CIRC ACCESSION NO--AP0109363

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW FREQUENCY BATHYTHERMOSOUNDER IS DESCRIBED. THE INSTRUMENT IS DESIGNED FOR MEASURING THE VERTICAL DISTRIBUTION OF THE SEA WATER TEMPERATURE AS DEEP AS 1 TO 5 KM. TEMPERATURE 0.1DEGREE OVER THE RANGE 0 TO 30DEGREESC. INFORMATION IS TRANSMITTED BY A SINGLE CONDUCTOR SEA CABLE ONTO THE SHIP. THE RESULTS OF MEASUREMENTS ARE RECORDED IN THE ANALOG AND DIGITAL FORMS. THE SCHEMES OF THE SOUNDER AND ITS ASSOCIATED EQUIPMENT ON BOARD THE SHIP ARE PRESENTED ALONG WITH SOME DATA OBTAINED WITH THE INSTRUMENT. FACILITY: INSTITUT OKEANOLOGII IM. P. P. SHIRSHOVA AN SSSR.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--TRIPLET TRIPLET ANNIHILATION IN GLASSY SOLUTIONS OF TOLUENE AT
77DEGREESK -U-

AUTHOR-(04)-BATEKHA, I.G., ALFIMOV, M.V., GORDEYEV, V.I., SHEKK, YU.B.

COUNTRY CF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(3), 675-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--TOLUENE, LUMINESCENCE SPECTRUM, NAPHTHALENE, LIGHT EXCITATION,
PHOSPHORESCENCE, FLUORESCENCE, OCTENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1624   STEP NO--UR/0048/70/034/003/0675/0677

CIRC ACCESSION NO--AP0125246
                           UNCLASSIFIED

CIRC ACCESSION NO--AP0125246
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SENSITIZED LUMINESCENCE
SPECTRUM OF A FROZEN SOLN. OF NAPHTHALENE,D SUBS (I) IN PHME UNDER
EXCITATION OF DIFFERENT INTENSITIES AT 254 NM WAS MEASURED. A 100 FOLD
INCREASE IN THE PHME EXCITING LIGHT INTENSITY RESULTED IN A SIGNIFICANT
SUPPRESSION OF THE PHOSPHORESCENCE COMPONENT OF THE SPECTRUM OF I.   THE
TIME DEVELOPMENT OF THE PHOSPHORESCENCE AND FLUORESCENCE ON SWITCHING ON
AND OFF A POTENT EXCITING LIGHT SOURCE (10 PRIME14 PHOTONS CM PRIME
NEGATIVE2 SEC PRIME NEGATIVE1) WAS SHOWN AND, BESIDES THE COMMON SHORT
TIME FLUORESCENCE, AN ADDNL. DELAYED LONG TIME COMPONENT OF THE
RADIATION WAS OBSD. THE DELAYED FLUORESCENCE FADED OUT IN 3 TIMES 10
PRIME NEGATIVE4 SEC AND ITS INTENSITY WAS PROPORTIONAL TO THE EXCITING
LIGHT INTENSITY MULTIPLIED BY THE CONCN. OF THE TRIPLET MOLS. OF I.   THE
DELAYED FLUORESCENCE WAS ASCRIBED TO AN ANNIHILATION INTERACTION OF THE
TRIPLET EXCITATIONS OF PHME BY THE TRIPLET MOLS. OF I.   ITS TIME
DEPENDENCE WAS DETD. BY THE RATE OF ACCUMULATION OF THE TRIPLET MOLS. OF
I AND BY THE LIFETIME OF THE PHME TRIPLET EXCITATIONS.   THEORETICAL
CONSIDERATIONS WERE VERIFIED EXPTL. BY USING THE SELECTIVE COMPETITIVE
INTERACTION OF THE PHME TRIPLET EXCITATIONS WITH 1,OCTENE.
FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2   022   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--SIMULTANEOUS EXISTENCE OF SEVERAL MYCOSES IN PATIENTS WITH ITSENKO
  KUSHING'S SYNDROME -U-
AUTHOR-(03)-SHEKLAKOV, N.D., LESHCHENKO, V.M., DADIOMOVA, V.G.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 6, PP 41-45

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN DISEASE, FUNGUS, DISEASE, CHEMOTHERAPY, ADRENAL GLAND,
  PITUITARY GLAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1379   STEP NO--UR/0206/70/000/006/0041/0045

CIRC ACCESSION NO--AP0133331
                            UNCLASSIFIED

2/2   022
CIRC ACCESSION NO--AP0133331

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   REPORTS FROM LITERATURE AND THE
AUTHORS' OWN OBSERVATIONS OF 2 PATIENTS WITH SEVERAL MYCOSES CONCURRENT
WITH ITSENKO KISHING'S SYNDROME ARE PRESENTED.   IN ONE PATIENT
GENERALIZED AFFECTION OF THE SKIN AND THE SCALP WAS CAUSED BY
TRICHOPHYTON VIOLACEUM, OF DEEP LAYERS OF THE DERMA (ABSECCES), BY
CANDIDA ALBICANS, AND OF NAILS, BUT TRICHOPHYTON RUBRUM.   IN THE OTHER A
SIMILAR PRECESS WAS CAUSED BY TRICHOPHYTON VIOLACEUM AND TRICHOPHYTON
RUBRUM.   THE SUCCESS IN THERAPY WAS ACHIEVED BY COMBINATION OF
ANTIMYCOTIC DRUGS WITH TREATMENT OF DYSFUCTION OF THE PITUITARY ADRENAL
COMPLEX.   FACILITY: TSENTRAL'NYY NAUCHNO-ISSLED.
KOZHNO-VENEROLOGICHESKIY MZ SSSR I KLINICHESKAYA BOL'NITSA IM V. G.
KOROLENKO, MOSKVA.

1/2   016   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--ON EARLY REINFECTION OF MICROSPOROSIS DUE TO MICROSPORUM LANOSUM
-U-
AUTHOR-(02)-STEPANOVA, ZH.V., SHEKLAKOVA, A.A.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 4, PP 68-70

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FUNGUS DISEASE, SKIN, FUNGICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0935   STEP NO--UR/0206/70/000/004/0068/0070

CIRC ACCESSION NO--AP0109092
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0109092   UNCLASSIFIED   PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FIVE PATIENTS WITH REINFECTION OF MICROSPOROSIS DUE TO M. LANOSUM WERE OBSERVED 2-3 MONTHS AFTER TERMINATION OF GRISEOFULVIN THERAPY. SINCE IN GRISEOFULVIN TREATMENT OF PATIENTS WITH DERMATOMYCOSIS WEAKENING OF IMMUNITY IS SOMETIMES OBSERVED, CASES OF EARLY REINFECTION OF MYCOTIC DISEASES MAY OCCUR. FACILITY: OTDEL MIKOLOGII TSENTRAL'NOGO KOZHNO VENEROLOGICHESKOGO INST. MINISTERSTVA ZDRAVOOKHRANENIYA SSSR I BOL'NITSA IM. V. G. KORCLENKO, MOSCOW.

USSR

UDC 669.712

YEFIMOVSKAYA, T. V., LANIN, A. A., SHERMAZANYAN, YA. T., SHAKHPARPNYAN, V. V., SHEKOYAN, M. G., and SKOKOVDINA, G. S., All-Union Order of the Labor Red Banner Scientific Research, Planning, Design, and Technological Institute of Sources of Current (VNIIT)

"Utilization of a High-Temperature Solar Installation for the Study of High-Melting Materials in an Oxidizing Medium (on the Basis of the Example of beta-Alumina)"

Abstract: Experimental research has been conducted by the Armenian Department of the VNIIT in Yerevan, on the thermal dissociation of sodium and potassium beta-alumina in a high-temperature solar heating installation for the purpose of obtaining a solid electrolyte. Results of this research have demonstrated considerable stability of the beta-alumina under conditions of radiant heating in air: beta-alumina does not dissociate completely with an exposure of up to 30 minutes at the melting point (2,000-2050°C. Sodium beta-alumina is considerably less subject to dissociation than is potassium beta-alumina. 1 figure. 1 table. 2 references.
1/1

1/2   026   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--DETERMINATION OF THE AVERAGE EFFECTIVE RADIUS OF EVAPORATION
   CENTERS IN THE NUCLEATE BOILING OF LIQUIDS -U-
AUTHOR-(03)-RATIANI, G.V., SHEKRILADZE, I.G., MAGRAKVELIDZE, T.SH.

COUNTRY OF INFO--USSR

SOURCE--SOOBSHCH. AKAD. NAUK GRUZ. SSR 1970, 57(1), 137-40

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEATE BOILING, PHASE EQUILIBRIUM, SURFACE TENSION,
   NUCLEATION, ETHANOL, BENZENE, CONIC BODY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1451   STEP NO--UR/0251/70/057/001/0137/0140

CIRC ACCESSION NO--AP0118440
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0118440
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE AV.
EFFECTIVE RADIUS, PO, OF EVAPG. CENTERS ON THE PROPERTIES OF THE SOLID
LIQ. INTERFACE WAS STUDIED. FOR A CONE, ANGLE 2 BETA, FOR THE CASE WHEN
0 IS SMALLER THAN 0 IS SMALLER THAN BETA, WHER E THETA IS THE WETTING
ANGLE, THE GEOMETRIC REPEESENTATION GAVE PO EQUALS (R MINUS L SUBWET SIN
BETA)-COS)BETA- THETA), WHERE L SUBWET IS THE LENGHT OF THE WETTED SIDE
OF THE CONE, CAN BE REPLACED BY RU0 , WHERE U SUB9 IS THE RATE OF
WETTING AT THETA EQUALS 0 AND GAMMA IS THE TIME GETWEEN A RISING BUBBLE
AND THE FORMING OF THE NEXT BUBBLE. ON THE BAIS OF THIS RELATION, WITH
INCREASE IN HEATING ASSOCD, WITH A DECREASE OF GAMMA, P SUB0 INCREASED,
WHEREAS R AND THETA REMAINED CONT. THIS WAS CONFIRMED WITH ETOH AND C
SUB6 H SUB6 ON SURFACES WITH DIFFERNT CONES AS EVAPN. CENTERS.
WHENTHETA IS SMALLER THAN BETA, THE SLOPE OF THE EVAPN. CURVE IS HIGHER.

UNCLASSIFIED

1.

USSR   UDC   621.039.5.001.4

BEREZOVSKIY, V. V., BYKOVSKIY, Yu. A., GRIDIN, V. A., KOKOREV, L. S.,
SHELAGIN, Yu. N.

"Flaw Detection on a Fuel Element Model by Means of a Laser"

V sb. Vopr. teplofiz. yadern. reaktorov (Problems in the Thermal Physics
of Nuclear Reactors--collection of works), vyp. 3, Moscow, Atomizdat,
1971, pp 93-100 (from RZh-Elektrotekhnika i Energetika, No 9, Sep 71,
Abstract No 9U188)

Translation: The authors discuss the use of an infrared CO_2-N_2-He laser
with a wavelength of 10.6 u. The parameters of laser emission enabled
focusing on a fairly small area (~0.001 mm^2), thus improving the reso-
lution of thermal devices. A laser beam with a power of 6 W in the con-
tinuous mode was used to detect flaws (pits in the casing and peeling
of the fuel in nuclear fuel elements). Peeling in the form of a spot of
arbitrary shape with a concentrated heat source is considered. The tem-
perature of the casing rises when the laser beam hits a region where
there is peeling. A pickup determines the temperature rise. It is found

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USSR

BEREZOVSKIY, V. V., et al., Vopr. teplofiz. yadern. reaktorov, vyp. 3, Moscow, Atomizdat, 1971, pp 93-100

that an increase in the rate of beam displacement entails an increase in the required power of the source, a rise in maximum temperature and more severe requirements for the time lag of the temperature pickup. Emission from a laser with a power of 1 kW was focused by a field of $3 \cdot 10^5$ W/cm^2 on an area of $2 \cdot 10^{-3}$ mm^2. Three illustrations, two tables, bibliography of five titles. A. M. Bovshovskiy.

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Masers and Lasers

UDC 621.039.5.001.4

USSR

BEREZOVSKIY, V. V., BYKOVSKIY, YU. A., GRIDIN, V. A., KOKOREV, L. S., SHELAGIN, YU. N.

