

USSR

FOMENKOV, V. N., STREKALOVA, E. Ye., KATSOVA, L. D., CHIRKOVA, Ye. M.,
SAL'NIKOVA, L. S., SILANT'YEVA, I. V., YEFIMENKO, L. P., KULAKOV, A. Ye.

"Experimental Data on Adaptation and Its Limits in the Action of Poisons
Having a Mutagenic and Embryotropic Action"

Sb. Farmakol, Khimioterapevt. sredstva. Toksikol. Probl. toksikol.
(Pharmacology of Chemically Therapeutic Substances. Toxicology. Problems
in Toxicology--Collected Works), T. 5 (Itogi nauki i tekhn. VINITI AN
SSSR - Results in Science and Technology of the All-Union Institute of
Scientific and Technical Information, Academy of Sciences, USSR), 1973,
pp 128-145) (from Referativnyy Zhurnal, 30F, Biologicheskaya Khimiya,
No 18, 25 September 1973, abstract No 1754)

Translation: The dependence of the development of a cytogenetic and embryo-
tropic effect on long-term exposure was studied in an example of the action
of different groups of chemicals: chlorine releasing substances, phenoxy-
acetic acid esters, triazines, carbamates, epoxy compounds, imines, and
others. The possibility of adaptation of animals to some substances that
cause pathological changes in offspring was demonstrated.

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- 48 -

FOMENKO, V.S.

MHD

JPRS 61609
20 March 1974

(9)

RESEARCH ON MATERIALS FOR THE MANUFACTURE OF OPEN-CYCLE MHD GENERATOR ELECTRODES

[Article by G. V. Samsonov, V. M. Stepiashv, G. G. Gnesin, V. S. Lomov, I. A. Podchernyayeva, M. K. Lapskov (Institute of Problems of Hydrodynamics, Academy of Sciences USSR), G. M. Shergelov, Yu. P. Kobzarev (Institute of Industrial Thermophysics, Academy of Sciences USSR), E. P. Stepanishin (Institute of Electrodynamics, Academy of Sciences USSR), Kiev, Izvestiya Akademii Nauk Ukrainskoye Materialy dlya MHD Otkrytoy Tsikla, Russian, 1971, pp 393-409]

Annotation

Presented in this paper are the results of testing of gas-permeable blum electrodes under model MHD conditions. The tests revealed that the erosion resistance of protected materials is increased by a factor of 80 to 100 while the current density is 2-3 A/cm² (in the distributed discharge mode) and up to 20 A/cm² in the arc mode.

The interaction between air plasma containing compounds of alkali metals as additive, and the surface of electrodes, protected by blowing and without protection, was investigated. The results of tests of electrodes made of nonporous polycrystalline silicon carbide, produced by the reaction sintering method, are presented in this work. The physical properties which govern the operational performance of the electrodes are analyzed. It is established that long-term operation of the electrodes does not result in change of the phase composition and properties of polycrystalline silicon carbide. Erosion and chemical destruction occurs only on the surface of electrodes.

The composition of the film formed on the surface of a silicon carbide electrode during operation in contact with plasma containing potassium additive is analyzed. It is shown that the continuously forming silicate film substantially increases the emissivity of silicon carbide.

The electrode of an MHD generator should satisfy two main requirements: a) resistance to the aggressive action of the plasma jet for a long

1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DETERMINATION OF ISOTOPE CONTENT OF EU AND IR BY USING THERMAL
NEUTRON METHOD -U-
AUTHOR--(04)-VASILYEV, S.S., VELYUS, L.M., KORZH, P.O., FOMENKO, V.T.
COUNTRY OF INFO--USSR
SOURCE--AT. ENERG. (USSR); 28: 65-7 (JAN 1970)
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--THERMAL NEUTRON, NEUTRON ABSORPTION, RADIATION INTENSITY,
EUROPIUM ISOTOPE, IRIDIUM ISOTOPE, QUANTITATIVE ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1979/1829 STEP NO--UR/0089/70/028/000/0065/0067
CIRC ACCESSION NO--AP0048132
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--A0048132
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A THERMAL NEUTRON ABSORPTION
METHOD WAS DEVELOPED FOR THE DETERMINATION OF EUROPIUM AND ITRIDIUM
ISOTOPES. GRAPHS FOR DETERMINING PRIME151 EU AND PRIME191 IR SHOW
RELATIVE INTENSITIES OF NEUTRON PASSAGE THROUGH THE SPECIMENS VS
ISOTOPIIC CONCENTRATION. THE ABSOLUTE STANDARD ERROR FOR DETERMINATION
OF PRIME151 EU WAS 0.22 AND 0.43PERCENT WITH ISOTOPE CONCENTRATIONS OF 0
TO 30 AND 30 TO 100PERCENT, RESPECTIVELY, AND FOR PRIME191 IR IT WAS
0.85PERCENT WITH CONCENTRATIONS OF 5.7 TO 100PERCENT. DURATION OF THE
ANALYSIS WAS 30 MIN.

UNCLASSIFIED

1/2 037 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--GUANOSINE NUCLEOTIDES IN THE BRAIN DURING NEUTRON IRRADIATION -U-
AUTHOR--(03)-FOMICHENKO, K.V., GAMEZO, N.V., SURIKOV, P.M.
COUNTRY OF INFO--USSR
SOURCE--VESTSI AKAD. NAVUK BELARUS. SSR, SER. BIYAL. NAVUK 1970, (1),
85-90
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--NEUTRON IRRADIATION, RADIATION BIOLOGIC EFFECT, BRAIN,
NUCLEOTIDE, ELECTROPHORESIS, THIN LAYER CHROMATOGRAPHY, RADIATION DOSAGE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0509 STEP NO--UR/0440/70/000/001/0085/0090
CIRC ACCESSION NO--AP0121183
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121183

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. USING HIGH VOLTAGE ELECTROPHORESIS AND THIN LAYER CHROMATOG., IT WAS FOUND THAT RAT BRAIN CONTENT OF GMP AND GDP DID NOT CHANGE 4 AND 12 HR AFTER IRRADN. WITH MEDIUM ENERGY NEUTRONS (13.5 RAD) BEING SLIGHTLY HIGHER (GMP) OR LOWER (GDP) THAN IN CONTROLS 8 HR AFTER IRRADN. THE GTP CONTENT WAS SIGNIFICANTLY LOWERED 8 HR AFTER IRRADN., SLIGHTLY AFTER 12 HR, AND UNCHANGED AFTER 4 HR. AT THE TIME OF HIGHEST EFFECT (8 HR) THE TOTAL CONTENT OF GUANOSINE PHOSPHATES WAS LOWER BY 29.1PERCENT THAN IN CONTROL ANIMALS.
FACILITY: INST. FIZIOL., MINSK, USSR.

UNCLASSIFIED

Am0023256

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4

Cherkasova, L. S.; Kukulyanskaya, M. F.; Mironova, T. M.; Novik, V. A.; Pikulev, A. I.; Iayts, M. Yu.; Fomichenko, V. G.; Fomichenko, K. V.

Role of Suprarenal Glands in Biochemical Shifts Under the Effect of Small Doses of Ionizing Radiation (Rol' nadpochechnikov v biokhlmicheskikh sdvigakh pri deystvii malykh doz ioniziruyushchey radiatsii) Minsk, Nauka i Tekhnika, 1969, 185 pp (SL:1575)

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2	General Biological Indices Characterizing the Reaction of the Organism to Adrenalectomy and Subsequent Irradiation (V. A. Novik)	31
3	Protein Fractions of Tissue in Adrenalectomy and Subsequent Irradiation (K. V. Fomichenko)	39
4	Carbohydrate-Energy Exchange in Adrenalectomy and Subsequent Irradiation (M. F. Kukulyanskaya, T. M. Mironova, V. G. Fomichenko)	59

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5	Oxidizing-Reducing Processes in Adrenalectomy and Subsequent Irradiation (M. Yu. Tayts)	94
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The monograph deals with contemporary radiobiology, role of the neuroendocrine system in formation and development of the radiation-biochemical effect. Given are literature data and results of experimental investigations of authors...

The book was written for physicians, biochemists, radiobiologists, radioendocrinologists and students.

19631747

USSR

UDC 541.124:541.6:547.1'118

KOSTYANOVSKIY, R. G., FOMICHEV, A. A., ZAGURSKAYA, L. M., and ZAKHAROV, K. S.,
Institute of Chemical Physics, Academy of Sciences, USSR

"The Nature of Lowering the Pyramidal Inversion Barrier of Phosphorus
in Acylphosphines"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 8, Aug 73,
pp 1915-1916

Abstract: High sensitivity of the pyramidal inversion to the type of sub-
stituent at the acyl group leads to the conclusion that the factor responsi-
ble for the lowering of the inversion barrier in acylphosphines is the
p- π -conjugation of the unshared electron pair of phosphorus with the
carbonyl group. The antiinductive substituents, activating the conjuga-
tion of the CO group with the electronic pair of the phosphorus facilitate
the inversion, while the mesomeric favoring ones counteract the inversion.

1/1

USSR

UDC: 621.378:550.145.18

DMITRIYEV, V. G., KUSHNIR, V. R., RUSTAMOV, S. R., FOMICHEV, A. A.

"Optimizing the Parameters of a Continuously Q-Switched Nd:YAG Laser With Nonlinear Crystal in the Cavity"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 111-112

Abstract: The paper gives the results of experiments on optimizing Nd:YAG laser parameters with conversion of emission to the second harmonic when a nonstoichiometric lithium metaniobate crystal is located inside the cavity. The laser operates in the quasicontinuous mode. So-called 100% conversion is attained when the average emission power on the fundamental harmonic is 310 mW. The peak powers on the fundamental and the second harmonic are 370 and 500 W respectively. The authors thank N. V. Shkunov for constructive criticism. Two illustrations, bibliography of eight titles.

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USSR

UDC 621.375.82

DMITRIYEV, V. G., KUSHNIR, V. R., RUSTAMOV, S. R., and FOMICHEV, A. A.

"Optimization of the Parameters of Alumino-Yttrium Garnet Lasers With Neodymium in a Quasi-Continuous Generation Mode With a Nonlinear Element Inside the Resonator"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2, Moscow, "Sov. radio," 1972, pp 111-112 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D908)

Translation: The results of experiments on the optimization of an alumino- yttrium garnet laser with Nd under transformation of its radiation to the second harmonic in a nonstoichiometric lithium metaniobate crystal which was placed inside the resonator are presented. The operating mode of the resonator was quasi-continuous. So-called 100% transformation was obtained for an average power of the basic radiation of 310 mw. The peak powers of the basic radiation in the harmonic were 370 and 500 w. 8 ref. Authors abstract.

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1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SHAPE OF POLAROGRAMS OF NICKEL ION DISCHARGE ON A PLATINUM
MICROELECTRODE IN A SODIUM SULFATE POTASSIUM CHLORIDE MOLTEN EUTECTIC
AUTHOR--(02)-CHOVNYK, N.G., FOMICHEV, A.M.
COUNTRY OF INFO--USSR
SOURCE--UKR. KHIM. ZH 1970, 36(1), 60-1
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, CHEMISTRY
TOPIC TAGS--NICKEL, SODIUM SULFATE, PLATINUM ELECTRODE, POLAROGRAPHY, ION,
EUTECTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1996 STEP NO--UR/0073/70/036/001/0060/0061
CIRC ACCESSION NO--AP0118955
UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0118955
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLAROGRAMS FOR THE DISCHARGE OF
NI AT 555DEGREES AT A PT MICROELECTRODE IN A NA SUB2 SO SUBR -KCL
EUTETIC ARE DESCRIBED BY THE ILKOVIC RELATION AND NOT THAT OF KOLTHOFF
AND LINGANE. FACILITY: KUIBYSHEV. AVIATS. INST., KUIB'YSHEV,
USSR.

