properties of a thin film system of transbisbindonilen. Possible mechanisms are considered of photoproduction of charge carriers, and an energy scheme of a molecular crystal of transbisbindonilen is proposed. 8 ill. 10 ref.

1/1

AM0043567

Soviet Inventions Illustrated, Section II Electrical, Derwent, UR 0482

2/70

243007 CIRCUIT FOR GENERATING A SEQUENCE OF PULSES WITH DIFFERENT POLARITIES. The pulse forming module is an amplifier built on a transistor (2) with a positive feedback. The modulating pulses can be impressed on this selection the pulses coming from the output transformer (3) will be given their polarity. The frequency is controlled by the timing pulses applied to terminals (9).

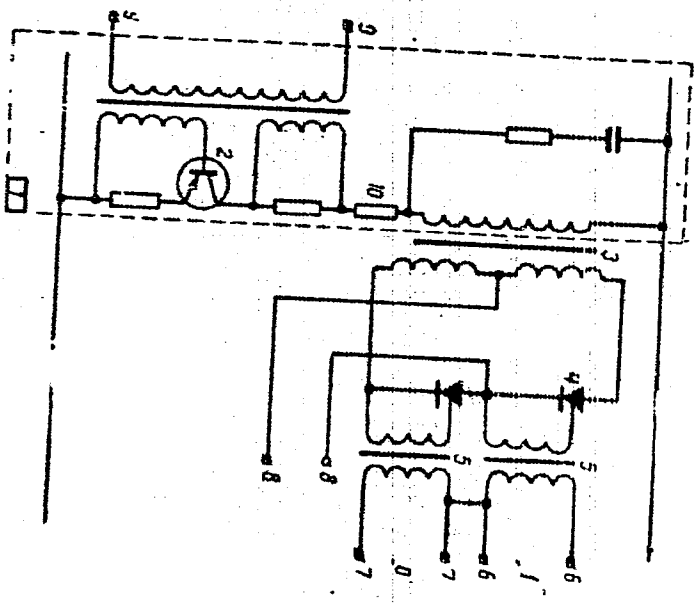
29.3.68 as 1227972/18-24. O.A. RAYSON & V.M.VASIL'YEV. (25.9.69) Bul 16/5.5.69. Class 21c, 74b. Int.Cl.G 05g, G 08c.

1/2

4

19762025

AA0043567



2/2

19762026

AA0044805 Rayson, O.A.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

243946 CONTACT PICKUP FOR ELECTRIC CONDUCTIVITY OF LIQUIDS, comprising an insulating tube (1), current electrodes (2), with the outer electrodes joined together and earthed, and four potential electrodes (3). Measurement transformers (Tp1, Tp2) are connected to the electrodes (3). Measurement transformers (Tp1, Tp2) are connected to the electrodes (3); their secondary windings are connected in series.

If resistances in the pickup sections between the electrodes (3) are equal, differences in currents flowing through these sections practically do not affect the output voltage(Uvykh), obtained by addition of voltages collected from the electrodes and appearing at the transformers (Tp1, Tp2) secondary windings. As the outer current electrodes are joined together, a parasitic shunting resistance has no effect on the output voltage. 23.4.65 as 1004754/26-25.ROZENBLIT,A.B.et al. (9.10.69) Bul 17/14.5.69. Class 421. Int.Cl.G 01n.

2/70

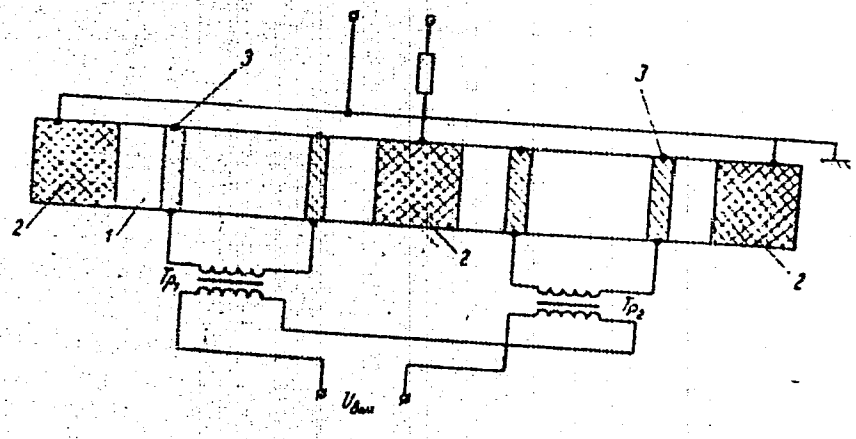
1/2

4

19771643

AA0044805

AUTHORS: Rozenblit, A. B., Raysov, O. A., Zozulya, B. I.



2/2

19771644

UNCLASSIFIED

TITLE--CHANGES IN PLEURAL ABSORBING ABILITY UNDER THE EFFECT OF HIGH FREQUENCY ELECTROMAGNETIC OSCILLATIONS ON THE ORGANISM -U-

PROCESSING DATE--090CT70

AUTHOR-(02)-RAYTELBERGBLANK, V.R., RAKHMAN, F.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 3, PP 379-384

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LUNG, CAT, PHOSPHORUS ISOTOPE, RADIOACTIVE TRACER, ELECTROMAGNETIC BIOLOGIC EFFECT, ULTRASONIC BIOLOGIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1121

STEP NO--UR/0238/70/016/003/0379/0384

CIRC ACCESSION NO--AP0115140

UNCLASSIFIED

2/2 032 UNCLASSIFIED

CIRC ACCESSION NO--AP0115140 PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PLEURAL ABSORBING ACTIVITY WAS STUDIED UNDER EFFECT OF ELECTROMAGNETIC FIELDS AND ULTRASOUND OF DIFFERENT POWER AND DURATION IN 123 CATS. ABSORBING FUNCTION OF THE PLEURAL CAVITY WAS STUDIED BY THE METHOD OF RADIOACTIVE INDICATION. RADIOACTIVE PHOSPORUS WAS ADMINISTRATED IN THE INDICATOR DOSAGE 22.5 MU KG. ABSORPTION WAS STUDIED IN DYNAMICS 5, 10, 20, 30, 45 60, 90 AND 120 MIN AFTER ADMINISTRATION OF P PRIME32 TO THE PLEURAL CAVITY. THE INVESTIGATIONS SHOWED, THAT THE DEGREE AND DIRECTION OF THE CHANGES IN THE PLEURAL ABSORBING FUNCTION DEPENDS ON THE POWER AND DURATION OF THE EFFECT OF ELECTROMAGNETIC OSCILLATIONS ON THE ORGANISM AND ON THE PHYSICAL CHARACTERISTICS OF THE AGENT. FACILITY: DEPARTMENT OF PATHOLOGICAL PHYSIOLOGY AGRICULTURAL INSTITUTE, ODESSA.

UNCLASSIFIED

USSR

UDC 577.15/17

YEVDOKIMOVA, G. A., RAYTSINA, G. I., KOSTYUKEVICH, L. I., and MILYUSHCHINA, N. A., Peat Institute, Academy of Sciences Belorussian SSR

"Sulfuric Acid Hydrolyzates of Lowland Peats as Growth Stimulators for Microorganisms and Plants. Composition of Nitrogen-containing Compounds. II"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Khimicheskikh Nauk, No 6, 1970, pp 87-90

Abstract: The authors studied the amino acid composition of sulfuric acid hydrolyzates of five samples of lowland peat, obtained by the action of sulfuric acid of varying concentrations at atmospheric and elevated pressure. The amino acids were isolated from the hydrolyzates by absorption on cation exchanger KU-2, converted to acid form by treatment with chemically pure hydrochloric acid. It was found that hydrolysis of lowland peat with sulfuric acid (concentration 2-30 percent, temperature 90-95°, time 6 hours) gives a hydrolyzate containing 17 amino acids. The amino acid yield increases with increased acid concentration;

1/2

USSR

YEVDOKIMOVA, G. A., et al., Izvestiya Akademii Nauk BSSR, Seriya Khimicheskikh Nauk, No 6, 1970, pp 87-90

6-6.5 percent of the organic substance of the hydrolyzate and about 2 percent of the organic substance of the peat are acted upon by 15-30 percent H_2SO_4. The nitrogen of the sulfuric acid hydrolyzates enters into the composition of amino acids (13.5-18.8 percent of the total nitrogen of the hydrolyzate) and ammonia compounds (34.1-59.5 percent).

2/2

USSR

UDC 616.8-009.836.12-092 "52"

YAKHNO, N. N., RAYT, M. L., BEYN, A. M., and LATASH, L. P., Laboratory of Problems of the Control of Functions in the Organism of Man and Animals imeni N. I. Grashchenkov, and Chair of Clinical Physiology, Central Scientific Research Laboratory of the First Moscow Medical Institute imeni I. M. Sechenov

"Diurnal Rhythm of Wakefulness and Sleep in Narcolepsy"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 71, No 3, Mar 71, pp 20-23

Abstract: The diurnal rhythm of wakefulness and sleep was studied in one patient with monosymptomatic narcolepsy (attacks of sleep during daytime) and in two patients with polysymptomatic narcolepsy (sleep attacks, cataplexy phases, and hallucinations during night sleep). Electroencephalograms (frontal, parietal, and occipital areas), electromyograms (mouth musculature), and electrocardiograms were recorded while the patients were carefully observed over a 24-hour period. The total duration of the sleep phase was markedly prolonged in the patient with monosymptomatic narcolepsy as a result of the sleep seizures during the day. Stages of pronounced drowsiness were observed in the patients with polysymptomatic narcolepsy. All patients

1/2

USSR

YAKHNO, N. N., et al., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 71, No 3, Mar 71, pp 20-23

displayed a deficit of the various "slow" sleep phases and increased recurrence of "rapid" sleep phases in the first half of the day and of delta-sleep phases in the evening and at night. A premature onset and a greater phasic activity of "rapid" sleep was observed in patients with polysymptomatic narcolepsy.

2/2

USSR

UDC 669.71.053.4

RAYVICH, Sh. B., MONTVID, A. E.

"Algorithm for Optimization of Evaporation Battery"

Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 70, pp 153-156. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G148 by the authors).

Translation: A method is suggested for optimization of evaporation batteries according to a combination of characteristics. The criterion used is the cost of a unit volume of water. A general plan of the sequence of design of evaporation batteries with different characteristics is developed for optimization. 1 fig.

1/1

USSR

UDC 669.71.053.4

RAYVICH, Zh. B., MAZEL', V. A.

"Comparison of Transient Processes of an Evaporation Plant and a Mathematical Model"

Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 70, pp. 145-152. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G147 by the authors).