"Laser Detection of Defects in a Fuel Element Model"

Vopr. teplofiz. yadern. reaktorov -- V sb. (Problems of Thermo-physical Nuclear Reactors -- Collection of Works), vyp. 3, Moscow, Atomizdat Press, 1971, pp 93-100 (from RZh-Teploenergetika, No 9, Sep 71, Abstract No 9U188)

Translation: Utilization of a CO_2-N_2-He gas infrared laser with a wavelength of 10.6 microns is discussed. The parameters of the laser radiation permitted focusing of it on a sufficiently small area (~ 0.001 mm^2) and, at the same time, increasing the resolution of the thermal devices. A 6 watt laser beam was used to detect defects (holes in the jacket, exfoliation of the fuel). Exfoliation in the form of a spot of arbitrary shape with a concentrated heat source is investigated. When the laser beam hits the exfoliation region, the jacket temperature rises. The rise in temperature is recorded by a sensor. It is established that with an increase in the beam displacement rate, the neces-sary power supply increases, the maximum temperature increases, and the require-ments on the inertia of the temperature sensor increases. Focusing one kilowatt

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USSR

BEREZOVSKIY, V. V., et al., Vopr. teplofiz. vadern. reaktorov, vyp. 3, Moscow, Atomizdat Press, 1971, pp 93-100

of laser radiation created a field of $3 \cdot 10^5$ watts/cm^2 over an area of $2 \cdot 10^{-3}$ mm^2. There are 3 illustrations, 2 tables and a 5-entry bibliography.

1/2   016   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--DIALKYLPHOSPHORUS COMPOUNDS. III. SYNTHESIS AND REACTIONS OF
DIALKYLPHOSPHINIC ACID CHLORIDE -U-
AUTHOR-(03)-IVIN, S.Z., SHELAKOVA, I.D., PROMONENKOV, V.K.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 561-2

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC SYNTHESIS, ORGANIC PHOSPHORUS COMPOUND, IMINE,
TRIETHYLAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0869   STEP NO--UR/0079/70/040/003/0561/0562

CIRC ACCESSION NO--AP0124532
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0124532

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. TO 4.3 G ETHYLENIMINE, 10.1 G ET SUB3 N, AND 30 ML C SUB6 H SUB6 WAS ADDED SLOWLY 12.8 G ME SUB2 PSCL IN C SUB6 H SUB6 AT NEGATIVE5DEGREES TO GIVE, AFTER 2 HR AT 40-50DEGREES, 79PERCENT ME SUB2 PSR (R EQUALS AZIRIDINO), B SUB2 74-50DEGREES, D PRIME20 1.0827, N PRIME20 SUBD 1.5330; DI-ET ANALOG, PREPD. SIMILARLY, 70PERCENT, B SUB0.06 71-2DEGREES, 1.0406, 1.4700. ME SUB2 PSCL AND NAN SUB3 IN ME SUB2 CO IN 1 HR AT 60DEGREES GAVE 80PERCENT ME SUB2 P(S)N SUB3, M. 67DEGREES, WHICH (4.05 G) IN C SUB6 H SUB6 TREATED SLOWLY WITH 4.98 G P(OET) SUB3 REACTED WITH HEAT EVOLUTION ANDYIELDED N AT 50DEGREES; AFTER 2 HR IT GAVE 67PERCENT ME SUB2 P(S)N:P(OET) SUB3, B SUB0.008 100DEGREES, D PIME20 1.1100, N PRIME20 SUBD 1.4850; TRI,ISO,PR ANALOG, 75PERCENT, B SUB0.008 99-101DEGREES, 1.0511, 1.4710; ALSO PREPD. WAS ME SUB2 P(S)N:PME(OPR) SUB2, 80PERCENT, B SUB0.008 105DEGREES, 1.0592, 1.4930.

USSR   UDC 616.981.513-022.38-039:616.3-008.1

PIVOVAROV, Yu. P., SIDORENKO, G. I., TKACHENKO, A. V., GOL'DBERG, Ye. S.,
AKIMOV, A. M., VOLKOVA, R. S., and SHELAKOVA, V. V., Chair of General Hygiene,
Second Moscow Medical Institute imeni N. I. Pirogov

"Bacillus cereus as an Agent of Food Poisoning in Man"

Abstract: During an investigation of food poisonings treated in several clinics
and hospitals in Moscow, Moscow Oblast, and Roven'kovskiy Rayon, Luganskaya Oblast
(Ukraine) since 1967, it was found that two general outbreaks, four familial out-
breaks, and 29 isolated cases involving a total of over 150 persons were caused by
Bacillus cereus. The microorganism was isolated in large quantities from the in-
testinal contents, vomited material, and suspected food products (sausage, beet
and potato soup, stewed cabbage, boiled meat, sardines, canned duck and beef).
Most of the cases were reported in the summer and fall. The course was generally
mild and brief. After an incubation period of 10 to 16 hours, sometimes 4 to 6
hours, symptoms appeared - stomach pains, nausea, diarrhea. The symptoms sub-
sided in 11 to 16 hours, less commonly in 24 to 48 hours. About 2% of the cases
followed a more severe and longer (3 to 5 days) course.

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USSR

SHELAMOV, G.N. [Member, Scientific-Technical Society Of Radio Engineering, Electronics, And Communication imeni A.S. Popov]

"Analysis of Dielectric Resonator Interaction With a Rectangular Waveguide"

Radiotekhnika, Vol 27, No 4, Apr 1972, pp 61-69

Abstract: General expressions for the coefficients of mismatch, transmission, and absorption are obtained by an analysis of the equivalent circuits of three types of microwave quadripoles with dielectric resonators: 1) A dielectric resonator with matched transmission line; 2) A dielectric resonator in a short-circuited transmission line; and 3) A dielectric resonator as the coupling element of two transmission lines. With the aid of an electronic computer tables were compiled for determining the resonance frequencies of the principal oscillation modes in these resonators. Experimental checks of the calculated relations obtained for the coupling parameters were conducted with dielectric resonators prepared from a ceramic based on rutile ($\epsilon = 85$). The results of the experiments are presented. It is possible with the technique described to conduct an analysis of the interaction of a dielectric resonator with other types of microwave transmission lines and metal cavity resonators. 4 tab. 3 ill. 6 ref.

Received, 12 Dec 1969; after revision, 18 May 1971.

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USSR   UDC   621.372.54.061

KOVBASA, A. P., SHELAMOV, G. N.

"Application of Circuit Theory to the Design of Microwave Devices With Ferrites and Dielectrics"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 132-142

Abstract: Equivalent circuits are set up and the parameters of ferrites and dielectrics are calculated. In analyzing the equivalent circuits of microwave two-terminal pair networks with ferrites and dielectrics, expressions are derived for the coefficients of reflection, transmission and absorption of these two-terminal pairs. Four tables, four illustrations, bibliography of five titles.

1/1

USSR

UDC: 621.317.335.3

BOKRINSKIY, A. A., SHELAMOV, G. N.

"Using Dielectric Cavities to Measure the Parameters of Dielectrics on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 83-84 (from RZh-Radiotekhnika, no 1, Jan 71, Abstract No 1A370).

Translation: A method is proposed which is based on measuring the parameters of a resonator made from the dielectric to be studied. The measurement element is a system made up of the dielectric resonator and a transmission line. The oscillatory mode which is fundamental for the given dielectric resonator is best to use for measuring permittivity. When a cylindrical dielectric cavity is used, special tables are used for computations where the product of the resonance frequency of the dielectric resonator by the square root of permittivity is given as a function of the geometric dimensions of the cavity. The loss tangent is determined with respect to the natural Q of the dielectric resonator which is determined

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USSR

BOKRINSKIY, A. A. and SHELAMOV, G. N., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1, 1970, pp 83-84

from the measured Q and the coupling factor. The proposed method was used for measuring the permittivity and loss tangent of various types of rutile-based microwave ceramics. E. L.

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1/2   034   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--PHYSICOCHEMICAL PRINCIPLES IN THE PRODUCTION OF SEMIMANUFACTURES
  FROM BAKED ALUMINUM POWERS -U-
AUTHOR-(02)-SHELAMOV, V.A., LITVINTSEV, A.I.

COUNTRY OF INFO--USSR

SOURCE--PHYSICOCHEMICAL PRINCIPLES IN THE PRODUCTION OF SEMIMANUFACTRUES
  FROM BAKED ALUMINUM POWDERS (FIZIKO-KHIMCHESKIYE OSNOVY PROIZVODSTVA
DATE PUBLISHED-------70

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

TOPIC TAGS--PHYSICAL CHEMISTRY PROPERTY, POWDER METALLURGY, INDUSTRIAL
  PRODUCTION, ALUMINUM POWDER, CHEMICAL REACTION KINETICS, METAL DEGASSING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1711   STEP NO--UR/0000/70/000/000/0001/0277

CIRC ACCESSION NO--AM0130575
                    UNCLASSIFIED

CIRC ACCESSION NO--AM0130575   UNCLASSIFIED   PROCESSING DATE--27NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: INTRODUCTION
7.   CHAPTER I. CERTAIN ELEMENTS OF POWDER METALLURGY 9.   II. METHODS
OF PRODUCTION, STRUCTURE AND PHYSICOCHEMICAL PROPERTIES OF ALUMINUM
POWSER 42.   III. GAS CONTENT OF ALUMINUM POWDERS 65.   IV. WAYS TO
SATURATE ALUMINUM POWDERS WITH GAS IN THE PROCESS OF PRODUCTION 81.   V.
DEGASING OF ALUMINUM POWDERS 88.   VI. KINETICS OF DEGASING OF ALUMINUM
POWDERS 113.   VII. STRUCTURAL CHANGES IN ALUMINUM POWDERS IN ANNEALING
128.   VIII. PRINCIPLES OF THE THEORY AND METHODS FO CASTING
SEMIMANUFACTURES FROM FRIABLE MATERIALS 147.   IX. METHODS OF OBTAINMENT
OF COMPACT SAP (?) BRIQUETS 156.   X. BAKING OF POWDER MATERIALS
(APPLICABLE TO SAP) 171.   XI. TREATMENT OF BLANCS FROM SAP WOTH
PRESSURE 192.   XII. THERMAL AND MECHANICAL WORKING OF SEMIMANUFACTURES
226.   XIII. PROPERTIES OF SAP SEMIMANUFACTURES 235.   XIV. THE USE OF
SAP SEMIMANUFACTURES IN INDUSTRY 258.   XV. PERSPECTIVES FOR THE
DEVELOPMENT OF PRODUCTION AND USE OF SEMIMANUFACTURES FROM MATERIALS OF
THE SAP TYPE 268.   LITERATURE 272.   THE BOOK IS DESIGNED FOR TECHNICAL
ENGINEERS OF VARIOUS BRANCHES OF INDUSTRY SPECIALIZING IN WORKING METALS
WITH PRESSURE AND POWDER METALLURGY.

UNCLASSIFIED

USSR

KORNIYENKO, L. S., KRAVTSOV, N. V., and SHELAYEV, A. N.

"Some Characteristics of a Continuous, Solid-State Ring Laser"

Abstract: This brief communication gives the results of experiments performed to obtain the characteristics of a solid-state ring laser. It is shown that under specific conditions, there is an instability in the two counter waves. The laser used in the experiments contained a YAG-neodymium crystal and operated at a wavelength of 1.06μ , with an oscillation threshold of 500 w, and at 1.3μ, with an oscillation threshold of 1200 w. The laser resonator was formed by three mirrors with radii of curvature of 5000 mm, 2000 mm, and infinity and reflection factors of about 99% at the oscillation wavelength. A garnet crystal with a diameter of five mm and a length of 50 mm, with plane-parallel terminations, was the active element, and the resonator was 117 cm long. The type of oscillation was investigated as a function of the coupling coefficient of the counter waves. Oscillograms of the laser output are given.

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1/2   022   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--EXPERIMENT ON THE BEAM EXTRACTION BY AN ELECTROSTATIC DEFLECTOR
   FROM THE JINR 2 METRE ISOCHRONOUS CYCLOTRON -U-
AUTHOR-(05)-SHELAYEV, I.A., ALFEYEV, V.S., KOZLOV, S.I., NIKOLAYEV, V.M.,
   OGANESYAN, R.TS.
COUNTRY OF INFO--USSR

SOURCE--LAB. OF NUCLEAR REACTIONS). 1970. 12P. DEP. CFSTI

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ION BEAM, CYCLOTRON, ELECTROSTATICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0139   STEP NO--UR/0000/70/000/000/0012/0012

CIRC ACCESSION NO--AT0127763
                         UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AT0127763
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   EXTRACTION OF THE ION BEAM FROM
  THE JINR 2 METER ISOCHRONOUS CYCLOTRON BY A SYSTEM COMBINING AN
  ELECTROSTATIC DEFLECTOR AND FOCUSING MAGNETIC CHANNEL IS DESCRIBED.
    FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA USSR.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE---30OCT70

1/2   031
TITLE--ORBIT PARAMETERS OF THE 2 METER JINR ISOCHRONOUS CYCLOTRON -U-

AUTHOR-(03)-SHELAYEV, I.A., KOZLOV, S.I., KLENIN, B.A.