UNCLASSIFIED

1/2 037 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--THE ANTIFRICTION PROPERTIES AND WEAR RESISTANCE OF THE HEAT
RESISTANT PLASTIC FENILON -U-
AUTHOR--(04)--TROFIMOVICH, A.N., PRIKUDKO, O.G., FOMICHEV, I.A.,
SOLODOVNIKOV, N.S.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, VESTNIK MASHINOSTROYENIYA, NO 2, 1970, PP 50-51
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--WEAR RESISTANCE, HEAT RESISTANCE, POLYAMIDE RESIN, FRICTION
TEST, HIGH TEMPERATURE EFFECT, MACHINE INDUSTRY/(U)FENILON POLYAMIDE
RESIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0889 STEP NO--UR/0122/70/000/002/0050/0051
CIRC ACCESSION NO--AP0113732
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NU--AP0113732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LOW HEAT RESISTANCE OF POLYMERS RESTRICTS THEIR APPLICATION AS ANTIFRICTION MATERIALS AT FRICTION NODES OF MACHINES. RECENTLY A NUMBER OF HEAT RESISTANT POLYMERS HAS BEEN DEVELOPED, WHICH RETAIN THEIR BASIC PROPERTIES AT 250-300DEGREESC AND HIGHER. AMONG SUCH MATERIALS ARE AROMATIC POLYAMIDES, A REPRESENTIVE OF WHICH IS FENILON, ITS VITRIFICATION TEMPERATURE IS 280DEGREESC. IT IS PROCESSES BY PRESSING INTO A PLASTIC WITH SUFFICIENTLY HIGH PHYSICAL AND MECHANICAL PROPERTIES. AN INVESTIGATION WAS MADE OF THE ANTIFRICTION PROPERTIES AND HEAT RESISTANCE OF FENILON UNDER CONDITIONS OF NORMAL AND INCREASED TEMPERATURES FOR VARIOUS FRICTION CONDITIONS IN ORDER TO DETERMINE THE POSSIBILITIES OF ITS APPLICATION IN FRICTION NODES OF MACHINES. FENILON MANIFESTED A COMPARATIVELY SAMLL AMOUNT OF WEAR UNDER TEMPERATURE CONDITIONS IN WHICH LESS HEAT RESISTANT POLYMER PLASTICS CANNOT FUNCTION. IN SPITE OF THE INCREASED WEAR WITH A HIGHER TEMPERATURE, THE SAMPLE REMAINED HARD, WITH NO SIGNS OF VOLUMETRIC DEFORMATION, OR OTHER SYMPTOMS OF HEAT DAMAGE. THE CONDUCTED TESTS INDICATE THAT FENILON CAN FIND APPLICATION AS A MATERIAL FOR FRICTION NODES OF HEAVILY LOADED MACHINES.

UNCLASSIFIED

USSR

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CIC 621.396.96:621.391.1(02)

LEONOV, A. I., ~~POKHOREN, K. I.~~

"Monopulse Radar"

Monoimpul'snaya radiolokatsiya (cf. English above), Moscow, "Sov. radio", 1970,
392 pp, ill. 1 r. 23 k. (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 1039 K)

Translation: The book deals with various problems of monopulse radar. Consideration is given to principles of design and basic functional elements of monopulse direction finding systems, and problems of precision and resolution are analyzed. Theoretical problems of computer simulation of monopulse systems are outlined, and the interference stability of monopulse direction finders is analyzed for various kinds of interference. Fields of application are described, and the basic tactical and technical characteristics of some monopulse radar sets of non-Soviet design are presented. The book is written for engineering and technical workers and upperclassmen in colleges and universities majoring in the field of radar technology. 166 illustrations, ten tables, bibliography of 134 titles. Resumé.

1/1

USSR

UDC: 532.517.4

FOMICHEV, M. S., Moscow

"Investigation of Kinematic and Dynamic Characteristics in the Wake Behind a Plate in an Unbounded Streamline Flow"

Moscow, Izv. AN SSSR: Energetika i Transport, No 4, Jul/Aug 72, pp 135-144

Abstract: The author investigates the principles which govern distribution of the hydrodynamic characteristics (kinematic -- K_{UV} , K_D , $K_{D'}$, $K_{D''}$ -- and dynamic -- K_{UV} , E' , S , ΔF) in a wake of developed turbulent flow behind a plate. The studies were done by the motion picture method on a visualized flow, by using capacitive pickups to measure the fluctuation of dynamic pressure, and by using a hot-wire anemometer to measure the velocity fluctuation. Dimensionless expressions are found for the relations between averaged and pulsation characteristics, as well as approximate computational formulas for describing the wake behind a plate in a real fluid flow. It was found that regardless of the complexity of the discrete vortex structure of motion of a real liquid, its velocity characteristics represented in the form of a Karman criterion are very stable with variation in transverse and longitudinal directions of the

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USSR

FOMICHEV, M. S., Izv. AN SSSR: Energetika i Transport, No 4, 1972, pp 135-144

wake which takes place along well defined regular curves. Analytical expressions which agree satisfactorily with experimental data were obtained for various sections of the wake by using the Froude number for describing translation motion, and by using the momentum criterion with regard to velocity fluctuation to describe translational-rotary motion. Dynamic pressure pulsation measurements in a water flow gave amplitude and frequency characteristics. By expressing these characteristics in terms of Euler and Strouhal numbers and comparing them with data on flow pulsation in a perturbed flow, it was shown how they conform to the same law of variation in a wake for air and water. Generalization of experimental data for flow of a real fluid gives engineering expressions for quantitative evaluation of the hydrodynamic characteristics of flow in the wake behind a plate: flow up to 20 times the characteristic dimension of the plate is described by an exponential law, while expressions are linear for flow at a distance between 20 and 60 times the characteristic dimension.

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F O M I C

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TECHNICAL TRANSLATION

1007 | ISTC-IT-23-2015-72

39 4/10/72

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

FOREIGN TITLE: PROBLEMY PEREDACII INFORMATSII LAZERNYI ZALUCHENNYE

AUTHOR: I. A. DERUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY
IHENI I. G. SCHECHENKO

Translated for FSIC by ACS1

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- 1/11/72 Page -

FOMICHEV, O. I.

UDC 532.78

INVESTIGATION OF DIRECTED CRYSTALLIZATION OF EUTECTIC ALLOYS

[Article by O.I. Fomichev, D.G. Sorachevskaya, I.M. Malchenko, Dnepropetrovsk State University, Department of Experimental Physics; Ordzhonikidze, Izvestiya VUZ: Inzhinernaia Metallurgiya, Russian, No 6, 1971, signed to Press 8 February 1971, pp 130-132]

Many investigators are concerned with studying the rules governing the formation of regular structures during directed crystallization of eutectic alloys [1-6]. This is because materials with an ordered filamentary (lamellar) structure possess anisotropic structure-sensitive properties and are finding wide-spread usage in various branches of contemporary technology. We know the following to be the basic conditions which permit obtaining a stable directed structure [2, 3, 5]: high purity of the original components, high temperature gradient in the liquid at the interface of the liquid and solid phases and a low crystallization rate. Nevertheless there are alloys which can not be directionally crystallized even with strict satisfaction of the above conditions [7-9]. Apparently there are factors that are as yet unknown which determine the formation of directed structures.

If we pay attention to the crystallographic orientation of the eutectic phases [2], we can then state that their conjunction is near the densest packing, which must give minimal fractures at the boundary of the contact and minimal increase in the total free energy of the two-phase aggregate. Consequently we can predict the possible crystallographic planes of conjunction and their number for both phases. Then to obtain a directed structure it is necessary that the number of possible planes of conjunction be minimal. In such cases after nucleation of the eutectic column, the growth will take place only in one direction since the others are energetically unjustified.

Similar conjunctions obviously are possible in systems which are formed either by strongly differing crystallographic phases or by highly asymmetrical phases or by phases with a hexagonal structure.

In the present paper we investigated the possibility of obtaining a directed eutectic structure in the systems Pb-Sn, Bi-Cd, Cd-Zn, and Bi-Sn. The directional hardening of alloys was done by the methods of

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4/11/72

FOMICHEV, O. I.

INVESTIGATION OF DIRECTED CRYSTALLIZATION OF EUTECTIC ALLOYS

[Article by O. I. Fomichev, D. G. Korzhichevskaya, I. H. Matichenko, Dnepropetrovsk State University, Department of Experimental Physics; Ordzhonikidze, Levantitsya Vozn. Ispytaniya, Metallurgiya, Russian, No 6, 1971, 41 found to press 8 February 1971, pp 130-132.]

JPM'S 55880
11/14/72
UDC 535.78

Many investigators are concerned with studying the rules governing the formation of regular structures during directed crystallization of eutectic alloys [1-6]. This is because materials with an ordered filamentary (lamellar) structure possess anisotropic structure-sensitive properties and are finding widespread usage in various branches of contemporary technology. We know the following to be the basic conditions which permit obtaining a stable directed structure [2, 3, 5]: high purity of the original components, high temperature gradient in the liquid at the interface of the liquid and solid phases and a low crystallization rate. Nevertheless there are alloys which can not be directionally crystallized even with strict satisfaction of the above conditions [7-9]. Apparently there are factors that are as yet unknown which determine the formation of directed structures.

If we pay attention to the crystallographic orientation of the eutectic phases [2], we can then state that their conjunction is near the densest packing, which must give minimal fractures at the boundary of the contact and minimal increase in the total free energy of the two-phase aggregate. Consequently we can predict the possible crystallographic planes of conjunction and their number for both phases. Then to obtain a directed structure it is necessary that the number of possible planes of conjunction be minimal. In such case after nucleation of the eutectic column, the growth will take place only in one direction since the others are energetically unjustified.

Similar conjunctions obviously are possible in systems which are formed either by strongly differing crystallographic phases or by highly symmetrical phases or by phases with a hexagonal structure.

In the present paper we investigated the possibility of obtaining a directed eutectic structure in the systems Pb-Sn, Bi-Cd, Cu-Zn, and Bi-Sn. The directional hardening of alloys was done by the methods of

1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--FINE STRUCTURE OF BARIUM TITANATE SINGLE CRYSTALS -U-
AUTHOR--(04)-GUYENOK, YE.P., ZABARA, YU.V., KUDZIN, A.YU., FOMICHEV, O.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(3) 956-8
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--BARIUM TITANATE, SINGLE CRYSTAL, CRYSTAL LATTICE DEFECT,
CRYSTAL LATTICE DISLOCATION, ETCHED CRYSTAL, CRYSTAL STRUCTURE ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0584 STEP NO--UR/0181/70/012/003/0956/0958
CIRC ACCESSION NO--AP0105567
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105567

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FINE STRUCTURE OF BATIO SUB3 CRYSTALS GROWN FROM SOLN. IN A KF MELT WAS INVESTIGATED. DEFECTS AND DISLOCATIONS WERE DEVELOPED BY SELECTIVE ETCHING (ORTHOPHOSPHORIC ACID AT 130-150DEGREES). CRYSTALS WERE CUT ALONG THE (100) OR (110) DIRECTION IN THE (001) OR (100) PLANE. ON THE (100) PLANE SQUARE ETCHING FIGURES WERE OBSD., AND ON THE (110) PLANES, ELONGATED FIGURES. THE ETCHING FIGURES WERE DISTRIBUTED NONUNIFORMLY ON THE SURFACE. THEIR CONC. WAS HIGHER IN THE REGION OF THE CRYSTAL THE FARTHER AWAY THEY WERE FROM THE POINT OF THE BEGINNING OF CRYSTAL GROWTH. SOMETIMES, THEY OCCURRED ALONG THE LINES OF THE SEPN. OF LAYERS. THE ETCHING FIGURES ARE RELATED TO THE STRUCTURAL INHOMOGENEITY OF THE BATIO SUB3 CRYSTALS, AND MOST PROBABLY APPEAR ON THE LINEAR DEFECTS OF THE DISLOCATION TYPE.

