

1/2 000 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--FUEL BURNOUT MECHANISM AND HEAT YIELD IN THE SECONDARY AIR FLOW
INJECTION ZONE OF TURBINE ENGINE COMBUSTION CHAMBERS WITH VARIOUS
AUTHOR--(CZ)-GCRBUNDV, G.M., KRISTOFUROV, I.L.

COUNTRY OF INFO--USSR

SOURCE--AVIATSIKONNAIA TEKHNIKA, VOL. 13, NO. 1, 1970, P. 88-96

DATE PUBLISHED-----70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--COMBUSTION PROCESS, COMBUSTION PRODUCT, HEAT OF COMBUSTION,
TURBINE, COMBUSTION CHAMBER, FLOW VELOCITY, FUEL INJECTOR, FUEL
EFFICIENCY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605060/CG1 STEP NO--UR/0147/70/013/001/0038/0096

CIRC ACCESSION NO--AP0144341

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0144341

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL INVESTIGATION OF THE COMBUSTION PROCESS IN SECONDARY AIR INJECTION REGIONS AS A FUNCTION OF FUEL COMBUSTION EFFICIENCY ALONG THE LENGTH OF THE EXHAUST PIPES. THE STUDY IS CONDUCTED FOR DIFFERENT METHODS OF SECONDARY AIR INJECTION IN A COMBUSTION CHAMBER WHOSE HEAD SECTION HAS A ZONE OF HETEROGENOUS MIXTURE FLOW FOLLOWED BY A COMBUSTION ZONE AND FINALLY BY COMBUSTION PRODUCTS. A DIMENSIONLESS EXPRESSION IS GIVEN FOR THE RATIO OF THE MAXIMUM ATTAINED COMBUSTION EFFICIENCY (WITH A GIVEN METHOD OF SECONDARY AIR INJECTION) TO THE LENGTH (EXPRESSED IN CALIBERS OF THE EXHAUST PIPE) AT WHICH THIS EFFICIENCY WAS ACHIEVED.

UNCLASSIFIED

AA0038810

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UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 3/70

238138 MOULDED ELASTIC HEATING CYLINDER ensures uniform heating through homogenous mixing by the core the surface of which has right and left-hand grooves. The core carries a heating element. 25.4.67. as 1150388/23-5, GUDIMCHEK, V.I. and KHRISTOFOROV, R.V. (1.7.69) Bul. 9/20.2.69. Class 39a⁴ Int. Cl. B 29F.

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19740020

Pharmacology and Toxicology

USSR

UDC 612.826.4.015.348.014.46:615.214

KHRISTOLYUBOVA, N. A., Laboratory of Psychopharmacology, Central Scientific Research Institute of Forensic Psychiatry imeni Prof Serbskiy, Ministry of Health USSR, Moscow

"The Effect of Lysergic Acid Diethylamide (LSD) on the Content of Monoamines in Some Nuclei of the Midbrain and the Hypothalamus"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 8, Aug 70, pp 53-55

Abstract: In experiments on rats, a distinct increase in the content of catecholamines was consistently observed in the reticular formation of the midbrain at the level of the caudal two-thirds of the interpeduncular nucleus, in the substantia nigra, in the zone above the interpeduncular nucleus at the level of its median third, and in the area situated laterally from the interpeduncular nucleus at the level of its cranial third, 15 and 60 min after LSD had been administered intravenously or intraperitoneally in doses of 20-30 mg/kg, and 19 hrs after doses of 0.2-1.2 mg/kg. Sixty min after a dose of 20 mg/kg, a decrease was noted in the concentration of catecholamines in the paraventricular, supraoptic, and dorsomedial nuclei of the hypothalamus. Injection of 0.12-1

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KHRISTOLYUBOVA, N. A., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 8, Aug 70, pp 53-55

mg/kg of LSD produced no changes after 20-45 min or 1-4 hrs in monoamine (catecholamine) content of the type observed 19 hrs after administration of doses in this range. These results differ from those of D. X. Freedman, who reported that LSD in doses of 0.5-1.3 mg/kg altered the content of serotonin in the brain within the first 2 hrs after application. The conflict was presumably due to the fact that Freedman conducted his investigation of brain homogenates by applying biochemical methods, while the content of monoamines in this study was determined locally by the histochemical method. The dorsal and medial nuclei of the commissure are known to contain serotonin and the changes in the fluorescence of these nuclei that were observed in this study may have been associated with an effect of LSD on the concentration of serotonin in the nuclei.

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Cytology

USSR

UDC 576.31

KERKIS, A. Yu. and KHRISTOLYUBOVA, N. B., Laboratory of Cell Ultrastructures, Institute of Cytology and Genetics, Siberian Department, Academy of Sciences USSR, Novosibirsk

"Dynamics of Changes in the Ultrastructure of Cells in Tissue Culture During the Cell Cycle"

Leningrad, Tsitologiya, No 4, 1971, pp 525-529

Abstract: Electron microscope study was conducted of various stages of the cell cycle in normal tissue culture (fetal rabbit kidney). Flat-parallel embedding of the material (embedding of tissue culture in plexiglas in the form of flat, parallel plastic slides) and "light" autoradiography were used to identify the different phases of the cell cycle. During the interphase changes were detected both in the cell organelles and in the structure of the protein-synthesizing apparatus, because the various stages of the interphase are not alike in genetic activity. Starting with G₁ there was an increase in the number of all the structures involved in protein synthesis. The process reached a peak at the end of S or beginning of G₂. At the end of G₂ the number of elements in the protein-synthesizing apparatus and other organelles decreased because the need for them disappeared after the cessation of the main synthetic processes. The morphological changes observed are

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USSR

KERKIS, A. Yu. and KHRISTOLYUBOVA, N. B., Tsitologiya, No 4, 1971, pp 525-529

consistent with the results of biochemical, autoradiographic, and cytologic studies on individual stages of the interphase.

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1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--QUASI PARTICLE STATES OF SPHERICAL NUCLEI -U-
AUTHOR--KHRISTOV, I.D. K
COUNTRY OF INFO--USSR
SOURCE--(JINR P4-4896) LAB. OF THEORETICAL PHYSICS). 1970. 15P. DEP. CFSTI
DATE PUBLISHED----- 70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--NUCLEAR STRUCTURE, ATOMIC MASS, NUCLEAR ENERGY LEVEL,
SUPERFLUIDITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/2170 STEP NO--UR/0000/70/000/000/0015/0015
CIRC ACCESSION NO--AT0127534
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0127534

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ROLE OF THE PAIR CORRELATIONS OF THE SUPERCONDUCTING TYPE IN SPHERICAL NUCLEI IS STUDIED. WITHIN THE FRAMEWORK OF THE SUPERFLUID MODEL THE EQUATIONS ARE DERIVED FOR THE SUPERFLUIDITY AND THE ENERGY OF EXCITED QUASI PARTICLE STATES TAKING INTO ACCOUNT THE BLOCKING. THE ENERGIES AND SUPERFLUID CHARACTERISTICS OF QUASIPARTICLE STATES IN THE REGION OF MASS NUMBERS 100 LESS THAN A LESS THAN 150 ARE CALCULATED. THE BLOCKING EFFECT IN SPHERICAL NUCLEI IS ESTIMATED. FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CHARACTERISTICS OF CONTINUOUS STEELMAKING PROCESS -U-
AUTHOR--(02)-KHRISTOV, V.N., GLINKOV, G.M.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(3), 159-62
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--METALLURGIC PROCESS CONTROL, STEEL PRODUCTION, INDUSTRIAL
AUTOMATIC CONTROL, TIME CONSTANT, GAS ABSORPTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/0835 STEP NO--UR/0148/70/013/003/0159/0152
CIRC ACCESSION NO--AT0132925
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132925

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STATIC AND DYNAMIC CHARACTERISTICS OF A CONTINUOUS STEELMAKING PROCESS WERE STUDIED. WITH RESPECT TO AUTOMATIC CONTROL, THE FLOW PROCESS IS NONLINEAR IN RELATION TO THE FLOW OF THE TREATED STREAM AND THE AMT. OF ASSIMILATED GAS AND LINEAR IN RELATION TO THE CONCNS. IN THE TREATED STREAM. THE CHARACTERISTICS OF THE PROCESS WERE STUDIED FOR STEPWISE CHANGES IN THE PARAMETERS. THE SYSTEM HAS BOTH TRANSPORT AND SIZE LAGS. THE SIZE LAG TIME IS ATTRIBUTED TO THE PRESENCE OF NONIDEAL FLOW DISPLACEMENT. RELATIONS BETWEEN THE TIME CONSTS. AND THE PARAMETERS OF THE PROCESS WERE ESTABLISHED. FACILITY: ZHDANOV. MET. INST., ZHDANOV, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DESCRIPTION OF TRIPLE COLLISIONS IN THE THEORY OF STRONG INTER
CHANNEL COUPLING -U-
AUTHOR-(03)-AMIRKHANOV, I.V., SMEDARCHINA, Z.K., KHRISTOVA, YE.K. *K*
COUNTRY OF INFO--USSR
SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 3, PP
392-404
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--NUCLEAR MODEL, NUCLEAR REACTION, THREE BODY PROBLEM, BOUNDARY
VALUE PROBLEM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0999 STEP NO--UR/0646/70/003/003/0392/0404
CIRC ACCESSION NO--AP0124658
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124658

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ONE OF THE DIFFICULTIES IN THE DESCRIPTION OF REACTIONS WITH THREEFREE PARTICLES AT THE BEGINNING OR THE END OF THE PROCESS IN THE FRAMEWORK OF MULTI,CHANNEL FORMALISM IS A CORRECT FORMULATION OF THE BOUNDARY CONDITIONS. A METHOD OF AVOIDING THIS TROUBLE IS SUGGESTED. FACILITY: OBYEDINENMYI INSTITUT. FACILITY: YADERNYKH ISSLEDOVAN Y.

UNCLASSIFIED

Magnesium

USSR

UDG 669.721.472(088.8)

KOSAREV, S. P., MUZHZHAVLEV, K. D., ~~KHRISTYUK, G. P.~~, and TIMOFEYEV, V. V.,
All-Union Scientific Research, Design and Planning Institute of the
Aluminum, Magnesium and Electrode Industry

"Diaphragmless Magnesium Electrolyzer"

USSR Authors' Certificate No 275418, G. 40c, 3/02, 40c, 3/08, (C 22 d
3/02, C 22d 3/08), filed 19 Mar 69, published 2 Oct 70 (from RZh-Metallur-
giya, No 3, Mar 71, Abstract No 3 G172)

Tranxlation: To increase metal yield in proportion to the current, the
under-surface of the bath cover is made to slope toward the electrolytic
cell, while the chlorine offtakes are placed in the cover on the side of
the collector cell.

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Instrumentation and Equipment

USSR

UDC 669.721.472(088.8)

KOSAREV, S. P., MUZHZHAVLEV, K. D., and KRISTYUK, G. P., All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry

"Contact Head of Graphite Anode"

USSR Authors' Certificate No 272566, Cl. 40c, 3/02; 40c, 3/08, (C 22 d 3/02, C 22 d 3/08), filed 10 Jul 68, published 7 Sep 70 (from RZh-Metallur-giya, No 3, Mar 71, Abstract No 3 G173 P)

Translation: The contact head of the graphite anode of a magnesium elec-trolyzer, including the cast-iron lining with current-feeding rod, is unique in that, in order to improve anode hermeticity and lengthen its service life, the contact head is passed through an opening in the lining of the electrolyzer and supplied with a flange around the perimeter, by which flange the head is joint to the flange of a connecting branch mounted co-axially at the opening and attached by its under side, which has the appearance of a plate, to the body of the electrolyzer. The connecting branch is supplied with a connecting hose in order to feed gas into the anode space. One illustration.