Translation: A method is suggested for comparing the transient processes of an evaporation plant and its mathematical model. An algorithm is composed for solution of the system of equations which make up the dynamic model of a multiple-unit evaporation plant. The data of two experiments are used to compare the transient processes in a three-unit evaporation plant with mixed flow and its model. 2 figs; 2 tables.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--DETERMINATION OF THE THREE DIMENSIONAL STRUCTURE OF A PEPSIN MOLECULE AT 5.5 A. RESOLUTION -U-

AUTHOR-(05)-ANDREYEVA, N.S., BORISOV, V.V., GOVORUN, N.N., MELIKADAMYAN, V.R., RAYZ, V.SH.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 192(1), 216-19

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEPSIN, MOLECULE, CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605006/F02 STEP NO--UR/0020/70/192/001/0216/0219

CIRC ACCESSION NO--AT0139815

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0139815

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXAMN. OF A MONOCLINIC FORM OF PEPSIN CRYSTALS PREPD. AT PH 2 (MAX. ACTIVITY OF THE ENZYME IS AT THIS PH) SHOWED THAT THE UNIT CELL OF THE ENZYME HAD PARAMETERS OF: A EQUALS 54.7ANGSTROM, B EQUALS 36.3ANGSTROM, C EQUALS 73.5ANGSTROM, AND BETA EQUALS 104DEGREES; THE UNIT CELL CONTAINS 2 MOLS. OF THE PROTEIN. ISOMORPHOUS DERIVS. WERE MADE BY ION DIFFUSION OF HGI SUB3, HGBR SUB3, PT(C SUB2 U SUB4) SUB2 PRIME2 NEGATIVE, PTCL SUB4 PRIME2 NEGATIVE, AND PT(NO SUB2) SUB4 PRIME2 NEGATIVE. THE INTRODUCTION OF THESE HEAVY ATOMS WAS FOLLOWED BY DIFFRACTION ANAL. THE ENZYME CONTAINS DISTINCT ALTERNATING, FLAT LAYERS WITHOUT INTERNAL VOIDS BUT WITH A VERY COMPLEX RELIEF SURFACE. FACILITY: INST. MOL. BIOL., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 536.46+662.215.2

YEROKHIN, B. T. and RAYZBERG, B. A.

"Pressure Changes in the Initial Combustion Period of a K System in a Half-Enclosed Space"

Novosibirsk, Fizika Goreniya i Vzryva, vol 7, No 4, December 1971, pp 488-492

Abstract: It has been established that the reduction in the cross section of a condensed system causes a sharp increase in pressure and leads to unstable processes in a half-enclosed space. This, in some cases, has resulted in quenching of the k-system with repeated spontaneous combustion, known as "sneezing," when the pressure diagram is discontinuous. The need has thus arisen for a criterion which would make possible the choice of initial conditions in which the pressure rise and the instability of the processes are not repeated. The present article discusses what the authors consider to be the most viable of such criteria, designated as $\varkappa$ and proposed by Yu. A. Pobedonostsev. The criterion is equal to the ratio of the burning surface in the channel of the k system to the channel cross-section area. However, the criterion is deemed not sufficiently general and does not take into account the effect of turbulent combustion, hydrodynamic losses, flow velocity, and

USSR

YEROKHIN, B. T., et al, Fizika Goreniya i Vzryva, vol 7, No 4, December 1971, pp 488-492

geometrical characteristics. The authors improve this criterion by taking as their initial point a system of equations for the motion of the combustion products in the k-system channel with the gas resulting from the combustion of the k-system distributed over its length, and by using the quasi-stationary principle according to which terms in the system of equations reflecting the nonstationary aspects of the process are neglected. Formulas are derived for determining the rise in pressure caused by turbulent combustion and hydrodynamic losses and for selecting optimal dimensions of the k-system channel.

2/2

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--INVESTIGATION OF THE HIGH FREQUENCY INSTABILITY THRESHOLD IN THE INTERACTION BETWEEN AN ELECTRON BEAM AND PLASMA -U-

AUTHOR-(04)-BOGDANKEVICH, L.S., RAYZER, M.D., RUKHADZE, A.A., STRELKOV, P.S.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 4, PP 1219-1233

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON BEAM, PLASMA INTERACTION, PLASMA STABILITY, ELECTRON DENSITY, EXTERNAL MAGENTIC FIELD, PLASMA DENSITY, PLASMA OSCILLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1486 STEP NO--UR/0056/70/058/004/1219/1233

CIRC ACCESSION NO--AP0106242

UNCLASSIFIED

2/2 030 UNCLASSIFIED

CIRC ACCESSION NO--AP0106242 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CRITICAL PLASMA DENSITY FOR WHICH HIGH FREQUENCY INSTABILITY ARISES IN THE PLASMA BEAM SYSTEM IS DETERMINED EXPERIMENTALLY. THE DEPENDENCE OF THE CRITICAL DENSITY ON THE ELECTORN BEAM DENSITY, MAGNITUDE OF EXTERNAL MAGNETIC FIELD AND GEOMETRICAL DIMENSIONS OF THE SYSTEM IS INVESTIGATED. THE THRESHOLD CONDITIONS FOR EXCITATION OF ELECTROSTATIC OSCILLATIONS, DERIVED FROM AN ANALYSIS OF THE DISPERISON EQUATION FOR A RESTIRCTED PALSMA BEAM SYSTEM, AGREE WITH THE EXPERIMENTAL DATA. A COMPARISON BETWEEN THE THEORY AND EXPERIMENT SHOWS THAT IN THE GIVEN EXPERIMENTAL CONDITIONS THE CRITICAL VALUES OF THE PLASMA DENSITY CORRESPOND TO EXCITATION OF AXIALLY SYMMETRIC OSCILLATION MODES. FACILITY: FIZICHESKIY INSTITUT IM. P. N. LEBEDEVA, AN SSSR.

UNCLASSIFIED

USSR

R

BOGDANKEVICH, L. S.; RAYZER, M. D.; et al (Lebedev Physics Institute, USSR Academy of Sciences)

"Study of the Threshold of High-Frequency Instability Occurring during Interaction of an Electron Beam with a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; April, 1970; pp 1219-33

ABSTRACT: An experimental determination is made of the critical density of a plasma in which a high-frequency instability occurs with a plasma beam. The authors study the dependence of the critical density on the energy of the electron beam, the magnitude of the external magnetic field, and the geometrical dimensions of the system. The threshold conditions of excitation of the electrostatic oscillations, found from an analysis of the dispersion equation for a confined plasma beam, agrees with the experimental data. A comparison of theory with experiment shows that under the experimental conditions studied, the critical values of the density of the plasma correspond to the excitation of the axisymmetric mode of oscillation.

1/1

MAYZER, M.D.

JPRS 58160

6 February 1973

(4.)

THE POSSIBILITY OF BUILDING PULSED ELECTRON ACCELERATORS WITH ENERGIES OF 20 TO 50 MEV

[Article by G. P. Mkheidze, M. D. Rayzer, M. S. Rabinovich, and A. A. Rukhadze; Moscow, Kratkiye Soobshcheniya po Fizike, Russian, No 3, March 1972, pp 67-74]

1. Progress of high-voltage pulsed equipment has per-
mitted in the last decade substantially elevating the parameters
of electron accelerators. Beams with a total energy of several
megajoules and a power of 10^{13} to 10^{14} watts per pulse are now
becoming realistic. The realization of such energies and powers
in electron beams opens up the prospect of their use to heat
solid targets to thermonuclear temperatures [1], investigate
phase transformations and obtain new materials [2]; the beams
are finding applications in investigating the effect of radia-
tion on materials and equipment [3], for turbulent heating of
plasma [4], the electronic pumping of lasers [5], as an injector
for accelerators, to accomplish collective methods of ion accel-
eration [6], etc.

The development of electron accelerators is characterized
basically by a tendency to increase the beam current [7-15] (Table
1). At the same time, electron beams with somewhat smaller cur-
rents (to 100 kiloamperes), but with an electron energy in the
range of 20-50 MeV, are extremely interesting for plasma and
quantum electronics and nuclear physics. Such accelerators would
find application for the creation of powerful plasma generators
and accelerators of electromagnetic radiation of the centimeter
range, based on the collective interaction of the electron beam
with plasma, which is very effectively manifested at ultrarela-
tivistic electron energies. The high efficiency of conversion
of the beam energy into radiative energy, which at the indicated
beam parameters can reach 10-30%, and the relative narrowness of
the lines of generation of the order of 10^{-3} - 10^{-4} make such
systems very promising.

[I - USSR - L]

Kayzer, V. D.

NAV/NISC /TRANSLATIONS

DEPARTMENT OF THE NAVY
NAVAL INTELLIGENCE SUPPORT CENTER
TRANSLATION DIVISION
4301 SUITLAND ROAD
WASHINGTON, D.C. 20390

CR/CI

Joyce

CLASSIFICATION: UNCLASSIFIED

APPROVED FOR PUBLIC RELEASE, DISTRIBUTION UNLIMITED

(2)

TITLE: The Development of Applied Methods in Problems of Static Calculation of Thin-Walled Three-Dimensional Systems (Shells and Folds)

Razvitiye prikladnykh metodov v zadachakh staticheskogo rascheta tonkostennykh prostranstvennykh sistem (obolochki i skladki)

AUTHOR(S): Mileykovskiy, I. Ye., and Kayzer, V. D.

PAGES: 24

SOURCE: Sixth All-Union Conference on Shell and Plate Theory 1966

ORIGINAL LANGUAGE: Russian

TRANSLATOR: C

NISC TRANSLATION NO. 3405

APPROVED P.T.K.

DATE 21 February 1973

USSR .

GENERALOV, N. A., [illegible], V. P., KOSYNOV, G. I., [illegible], M. A., and RAYZER, [illegible]

"Experimental Investigation of Continuously Heated Optical Discharges"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol. 61, No. 4(10), October 1971, pp 1434-1445

Abstract: This article is the consequence of a letter written to the editor of the ZhETF (Journal of Experimental and Theoretical Physics) by the authors named above, in which they reported obtaining a continuously heated optical discharge in gases at pressures of the order of several atmospheres. The discharge plasma occurs at the center of a gas volume far from all solid surfaces, emits a blinding white light, and lasts as long as energy fed it by an input laser beam lasts. The present article provides the results of the first experimental investigation of some characteristics of this continuous optical discharge. It discusses the existence limits of the discharge's unattenuated mode and their dependence on the power of the light and the pressure of various gases, the stability of the heating for various beam configurations, and the determination of the shape and dimensions of the plasma. The part

1/2

USSR

GENERALOV, N. A., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol. 61, No. 4(10), October 1971, pp 1454-1446

of the laser beam energy absorbed by the discharge is measured, and the plasma discharge is analyzed by measuring the electron density through the spectroscopic method and estimating the plasma temperature. The authors express their thanks to A. E. Abaliyev for his assistance in setting up the experimental apparatus and conducting the experiments. They are associated with the Institute of Mechanical Problems, Academy of Sciences, USSR.