UNCLASSIFIED

I/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SURFACE GRAPHITIZATION OF CEMENTITE -U-
AUTHOR--(03)-SALLI, I.V., FOMICHEV, O.I., POLYUSHKIN, N.I.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., ^FCHERN. MET. 1970, 13(4), 155-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--GRAPHITIZATION, CAST IRON, X RAY DIFFRACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/1220 STEP NO--UR/0148/70/013/004/0155/0157
CIRC ACCESSION NO--AT0133217
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0133217

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STABILITY OF CEMENTITE WAS STUDIED. SAMPLES OF HYPEREUTECTIC CAST IRON WERE SUBJECTED TO QUENCHING FROM HIGH TEMPS., WHEREUPON THEY WERE ISOTHERMALLY ANNEALED IN VACUUM AT TEMPS. BELOW THE QUENCHING TEMP. AFTER ISOTHERMAL HOLDING, PPTS. OF THE FE SOLID SOLN. APPEARED ON THE POLISHED SURFACE OF THE CEMENTITE CRYSTALS, THE AMT. OF WHICH DEPENDED ON THE PRIOR QUENCHING TEMP. WITH DECREASING DIFFERENCE BETWEEN THE QUENCHING TEMP. AND THE ISOTHERMAL HOLDING TEMP. THE AMT. OF THE PPTS. ON THE SURFACE OF THE CEMENTITE CRYSTALS DECREASED. X RAY DIFFRACTION INVESTIGATION OF SAMPLES OF HYPEREUTECTIC CAST IRON CONTG. C 5, MN 3.5, AND CR 0.5PERCENT WAS ALSO PERFORMED. THE CAST IRON SAMPLES WERE HELD AT 873-1273DEGREE SK, WHEREUPON THEY WERE QUENCHED IN WATER. THE POLISHED QUENCHED SAMPLES WERE INVESTIGATED BY THE RECIPROCAL LATTICE TECHNIQUE. ON THE BASIS OF THE INVESTIGATIONS PERFORMED, DIRECT GRAPHITIZATION OF CEMENTITE IS POSSIBLE. FACILITY: DNEPROPETROVSK. GOS. UNIV., DNEPROPETROVSK, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CHARACTERISTICS OF THE CRYSTALLIZATION OF EUTECTICS FOR SLIGHT
SUPERCOOLINGS -U-
AUTHOR--(04)-SALLI, I.V., FOMICHEV, O.I., SAKHNO, G.A., KHABLO, T.V.
COUNTRY OF INFO--USSR
SOURCE--IZVEST. V.U.Z. TSVETNAYA MET., 1970, (2), 126-130.
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--LEAD ALLOY, TIN ALLOY, CRYSTALLIZATION, EUTECTIC MIXTURE,
SUPERCOOLING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1502 STEP NO--UR/0149/70/000/002/0126/0130
CIRC ACCESSION NO--AT0130431
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0130431

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHYSICAL NATURE OF THE PROCESSES UNDERLYING THE FORMATION AND SOLIDIFICATION OF EUTECTICS IN VARIOUS ALLOYS (E.G. PB, SN) IS DISCUSSED IN THE LIGHT OF THE LATEST THEORETICAL AND EXPERIMENTAL DATA, WITH SPECIAL REF. TO THE PART PLAYED BY THE DEGREE OF SUPERCOOLING INVOLVED. THUS, FOR EXAMPLE, THE FORMATION OF AN ESSENTIAL EUTECTIC COLUMN ONLY BECOMES POSSIBLE FOR FAIRLY SUBSTANTIAL SUPERCOOLINGS AND SUPERSATURATIONS. BEFORE THESE CONDITIONS ARE ACHIEVED THERE IS A TENDENCY FOR TWO 'PSEUDO PRIMARY' PHASES TO SEPARATE, AND ONLY LATER DOES TRUE EUTECTIC SOLIDIFICATION SET IN.

UNCLASSIFIED

USSR

ZIMKINA, T. M., and FOMICHEV, V. A.

Ul'tramyagkaya rentgenovskaya spektroskopiya (Ultrasoft X-Ray Spectroscopy),
Leningrad, Leningrad University Press, 1971, 132 p

Translation of Forward: The history of the development of x-ray spectroscopy is marked by two periods in which the widespread attention of physicists has been centered. The first period of expanded interest in x-ray spectra coincided with the development of views on the atomic structure; the second period is associated with the emergence of the solid state theory. This second period is also identified with the development of ultrasoft x-ray spectroscopy which held considerable advantages over short-wave- x-ray spectroscopy for electron structure studies of solids. These advantages were demonstrated as early as in the thirties, but the low level of experimentation engineering at that time presented severe experimental problems which had impeded the development of ultrasoft x-ray spectroscopy. The application of highly effective ionization detectors for recording x-ray emission and the notable advancements in experimental techniques of the fifties produced a new wave of interest in ultrasoft x-ray spectroscopy. The marked progress in plasma physics and space research during the last decade promoted even greater interest in spectral studies in the area of ultrasoft x-ray emission.

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USSR

ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad University Press, 1971, 132 p

A. P. Lukirskiy and M. A. Rumsh were the first in the USSR to initiate developments in the new experimentation technology of this difficult and little-known spectral science. Their studies were the cornerstone for the development of two new trends in physics research -- ultrasoft x-ray spectroscopy and x-ray photoeffects from heavy photocathodes. A contribution of prime significance to the development of the latter was made by M. A. Rumsh, who devised a modern experimental technique for photoeffect studies in the x-ray spectral region and, together with his associates, devoted many years to studies of principles governing the extrinsic photoeffect of heavy photocathodes. A. P. Lukirskiy concentrated his efforts on designing long-wave x-ray spectrometers, modern experimental procedures for ultrasoft x-ray spectroscopy, studies of interaction of long-wave x-ray emission with matter (photoionization absorption, photoeffect reflection), and application of the above methods to electron structure studies of matter. In 1963, A. P. Lukirskiy was awarded the second prize of Leningrad State University im. A. A. Zhdanov. His work formed the basis of his doctoral dissertation and received wide acclaim and high ratings both in the USSR and abroad. A special design office for x-ray equipment initiated the serial production of the first Soviet

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

ultralong-wave spectrometer-monochromator (RSM-500), designed by A. P. Lukirskiy. Scientific research institutes in a number of cities (Moscow, Sverdlovsk, Kiev, Tartu, Yerevan' and others) have initiated research projects based on RSM-500 spectrometers. The present book is based primarily on the results of studies on ultrasoft x-ray spectroscopy performed in the last decade at the X-Ray Laboratory, Department of Electronics of Solids, Physics Faculty, Leningrad State University im. A. A. Zhdanov. Most of these projects were carried out under the direct guidance of A. P. Lukirskiy or were based on his ideas. Due to the limited space of this rather small monograph, the authors have made no attempt to provide complete and comprehensive coverage of problems related to ultrasoft x-ray spectroscopy.

The book correlates extensive experimental data on procedures and experimental techniques in the field of long-wave x-ray emission, cites specific features in the performance of diffraction gratings and detectors, and describes emission filtration methods and the operation of unique and special spectrometers developed by A. P. Lukirskiy. The book also presents the results of new methods of electron structure studies of solids and gaseous molecular compounds. A survey of the basic results of photoionization

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

absorption studies in gases and solids in the field of long-wave x-ray emission is included. The last chapter provides optical constants of solids for both soft and ultrasoft x-ray emissions. The authors thank Docent O. A. Yershov for his assistance in writing the chapter on "Optical Constants of Solids in Ultrasoft X-Ray Spectral Emission."

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USSR

ZIMKINA, T. N., and FOMICHEV, A. A.

Ul'tramyagkaya rentgenovskaya spektroskopiya (Ultrasoft X-Ray Spectroscopy), Leningrad, Leningrad University Press, 1971, 132 p

Translation of Introduction: Within the electromagnetic-wave scale ultrasoft x-ray emission holds a spectral region from about 15 to 200 Å. It is self-evident that these boundaries are rather arbitrary. Diffraction gratings -- the principal dispersive element -- lose their efficiency in wavelengths below 15 Å. In this range the spectral decomposition of emission takes place by natural crystals which are characteristic for soft (wavelengths 2 to 15 Å) and hard (wavelengths below 2 Å) x-ray emission. To date, there are almost no data on x-ray spectra in the wavelength region above 500 Å. Theoretically, x-ray spectra generated in the presence even of only one internal (nonvalent) atomic level molecule or solid can also exist within a longer wave region of the electromagnetic-wave scale. The ultrasoft x-ray emission region is situated between the "ordinary" x-ray and ultraviolet spectral regions requiring markedly different study methods. X-Ray spectra with natural crystals and optical spectrometers with diffraction gratings operated under normal angles of incidence of emission on the grating cannot be used for the spectral decomposition of ultralongwave emission. Prior to the 1930s this

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ZIMKINA, T. M., and fomichev, v. a., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

spectral region appeared as a white spot on the electromagnetic scale. The experimental utilization of the ultrasoft emission region became possible only after it was observed that fairly low sliding angles in the x-ray spectral region may generate complete emission reflection from the surface of solids (in x-ray incidence from vacuum on the surface of a medium). In 1926 Compton and Duane showed that x-ray spectra can be produced by reflecting the emission from diffraction gratings at very small sliding incidence angles situated within the full external reflection region. In 1927 Tibo and Osgood applied dashed diffraction gratings for spectral studies of very soft x-rays. These first studies bridged the gap between the optical and x-ray regions of the spectrum. The ensuing papers on soft x-ray emission dealt with the development of methods for precision measurements of wavelengths using diffraction gratings. The subsequent decade (1933-43) is marked by a great number of studies on emission spectra of solids, primarily of light elements with atomic numbers of $Z = 3$ to $Z = 30$. Some of the experiments also produced absorption spectra of these elements. The studies were conducted by Bearden, Sieglahn, Magnuson, O'Brien, Skinner, Farino, and other authors, and were concerned primarily with general properties of spectra and their wavelengths. The experimentation tech-

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

nology of those years was far from being geared to detailed studies of intensities and fine spectral structures. The photographic methods of spectral recording by spectrographs ruled out absolute intensity measurements, while the unknown relationship between emulsion sensitivity and recorded emission wavelength hindered studies of wide spectral sectors. Moreover, the low sensitivity of even special photoemulsions to ultralongwave x-ray emission delayed the appearance of spectra to a point where the substance applied to the anode of the x-ray tube could no longer be safely preserved. Under exposure to electron bombardment, even under vacuum of the order of 10^{-6} mm Hg, the test substance could undergo various processes of oxidation decomposition, contamination with carbon, tungsten oxides, etc. The low reflection factors of diffraction gratings required the use of wide-slot spectrometers which made it impossible to obtain good resolution of fine spectral structures. The spectral shapes could not be properly studied due to the lack of data on the spectral relationship between the reflection factors of the diffraction gratings and the application of short-wave emission reflected from the gratings at higher orders of diffraction. Considerable problems arose in studies of absorption spectra due to the lack of heavy-duty continuous spectral sources. In the ultrasoft region,
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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*. Leningrad, Leningrad, University Press, 1971

bremstrahlung appears to be of low intensity, and all studies were therefore conducted using line emission sources. The inconstancy of the relative line intensity of these sources and the application of spectra of higher orders of diffraction, not to mention the discrete spectral structure, were the principal shortcomings of these sources. Considerable interest in ultralong-wave x-ray spectroscopy arose in the 1950s with new advances in experimentation technology. In 1952, Paor and associates designed a vacuum spectrometer with a photoelectric multiplier and Cu-Be emitters which exhibited much higher sensitivity in the 100-800 Å region than that of a photoplate. In 1954 Chalklin and Rogers constructed a vacuum spectrometer with a Geiger counter to serve as a detector. The effective region of this spectrometer was 20 to 200 Å. The upper limit of the spectral region which can be picked up by such a detector is restricted by the high absorption of long-wave emission in the counter's porthole. In 1953 Tombolian and associates conducted feasibility studies on continuous electromagnetic emission produced by high-energy electrons using a synchrotron as a source for absorption spectra studies. This emission exhibits high intensity and takes up a wide portion of the spectrum. Tombolian's work holds much promise for this remarkable source in measuring absorption spectra. Significant contributions to furthering the development of techniques and