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KHRISTYUKHIN, A. K.

СР ДОКУМЕНТА

SO: SPB 55204

UDC: 614.23/.25:658.53

DETERMINATION OF WORK DONE BY MEDICAL PERSONNEL IN A TEAM SITUATION

Article by A.K. Khristyukhin, candidate of medical sciences, All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N. A. Semashko, USSR Ministry of Health, Moscow; Sovetskoye Zdravookhraneniye, Russian, No 1, 1972, submitted 6 July 1971, pp 21-23

It is stated in the Directives of the 24th Congress of the CPSU that work is a source of wealth, and only growth of the productivity of labor on each job and increased efficiency of the entire national economy will multiply the benefits that the Soviet people will receive to the extent of the contribution of each to the national product." This position also applies completely to public health. The specifics of activities of public health workers do not permit expressing the productivity of their labor using the indices applicable to other branches of the national economy. At the same time, the labor of medical workers, like any other labor, must be measured, and thus the force required to perform it can be defined.

The index reflecting work necessary to the public in the public health system is the established staff norm. The substantiation of its determination and accuracy thereof permit, to some extent, making a judgment as to the productivity of work of medical workers, since many factors that affect work input (organization of medical care, organization of work, its intensity, how the work place is equipped, and a number of other factors) are taken into consideration when setting norms with regard to size of staff.

Cooperative and separate systems of work are used more and more often in the practical activity of public health institutions that is related to rendering therapeutic and prophylactic services. One of the forms of cooperative work is the team system; it involves a group of workers who perform, at the same time, various types and special forms of duties to achieve the same goal. Comprehensive medical examinations, surgical intervention for a specific pathology, operation of blood transfusion stations and departments with regard to processing donor blood, certification by medical commissions of pre-enlisted and enlisted groups, the flight personnel of the Air Corps, the work of VIKS [Medical Commission for Evaluation of Disability], as well as other problems pertaining to medical care for the people could not be performed without the concurrent participation of different categories of workers in special fields.

USSR

UDC 621.762:621.772

MAY, V. K., DENISENKO, E. T., and ~~KHRYZENKO~~, A. F., Institute of the Problems of Material Science, AN UKrSSR

"Effect of Nichrome Powder Structure Characteristics of Hot Pressuring Kinetics"

Kiyev, Poroshkovaya Metallurgiya, No 6 (102), Jun 71, pp 25-28

Abstract: The metallographic investigation of hot pressed Nichrome specimens did not reveal a substantial growth of grains with increasing temperature and increasing pressure. Therefore, the main parameters characterizing the structural factor must be of the size of the initial powder particles and the magnitude of the mosaic blocks established during the hot pressing process. The effect of initial powder particle sizes on the packing rate was experimentally investigated on powder of Nichrome Kh20N80. Its packing kinetics and calculated deformation change kinetics during hot pressing are shown. The structural factor characterizing the packing rate during hot pressing was found to be a monotonically decreasing function of the average powder particle size. The character and direction of the substructure change during hot pressing are determined not only by temperature and the hot pressure, but they depend also on preliminary thermal treatment of the powder. Four illustr., two tables, five formulas, five biblio. refs.

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USSR

UDC: 621.762.27

KHRIYENKO, A. F., SKOROZHOD, V. V. and PANICHKINA, V. V., Institute of Problems of the Material Science, Academy of Sciences Ukrainian SSR

"Hydrogen Effect on Certain Properties of Electrolytic Nickel Films"

Kiev, Poroshkovaya metallurgiya, No 12, Dec 71, pp 17-20

Abstract: This study concerns the effect of the hydrogen dissolved in nickel on the defectiveness of crystal structures, recovery processes, and pre-crystallization changes in the fine crystalline structure of nickel powders. The test specimens included: electrolytic nickel powder, autoclave nickel, and electrolytic nickel foil. The study covered the effects of electrolytic conditions and the pH of the solutions on the amount of hydrogen dissolved in nickel, the kinetics of hydrogen liberation, and changes in conductivity and hardness with annealing temperature. An increase in hydrogen concentration appears to reduce the energy of formation of packing defects and increase both the resistivity and hardness (HV). The increase in resistivity is attributed either to the formation of proton gas clouds (in the nickel lattice) inhibiting the movement of

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KHRIYENKO, A. F., et al, Poroshkovaya metallurgiya, No 12, Dec 71, pp 17-20

conduction electrons or to the initiation of a new phase with conductance similar to that of pure nickel. It is suggested that dissolved hydrogen may significantly affect certain physical properties of powders and foils at temperatures preceding its complete liberation. (4 illustrations, 9 bibliographic references).

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USSR

UDC 621.762.27

SKOROKHOD, V. V., KHEIYENKO, A. F., SOLONIN, YU. M., and KHANDROS, L. L.,
Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Study of Packing Defects in Electrolytic Nickel Powder"

Kiev, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 9-13

Abstract: A study is presented of the kinetics of isothermal annealing of packing defects in electrolytic nickel powder at 141 and 191°C. The probability of the emergence of packing defects was calculated from the anisotropy of blocks for directions [111] and [100]. It is suggested that the hydrogen present in the powder in amounts of 0.0075 to 0.0035% is responsible for the decrease in defect formation energy. On dissolution in nickel, hydrogen becomes ionized; the released electrons are captured by the s-d band. Since hydrogen increased the number of s-d electrons per atom, it is bound to decrease the packing defect energy. Annealing

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SKOROKHOD, V. V., et al., Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 9-13

at 200--300°C markedly reduces the concentration of packing defects without an appreciable decrease in dislocation density. Mathematical treatment of the relationship between the effective energy of packing defects and temperature at various mean hydrogen concentrations shows that with annealing temperatures above 141°C, the hydrogen concentration on the packing defect will approach equilibrium at reasonably low annealing durations.

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1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--COATING FOR CONTACT WELDING -U-
AUTHOR--~~KHRIZMAN, M.G.~~ K
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 260,761
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--06JAN70
SUBJECT AREAS--MECH., IND., CIVIL AND MACHINE ENGR, MATERIALS
TOPIC TAGS--CHEMICAL PATENT, PROTECTIVE COATING, CHEMICAL COMPOSITION,
WELDING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/1974 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0115773

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0115773

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COATING FOR CONTACT WELDING
CONSISTED OF A BINDER, SUCH AS A DRYING OIL, AND A FILLER, SUCH AS
INDENE COUMARONE RESIN 30-100 AND ROSIN 3-10 PARTS BY WT. ENOUGH DRYING
OIL IS USED TO GUARANTEE THE PASTELIKE CONSISTENCY OF THE COVERING.

UNCLASSIFIED

KHRIZOLITOVA M.A.

UNCLASSIFIED

PROCESSING DATE--03JUL70

TITLE--SYNTHESIS OF HIGHER ALPHA, OMEGA DICHLOROCLEFINES BY THE ANODIC
CONDENSATION OF OMEGA CHLOROCARBOXYLIC ACIDS AND 1,3, BUTADIENE. II. -U-
AUTHOR--KHEIZOLITOVA, M.A., MIRKIND, L.A., FICSHIN, M.YA.

COUNTRY OF INFO--USSR

SOURCE--Zh. Org. Khim. 1970, 6(2) 219-22

DATE PUBLISHED-----70

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19

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ELECTROLYSIS, CARBOXYLIC ACID,
BUTADIENE, GAS CHROMATOGRAPHY, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1980/173E

STEP NO--UR/C366/70/006/C02/0219/0222

CIRC ACCESSION NO--AFCC49816

UNCLASSIFIED

Acc. Nr.

APC049816

Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code

UR 0366

106538h Synthesis of higher α,ω -dichloroolefins by the anodic condensation of ω -chlorocarboxylic acids and 1,3-butadiene. II. Khrizolitova, M. A.; Mirkind, L. A.; Fioshin, M. Ya. (USSR). *Zh. Org. Khim.* 1970, 6(2), 219-22 (Russ). The electrolysis of $\text{Cl}(\text{CH}_2)_6\text{CO}_2\text{H}$ (I) or $\text{Cl}(\text{CH}_2)_8\text{CO}_2\text{H}$ (II) in the presence of $\text{H}_2\text{C}=\text{CHCH}=\text{CH}_2$ gave the following products (identified by gas chromatog.): from I, $\text{Cl}(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{Cl}$, $\text{Cl}(\text{CH}_2)_8\text{CH}(\text{CH}=\text{CH}_2)(\text{CH}_2)_6\text{Cl}$, $\text{Cl}(\text{CH}_2)_9\text{CH}=\text{CHCH}_2\text{CH}_2\text{CH}(\text{CH}_2)_5\text{Cl}$, $\text{Cl}(\text{CH}_2)_7\text{CH}(\text{CH}=\text{CH}_2)\text{CH}_2\text{CH}=\text{CH}(\text{CH}_2)_6\text{Cl}$; and from II, $\text{Cl}(\text{CH}_2)_9\text{CH}=\text{CH}(\text{CH}_2)_7\text{Cl}$, $\text{Cl}(\text{CH}_2)_8\text{CH}(\text{CH}=\text{CH}_2)(\text{CH}_2)_8\text{Cl}$, $\text{Cl}(\text{CH}_2)_9\text{CH}=\text{CH}(\text{CH}_2)_6\text{CH}(\text{CH}=\text{CH}_2)\text{CH}_2\text{CH}(\text{CH}_2)_5\text{Cl}$, $\text{Cl}(\text{CH}_2)_7\text{CH}(\text{CH}=\text{CH}_2)\text{CH}_2\text{CH}(\text{CH}_2)_8\text{Cl}$.

CPJR

REEL/FRAME
19801738

USSR

UDC 621.378.3

BOBROVNIKOV, Yu. A., VERNIGOR, Ye. M., ZVEREV, G. M., LUK'YANTSEV, Ye. A.,
MARTYNOV, A. D., and KIROLOVA, O. P.

"Effective Conversion of the Second Harmonic of a Ruby Laser into Induced
Radiation in the 400-470 Millimicron Range in Stilbenyloxazole Solutions"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 13, No 2, Aug 70, pp 216-219

Abstract: Results are presented for an experiment conducted to study the laser-
induced radiation in alcohol solutions of stilbenyloxazoles. In the experiment
a 2.5 Mw ruby-laser beam was focused on the vessel containing the solution. The
induced radiation was recorded by means of the ISP-51 spectrograph. The wave
length of the induced radiation ranged from 400 to 470 millimicrons. The spectrum
width for alcohol is 2.5-3 times that produced in benzene. For all solutions
studied the radiation conversion factor is about 20%.

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Acc. Nr: **0043869**

Ref. Code: UR 0016

PRIMARY SOURCE: *Journal Mikrobiologii, Epidemiologii, i Immunobiologii*, 1970, Nr 2, pp 27-32

DYNAMICS OF IMMUNE RESPONSE IN MICE FOLLOWING ADMINISTRATION OF PERTUSSIS MONOVACCINE

Khazanova, L. Ye.; Stanislavskiy, Ye. S.;
Khromacheva, R. P.; Sandulova, S. L.

The authors studied the relationship of the level of various classes of specific immunoglobulins in the blood and resistance of vaccinated mice to experimental pertussis meningoencephalitis in various schemes of administration of the antigen.

