

USSR

UDC 669.295.5

KORNILOV, I. I., NARTOVA, T. T., and SHIROKOVA, N. I., Moscow

"The Effect of Zirconium and Aluminum on the Structure and Properties of  $Ti_3Sn$ "  
Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul-Aug 70, pp 174-177

Abstract: The effect of zirconium and aluminum on the phase equilibrium and properties of  $Ti_3Sn$  was investigated on the basis of two polythermal sections coming from the composition of the compound  $Ti_3Sn$  in the systems Ti-Zr-Sn and Ti-Zr-Al-Sn. The investigation was carried out by differential thermal and microstructure analyses and measurements of hardness, electrical resistance, and density. The microstructures and polythermal section curves of the two systems are shown and their characteristics outlined. The established character of the chemical interaction of components of the investigated sections is confirmed by the regularity in the variation of properties of the alloys in dependence on structure and chemical composition.

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UDC 669.295.5'296'71

NARTOVA, T. T., and SHIROKOVA, N. I.

"Phase Equilibrium and Heat Resistance of Ti-Zr-Al Alloys"

Moscow, Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 194-198

Abstract: The results are presented of an investigation of the phase equilibrium and properties of alloys whose polythermal sections are parallel to the Ti-Ti<sub>3</sub>Al side, with a constant 5 wt % content of Zr and with an isothermal section at 500° C. Alloys for phase equilibrium study were produced by the induction method of noncrucible melting in suspension in a purified helium atmosphere. The experimental technique is briefly described. The polythermal section parallel to the Ti-Ti<sub>3</sub>Al side was constructed using the methods of differential thermal, micro-structure, and X-ray analyses (on a high-temperature vacuum facility of the Academy of Sciences UkrSSR). Creep tests were conducted by the centrifugal flexion method at 700°C and 20 kg/mm<sup>2</sup> stress along two sections: one parallel to the Ti-Al side and the other parallel to the Ti-Zr side. The results show that the constructed polythermal section, parallel to Ti-Ti<sub>3</sub>Al with a constant 5 wt % Zr content is similar to the Ti-Al system. The constructed isothermic section of Ti-Ti<sub>3</sub>Al-Zr at 500° contains a large single-phase region of solid solution of

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USSR:

NARTOVA, T. T. and SHIROKOVA, N. I., Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 194-198

Ti, Zr, and Al, and a narrow two-phase region ( $\alpha + \alpha_2$ ) adjacent to the Ti-Ti<sub>3</sub>Al side. The maximum creep resistance is obtained with an 86% Ti, 9% Al, and 5% Zr alloy. Its tensile strengths at room temperature, 700°C, and 800°C are 100, 80, and 50 kg/mm<sup>2</sup>, respectively.

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USSR

VYCHEROV, V. G., et al, Tsvetnyye metally, No 5, May 72, pp 21-23

much shorter time for the preliminary reducing roasting of the overall amount of ore. (1 illustration, 1 table, 5 bibliographic references)

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APPROVED FOR RELEASE: 07/20/2001 <sup>Extraction and Refining</sup> CIA-RDP86-00513R002202930002-1  
UDC 669.243.881.669

USSR

VYCHEROV, V. G., TSEMEKHMEN, L. SH., SHIROKOVA, Z. F., and KUBACHEV, P. P.

"Carbon Behavior in Smelting Oxidized Nickel Ores to Ferronickel"  
Moscow, Tsvetnyye metally, No 5, May 72, pp 21-23

Abstract: The principal factors responsible for carbon behavior in the process of smelting oxidized nickel ores resulting in frothing are the composition of the melt and the oxidizer consumption rate. The higher the consumption (all other conditions being equal), the higher the carbon solubility in the metal melt. Silicon and nickel are shown to reduce carbon solubility in iron while chromium has the opposite effect. It is shown here that frothing is caused primarily by the reaction of ferrous oxide with the carbon dissolved in the ferronickel. Addition of small amounts of ferrosilicon to the melt will eliminate frothing in the process of smelting to ferronickel, regardless of the melt's composition. Preliminary ore reduction with a gaseous agent will eliminate the presence of carbon in the melt. Simultaneous melting of both reduced and unreduced ores is shown to have practical application in that iron ore is more readily reduced at lower temperatures than magnesium ore and may require