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

procedures for ultralong-wave x-ray spectroscopy were made by A. P. Lukirskiy in his studies initiated at the end of the 1950s. Lukirskiy and his associates developed an improved counter, analyzed various gas mixtures (counter fillers) and determined the effectiveness of the new counter for a wide range of wavelengths (6 to 400 Å) with various gas fillers, making it possible to use the counter for absolute intensity measurements of ultralong-wave x-ray spectra. The investigators also demonstrated the potentialities of proportional counters for recording emission over a wide range of intensities. A number of studies by A. P. Lukirskiy, M. A. Rumsh et al., concern photo-voltaic detectors (secondary open-type electronic multipliers). The studies include selection of photocathode materials and a detailed analysis of the spectral curve of their quantum yield, permitting photomultiplier applications for absolute measurements. The addition of highly effective ionization and photovoltaic detectors to the spectrometer system markedly reduced spectra generation time, making it possible to lower the performance requirements on the tube and thus increase data reliability. Great importance for the development of ultrasoft x-ray spectroscopy is attached to the studies by A. P. Lukirskiy on various types of diffraction gratings and reflection coefficients from different materials in wavelengths from 7 to 200 Å. The results of these studies have

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ZIMKINA, T. M. and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

shown that proper selection of coatings will markedly increase the reflection factor of the diffraction grating cut on glass and eliminate the fine structure in the spectral path of the grating's efficiency in the L-edge absorption region of silicon -- a component of glass ($\lambda \approx 130 \text{ \AA}$). On the basis of reflection data on ultrasoft x-ray emission Lukirskiy introduced a new component into the spectrometer -- a spherical filter-reflector which eliminated a major problem in long-wave x-ray spectral studies related to application of emission reflected by the grating under various order of diffraction. When set at a specific angle relative to the incident ray, this spherical mirror reflected emission only beginning with a certain wavelength while absorbing all emissions of lower wavelengths. Changing the sliding angle permitted shifting the boundary of reflected wavelength one way or the other. The study covered various coatings for filter-reflectors to determine the optimum type -- a polystyrene coating. The significance of the filter reflector for studying x-ray spectra can scarcely be overrated, specifically for absorption spectra. The results of an entire complex of studies conducted under the guidance of Lukirskiy formed the basis of modern experimental techniques in ultralong-wave x-ray spectroscopy, made possible designs of highly effective

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

spectrometers, and offered new, strong possibilities of using this method of investigation for studying electron structures of solids and molecular gases, principles governing both absorption and reflection of ultra-longwave x-ray emission, photoeffect regularities in low quantum energies, solution of applied problems related to the quantitative analysis of light elements, x-ray emission of the stars and the Sun, as well as problems related to high-temperature plasma. The principal advantages of ultra-soft x-ray spectroscopy in solving the above problems are as follows:

1. Within the ultrasoft x-ray spectral region, the shallow energy level width is very much smaller than those in the short-wave x-ray emission. The internal energy level width will, therefore, hardly distort the information on the electron states of solids available in the x-ray spectra. Experiments indicate that levels which produce emission in the 100 Å region have a width of 0.1 to 0.3 ev.

2. The second advantage is associated with the finite value of wave resolution $\Delta \lambda$ for all spectral devices; recalculating this value for energy resolution is extremely useful for the ultrasoft spectral region since $\Delta E(\text{ev})$

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

- $(12,398/\lambda^2) \Delta\lambda$ (Å). In a spectral region with $\lambda \approx 1$ Å, even in devices with a resolution of $\lambda/\Delta\lambda = 10^4$, the energy resolution will come only to $\Delta E = 1.2$ ev. On the other hand, it is possible to obtain a resolution of $\Delta E = 0.1$ ev in the 100 Å region with a device having $\lambda/\Delta\lambda = 10^3$. Such wave resolutions are real for spectrometers with effective gratings and detectors. In this manner, in ultrasoft x-ray spectroscopy, spectra distortions introduced by both the internal level width and the finite value of instrumental resolution will be much smaller than those of the width of the spectral region under study. In many cases it will therefore not be necessary to correct spectra for the above distortions which, in turn, upgrades the accuracy of the obtained results.

3. X-ray spectra of light elements ranging from Li to F are situated in the ultrasoft-wave emission region (18-240 Å). Hence, the study of the energy structure of such important chemical compounds as oxides, nitrides, carbides, borides and fluorides is possible only by using ultrasoft x-ray spectra.

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USSR

ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

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ZIMKINA, T. M., and FOMICHEV, V. A., *Ultrasoft X-Ray Spectroscopy*, Leningrad, Leningrad University Press, 1971

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USSR

FOMICHEV, V. A., KUPRIYANOV, V. N., Leningrad State University imeni A. A. Zhdanov

"Ultrasoft X-Ray Spectra of Germanium"

Leningrad, Fizika Tverdogo Tela, No 9, September 1970, pp 2639-2646

Abstract: The $M_{II,III}$ -spectra of germanium emission and absorption are obtained. Three maxima in the emission spectrum are detected and identified: two of them correspond to the $M_{III} M_{IV, \gamma}$ and $M_{II} M_{IV}$ transitions, while the third is assumed to be a satellite. On the basis of the first lines is evaluated the spindoublet splitting of the M_{II} - and M_{III} -levels of Ge (3.6 eV). On the basis of the M_{III} absorption edge of germanium is evaluated the width of the M_{III} level (1.3 eV). Also obtained is the $M_{II, III}$ emission spectrum of Ge in GeO_2 ; a considerable shift of the $M_{II, III}$ band into the high-energy direction is observed, together with an increase of its intensity in the transition from Ge to GeO_2 . The $M_{IV, \gamma}$ emission and absorption spectra of monocrystalline and amorphous germanium, lying within the wave length region of 350-800 Å were obtained. Together with the K and the $M_{II, III}$ spectra, these data are compared with the density curve of states $N(E)$. 3 tables, 6 figures, 21 bibliographic entries.

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1/2 028 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--K SPECTRA OF BORON IN TRANSITION METAL DIBORIDES AND IN LAB SUB6,
BAB SUB6, AND ASB COMPOUNDS -U-
AUTHOR--(03)-LYAKHOVSKAYA, I.I., ZIMKINA, T.M., FOMICHEV, V.A.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(1), 174-80
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS, PHYSICS
TOPIC TAGS--BORIDE, LANTHANUM COMPOUND, BARIUM COMPOUND, ARSENIC COMPOUND,
TITANIUM CARBIDE, EMISSION SPECTRUM, TRANSMISSION METAL, ABSORPTION
EDGE, ABSORPTION SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/0204 STEP NO--UR/0181/70/012/001/0174/0180
CIRC ACCESSION NO--AP0055000
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0055000

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

ABSTRACT. X RAY EMISSION AND PHOTOELECTRON K SPECTRA OF B IN DIBORIDES WERE OBTAINED FOR THE TRANSITION METAL DIBORIDES TIB SUB2, ZNB SUB2, HFB SUB2, AND TAB SUB2 AND FOR BAB SUB6, LAB SUB6, AND ASB. IN ALL BORIDES THE EMISSION K BANDS OF B HAVE A COMPLEX STRUCTURE AND APPROX. THE SAME SHAPE. IN THE ABSORPTION SPECTRA OF ALL BORIDES INVESTIGATED, WITH THE EXCEPTION OF ASB, IN THE REGION OF K EDGE ABSORPTION, A SHARP SELECTIVE MAX. IS OBSD. WHICH CAN APPARENTLY BE RELATED TO A TRANSITION INTO AN EXCITED STATE OF B. THE ABSORPTION EDGE IN THE K SPECTRUM OF B IS SEPD. FROM THE SHORT WAVELENGTH EMISSION EDGE BY A DISTANCE OF THE ORDER OF 3 EV FOR ALL THE BORIDES. IN THE SPECTRA OF THE METAL OF THESE SAME COMPS., THE ABSORPTION EDGE COINCIDES WITH THE SHORT WAVELENGTH EDGE OF EMISSION. THE PRESENCE OF AN ENERGY GAP IN THE SPECTRA OF B CAN BE RELATED TO THE PRESENCE OF FREE 3D STATES AT THE BOTTOM OF THE CONDUCTION BAND OF THE TRANSITION METAL. FROM COMPARISON OF THE K SPECTRA OF B WITH K AND L SUBII, III SPECTRA OF TIB SUB2, THE ENERGY DISTRIBUTION OF THE STATES OF DIFFERENT SYMMETRY IN THE VALENCE BAND AND IN THE CONDUCTION BAND OF TIB SUB2 IS DETD.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--19SEP70
TITLE--X RAY SPECTRA OF BORON IN BORON NITRIDE AND BORON OXIDE -U-
AUTHOR--(03)-FOMICHEV, V.A., ZIMKINA, T.M., LYAKHOVSKAYA, I.I.
COUNTRY OF INFO--USSR *F*
SOURCE--FIZ. TVERD. TELA 1970, 12(1) 156-9
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--X RAY EMISSION, X RAY ANALYSIS, BORON NITRIDE, BORON OXIDE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0245 STEP NO--UR/0181/70/012/001/0156/0159
CIRC ACCESSION NO--AP0048524
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

2/2 018

CIRC ACCESSION NO--AP0048524

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE BEHAVIOR WAS INVESTIGATED OF
SELECTED MAX. IN THE K SPECTRA OF B IN BN AND B SUB2 O SUB3 LOCATED AT
THE SHORT WAVELENGTH SIDE OF THE MAIN BAND. ON VARIATION OF THE ANODE
VOLTAGE OF THE X RAY TUBE, EMISSION SPECTRA IN THE REGION OF THE ABOVE
MAX. FOR BN UNDERGOES VARIATIONS RELATED TO THE PRESENCE OF B SUB2 O
SUB3 IMPURITY ON THE SURFACE OF BN. IN THE SPECTRA OF B SUB2 O SUB3
SUCH VARIATIONS WERE NOT OBSD.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--17 JUL 70

TITLE--GASDYNAMIC STAND FOR TESTING THE STRENGTH OF TURBINE DISKS UNDER
NONSTATIONARY LOADING CONDITIONS -U-

AUTHOR--SEKISTOV, V.A., KUZLEV, I.A., POKICHEV, V.I.

COUNTRY OF INFO--USSR

SOURCE--PROBLEMY PRICHCNOSTI, VOL. 2, FEB. 1970, P. 68-73

DATE PUBLISHED-----70

77
5
82

SUBJECT AREAS--ENERGY CONVERSION (NON-PROPELLSIVE), PROPELLSION AND FUELS,
MECH., INC., CIVIL AND MARINE ENGR

TOPIC TAGS--TURBINE DISK, GAS TURBINE ENGINE, ENGINE TEST STAND, AIRCRAFT
ENGINE, GAS DYNAMICS, THERMAL EFFECT, ELASTICITY, STRAIN, TURBOPUMP,
LIQUID PROPELLANT ENGINE, CENTRIFUGAL FORCE/(U)GSTEP1 GASDYNAMIC TEST
STAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAPE--1978/1972

STEP NO--UR/3663/70/002/000/0068/0073

STEP ACCESSION NO--APOC46659

Acc. Nr:

AP0048659

Abstracting Service:

INTERNAT. AEROSPACE ABST. 5-70

Ref. Code:

UR 3663

A70-25296 # Gasdynamic stand for testing the strength of turbine disks under nonstationary loading conditions (Gazodinami-cheskii stand dlia ispytaniia turbinnykh diskov na prochnost' v usloviakh nestatsionarnykh nagruzhenii). V. A. Seleznev, I. A. Kozlov, and V. I. Fomichev (Vysshee Inzhenerno-Aviatsionnoe Voennoe Uchilishche VVS; Akademiia Nauk Ukrainskoi SSR, Institut Problem Prochnosti, Kiev, Ukrainian SSR). Problemy Prochnosti, vol. 2, Feb. 1970, p. 68-73. In Russian.