COUNTRY OF INFO--USSR

SOURCE--JINR P9 5033 LAB. OF NUCLEAR REACTIONS. 1970. 18P. DEP. CFSTI

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ORBIT PARAMETER, CYCLOTRON, MAGNETIC FIELD MEASUREMENT,
  BETATRON, OSCILLATION/(U)BESM DIGITAL COMPUTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0165   STEP NO--UR/0000/70/000/000/0018/0018

CIRC ACCESSION NO--AT0127789
                    UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE---30OCT70

CIRC ACCESSION NO--AT0127789

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCHEME OF THE CALCULATION OF THE ORBIT PARAMETERS AND PHASE GRAPHS, ADOPTED BY PROCESSING THE DATA OF THE MAGNETIC FIELD MEASUREMENTS OF THE 2 METRE ISOCHRONOUS CYCLOTRON, IS DESCRIBED. THE RESULTS OF THIS CALCULATION PERFORMED BY USE OF THE BESM 4 COMPUTER ARE PRESENTED. IT IS SHOWN THAT THE VALUES OF THE NU SUBR, NU SUBZ BETATRON OSCILLATION FREQUENCES, OBTAINED ACCORDING TO THE APPROXIMATE ANALYTICAL FORMULAE, AGREE WELL WITH THE RESULTS OF NUMERICAL INTEGRATION. FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA USSR.

UNCLASSIFIED

1/2   026   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--CHARACTERISTICS OF A LIGHT ION SOURCE FOR THE U-200 CYCLOTRON -U-

AUTHOR-(02)-SHELAEV, I.A., SOLOVEVA, G.M.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCES OF THE ION CURRENT
ON THE GAS YIELD, CURRENT AND VOLTAGE OF THE DISCHARGE AND THE VOLTAGE
OF THE DEES WERE INVESTIGATED. RESULTS ARE DISCUSSED.

UNCLASSIFIED

Thin Films

GANOPOL'SKIY, V. I., SHARAPOVA, V. S., KHARKOVER, M. Z., and SHELEG, M. U.,
Institute of Solid State Physics and Semiconductors, Academy of Sciences
Belorussian SSR, and Ural State University imeni A. M. Gor'ky, Sverdlovsk,
Ministry of Higher and Secondary Specialized Education RSFSR

"Extraction Photometric Analysis of Thin Magnetic Films Fe-Co-Ni by Means of
8-Mercaptoquinoline"

Abstract: A method of analysis of thin ferromagnetic films Fe-Co-Ni is described.
The method is based on the following: 1) the thiooxinate stability increases in
the series Fe-Ni-Co, the difference in this stability being especially marked
between iron and nickel on one hand, and cobalt on the other; 2) the absorption
spectra of the above thiooxinates have wide, intensive bands in the visual region
suitable for analytical purposes. The absorption bands of iron thiooxinate
(λ_{max}=450 mμ) and cobalt thiooxinate (λ_{max}=470 mμ) are practically superimpos-
able, while each of them individually, when paired with the absorption band of
nickel thiooxinate (λ_{max}=540 mμ) can be resolved spectrophotometrically. These

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USSR

GANOPOL'SKIY, V. I., et al, Zhurnal Analiticheskoy Khimii, Vol 25, No 5, May 70, pp 982-986

properties permit the analysis of two-component mixtures of thiooxinates (Fe-Ni and Co-Ni) to be carried out without separating the components. It also simplifies analysis of the Fe-Co-Ni system; the prolonged method of sequential reextracting of iron and nickel is aboided by separating Fe-Ni mixture from Co, which is left behind.

2/2

USSR

UDC 621.373.826:038.8

YERMOLAYEV, E. A., SHELEKHIN, YU. L., VOTINOV, M. P.

"Interaction of a Ruby with Ionizing Radiation"

Translation: A rose ruby (0.05 percent Cr_2O_3 in burden) was irradiated by Co^{60} γ-rays (a dosage of 10^8 roentgens) and thermal neutrons (10^{16}-10^{17} neutrons/cm^2) at room temperature, and single crystals of corundum (and ruby) were irradiated by x-rays (10^4 roentgens) at the liquid nitrogen level. The irradiated crystals acquired an orange tint. Two additional absorption bands with centers at 370 and 460 nm appeared in the optical spectrum, the Cr^{3+} content decreased by 11-18 percent, and the nonuniformity of the intracrystalline field increased by 30-40 percent. It is confirmed that the induced coloring is connected with a change in the valence state of the chromium and the formation of centers of color in the matrix defects. There is 1 illustration and a 7-entry bibliography.

1/1

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USSR

VEPRIK, YA. M., TRUKHIN, M. I., SHELEKHIN, YU. L.

"Electron Centers in Microcrystals of Silver Bromide of a Photoemulsion Sensitized by Amines"

Translation: The existence of two types of centers, stable and photon-induced electron-excess, was observed by the EPR method in microcrystals of the Ya2 nuclear photographic emulsion at 77°K. The stable centers were observed independent of the exposure; $g = 1.96$ for these. The other centers were induced by light and $g = 2.0036$ for these. The magnitude of the signal of centers of the second type depends on the illumination temperature (maximum at -40°C and disappearance upon heating to +20°C) and correlates with the temperature change in

1/2

USSR

VEPRIK, YA. M., et al, Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. chuvstvitel'nosti, no place of publication given, Vneshtorgizdat, no year given, pp 131-134

light sensitivity. Neither photoinduction of centers of the second type nor heating of the exposed samples have an effect on the signal from stable centers. It follows from a comparison with EPR of free Ag atoms in AgHal and alkali-halide crystals that centers of the second type are not Ag atoms. The hypothesis that dependence of the signal on temperature reports in the dependence of the mobility of interstitial Ag^+ ions was tested in experiments with the introduction of different amines into the emulsion. Their introduction sharply increased the signal of centers of the second type at the temperature maximum, probably due to recombination of photoelectrons with Ag^+ ions from dissociated Ag-amines of the complexes, since differences in the intensification of the signal upon the introduction of different amines correlates with differences in the instability constants of Ag-complexes of the amines. Also possible is a contribution to the signal from photoreduction in the transfer of an electron from the coordinated amine to a central Ag^+ ion in photoexcitation of the complex. 10 references. A. L. Kartuzhanskiy.

Higher Algebra and Geometry and Topology

USSR

UDC 512.972

AKIVIS, M. A. and SHELEKHOV, A. M.

"Calculation of Curvature and Torsion Tensors of a Multidimensional Three-Sheet and the Associator of the Local Quasigroup Associated With It"

Moscow, Sibirskiy Matematicheskiy Zhurnal, Academy of Sciences SSR, Siberian Department, Vol 12, No 5, Sep/Oct 71, pp 953-960

Abstract: A relationship is established between two methods of assigning a three-sheet W_r on a differentiable manifold X_{2r}: using three systems of wholly integrable Pfaff equations, and using finite equations. The invariants of the sheet assigned by the finite equations are computed. The formules obtained are used in computing tensors of curvature and torsion of a three-sheet W_r generated by a local analytic quasigroup Q_r. The relationship between the associator of this quasigroup and the curvature tensor of the three-sheet W_r is found. This relationship is used to obtain the necessary conditions for closure of the figures of Rodemeister and Bolya and hexagonality on the sheet W_r, expressed in terms of the curvature tensor of the sheet.

1/1

USSR

LESOVOY, M. P., SHELEKHOVA, L. N., and KONDRATYUK, O. K., Ukrainian Scientific
Research Institute for Plant Protection, Kiev

"Chemical Composition of Germinating Uredospores of Puccinia triticina Races
Differing in Virulence"

Abstract: The chemical composition of the germinating uredospores of two
races of Puccinia triticina (race 77 -- aggressive, and race 52 -- less
aggressive) were determined at 22° to 24° on a susceptible wheat strain
Erythrospermum-15. Analysis of the results showed that total nitrogen content
and free amino acid concentration was significantly greater in race 52
uredospores. Peroxidase activity was detected only in resting spores. In
race 77 peroxidase activity was three-fold less than in the less virulent
race 52. The relationship with respect to catalase was reversed. RNA and
DNA phosphorus content in race 77 was much greater than in race 52. On germi-
nation the content of each of the above mentioned chemical entities decreases;
the decrease in protein nitrogen and free amino acids was less pronounced in
race 77 than in race 52.
1/1

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USSR

UDC 535.231.4.07:535.89

BAYUNOV, V. I., DEMIDOV, M. I., OGURTSOVA, N. N., Candidate of
Technical Sciences, PODMOSHENSKIY, I. V., Candidate of Technical
Sciences, SMIRNOV, V. L., SHELEMINA, V. M.

"An Installation for the Measurement of High Brightness Tempera-
tures"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 12, Dec 70,
pp 24-27

Abstract: An installation for the measurement of brightness
temperatures in the range of 6,000-100,000 ° K, with a time re-
solution of up to 3 x 10⁻⁸ seconds, is described. This is the
IF-88 installation, designed and constructed by I. V. Bolotnikov
and I. V. Poryakhson. Determination of the temperature is based
upon successive comparison of the brightness of the source under
investigation and that of Standard EV-45, the measurement being
conducted simultaneously in two wavelength intervals, isolated by
interference filters from a spectral range of 220-400 nanometers.
3 figures, 3 bibliographic entries.
1/1

USSR

UDC 621.791.753.9

LANGER, N. A., Candidate of Technical Sciences, ONOPRIYENKO, L. M., Engineer,
BLASHCHUK, V. YE., Engineer, GORBAN', V. A., Engineer, Electric Welding Institute
imeni Ye. O. Paton of the Academy of Sciences UkrSSR, ISAYEV, M. M., Engineer,
All-Union Scientific Research Institute of the Hydrolysis Industry, Leningrad,
and SHELENKOV, G. M., Sumsk Machinery Manufacture Plant imeni M. V. Frunze

"Corrosion Resistance of Welded Joints of AT3 Alloy in Sulfuric Acid"

Abstract: An experimental study was made of the corrosion resistance and
the change of mechanical properties of AT3 titanium alloy and its compounds
in 0.6-1.2% concentrated sulfuric acid at 180 and 200° C. The results of
electrochemical investigation in 0.9% H_2SO_4 at 90° C show that automatically
welded specimens behave analogously to the base metal and active zone. Manually
welded specimens have an active zone of anodic dissolution; in their passive
zone the current density is $2 \cdot 10^{-2}$ mA/cm², which is less than in the base metal
($4 \cdot 10^{-2}$ mA/cm²). Tests conducted with sample specimens revealed that the base
metal corrodes after 44 weldings at a rate of 0.014 mm/year, automatically
1/2

USSR

LANGER, N. A., et al., Avtomaticheskaya Svarka, No 1(250), Jan 74, pp 67-68

welded joint corrodes at a rate of 0.016 mm/year, and a manually welded joint corrodes at a rate of 0.013 mm/year. Two figures, one table, two bibliographic references.

2/2

- 50 ..

USSR

UDC 621.791.052:620.193:669.295

BLASHCHUK, V. YE., Engineer, GUREVICH, S. M., Doctor of Technical Sciences, SHELENKOV, G. M., Engineer, Electric Welding Institute imeni Ye. O. Paton; TKACHENKO, N. N., Candidate of Technical Sciences, VASILENKO, I. I., Candidate of Technical Sciences, LISKEVICH, I. YU., Engineer, ZAFIYOVSKIY, YU. M., Engineer, ISAYEVA, M. M., Engineer, and MELEKHOV, R. K., Engineer, Physico-mechanical Institute of the Academy of Sciences UkrSSR

"The Tendency of AT3 Titanium Alloy Welded Joints to Mechanical Corrosion Failure"

Abstract: A study was made of the tendency of AT3 titanium alloy and its welded joints to breakdown at increased temperature and pressure in a 0.6% solution of H_2SO_4, as applicable to the working conditions of hydrolytic apparatus. Specimens of AT3 alloy were cut from 24-mm-thick hot-rolled sheet. The failure of welded joints took place at stresses exceeding the yield limit of the alloy. The conditional limits of the corrosion-fatigue strength in axial load with symmetric tension and compression of AT3 alloy and its manually welded joints are close. Automatically welded joints show, in comparison with AT3 alloy,
1/2

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USSR

BLASHCHUK, V. YE., et al., Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 39-40

some decrease in strength at stresses exceeding the conditional limit of
corrosion-fatigue strength. The AT3 alloy and its welded joints show practi-
cally the same durability at cyclic torsion. AT3 alloy is recommended for
the production of welded experimental hydrolytic apparatus. Four figures,
one table, eight bibliographic references.