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1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--COMPARISON BETWEEN THE AUGMENTED WAVE AND GREEN'S FUNCTION METHODS  
IN THE ZONE THEORY OF SOLIDS -U-  
AUTHOR--(04)-DYAKIN, V.V., YEGOROV, R.F., ZVEZDIN, V.K., SHIROKOVSKY, V.P.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR. 1970, 29, (3), 579-483

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ELECTRON SPECTRUM, WAVE FUNCTION, ENERGY BAND STRUCTURE,  
METAL CRYSTAL, CALCULATION, GREEN FUNCTION, VARIATIONAL METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1819

STEP NO--UR/0126/70/029/003/0479/0483

CIRC ACCESSION NO--AP0129187

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 031

CIRC ACCESSION NO--AP0129187  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE MATHEMATICAL PROBLEM OF FINDING THE ELECTRON ENERGY SPECTRUM AND WAVE FUNCTIONS OF METAL CRYSTALS AND DERIVING THE ELECTRICAL AND OTHER PROPERTIES FROM THESE IS CONSIDERED THEORETICALLY IN TWO FORMS BASED ON THE AUGMENTED PLANE WAVE AND GREEN'S FUNCTION METHODS, RESP. IT IS PROVED THAT IN BOTH THE RELATIVISTIC AND NONRELATIVISTIC CASES BOTH METHODS MAY BE DERIVED FROM A SINGLE BASIC VARIATIONAL PRINCIPLE. SOME OF THE SIMILARITIES AND DIFFERENCES BETWEEN THE TWO METHODS ARE DISCUSSED.

UNCLASSIFIED

USSR

UDC: 621.317.8(088.8)

BADINTER, Ye. Ya., ZELIKOVSKIY, Z. I., KARASIK, N. Ya., PONYATOV, G. A.,  
SAVENKOV, A. N., FARMAKOVSKIY, B. V., TSETENS, V. P., SHIROKSHIN, K. A.

"A Resistor With a Winding of Cast Microwire in Glass Insulation"

USSR Author's Certificate No 287161, filed 24 Nov 69, published 1 Feb 71  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V334 P)

Translation: This Author's Certificate introduces a resistor wound with cast microwire in glass insulation. The body of the resistor is made from an electrical insulating material such as glass. To improve the stability of operational characteristics in the negative temperature region, the core and insulation of the microwire are made from materials whose effective temperature coefficient of expansion is close to that of the body material. A modification of the resistor is proposed which is distinguished by the fact that borosilicate electric vacuum glass is used as the insulating material, and a ternary or more complex alloy is used as the core material. The components of the alloy are taken in the following ratios (percent): Cr--8-12, Mn--8-16, Si--6-12, Mo--0.1-5, Re--less than 2.2, Ce--less than 1.2, Pr--less than 1.2, the remainder--Ni-Co.

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SHIROKSHINA, Z. V., TROITSKIY, V. M., "Optiko-mekhanicheskaya promyshlennost",  
No. 1, Jan 71, pp 46-48

given. The index of refraction of films of KMI-29 resins was measured as  $1.4 \pm 0.02$  and for films of FM-29 resins was  $1.58 \pm 0.02$ . The films were practically transparent in the infrared region. The coatings were kept for more than 500 hrs at a temperature of  $350^\circ$  and did not break down even when the temperature was raised to  $400^\circ\text{C}$  for 30 min. The optical and mechanical parameters of the film does not change after  $\gamma$ -irradiation and the alternating effect of high and low temperatures.

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1/2 011 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--DIFFUSION OF WATER VAPORS THROUGH POLYMER FILMS -U-

AUTHOR--(03)-SHIROKSHINA, Z.V., SUYKOVSKAYA, N.V., PUGODAYEV, A.K.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO MEKHANICHESKAYA PROMYSHLENNOST', NO 1, 1970, PP  
48-52

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PLASTIC FILM, WATER VAPOR, FLUOROCARBON RESIN, WATERPROOFING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1342

STEP NO--UR/0237/70/000/001/0048/0052

CIRC ACCESSION NO--AP0123300

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123300

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PERMEABILITY OF WATER VAPOR THROUGH 2.5-20 MU THICK POLYMER FILMS IS DETERMINED. IT IS SHOWN THAT 32L TYPE FLUORORGANIC POLYMER FILMS ARE MOST HYDROPHOBIC AND LEAST PERMEABLE FOR WATER VAPOR.