Description of the GSTP-1 gasdynamic test stand designed for studying elastoplastic strains in aircraft gas-turbine disks and turbopump units of liquid-propellant rocket engines under alternating nonisothermal loads. The stand simulates the centrifugal forces and thermal effects experienced by an actual disk. It can be also used for determining the strains and temperature field in a disk subjected to abrupt and rapid temperature variations, with temperature control over the disk radius.

V.P.

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19781972

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USSR

UDC 577.15:539.12.04

NOSKIN, L. A., SVERDLOV, A. G., and FOMICHEV, V. N., Leningrad Institute of Nuclear Physics, USSR Academy of Sciences

"Mechanism of Protection of Glutamic Acid Dehydrogenase by Mexamine Against Gamma Irradiation"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 3, 1973, pp 733-736

Abstract: Inactivation of glutamic acid dehydrogenase in relation to the radiation dose was exponential, but the extent of inactivation was exponentially dependent on the inverse concentration of the enzyme. The addition of mexamine (5-methoxytryptamine) to the enzyme prior to irradiation had a markedly protective effect, as manifested by a change in the angle of slope of the exponent on the dose curve. When the concentration of the irradiated enzyme was kept constant while that of mexamine was varied, saturation of the radioprotective effect occurred at a certain concentration of the compound. The concentration that resulted in saturation was independent of the radiation dose. The mechanism of the protective effect of mexamine is assumed to be based on the latter's binding to the most radiosensitive portions of the glutamic acid dehydrogenase molecule and to protection of these portions from inactivation by the radicals formed during irradiation.

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1/3 036

UNCLASSIFIED

PROCESSING DATE--230C170

TITLE--POLARIZATION OF METER WAVELENGTH RADIO EMISSION OBSERVED IN REFLECTED LIGHT, POLARIZATION OF METER SOLAR RADIO EMISSION OBSERVED IN

AUTHOR--(02)-FORMICHEV, V.V., CHERTOK, I.M.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ASTRONOMICHESKIY ZHURNAL, VOL 47, NR 2, 1970, PP 322-328

DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--SOLAR RADIO EMISSION, SOLAR RADIATION BURST, SOLAR FLARE, LIGHT REFLECTION, SOLAR CORONA, SECOND HARMONIC, LIGHT POLARIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/0247

STEP NO--UR/0033/70/047/002/0322/0328

CIRC ACCESSION NO--AP0127846

UNCLASSIFIED

2/3 036

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0127846

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. METER SOLAR RADIO EMISSION OBSERVED IN REFLECTED LIGHT WITH THE REFLECTION OF THE ORDINARY AND EXTRAORDINARY WAVES FROM CORRESPONDING CORONAL LAYERS WAS INVESTIGATED. IT WAS FOUND THAT FOR TYPE II AND TYPE III BURSTS HAVING A HARMONIC STRUCTURE ONE OF THE PECULIARITIES IS THE POSSIBILITY OF RADIO EMISSION POLARIZATION IN THE SECOND HARMONIC. THE SIGN OF THIS POLARIZATION CAN CORRESPOND TO WAVES OF BOTH THE ORDINARY AND EXTRAORDINARY TYPE AND THE DEGREE OF POLARIZATION CAN CHANGE FROM BURST TO BURST IN A RATHER BROAD RANGE. THERE CAN BE CASES OF THE ABSENCE OF POLARIZATION IN THE SECOND HARMONIC FOR BURSTS OF TYPES II AND III. IF IT IS TAKEN INTO ACCOUNT THAT RADIO EMISSION OF THE FUNDAMENTAL TONE IN TYPE II BURSTS IS UNPOLARIZED AND IN ADDITION, WITH THE MAGNETIC FIELD STRENGTHS CHARACTERISTIC OF THE REGIONS WHERE TYPE II BURSTS ARE GENERATED, THE DEGREE OF POLARIZATION OF REFLECTED RADIO EMISSION CAN ASSUME ONLY RELATIVELY LOW VALUES, THE REGISTRY OF TYPE II BURSTS IN THE MENTIONED RANGE APPEARS NATURAL. THE SITUATION FOR REGISTRY OF POLARIZATION IN THE SECOND HARMONIC TYPE II BURSTS BECOMES MORE FAVORABLE WITH TRANSITION TO HIGH FREQUENCIES; IT CAN THEN BE EXPECTED THAT THE RADIO EMISSION IN SOME BURSTS WILL HAVE APPRECIABLE POLARIZATION OF THE ORDINARY AND EXTRAORDINARY TYPES. IN THE REGISTRY OF TYPE II AND TYPE III BURSTS IN THE COMPLEX OF PHENOMENA ASSOCIATED WITH ONE FLARE THE POLARIZATION CHARACTERISTICS OF THE SECOND HARMONICS OF BURSTS AT THE FREQUENCIES WHERE THEY ARE OBSERVED JOINTLY CAN NEVERTHELESS DIFFER CONSIDERABLY.

UNCLASSIFIED

3/3 036

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0127846

ABSTRACT/EXTRACT--THIS CAN BE ATTRIBUTED TO THE FACT THAT THE RADIO EMISSION FORMING AS A RESULT OF COMBINATION SCATTERING EMERGES FROM THE GENERATION REGION AT DIFFERENT ANGLES OF THE RADIAL DIRECTION IN THE CASES OF TYPE II AND TYPE III BURSTS. ACCORDINGLY, IN PROPAGATION IN THE DIRECTION OF THE SOLAR SURFACE AND BACK THE INFLUENCE OF REFRACTION ON THE NATURE OF POLARIZATION IS ALSO DIFFERENT. IN CONTRAST TO TYPE II BURSTS, WHOSE EXCITING AGENT IS A SHOCK WAVE WITH A MAGNETIC FIELD, TYPE III BURSTS CAN BE GENERATED IN REGIONS WHERE THE FIELD STRENGTH CONSIDERABLY EXCEEDS THE VALUES CORRESPONDING TO THE H SUBO () MODEL. THEIR GENERATION ONLY REQUIRES THAT THE LEVEL F EQUALS 2F SUBH, WHERE THE GYRORESONANCE ABSORPTION OF ORDINARY AND EXTRAORDINARY WAVES IS IMPORTANT, BE SITUATED CLOSER TO THE SOLAR SURFACE THAN THE LEVEL V EQUALS -1; WHERE PLASMA WAVE AT THE FREQUENCY F SUBO ARE EXCITED. THEREFORE, RADIO EMISSION IN THE SECOND HARMONIC FOR TYPE II BURSTS. IN PARTICULAR, A QUITE HIGH DEGREE OF POLARIZATION IS ALSO POSSIBLE AT LOW FREQUENCIES. THE FACT THAT REFLECTED RADIO EMISSION CAN HAVE NOT ONLY A POLARIZATION CORRESPONDING TO AN ORDINARY WAVE, BUT ALSO A POLARIZATION CORRESPONDING TO AN EXTRAORDINARY WAVE, MAKES IT POSSIBLE TO UNDERSTAND THE CHANGE IN POLARIZATION SIGN AT A FIXED FREQUENCY OBSERVED IN A NUMBER OF TYPE III BURSTS. FACILITY: INSTITUTE OF TERRESTRIAL MAGNETISM, IONOSPHERE AND RADIO WAVE PROPAGATION.

UNCLASSIFIED

USSR

UDC 536.45.001.2

BONDARENKO, V. P., and FOMICHEV, YE. N.

"Experimental Research in the Thermodynamic Properties of Substances in the Condensed Phase at High Temperatures"

Khar'kov, Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972, -- sb. (Ukrainian Republic Scientific and Technological Conference Honoring the 50th Anniversary of the Ukrainian SSR's Metrological Service, 1972 -- Collection of Works), 1972, p 66 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 2, 1973, Abstract No 2.32.1010 by V.S.K.)

Translation: The authors present the results of KhGNIIM Khar'kov State Scientific Research Institute of Metrology] projects aimed at measuring the enthalpy, heat, and phase transition temperatures for elements, oxides, carbides, and silicides at temperatures on the order of 2,800 K. They describe the equipment that was used, the sample preparation that was done, and the procedure used to take the measurements. They also discuss evaluating the systematic and random measurement errors, in addition to showing that the maximum error in the enthalpy measurements over to 500-2,800 K range is 0.3-0.8 percent.

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USSR

UDC 549.517.1:536.241.1:536.5.031

FOMICHEV, Ye. N., KANTOR, P. B., KANDYBA, V. V.

"New Research on the Melting Point of Corundum as a Secondary Reference Point on the Temperature Scale"

Tr. Metrol. In-tov SSSR (Works of Metrological Institutes of the USSR), No 110 (170), 71, pp 135-141 (from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 12, Dec 71, Abstract No 12.32.1033)

Translation: In the article are presented results of research, conducted in the USSR and abroad, on determination of the melting point of corundum as a new secondary reference point of the IPTS. On the basis of the conducted research and critical analysis of the results of the projects, the average value of the melting point of corundum was computed at 2049°C. This is the value of the melting point of corundum that is recommended as a secondary reference point of the IPTS. 3 tables. 12 references.

1/1

USSR

UDC 536.722:536.621.082

FOMICHEV, Ye. N., KANTOR, P. B., KANDYBA, V. V.

"Procedure and Equipment for the Measurement of Substances in a Condensed Phase at High Temperatures"

Tr. Mtrol. In-tov SSSR (Works of Metrological Institutes of the USSR), No 110 (170), 71, pp 108-124) (from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 12, Dec 71, Abstract No 12.32.1194)

Translation: The measurement equipment of a high-temperature calorimetric installation for measuring the enthalpy of substances in a condensed phase in the temperature range of 500 - 3000° K is described. Consideration is given to measurement of the temperature of the sample in a high-temperature vacuum furnace, measurement of the temperature rise of the calorimeter, and calculation of the temperature correction for heat exchange, as well as the procedure for calibration of the calorimeter, by the absolute method by means of a current. An evaluation was made of the basic procedural and instrumental errors of measurement of the sample temperature, the calorimeter temperature, and the calorimeter calibration. 3 figures. 1 table. 12 references.

1/1

USSR

UDC 536.5:536.421.1

FOMICHEV, Ye. N., KANTOR, P. B., KANDYBA, V. V.

"A High-Temperature Installation for Reproducing the Reference Point of Corundum"

Tr. Metrol. in-tov SSSR (Works of Metrological Institutes of the USSR), No 110 (170), 1971, pp 125-134 (from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 12, Dec 71, Abstract No 12.32.1034)

Translation: In the article is described an installation for measuring and reproducing the melting point of corundum (2049° C), as a new secondary reference point of the IPTS. The designs of the reference furnace and the measurement equipment for determining the melting point of corundum are described, as well as equipment for automatic recording of the temperature areas on the heating and cooling curves. Consideration is given to errors in measurement of the melting point of corundum by methods of optical pyrometry. 3 figures. 10 references.

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Acc. Nr.: APO029429

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 1, pp 75 - 78

CHARACTERISTICS OF DRUG RESISTANCE IN DYSENTERY BACTERIA ISOLATED IN MINSK

T. R. Lobanok, Yu. K. Formichev

Byelorussian Institute for Epidemiology and Microbiology, Byelorussian V. I. Lenin University

Sensitivity to 4 drugs (streptomycin, chloramphenicol, tetracycline and norsulfazol) of 711 strains of dysentery bacteria, isolated from dysentery cases in Minsk within a number of years was studied. It was shown that 315 isolates were resistant to the above antibacterial preparations, 90.1 per cent of the resistant cultures being polyresistant. Studies in vitro with mixed cultures of sensitive F-bacteria (*E. coli* K-12 W1485) and resistant *Shigella* strains demonstrated that the latter transferred the property of drug resistance to the recipient strain in 61.6 per cent of the cases. On the basis of this factor it is concluded that *Shigella* strains capable of transferring the property of resistance to F-bacteria are the carriers of R-factors.

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REEL/FRAME

19681025

6 9m

USSR

F UDC 621.791.754.293:669.295

GUSEVA, YE. A., KLIBYCHEV, A. I., FOMICHEVA, I. A., and MAZOK, V. K.