Experiments were carried out on mongrel and inbred (CBA abd C57BL) mice. Agglutination and passive hemagglutination reactions were used for detection of Ig M- and Ig G-antibodies. Single immunization of mice with corpuscular pertussis vaccine caused a weak response (according to the data of antibody production). Administration of high subtoxic doses of the vaccine was followed by preponderant synthesis of Ig M-antibodies. Mice immunized one were resistant against meningoencephalitis, in the absence of antibodies detectable in the blood. Second administration of pertussis vaccine to mice had a marked stimulating effect on the synthesis of antibodies, particularly of Ig G. However, the level of specific resistance failed to show considerable change or reduction.

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REEL/FRAME
19770293

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AP0043869

As a result of vaccination intact mice of C57BL species, highly sensitive to pertussis, acquired the capacity to elaborate specific resistance; less sensitive mice of CBA line were incapable of doing so.

Blood antibody level of mice failed to correlate with their resistance against pertussis meningoencephalitis.

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USSR

YELISHAKOV, I. B., KHROMATOV, V. YE., Moscow

"Oscillations of Panels in a Supersonic Flow in the Presence of Random Effects"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 54-58

Abstract: This article contains a study of the effect of the velocity of a head-on supersonic flow on the statistical characteristics of the stress-strain state of a cylindrical panel. The external loads are made up of pressure pulsations in a field of random forces which are considered random time-space functions and a pressure perturbation which depends on the deformations of the panel. The results of a numerical analysis are presented for a number of statistical characteristics of normal displacements of the panel as a function of the Mach number. The effect of the perturbed pressure and mutual correlations of the generalized coordinates is estimated. The method described by Bolotin in "Stochastic Boundary Problems in Plate and Shell Theory" -- the method of canonical expansions -- was used to solve the equations of the stochastic problem.

A numerical example is described and the results of calculating the statistical characteristics on the BESM-4 computer are presented in the form
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USSR

YELISHAKOV, I. B., et al., Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 54-58

of graphs. From the results of these calculations it appears that when considering the regular pressure component the vibration level of the channel is appreciably lower than the level calculated without considering this component. Several possible causes are suggested to explain the drop in vibration level.

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1/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--A NEW ONCOLOGICAL CENTER -U-
AUTHOR--KHROMCHENKO, A. K
COUNTRY OF INFO--USSR
SOURCE--MEDITSINSKAYA GAZETA, SEPTEMBER 11, 1970, P 4, COLS 3-7
DATE PUBLISHED--11SEP70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL SCIENCES
TOPIC TAGS--ONCOLOGY, MEDICAL RESEARCH FACILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1794 STEP NO--UR/9034/70/000/000/0004/0004
CIRC ACCESSION NO--AN0138741
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AN0138741

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONSTRUCTION OF THE ALL UNION SCIENTIFIC RESEARCH ONCOLOGICAL CENTER NEAR THE PRESENT SITE OF THE INSTITUTE OF EXPERIMENTAL AND CLINICAL ONCOLOGY WILL BE COMPLETED IN 1975. PLANS FOR THE NEW INSTITUTE ARE BEING DEVELOPED BY THE INSTITUTE "MOSPROYEKT-4". ONE OF THE MISSIONS OF THE INSTITUTE WILL BE TO COORDINATE AND PLAN CNACER RESEARCH IN THE SOVIET UNION.

UNCLASSIFIED

USSR

UDC 621.372.822.092.22

~~KHROMENKO, T. G.~~

"Wave Diffraction in a Rectangular Wave Guide with a Step Inhomogeneity and Dielectric Filling"

Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb. (Radio Engineering. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 15, pp 25-31 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B128)

Translation: The diffraction of wave guide waves at the step junction of rectangular wave guides of different widths is investigated.

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UDC 621.762.2(088.8) 3

USSR

PATYUKOV, G. H., ROMANOV, A. I., BARANOV, M. N., BUTORIN, N. I., ~~KHROMENKO, G. S.~~, GONCHAROV, M. T., and SAGUNOV, T. M., Noril'sk Mining and Metallurgical Combine imeni A. I. Zavenyagin

"Electrolyzer for Making Metal Powder"

USSR Authors' Certificate No 267080, Cl. 40c, 1/02; 40c, 5/00, (C 22d), filed 21 Feb 67, published 23 Jan 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract NO 3G405P)

Translation: The electrolyzer contains a bath, anodes, disk cathodes fastened on a shaft, current supply unit, and drive mechanism. In order to decrease power consumption and increase dependability of electrolyzer operation, the drive mechanism is supplied with a toothed rack, which engages with the gear that is fixed on the shaft with the cathodes and imparts to the cathodes a reciprocating motion along the path of a pendulum. The contact at the point of the current supply to the shaft by the cathodes is made to be fixed. One illustration.

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USSR

UDC 577.1:615.7/9

KHROMENKO, Z. F., GOSTINSKIY, V. D., and IVANOV, N. G.

"Materials on the Primary Toxicologic Evaluation of Hydroterphenyl"

Nauch. tr. Irkutsk, med in-ta (Scientific Works of Irkutsk medical Institute), 1972, vyp. 115, pp 122-123 (from RZh-Biologicheskaya Khimiya, No 8, 1973, Abstract No 8F2170)

Translation: For internal (in the stomach) administration of hydroterphenyl, its LD₅₀ for rats and mice was 6.6 and 4.2 grams/kg respectively. At doses of 7.5-10 grams/kg the animals died in 3 to 10 days. In the case of inhalation by the rats (10-200 mg/m³; 4 hours) no deaths were observed. The threshold concentration of hydroterphenyl with respect to choline esterase activity was 20 mg/m³; with respect to chloride and phenol content in the urine it was 35 mg/m³. On repeated internal administration of the hydroterphenyl (over a 3-length period) to rats in doses of 0.107-0.5 LD₅₀, a significant reduction in weight gain, intensification of the antitoxic function of the liver, a reduction in choline esterase activity, an increase in the elimination of free and general phenols with the urine, and an increase in the weight factors of the liver, kidneys and spleen were observed. The conclusion was drawn regarding 1/2

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KHROMENKO, Z. F., et al., Scientific Works of Irkutsk Medical Institute, 1972, Vyp 115, pp 122-123

the moderate toxic properties of hydroterphenyl. With respect to general toxic effect the hydroterphenyl belongs to the substances capable to disturbing the functional state of the liver, kidneys and central nervous system. The cumulative properties of hydroterphenyl are weakly expressed.

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1/2 030 UNCLASSIFIED PROCESSING DATE--09OCT70
 TITLE--CORROSION OF CONSTRUCTION MATERIALS DURING THE SULFOXIDATION OF
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 AUTHOR--(05)--BALAKIREV, YE.S., OSTROUMOVA, V.V., GERSHENOVICH, A.I.,
 DZHAGATSPANYAN, R.V., KHROMENKOV, L.G.
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE HG PHOTOCHEM. SULFOXIDN. OF ALIPHATIC C SUB10-20 HYDROCARBONS,. SATISFACTORY CORROSION RESISTANCE WAS FOUND FOR STEEL 0KH23N28M3D3T OR KH18N12M2T, OR PB. S-O, THE CORROSION RATES BEING 0.040, 0.048, AND 0.034 G-M PRIME2-HR. DURING THE ALC. EXTN. OF THE SULFONIC ACIDS, THE CORROSION RATES FOR THE STEELS WERE 0.00075 G-M PRIME2-HR.

UNCLASSIFIED

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TECHNICAL TRANSLATION

ANNA | FSTC/HT-23-2015-72

29 Nov 72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV,
SEPTEMBER 1968

FOREIGN TITLE: ПРОБЛЕМЫ ПЕРЕДАЧИ ИНФОРМАЦИИ ЛАЗЕРНЫМ ИЗЛУЧЕНИЕМ

AUTHOR: I. A. DERJUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY
IMENI T.G. SHEVCHENKO

Translated for FSTC by AGSI

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File Page -

USSR

UDC 546.641*161+546.664*161+645.665*161+546.666*161+546.668*161

STRIZHKOV, B. V., RUCHKIN, YE. D., KRIKOROV, V. S., PCHELKIN, V. A., NIKITENKO, L. S., and KHROMOV, A. D.

"Production of Anhydrous Fluorides of the Yttrium Subgroup of Rare-Earth Elements"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 8, 1972, pp 1428-1433

Abstract: The anhydrous REM fluorides are a promising material for the manufacture of thin-film condensers by vacuum sputtering. One method of manufacturing anhydrous REM fluorides is by thermal decomposition of the hydrated fluorides of these elements. One shortcoming of this method is that dehydration upon heating may be accompanied by pyrohydrolysis. The method has not been fully studied. The present work studies the process of production of anhydrous fluorides of Y, Dy, Ho, Er, and Yb by thermal decomposition of their hydrates in air, in a current of a dry inert gas and in a vacuum. The methods of thermal, crystalloptical, x-ray structural, and chemical analyses plus IR spectroscopy were used to study the specimens. The dehydration of the fluorides was found to be a multistage process. Complete removal of the water of crystallization requires heating to 500-600°C (somewhat lower in a vacuum), apparently a result of the deep penetration of water molecules into the defective crystalline lattice of the fluorides. Initial

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Strizhkov, B. V., Ruchkin, Ye. D., Krikorov, V. S., Pchelkin, V. A., Nikitenko, L. S., Khromov, A. D., Moscow, Neorganicheskiye Materialy, No 8, 1972, pp 1428-1433.

dehydration removes all but approximately 0.5 mol of the water rather easily, after which dehydration is more difficult and apparently is accompanied by ordering of the crystalline structure of the substance. The temperature of complete dehydration can be reached only in a vacuum or in a current of a dry inert gas; otherwise, the process of pyrohydrolysis begins before the dehydration reaction is completed.

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USSR

UDC 616.936-07

DUKHANINA, N. N., SARIKYAN, S. Ya., ZHUKOVA, T. A., KHROMOV, A. S., and ALEKSEYEVA, Z. M., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martynovskiy, Ministry of Health USSR

"Detection of Malaria Cases in the USSR Between 1967 and 1970"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 3, 1972, pp 319-323

Abstract: Many malaria cases are not detected early due to some laxness in the system induced by the virtual eradication of the disease and by the inconvenience and costliness of running mass screening tests. Study of two groups of malaria patients and parasite carriers - local residents, including those who contracted malaria after receiving blood transfusions, and Soviet citizens returning from trips to Asia and Southeast Asia and foreign nationals - showed that the disease was not detected in most of the local residents until they sought care in a medical facility, only 40% (out of 234) doing so 1 to 5 days after the onset. The disease was detected earlier in the second group, mostly students, because they tended to visit a physician promptly. Some delays were occasioned by an absence of symptoms for a long time (6 to 12 months) owing to the protracted latent period of the causative agent.

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KHROMOV, A. S.

PROBLEMS AND PROSPECTS OF CONTROLLING MALARIA IN TROPICAL AFRICAN COUNTRIES

TMO: 616, 9/16, 1-1034, 4(6)

Articles by G. P. Stokholya, P. I. Kuznetsov, A. S. Khromov, A. T. Danov, Moscow, Sovetskoye Zdravookhraneniye, Meditsina, no. 12, 1972, pp. 13-15, 13 June 1972, pp 59-62]

At the present time, when malaria has been eradicated from all European countries and more than half of the entire population of Asian and American countries live in areas that have been totally or partially freed of this ailment, in the countries of tropical Africa, as in the case many centuries ago, virtually the entire population suffers from malaria, and 500,000 children up to five years of age die every year.