UNCLASSIFIED

USSR

UDC 621.791.755:62-181.48:62-415:669.295

SHIRONIN, V. M., Engineer

"Technology of Microplasma Welding of Thin-Sheet Titanium"

Moscow, Svarochnoye Proizvodstvo, No 11, 1973, pp 14-16

Abstract: Face and butt welds produced by microplasma welding were investigated where argon was used as the plasma-forming gas and helium as the gas shield. Plates of VT1-0 titanium measuring 0.2, 0.3, 0.5, 0.8, and 1.0 mm thick were welded where it was found that seam width in microplasma welding is smaller than in argon-arc welding. It was established that the better joint is produced by a face joint, but that for more complex welding modes the butt joint is better. Optimum welding parameters are given for each thickness of metal. It was established that microplasma welding is better than argon-arc welding in continuous and pulse welding modes, resulting in weld seams with lower porosity. 5 figures, 1 table, 9 bibliographic references.

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USSR

UDC 542.91+542.742+547.834.2

SHIROYAN, E. R., AVETYAN, V. T., TOLMAYAN, A. G., Institute of Fine Organic Chemistry imeni A. L. Mndzhoyan, Academy of Sciences of the ArmSSR, Yerevan

"Indole Derivatives. XLIII. 3-Alkyl-9-Methoxy-12b-Methyl-1,2,3,4,6,7,12,12b-Octahydroindolo(2,3-a)quinolizines"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 26, No 2, 1973, pp 147-152

Abstract: The paper describes synthesis of 3-alkyl-9-methoxy-12b-methyl-1,2,3,4,6,7,12,12b-octahydroindolo(2,3-a)quinolizines. It was found by thin-layer chromatography that these bases form two diastereomers. The IR spectra show the trans configuration of the quinolizidine fragment in one or both diastereomers. The hydrochlorides of these bases were pharmacologically tested, and the results will be given in a future paper.

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Nitrogen Compounds

USSR

UDC 547.752+547.834.2

SHIROYAN, E. R., and AVETYAN, V. T. Institute of Fine Organic Chemistry  
imeni A. L. Mndzhoyana, Academy of Sciences Armenian SSR (Yerevan)

"Derivatives of Indol. XXXV. 1-Alkyl-12b-methyl-1,2,3,4,6,7,12,12b-  
octahydroindole (2,3-a)quinolizines"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 1, 1972, pp 61-65

Abstract: The title compounds were synthesized in conjunction with a study  
of their pharmaceutical properties. Both stereoisomers were obtained.  
Examination of the IR spectra indicated that the predominate form was the  
trans conformation. Intermediate derivatives are given together with their  
percent yield, melting point, molecular formula, theoretical and experimental  
percent composition, and important peaks in the IR spectra.

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USSR

GORYACHEV, GALINA ANATOL'YEVNA, et al., Deystviye pronikayushchey radiatsii na radiodetaili, Moscow, Izd. "Atomizdat," 1971, 120 pp, 32 fig., 35 tab., 52 ref., 71 k.

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USSR

GORYACHEV, GALINA ANATOL'YEVNA, et al., Deystviye pronikayushchey radiatsii na radiodetali, Moscow, Izd. "Atomizdat," 1971, 120 pp, 32 fig., 35 tab., 52 ref., 71 k.

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USSR

GORYACHEV, GALINA ANATOL'YEVNA, et al.; Deystviye pronikayushchey radiatsii na radiodetali, Moscow, Izd. "Atomizdat," 1971, 120 pp, 32 fig., 35 tab., 52 ref., 71 k.