2/2

USSR

GUREVICH, S. M., Doctor of Technical Sciences, and SHELENKOV, G. M. and BLASHCHUK, V. YE., Engineers

UDC 621.791.011:669.295

"Weldability of Titanium Alloy VT3"

Moscow, Svarochnoye Proizvodstvo, No 11, 1973, pp 20-21

Abstract: The weldability of titanium alloy AT3, with a complex composition, was studied and compared to unalloyed titanium VT1-0. Composition of VT3 was (in %): 2.5 Al, 0.4 Fe, 0.17 Si, 0.3 Cr, 0.1 O_2, 0.004 H_2, and 0.016 N_2. Samples 24 mm thick were submerged-arc welded with a 10 mm diameter tungsten electrode. Mechanical tests showed that the impact strength and elongation at normal and low temperatures change very little for either material while for AT3 there is a significant lowering of relative reduction in area at low temperatures (-196 C) with a rise in threshold energy. This was a result of increased oxygen content in the seam metal. Thus, the studies showed that the ductility and impact strength of the seam and heat-affect zone metal of the joint, produced by welding AT3 changes very little for different values of threshold energy and are analogous to the changes in technical titanium VT1-0. 3 figures, 2 tables, 7 bibliographic references.
1/1

USSR

GUREVICH, S. M., Doctor of Technical Sciences, and SHELENKOV, G. M., Engineer

UDC 621.791.754:669.295

"Manual Argon-Arc Welding of Titanium Without Bevelling"

Moscow, Svarochnoye Proizvodstvo, No 2 (460), Feb 73, pp 21-22

Abstract: A technology of manual argon-arc welding of titanium was developed by which high-quality butt-welded joints up to 10 mm thick can be produced. The effects of the gap between edges, of the welding conditions, and of the position of the electrode on the seam development were investigated on VT1-0 titanium specimens butt-welded with lanthanum-tungsten electrode in an argon atmosphere. Characteristic dependences of the optimum gap between weldable edges, the optimum diameter of welding wire, and of the welding current are shown. Welded joints of 5-6-mm-thick metal were found to be almost as strong as the initial metal. Some decrease in strength takes place at thicknesses up to 10 mm, in which case equal strength can be attained by increasing the size of weld seams. Three figures, one table, two bibliographic references.

1/1

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USSR

GUREVICH, S. M., BLASHCHUK, V. Ye., Ye. O. Paton Electric Welding Institute,
LUK'YANENKO, V. M., SHELENKOV, G. M., Suma Machine Building Plant

"Welding of Chemical Apparatus of AT3 Titanium Alloy"

Abstract: This work studies the weldability and develops a production
technology for welding of chemical apparatus of AT3 titanium alloy. The
alloy studied had the following chemical composition: 2.5% Al, 0.41% Fe,
0.17% Si, 0.3% Cr, 0.1% O, 0.004% H, 0.016% N. The butt joints were pro-
duced by argon-arc welding with a tungsten electrode by manual welding with
X-shaped placement of edges and automatic welding with an infusible elec-
trode. The welding technology developed was used in the production of hy-
drolytic apparatus with capacities of 6-50 m^3, wall thickness 10-24 mm. The
use of AT3 alloy allows interior volume to be increased by 15-35% over lined
steel apparatus, increasing interior volume utilization factor from 74% to
95%.

1/1

SHELENSHKEVICH, V.H.

STPRS
6.75

XIV-13. STUDY OF THE CHARACTERISTIC FEATURES OF CRYSTALLIZATION OF MICRODROPS
OF THE MELT ON THE SURFACE OF AUTOEPITAXIAL SILICON LAYERS

[Article by R. H. Erlikh, N. A. Belov, T. S. Kondrat'yeva, V. A. Shelenshkevich;
Leningrad; Novosibirsk. III Simpozium po Protsessam Rosta i Sinteza Poluprovod-
nikovykh Kristallov i Plenok. Munstan, 12-17 June 1972, p 204]

Data are presented from a statistical analysis of the frequency of en-
countering growth defects caused by crystallization of microdrops of the melt
on the surface of autoepitaxial silicon layers. The silicon layers were obtained
during the silicon tetrachloride reduction by hydrogen. The growth conditions of re-
producing the silicon tetrachloride the formation of microdrops of the melt were
autoepitaxial layers promoting the formation of microdrops of the melt were
simulated. Silicon plates alloyed with iron and gold containing contamination
by metal, graphite, dust, and traces of washing solutions on the surface were
used as substrate in the experiments. It was demonstrated that the formation
of microdrops of the melt is favored by the presence of such admixtures as
iron, gold, hydrogen, oxygen, antimony and others. The sources of which can be
the crystal itself (above all, the contamination of the microdrops of the melt with res-
crystallization medium. The movement of the grown surface) and the
puct to the morphological characteristics of the defects formed corresponds to
the directions of predominant growth <112> and bulidan of the stages <110>. It
was noted that the crystallization of microdrops of the melt can be accompanied
by the texture effect of the admixtures from the surrounding regions of the crys-
tal and can serve as a cause of the formation of growth defects of the follow-
ing type: plateau-like elevations, faceted whiskers, tongues, growth hills of
pyramidal appearance, and complex twins -- tripyramidin, according the morpho-
logical characteristics of the relief connected with the presence of the liquid
phase on the growth surface of the crystal and on its back side -- the sandwich
layer -- permit judgment of the conditions of the growth process of the auto-
taxial silicon layers. In this paper the possible mechanism of crystalliz-
microdrops of the melt are discussed, and the different technological methods
of lowering the probability of their occurrence are proposed.

- 210 -

USSR

SHELEPEN', S. V.

"Substantiation for the Use of Electrical Sensors and a Differentiator to Improve the Control System of the KhTGZ K-300-240 Turbine"

Translation: The flaws in the hydromechanical angular-rate sensor and the system for switching on the electrohydraulic attachment in the water control system used in KhTGZ [Khar'kov Turbogenerator Plant] K-300-240 turbines make it impossible to use them for frequency control and can lead to turbine accidents. The author proposes that an electrical impulse generated by rotor acceleration be used for frequency control, after which it is converted into a hydraulic impulse and used to control the steam admission members. For these purposes he proposes the use of the DIE-042 tachogenerator, augmented by an electrical circuit and networks that form a differentiating effect. The realization of this effect as a hydraulic effect is accomplished by using a KhTGZ velocity regulator. When the process involved in a complete load drop was modeled on an MH-8 electronic computer, it was discovered that the rotation frequency

1/2

USSR

SHELEPEN', S. V., Tr. Novocherkas. politekhn. in-ta, Vol 258, 1972, pp 74-80
error was 155 rpm, of which 150 rpm were static deviation. (3 illustrations;
4 bibliog. ref.)

USSR

S

TITOV, YU. A., SHELEPETS, V. I., OKSYUTICH, N. B.

UDC 621.383.89

"Codoscope Type Cathode Ray Tube"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyve Obraztsy, Tovarnyye Znaki, No 16,
8 May 70, p 57, Patent No 270102, Filed 20 Dec 67

Translation: This Author's Certificate introduces a codoscope type cathode
ray tube containing recording and reproducing projectors, address plates, a
control assembly, a potential carrier assembly and a luminescent output
screen. The tube is distinguished by the fact that in order to insure high
speed of recording the parallel binary code and to decrease the amplitude
of the control signals, the control assembly comprises a system of parallel
deflecting plates separated by dielectric and arranged perpendicular to the
plane of the beam in direct proximity to the potential carrier.

1/1

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Power, Engine, Turbine, Pump

USSR

SHELEPEN', S. V.

UDC 621.165-531.6

"Basis for the Use of an Electric Sensor and Differentiator to Improve the System for Control of the K-300-240 Turbine Produced at the Khar-kov Turbo-generator Plant"

Tr. Novocherkas. Politekhn. In-ta (Works of the Novocherkask Polytechnical Institute), No 258, 1972, pp 74-80 (from Referativnyy Zhurnal -- Turbostroye-niye, No 1, 1973, Abstract No 1.49.42)

Translation: A system of control by means of an electric sensor and a differentiator is discussed. A magnetic intensifier and an electrohydraulic converter were used for converting the electric pulse into a hydraulic pulse. A governor produced by the Khar'kov Turbogenerator plant was used as the hydraulic part. The time of the transient process with total load cutoff, measured on the Mn-S analog computer, was 4 seconds. The quality of the transient process was high, approaching periodicity.

1/1

USSR

BIRYUKOV, A. S., SHELEPIN, L. A.

UDC: 621.375.82

"Kinetics of Physical Processes in Electrogasdynamic Lasers"

Moscow, Kinetika fizicheskikh protsessov v elektrogazodinamicheskikh lazerakh.
Fiz. in-t AN SSSR (cf. English above. Physics Institute of the Soviet Academy
of Sciences), Preprint No 130, 1972, 21 pp, ill., mimeo. (from RZh-Fizika,
No 8, Aug 73, abstract No 8D1069 K [résumé])

Translation: An investigation is made into relaxation processes in electro-
gasdynamic lasers using gasdynamic flows and electronic excitation of the
working gas. Basic relations are found for the inversion maximum as a
function of the parameters of the system. The paper demonstrates the ef-
fectiveness of electrogasdynamic lasers with supersonic gas flow velocities
and their advantages over gasdynamic and transverse-discharge, gas-pumped
lasers with low pumping speeds. A simple theory is given for gas-pumped
lasers with transverse excitation. The possibilities of using atomic gases
as the working fluid in electrogasdynamic lasers are discussed. Bibliog-
raphy of 14 titles.

1/1

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USSR

GORDIYETS, B. F., OSIPOV, A. I., SHELEPIN, L. A.

UDC: 621.375.82

"Oscillatory Relaxation in Gases, and the Molecular Laser (Part I)"

Moscow, Kolebatel'naya relaksatsiya v gazakh i molekulyarnyye lazery (Ch. I).
Fiz. in-t AN SSSR. Optich. labor. (cf. English above. Physics Institute of
the Soviet Academy of Sciences. Optics Laboratory), preprint No 135, 1972,
76 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D985
[résumé])

Translation: The article is a state-of-the-art survey of the theory of oscilla-
tory relaxation in gases and its application to the theory of molecular lasers.
A brief presentation is made of the procedure for calculating the probabilities
of vibrational transitions in collisions, and the formulas which are used in
practical computations are presented. The authors discuss relaxation of
diatomic and polyatomic molecules modeled by harmonic oscillators. A detailed
analysis is made of oscillatory relaxation in a system of harmonic oscillators.
Quasistationary distributions of the populations of vibrational levels which
arise under appreciably nonequilibrium conditions are considered both in a
single-component molecular system and in gas mixtures. Relaxation in the pres-
ence of sources of vibrationally excited molecules is discussed, and the
mechanisms of operation of lasers based on vibrational-rotational transitions
are examined. Bibliography of 106 titles.
1/1

SHELEPIN, L.A.

GEOMAGNETIC
DISTURBANCES

COUPLING OF THE UPPER AND LOWER ATMOSPHERE BY INFRARED RADIATION AND THE POSSIBILITY OF FORECASTING PRESSURE VARIATIONS AT SEA LEVEL DURING GEOMAGNETIC DISTURBANCES

[Article by B. F. Gordiyets, Yu. N. Gol'tsov, M. N. Markov, L. A. Shelepin, Physics Institute imeni P. N. Lebedev of the USSR Academy of Sciences, Moscow, Doklady Akademii Nauk USSR, Russian, Vol 212, No 2, 1973, submitted 11 December 1972, pp 341-344]

In references [1-5] it is demonstrated with high statistical reliability that the geomagnetic disturbances caused by intrusion of corpuscular fluxes from the sun to the upper atmosphere of the Earth have significant effect on the weather forming processes, changing, in particular, the pressure at the Earth's surface.

The purpose of this paper is to indicate one of the possible mechanisms of energy transfer from the upper atmosphere downward into the stratosphere and troposphere and to demonstrate in what way small disturbances here caused by the release of this energy can lead to significant (with a rate to several millibars per day) variation of the pressure at sea level with a different sign of this variation in different parts of the Earth.

As is known [6-8], in the upper atmosphere at altitudes of $z > 120$ km geomagnetic disturbances give an energy flux of I_0 downward reaching values of $I_0 - 10$ ergs/(sec·cm²) for geomagnetically quiet conditions. During the storms ($K_p \geq 5-7$). An analysis of the various geomagnetic radiation [8] shown that obviously the most possible mechanism of this radiation as a result of vibrational-rotational transitions in the NO molecules and NO⁺ ions (along with CO, $N_2(N)_y$ and so on) caused by exothermic reactions

$$N + O_2 \rightarrow NO + O, \quad N_2^+ + O \rightarrow NO^+ + N, \quad O^+ + N_2 \rightarrow NO^+ + N.$$

- 1 -

[I - USSR - E]

MARKOV, M. N.

GEOMAGNETIC

DISTURBANCES

JPRS 61096

30 January 1974

COUPLING OF THE UPPER AND LOWER ATMOSPHERE
AND THE POSSIBILITY OF FORECASTING PRESSURE BY INFRARED RADIATION
SEA LEVEL DURING GEOMAGNETIC PRESSURE VARIATIONS AT

[Article by B. F. Gordiyets, P. N. Tridcav, L. A. Shelepin, Physics Institute
iment P. N. Lebedev of the USSR Academy of Sciences, Moscow; Doklady
Akademii Nauk SSSR, Russian, Vol 212, No 2, 1973, submitted 11 December 1972,
pp 341-344]

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The purpose of this paper is to indicate one of the possible mechanisms
of energy transfer from the upper atmosphere downward into the stratosphere
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by the release of this energy can lead to significant disturbances at sea
millibars per day) variation of the pressure (with a rate to several
sign of this variation in different parts of the Earth.