"Argon-Arc Welding of Titanium Alloys by Through Fusion"

Moscow, Svarochnoye Proizvodstvo, No 2, Feb 70, pp 15-16

Abstract: A procedure is described for through fusion welding of titanium alloys up to 10 mm thick without dressing the edges. The welds obtained by this procedure have good penetration and a high weld shape factor. There are no sharp transitions from fusion to basic metal on the backside of the weld. X-ray control of the welded joints showed that the pores in the weld are very small. Comparative data are presented showing that the strength of samples without reinforcement for the welded joints executed by through fusion is approximately 10 kg/mm^2 higher than in the case of two-pass welding.

It is shown that through fusion can be obtained only under certain welding conditions. The basic condition for through fusion welding is insuring a specific arc pressure on the pool of molten metal which can overcome the surface tension, force the molten metal out of the pool, and equalize the hydrostatic pressure of the liquid metal. The comparatively low specific weight of titanium alloys and correspondingly lower hydrostatic pressure provide a basis for assuming that for these metals through fusion welding can be realized more easily than for steel.

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USSR

GUSEVA, YE. A., et al., Svarochnoye Proizvodstvo, No 2, Feb 70, pp 15-16

Conditions for argon-arc through fusion welding are calculated for sheet material made of OT4 and VT6S alloys 4, 8, and 10 mm thick.

2/2

USSR

UDC 632.95:543.544

FOMICHEVA, L. G., and YEFIMOVA, L. I., Moscow Oblast Plant Protection Station

"Determination of Residual Amounts of Keltane in Cucumbers by the Method of Thin-Layer Chromatography"

Moscow, Khimiya v Sel'skom Khozyaystve, No 9, 1971, pp 45-47

Abstract: A method of determining the residual amounts of keltane (chloro-ethanol) in cucumbers using thin-layer chromatography was developed. The basis for the method consists of extracting the keltane from the product with n-hexane, driving off the solvent after preliminary drying of the extract over anhydrous sodium sulfate and subsequent chromatographic analysis in a thin layer of aluminum oxide or silicon dioxide fixed with gypsum. Benzene was used as the mobile solvent. The procedure is outlined in detail and data are presented from some analyses using it. These data characterize the content of the residual amounts of keltane depending on the "waiting time" after treating the cucumbers with 0.1-0.2 percent solutions of keltane. Even 9 days after treating the cucumbers they still contained up to 0.1 milligrams of keltane per kilogram of product.

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Electrochemistry

USSR

UDC 541.13

PAVLOV, Yu. V., FOMICHEVA, M. G., MISHUSTIN, A. I., and ALPATOVA, N. M.,
Institute of Electrochemistry, Academy of Sciences, USSR, Moscow State
University Imeni M. V. Lomonosov

"Dynamic Polarization of Hexamethylphosphoric Triamide Protons by Electro-
chemically Generated Solvated Electrons"

Moscow, Elektrokimiya, Vol 9, No 4, Apr 73, pp 541-543

Abstract: Existence of solvated electrons has been suspected on the basis of some NMR data. In this study an attempt was made to use dynamic polarization to identify these electrons. Dynamic polarization is based on changing the intensity of NMR signals lightly connected with the unpaired electrons, by saturating the NMR transitions with UHF power. The study was carried out on hexamethylphosphoric triamide in LiCl and NaBr solutions. On the basis of the data from dynamic polarization, spectra and relaxation times, a conclusion was reached that in the system under investigation a very weak intermolecular superfine scale interaction takes place, indicating the presence of solvated electrons rather than the $\{[(\text{CH}_3)_2\text{N}]_3\text{PO}\}^-$ type anion radicals.

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USSR

UDC 547.233

KESSLER, YU. M., FOMICHEVA, M. G., ALPATOVA, N. M., and YEMELIN, V. P.,
Electrochemical Institute, Academy of Sciences Institute of Chemical
Mechanical Engineering, Moscow

"Certain Physical and Structural Characteristics of Hexamethylphosphoro-
triamide"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 3, May/June 72, pp 517-519

Abstract: Hexamethylphosphorotriamide (HMPT) (tris(dimethylamino)phosphine
oxide $(CH_3)_2N_3PO$) is an important organic solvent, of special interest due to
its use as a medium for the study of electron behavior in condensed phases.
Three physicochemical properties of the solvent were measured. Using a
pycnometer, the specific gravity was determined to be 1.0202 at 25°C and
1.0327 at 10°. The viscosity, measured with an Ostwald viscosimeter, was
reported as 3.24 centipoise at 25° and 4.50 centipoise at 10°. The dielectric
constant was measured at 200 kilohertz by phase displacement with compensation
for carbon. The results were 30.02 at 25° and 32.6 at 10°. A comparison of
the molecular and molar volumes of several liquids with those of HMPT suggests
a structure other than close packing. Further comparison of the function
inverse times temperature derivative for dielectric constant and specific
gravity implies that HMPT has a labile structure with a dipole character.

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Polymers and Polymerization

USSR

UDC 678.743.61-13:678.044.022

BOGACHEVA, M. D., LUKHAYEVA, A. M., SIDOROVICH, YE. A., and SHENBERG, M. P.,
All-Union Scientific Research Institute of Synthetic Rubber, Lenini St. 4, Leningrad

"Properties of Heat-Frost Resistant Organofluorine Rubbers and Resins Made from Them"

Moscow, Kauchuk i Rezina, No 3, 1972, pp 5-7

Abstract: Vitrification temperature of vinylidene fluoride (VF) copolymers with perfluoroethylvinyl ether (PEFVE) containing less than 5% of the ether is stabilized at about -100°C ; when PEFVE content exceeds 50%, the temperature is raised to about -30 to -30°C . The strength and frost resistance of the resins becomes poorer with increasing content of PEFVE. High tension values during the 100% elongation of the resins containing less than 25% of the ether indicate the existence of a crystalline phase in the copolymer. The vulcanizates from these copolymers are of comparable quality with those from Viton rubber, regarding their resistance to thermal aging.

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1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--VULCANIZATION OF SATURATED FLUORINE CONTAINING RUBBERS -U-

AUTHOR--(05)--LUNDSTREM, A.M., GRINBLAT, M.P., FOMICHEVA, M.M., LOPYREV,
V.A., NETSETSKAYA, O.A.
COUNTRY OF INFO--USSR

F

SOURCE--USSR 263,132
REFERENCE--UTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--VULCANIZATION, SYNTHETIC RUBBER, FLUORINATED ORGANIC COMPOUND,
CHEMICAL RESISTANCE, AMINE, CHEMICAL PATENT

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1461

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

CIRC ACCESSION NO--AA0128860

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0128860

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SATD. F CONTG RUBBERS ARE
VULCANIZED BY AMINES AND CONVENTIONALLY USED INGREDIENTS. TO IMPROVE
THE CHEM. RESISTANCE OF THE VULCANIZATES, COMPS. OF THE FORMULA I,
WHERE N IS 0-8, OR THEIR COMBINATIONS IN CONCNS. OF 1-10PERCENT BY WT.
OF THE POLYMER ARE USED AS AMINES.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF SOME SILOXANEDIGLS ON THE PROPERTIES OF RUBBER MIXTURES
AND VULCANIZATES FROM SILOXANE RUBBERS -U-
AUTHOR-(02)-FOMICHEVA, M.M., BORISOV, S.N.
COUNTRY OF INFO--USSR
SOURCE--KAUCH. REZINA 1970, 29(2), 3-5
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--SILOXANE, ALCOHOL, SYNTHETIC RUBBER, FILLER, TENSILE STRENGTH,
ELONGATION, THERMAL AGING, VULCANIZATE/(U)SKTV SILOXANE RUBBER, (U)SKT
SILOXANE RUBBER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0446 STEP NO--UR/0138/70/029/002/0005/0003
CIRC ACCESSION NO--AP0119382
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119382

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SILOXANE RUBBERS SKTV AND SKT WERE MIXED WITH 35 PARTS AEROSIL 2491, 1-2 PARTS PEROXIDES, AND MILLED IN THE PRESENCE OF LIQ. SILOXANEDIOLS (I) AND CRYST. TETRAMETHYLDISILOXANEDIOL (II) AT 25-75DEGREES. I CONTG. LESS THAN 9 SI ATOMS WERE THE MOST EFFECTIVE ANTICROSSLINKING AGENTS. THE ANTICROSSLINKING EFFECTIVENESS OF II DEPENDED ON ITS M.P., E.G. II M. 65-60DEGREES DID NOT CHANGE DURING A 6 MONTH PERIOD. SKTV AND AKT VULCANIZATES MODIFIED WITH I HAD SUPERIOR TENSILE STRENGTH AND RELATIVE ELONGATION, WHICH WERE ONLY SLIGHTLY AFFECTED BY THERMAL AGING AT 200-50DEGREES. FACILITY: VSES. NAUCH.-ISSLED. INST. SIN. KAUCH. IM. LEBEDEVA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 541.26'.118

VOLCDIN, A. A., KIREYEV, V. V., KORSHAK, V. V., and FOMIN, A. A.

"Synthesis and Investigation of Pentaarylhydroxyhydroxydialkoxyphosphazocyclotriphosphazotrienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2206-2211

Abstract: A series of pentaarylhydroxyaminocyclotriphosphazotrienes has been synthesized and converted to respective trichlorophosphazo-compounds by Kirsonov reaction; alcoholysis of the latter gave a series of pentaarylhydroxyhydroxydialkoxyphosphazocyclotriphosphazotrienes (I). The structure of the compounds synthesized was proposed on the basis of IR and NMR ^{31}P spectral data. A correlation has been shown to exist between the pK_a values of (I) in alcohol and Taft's σ^* constants of the alkyl substituents. The substituents at the phenyl ring showed no effect on the value of pK_a .

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USSR

UDC 546.185:547.245

TELKOVA, I. B., KIREYEV, V. V., KORSHAK, V. V., VOLODIN, A. A.,
and FOMIN, A. A.

"Synthesis and Study of Arylhydroxycyclotriphosphazotrienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43, (105), No 6, Jun 73,
pp 1157-1161

Abstract: Pentaarylhydroxycyclotriphosphazotrienes and hexaarylhydroxycyclotriphosphazotrienes were synthesized by the reaction of the respective sodium phenoxides with hexachlorocyclotriphosphazotriene in acetone or tetrahydrofuran. The structures of all derivatives obtained were supported by IR, UV and NMR³¹p spectra.

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USSR

UDC 541.26.118

VOLODIN, A. A., KIREYEV, V. V., FOMIN, A. A., YEDELEV, M. G., and KORSHAK, V. V., Corresponding Member Academy of Science USSR, Moscow, Chemico-Technological Institute imeni D. I. Mendeleev, Moscow

"Synthesis and Study of Pentaaryloxyfluorocyclotriphosphazotrienes"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 98-100

Abstract: Pentaaryloxychlorocyclotriphosphazotrienes (I) with aryl groups RH_4C_6 , where R = H, p-MeO, p-Me, m-MeO, m-Me, were prepared according to E. T. McBee et al., Inorg. Chem., 5, 450, 1966. By treating compounds I with potassium fluorosulfinate in O_2NPh , the corresponding nonfluoro derivatives (II) were prepared: $\text{P}_3\text{N}_3(\text{OC}_6\text{H}_4\text{R})_5\text{Cl} + \text{KSO}_2\text{F} \rightarrow \text{P}_3\text{N}_3(\text{OC}_6\text{H}_4\text{R})_5\text{F} + \text{KCl} + \text{SO}_2$. KSO_2F was obtained by treating KF with liquid SO_2 . The physical properties of compounds II were determined (table) and their nuclear (^{31}P and ^{19}F) magnetic resonance spectra studied.

1/1

- 13 -

Power, Engine, Turbine, Pump

USSR

UDC: 621.313.39:538.4

FOMIN, A. A.