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Acc. Nr: MP0049060

Ref. Code: UR0357

PRIMARY SOURCE: Vestnik Oftal'mologii, 1970, Nr / ,  
pp 71-75 S

PROJECTION ONTO THE SCLERA OF OBJECTS UNDERGOING  
OPHTHALMOSCOPY ACCORDING TO THE DATA OF PERIMETRIC  
LOCALIZATION WITH DUE REGARD FOR INDIVIDUAL SIZE  
AND SHAPE OF THE EYEBALL

Yu. K. Shirshikov

Summary

Correlations between the length of the anterior-posterior axis (APA) and horizontal transverse diameter (HD) were studied by the ultrasound method on 220 eyes with myopia ranging from 1.0 to 30.0 D. A high positive correlation (+0.86) between the

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APA/HD ratio and the degree of myopia was revealed. These data served as a basis for calculation of a constant and constructing schemes of spheroid eyes with the axis length from 22 to 26 mm and of eyes with an elongated axis measuring from 27 to 32 mm (the A. I. Dashevsky scheme of an average eye having been taken as a reference model). Tables for conversion of goniometric data of perimetric localization into millimeters of the distance from the cornea along the arc and chord for eyes of different dimensions were worked out graphically and mathematically. Apart from the ultrasound method the author proposes to use a device designed by him and called an indicator of the eyeball size in measuring dimensions of the eye.

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UDC 541.123.4+546.185.325

KRUPATKIN, I. L., and SHIRSHINA, L. G.

"Equilibrium Between the Liquid Phases in the Ternary System Phosphoric Acid - Guaiacol - n-Octane"

Leningrad, Zhurnal Obshchey Khimii, Vol 43, No 11, Nov '73, pp 2344-2347

Abstract: Equilibria in the system phosphoric acid - guaiacol - n-octane were investigated under isothermal conditions in the 25-100° range. With increasing temperatures, the conodes of the heterogeneous regions in the ternary system studied changed their direction, passing over isotherms with parallel conodes. Simultaneously the critical points were displaced along the binodal curve, passing through its maximum. As a result the curve of critical points acquired an S-shape. While separation into layers took place in all three component binary systems, an equilibrium between three liquid phases was absent.

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USSR

UDC 541.49:541.123.2:546.185+547.564

KRUPATKIN, I. L., SHIRSHINA, L. G., and SHCHERBAKOVA, T. A., Kalinin Polytechnical Institute

"Study of the Double Systems of Phosphoric Acid With Some Derivatives of Phenol and Naphtols"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1881-1884

Abstract: Seven double systems of phosphoric acid with m-chlorophenol o-nitrophenol, m-nitrophenol, thymol, vaniline,  $\alpha$ -naphtol, and  $\beta$ -naphtol were investigated by means of visual-polythermal method in temperature range 0-140°, using fusibility and lamination as the end points. It has been shown that the system with m-chlorophenol is a system with upper critical point located considerably above the 140°. The systems with o- and m-nitrophenols,  $\alpha$ - and  $\beta$ -naphtols and thymol correspond to systems with lower critical points being in the range of metastable state below the experimentally determined monotectic temperatures. It was established that the temperatures of monotectic reactions and the melting points of o-, m- and p-derivatives of the phenol and  $\alpha$ - and  $\beta$ -naphtols change symbatically. This does not occur with chlorophenols. In the system phosphoric acid-vanilin a compound with a 1:1 composition has been noted, melting congruently at 96.8°.

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UDC 532.516

USSR

MIGUNOVA, G. I., SHIRSHOV, A. N.

"Numerical Solution of the Problem of Flow of a Viscous Liquid in a Channel with Sudden Constriction"

V sb. Chislen. metody rascheta techeniya vyazkoy zhidkosti v kanalakh (Numerical Methods of Calculating the Flow of a Viscous Liquid in Channels--collection of works), Moscow, 1971, pp 17-25 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B509)

Translation: A study was made of the problem of turbulent flow around an offset in a flat channel. The problem was reduced to solving the system of equations for the current and vortex function. It was assumed that the kinematic transfer coefficient of the momentum is constant. The sticking conditions were taken as the boundary conditions on the wall. The absence of tangent stresses was assumed on the upper wall of the channel. The problem was solved by the buildup method using the explicit difference scheme. Finite-difference relations, the approximating equations and boundary conditions are presented. The calculation was performed on a fine grid in the vicinity of the offset and a larger grid in the rest of the area. The finite-difference equation for determining the pressure field is also presented. The results from calculating the pressure function, the pressure diagram and the longitudinal velocity component are presented.