As is known [6-8], in the upper atmosphere at altitudes of z > 120 km
there is very intense infrared radiation giving an energy flux of I_0 downward
reaching values of $I_0 \sim 10^2$ to 10^3 erg/(sec·cm²) for strong geomagnetic
geomagnetic disturbances this flux at high latitudes can increase significantly.
storms ($K_p \sim 5-7$); An analysis of the various possible mechanisms of this
radiation [8] shows that obviously the most significant radiation is the
$I_0 \sim 1 - 10$ erg/(sec·cm²) for geomagnetically quiet conditions. During the
radiation as a result of vibrational-rotational transitions in the NO mole-
cules and NO^+ ions (along with CO, $N_{14}N_{15}$, and so on) caused by exothermic
reactions

$$N + O_2 \rightarrow NO + O, \quad N^+ + O_2 \rightarrow NO^+ + N, \quad O^+ + N_2 \rightarrow NO^+ + N.$$

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[I - USSR - E]

GORDIYETS, B. F.

GEOMAGNETIC DISTURBANCES

Geomagnetic Disturbances

JPRS 61096

30 January 1974

COUPLING OF THE UPPER AND LOWER ATMOSPHERE AND THE POSSIBILITY OF FORECASTING PRESSURE VARIATIONS AT SEA LEVEL DURING GEOMAGNETIC DISTURBANCES

[Article by B. F. Gordiyets, M. N. Markov, L. A. Shelepin, Physics Institute imeni P. N. Lebedev of the USSR Academy of Sciences, Moscow; Moscow, Doklady Akademii Nauk SSSR, Russian, Vol 212, No 2, 1973, submitted 11 December 1972, pp 341-344]

In references [1-5] it is demonstrated with high statistical reliability that the geomagnetic disturbances caused by intrusion of corpuscular fluxes from the sun to the upper atmosphere of the Earth have significant effect on the weather forming processes, changing, in particular, the pressure at the Earth's surface.

The purpose of this paper is to indicate one of the possible mechanisms of energy transfer from the upper atmosphere downward into the stratosphere and troposphere and to demonstrate in what way small disturbances here caused by the release of this energy can lead to significant (with a rate to several millibars per day) variation of the pressure at sea level with different signs of this variation in different parts of the Earth.

As is known [6-8], in the upper atmosphere at altitudes of $z > 120$ km there is very intense infrared radiation giving an energy flux of I_0 downward. $I_0 \sim 1$ - 10 ergs/(sec·cm^2) for geomagnetically quiet conditions. During the geomagnetic disturbances this flux at high latitudes can increase significantly, reaching values of $I_0 \sim 10^2$ to 10^3 ergs/(sec·cm^2) for strong geomagnetic storms ($K_p \geq 5$-7). An analysis of the various possible mechanisms of this radiation [8] shows that obviously the most significant radiation is the radiation as a result of vibrational-rotational transitions in the NO molecules and NO$^+$ ions (along with CO, $N_{14}N_{13}$, and so on) caused by exchange reactions

$$N+O_2 \rightarrow NO+O, \; N^*+O_2 \rightarrow NO^+ +N, \; O^*+N \rightarrow NO^+ +N.$$

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[I - USSR - E]

ALGORITHM OF OPERATOR ACTIVITIES IN PROCESS OF TARGET CLASSIFICATION ON RADAR SCOPE

[Article by A. Kh. Glitdeyov, T. M. Strigina, Yu. A. Ulanov, I. N. Khutoryan; Moscow, Voprosy Psikhologii, Russian, No 4, 1973, pp 139-143]

(algorithm) of operator activities in the classification of objects which he sees on the radar scope. The operator accomplishes classification of objects which the objects, sites and relative rates of movement of the blips produced by the objects, sizes and relative rates of movement of the blips produced about the correspondence of the targets. Using this information on ing the correspondence of the targets. Using this information the operator makes a decision concern- The need to develop a method by which to find the numerical probabilities of correct and erroneous classification of targets according to their solving this type of problems is underscored, for example, by B. F. Lomov, et al [5].

Existing views [1, 2] toward a model of operator activities in the process of classification of objects which he detects on the basis of the parameters of the blips on a cathode-ray tube (CRT) presume that when blips appear that correspond to various targets the operator will classify them by comparing each parameter of the blips (brightness, for example) with some "reference" attribute of the given parameter, which is memorized during the training process. As a result of such comparison the operator relates the blips with greater brightness than the reference value to one class, and blips with less brightness to another. Classification is done in like manner on the basis of other parameters of the blips.

Such a model is valid in the case when the operator classifies a single target or group of targets for which neither the relationship of the parameters of the blips nor the presence or absence among them of certain classes of targets is known ahead of time. However there is another smaller class of targets for which the operator has a priori information about the presence of certain classes of targets in the

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[I - USSR - F]

detected group and knows the relationship of the parameters of the blips that correspond to the various classes of targets. In this case, as shown by polling a large number (about 50) of operators, man classifies objects by comparing the parameters of their blips.

It was discovered by polling a group of operators that classifica-tion is done in parallel with respect to all blips and successively with respect to their parameters as long as the volume of information in one presentation does not exceed the operator's capabilities to process it.

In the latter case the operator begins to analyze not all the blips, but only those which are located on an individual part of the CRT scope. Here the "strobe" part of the CRT will contain only the number of blips that the operator can analyze in one presentation [3, 6].

During the time of one presentation the operator classifies targets some probability all the detected blips or a part of them, either correctly or erroneously, or classifies the targets according to the principle of equal probability. In each ensuing cycle of observation the operator's decision concurring with the membership of a given target to a certain class is corrected. Consequently the probability of correct classification increases. The model of the result of the operator's actions in such a situation is satisfactorily approximated by the Bayes formula [9, 10].

In the general case the operator classifies targets according to the set of parameters of their blips. In this case, obviously, the model of his actions will be similar to the one described by L. B. Filenov [8].

The essence of the problem consists here in the fact that the probabilities of classification are determined by the reference parameter of the blips, i.e., the parameter that has the greatest information, and the other auxiliary parameters were determined only at the time of classification.

We will limit the total number of classified objects so that the amount of information that is perceived by the operator in one presenta-tion will not exceed the limiting volume, which he is capable of processing during the time of one presentation.

We will assume that the operator knows beforehand what classes of targets are seen and what the relationships are between the parameters of blips produced by targets of the given classes.

We will assume that the probabilities of correct and erroneous classification of the targets are determined by the same reference para-meter of blips (brightness, for example).

We will limit the number of classes of targets to be analyzed to two: class X and class Y.

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AIR MATHEMATICS

ALGORITHM OF OPERATOR ACTIVITIES IN PROCESS
OF TARGET CLASSIFICATION ON RADAR SCOPE

[Article by A. Kh. Gildevoy, T. N. Strokov, Ye. A. Ulanov, I. N. Khetoryan;
Moscow, Vopros Psikhologii, Russian, No 4, 1973, pp 139-143]

The purpose of this investigation is to develop a mathematical model
(algorithm) of operator activities in the classification of objects which
he sees on the radar scope. The operator accomplishes classification on
the basis of information obtained from the radar scope in the form of
brightnesses, sizes and relative rates of movement of the blips produced
by the objects to be classified. Using this information an operator makes
about the character of the targets, the operator makes a decision concern-
ing the correspondence of the targets. The operator makes a decision concern-
The need to develop a method by which to find the numerical class of target,
of correct and erroneous classification of targets according to their
blips on the radar scope has increased in recent time. The urgency of
solving this type of problem is underscored, for example, by B. F. Lomov,
et al [5].

Existing views [1, 2] toward a model of operator activities in the
process of classification of objects which he detects on the basis of the
parameters of the blips on a cathode-ray tube (CRT) presume that when
blips appear that correspond to various targets the operator will classify
them by comparing each parameter of the blips, for example,
with some "reference" attribute of the blips, which is memorized
during the training process. As a result o, for example)
relates blips with greater brightness than the reference value to one
class, and blips with less brightness to another. Classification is done
in like manner on the basis of other parameters of blips.

Such a model is valid in the case when the operator classifies a
single target or group of targets for which neither the relationship of
the parameters of the blips nor the presence of a certain class of
certain classes of targets is known ahead of time. However there is
another smaller class of problems for which the operator has a priori
information about the presence of certain classes of targets in the

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detected group and knows the relationship of the parameters of the blips that correspond to the various classes of targets. In this case, as shown by polling a large number (about 50) of operators, man classifies objects by comparing the parameters of their blips.

It was discovered by polling a group of operators that classification is done in parallel, with respect to all blips and successively with respect to their parameters as long as the volume of information in one presentation does not exceed the operator's capabilities to process it.

In the latter case the operator begins to analyze not all the blips, but only those which are located on an individual part of the scope. Here the "strobe" part of the CRT will contain only the number of blips that the operator can analyze in one presentation [5, 6].

During the time of one presentation the operator classifies targets with some probability all the detected blips or a part of them, either correctly or erroneously, or classifies the targets according to the principle of equal probability. In each ensuing cycle of observation the operator's decision concerning the membership of a given target to a certain class is corrected. Consequently, the probability of correct classification increases. The model of the result of the operator's actions in such a situation is satisfactorily approximated by the Bayes formula [9, 10].

In the general case the operator classifies targets according to the set of parameters of their blips. In this case, obviously, the model of his actions will be similar to the one described by L. B. Filonov [8].

The essence of the problem consists here in the fact that the probabilities of classification are determined by the reference parameter of the blips, i.e., the parameter that has the greatest information, and the other auxiliary parameters were determined only at the time of classification.

We will limit the total number of classified objects to that the amount of information that is perceived by the operator in one presentation will not exceed the limiting volume, which he is capable of processing during the time of one presentation.

We will assume that the operator knows beforehand what classes of blips produced by targets are between the parameters.

We will assume that the probabilities of correct and erroneous classification of the targets are determined by the same reference parameter of blips (brightness, for example).

We will limit the number of classes of targets to be analyzed to two: class X and class Y.

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STROKOVA, T.M.

AIR MATHEMATICS

ALGORITHM OF OPERATOR ACTIVITIES IN PROCESS OF TARGET CLASSIFICATION ON RADAR SCORE

The purpose of this investigation is to develop a mathematical model (algorithm) of operator activities in the classification of objects which he sees on the radar scope. The operator accomplishes classification on the basis of information obtained from the radar scope in the form of brightnesses, sizes and relative rates of movement of the blips produced by the objects to be classified. Using this information, the operator makes a decision concerning the character of the targets, the operator makes a decision concerning the correspondence of the targets, the operator makes a decision concerning the correct and erroneous classification of targets. The need to develop a method by which to find the numerical probabilities of correct and erroneous classification of targets according to their blips on the radar scope has increased in recent time. The urgency of solving this type of problem is underscored, for example, by B. F. Lomov, et al [5].

Existing views [1, 2] toward a model of operator activities in the process of classification of objects which he detects on the basis of the parameters of the blips on a cathode-ray tube (CRT) presume that when blips appear that correspond to various targets the operator will classify them by comparing each parameter of the blips (brightness, for example) with some "reference" attribute of the given parameter, which is memorized during the training process. As a result of such comparison the operator relates blips with greater brightness than the reference value to one class, and blips with less brightness to another. Classification is done in like manner on the basis of other parameters of the blips.

Such a model is valid in the case when the operator classifies a single target or group of targets for which neither the relationship of the parameters of the blips nor the presence or absence among them of certain classes of targets is known ahead of time. However there is another smaller class of problems for which the operator has a priori information about the presence of certain classes of targets in the

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[I - USSR - F]

detected group and knows the relationship of the parameters of the blips that correspond to the various classes of targets. In this case, as shown by polling a large number (about 10) of operators, man classifies objects by comparing the parameters of their blips.

It was discovered by polling a group of operators that classification is done in parallel with respect to all blips and successively with respect to their parameters as long as the volume of information in one presentation does not exceed the operator's capabilities to process it.

In the latter case the operator begins to analyze not all the blips, but only those which are located on an individual part of the CRT scope. Here the "strobe" part of the CRT will contain only the number of blips that the operator can analyze in one presentation [5, 6].

During the time of one presentation the operator classifies some probability all the detected blips or a part of them, either correctly or erroneously, or classifies the targets according to with principle of equal probability. In each ensuing cycle of observation to the operator's decision concerning the membership of a given target to a certain class is corrected. Consequently the probability of correct classification increases. The model of the result of the operator's actions in such a situation is satisfactorily approximated by the Bayes formula [9, 10].

In the general case the operator classifies targets according to the set of parameters of their blips. In this case, obviously, the model of his actions will be similar to the one described by L. B. Filonov [8].