2/2

USSR

RAYZER, Yu. P. (Institute of Problems in Mechanics of the USSR Academy of Sciences)

"Propagation of a High-Pressure Microwave Discharge"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; July, 1971, pp 222-33

Abstract: Propagation of microwave discharges in gases at high pressures of the order of an atmosphere is considered. Thermal conductivity is the major mechanism of propagation of the discharge toward the incident electromagnetic wave. Heat from the plasma is transmitted to the cold gas, which becomes heated and ionized and begins to absorb microwave radiation. The problem of stationary conditions of propagation of a discharge wave is formulated and solved approximately. The temperature up to which the plasma can be heated and also the velocity of the discharge front as a function of energy flux in the electromagnetic wave, as well as the threshold for existence of the condition are determined. It is shown that the process has much in common with combustion. The phenomenon is not infrequently observed in continuously operating microwave devices when a discharge is ignited in the wave guide and the plasma formation moves toward the microwave source. However, up to now no physical interpretation of the phenomenon has been offered. Reasonable agreement between the results of the calculations and experimental data is obtained.

1/1

USSR

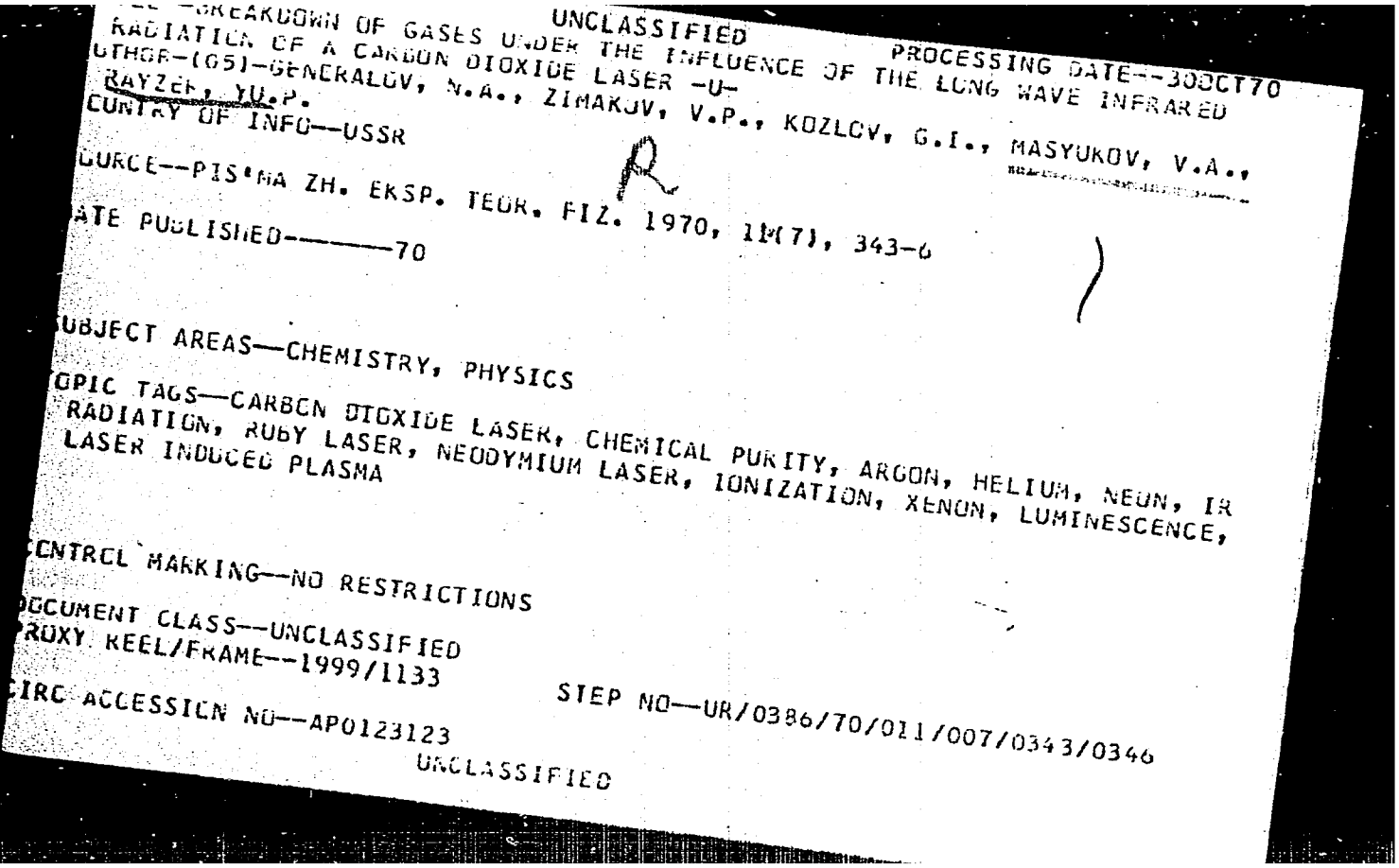
RAYZER, Yu. P., MUL'CHENKO, B. F., EPSTEIN, V. A., Institute of Problems in Mechanics, USSR Academy of Sciences

"Investigation of a High-Pressure Laser Spark Ignited by an Extraneous Plasma Source"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, December, 1970, pp 1975-82

Abstract: A laser spark in argon at pressures up to 80 atm is ignited by an extraneous plasma source, the intensity of the supporting radiation far below the breakdown threshold. The threshold power of the radiation from a ruby laser required for maintaining the plasma is determined for pressures ranging from 16 to 80 atm and is found to lie between 70 and 10 kw. The plasma temperature (18 000-33 000°) and other parameters are measured. The results are in agreement with the theoretical calculations.

1/1



UNCLASSIFIED PROCESSING DATE--30OCT70

BREAKDOWN OF GASES UNDER THE INFLUENCE OF THE LONG WAVE INFRARED RADIATION OF A CARBON DIOXIDE LASER -U-

AUTHOR-(05)-GENERALOV, N.A., ZIMAKOV, V.P., KOZLOV, G.I., MASYUKOV, V.A., RAYZER, YU.P.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(7), 343-6

DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--CARBON DIOXIDE LASER, CHEMICAL PURITY, ARGON, HELIUM, NEON, IR RADIATION, RUBY LASER, NEODYMIUM LASER, IONIZATION, XENON, LUMINESCENCE, LASER INDUCED PLASMA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1133

STEP NO--UR/0386/70/011/007/0343/0346

CIRC ACCESSION NO--AP0123123

UNCLASSIFIED

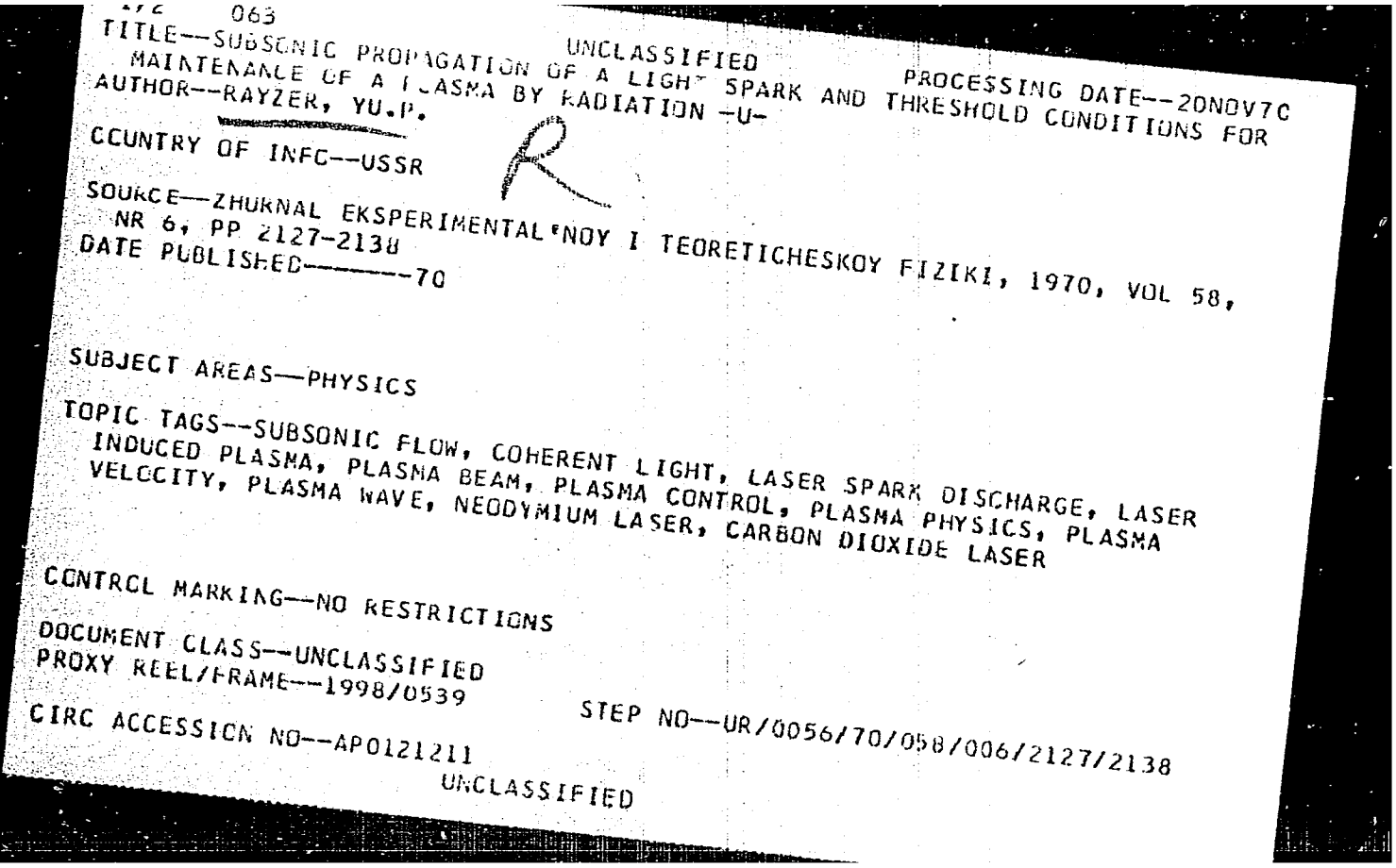
2/2 077 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123123