The reasons for the serious lag of African countries with regard to control of malaria, in relation to other parts of the world are complex and diverse. They are related first of all to the present situation of these countries, as indicated by the very history of the control of this disease over the vast territories of the African continent.

We can distinguish three periods in the history of active war against malaria in tropical Africa. The first period goes from the start of the 19th Century to the end of the 1940s. Its typical characteristic was that malaria control measures were performed only among colonial troops and the colonial administration. The limited measures in this case that were performed among the local population in the 1910s-1920s were motivated usually by strategic or economic considerations. The rural population of tropical Africa was virtually without any medical care.

The second period, which is referable to the 1940s, was a transitional one. It coincided with the upsurge of the national liberation movement and the start of disintegration of the colonial system on the African continent, and it was characterized by the fact that along with the data were reported to the Fifth International Congress on Rural Medicine (10-15 May 1972, Bulgaria).

JRS 58117
31 Apr 73

KHROMOV, A. S.

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The Fifth International Congress on Rural Medicine convened in Bulgaria (Zolotyaya Paski) from 10 to 15 May 1972. At this congress there were 687 delegates from 31 countries, including the USSR. A total of 389 papers were delivered on the following topics: epidemiology of infectious and parasitic disease in rural areas, hygiene of agricultural labor and

countries of the world, to discuss and adopt the necessary measures to protect the people from adverse factors related to rural living and working conditions. In 1961 the International Association of Rural Medicine (IASRM) was founded. Since its inception, the association held four international congresses on rural medicine: in Tours (France) in 1961, in Bad Reichenhach (FRG) in 1964, in Prague (Czechoslovakia) in 1966, and in Osaka (Japan) in 1969.

In view of mechanization and automation of agriculture and extensive use of chemical fertilizers and pesticides, especially in developed countries, new problems arise with which rural medicine has to deal. In the near future such problems will also be pressing in developing countries.

Problems pertaining to rural medicine occupy a prominent place among other problems of medical science and public health practice in both developed and developing countries of Asia, Africa, and Latin America. However, while in economically developed countries some problems of rural medicine have already been solved in part, specifically, rural public health services have been created which fight against infectious and parasitic pathology in rural regions and implement measures to improve sanitary and hygienic conditions, in countries that were recently liberated from colonial dependence everything has to be started from scratch, beginning with organization of public health services in rural areas.

Article by ~~V. A. S.~~ Khromov, A. S. Khromov, A. S. (Moscow); Moscow, Sverdlovskaya Zdravoohrannitelnyy, Rossiya, No. 11, 1972, pp. 89-91

URGENT PROBLEMS OF RURAL MEDICINE IN DEVELOPING NATIONS (ACCORDING TO THE RESULTS OF THE FIFTH INTERNATIONAL CONGRESS ON RURAL MEDICINE)

UDC: 614 (5)6-22)



KH Roman, A.S.

Medical Sciences

PUBLIC HEALTH PROBLEMS DISCUSSED AT THE INTERNATIONAL SYMPOSIUM ON TROPICALS
[Article by A.S. Roman, Candidate of Medical Sciences (Moscow); Moscow, Sovietkoye Zdravokhraneniye, No 4, 1972, pp 94-95]

UML: 0143301010.V113.S10P14

A symposium on tropicals convened in Tbilisi (Georgian SSR) on 1-12 December 1971. Physicians and doctors from Czechoslovakia, the USSR, Rumania, Hungary, GDR, Poland, Romania, Yugoslavia, Afghanistan, Egypt, Syria, and Sudan participated in the work of the symposium.

The participants heard 76 papers delivered in the sections on internal and infectious disease, nutrition and childhood, surgery, physiology, and parasitology.

Infectious and parasitic disease constitutes the chief problem in developing countries. The principal papers discussed diagnosis and treatment, epidemiological distinctions of some infectious and parasitic diseases, as well as organization of epidemic control measures in some developing countries.

It is absolutely imperative to be informed about the epidemic and parasitological situation in a country in order to organize and initiate the necessary measures to control the disease. However, such information is difficult in developing countries because of the lack of epidemic control and parasitological services in most such countries.

The papers entitled "Organization of Epidemic Control Work in the Hungarian People's Republic" by Dr. Szerek and "Serological Basis of Parasitology Supervision of Infectious Diseases in Afghanistan" by Dr. Sedi showed that in countries where there are no epidemic control services multipurpose medical examinations on different population groups in different regions by the sampling method are particularly important. They yield the necessary information about the distribution of infectious disease and permit selection of the necessary measures to control it. Thus, a complex sampling study of the residents of Kabul revealed antibodies to poliomyelitis virus in 57-66 percent of the children up to three years of age, and in 90 percent of those

Therapy

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UDC 615.849.19.015:616-091

KHROMOV, B. M., KOROTKEVICH, N. S., OKSOVA, Ye. Ye., KRYLOV, K. I., PROKOPENKO, V. T., and BOGDANOV, M. P., Leningrad Institute of Postgraduate Medicine imeni S. M. Kirov, Leningrad Institute of Precision Optics and Mechanics, and Institute of Psychoneurology imeni V. M. Bekhterev

"Organ Changes Following Experimental Resection With a Laser Beam"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 2, 1973, pp 45-48

Abstract: The liver, spleen, and kidneys of rats were resected with a laser beam (energy density 10 to 18 j/mm^2). Immediately after the operation, a linear area of coagulated tissue could be seen on the surface of the organs. Histologic examination from 1 to 33 days after the operation revealed several distinct zones of altered tissues in the 3 operated organs. Under a surface zone of coagulated tissue was a zone of necrosis and then a zone of reactive changes. Still deeper was normal tissue with solitary hemorrhages. A leukocyte reaction became apparent on day 3. Edema and hemorrhages were most pronounced in the spleen. Connective-tissue fibers began to proliferate in the necrotic zone of the spleen on day 3 after the operation and in the liver and kidneys on day 7. The amount of connective tissue gradually increased and formed a scar.

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UDC 615.849.19

KHROMOV, B. M., Professor

"Lasers in Medicine. The All-Union Symposium 'Biological and Antitumor Action of Laser Radiation'"

Moscow, Sovetskaya Meditsina, No 6, 1972, pp 153-156

Translation: Every year optical quantum generators (OQG) or lasers find continually greater application in various fields of science and technology, including medicine.

This is the reason for the great interest expressed in the 1st All-Union Symposium on the Biological and Antitumor Action of Laser Radiation held in Kiev 18-20 May 71. Scientists, physicians, and engineers from Moscow, Leningrad, Kiev, Alma-Ata, Odessa, and other cities participated. About 50 papers and reports were heard at the symposium, summarizing the experimental and clinical research carried out in the last few years in a number of the scientific institutions of the USSR.

The symposium was opened by UkrSSR Academy of Sciences Academician R. Ye. Kavetskiy, chairman of the organizing committee. He noted the great theoretical and practical significance of the new problem -- application of lasers to biology and medicine -- and emphasized the need for deep, thorough laser research.

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The question of the mechanism of the biological action of laser rays, to which the report by N. F. Gamalei was devoted, has a special place within this new problem. The mechanism of the biological action of laser radiation is an important theoretical and practical problem. Inadequacy of knowledge on the way laser radiation interacts with biological matter is retarding the solution of many tasks involved with medical laser application. Obviously a number of factors -- thermal effect, shock action, appearance of an electric field, and others -- are important in the way laser rays affect biological objects.

We can study the "laser problem" in medicine only if special lasers designed for biomedical research and medical practice are available. Therefore papers on the creation of new types of laser devices attracted a great deal of attention.

The report by N. D. Devyatkov and V. P. Belyayev provided information on laser devices designed at some institutes of the Ministry of Electronic Industry to be used in joint research with institutions of the Ministry of Public Health. Programs to design and apply lasers designed for treatment of oncological patients, for surgery, and other uses are being conducted jointly with the Moscow Oncological Institute imeni P. A. Gertsen, the Institute

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of Surgery imeni A. V. Vishnevskiy, the Kiev Institute of Oncology, and other institutes. Development and subsequent series production of experimental laser apparatus based on solid and gas lasers with both pulse and continuous action is planned for 1971-1972. They are to be used in surgery, oncology, radiation therapy, ophthalmology, and other fields.

A number of important problems were examined in the report by I. V. Kudryavtsev et al.: Creation of surgical and therapeutic laser instruments based on OKG of various types and output capacities; development of laser beam control systems for manual semi-automatic and automatic operation during laser treatment; development of devices to transmit laser energy and monitor OKG power parameters; development of outfits for complex diagnosis of malignant tumors; laser operation safety and protective devices.

The achievements attained with domestic and foreign laser surgical apparatus were reviewed in the report by Ya. Ya. Popova et al. The merits and shortcomings of existing apparatus were noted, and the principal requirements imposed on laser surgical apparatus were presented. One version of the design for a laser knife was examined, and the results of biomedical tests with the apparatus were presented. Ways to improve the design of laser surgical apparatus are being examined.

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M. F. Stel'makh also reported on new types of apparatus being designed for medical and surgical purposes.

V. N. Dudnichenko et al. presented interesting data on the transmission of laser radiation through optical light guide filaments. It should be stressed that improved laser devices to be used in surgery can be designed only with the employment of such light guides.

A number of papers dealt with the results of the action of laser radiation on various cells, tissues, and organs. It is difficult to overvalue the practical significance of the experiments that have been carried out after one recalls that surgical cutting (including by laser) normally occurs adjacent to healthy tissues and organs. Therefore the study of changes occurring in cells, tissues, and organs after the action of laser radiation is of undoubtable practical interest.

Employing microscopic filming techniques V. I. Andriyenko et al. obtained interesting data on the action of radiation from a neodymium laser on cell cultures from various normal and tumorous tissues. Phase-contrast microscopic filming was carried out on HeLa cell tissue cultures irradiated by laser to produce a motion picture with which it is possible to trace the morphological changes occurring in cells in response to laser radiation.

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N. F. Canalei et al. reported on results of a cytological experiment with an ultraviolet laser microbeam. It was established that ultraviolet radiation readily damages the nucleoli of unstained cells. Nucleolar disintegration occurs significantly faster and at lower emission power in cells stained by various dyes. Vitamins, antibiotics, and other substances also have an effect on the degree to which cells and their components are damaged. V. I. Livshits et al. reported on ultrastructural changes in HeLa cell cultures irradiated by a neodymium laser.

B. V. Ognev et al. presented interesting data on the effects of laser beams on organs of experimental animals. The effects of continuous-action laser radiation on the eye, liver, spleen, kidney, stomach, intestine, mesenteric lymph nodes, ovary, and transplanted Brown-Pierce carcinomas were studied in experiments on rabbits. A localized burn appears immediately when a laser pulse of not more than 100 joules is directed at the wall of the small intestine, while increasing the pulse's power intensifies the destructive effect to the point of forming star-shaped wounds that pass through the entire wall of the intestine. The wall of the large intestine was found to be more resistant to the action of a laser pulse, and at identical energy levels the laser radiation never created wounds that passed through the entire wall of

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the large intestine. Surface burns were noted after irradiation of mesenteric lymph nodes. At high laser energy levels the lymph node capsules ruptured, and hemorrhaging occurred in the node stroma. Subserotic hemorrhaging also occurred in the stomach wall. The pattern of pathological changes in irradiated sections of liver, spleen, kidney, and ovary was comparable. Dark and whitish spots appeared immediately in areas treated by laser, indicating disruption of vascularization in the form of clotting and hemorrhaging. Positive results in experiments on rabbits with Brown-Pierce carcinomas indicated a possibility for employing lasers in oncology.