"The Effectiveness of Induction Pumps and Supports"

Riga, Magnitnaya Gidrodinamika, No 1, 1972, pp 81-87.

Abstract: The local relationship between the components of the Poynting vector and the Maxwell stress tensor is presented, the existence of which is a sufficient condition for the effectiveness of an electromechanical converter to be determined by the field phase velocity. It is demonstrated that arbitrarily great effectiveness can be achieved in induction pumps. The effectiveness of induction supports for support of a disk is studied.

1/1

Acc. Nr.: AP0041159

F

USSR

Ref. Code: UR 0121

UDC 621.923.5:621.922.023

FRAGIN, I. YE., FOMIN, A. A., MATVEVIVA, A. YE.

"The Honing of Hardened Cylinder Sleeves by Large-Grained Abrasive Blocks"

Moscow, Stanki i Instrument, No 1, 1970, pp 21-24

Abstract: The article deals with a study of the honing of hardened cylinder sleeves with large-grained abrasive blocks in order to determine the influence of the honing conditions and the structure of the blocks upon their wear and specific consumption, the productivity of the honing process and the errors in the shape of the opening. The purpose of the study was to determine the optimum grain size and hardness for the abrasive blocks. The research included investigation of the influence of specific pressure upon metal removal and block wear, the influence of the speed of the reciprocal motion upon metal removal and block wear, investigation of the influence of the peripheral velocity upon metal removal and

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Reel/Frame

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AP0041159.

block wear, determination of the relationship of ovality correction upon the cutting conditions, the effect of the machining time upon productivity and ovality correction.

ea

19750943

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Information Transmission

USSR

UDC: 621.391.1

FOMIN, A. F., Active Member of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Information Characteristics of Some Wide-Band Analog Systems of Data Transmission"

Moscow, Radiotekhnika, Vol 26, No 6, Jun 71, pp 18-28

Abstract: The author studies the actual traffic-handling capacity, information efficiency, energy and frequency characteristics of some wide-band analog data transmission systems. Systems with PAM-FM and PPM-Am signals are investigated for various methods of reception, assuming that the receiver input is subjected to an additive mixture $Y(t)$ of the signal $\Lambda(\lambda, t)$ and white Gaussian noise $n(t)$ with known spectral power density N_0^2 . The message to be transmitted $\lambda(t)$ is a stationary random process with a spectrum which is uniform and nonvanishing only in the range $0-F_s \text{ max}$. Time quantization is in accordance with Kotel'nikov's theory ($T_0 = \frac{1}{2}F_s \text{ max}$), and restoration of the process with respect to its discrete values is without errors (ideal interpolation). The basic information characteristics of some analog and digital systems of continuous message transmission are compared. It is found that in transmission of multichannel telephone messages with frequency multiplexing of channels, the requirements for permissible phase fluctuations of the synchronizing signal are more severe than for single-channel messages.

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USSR

UDC: 621.372.061

URYADNIKOV, Yu. F., FOMIN, A. F.

"Threshold Properties of a Frequency Demodulator with Phase Synchronization"

V sb. Metody pomekhoustoychivogo priyema ChM i FM (Methods of Interference-Free FM and PM Reception--collection of works), Moscow, "Sov. radio", 1970, pp 111-123 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A142)

Translation: The authors investigate the threshold properties of a phase-synchronized demodulator with regard to initial detuning and phenomena of the type of disruptions in synchronization. The investigations are reduced to computational formulas and graphs. Various methods of statistical linearization of the transmission factor of a phase discriminator are also evaluated. Resumé.

1/1

- 138 -

USSR

UDC: 621.372.061

BEREZKIN, V. V., FOMIN, A. F.

"On an Investigation of the Workability and Threshold Properties of a Multi-channel Frequency Demodulator"

V sb. Metody pomekhoustoychivogo priyema ChM i FM (Methods of Interference-Free FM and PM Reception--collection of works), Moscow, "Sov. radio", 1970, pp 136-148 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A143)

Translation The authors consider the circuit of a multichannel frequency demodulator which consists of a device for signal detection and recognition (a bandpass filter array plus a maximum signal detector) and a frequency evaluation device (standard frequency discriminator). The resistance of the multichannel frequency demodulator to interference is analyzed. The procedure for experimentally checking the demodulator is described. Measurement results are given which indicate that the multichannel frequency demodulator has excellent workability and high resistance to interference in comparison with a standard frequency demodulator. It is noted that the circuit can be used for demodulation of both continuous FM signals and signals of the APM-FM type. Five illustrations, bibliography of eight titles. N. S.

1/1

AA0040509

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UR 0482

3-78

Soviet Inventions Illustrated, Section I Chemical, Derwent,

236411 STAMPING of lightgauge austenitic plate is made on lead and zinc stamp by preheating the plate to the temperature of the austenitic formation and then cooling it down to 25-30°C above the martensitic conversion but below the melting point of the stamp (327°C). Preheating is done in a furnace and for cooling the plate is transferred to an electric oven or to an alkaline bath. 31.7.67. as 1177719/25-27. N.P.PETROVICHEV et al. (11.6.69.) Bul.7/3.2.69. Class 7c, 18c. Int.Cl. B21d, C21d.

LD

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AUTHORS: Petrovichev, N. P.; Fomin, A. P.; Stroganov, G. B.; Natapov, S. L.; Entin, L. Kh.; Orzhekhovskiy, Yu. E.

19750009

Reliability Theory

USSR

UDC: 621.3.019.3

FOMIN, A. V., BORISOV, V. F., CHERMOSHENSKIY, V. V.

"Methods of Computer and Experimental Evaluation of the Reliability of Radio Components With Respect to Incomplete Failures"

Tr. Mosk. aviats. in-ta (Works of the Moscow Aviation Institute), 1970, vyp. 212, pp 89-117 (from RZh-Radiotekhnika, May 71, No 5, Abstract No 5A85)

Translation: A comparative analysis is given of the matrix-topological method and the method of statistical planning of an experiment from the standpoint of their use for computer calculation of the reliability of electronic circuits. It is shown that the second method can be used for calculating reliability with respect to incomplete failures when the circuit has no analytical description. Seven illustrations, one table, bibliography of seven titles. N. S.

1/1

USSR

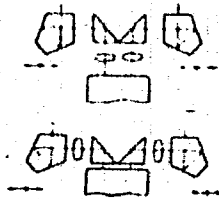
UDC: 621.397.61:535.813

FOMIN, A. S., Leningrad Electrical Engineering Institute of Communications
in the name of Professor M. A. Bonch-Bruyevich

"An Optical System for a Single-Tube Stereoscopic Television Camera"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 3, Jan 71, Author's Certificate No 291376, Division H, filed 17 May 68,
published 6 Jan 71, p 162

Translation: This Author's Certificate introduces an optical system for a
single-tube stereoscopic television camera which contains two objective
lenses and two fixed rectangular prisms. As a distinguishing feature of the
patent, a reversed mirror image of the stereo frames is obtained by placing
additional penta prisms in front of the triangular prisms.



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USSR

UDC: 621.317.4:621.318.134

FOMIN, A. Ye., LIPATOV, P. V., SHCHERBINA, P. L., PRISADA, V. M.

"Multidimensional Statistical Analysis of the Pulse Parameters of Ferrite Cores"

Elektron. tekhnika. Nauchno-tekhn. sb. Ferrit. tekhn. (Electronic Technology. Scientific and Technical Collection. Ferrite Technology), 1970, vyp. 3(25), pp 66-72 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A249)

Translation: The authors consider some aspects of multidimensional studies of the pulse parameters of ferrite cores -- amplitude of readout signals, time for magnetic reversal, and the rise time to maximum of the readout signals. A description is given of a measurement complex for these studies which consists of an AI-4096 analyzer, a U-700M automatic device for quality control of ferrite cores, and input matching devices. Measurement data are given as well as the results of computer processing of these data. It is emphasized that such studies are highly important for evaluating the quality of batches of ferrite cores, and for the development of controlled ferrite technology. Resumé.

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USSR

UDC 539.4.624

TRUKHLOV, L. M., and FOMIN, G. A.

"Calculation and Theoretical Research on the Stressed State of a Silo Row Building With the Use of an Electronic Digital Computer"

Saratov, Issled. Napryazh. Sostoyaniya Zhelezobeton. Silos. Sooruzh. -- Sbornik (Research on the Stressed State of Reinforced-Concrete Silo Structures -- Collection of Works), No 3, 1971, pp 5-26 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1047 by Ya. B. L'vin)

Translation: Groups of silo containers, consolidated into a unit of two or four containers each, are calculated for the nonuniform pressure of a friable material, with account taken of the interrelationship of the containers as shells on the basis of the semizero-moment theory of V. Z. Vlasov. A comparison is made of the labor intensity and results of calculation by the method of displacement (the basic system is composed of open cylindrical and butt elements) and the method of forces (the basic system is formed by separation of the unit into closed cylindrical shells). The number and orientation of the basic unknowns in the method of forces (the intersecting forces of the combined shells which replace the butt element) were varied. The method of forces is recommended as being less labor-intensive and sufficiently exact

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UDC 519.281

FOMIN, G. A.

"Algorithm for Finding Dividing Surface Using a Simplex (Complex) Method"

Tr. Mosk. Energ. In-ta. [Works of Moscow Power Engineering Institute], No. 76, 1970, pp 64-75 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V162 by Ye. Barzilovich).

Translation: Suppose a sample of objects x_1, \dots, x_N is fixed and for each object of the sample, the value of function $y(x_j)$ is known defining the class to which the object is related from x_j :

$$y(x_j) = \begin{cases} 1, & \text{if } x_j \in \text{class 1,} \\ -1, & \text{if } x_j \in \text{class 2.} \end{cases}$$

This article presents an algorithm for finding estimates of parameters c of function $\psi(c, x)$ of the form

$$\psi(c, x) = c_0 + \sum_{i=1}^k c_i x_i + \sum_{l=1}^h \sum_{l=1}^k c_{li} x_l x_i$$

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USSR

UDC 519.281

FOMIN, G. A., Tr. Mosk. Energ. In-ta., No. 76, 1970, pp 64-75.

providing the minimum value of the criterion

$$Q(c) = \frac{1}{2} \sum_{j=1}^N [1 - \text{sign} \{y(x_j) \cdot \psi(c, x_j)\}]. \quad (1)$$

If the desired estimates are represented by c , the function $\psi(c, x) = 0$ defines a certain surface in space x , which divides the points of the sample into two classes in the best manner (based on criterion (1)).

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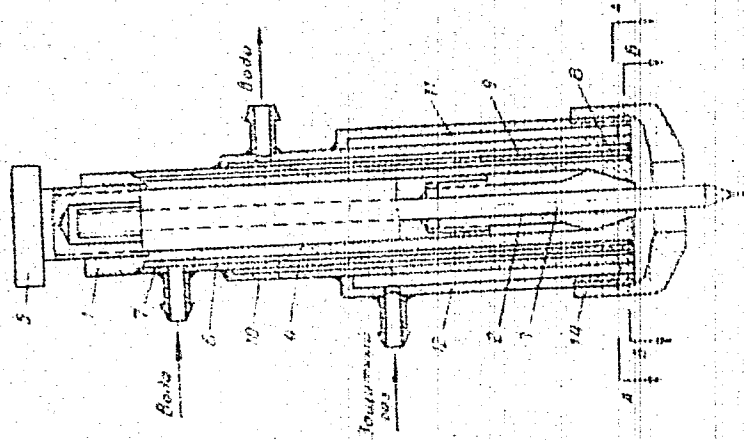
UR 0482

Soviet Inventions Illustrated, Section **F** Chemical, Derwent, 3/70

238029 PUSHER-TYPE ELECTRIC VACUUM FURNACE with continuous operation for the heat treatment of articles placed in cassettes is a rectangular vacuum channel which is separated into working zone 11 and pre-degasification zone 7 by dynamic shutters 8,15. The cassettes 1 are charged through hatch 2 into loading-unloading chamber 3 and moved along the furnace by push rods. A high-vacuum pump is connected at 21 and a medium-vacuum pump to the cooling sections 14,16, at 22. 12.5.62. as 777373/24-7. A.I. MIRER, G.A. FOMIN. (16.7.69.) Bul.9/20.2.69. Class 21h. Int.Cl. B05b.