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PULSES (50-250 HZ, 0.3-1.5 MUSEC, PEAK OUTPUT 10 KW) OF THE 10.6-MU RADIATION OF A LASER BASED ON THE CO SUB2-N-HE MIXT., WORKING WITH CONTINUOUS PUMPING, WERE USED TO STUDY THE BREAKDOWN OF AR, NE, HE, AND XE AT LESS THAN 25 ATM. THE BREAKDOWN FREQUENCY WAS GREATER THAN 10 HZ; THE GAS LUMINESCENCE IN THE BREAKDOWN REGION WAS CONTINUOUS. THE FORMS OF THE INCIDENT, PASSING THROUGH THE BREAKDOWN PLASMA, AND REFLECTED (FROM THE PLASMA) PULSES AS WELL AS A VISIBLE LUMINESCENCE OF THE PLASMA WERE RECORDED SIMULTANEOUSLY. THE BREAKDOWN DEVELOPED FOR APPROXIMATELY EQUAL TO 0.1 MUSEC. THE LUMINESCENCE DURATION WAS LONGER THAN THAT OF THE PULSES AND SHORTER BY SIMILAR TO 3 ORDERS THAN THE BREAK BETWEEN THE PULSES. THE BEGINNING OF APPEARANCE OF RARE VISIBLE FLASHES WAS CONSIDERED A THRESHOLD; MOST RELIABLE MEASUREMENTS OF THE THRESHOLD INTENSITY WERE OBTAINED FOR XE. AT VARIANCE WITH XE, THE THRESHOLD IN HE INCREASES CONSIDERABLY WITH INCREASING GAS PURITY. THE SPARKS IN AR, HE, AND NE LIGHT LONGER THAN IN XE AND THE REFLECTION AND ABSORPTION OF THE PULSES IS SMALLER. THE XE ATOMS ARE IONIZED AND AT HIGHER PRESSURES, THE ELECTRON D. REACHES A CRIT. VALUE OF 1.13 TIMES 10 PRIME19-CM PRIME3. THE THRESHOLDS MEASURED ARE DISCUSSED ON THE BASIS OF AN AVALANCHE IONIZATION. THE AVALANCHE DEVELOPS IF THE ENERGY GAIN RATE EXCEEDS THE TOTAL RATE OF LOSSES. THE THRESHOLD CORRESPONDS TO AN ELECTRON D. STABILITY, IN CONTRADICTION TO THE SHORT GIANT PULSES OF THE RUBY AND ND LASERS.

FACILITY: INST. PROBL. MEKH., MOSCOW, USSR.

UNCLASSIFIED



UNCLASSIFIED

063

TITLE--SUBSONIC PROPAGATION OF A LIGHT SPARK AND THRESHOLD CONDITIONS FOR MAINTENANCE OF A PLASMA BY RADIATION -U-

PROCESSING DATE--20NOV70

AUTHOR--RAYZER, YU.P.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 6, PP 2127-2138

DATE PUBLISHED----------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SUBSONIC FLOW, COHERENT LIGHT, LASER SPARK DISCHARGE, LASER INDUCED PLASMA, PLASMA BEAM, PLASMA CONTROL, PLASMA PHYSICS, PLASMA VELOCITY, PLASMA WAVE, NEODYMIUM LASER, CARBON DIOXIDE LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0539

STEP NO--UR/0056/70/058/006/2127/2138

CIRC ACCESSION NO--AP0121211

UNCLASSIFIED

2/2 063 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0121211

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUBSONIC CONDITIONS FOR PROPAGATION OF A LASER SPARK WHICH ARE SIMILAR TO THOSE OF SLOW COMBUSTION. THE STEADY STATE PROBLEM IS FORMULATED AND APPROXIMATELY SOLVED. THE PLASMA TEMPERATURE WAVE VELOCITY AND THRESHOLD POWER REQUIRED FOR EXISTENCE FO A NONDECAYING WAVE ARE FOUND. GOOD AGREEMENT WITH AVAILABLE EXPERIMENTAL DATA OBTAINED BY AID OF A NEODYMIUM LASER IS OBTAINED. THE POSSIBILITY OF DESIGNING A LIGHT PLASMONTRON BASED ON A CONTINUOUS OPERATION CO SUB2 LASER IS DISCUSSED. FOR MAINTENANCE OF A PLASMA IN AIR A LIGHT POWER OF ABOUT 2 KW IS REQUIRED. THE TEMPERATURE OF SUCH A PLASMA IS 18,000DEGREESK. FACILITY: INSTITUT PROBLEM MEKHANIKI AN SSSR.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PHYSICAL FUNDAMENTALS OF THE THEORY OF CRACKS IN BRITTLE RUPTURE -U-

AUTHOR--RAYZER, YU.P.

COUNTRY OF INFO--USSR

SOURCE--USPEKHI FIZICHESKIKH NAUK, VOL. 100, FEB. 1970, P. 329-347

DATE PUBLISHED-------70

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

TOPIC TAGS--BRITTLE FRACTURE, BIBLIOGRAPHY, STRESS CONCENTRATION, ELASTICITY, METAL CRACKING, STATE OF THE ART

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1839 STEP NO--UR/0053/70/100/000/0329/0347

CIRC ACCESSION NO--AP0118803

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118803

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SURVEY OF THE PHYSICAL FUNDAMENTALS AND IDEAS ON WHICH THE ACTUAL THEORY OF BRITTLE RUPTURE CRACKS IS CONSTRUCTED. A DISCUSSION IS PRESENTED OF THE THEORY OF AN UNSTABLE CRACK (GRIFFITH'S PROBLEM), THE STRESS INTENSITY COEFFICIENT, AND THE CRITERION FOR CRACK PROPAGATION. THE CASE WHERE THE FORCES ARE APPLIED FROM THE INSIDE OF A CRACK IS CONSIDERED. THE RELATION EXISTING BETWEEN THE STABLE EQUILIBRIUM CRACKS AND MATERIAL FAILURE IS EXAMINED. THE COHESION FORCES ARE INTRODUCED, AND AN EQUATION OF MECHANICAL EQUILIBRIUM IS DERIVED. THE FINITENESS OF STRESSES AND THE STEADINESS OF THE ELASTIC POTENTIAL ARE EXAMINED. IN CONCLUSION, THE BEHAVIOR OF REAL MATERIALS AND QUASI BRITTLE RUPTURE ARE DISCUSSED.

FACILITY: AKADEMIIA NAUK SSSR, INSTITUT PROBLEM MEKHANIKI, MOSCOW, USSR.

UNCLASSIFIED

USSR

RAYZER, YU. P., Institute of Problems of Mechanics, Academy of Sciences USSR

"Subsonic Propagation of a Light Spark and Threshold Conditions for Maintaining a Plasma by Radiation"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 58, No 6, June 1970, pp 2127-2138

Abstract: A combustion analogy is applied to explain new phenomena of the laser spark type. Bunkin, et al (ZhETF, Pis'ma, Vol 9, 1969, p 609) observed the slow propagation of a spark in atmospheric air, artificially igniting it at light intensities insufficient for breakdown. This article presents a more detailed examination of the subsonic propagation of a discharge or spark at optical frequencies. The propagation rate and the plasma temperature are calculated. The threshold is found for the existence of the condition, and the minimum powers and light intensities are calculated for which maintenance of a plasma by radiation is generally possible and which facilitate combustion conditions. Threshold values were calculated for air at atmospheric pressure. The threshold light intensity for a neodymium

1/2

USSR

RAYZER, YU. P., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 58, No 6, June 1970, pp 2127-2138

laser $S_t \sim 1.3 \cdot 10^4$ kw/cm^2, or P_t = 920 kw, assuming a beam radius of 0.15 cm. For a CO_2 gas laser $S_t \sim 10^2$ kw/cm^2, or P_t = 7 kw for R = 0.15 cm. The plasma temperature in these cases is approximately 18,000°K. The rate of propagation of the wave along the heated gas is of the order of 200 m/sec. It is pointed out that in cases of small R $\simeq$ 0.05 cm losses to radiation are considerably less than thermal conductivity losses; for a CO_2 laser and a coefficient of thermal conductivity losses A = 2.9, $P_{min} \sim 4$ kw. Conditions most suitable for maintaining the plasma are most easily achieved by sharp focusing of the beam. It is pointed out that it is possible that ~2 kw will be sufficient to maintain a plasma in atmospheric air with a well focused CO_2 laser beam.

2/2

USSR

R

RAYZER, Yu. P.; GENERALOV, N. A.; KOZLOV, G. I. (Moscow)

"Occurence of Conditions of Nonequilibrium and the Variation of the Abosrbing Capability of a Plasma under the Influence of Powerful Pulses of Light"

Novosibirsk, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki; May-June, 1970; pp 27-37

ABSTRACT: The authors studied the kinetic processes taking place in a plasma under the influence of laser radiation which result in conditions of nonequilibrium and a variation in the absorbing capability of the plasma. The population distribution of the excited levels of the atoms during the action of the radiation was found by solving the Fokker-Planck equation for bound states. The rate of gradual ionization and the kinetics of the variations in electron density, excited atoms, and the absorption coefficient were calculated. The results of the calculation of light absorption were compared with experimental data obtained by the authors on the passage of laser pulses through plasma, and a satisfactory agreement between theory and experiment was found.

The article includes 32 equations and 4 figures. There are 12 references.

1/1

Magnetohydrodynamics

USSR

RAYZER, Yu. P. (Institute of Problems in Mechanics of the USSR Academy of Sciences)

"Propagation of Discharges and Confinement of a Dense Plasma by Electromagnetic Fields"

Moscow, Uspekhi Fizicheskikh Nauk; November, 1972; pp 429-63

ABSTRACT: Systematically and from a particular point of view, the author studies a broad class of processes in which occur the propagation of boundaries of discharges, plasma fronts, and ionizing waves confined by the dissipation of an external electromagnetic or electrical field. Processes of a similar type are encountered in the most varied and, sometimes, divergent areas of physical research and engineering, but they are all related by a community of fixed rules. The problem of determining the parameters of a plasma (for example, its temperature) and the rate of propagation of a plasma front, in essence, belongs to a class of problems in the theory of modes. In the development of the theory, the author discusses and employs a profound analogy which exists between the propagation of discharges and the combustion and detonation of burning materials. In great detail he examines many actual processes and apparatus in which is observed the effect of the propagation of discharges: laser sparks,

1/2

USSR

RAYZER, Yu. P., Uspekhi Fizicheskikh Nauk; November 1972, pp 429-63

high-frequency and superhigh-frequency plasmatrons, "burning" in waveguides, ionizing waves in waveguides and in constant fields, etc. Static modes of burning of discharges and the confinement of a dense plasma by electromagnetic fields of various frequency ranges are studied.