When the eye is treated with laser beams, typical changes are observed not just in the eye itself, but in various portions of the brain as well.

Data on the effects of laser radiation on skin were presented in the reports by V. P. Yatsenko, V. V. Byalika et al., and A. I. Kolomiychenko et al. Employing different procedures the authors observed typical morphological and histochemical changes in skin irradiated with various doses of laser radiation. The extent of these changes depended on a number of factors including the intensity of skin pigmentation and administration of medicinal compounds. It is important to note that when novocaine, sarkolizin [transliteration], and 5-fluoruracil solutions are injected into the zone of laser treatment beforehand,

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the depth of necroses does not differ significantly from that attained when the skin is treated with the same level of energy without prior injection of drugs. With preliminary injection of tetracycline solution the depth of necrotic changes was somewhat greater and encompassed the epidermis, dermis, and the top layer of subcutaneous fatty tissue, which was sharply edematous.

V. V. Nikitchenko and V. G. Panchuk et al. reported on changes in acid phosphatase activity in liver cells and in their ultrastructure after irradiation by a laser beam.

Data on changes in peripheral blood of animals in response to high-power pulsed laser radiation were presented in the report by I. G. Iagunova et al. The results obtained indicate that definite changes occur in the composition of peripheral blood, the degree of which fluctuates depending on the intensity and density of the energy.

Ye. P. Sidorik et al. reported on free-radical states and processes in biological entities in response to laser radiation.

The possibility for using lasers during surgery as a "laser or light scalpel" is of special interest to surgeons. Only a few reports were given on

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this important subject unfortunately. For example the report by B. V. Ognev et al. mentioned above discussed some operations in which lasers were employed. It was possible to completely cut open the walls of the stomach, large and small intestine, mesenteric lymph nodes, liver, spleen, and ovary bloodlessly in 4-12 seconds with lasers under aseptic conditions. In addition resection of a 15 centimeter segment of the small intestine was performed successfully on 2 animals. The operation concluded with the suturing of the wounds with silk seams, after which they healed well. The authors conclude that bloodless surgery can be carried out with continuous-action laser beams on internal organs in the peritoneal cavity of different anatomical and embryological origins.

B. M. Khromov et al. presented comparative data on various operations on animals with laser beams, scalpels, and thermocautery (electroknife). Numerous experiments produced the following conclusions: 1) A continuous-action laser beam can be used to quickly, bloodlessly cut through soft tissues, amputate limbs, and section and resection parenchymatous organs. Only major vessels need be perstricted. Tissue charring occurs at high beam energy levels and when the beam is employed for a long time. Surrounding organs and tissues must be carefully shielded from the laser beam. There is a zone of

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coagulated tissue along the beam cut line, and necrotic and necrobiotic changes are observed in adjacent tissues, which are subsequently replaced by connective tissue. A scar develops for 3-4 weeks depending on the type organ and tissue.

2) In similar operations carried out with a scalpel and thermocautery, regeneration is slower and scar formation takes longer. However the scar resulting from scalpel operations is thinner and softer than that formed in laser operations. Hemorrhaging that must be stopped occurs in scalpel operations, and sometimes hematoma develops in the postoperative period.

The stimulating effect of laser radiation on the animal body is of great theoretical and practical interest.

V. M. Inyushin spoke on the biophysical principles for employing the helium-neon laser in pulse- and continuous-action modes to stimulate physiological processes. The stimulating effects of laser radiation can be used to correct certain pathological conditions, as is demonstrated by the experience of employing laser radiation to treat a number of illnesses connected with disruption of neurovascular trophic processes (see the collection *Svet Geliy-Neonovykh Lazerov v Biologii i Meditsine (Helium-Neon Laser Light in Biology and Medicine)*, Alma-Ata, 1970).

Considering the stimulating properties of laser radiation, P. R. Chakurov used it to treat several diseases (obliterative endarteritis, poly-arteritis,

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and osteo-arthritis).

It would be pertinent to note that while lasers have found substantial application in ophthalmology as well as in treating some therapeutic diseases, their use in treating specifically surgical diseases and damage is still truly a "surgical virgin land" requiring experimental and clinical development.

A number of reports were devoted to the use of lasers in experimental and clinical oncology.

R. Ye. Kavetskiy, V. V. Gorodilova et al., S. D. Pletnev et al., and V. Ye. Likhtenshteyn and V. V. Byalik reported on successful application of various types of laser radiation in experimental oncology. The effects of laser radiation on malignant tumors -- melanomas, carcinomas, etc. -- were demonstrated by numerous experiments on animals. Complete irradiation of the tumor must be considered an obligatory condition. The intensity of tumor breakdown depends on both the morphology of the neoplasm and the irradiation dose. A study conducted in parallel on the cytological pattern and quantitative DNA changes in melanoma nuclei demonstrated the great damaging effect of the laser beam. It was established that tumor cells appearing undamaged and intact in the early stages of irradiation continued to be viable in subsequent investigations.

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KHROMOV, B. M., Sovetskaya Meditsina, No 6, 1972, pp 153-156

The report by R. Ye. Kavetskiy et al. was devoted to the application of lasers in an oncological clinic. The division of laser therapy for treatment of superficial tumors at the Kiev Institute of Oncology is the first of its kind in the USSR. By the start of 1971 149 patients with various benign and malignant skin tumors, skin surface affliction of a pretumoral nature, and other problems had been subjected to laser therapy. Although the observation time has not been long, the treatment results are encouraging. Valuable features of laser therapy in comparison with other methods for treating superficial tumors include rapidity of irradiation, conducted once as a rule without anesthetic, absence of radiation-associated illnesses, absence of side effects, and good healing of the irradiated locus without accompanying infections.

I. G. Lagunova raised important, cardinal questions on the use of lasers in the clinic in her report. She justifiably noted that today there is no doubt of the suitability of employing laser radiation in clinical practice. The accumulated experience has shown that the entire range of laser radiation waves must be employed in clinical practice. Different generation modes, different levels of produced energy, different densities of impinging energy, and other parameters must be employed. Special medical optical quantum

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KHROMOV, B. M., *Sovetskaya Meditsina*, No 6, 1972, pp 153-156

generators of various types must be designed so that the application of laser radiation in the clinic could be most effective. The establishment of medical and technical requirements for medical optical quantum generators and all tools mentioned above is a difficult task. Cooperation among both medical and technical experts is necessary for solution of these problems. Further accumulation of experimental data and generalization of the collective experience will make it possible to design medical lasers and finally determine the range of their application in clinical practice.

V. A. D'yakov et al. and K. A. Karpichev and Kh. A. Baratov had interesting reports on the use of a new method -- holography -- in biomedical research and diagnosis.

A number of reports furnished data on the use of lasers in ophthalmology, stomatology, and otolaryngology (N. A. Puchkovskaya, L. A. Linnik, L. S. Terent'yeva, L. A. Vedmedenko, D. L. Korytnyy, V. L. Isakov etc.). Individual reports were devoted to dosimetric problems and other physicotchnical characteristics of lasers and their radiation (V. I. Isayenko et al., B. R. Kirichinskiy et al., G.G. Shazayeva et al., etc.).

Concluding the symposium, Academician R. Ye. Kavetskiy noted that lasers have become entrenched as a new, powerful research tool in experimental biology and medicine. As far as clinical applications are concerned, a favorable

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KHROMOV, B. M., Sovetskaya Meditsina, No 6, 1972, pp 153-156

future is taking form. Progress in the use of lasers in clinical medicine will depend on both improvements in laser equipment employed in this field and in the radiation procedures, and on basic research, in particular that directed toward clarifying the mechanisms of the biological effects of laser radiation.

At the conclusion recommendations were adopted involving subsequent, thorough research on the possibilities of using lasers in biology and medicine. Realization of the recommendations would undoubtedly facilitate introduction of new, powerful lasers into medical practice.

An exhibit on the application of lasers in biology and medicine was organized at the Kiev Institute of Oncology during the symposium proceedings.

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UDC 621.385:530.145.6:57

KHROMOV, B.M., KRYLOV, K.I., KOROTKEVICH, N.S., OKSOVA, YE.YE., PROKOPENKO, V.T.,
BOGDANOV, M.P.

"Test Of The Use Of A Laser During Surgical Operations (Experimental Studies)"

[Nauch.tr.] Leninr. in-ta usoverah. vrachey im. S.M. Kirova ([Scientific Works]
Leningrad Institute For The Improvement Of Doctors imeni S.M. Kirov), 1971, Issue
97, pp 64-67 (from RZh--Radiotekhnika, No 9, Sept 1971, Abstract No 90509)

Translation: The paper describes the use of a laser for dissection of soft tissues and organs of animals with the aid of a laser at the Department [kafedra] Of Operational Surgery of the Leningrad Institute For The Improvement Of Doctors. The continuous operation CO₂ laser with a power up to 20 watts had a 0.5 mm wide beam. The depth of the cut amounted to 18 mm (liver of a dog). Cutting off parts of the organs took place unemically; the surface of the cut was dry and of a chestnut brown color with longitudinal stripes proceeding into the interior. Coagulated tissue is disposed on the line of the cut and in the adjoining tissues necrotic and necrobiotic changes develop with subsequent replacement of their connecting tissues and formation of a scar. 1 ill. 1 tab. V.I.

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1/4 -087 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--THE LASER BEAM IN MEDICINE -U-
AUTHOR--KHRLMOV, B. M.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, PRAVDA, 20 MAR 70, P 6
DATE PUBLISHED--20MAR70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--LASER RADIATION BIOLOGIC EFFECT, EXPERIMENTAL SURGERY, BLOOD
COAGULATION, EYE DISEASE, TUMOR, LASER APPLICATION
CENTRAL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605037/D04 STEP NO--UR/9012/70/000/000/0006/0006
CIRC ACCESSION NO--AN0142454
UNCLASSIFIED

274 067

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AN0142454

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. QUESTION ASKED BY READERS K. SERAFIMOV (RCSTOV-NA-DONU) AND P. MESHCHERKOV (KRASNOYARSK): "MUCH IS BEING SAID ABOUT THE PROSPECTS OF USING LASER BEAMS IN MEDICINE. WHAT HAS BEEN DONE IN THIS FIELD? WHAT ARE SCIENTISTS WORKING ON? REMARKABLE SOURCES OF LIGHT RADIATION, OPTICAL QUANTUM GENERATORS (LASERS) ARE STILL VERY "YOUNG". IN SPITE OF THIS, THEY HAVE ALREADY FOUND BROAD APPLICATION IN MANY BRANCHES OF SCIENCE, TECHNOLOGY AND INDUSTRY. THERE IS NO DOUBT THAT LASERS HAVE A BRILLIANT FUTURE, AND IN MEDICINE AS WELL. A COMPREHENSIVE INVESTIGATION OF THE EFFECT OF LASER BEAMS ON DIFFERENT CELLS, TISSUES, ORGANS, SYSTEMS AND ON THE HUMAN ORGANISM AS A WHOLE IS IN PROSPECT. SECONDLY, IT IS EXTREMELY IMPORTANT TO INVESTIGATE THE POSSIBILITY OF USING THEM FOR THERAPEUTIC PURPOSES. IN BRIEF, AN UTTERLY NEW, IMPORTANT AND PROMISING PROBLEM HAS ARISEN: LASER BEAM USE IN MEDICINE. EXPERIENCE IN THE USE OF LASERS IN EXPERIMENTAL SURGERY, AND OTHER DATA FROM MEDICAL PRACTICE IN THE USSR AND ABROAD, GIVE RATHER PROFUSE FOOD FOR THOUGHT. SOVIET MEDICS ARE ENGAGED IN EXPERIMENTAL AND CLINICAL INVESTIGATION OF THIS BROAD PROBLEM. SOME INTERESTING RESULTS HAVE BEEN OBTAINED FROM USING LASER BEAMS ON THE EYES, SKIN, TEETH AND CERTAIN INTERNAL ORGANS, THE BRAIN, BLOOD VESSELS AND EXPERIMENTAL TUMORS. IT HAS BEEN FOUND THAT THE USE OF CONTINUOUS ACTION LASERS OF "LIGHT SCALPELS" IS PROMISING FOR SURGICAL OPERATION ON SOME INTERNAL ORGANS OR ON PATIENTS WITH INCREASED BLEEDING TIME.