The essence of the problem consists here in the fact that the probabilities of classification are determined by the reference parameter of the blips, i.e., the parameter that has the greatest information, and the other auxiliary parameters were determined only at the time of classification.

We will limit the total number of classified objects so that the amount of information that is perceived by the operator in one presenta- tion will not exceed the limiting volume, which he is capable of processing during the time of one presentation.

We will assume that the operator knows beforehand what classes of blips produced by targets of the given classes.

We will assume that the probabilities of correct and erroneous classification of the targets are determined by the same reference para- meter of blips (brightness, for example).

We will limit the number of classes of targets to be analyzed to two: class X and class Y.

USSR

UDC 621.365.82

BIRYuKOV, A. S., ShELEPIN, L. A.

"The Kinetics of Physical Processes in Gas Dynamic Lasers. The Effect of Nozzle Shape on Inversion. High-Temperature Lasers"

Preprint No 59, Physical Institute of the Academy of Sciences of the USSR, Moscow, 1973, 53 pp, illustrated. RZh-Fizika, No 9, Sep 1973, Abstract No 9D763

Translation: The effect of the shape of a supersonic nozzle on the parameters of a gas dynamic CO_2 laser is analyzed. It is shown that each of the elements characterizing the nozzle (the half-width of the critical cross-section, the angle of opening, the length and shape of the expansion portion, the nature of the transition from subsonic flow to supersonic, etc.) has a specific effect on the kinetics of oscillatory relaxation and the degree of population inversion. Also examined are cases of high (up to approximately $4000^\circ K$) initial temperatures, considering changes in the state and gas dynamic parameters as a result of chemical reactions. It is established that equilibrium reactions do not lead to additional disequilibrium. Such disequilibrium can be obtained in the combustion of carbon-containing mixtures. Thirty-two bibliographic citations. Abstract by the author.

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USSR   UDC: 512.8+53

SMORODINSKIY, Ya. A., SHELEPIN, L. A., Joint Institute of
Nuclear Research, Dubna; Physics Institute imeni P. N.
Lebedev, Academy of Sciences of the USSR

"Clebsch-Gordan Coefficients from Various Standpoints"

Abstract: Recent years have seen the development of a gener-
alized theory of angular moments. New results have appre-
ciably changed the place of Clebsch-Gordan coefficients in
both physical and mathematical applications. This survey
reviews two aspects of the theory of Clebsch-Gordan coeffi-
cients which has arisen as an applied branch of group theory.
First, a study is made of the relation between Clebsch-Gordan
coefficients and combinatorial theory, the calculus of finite
differences, special functions, complex moments, projective
and multidimensional geometry, topology, multiple integrals,
and various other branches of mathematics. In these areas,

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the Clebsch-Gordan coefficients play the part of a new uni-
versal calculus which goes considerably beyond the primary
framework of the theory of angular moments. Secondly, new
applications are considered for the Clebsch-Gordan coefficients
in physics. With the aid of the generalized theory of angular
moments, which is an adequate tool for studying various physi-
cal systems (atoms, molecules, nuclei, hadrons, radiation),
a study is made of the interrelationships between physical
symmetries. As an example, it is shown how this theory can
be applied to elementary particle symmetries. A supplement
to the article gives a brief summary of the results on the
theory of Clebsch-Gordan coefficients of compact groups.
Seven figures, bibliography of 168 titles.

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Lasers and Masers

USSR

GORDIYETS, B. F.; OSIPOV, A. I.; SHELEPIN, L. A. (Lebedev Physics Institute, USSR Academy of Sciences)

"Kinetics of Nonresonance Vibrational Exchange and Molecular Lasers"

ABSTRACT: The authors studied the kinetics of nonresonance vibrational exchange in molecular systems under conditions in which equilbrium with respect to the vibrational degrees of freedom becomes established more rapidly than transition of energy to translational degrees of freedom. Distributions of the vibrational energy (taking into account two-quantum transitions) were found for a binary mixture of harmonic oscillators and a one-component system of anharmonic oscillators. The distributions depend substantially on the relation between the vibrational quanta. A number of applications of nonresonance exchange in molecular lasers were investigated. Possibilities for "ampli-

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1/3   046
UNCLASSIFIED
TITLE--MECHANISMS OF INFRARED RADIATION OF THE UPPER ATMOSPHERE -U-   PROCESSING DATE--20NOV70

AUTHOR-(03)-GORDIYETS, B.F., MARKOV, M.N., SHELEPIN, L.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KOSMICHESKIYE ISSLEDOVANIYA, VOL VIII, NO 3, 1970, PP
437-448

DATE PUBLISHED------70

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CIRC ACCESSION NO--AP0132712

UNCLASSIFIED

2/3   046
CIRC ACCESSION NO--AP0132712   UNCLASSIFIED   PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE
OSCILLATORY RELAXATION OF DIATOMIC MOLECULES IN THE UPPER ATMOSPHERE AND
A JOINT ALLOWANCE WAS MADE FOR THE EFFECT OF PHOTOELECTRONS AND ELECTRIC
FIELDS ON ELECTRON AND ION TEMPERATURE. A STUDY WAS MADE OF DIFFERENT
MECHANISMS (THERMAL, ELECTRON, CHEMICAL) RESPONSIBLE FOR IR RADIATION.
IT WAS FOUND THAT IN THE UPPER ATMOSPHERE, WHOSE CHARACTERISTICS ARE
DESCRIBED BY AVERAGED, STANDARD PARAMETERS IN THE ABSENCE OF GEOMAGNETIC
DISTURBANCES (KP EQUALS 0), THERE ARE EMITTING LAYERS AT SOME ALTITUDES
IN THE RANGE 100-500 KM. AN ESTIMATE OF THE THICKNESS AND INTENSITY OF
THE EMISSION OF THESE LAYERS SHOWS THAT IN THE CASE OF EXCITATION OF
MOLECULES BY ELECTRON IMPACT IN AN ELECTRIC FIELD AND DURING CHEMICAL
REACTIONS THE THICKNESS IS ABOUT 10 KM AND THE INTENSITY OF THE EMISSION
IN THE REGION OF THE ROTATIONAL VIBRATIONAL BANDS OF THE MOLECULES NO,
CO, N PRIME14, N PRIME15 AND OTHERS (3-8 MICRONS) CAN ATTAIN 10
PRIMENEGATIVE5 -10PRIMENEGATIVE4 ERG-CM PRIME3 TIMES SEC.   THE
AGREEMENT OF THESE VALUES WITH THE EXPERIMENTAL DATA OF A NUMBER OF
ROCKET AND SATELLITE MEASUREMENTS INDICATES THAT ELECTRIC FIELDS AND
CHEMICAL REACTIONS IN THE UPPER ATMOSPHERE ARE THE PRINCIPAL FACTORS
WHICH LEAD TO THE GENERATION OF IR RADIATION. IN THE FUTURE IT IS
NECESSARY TO STUDY THESE PROCESSES FURTHER AND STUDY SUCH IMPORTANT
CASES AS THE BEHAVIOR OF THE UPPER ATMOSPHERE DURING GEOMAGNETIC STORMS
WHEN THE OBSERVED EMISSION FLUXES IN LAYERS AT ALTITUDES 300-500 KM ARE
CONSIDERABLY ENHANCED IN INTENSITY (UP TO 10 PRIMENEGATIVE3 ERG-CM
PRIME3 TIMES SEC).

UNCLASSIFIED

CIRC ACCESSION 046

ABSTRACT/EXTRACT--IT WOULD BE INTERESTING TO FORMULATE EXPERIMENTS FOR DETERMINING THE DEPENDENCE OF RADIATION INTENSITY ON THE SPECIFIC STATE OF THE UPPER ATMOSPHERE, ANALYSIS OF THE SPECTRAL COMPOSITION OF THE RADIATION, DETAILED INVESTIGATION OF THE CORRELATION BETWEEN ENERGY FIELDS AND THE INTENSITY IN DIFFERENT SPECTRAL REGIONS, AS WELL AS THE VERTICAL POSITION OF THE EMITTING LAYERS.

ACCESSION NO--AP0132712   UNCLASSIFIED

PROCESSING DATE---20NOV70

UNCLASSIFIED

USSR

SHELEPIN, Yu. Ye., Laboratory of the Physiology of Vision, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

UDC 612.84+612.822.3

"The Effect of Image Size on the Parameters of Evoked Potentials in the Striate Cortex in the Cat"

Abstract: Biopotentials were recorded in occipital cortex area 17 in immobilized cats with gaze fixed on one point of a screen on which drawings of parallel lines forming grills were projected at the rate of one picture per sec. Impulse activity (IA) and averaged evoked potentials (AEP) were analyzed in correlation with the overall size of the grills and the orientation of the parallel lines. The results, judged by AEP negative waves which were synchronous with IP peaks, indicated that successive presentation of identical grills projected one above and the other below the gaze fixation point induced responses of the same magnitude in the projection area of the fovea centralis. A grill with an overall size twice as large as the preceding grills induced a bigger response. A large grill with the parallel lines running in one direction in the upper half and in the other in the lower half induced a response 1/2

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of the same magnitude as one uniform large grill. It is concluded that AEP negative wave reflects the number of activated receptive fields regardless of the types of neurons involved.

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USSR

KEYDAN, V. F., MIKHALEVSKIY, V. S., SEM, M. F., and SHELEPO, A. P.

UDC: 621.375.82

"Oscillations in Ionized Selenium"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection of works) "Sov. radio," No 1(13), 1973, pp 75-78 (from RZh--Fizika, No 7, 1973, Abstract No 7D1015)

Translation: The characteristics of oscillations in selenium ion transitions are investigated in pulsed continuous operation. It is established that in a pulsed discharge, the upper energy level population may originate in electronic excitation from the base state of the atom as well as the recharge of the helium ions with neutral selenium atoms. In continuous operation, the dependence of the generated power on the discharge conditions is determined, the plasma parameters are measured, and the pumping velocity of the upper levels of the laser transitions by the recharging and electronic excitation processes is calculated. Comparison of the computed pumping velocity with the measured velocity showed that in continuous operation the principal contribution to the creation of the population inversion at the energy levels of the selenium ion is made by the recharging. Authors' abstract

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USSR

UDC 621.762.2:669.22

3

CHIZHIK, S. P., SHTAYNBERG, A. N., KAGAN, N. M., KHASIN, E. I., SHELEST, A. YE.,
DMITRIYENKO, V. YE., and LAYNER, D. I.

"Method of Producing Silver Granules"

Translation: An alloy containing up to 50% Ag, the rest Al, is rolled into
strip and treated in alkali. In order to produce granules with up to 0.5%
Al content, the initial alloy is rolled into strip up to 0.5-5 mm in thick-
ness, and before alkali treatment is heated to 540-560°, held for 1.5 hr in
an inert atmosphere until a solid solution of Ag in Al forms, and is hardened.

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USSR

FALALEYEVA, Z. S., SHELEST, A. YE.

UDC 621.385.032.24

"Method of Evaluation of Durability of Multi--Cross Piece Grid of Molybdenum Wire"

V sb. Plastich. deformatsiya tugoplavk. met. i spets. splavov (Plastic Flow of Refractory Metals and Special Alloys--Collection of Works), Moscow, "Nauka," 1970, pp 22-25 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A98)

Translation: Multi-cross piece grids of the "stocking" type for electron tubes are produced from small-diameter molybdenum wire, direct determination of the durability characteristics of which is very difficult. In addition, in the process of manufacture of the grid cross piece and winding of the wire, various technological operations (heat treatment, deposition of coating, and soldering) are undergone, which effect the character of the finished grids. In order to evaluate the quality of grids of the "stocking" type, a method is proposed for checking them on a micromachine by bending between two mandrels. A description is given of the behavior of the grid during the recommended test method, and the character of the deformation of the individual components for construction of the grid is analyzed. Formulas are derived for determining the breaking force relative to one cross piece of the load corresponding to the start of breakdown of the grid and which is recorded at the testing machine. In the Novosibirsk Electrovacuum Institute,

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USSR

FALALEYEVA, Z. S., SHELEST, A. YE, Plastich. deformatsiya tugoplavk. met. i spets. splavov, 1970, pp 22-25 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A98)

tests were conducted by the proposed method of finished grids of the "stocking" type, the results of which conformed well with the results of tests on the durability during stretching of individual wires. 1 ill. 2 ref. Summary.

·USSR

UDC: 629.78.002

GOLEGO, N. L., SHELEST, B. P.