The article includes 12 illustrations. There are 55 bibliographic references.

2/2

USSR

UDC 528.061.2

RAYZMAN, G. P.

"Some Principles of the Coefficient of Vertical Refraction"

Moscow, Geodeziya i Kartografiya, No 1, Jan 72, pp 25—31

Abstract : In order to determine actual values of reciprocal coefficients of vertical refraction, geodetic investigations including measurements of zenith distances with the optical theodolite OT-02, temperature and moisture content measurements of air in 1 m and sighting beam levels, and atmospheric pressure measurements were carried out in Middle Asia, near the city of Tashkent, in the years 1969 and 1970. The investigation results demonstrate that the use of the tabulated coefficient of refraction (0.14 for the investigated region) is not well-founded satisfactorily in all cases of geodetic practice and that, therefore, determined average values of the coefficient of refraction have to be used in geodetic leveling for each line of the

1/2

USSR

RAYZMAN, G. P., Geodeziya i Kartografiya, No 1, Jan 72, pp 25-31

geodetic net. Between the coefficient of refraction and the vertical temperature gradient τ, the empirical dependence $K = \eta(\tau - a)$ was established, where η and a are seasonal constants. For the region of Tashkent they are: $\eta = -0.044$ and $a = -3.330$ in spring and $\eta = -0.297$ and $a = -0.190$ in summer. Three illustr., six tables, four biblio. refs.

2/2

USSR

UDC:669.187.5

ZAYTSEV, B. Ye., GOTIN, V. N., SHCHERBAKOV, A. I., SERGYEV, A. B., ZHITKOV, N. K., OKOROKOV, G. N., BOYARSHINOV, V. A., TULIN, N. A., VOYNOVSKIY, Ye. V., TOPILIN, V. V., POZDEYEV, N. P., SHALIMOV, Al. G., OSIPOVA, L. A., CHERNOV, Yu. V., and RAZANOV, T. S.

"Specifics of Vacuum Arc Remelting of Nickel-Based Alloys and Stainless Steels With Reverse Arc Polarity"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 181-183

Translation: Results are presented from a study of vacuum arc remelting of nickel alloys in a crystallizer 380-480 mm in diameter with thermocouples calked in length and height. The rate of melting with reverse polarity is 20% higher with identical bath depth of liquid metal. This is a result of more intensive heat transfer from the walls of the crystallizer during melting with reverse polarity. The macrostructure, chemical composition N, O, H and mechanical properties of the metal produced by melting with forward and reverse polarity are identical. The ingot produced with reverse polarity had no corona. 2 figures; 1 table; 1 biblio. ref.
1/1

USSR

UDC 577.1:612.12.015

RAZBASH, M. P., and KARAL'NIK, B. V.

"Investigation of Phosphate Antigens of Rhizobacteria. Report I. Detection and Determination of the Activity and Specificity of Phosphatides of Rhizobacteria"

Zh. mikrobiol. epidemiol. i immunobiol. (Journal of Microbiology and Immunobiology), No 2, 1973, pp 89-94 (English Resume)(From RZh-Biologicheskaya khimiya, No 12, Jun 73, Abstract No F 1631)

Translation: It was found that phosphatide antigens possessing hemosensitive activity are to be found in diphtherial rhizobacteria. Phosphatides of rhizobacteria of certain serotypes possessed a strictly typical specificity in experiment aimed at the cross-suppression of hemagglutination and cross inhibition and the phosphatides of serotypes 1,3 and 5 proved to be very close to the antigen specificity.

1/1

USSR

UDC 541.49+546.791.6+661.718.1

RAZBITNAYA, L. M.

"A Study of the Complexing of Uranyl with Aminoalkylphosphonic Acids: I. Complex Compounds of UO_2^{2+} with $C_4H_{12}N_2P_2O_8U$ (I), $C_8H_{20}N_2P_2O_8U$ (II) and $C_9H_{26}N_3P_5O_{17}U$ (III)"

Leningrad, Radiokhimiya, Vol XIII, No 3, 1971, pp 405-411

Abstract: Various properties of these compounds and of the general class of ligands to which they belong have been fairly well studied. However, no attention at all has been directed toward the capability of derivatives of the alkylamines to bind uranyl, even though the affinity of uranium for phosphorus groups which are good donors is well known.

The present spectrophotometric study of the reactions of uranyl with (I), (II) and (III) yielded information on the variation in light absorption of UO_2 and its complexes, the relationship between optical density of the complexes and the concentration, the reaction rates for different concentration of the complexes (by the saturation method; pH = 5.5 and 2.0-2.2) and the dissociation of (I) and (II), as it is affected by pH. The experiments also made it possible to isolate and identify certain solid complexes formed by the reactions of uranyl with the aminoalkylphosphonic acids.

1/1

USSR

UDC: 621.931

RAZBOROV, V. A.

"On Choosing a Design for a Radiotelegraph Communications System From the Standpoint of an Economic Criterion of Optimality"

V sb. Raschety radiotekhn. skhem i proyektir. radioapparatury (Calculations of Radio Circuits and Design of Radio Equipment--collection of works), Omsk, 1970, pp 19-22 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A25)

Translation: The author defines the concept of an economically optimum communications system. An analysis is made of the possibilities of reducing economic expenditures. It is shown that a system of simplest design (without return channel, without the use of spaced reception and redundant coding) may be a long way from optimum in the economic sense under certain conditions. Consideration is given to methods of reducing total expenditures on a communications system with channels where there is intensive fading; these methods are based on minimizing the mean statistical value of the transmission ratio of a channel by conversion of the statistical parameters of the channel and using a return channel for transmitting information on the accuracy of signal reception or on the signal-to-noise

1/2

RAZBOROV, V. A., Raschety radiotekhn. skhem i proyektir. radioapparatury, Omsk, 1970, pp 19-22

ratio at the receiver input. Conditions under which it is more economical to use one system or another are discussed. N. S.

USSR

UDC: 621.391.81

RAZBOROV, V. A.

"Theoretical and Experimental Study of the Prediction and Filtration of Random Processes by Using Their Derivatives"

V sb. Raschety radiotekhn. skhem i proyektir. radioapparatury (Calculations of Radio Circuits and Design of Radio Equipment--collection of works), Omsk, 1970, pp 32-58 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A62)

Translation: The author considers the problem of predicting a one-dimensional continuous random process in the presence of additive interference; prediction quality is evaluated by using the normalized value of the square of the error of prediction. The problem is solved by an approximate method using linear operators. A formula is derived for the transfer factor of an optimum filter for the prediction system. A general schematic diagram is given for a nonlinear system of prediction which ensures negative displacement of prediction error. An experimental installation based on this system is described. Fourteen illustrations, bibliography of nine titles. N. S.

1/1

USSR

UDC: 533.9.07

GUSEV, V. K., MALYSHEV, G. M., RAZDOBARIN, G. T., SOKOLOVA, L. V.

"Measuring Electron Temperature and Concentration by the Scattering of Laser Radiation in a Plasma on the Tuman-2 Machine"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 2, 1972, pp 340-343

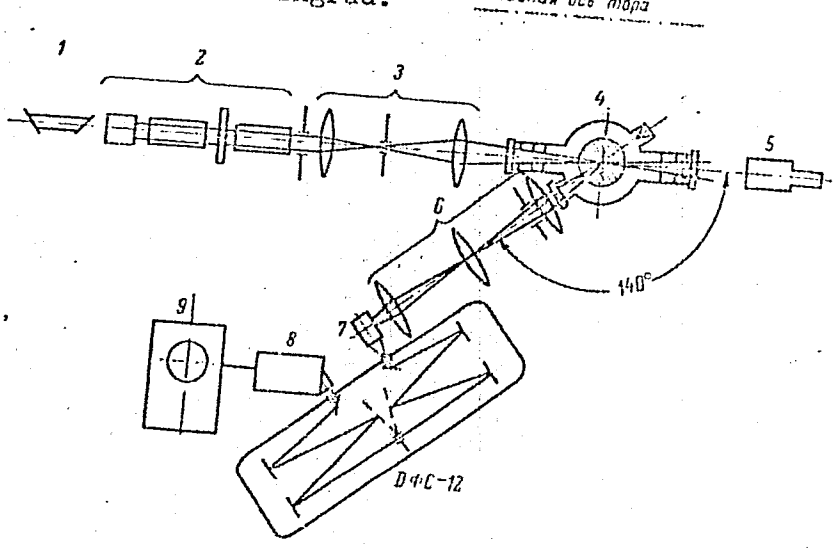
Abstract: An experimental method for diagnosing a plasma through laser radiation scattering is described. The Tuman-2 used by the authors in the experiments is an axially symmetrical toroidal magnetic trap with longitudinal current. The toroid has a large diameter of 80 cm and a small diameter of 20 cm. Maximum diameter of the plasma cord in the ohmic heating period is 16 cm; the cord is maintained in equilibrium by a programmed transverse magnetic field and by the interaction of the longitudinal current and the housing. The heating of the plasma under the action of the longitudinal current, the uhf field, and the adiabatic compression by the increasing longitudinal magnetic field, is investigated. Measurements of the electron temperature and concentrations were made under the conditions in which the plasma was heated by the discharge current. The authors express their gratitude to V. Ye. Golant, M. G. Kaganskiy, Yu. E. Komach, and Ye. N. Kozlovskiy for their assistance. They are with the Physico-technical Institute

1/2

USSR

GUSEV, V. K. et al, Zhurnal tekhnicheskoy fiziki, No 2, 1972, pp 340-343

imeni A. F. Ioffe at Leningrad.



2/2

USSR

UDC 615.616.24-003.656.6

BEZRODNYKH, A. A., KASPAROV, A. A., MAZUROV, V. I., KOCHETKOVA, T. A., RAZDVADOVSKIY, YE. F., SIDOROVA, N. V., KULIKOVA, T. P., GALITSINA, I. Z., ZAMARAYEVA, T. V.