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PROCESSING DATE--11DEC70

CIRC. ACCESSION NO--ANCI42454

ABSTRACT/EXTRACT--LOSS OF BLOOD IN SUCH CASES CAN BE VERY GREAT, WHILE THE USE OF THE "LIGHT SCALPEL" MAKES IT POSSIBLE TO PERFORM SUCH OPERATIONS ALMOST BLOODLESSLY. WE ARE DEALING ONLY WITH OPHTHALMOLOGY, WHERE DOCTORS ARE SUCCESSFULLY TREATING A NUMBER OF SERIOUS EYE DISEASES (TRAUMATIC SEPARATION OF THE RETINA, SOME INTRACULAR TUMORS) WITH LASERS. RECENTLY, AT THE INSTITUTE OF SURGERY IMENI A. V. VISHNEVSKIY, LASERS BEGAN TO BE USED TO REMOVE TATTOOS, AND AT THE KEIV INSTITUTE OF EXPERIMENTAL AND CLINICAL ONCOLOGY, THE FIRST LASER THERAPY DEPARTMENT HAS BEEN OPENED FOR TREATMENT OF SUPERFICIAL TUMORS. I SHOULD LIKE TO SEE MORE INTEREST IN THIS NEW PROBLEM DISPLAYED BY THE USSR ACADEMY OF MEDICAL SCIENCES, BY THE ADMINISTRATIVE PUBLIC HEALTH AGENCIES, AND BY ORGANIZATIONS THAT PLAN AND SUBSIDIZE SCIENTIFIC RESEARCH. WE ALSO NEED AN ORGANIZATION AND METHODOLOGY CENTER THAT WOULD GENERALLY SUPERVISE SUCH RESEARCH. IN OUR OPINION THE INSTITUTE OF SURGERY IMENI A. V. VISHNEVSKIY COULD BECOME SUCH A CENTER. THERE MUST BE STRENGTHENING OF THE ECONOMIC BASE FOR INVESTIGATION OF THIS PROBLEM IN A NUMBER OF SCIENTIFIC INSTITUTIONS. IT IS EXTREMELY IMPORTANT TO ACCELERATE PRODUCTION OF PULSED AND CONTINUOUS ACTION LASERS AND OF ALL THE ANCILLARY APPARATUS ADAPTED FOR EXPERIMENTAL AND CLINICAL MEDICINE. AND ALL THIS IS ONLY THE BEGINNING. IF WE REFER TO CLINICAL PRACTICE, THE AREA OF APPLICATION OF LASERS IS STILL LIMITED. THERE IS ANOTHER IMPORTANT ASPECT OF THE PROBLEM OF GENERAL SIGNIFICANCE TO ALL THOSE WORKING WITH LASERS.

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PROCESSING DATE--11DEC70

CIRC. ACCESSION NO--AN0142454

ABSTRACT/EXTRACT--WE REFER TO THE FACT THAT IN THE ABSENCE OF NECESSARY PRECAUTIONARY MEASURES, SOME ADVERSE EFFECT OF LASER RADIATION ON THE HUMAN ORGANISM MAY OCCUR. THE TIME HAS COME TO PUBLISH AT LEAST A TEMPORARY NATIONAL INSTRUCTION SHEET PERTAINING TO INDUSTRIAL HYGIENE AND SAFETY MEASURES FOR INDIVIDUALS WORKING WITH LASERS. IN DISCUSSING THE PROBLEM OF STUDYING AND USING LASERS IN MEDICINE, WE MUST NOTE YET ANOTHER CIRCUMSTANCE. THE FACT OF THE MATTER IS THAT NOT ALL PHYSICIANS ARE FAMILIAR WITH LASERS AND THE POSSIBILITIES OF USING THEM. OUR LITERATURE ON THIS SUBJECT IS LIMITED ONLY TO OCCASIONAL ARTICLES IN SPECIALIZED JOURNALS. THERE IS NO SUMMARIZING MONOGRAPHIC REVIEW OR SUMMARY IN OUR LITERATURE OR THE FOREIGN LITERATURE DEALING WITH THESE ISSUES. ONLY RECENTLY HAS A SMALL MONOGRAPH BY K. YE. KAVETSKIY ET AL. BEEN PUBLISHED IN KIEV IN A VERY LIMITED NUMBER OF COPIES, AND IT IS NOT ACCESSIBLE TO THE BROAD MASSES OF PRACTICING PHYSICIANS. EVERYTHING THAT HAS BEEN MENTIONED HERE DOES NOT PRESENT ANY SPECIAL DIFFICULTIES, ONLY ATTENTION MUST BE GIVEN TO THIS MATTER. THE POTENT ENERGY OF THE LASER BEAM SHOULD FIND A FIRM FOOTHOLD IN THE ARSENAL OF THERAPEUTIC TOOLS IN SOVIET MEDICINE. FACILITY: CHAIR OF OPERATIVE SURGERY, LENINGRAD INSTITUTE FOR ADVANCED TRAINING OF PHYSICIANS.

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USSR UDC 615.849.19.015.47612.014.481:615.849.19:061.5*1969"

KHROMOV, B. M., Professor

"Symposium on the Biological Effect of Lasers"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 2, Mar/Apr 70, pp 94-96

Abstract: A symposium on the biological effect of lasers was conducted on 20-23 Oct 69 in Kiev. The dosimetry, application of lasers in medicine, and protection from laser radiation were discussed. N. S. Zhelyazo et al (Kiev) proposed a laser microbeam installation for cytological investigations. B. V. Ognev et al (Institute of Surgery imeni A. V. Vishnevskiy, Moscow) established in animal experiments that lasers damage primarily blood vessels, particularly capillaries, and the retina. They also found that these beams destroy Brown-Pearce carcinomas and their metastases. R. Ye. Kavetskiy (Kiev) emphasized that laser radiation is of value in the treatment of pigmented malignant tumors, particularly if substances that absorb this radiation are introduced. I. R. Lazarev et al reported on the organization of a Department of Laser Therapy at the Kiev Institute of Experimental and Clinical Oncology. In a paper by Devyatkin et al (Moscow), the effect of lasers on malignant tumors of mice (the

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USSR

KHROMOV, B. M., Eksperimental'naya Khirurgiya i Anesteziologiya, Vol 15, No 2, Mar/Apr 70, pp 94-96

Harding-Passy melanoma) was discussed. The experiments in question showed that irradiation of the entire tumor was necessary in order to obtain a therapeutic effect; growth of the tumor continued after partial irradiation. V. V. Byalik and V. Ye. Likhtenshteyn (Kiev) reported on the effect of laser radiation on Schwets erythromyeloses of rats and on the combined treatment of experimental tumors by laser irradiation and chemotherapy with fluorouracil or ThioTEP. The results obtained indicated that application of laser radiation in clinical oncology is promising. According to a paper by I. G. Logunova et al (Moscow), experimental results have indicated that laser radiation can be used for treatment of skin tumors. S. D. Pletnev et al (Moscow) used a laser beam emitted by a CO₂-filled generator as a surgical knife. They removed implanted tumors located on the surface, carried out resections of the liver of rabbits, and amputated the hind legs of rats. B. M. Khromov et al (Leningrad) investigated the possibilities of resection of the liver, spleen, and kidneys, and also of surgery of soft tissues and amputation of extremities using a continuous-action CO₂ laser. They found that the laser beam cuts tissues without inducing blood flow, and coagulates tissue in the plane of the cut. Behind the coagulated

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KHROMOV, B. M., Eksperimental'naya Khirurgiya i Anesteziologiya, Vol 15, No 2, Mar/Apr 70, pp 94-96

tissue, necrotic changes take place that are followed by formation of connective tissue and a thin scar. The surrounding tissues and organs must be protected from the action of laser radiation. A number of reports on applications of lasers in experimental and clinical ophthalmology were read. V. M. Ilyushin et al (Alma-Ata) reported on the application of monochromatic red light emitted by a Ne-He gas laser in the treatment of a number of conditions including hypertension, trophic ulcers, and diseases of the nervous system (syringomyelia, encephalopathies). In the discussion that followed this report, the necessity of carrying out adequate experimental work before applying laser radiation clinically was emphasized. Papers on the dosimetry of laser radiation and means of protection from it were given by B. R. Kirichinskiy, L. I. Derlemenko, and M. I. Erman (Kiev); V. R. Pronin et al (Moscow); M. S. Simongulova (Tbilissi); and others.

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USSR"

~~KHROMOV, B. N.~~ Professor, Head, Chair of Operative Surgery, Leningrad
Institute for Advanced Training of Physicians

"The Laser Beam in Medicine"

Moscow, Pravda, 20 Mar 70, p 6

Translation: Question asked by readers K. Serafimov (Rostov-na-Donu) and P. Meshcherkov (Krasnoyarsk): "Much is being said about the prospects of using laser beams in medicine. What has been done in this field? What are scientists working on?"

Remarkable sources of light radiation, optical quantum generators (lasers) are still very "young." In spite of this, they have already found broad application in many branches of science, technology and industry. There is no doubt that lasers have a brilliant future, and in medicine as well.

A comprehensive investigation of the effect of laser beams on different cells, tissues, organs, systems and on the human organism as a whole is in prospect. Secondly, it is extremely important to
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KHROMOV, B., et al., Moscow, Pravda, 20 Mar 70, p 6

investigate the possibility of using them for therapeutic purposes. In brief, an utterly new, important and promising problem has arisen: laser beam use in medicine.

Experience in the use of lasers in experimental surgery, and other data from medical practice in the USSR and abroad, give rather profuse food for thought. Soviet medics are engaged in experimental and clinical investigation of this broad problem. Some interesting results have been obtained from using laser beams on the eyes, skin, teeth and certain internal organs, the brain, blood vessels and experimental tumors. It has been found that the use of continuous action lasers of "light scalpels" is promising for surgical operation on some internal organs or on patients with increased bleeding time. Loss of blood in such cases can be very great, while the use of the "light scalpel" makes it possible to perform such operations almost bloodlessly.

And all this is only the beginning. If we refer to clinical practice, the area of application of lasers is still limited. In
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KHROMOV, B., et al., Moscow, Pravda, 20 Mar 70, p 6

practice we are dealing only with ophthalmology, where doctors are successfully treating a number of serious eye diseases (traumatic separation of the retina, some intraocular tumors) with lasers. Recently, at the Institute of Surgery imeni A. V. Vishnevskiy, lasers began to be used to remove tatoos, and at the Kiev Institute of Experimental and Clinical Oncology, the first laser therapy department has been opened for treatment of superficial tumors.