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19740013

Adsorption

USSR

UDC 541.183

BANINA, V. A., VOZMILOVA, L. N., MAMONTSOV, A. P., and FOMIN, G. G.

"Adsorption of Organic Solvents on the Surface of Gallium Arsenide"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 45, No 8, Aug 71, p 2098

Translation: The authors investigated the adsorption of acetone, benzene, carbon tetrachloride, methyl alcohol and ethyl alcohol on the surface of gallium arsenide. Organic solvents tagged with carbon-14 were used in the work. The counting apparatus did not permit counting the number of adsorbed molecules and therefore the ratio $N:S^m$ was calculated, which is proportional to the number of adsorbed molecules. Here N is the sample count (cpm) after treatment with the solvent and drying for two hours at room temperature and S^m is the calculated specific radioactivity of one gram molecule of solvent.

The results show that all investigated solvents are adsorbed on the surface of gallium arsenide. The degree of adsorption decreases in the order acetone > benzene > ethanol > methanol > carbon tetrachloride, in relative units: 37:15:7:6:1.

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USSR

BANINA, V. A., et al.; Zhurnal Fizicheskoy Khimii, Vol 45, No 8, Aug 71, p 2098

A study of desorption of organic solvents from the surface of gallium arsenide on heating showed that all investigated solvents with the exception of carbon tetrachloride are fairly strongly held to the surface of gallium arsenide and are removed only with difficulty on heating. The hypothesis is advanced that bonding of the organic molecule to the surface of the semiconductor is due to donor-acceptor interaction.

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FOMIN, G.V.

CHEMICAL TRANSFORMATIONS

SINGLE-ELECTRON TRANSFER AND CHEMICAL TRANSFORMATIONS
(Conference in Rostov-on-Don)

Article by Candidate of Chemical Sciences Z. V. Fedras, Moscow,
Vestnik Akademi Nauk SSSR, Russian, No 9, September 1973, pp
107-106

de Vries
-20 JUN 1974
10 Physics

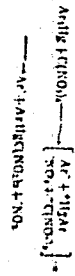
A conference on the role of electron transfer in chemical reactions was held in Rostov-on-Don on 22-25 May. It was organized by the Northern Caucasus Scientific Center of the Higher School; about 40 reports were presented. Participating in the conference were the leading chemical institutes of the High-Leningrad and Gorkyly universities, and also Rostov-on-Don, Moscow.

Chemical reactions are usually regarded as the rupture and formation of bonds, that is, the rearrangement of the skeletal placement of atoms or atomic arrangements is preceded by the transfer of electrons from one of the reacting molecules to the other. The study of this stage, which has become possible through the use of new instrumental methods of investigation, especially of electron paramagnetic and nuclear magnetic resonance, expands concepts of the reaction mechanism as a sequence of elementary stages known to us.

As a result of electron transfer new particles appear, not known to organic chemistry of the past. The properties of those products were examined in a number of reports. Hemoglobin, cytochrome C and other enzymes with Fe(II) after electron transfer give nonquilibrium forms in which the iron has already gone over into the state Fe(III) but the protein part still retains its previous configuration (R. M. Davydov). The transformation of 4,4-dihydro-cis-stilbene into an anion-radical is accompanied by complete cis-trans-isomerization. Destruction of the symmetrical cis-stilbene in the presence of electron transfer gives a mixture

- 143 - JRS 60661, 30 2-73

NO₂, but mainly leaves the cell and gives the hydrogen from the solvent



The aryl(trinitroperoxy) mercury, as is evident from the formula, forms through combination of the (trinitroperoxy)decomposition with the aryl mercury cation.

It is known that the reaction of alkoxy ions and fatty nitrocarbanions with perchloroyl fluoride leads to the corresponding fluoro- and chloro-derivatives. L. V. Oshibayeva et al. showed that in the reaction the initial phase is single-electron transfer, leading to the anion-radical (trio⁻) and the alkoxy radical or radical of the polynitro compound. V. A. Pavlov et al. and Z. M. Ponom demonstrated the role of electron transfer in another well-known reaction -- ionic hydrogenation. During the reaction of carboxylates with triethylamine there is a displacement of the hydride ion and the formation of the corresponding carbanion in these conditions. Hexachloroantimonate of triphenylhexachloroantimonate of tri(pentachlorophenyl)scarcenium is introduced into the reaction, the end product proves to be the free tri(pentachlorophenyl)methyl radical. The first stage of the reaction of silane with the carbanion ion evidently is a single-electron transfer with the formation of the radical pair carbonyl radical -- silane cation-radical. If the formed carbonyl radical is highly reactive, it reacts with the silane cation-radical in the cell of the solvent, giving the hydrogenation product. But if the radical has low reactivity, the process ends in the stage of electron transfer.

The participants in the conference noted the role of the formation of molecular complexes in reactions with electron transfer. I. A. Lygin and G. B. Seleznev have established the tetra(nitromethane) forms with organic donor-acceptor complexes (capable of homolytic decomposition) which is equivalent to electron transfer). In the dark that reaction proceeds slowly and is controlled only by thermal factors. During intense irradiation with light with a wavelength corresponding to the absorption band component of the complex, the process is completed in several seconds. The chemically, G. V. Pankov et al. studied the reaction of quinone with salts of aryl diazonium. The obtained results indicate that the active center which reacts with the diazonium cation is the singlet quinone radical; the arylation of quinone proceeds by a chain mechanism.

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--MECHANISM OF THE REDUCTION AND HYDROXYLATION OF
ANTHRAQUINONE, 2, SULFONATES IN ALKALINE SOLUTIONS --U--
AUTHOR--(03)--FOMIN, G.V., GURDZHIYAN, L.M., BLYUMENFELD, L.A.
CCOUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 151-4, PHYS CHEM
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL REDUCTION, ANTHRAQUINONE, SULFONE, PHOTOLYSIS,
HYDROXYL RADICAL, CHEMICAL REACTION MECHANISM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1083 STEP NO--UR/0020/70/191/001/0151/0154
CIRC ACCESSION NO--AT0124740
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124740

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC CURVES WERE SHOWN FOR ACCUMULATION OF ION RADICALS IN PHOTOLYTIC AND DARK REACTIONS WITH OR WITHOUT ADDED C SUB6 H SUB6 BETWEEN ANTHRAQUINONE,2,SULFONATE AND HD PRIME NEGATIVE ION. THE MAX. CONC. OF ANION RADICALS IN THE ABSENCE OF C SUB6 H SUB6 IN THE PHOTOREACTION WAS 50-60PERCENT OF THE INITIAL CONC., AND IN THE DARK REACTION IT REACHED 5-6PERCENT. WITH C SUB6 H SUB6 THESE WERE NEARLY 100PERCENT AND 10-12PERCENT RESP. A REACTION SCHEME WAS SUGGESTED. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ROLE OF SINGLE ELECTRON TRANSFER STEPS IN REACTIONS OF ORGANIC
COMPOUNDS -U-
AUTHOR--(04)-BLYUMENFELD, L.A., BRYUKHOVETSKAYA, L.V., FUMIN, G.V., SHEYN,
S.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. FIZ. KHIM. 1970, 44(4), 931-44
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ELECTRON, ORGANIC CHEMISTRY, CHEMICAL REACTION MECHANISM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1160 STEP NO--UR/0076/70/044/004/0931/0944
CIRC ACCESSION NO--AP0128582
UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0128582
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE SINGLE ELECTRON TRANSFER IN
HETEROCYCLIC CHEM. REACTIONS IS REVIEWED WITH 60 REFS. FACILITY:
INST. KHIM. FIZ., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

UDC: None

KOGAN, A. B., VLADIMIRSKIY, B. M., TAMBIYEV, A. E., and FOMIN,
G. P., Rostov State University

"Spatial Organization of Neuron Assembly Functional Mosaics in
the Cerebral Cortex"

Moscow, Doklady Akademii nauk SSSR, vol 206, No 6, 1972, pp 1478-
1481

Abstract: Since it is difficult to determine by direct experiment
the full configuration of the mosaic pattern formed by the distri-
bution of excitatory and inhibitory cell groups, the authors under-
take in this article to determine the pattern through the use of
mathematical methods based on the statistics of earlier experimen-
tation. These statistics consist for the most part of dimensions
and other spatial characteristics of the actual probabilities of
neuron assemblies in the analyzer fields of the cerebral cortex. The
statistical information for the present article is derived from a
paper published by the first of the authors named above (Neuro-
fiziologiya, 1, 1969, p 120). A picture of the reconstructed mo-
saic patterns, obtained with the assistance of an electronic di-
gital computer, is reproduced.

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Acc. Nr.: AP0041189

Ref. Code: UR 0107

USSR

UDC: None

MEDVEDEV, L., Colonel, and FOMIN, L., Engineer-Colonel

"Radar Station P-10"

Moscow, Radio, No. 1, 70, pp 14-16

Abstract: A discussion on a fairly simple level, of the radar station P-10 designed to detect flying objects. The detection range of the station for targets at an altitude of 10 km is 200 km, with the detection range varying in general with target altitude. The station operates in the pulse mode, and its detection zone ceiling is not less than 16,000 meters. A full circular view of the surrounding air space is provided, with a velocity of from 0.5 to 2 or 3.5 revolutions per minute. The station is protected from noise; specifications concerning errors in coordinate determination and resolving power are given. Operation is in the meter

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wavelength range and the station can be pretuned to several fixed operating frequencies. The antenna has a broad directional diagram of 22° maximum in the horizontal plane. The voltage supply is three-phased at 220-250 volts, 50 Hz, with 6.25 kw consumed. The entire equipment of the station is carried in two trucks of the ZIL-151 type. One van contains the radar equipment; the other the power supply and distribution switchboard. The first illustration of the article shows the antenna array as mounted on the truck containing the radar equipment, and the second gives the front-panel layout of the various radar components mounted on the racks contained in the first truck. The concluding paragraph promises further details on the radar equipment's operation, particularly the principles on which the coordinates of the target are obtained and the design work on the station, to appear in a forthcoming issue of Radio.

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1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PRODUCTION OF REFRACTORY COMPOUND POWDER GRINDING MATERIALS -U-
AUTHOR--(04)-BEZYKORNOV, A.I., DOBROVOLSKY, A.G., KOVALCHENKO, M.S., FOMIN,
L.M.
COUNTRY OF INFO--USSR F
SOURCE--POROSHKOVAJA MET., FEB. 1970, (2), 108-110
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--INDUSTRIAL PRODUCTION, REFRACTORY MATERIAL, GRINDING, TUNGSTEN
CARBIDE, ZIRCONIUM CARBIDE, BORIDE, SINTERING FURNACE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0135 STEP NO--UR/0226/70/000/002/0108/0110
CIRC. ACCESSION NO--AP0123907
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123907

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SIMPLE METHODS OF OBTAINING FINE GRAINED WC, ZRC, AND W SUB2 B SUB5 POWDERS FOR THE MANUFACTURE OF GRINDING WHEELS AND ABRASIVE CLOTH ARE DESCRIBED. THE ORIGINAL COMMERCIALY PURE MATERIALS ARE PRESSED INTO BLOCKS IN A HYDRAULIC PRESS AND SINTERED; THESE ARE LATER CRUSHED AND THE GRAINS ARE GRADED BY SIZE (TYPICAL YIELD 20PERCENT 400-500 AND 15PERCENT 120-160 MU M). THE MICROHARDNESS OF THE GRAINS ARE SIMILAR TO 2000-3000 KG-MM PRIME2, DEPENDING ON THE PRECISE METHOD OF PROCESSING. REPEATED PROCESSING OF ABRASIVE POWDER WASTE MAY LEAD TO A DISADVANTAGEDUS CHANGE IN CHEMICAL COMPOSITION.

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