"On the Part Played by Solid Lubricant Coatings in the Formation of Processes Accompanying Contact Vibration Displacements in a Vacuum"

Sb. nauch. tr. Kiyev. in-t inzh. grazhd. aviatsii (Collected Scientific Works of the Kiev Institute of Civil Aviation Engineers), 1970, vyp. 3, pp 39-43 (from RZh-Raketostroyeniye, No 7, Jul 71, Abstract No 7.41.226)

Translation: The paper deals with problems in the use of solid lubricant coatings containing molybdenum disulfide, WS_2, WSe_2, WTe_2, graphite and other materials with a laminar structure for reducing friction and cutting down the damage to contacting surfaces when parts operate in a vacuum. In addition to materials with a laminar structure, polymer materials -- polyfluoroethylene, textolite, polyethylene, polyamides, etc. -- are used as solid lubricants. The comparatively low sliding rates and the resultant low friction temperature of polymer coatings mean that these materials can be used for reducing friction and cutting down the damage to contacting surfaces operating in a deep vacuum in the presence of vibration displace-

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GOLEGO, N. L., SHELEST, B. P., Sb. nauch. tr. Kiyev. in-t inzh. grazhd. aviatsii, 1970, vyp. 3, pp 39-43

ments. This research was devoted to the investigation of damageability of friction surfaces covered with solid laminar and polymer materials under conditions of contact vibration displacement. Polyfluorethylene coatings were chosen for studying the effect of polymer coatings on friction processes accompanying vibration displacements in a vacuum. These coatings were tested with a displacement of 500 μ and a frequency of 60 Hz in a vacuum of 10^{-5} mm Hg in the pressure range of 10-150 kg/cm^2. The studies showed that when polyfluoroethylene coatings are used on the contacting specimens, a thin, easily sliding protective layer is formed from the coating material, which prevents accidental sticking, destruction or change of the structure of the coating or the contacting surface of steel speci-mens. In the study of a molybdenum disulfide coating, it was found that this coating ensures optimum characteristics of the processes in the sur-face layers of the materials without seizing or destruction under vacuum and vibration displacement conditions throughout the entire pressure range. The microhardness of a molybdenum disulfide layer does not change after testing, and is in the range Hμ = 170-190 kg/cm^2. Thus the described coatings can provide excellent working capacity of machine elements under deep vacuum conditions. Two illustrations, one table, bibliography of eight titles. T. A. Ye.

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USSR

UDC 669.285'27:620.17

PAVLOV, I. M., FALALEYEVA, Z. S., MAKUNIN, M. S., and SHELEST, G. Ye.,
Institute of Metallurgy, Academy of Sciences USSR

"Effect of Tungsten on Structure and Properties of Electron-Beam-Melted Molybdenum"

Translation of Abstract: The authors investigated vacuum-melted Mo with 0.7-10% W. Ingots were processed by extrusion through an eyelet. The microhardness of as-cast and as-deformed alloys was determined. The mechanical properties of alloys (short-term fracture) were determined at 500, 600, 700, and 1000°. The minimum microhardness for cast alloys is obtained with 0.7-2.0% W. To judge by microhardness, all melts after extrusion were more homogeneous than as-cast. Softening of the investigated alloys occurs in the 700-1000° range. The optimum combination of strength and plastic properties at room temperature is observed in the alloy with 2% W. Three illustrations. Bibliography with 12 titles.
1/1

USSR

MOLCHAN, V. A., SHELEST, V. A., ASTAKHOV, V. I.

"Some Problems of Automation of Composition of a Class Schedule in a University Using the Minsk-22 Computer, with Kiev Institute of Petrochemistry as an Example"

Translation: An actual problem of introduction of a method of automation of the process of composition of a class schedule for the Kiev Institute of Petrochemistry is studied, with the task of assuring timely scheduling. A mathematical formulation of the problem of composition of a semester schedule is presented for the statement used in most universities.

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USSR

UDC 632.954:631.461

BEZUGLOV, V. G., MINENKO, A. K., and SHELESTOV, YE. P., Scientific Research Institute of the Agriculture of Central Regions of Non-Chernozem Zone

"The Effect of Dicamba, Tordon 22K, and Lumetone on the Weeds and Soil Micro-flora"

Abstract: The effect of herbicides on the soil microflora depends to a large extent on the quantity of rainfall prior to the introduction of the agents. With excessive rainfall (150% of the normal fallout) the herbicides stimulated development of microorganisms, while with rain defficiency -- 80% of the normal level -- they depressed them somewhat as shown by a decreased number of micro-organisms requiring mineral nitrogen, nitrificators and denitrificators. In a very dry year (1971) tordon 22K (0.07 kg per hectare) was the most active agent against most of the physiological microorganisms; it weakened the nitri-fication activity of the soil and development of bacteria participating in phosphorus mineralization. Dicamba (0.12 kg per hectare) appeared to be non-toxic to most of soil microorganisms, but regardless of climatic conditions inhibited somewhat the nitrification process. In the lumetone treated soil (4.0 kg per hectare) after the harvest of barley, the number of fungi was lowered slightly.

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USSR

UDC: [621.372.4+621.322.51]029.64

FURSAYEV, M. A., SHELIKHOV, G. M.

"Accounting for the Effect Which the Cover on the Rods of a Ladder-Type Delay System has on its Dispersion Properties"

V sb. Voor. elektron. tekhniki(Problems of Electronic Technology--collection of works), Saratov, 1970, pp 74-79 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B117)

Translation: The authors consider the change in the dispersion properties of a ladder-type delay system with double straps in the middle plane when the rods of the system are enclosed in rectangular covers used to increase the effectiveness of electron interaction and to improve heat dissipation. The analysis is based on use of an equivalent circuit in the form of a cascade-connected two-terminal pair network corresponding to the strap section, and a single-terminal pair corresponding to the conductivity of the resonator. Relationships are derived for calculating a ladder-type system with a cover. A procedure is described for experimental verification with the aid of an electrolytic bath. Three illustrations, one table, bibliography of eight titles. N. S.

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SHELIMOVA, L. Ye.

Chemistry

PHASE DIAGRAMS OF SEMICONDUCTOR SYSTEMS

(Symposium in Moscow)

The Fifth Symposium on Phase Diagrams of Semiconductor Systems, organized jointly with the Institute of New Chemical Problems of the AS USSR, was held on 13-15 September 1971 in the work of the symposium were about 100 persons from 30 scientific organizations of many cities of the Soviet Union. Forty-five reports were presented, devoted to investigation of P-T-X diagrams and questions in the study of the nature of crystal lattice defects and their influence on the properties of semiconductor compounds.

The symposium demonstrated the growing interest of scientists in the physics and chemistry of non-stoichiometric semiconductor compounds, as on the solution of those problems will to a great extent depend the obtaining of materials with controllable energetic properties necessary both for practical use in semiconductor instruments and for fruitful scientific investigation.

In the reports considerable attention was given to the complex question of determination of the extent of narrow region of homogeneity of semiconductor compounds which cannot be detected by ordinary methods of analytical chemistry and metallography. Most studied semiconductor compounds, with a narrow region of homogeneity, the investigation usually is conducted by the method of "frozen equilibria", which amounts to determination of the concentration of current carriers in samples brought into equilibrium at high temperatures and cooled at the same rate to room temperature. However, the method of "frozen equilibria"

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NOVIKOVA, S. I., SHELIMOVA, L. Ye., ABRIKOSOV, N. Kh., YEVSEYEV, B. A.,
Institute of Metallurgy imeni A. A. Baykov, Moscow

"Investigation of the Phase Transition of Germanium Telluride"

Abstract: The article is a continuation of previous work (Novikova et
al., Fizika Tverdogo Tela, Vol 12, 1970, p 3623) in the investigation of
germanium telluride in the region of the transition from the low-temperature
rhombohedral lattice (α-GeTe) to the face-centered cubic type (β-GeTe).
The measurements were made on a high-temperature quartz dilatometer with
a sensitivity to elongation of 10^{-6} cm. Measurements in the phase tran-
sition region were made every 0.1°C with temperature variation of no more
than 0.03°C. An irregularly shaped specimen was studied parallel and per-
pendicular to axis [111]. A single crystal grown from a 50:50 (atomic)
melt of germanium and tellurium was used as the specimen. Curves for the
variation with temperature of the linear coefficient of thermal expansion show
that the phase transition takes place at 626°K when the temperature is

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increased and at $619^{\circ}K$ as the temperature falls. In contrast to the previously studied specimen, the results of this work showed a negative coefficient throughout the entire temperature range, with a more gradual increase in absolute value near the transition point instead of an abrupt change from positive to negative values. Measurements of the variation with temperature of the relative change in volume showed that this parameter at the phase transition is extremely sensitive to specimen composition. In the first specimen (studied in the previous paper with 50.6 atomic percent tellurium) transition takes place with an increase in volume, while in the second specimen (50 atomic percent tellurium) the volume decreases at the transition point. This indicates that there should be a composition somewhere between these two specimens where there is no change in volume at the transition point. These results are used to explain some discrepancies in the literature. Two figures, bibliography of four titles.

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USSR

SHELKOV, B. A., Deputy Chairman, Executive Committee, Moscow City Council of
Workers' Deputies

"The Noise Level Will be Reduced"

Moscow, Zdorov'ye, No 7, Jul 70, pp 1-2

Translation: "I am a citizen of Moscow, and live on Sadovoye Circle. It is very
noisy. Is there any hope that there will be less roaring and crashing in the
city? What is being done in the Moscow City Council of Workers' Deputies about
this?" I. Petryayev. The editors receive many similar letters. We turned to
Boris Alekseyevich Shelkov, deputy chairman of the executive committee of the
Moscow City Council of Workers' Deputies, who headed the city commission on noise
control, and asked him to answer certain questions which especially agitate read-
ers of our magazine. The questions and answers are given below. What steps are
being taken to reduce the noise made by city transport? The Moscow city committee
of the party and the executive committee of the Moscow Council attach great im-
portance to the problem of reducing noise in the city, for it relates directly to
preserving people's health and improving their living conditions. In particular,
steps are being taken to reduce the noise made by transport. In recent years,
the main routes of the capital have been rebuilt and transport bypasses have been
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SHELKOV, B. A., Zdorov'ye, No 7, Jul 70, pp 1-2

constructed. On Sadovoye Circle, on Mir, Lenin, Kutuzov, Komsomol, and Leningrad
Prospects, and on the Entuziastov, Warsaw, and other highways, and elsewhere,
traffic lights create a "green wave." At the Serpukhov Gate, transport movements
are subject to automated remote control. All of this ensures even vehicle traffic,
spares drivers from frequent stopping and starting of engines, and, in the last
analysis, will aid in further reducing noise. In the central part of the city, in
the last 2 years alone, 7 km of trolley lines have been taken up. Noise is con-
siderably reduced by the fact that 90% of the rails have welded joints. Throughout
the city, an improved network design, which reduces the noise that accompanies
trolleys and streetcars, has now been introduced. Old cars and vehicles are
gradually being replaced by new ones, with improved noise characteristics. The
executive committee of the Moscow Council has obligated enterprises and organiza-
tions which have means of transport not to allow vehicles which are technically
faulty on the roads and to direct serious attention to eliminating the increased
noise which they create. Appropriate training of engineering-technical personnel
is beginning at motor vehicle pools, fleets, depots, and at auto repair shops.
Railroad transport troubles the citizens of Moscow a great deal. In the coming
years it is planned to reroute a maximum amount of transit cargo flow to the Great
Circle of the Moscow Railroad Center, which passes around the edge of the city.
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Within 3 years, the cargo stations located near large residential areas will be
equipped with two-way radio communication with shunting locomotives, and diesel
cranes will be replaced by low-noise electric ones. This modernization is already
underway. In the coming years, those citizens of Moscow who live on main lines
will hear less of the irritating click of railroad car wheels; the length of joint-
less track will increase. What does the commission consider most important for
further reducing noise in the city? In November of last year, the executive com-
mittee of the Moscow Council passed a resolution "On Measures to Reduce Noise
Levels in the City of Moscow." It defines the main directions in which the attack
on noise in the capital is now unfolding in concrete and detailed terms. Moscow
urban planners have been asked to work out, in the coming 2 years, experimental
designs of noise-protection devices on the main routes which have especially in-
tensive transport traffic. Designs will also be worked out to ensure a reduction
in the noise which is created by various types of equipment installed in residen-
tial buildings, stores, municipal-domestic enterprises, and public catering enter-
prises. The Moscow noise map, which will give a clear and precise picture of the
noise background of the city, is being completed. Planning organizations have
been assigned to work out measures to limit penetration of noise from subway lines
and open substations of the Moscow Power System into residential buildings. The