"Antifibrosis Effect of Polyvinylpyridine-N-Oxide as a Compound to Prevent the Development of Silicosis"

Nauch. tr. Irkutsk. med. in-t (Scientific Works of the Irkutsk Medical Institute), 1972, vyp 110, pp 52-53 (from RZh--Farmakologiya. Khimioterapevticheskiye Sredstva. Toksikologiya, No 3, Mar 73, Abstract No 3.54.874)

Translation: The polymers polyvinyl-pyridine-2- and 4-N-oxides had an effect on the degree of expression of histologic alterations in the early stages of the development of experimental silicosis (10 days) when administered intratracheally and, especially, hypodermically. These polymers normalized the indexes of the oxidation processes in the lung tissue and the myrocardium. After one, three and six months of the experiment, the polymers with a molecular weight of 40,000 to 80,000 retarded the development of fibrosis, reduced the amount of neutrally soluble collagen and

1/2

USSR

(5)

BEZRODNYKH, A. A., et al., Nauch. tr. Irkutsk. med. in-t, 1972, vyp 110, pp 52-53

normalized the amino acid composition of the lung tissue, the indexes of the oxidation phosphorylation and the activity of the intracellular enzymes. On intratracheal administration of polymers with a molecular weight of 50,000 to 1,500,000, the development of catarrhal bronchitis and bronchiolitis was noted.

2/2

USSR

UDC: 62:519.25

OBREZKOV, G. V. and RAZEVIG, V. D.

"Methods of Analyzing Tracking Breakdown"

Moscow, 240 pp, 1972, "Sovetskoye radio," pp 238-239

Translation:

TABLE OF CONTENTS

1/6

USSR

OBREZKOV, G. V. and NAZEVIG, V. D., "Sovetskoye radio.", 1972, pp 238-239

USSR

OBREZKOV, G. V. and RAZEVIG, V. D., "Sovetskoye radio," 1972, pp 238-239

3/6

USSR

OBREZKOV, G. V. and RAZEVIG, V. D., "Sovetskoye radio," 1972, pp 238-239

USSR

OBREZKOV, G. V. and RAZEVIG, V. D., "Sovetskoye radio," 1972, pp 238-239

5/6

USSR

OBREZKOV, G. V. and RAZEVIG, V. D., "Sovetskoye radio," 1972, pp 238-239

6/6

USSR

UDC: 62:519.25

OBREZKOV, G. V. and RAZEVIG, V. D.

"Methods of Analyzing Tracking Breakdown"

Moscow, 240 pp, 1972, "Sovetskoye radio," p 2

Translation: This book presents a review of the most important methods of analyzing tracking breakdowns in closed servo circuits in automatic electronic equipment under the effects of fluctuating noise. The phenomenon of tracking breakdown in automatic frequency and phase control in automatic tracking radar circuits is used as the example. The analytic research methods given in the book are based fundamentally on Markov random process systems. Special attention is devoted to analysis of tracking breakdown using analog and digital computers. In addition to its direct application to the study of tracking breakdown, the material is useful for investigating other nonlinear phenomena in electronics and automation.

The book is designed for scientific personnel and engineers involved in the research and design of electronic tracking devices.

Six tables, 55 illustrations, bibliography of 106 titles.

1/1

USSR

UDC 621.43.011:533+621.5.533

RAZHIN, A. F., and SAVINOV, A. A.

"Experimental Investigation of the Distribution of Pressure on a Solid of Revolution with a Jet in a Carrying Stream"

Uch. Zap. Tsentr. Aero-Gidradinam. In-ta (Scientific Notes of the Central Aerohydrodynamic Institute), Vol 2, No 3, 1971, pp 76-79 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2B405 by Yu. A. Lashkov)

Translation: The article presents the results of an investigation on a model of the interaction of a body of revolution and ther reaction jet of the lifting engine of a VTOL or STOL aircraft. The jet emerged from the undersurface of the body into a carrying stream. The model constituted a cylinder, consisting of front and rear rotating parts and a central stationery part. The aspect ratio of the model was 15 at a length of 1.5 meters. On the bottom surface of the stationery central part was a round nozzle 45mm in diameter, from which emerged a jet of compressed air normal to the axis of the model. The compressed air was supplied to the rear part of the model through an air-conduit pedestal. The tests were conducted at a zero angle of attack within a range of velocity variation of the mainstream from 25 to 75 meters per second at two values of the jet, equal to 100 and 300 mps. Measurement of the distribution pattern of

Biophysics

USSR

UDC 591.882

BERESTOVSKIY, G. N., LUNEVSKIY, V. Z., MUSIYENKO, V. S., POPOVA, S. V., RAZHIN, V.D., Laboratory of Biophysics of Living Structures, Institute of Biological Physics, Academy of Sciences USSR, Pushchino-na-Oke

"Study of the Cumulative Structural Changes in a Nerve Fiber During Rhythmic Stimulation Using Optical Techniques"

Leningrad, Tsitologiya, Vol 14, No 12, 1972, pp 1,461-1,467

Abstract: Optical techniques (birefringence, ultraviolet absorption, light dispersion) were used to study the structural and physical-chemical changes in nerve fiber accumulated during rhythmic activation of it. The studies were made on the giant axons of the squid and the ventral nerve cord of crayfish. The quantitative analysis of the experimental results led to the following conclusions: in practice there are no cumulative changes in the degree of orientation of the macromolecular structures in the axoplasm, including the gel-sol transition even as a result of transmission of several thousands of pulses through the nerve; although conformational changes take place in the proteins of the entire axoplasm 20 milliseconds after generation of a single action potential, they are expressed two orders more weakly than in the case of denaturation; the results of the light dispersion experiments agree with the

1/2

USSR

BERESTOVSKIY, G. N., et al., Tsitologiya, Vol 14, No 12, 1972, pp 1,461-1,467

published data. In addition to the primary purpose of studying the role of the axoplasm during the excitation process, the described experiments permit the determination of possible artifacts when studying the structural changes in the membrane from a single action potential by the given optical methods.

2/2

RAZHIN, V. D.

UNCLASSIFIED

50: Soviet Aerospace Activity

SECTION III

Facilities

PCS-85

June 71

Name: Institute of Biophysics, Pushchino

Description:

Biophysics

(U) During this quarterly reporting period, 13 new articles were located from the Institute of Biophysics at Pushchino. On the basis of these articles, it was possible to associate 19 new persons with the institute. These persons are listed below together with the subjects and dates of the articles:

Basurmanov, O. K.	endocrine system	1970 (17)
Berestovskiy, G. N.	phospholipids	1970 (18)
Gazyev, A. I.	DNA	1970 (19)
Ivannikova, A. G.	plant physiology	1969 (20)
Kiselev, Ye. Ye.	muscle physiology	1970 (21)
Kravchenko, N. A.	EPR spectra	1970 (22)
Nafikmanov, A. A.	radiation effects	1970 (23)
Panov, A. A.	endocrine system	1970 (17)
Pasoyan, V. G.	EPR spectra	1970 (22)
Porotikov, V. I.	muscle physiology	1970 (21)
Postnikova, G. B.	chromatography	1970 (24)
Rachiba, V. D.	phospholipids	1970 (18)
Revin, A. F.	radiation effects	1970 (23)
Sukhoruchkina, L. V.	chromatography	1970 (24)
Trincher, K. S.	plant physiology	1969 (20)
Vasilov, Yu. V.	radiation effects	1970 (23)
Zaikin, A. N.	hydrogen peroxide	1970 (25)
Zakrzhevskaya, D. T.	DNA	1970 (19)
Zubin, A. M.	DNA	1970 (19)

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--STRUCTURE OF ULTRATGRAFTING WITH STYRENE OR VINYLTOLUENE -U-

AUTHOR-(04)-RAZIKOV, K.KH., ISAMUKHAMEDOVA, I.I., USMANOV, KH.U., AZIZOV, U.A.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(1), 35-8

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--NATURAL FIBER, STYRENE, CELLULOSE, VINYL COMPOUND, TOLUENE, METHYL METHACRYLATE, ACRYLATE, EPOXY RESIN, QUARTERNARY AMMONIUM SALT, GRAFT POLYMERIZATION/(U)ED5 EPOXY RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1838 STEP NO--UR/0291/70/014/001/0035/0038

CIRC ACCESSION NO--AP0123627

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123627

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON AND OPTICAL MICROSCOPY OF THE TITLE POLYMERS SHOWED THAT THE INCREASE OF GRAFTING GREATER THAN OR EQUAL TO 21.5PERCENT CAUSES STRUCTURAL CHANGES OF THE COTTON FIBERS. POLYSTYRENE OR POLY(VINYLTOLUENE) CHAINS SWELL IN ME METHACRYLATE, BU METHACRYLATE, OR EPOXY RESIN ED-5, USED IN MOUNTING OF THE SAMPLES FOR MICROSCOPY AND SEPG. THE FIBERS. HOWEVER, THE GRAFTED CELLULOSE CONTG. GREATER THAN OR EQUAL TO 13.4PERCENT GRAFTED CHAINS DOES NOT SWELL OR DISSOLVE IN QUATERNARY AMMONIUM BASES.

UNCLASSIFIED

Heat Treatment

USSR

UDC 621.791.053.011:621.78:669.14.018.8

RAZIKOV, M. I., Doctor of Technical Sciences, POSPELOV, N. G., Engineer, SAMOYLOV, M. I., and BERESNEV, G. A., Candidates of Technical Sciences, and IVANOVA, M. A., Engineer

"Search for Optimum Heat Treatment Modes for N18K9M5T Steel Weld Joints"

Moscow, Svarochnoye Proizvodstvo, No 8, Aug 73, pp 13-16

Abstract: Results are presented from a study of grain growth in the heat-affected zone and the presence of the amount of weak stable austenite, enriched with titanium and molybdenum, in the weld joint of thin-sheet N18K9M5T maraging steel with a chemical composition (in %): 18.35 Ni, 8.75 Co, 5.1 Mo, 0.72 Ti, 0.015 C, 0.03 Si, 0.03 Mn, 0.003, S, 0.003 P, 0.02 Al. Weld samples were subjected to conventional heat treatment of heating to 810-830°C for 20 minutes, air cooling, aging at 475-485°C for four hours and air cooled, and a repeated heating treatment of 980-1000°C for 5-10 seconds, done 3-5 times with a heating rate of 100-300°C/sec. Analysis of mechanical tests (impact strength, tensile strength, rupture strength, etc.) showed that the repeated heating method yields properties 15-20% higher than for samples conventionally heat treated. Nine figures, two tables, 12 bibliographic references.

1/1

USSR

UDC: 621.178.169

RAZIKOV, M. I., SHUMYAKOV, V. I., YUZHANINOV, L. N., Ural "Order of the Red Banner of Labor" Polytechnical Institute imeni S. M. Kirov

"A Method of Testing Materials for Cavitation Stability"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331282, Division G, filed 28 Apr 70, published 7 Mar 72, p 124

Translation: This Author's Certificate introduces a method of testing materials for cavitation stability in which a working section is formed in a fluid jet of continuous cross section, and the jet is periodically intersected by the study specimen, whose test surface is kept parallel to the fluid jet. As a distinguishing feature of the patent, in order to simulate the actual process of microimpact action accompanying cavitation and to intensify the process of specimen testing, a hollow is formed throughout the entire length of the working section of the jet, and the specimen approaches the jet from the side with the hollow.