I should like to see more interest in this new problem displayed by the USSR Academy of Medical Sciences, by the administrative public health agencies, and by organizations that plan and subsidize scientific research. We also need an organization and methodology center that would generally supervise such research. In our opinion the Institute of Surgery imeni A. V. Vishnevskiy could become such a center. There must be strengthening of the economic base for investigation of this problem in a number of scientific institutions. It is extremely important to accelerate production of pulsed and continuous action lasers and of all the ancillary apparatus adapted for experimental and clinical medicine.

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KHROMOV, B., et al., Moscow, Pravda, 20 Mar 70, p 6

There is another important aspect of the problem of general significance to all those working with lasers. We refer to the fact that in the absence of necessary precautionary measures, some adverse effect of laser radiation on the human organism may occur. The time has come to publish at least a temporary national instruction sheet pertaining to industrial hygiene and safety measures for individuals working with lasers.

In discussing the problem of studying and using lasers in medicine, we must note yet another circumstance. The fact of the matter is that not all physicians are familiar with lasers and the possibilities of using them. Our literature on this subject is limited only to occasional articles in specialized journals. There is no summarizing monographic review or summary in our literature or the foreign literature dealing with these issues. Only recently has a small monograph by R. Ye. Kavetskiy et al. been published in Kiev in a very limited number of copies, and it is not accessible to the broad masses of practicing physicians.

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KHROMOV, B., et al., Moscow, Pravda, 20 Mar 70, p 6

Everything that has been mentioned here does not present any special difficulties, only attention must be given to this matter. The potent energy of the laser beam should find a firm foothold in the arsenal of therapeutic tools in Soviet medicine.

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1/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70
OF MINIMAL PHASE LINEAR

TITLE--CALCULATING PHASE AND TIME CHARACTERISTICS
TELEVISION SYSTEMS -U-
AUTHOR--(03)-KHRDMCY, B.P., BEZRUKOV, V.N., BALOBANDV, V.G.

COUNTRY OF INFO--USSR

K

SOURCE--MGSCCW, RADIOTEKHNIKA, NO 2, 1970, PP 11-17

DATE PUBLISHED-----70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--TV SYSTEM, PHASE MEASUREMENT, LINEAR SYSTEM, FREQUENCY
CHARACTERISTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1286

STEP NO--UR/0108/70/000/002/0011/0017

CIRC ACCESSION NO--AP0123245

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123245

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A GENERAL APPROACH IS PROPOSED FOR CALCULATING THE PHASE AND TIME CHARACTERISTICS IN MINIMAL PHASE TYPE, LINEAR TELEVISION SYSTEMS ACCORDING TO FREQUENCY CHARACTERISTIC SHAPE. RELATIONSHIPS ARE OBTAINED WHICH MAKE IT POSSIBLE TO CALCULATE THE FREQUENCY CHARACTERISTICS WITH SUFFICIENT ACCURACY FOR PRACTICAL APPLICATION. THEORETICAL AND EXPERIMENTAL DATA ARE COMPARED.

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UDC 633.65

AYUKZAMAN, D. A., and KEROMOV, B. P., Krasnoyarsk Institute of Non Ferrous Metals under M. I. Kalinin

"Magnetostriction Paraprocess and Its Dependence on the Temperature of Elinvar Alloys in the Iron-Nickel-Chromium System"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol. 30, No. 3, Sep 1985, pp. 377-381

Abstract: The magnetostriction paraprocess and its dependence on temperature for Elinvar alloys was studied in strong magnetic fields. A definite relationship was determined between the magnetostriction susceptibility of the paraprocess and the lattice parameters. It was demonstrated that the form of the curves of the temperature dependence of magnetostriction depends on the relationship between linear and volumetric magnetostriction. Elinvars which have both magnetostriction of technical magnetization and the paraprocess have technical applications.

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1/2 009 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--MASS SPECTRA OF PHENYLPYRIDINES -U-
AUTHOR--(05)-TERENTYEV, P.B., KHMELNITSKIY, R.A., KHROMOV, I.S., KOST,
A.N., GLORIOZOV, I.P.
COUNTRY OF INFO--USSR
SOURCE--ZH. DRG. KHIM. 1970, 6(3) 606-10
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--MASS SPECTRUM, BENZENE DERIVATIVE, PYRIDINE, AZO COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1583 STEP NO--UR/0366/70/006/003/0606/0610
CIRC ACCESSION NO--AP011257
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MASS SPECTRA WERE OBTAINED OF 2, 3, OR 4, PHENYLPYRIDINES, 2, METHYL, 5, PHENYLPYRIDINE, AND 2, 6, DIPHENYLPYRIDINE. THE POSSIBLE IONIC STRUCTURES OF LARGE IONIC FRAGMENTS WERE DEDUCED BY AN LCAO CALC. METHOD. THE PYRIDINE RING ISOMERIZES, DURING MASS SPECTROSCOPY TO AZO PRISMANE OR AZOBENZOVALENE TRICYCLIC STRUCTURES.

UNCLASSIFIED

AA0040730

Khromov, N.P.

UR 0482

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

243752 ELECTRODE SUPPORT OF INTERNAL ELECTRIC
EROSION GRINDER. The support assembly
(parts 1,2,4 and 5) is an addition to the original
machine (patent No. 140313) the object of which is
to reduce the deflection and vibration of the
electrode 3. The support consists of a rod 2
mounted in a pivoting arm 1 and held against the
electrode 3 by a spring 6. The support position is
adjusted by a set screw and stop 5.

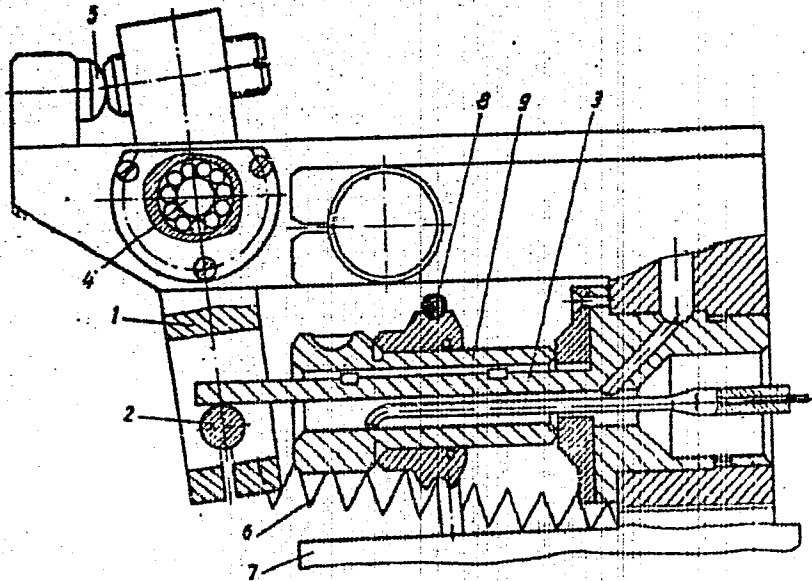
30.8.67 as 1184407/25-8. Add to 140313. YU. V. ASTAKHOV
et al. AUTOMATIC EQUIPMENT FOR ELECTRICAL EROSION
MACHINING DES. OFFICE (3.10.69) Bul 17/14.5.69.
Class 21h. Int. Cl. B 23k.

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18

19750385

AA0040730



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LD

AA0040730

AUTHORS: Astakhov, Yu. V.; Semushkin, V. G.; and Khromov, N. P.

Osoboye Konstruktorskoye Byuro po Proyektirovaniyu Sredstv
Avtomatizatsii i Kontrolya i Elektroeruzionnogo Oborudovaniya

19750387

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USSR

UDC 669.162.26.012.1-52:681.3

KHROMOV, V. A., and MKRTCHAN, L. S.

"Method of Regulation of the Thermal State of the Blast Furnace"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 21-28

Translation: A method has been developed at the Central Scientific Research Institute for Ferrous Metallurgy for calculation of the ore charge necessary for maintenance of the thermal state of a blast furnace at a fixed level. This is done using the data of the thermal balance of the melt, calculated per kilogram of carbon contained in the dry top gas. Investigations have established that the use of the algorithm allows adjustment of the thermal state of the blast furnace process to be performed in a timely manner using the most economic means--changing of the ore charge.

Regulation of the thermal mode of a blast furnace using this algorithm and the WNIEM-1 computer has been performed at the Azovstal' Plant during four periods with a total duration of 63 days; a decrease in the consumption of coke by 2.5-2.8% and an increase in productivity by 2.8% were achieved. 1 biblio. ref.

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- 22 -

USSR

UDC 669.162.26.012.1-52:681.3

KHROMOV, V. A., and MKRTCHAN, L. S.

"Method of Regulation of the Thermal State of the Blast Furnace"

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Translation: A method has been developed at the Central Scientific Research Institute for Ferrous Metallurgy for calculation of the ore charge necessary for maintenance of the thermal state of a blast furnace at a fixed level. This is done using the data of the thermal balance of the melt, calculated per kilogram of carbon contained in the dry top gas. Investigations have established that the use of the algorithm allows adjustment of the thermal state of the blast furnace process to be performed in a timely manner using the most economic means--changing of the ore charge.

Regulation of the thermal mode of a blast furnace using this algorithm and the VNIEM-1 computer has been performed at the Azovstal' Plant during four periods with a total duration of 63 days; a decrease in the consumption of coke by 2.5-2.8% and an increase in productivity by 2.8% were achieved. 1 biblio. ref.

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- 22 -

USSR

UDC 622.785.004.12

KHROMOV, V. A.

"Expediency of Reducing Permissible Limits of Fluctuation of Iron Content in the Sinter"

Proizvodstvo Chernykh Metallov (Production of Ferrous Metals - Collection of Works) No 75, Metallurgiya Press, 1970, pp 14-17

Translation: Fluctuations in the content of iron in melted sinter cause corresponding undesirable changes in the thermal state and slag mode, accompanied by a decrease in technical and economic indicators of blast furnace operation.

The limits of fluctuation of the content of iron in the sinter of +1% permitted by the technological instructions do not correspond to today's requirements for blast furnace production.

Considering contemporary practice of regulation of the thermal state, as well as requirements of the applicable state standard for content of silicon in a given type of cast iron, the expediency is demonstrated of providing sinter for blast furnace operation with limits of fluctuation of iron content of not over +75% of the average norm. These limits should be decreased to

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KHROMOV, V. A., Proizvodstvo Chernykh Metallov, No 75, Metallurgiya Press, 1970, pp 14-17

+0.4 or +0.2% if permissible limits of fluctuation of silicon content in the cast iron of 0.1 or 0.05% must be achieved.
1 biblio. ref.

2/2

USSR

KHROMOV, V. A.

UDC:669.162+622.785:015.9

"The Problem of Losses of Iron in Sinter-Blast Furnace Production"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 17-21

Translation: Proper planning of norms for expenditure of iron-containing materials during production of sinter and cast iron requires technically well founded coefficients of conversion of iron to the end product, to utilized wastes, and also nonrecoverable losses of this element.