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executive committee of the Moscow Council has asked the State Committee on Stand-
ards, Measures, and Measuring Instruments of the Council of Ministers USSR to
include permissible noise levels for various types of equipment, means of trans-
port, and domestic devices in the All-Union State Standards. While planning quiet
for tomorrow, we are not isolating ourselves from today's affairs. Let us look at
night delivery of products to stores. In those places where stores occupy the
first floors of residential buildings, a dilemma inevitably arises between the
desire for quiet and the necessity of an uninterrupted supply of fresh bread, milk,
and other goods. Members of the commission reviewed this entire set of mutually
related problems. Unfortunately, at the present time it is not possible to fully
stop night delivery of products. But trade organizations will deliver an increas-
ing volume of goods in containers, without noisy packing. Although this is only
half a measure, it will alleviate the situation somewhat. The executive committee
of the Moscow Council has demanded that night operation of compressors, excavators,
and bulldozers at construction sites be restricted. Enterprises which use loud-
speakers for production or other purposes must ensure that they cannot be heard
beyond the service area. In recent years, a large number of industrial enter-
prises, workshops, and motor pools which created increased noise have been moved
out of the residential areas of the city. Work to reduce noise which disturbs

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residents of nearby buildings is now underway at more than 100 plants and factor-
ies. A check showed that such plants as the repair-bearing plant in Dzerzhin-
skiy Rayon, the Plant imeni Vladimir Il'yich in Moskvoretskiy Rayon, the Iron
Foundry imeni Voykov in Leningrad Rayon, the Moscow Food Combine, and others can
now live at peace with the citizens of Moscow. There are no more complaints.
In carrying out the decision of the Moscow Council executive committee, the Main
Moscow Housing Administration became seriously occupied with the problem of noise
within buildings. Each year, work to provide soundproofing or to remove pumping
installations and other equipment located there is carried out in more than 300
buildings. The Liftremont Trust, using a noise-measuring apparatus, repairs and
muffles elevators which still, for the most part, arouse entirely justifiable com-
plaints. In the battle against noise, the public, employees of housing operations
offices, and organs of the militia must become more actively involved. What pro-
hibitions have been introduced to preserve quiet? After 11 p.m., singing or the
playing of musical instruments or loud transistor radios are prohibited on the
streets and in the yards of residential buildings. Radios, phonographs, and tape
recorders cannot be set on balconies or in open windows. The Moscow Council
executive committee has asked the editorial office of Moscow Radio and the Central
Television Studio to remind listeners and viewers after 10 p.m. that the level of
noise-producing devices must be lowered. Unfortunately, this request has not yet
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SHELKOV, B. A., Zdorov'ye, No 7, Jul 70, pp 1-2

been fulfilled. In recreational parks radios should be turned down so as not to
carry to surrounding areas. The struggle against noise in the city is the com-
mon work of all its residents, public organizations, and administrative organs.
From the editors: Over the course of several years, the journal Zdorov'ye has
systematically published materials raising problems of the struggle against domes-
tic and industrial noise under the title, "Planned Silence." At the initiative of
the editors, Councils of Ministers of the union republics have created authorita-
tive interdepartmental commissions which are charged with coordinating all efforts
in this direction. The editors acquainted themselves with commission activity in
the Azerbaydzhan SSR, Kirgiz SSR, Tadzhik SSR, Turkmen SSR, and Uzbek SSR, and our
readers have been informed of this in the pages of the magazine. In the future,
we intend to continue to inform our readers of progress in the attack on noise, to
relate the best experience in this work, and to reveal weaknesses.

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USSR $\mathcal{S}$ UDC: 621.3.018.12:621.375.4

SHELKOV, S. P.

"Amplitude-Dependent Phase Displacements and Reduction of These Displacements in Transistorized Amplifiers"

Tr. Tomskogo in-ta radioelektron. i elektron. tekhn. (Works of the Tomsk Institute of Radio Electronics and Electronic Technology), 1970, 16, pp 71-76 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D104)

Translation: The author considers the phase displacements which arise with relatively high input signals due to nonlinearity of transistors. In this regard, the high-frequency parameters of transistors are analyzed as a function of the input signal amplitude. It is shown that amplitude-dependent phase displacements can be compensated in a common-emitter circuit. Bibliography of seven titles. N. S.

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USSR

UDC: 621.3.018.12:621.378:517.27

SHELKOV, S. P.

"Effect Which Scatter and Instability of the Parameters of Amplifier Elements Have on Phase-Frequency Characteristics"

Tr. Tomskogo in-ta radioelektron. i elektron. tekhn. (Works of the Tomsk Institute of Radio Electronics and Electronic Technology), 1970, 16, pp 77-83 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D103)

Translation: A probabilistic method of analysis is used to determine the parameters of amplifier elements which minimize the phase instability of the individual stages and of the amplifier as a whole. Bibliography of five titles. N. S.

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USSR

UDC 621.357.8:669.794(088.8)

TEREKHOVA, V. F., KULAKOV, Yu. A., SAVITSKIY, Ye. M., SHELKOVA, I. G.

"Method of Electrolytic Polishing of Rare Earth Metals and Their Alloys"

USSR Author's Certificate No 305203, Filed 27/01/70, Published 13/07/71, (Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No 2 L248 P from the Resume).

Translation: A method of electrolytic polishing of rare earth metals and their alloys in an electrolyte containing HNO_3 and glycerin, differing in that in order to improve the quality of polishing of yttrium and its alloys, oxalic acid is introduced to the electrolyte in the following ratio of components, wt.%: HNO_3 -- 40-50, oxalic acid 20-40, glycerin -- remainder, and the process is conducted at 20°C and $D = 1.5-3$ a/cm^2.

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USSR   UDC 546.641

SAVITSKIY, Ye. M., TEREKHOVA, V. F., and SHELKOVA, I. G.

"Study of the Fine Structure of Yttrium Single Crystals"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory
and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 70-73

Translation: A method is developed for polishing and etching yttrium single
crystals. The fine structure on the base plane, on the plane of the second-
order prism, and on the intermediate planes is produced. Data of structural
and X-ray analysis attest to a rather high degree of perfection of the single
crystals produced in the laboratory. 4 Figures; 4 Bibliographic References.

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Acc. Nr:
APC036812

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i
Immunobiologii, 1970, Nr 1, pp 31-35

DYNAMICS OF DISCHARGE OF TYPHOID BACILLI IN CHRONIC CARRIERS IN DIFFERENT SEASONS OF THE YEAR AND ITS SIGNIFICANCE IN THE EPIDE-MIOLOGY OF THE DISEASE

S. R. Khomik, Ya. M. Ferdinand, G. I. Skirda, N. S. Kovaleva, N. S. Solouev, K. I. Popova, I. P. Timoshkina, M. M. Shelkovich, B. A. Plydro, Apeykina, M. D.

The feces of forty five carriers of typhoid bacillus were examined in different seasons of the year. The greatest number of bacilli was discharged from January to May (0.1 to 960 million per gm of feces were the number of bacilli found throughout the year). Therefore, the authors recommend examination of carriers to be carried out mainly during the first half of the year.

There was established no association between the seasonal distribution of the incidence of the disease and the intensity of bacterial discharge.

D. W.

USSR

UDC: 621.317.73(088.8)

TIKHOMIROV, V. P., LEVINSON, B. A., KISELEV, I. B., SHELKOVNIKOV, A. A., and DVORYANCHIKOV, I. A.

"Automatic Device for Measuring the Input Resistance of a Long Line"

/N.-i. in-t teploenerg. priborostr./ Avt. sv. USSR (Scientific Research Institute of Thermal Energy and Instrument Manufacture, Author's Certificate USSR) Class 21a⁴, 74, (G01 r 27/04), No. 270842, Application 21.08.68, Publication 20.08.70 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A388P)

Translation: An automatic device is proposed for measuring the input resistance of a long line, containing a UHF oscillator, a modulator, a detector, an amplifier, a phase-sensitive rectifier, and a compensating parametric controlling element. The proposed measuring device is distinguished in that, with the purpose of improving the accuracy of measurement, a parametric controlling element is connected in series with the measured section of the line. E. L.

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UNCLASSIFIED   PROCESSING DATE--04DEC70

TITLE--EFFECT OF CONTINUOUS NEUTRON IRRADIATION ON THE STRUCTURE AND
PROPERTIES OF MAGNETIC ALLOYS OF THE YUNDK ,IRON NICKEL ALUMINIUM
AUTHOR-(05)-GRINBLAT, YU.N., LYASHCHENKO, B.G., ROGOZYANOV, A.YA.,
SAKATUNOV, YU.S., SHELKOVNIKOVA, G.YE.
COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970, 29, (2), 252-255

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--NEUTRON IRRADIATION, PERMANENT MAGNET MATERIAL, MAGNETIC
PROPERTY, RESISTIVITY, ALLOY STRUCTURE, COBALT IRON ALLOY, IRON NICKEL
ALLOY, ALUMINUM CONTAINING ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1676   STEP NO--UR/0126/70/029/002/0252/0255

CIRC ACCESSION NO--AP0129046
                    UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0129046

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF CONTINUOUS NEUTRON IRRADIATION (10 PRIME21 N-CM PRIME2) AT TEMP. UP TO 630DEGREESC ON CAST AND SINTERED ALLOYS OF THE YUNOK TYPE (FE,NI,AL AND FE,NI,AL,CO) USED FOR PERMANENT MAGNETS WAS STUDIED. BECAUSE OF THE RADIATION, SPECIAL METHODS WERE REQUIRED FOR MEASURING THE MAGNETIC PROPERTIES AND ELECTRICAL RESISTANCE AND FOR STUDYING THE MATERIAL IN THE OPTICAL AND ELECTRON MICROSCOPES. NO CHANGES IN THE STRUCTURE OR PROPERTIES ATTRIBUTABLE TO THE IRRADIATION WERE OBSERVED; CHANGES OCCURRING ABOVE 600DEGREESC WERE DUE SOLELY TO THE ORDINARY EFFECTS OF HEAT TREATMENT.

UNCLASSIFIED

USSR   UDC: 624.391.883.2

SHELKUNOV, K. N., KAZOVSKIY, L. G.

"Concerning the Invariance of Potential Interference Immunity
With Respect to Type of Modulation for Optical Communications
Channels"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t
svyazi, Vyp. 1 (Materials of the Scientific and Technical Con-
ference of Leningrad Electrical Engineering Institute of Com-
munications--collection of works, No 1), Leningrad, 1971, pp
95-99 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A31)

Translation: Potential interference immunity for quantum noise
with various types of optical signal modulation is considered.
It is shown that in a binary channel, variation in the shape
of the optical pulse emission envelope and the use of signals
of equal energies with modulation of the non-energy parameters
(polarization, frequency, phase) do not increase interference
immunity over the simplest AM case (telegraphy with a passive
pause). Resumé.

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TITLE--INFRARED SPECTROSCOPIC STUDY OF DEHYDROCHLORINATED POLYIVINYL
   CHLORIDE) FIBERS AND FILMS AND THEIR MODIFICATIONS -U-
AUTHOR-(05)-GRACHEV, V.I., BEZPROZYANNYKH, A.V., SHELKUNOV, V.G.,
   KLIMENKO, I.B., KIRILENKO, YU.K.
COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3) 633-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--IR SPECTRUM, POLYVINYL CHLORIDE FIBER, TEMPERATURE DEPENDENCE,
   CATALYST ACTIVITY, CHLORINATION, DEHYDROGENATION, BROMINATION, THIOUREA,
   POLYMER FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0305   STEP NO--UR/0080/70/043/003/0633/0638

CIRC ACCESSION NO--AP0111499
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0111499
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE EFFECTS OF MEDIUM, CATALYST,
  AND TEMP. OF DEHYDROCHLORINATION OF POLY(VINYL CHLORIDE) FIBERS AND
  FILMS ON THEIR IR SPECTRA WAS STUDIED. DEHYDROCHLORINATION INCREASES
  WITH TEMP. (110-150DEGRRES) AND TIME AS SHOWN BY INCREASED INTENSITY OF
  THE BANDS AT 1680-1720 AND 1605 CM PRIME NEGATIVE1 (UNSATD. C-O AND C-C
  BONDS). TEH BAND INTENSITY AT 3028 CM PRIME NEGATIVE1 (END VINYL
  GROUPS) ALSO INCREASES WITH TEMP. THE PRESENCE OF A CATALYST INCREASES
  THE RATE, DIAZOAMINOBENZENE INCREASING THE RATE MORE THAN
  ALPHA,NAPHTHYLAMINE. USING DIAZOAMINOBENZENE, ALPHA AND BETA
  UNSUBSTITUTED ALDEHYDE GROUPS ARE FORMED (ABSORPTION AT 1690 CM PRIME
  NEGATIVE1). DEHYDROCHLORINATION PROCEEDS MORE RAPIDLY IN AIR THAN IN
  VACUUM. ALSO, THE TREATED PRODUCT WAS BROMINATED WITH 3PERCENT AQ. BR
  AT 80DEGREES FOR 2 HR TO GIVE BRCHCH:CHCHBR GROUPS.   SUBSEQUENT
  TREATMENT WITH THIOUREA AT 100-2DEGREES SHOWS THE PRESENCE OF THIOAMIDE
  AND THIOURONIUM GROUPS, WHICH ARE REMOVED BY TREATMENT WITH 2N NAOH, IN
  THE SPECTRUM.

UNCLASSIFIED