1/1

USSR

UDC 621.791.927:532.526

RAZIKOV, M. I., and DUBSKIKH, V. Ya., Ural Polytechnical Institute imeni S. M. KIROV

"Cavitation Immunity and Mechanical Characteristics of Smelted Metal With Aged Martensite Structure"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 70, pp 23-26

Abstract: In the repair of hydroturbine rotating blades, stainless austenite electrodes are widely used. Although metals melted by such electrodes are highly immune to cavitation, they are still inferior to electrodes of the martensite class (type EF-13, for example). But use of these electrodes involves difficulties, and as a result there has been research in the cavitation immunity of stainless dispersion-hardened steels. Since these studies have ignored data on the cavitation immunity of the cast metal, this article sets out to remedy the lack of data. The specimens for investigating the mechanical characteristics and cavitation immunity were taken from the upper layers of the castings, and were tested under intense cavitation on a shock-erosion machine. During the tests, specimens measuring 20 x 16 x 5 mm were subjected to a water jet with a peripheral speed of 78 m/sec in a closed chamber under a pressure of 0.28

1/2

USSR

RAZIKOV, M. I., and DUBSKIKH, V. Ya., Avtomaticheskaya Svarka, No 11, Nov 76, pp 23-26

atm through a nozzle 8 mm in diameter. The results were estimated from the weight loss of the specimens in 2 hours for each sample. A table of the chemical compositions of the specimen is given together with photographs of the effect of temperature annealing on the metal specimen microstructures. The article concludes with recommendations on how immunity to cavitation may be improved.

2/2

Acc. Nr. AA0108178

Abstracting Service: CHEMICAL ABST. 6-70

Ref. Code UR 0482

R

135535k Powder wire for surfacing. Vernik, V. S.; Ruleva, A. F.; Kliman, T. G.; Razikov, M. I.; Korolev, N. V.; Kulishenko, B. A. U.S.S.R. 261,147 (Cl. B 23k), 06 Jan 1970, Appl. 14 Aug 1968; From *Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki* 1970, 47 (4), 146–7. Powder wire for surfacing consisted of a steel casing and a powd. core contg.: graphite 0.24–2.6, ferromanganese 22.5–7, Fe powder 1.9–5.2, W 14–16%, and a steel strip the remainder. •MSCL

REEL/FRAME

19891844

USSR

UDC 621.317.39.531.758

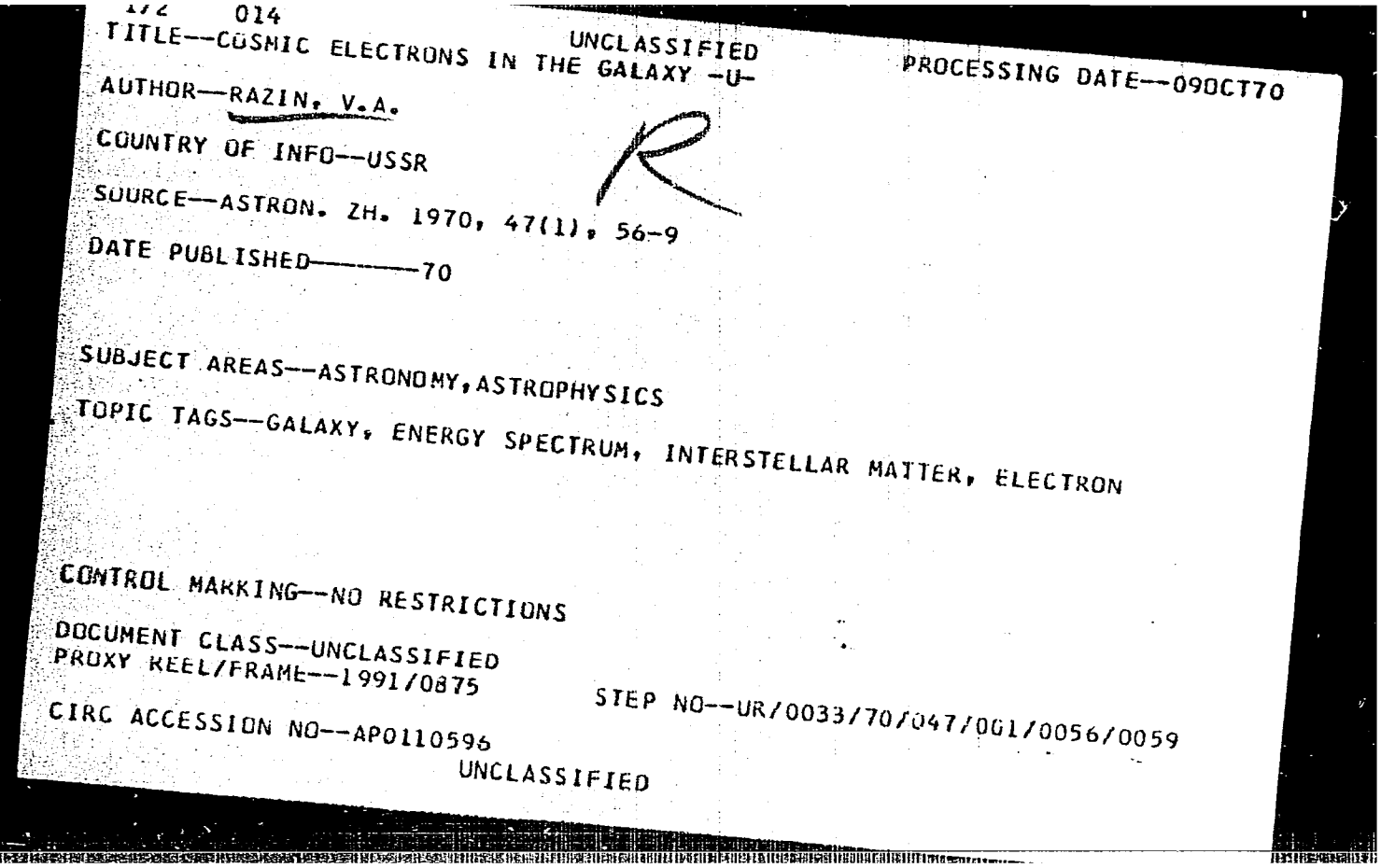
RAZIN, K. A., Candidate of Technical Sciences, METLITSKIY, R. S., KABIN, Yu. Ya., LYUBESHKIN, V. P., AND MARTYNOVA, Ye. Ye., Engineers

"The Densimeter of the "Venera-5" and "Venera-6" Space Stations"

Pribory i Sistemy Upravleniya, No 10, 1971, pp 39-40.

Abstract: A description, drawing, block diagram, schematic diagram and photograph are presented of the densimeter used on the "Venera-5" and "Venera-6" spacecraft. The device is based on the method of measurement of gas density consisting in that a body is placed in motion in the medium whose density is to be measured and the aerodynamic resistance or drag of the gas, which is a function of density, is determined. In the vibration densimeter described, the moving bodies consisted of the arms of a continually excited tuning fork. The oscillating amplitude of the arms was inversely proportional to the aerodynamic drag, and the high Q of the tuning fork allowed good sensitivity of the device to be achieved. The device can measure densities from 0.5 to 45 kg/m^3 in the 0-350°C temperature interval with an error of not over ±10%. Its indications are independent of gas composition. Calibration of the densimeter is described. As the example of the operation of the densimeter, tables are presented of the measurement data produced from the "Venera-5" spacecraft as it descended on Venus.

1/1



172 014
UNCLASSIFIED
TITLE--COSMIC ELECTRONS IN THE GALAXY -U-
PROCESSING DATE--090CT70
AUTHOR--RAZIN, V.A.
COUNTRY OF INFO--USSR
SOURCE--ASTRON. ZH. 1970, 47(1), 56-9
DATE PUBLISHED-------70
SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS
TOPIC TAGS--GALAXY, ENERGY SPECTRUM, INTERSTELLAR MATTER, ELECTRON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0875
STEP NO--UR/0033/70/047/001/0056/0059
CIRC ACCESSION NO--AP0110596
UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0110596

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DISCUSSION IS GIVEN OF THE FORMULAS FOR THE APPROXN. OF THE DIFFERENTIAL ENERGY SPECTRUM OF PRIMARY COSMIC E, 0.1-40 BEV, NEAR THE EARTH. THE FREQUENCY SPECTRUM AGREES SATISFACTORILY WITH OBSERVATIONAL DATA, TESTIFYING TO THE SIMILARITY OF THE ENERGY SPECTRA NEAR THE EARTH AND IN INTERSTELLAR SPACE AND TO THE FACT THAT COSMIC PARTICLES ARE SITUATED MAINLY IN THE GALACTIC DISK OR IN THE ARMS OF THE GALAXY. FACILITY: RADIOFIZ. INST., GOR'K. GOS. UNIV., GORKI, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--CARBENE CHEMISTRY -U-

AUTHOR-(05)-DANILKINA, L.P., KOMENDANTOV, M.I., KOSTIKOV, R.R., MANDELSHTAM, T.V., RAZIN, V.V.
COUNTRY OF INFO--USSR

SOURCE--VESTN. LENINGRAD. UNIV., FIZ., KHIM., 1970, (1), 123-43

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL BONDING, MOLECULAR STRUCTURE, CHEMICAL REACTION MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1736 STEP NO--UR/0054/70/000/001/0123/0143

CIRC ACCESSION NO--AP0138709
UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0138709
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW OF THE STRUCTURE, REACTIVITY, AND REACTION MECHANISMS OF CARBENES WITH COMPDS. CONTG. MULTIPLE BONDS, WITH SPECIAL REF. TO THE WORK OF I. A. DYAKONOV WITH 160 REFS.

UNCLASSIFIED

Acc. Nr.: AM0104115 Ref. Code: 4R0000

Yushko-Zakharova, O. Ye.; Ivanov, V. V.; Razina, I. S.; Chernyayev, L. A.

Geochemistry, Mineralogy, and Methods for Determination of Elements of the Platinum Group (Geokhimiya, mineralogiya, i metody opredeleniya elementov gruppy platiny) Moscow, "edra, 1970, 199 pp (SL:2044)

TABLE OF CONTENTS:

1/2

REEL/FRAME
19870533

18

Acc. Nr. AM0104115

The book is beased on authors' works dealing with chemico-spectroscopic determination of platinum metals, as well as results of ore study in the X-ray microanalyzer and the JKhA-3A.

Given are characteristics of about 60 minerals of platinum metals; half of them were discovered in recent years due to the use of X-ray electron microsounding of ores...