Based on balances composed using actual natural consumptions of charge materials and the total production of sinter and cast iron over an extended interval of time 1967-1968, it was established at the Cherepovtsk Metallurgical Plant that 98.0-98.6% of the iron goes over into the sinter, while the remaining iron is irreversibly lost; 96.7-97.9% of iron is converted to cast iron. Furthermore, iron is usefully employed as scrap (0.7-0.6%), as well as the iron in the bell dust which is trapped (0.6-0.4%). Irreversible losses of iron in the blast furnace section amount to 2.1-1.1% of the total quantity put in production. Balance calculations refine the norm for consumption of iron per ton of finished product cast iron at this plant as 964-977 kg. 2 tables.

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USSR

UDC: 621.372.85(088.8)

BOVA, N. T., KHRAMOV, V. A., Kiev Polytechnical Institute

"A Device for Automatically Matching a Load to a Transmission Line"

USSR Author's Certificate No 277894, filed 27 Sep 68, published 19 Nov 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B193 P)

Translation: The proposed device consists of a system of pickups, matching varactors and interconnected control elements. To reduce overall dimensions and weight, and to increase speed and reliability, the pickup system is made in the form of a number of coupling probes spaced with an interval of one-eighth wavelength. The matching varactors are connected in parallel in the line with a spacing of one-quarter wavelength.

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USSR

UDC 621.762.002.5

TIKHONOV, G. F., KHROMOV, V. G., VASIL'YEV, V. A.

"Application of the UVD All-Purpose Vacuum Dilatometer for Studying the Process of Sintering Cermet Materials"

Tr. Gor'kov. politekhn. in-ta (Works of Gor'kiy Polytechnic Institute), Vol 26, No 15, 1970, pp 24-27 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G471)

Translation: Improvements in the structure of the UVD dilatometer have offered the possibility of regulating temperature, automatically printing out temperature marks when working with the "differential" method, changing the sizes of a specimen, and investigating the shrinkage kinetics of porous cermets materials in a wide range of process flow rates. Under certain conditions, it is possible to use the "differential" method of investigation with isothermal holding. There are 3 illustrations and a 2-entry bibliography.

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USSR

UDC 621.762.001:669.295

MAL'TSEV, M. V., KHROMOV, V. G., and MALYSHKINA, Z. N.

"Investigation of the Production and Properties of P/M Electrolytic Titanium"

Tr. Gor'kovsk. politekhn. in-ta (Works of Gor'kiy Polytechnic Institute), 1970, 26, No 15, pp 33-40 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G370 by V. Chelnokov)

Translation: The article investigates the properties of 0.5-mm-thick compact titanium strip produced by the method of rolling PTER-3 electrolytic powder. To obtain the strip, the powder must be rolled into breakdown strip ~3 mm thick with a porosity of 10-20%. Four-time rolling of the breakdown with intermediate sintering at 1000° in high vacuum (~5·10⁻⁵ mm Hg) and final annealing at 750-1000° makes possible the production of titanium with $\delta = 45-50\%$ and $\sigma_B = 32-40$ kg/mm². It is recommended that annealing be performed at 750°, which assures the obtaining of fine-grained structure of alpha-titanium with optimum plastic properties and strength. Four illustrations. One table. Bibliography with six titles.

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- 24 -

1/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--DETERMINATION OF THE ANGLES OF ROTATION OF OPTICALLY PURE
2, HALOHEXANES -U-

AUTHOR--(03)-UGLOVA, E.V., KHRGMOV, V.N., REUTOV, O.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 655-7 (RUSS)

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HALOGENATED ORGANIC COMPOUND, HEXANE, CALCULATION, OPTIC
PROPERTY, ORGANIC SULFUR COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2041

STEP NO--UR/0366/70/006/004/0655/0657

CIRC ACCESSION NO--AP0125629

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--A0125629

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STEREOSPECIFIC REACTIONS METHOD (M. R. HOFFMANN, 1964) WAS USED TO CALC. THE MAX. OPTICAL ROTATION ANGLES (SHOWN ON MICROFICHE). THE REACTIONS OF I WITH ETSNA GAVE MEBUCHSET (II) WITH INVERSION. THE CALCD. (ALPHA) PRIME20 SUBDMAX. OF II IS 17.8DEGREES. THESE DATA DIFFER CONSIDERABLY FROM THE REPORTED (ALPHA) SUBD PRIMET VALUES.

UNCLASSIFIED

USSR

UDC 621.375.82 2

BONCH-BRUYEVICH, A. M., KOSTIN, N. N., PRZHIBEL'SKIY, S. G., KHODOVOY, V. A.,
KHROMOV, V. V., CHIGIR', N. A.

"Resonance Nonlinear Phenomena in Elementary Noninteracting Systems"

V sb. Nelineyn. protsessy v optike. (Nonlinear Processes in Optics--collection of works), Vyp. 2, Novosibirsk, 1972, pp 75-95 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D861)

Translation: A study was made of nonlinear phenomena in sets of elementary noninteracting systems under the effect of powerful radiation as a function of its spectral composition. The displacement and splitting of the D-absorption lines of the chief doublet of the K atom in the radiation field of a ruby laser were investigated experimentally. Nonlinear phenomena were detected in connection with the variation of the refraction coefficients of the atomic vapors of Rb and K in a laser radiation field with a broad spectrum ($\Delta \lambda = 10 \text{ nm}$) (the variation of the polarization, focusing, and defocusing of the radiation passing through the vapor, induced parametric scattering). Intense directional radiation was observed in a number of transitions of the Rb atom on excitation by a laser in a pigment ($\lambda = 775-795 \text{ nm}$). The phenomenon of nonlinear population of the excited states of the K and Rb molecules with nonuniformly broadened absorption bands was detected and investigated.

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USSR

UDC 621.039.51

KHROMOV, V. V., KUZ'MIN, A. M., KASHUTIN, A. A., and SILAYEV, YU.V.

"Calculation Optimization Complex for Fast Nuclear Reactors (ROKBAR)"

Fiz. Yadern. Reaktorov (Nuclear Reactor Physics -- collection of works), No 2, Moscow, Atomizdat Press 1970, pp 3-16 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.63)

Translation: The ROKBAR program for optimization of fast nuclear reactors has been written for the M-20 computer at the Moscow Engineering Physics Institute. The ROKBAR program allows sequential search for the optimal version of a fast reactor considering its thermal, strength, and neutron physical characteristics while avoiding variant calculation. The program is based on an algorithm of gradient search for an optimal version using formulas from the theory of small perturbations and linear programming. The authors preferred this method of optimization above other methods (dynamic programming, the maximum principle of Pontryagin), since it is most universal and has been developed in sufficient detail. The

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USSR

~~APPROVED FOR RELEASE: 08/09/2001~~ CIA-RDP86-00513R002201320008-3" 2

~~Processes in Optics--collection of works), Vyp. 2, Novosibirsk, 1972, pp --~~
75-95

A study was made of the saturation kinetics of the absorption in red bands of Rb molecules under the effect of ruby laser radiation. It was established that the absorption decreases uniformly along the entire band and is restored within $2 \cdot 10^{-2}$ seconds. These phenomena are explained by dissociation and reduction of the Rb molecules. The results of all of the experiments were compared with the theoretical calculations. The bibliography has 10 entries.

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USSR

KHROMOV, V. V., et al., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 3-16 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.63)

creation of the ROKBAR optimization complex was facilitated by the experience in the planning of fast nuclear reactors accumulated at the Institute of Physics and Power Engineering. Optimization studies of a BN-350 nuclear reactor have shown that 2 to 3 minutes of M-20 computer machine time is required for each step in the search, the total time expended for optimization of the nuclear reactor being not over 1.5 hr. Studies performed using the ROKBAR program have shown that it is a reliable and effective tool for the search for optimal compositions of fast nuclear reactors. 9 biblio. refs.

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USSR

UDC 621.039.51

KHROMOV, V. V., KUZ'MIN, A. M., KASHUTIN, A. A., and SILAYEV, YU.V.
"Calculation Optimization Complex for Fast Nuclear Reactors
(ROKBAR)"

Fiz. Yadern. Reaktorov (Nuclear Reactor Physics -- collection of works), No 2, Moscow, Atomizdat Press 1970, pp 3-16 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.63)

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USSR

KHROMOV, V. V., et al., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 3-16 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.63)

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USSR

UDC 612.039

KUZ'MIN, A. M., KASHUTIN, A. A., SILAYEV, Yu. V., and KHROMOV, V. V.

"Solution of Certain Optimization Problems for Fast Reactors"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 17-32 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V526)

Translation: Problems illustrating the possibilities of the ROKBAR program and giving an idea of the nature of solutions and the optimization of high-power fast reactors are described. Reactors with oxide fuel and sodium coolant are considered; the core consists of two regions with different concentrations of fissionable isotopes. The following problems are solved: 1. the minimum of the critical mass for a constant reactor power. In seeking the optimum the dimensions of the fuel elements and the assembly, the dimensions of the core regions, the step of the fuel element lattice, the velocity of the coolant, and the concentration of fissionable isotopes were varied. Results are presented for reactors with an electric power from 500 to 2500 Mw. The minimum critical mass is achieved for very high values of the maximum thermal stress, which drops from 2590 to 2050 kw/l with an

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USSR

KUZ'MIN, A. M., et al, Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 17-32 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V526)

increase in power in this range, so that the value of the minimum critical mass increases by a factor of 4 with the rise in power. The minimum of the critical mass is achieved for a flattening coefficient of ~ 0.3 . 2. The minimum of the doubling period of the breeder reactor system. It is shown that in this case the doubling period drops with a rise in reactor power and can be decreased by holding a constraint on the average heating of the coolant and also through creating a weakly stressed active section in the center of the reactor or a zone with raw material. 3. The minimum expenditure of plutonium to ensure a given rate of development of nuclear power. The results of calculations are given and discussed. Experience accumulated in the process of optimization studies with the aid of the ROKBAR program is discussed, and recommendations are made on the selection of a plan for the solution of optimization problems taking into account thermophysical and strength relationships. S. M. Zaritskiy.

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USSR

UDC 621.039

KHROMOV, V. V., KUZ'MIN, A. M., KASHUTIN, A. A., and SILAYEV, Yu. V.

"Computational Optimization Complex for Fast Atomic Reactors (ROKBAR)"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 3-16 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V528)

Translation: A program for the M-20 computer is described that is intended for finding the optimal version of a fast power reactor considering the interrelationship of its thermal, strength, and neutron-physics parameters. The algorithm for gradient search is achieved through the use of formulas of the theory of small perturbations and linear programming (the method of consecutive shortening of discrepancies). Following are considered given in the optimization: reactor power, the form and properties of the fuel and structural materials, the coolant circuit and the coolant, the structural solution, the maximum temperature of the coolant at the output of the core, and the parameters of the external fuel cycle. The ROKBAR program makes it possible to optimize the doubling time of fast reactors, the critical mass, the coefficient of nonuniformity of the heat release field, the energy

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USSR

KHROMOV, V. V., et al, Fiz. yadern. reaktorov (Physics of Nuclear Reactors — Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 3-16 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V528)

intensity of the fuel in the cycle, etc., and also any combination of these quantities. Two-dimensional cylindrical reactors having no more than 2 zones with respect to height and several zones with respect to radius can be considered. To satisfy the optimality criterion, one can change the following controlling parameters: the height of the core, the thickness of the individual zones, the dimensions and step of the fuel elements, the velocity of the coolant, the enrichment of the fuel, and the volume of boron rods for compensation of reactivity. Constraints are imposed on the region of change of the controlling parameters and on several quantities which have a functional dependence on the reactor parameters. S. M. Zaritskiy.

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