2/2

Reel/Frame
19870534

USSR

UDC:535.82:546.791

SUVOROV, A. L., KUKAVADZE, G. M., RAZINKOVA, T. L., SHAROV, B. V., FEDORCHENKO, V. A., BOBKOV, A. F. and KUZNETSOV, V. YA.

"Autoionic Microscopy of Uranium. Preliminary Results"

Moscow, Atomnaya Energiya, Vol 36, No 1, Jan 74, pp 14-18

Abstract: The primary factor inhibiting autoionic microscopic analysis for new (particularly fissionable) materials, apparently, is the lack of any final theory of the formation of images in the autoionic microscope, or of a complete understanding of the physical principles upon which the field evaporation phenomenon is based. The first stage of the work reported is an explanation of the capabilities of the autoionic microscopic method for studying uranium specimens, and a search for more effective modes of analysis, as well as the development of certain associated methodological problems. It is found that uranium needles can resist the mechanical stresses imposed in the autoionic microscope. The best result is achieved using pure argon and a mixture of He + 0.5% H_2 as imaging gases. A computer is used to construct a model of the autoionic image of α-uranium and standard stereographic projections for α-uranium in the planes (010), (001) and (110), allowing the crystallographic faces to be indicated on the photomicrographs produced. Preliminary results presented indicate the possibility in principle of autoionic microscope analysis (in atomic details) of uranium specimens.

1/1

USSR

PANTELEYEV, V. V., RAZINOVA, S. M., VASIL'YEV, S. S.

"Temperature Field in a Discharge Column Bounded by Walls"

Moscow, Khimiya i Fizika Nizkotemperaturnoy Plazmy, Moscow University Press, 1971, pp 139-142

Abstract: Rotational gas temperature distribution is spectrometrically determined for a discharge in air in an enclosed tube. The ISP-51 spectrograph was used with a camera having a focal length of 270 mm. The intensity of the rotational lines was also determined photoelectrically, using the FEP-1 attachment. A discharge tube with an inside radius of 0.2 cm was used. The results agree with data in the literature obtained with a high-dispersion spectrograph. Three figures, one table, bibliography of five titles.

1/1

USSR

PRYAKHIN, V. K., Engineer, RAZINTSEV, V. I., Engineer, and DANILOV, F. M., Candidate of Technical Sciences

"Investigation of the Stability of a Hydraulic Servo Motor With Direct Feedback"

Moscow, Izvestiya Vysshykh Uchebnykh Zavedeniy, Mashinostroyeniye, No 5, 1972, pp 77-80

Abstract: The method of harmonic linearization is used to study a loaded hydraulic servo motor with direct feedback. The conditions of stability of the servo motor are determined, with account taken of compressibility of the working fluid, as well as the parameters of the servomechanism and the load. 8 references.

1/1

USSR

UDC 539.4

ANDRONIKASHVILI, E. L., POLITOV, N. G., PAPERNO, I. M., RAZMADZE, A. K.

"Particularities of the Plastic Flow and Deformation Strengthening of Ionic Crystals"

Khar'kov, Fiz. Mekhanizmy Plastich. Deform. pri Nizkikh Temperaturakh -- Sbornik (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works) 1971, p 33 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1247 by L. I. Mirkin)

Translation: An investigation was made of the influence of irradiation in a reactor, mechanical loading, and cooling upon the properties of crystals. During the stretching of an irradiated crystal, failure takes place prior to the attainment of plasticity due to the high strength of fixation of the dislocations during irradiation. The irradiation of prestressed crystals permits the strength to be increased by a factor of 2, and the plasticity by a factor of 3. On the basis of the example of lithium fluoride crystals it was shown that irradiation fixes structural changes during loading. Lowering the irradiation temperature decreases the ultimate strength of nonloaded crystals and does not affect the ultimate strength of crystals under load. Decreasing the temperature to 77°K and x-ray irradiation brings about a threefold increase

1/2

USSR

RAZMADZE, A. N., BIDZINASHVILI, R. I.

"Experimental Study of Combined Prestressed Sprengel Systems"

Tr. Gruz. Politekhn. In-t., [Works of Georgian Polytechnical Institute], 1971, No 2(142), pp 198-206. (Translated from Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 1V952 by D. K. Bendyug).

Translation: Results are presented from experimental studies of three models of Springel systems on the effects of a longitudinal compressive force. The rigid Sprengel elements consist of steel tubes, the flexible elements (pre-stressed belts) consist of cables. The experiments were performed on a special test stand. The loading was applied by a hydraulic jack in stages of 1,000 kg. Theoretical calculation for the experimental model of the prestressed Sprengel system was used to determine preliminarily the critical force and prestressing force of the cables. Graphs of the experimental data show that the Sprengel system operated up to loss of stability in central compression, since the bending was very slight, but in the loading sector near the critical load the linear "load-bending" graphs are converted to curved graphs. The loss of stability was characterized by the moment at which the needle of the manometer suddenly stopped and the readings on the scale began to drop. It is established by comparison that the prestressing of force produced theoretically

1/2

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--MECHANICS OF ABSOLUTELY ELASTIC RODS AT HIGH COLLISION VELOCITIES -U-

AUTHOR--RAZMADZE, G.N.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK GRUZINSKOI SSR, SOOBSHCHENIIA, VOL. 57, FEB. 1970, P. 381-384

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELASTICITY THEORY, METAL ROD, COLLISON, MOTION MECHANICS, CONTINUUM MECHANICS, ACOUSTIC THEORY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1278 STEP NO--UR/0251/70/057/000/0381/0384

CIRC ACCESSION NO--AP0124929

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124929

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF A HIGH VELOCITY CENTER TO CENTER COLLISION OF TWO IDENTICAL INFINITELY LONG AND ABSOLUTELY ELASTIC RODS IN A ACOUSTIC MEDIUM, IN TERMS OF EINSTEIN'S NONCLASSICAL MECHANICS. EINSTEIN'S FORMULAS RELATING TIME, SPACE, MASS, AND ENERGY ARE DERIVED BY USING COLLISIONS OF SUCH RODS AS THE BASIS. THE PHYSICAL MEANING OF THE RESULTS IS DISCUSSED, SHOWING THAT EINSTEIN'S FORMULAS MAY FIND A WIDE APPLICATION IN SOLVING THE PROBLEMS OF MECHANICS IN ACOUSTIC MEDIA. THE RESULTS OF THE STUDY COINCIDE WITH THOSE OF EINSTEIN AND LORENTZ IN WHICH THE SPEED OF SOUND IS SUBSTITUTED FOR THE SPEED OF LIGHT. FACILITY: GRUZINSKII INSTITUT SUBTROPICHESKOGO KHOZIAISTVA, SUKHUMI, GEORGIAN SSR.

UNCLASSIFIED

USSR

UDC 547.241.07

RAZMOV, A. I., LIORBER, B. G., FOKOLOV, M. P., and KHAMMATOVA, V. M., Kazan Chemical Technological Institute imeni F. M. Kirova

"Process for the Preparation of Phosphorylated Thiosemicarbazones"

USSR Author's Certificate No 362022, filed 1 Mar 71, published 13 Dec 72 (from Otkrytiva, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 2, 1973, p 54)

Translation: This process is improved in that the phosphorylated aldehydes react with the thiosemicarbazides in an organic solvent with a subsequent isolation of the desired product by a known method.

1/1

USSR UDC 669.721'884.018.9

RAZNYSLOV, V. I., and TAYTS, A. YU.

"Vacuum-Thermal Process for the Production of Magnesium Lithium Alloys"

V. sb. Vakuumn. protsessy v tsvetn. metallurgii (Vacuum Processes in Nonferrous Metallurgy -- Collection of Works), Alma-Ata, "Nauka," 1971, pp 192-194 (from Referativnyy Zhurnal -- Metallurgiya, No 6, Jun 71, Abstract No 6G187)

Translation of Abstract: Results are given of the vacuum thermal process for the production of sufficiently pure binary alloy of Mg with Li or an alloy directly from oxide feed material. The solid phase reduction of Mg and Li from oxide compounds with Al and FeSi impurities was studied (one illustration; 7 bibliographic entries)

1/1

USSR

UDC 669.721.053.28

BYKOV, A. D., RAZMYSLOV, V. I., ANDREYEVA, R. M.

"The Nature of Chlorine in Dolomites and Its Influence on the Technology of the Production of Magnesium and its Alloys"

Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 72, pp. 5-10. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G193 by the authors).

Translation: Using the dolomites of the Pravdinskiy deposit (Irkutsk Oblast) as an example, it is demonstrated that they may contain a slight quantity of Cl (up to 0.14%), bonded with the rock-forming mineral in the complex $Ca_3(Cl, CO_3)_2$. The presence of Cl in dolomites is explained by its assimilation from sea water during the process of dolomite formation. During vacuum thermal reduction of MgO in the 1100-1300° temperature interval, the Cl, in contrast to the F salts, acts as an anticatalyst, significantly decreasing the degree of reduction of Mg, particularly in the relatively low-temperature area (up to 1200°). The Cl goes over to the Mg in quantities depending on the Cl content in the initial raw material and the temperature of reduction. For the samples studied, the content of

USSR

BYKOV, A. D., et al, Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti, 1970, No. 72, pp. 5-10

Cl' anion in dolomite roasted at 1100° reached 0.35%. Removal of the Cl is facilitated by a high-temperature mode (1300° and higher). In evaluating dolomites as a raw material for the production of Mg or its alloys with certain light metals such as Li by the silicothermal method, one must consider the content of Cl along with the ordinary impurities. 2 tables.

2/2

1/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EXTENSIVE IDIOPATHIC MUCINOUS ALOPECIA -U-

AUTHOR-(02)-RAZNATOVSKIY, I.M., TUTYKHIN, A.B.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 3, PP 68-71

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN DISEASE, THYROID GLAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1477 STEP NO--UR/0206/70/000/003/0068/0071

CIRC ACCESSION NO--AP0101563

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

2/2 025

CIRC ACCESSION NO--AP0101563

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWO PATIENTS WITH EXTENSIVE MUCINOUS ALOPECIA WERE OBSERVED WHICH THE AUTHORS BELIEVED TO BELONG TO MYXODERMIAS RUNNING A COURSE WITHOUT SIGNS OF DISORDERS ON THE PART OF THE THYROID. IT IS SUGGESTED THAT THE CLINICAL FORM BE NAMED BY THE TERM GIVEN BY PINCUS, AND THAT HISTOLOGICAL CHANGES SIMILAR TO THOSE FOUND IN IT BE DESIGNATED BY THE TERM "MUCOPHANEROSIS" SUGGESTED BY BRAUN FALCO.

UNCLASSIFIED