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Acc. Nr: AP0049044

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Ref. Code: UR0607

PRIMARY SOURCE: Vestnik Otorinolaringologii, 1970, Nr / ,  
PP 53-57

THE SURGICAL TREATMENT OF CHRONIC TONSILLITIS IN PATIENTS WITH  
EPILEPSY

V. M. Shirshov (Moscow)

Summary

During the examination of 500 patients with epilepsy in 146 (29%) chronic tonsillitis was revealed. The author has elaborated a special technique of preoperative preparation of such patients consisting in the administration of large doses of anticonvulsive agents and premedication with a solution of atropine sulfate. Under local anesthesia tonsillectomy was performed in 119 patients. There were no epileptic seizures during the operation. Follow-up observation (from 2 to 8 1/2 years) over 112 operated patients established a cessation of tonsillitis, significant improvement of the general state and rise of the efficacy of anticonvulsive therapy in the majority of cases. In 40 patients there was a complete discontinuation of convulsive seizures, in 44 — the course of epilepsy improved. The author speaks in favor of the surgical method of treating chronic tonsillitis in epileptic patients, deeming it absolutely impermissible the employment of any electric procedures.

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UDC 547.759.3'821'743.1

SHIRSHOVA, T. I., and TERENT'YEVA, I. V., Institute of Chemistry, Moldavian SSR Academy of Sciences, Kishinev

"Certain Reactions of Carex parvae alkaloids. 6-Aminobrevicollin and 6-Bromobrevicollin"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 7, 1973, pp 952-953

Abstract:  $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$  was used to reduce nitro derivatives of brevicollin, brevicarine, and methyl and acetylcarine to form the amino derivatives. Since the amino derivatives are highly unstable, only 6-aminobrevicollin could be isolated; it was converted to 6-bromobrevicollin by the Sandmeyer reaction.

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1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--ULTRASOUND DIAGNOSIS OF PNEUMONIA -U-  
AUTHOR--(05)-BOGIN, YU.N., MUTINA, YE.S., BOGDANOV, A.V., SHIRSHOVA, T.N.,  
BEDUKHINA, L.I.  
COUNTRY OF INFO--USSR  
SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 6, PP 123-138  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PNEUMONIA, ULTRASOUND, DIAGNOSTIC MEDICINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3005/1474 STEP NO--UR/0497/70/048/006/0123/0128  
CIRC ACCESSION NO--AP0133410  
UNCLASSIFIED



UNCLASSIFIED

PROCESSING DATE--04DEC70

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CIRC ACCESSION NO--AP0133410

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

ABSTRACT. THE AUTHORS EVALUATED THE DIAGNOSTIC POSSIBILITIES OF THE BILOCATION TECHNIQUE IN ACUTE AND CHRONIC PNEUMONIA. THERE WERE 31 PATIENTS WITH ACUTE PNEUMONIA AND 55 HETEROGENOUS FOCI OF INDURATION OF THE PULMONARY TISSU WHICH DISAPPEAR UPON RECOVERY. IF PNEUMONIA IS COMPLICATED BY ACUTE PLEURISY ON THE ECHOGRAM THE LAYER OF FLUID IS REFLECTED IN THE FORM OF NONINTENSIVE HOMOGENOUS SHADOW. THE PNEUMONIC FOCUS IS WELL SEEN BEYOND THE FLUID LAYER. AN EXACERBATION OF CHRONIC PNEUMONIA IS ACCOMPANIED BY THE APPEARANCE OF HETEROGENOUS FOCI OF PULMONARY TISSUE INDURATION.

FACILITY: IV KAFEDRA TERAPII I II KAFEDRA KHIRURGII TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY, MOSKVA, BILOKATIONNAYA LABORATORIYA NA BAZE TSENTRAL'NOY KLINICHESKOY BOL'NITSY MINISTERSTVA PUTY SOBSHCENIYA, MOSKVA.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--THERMAL DIFFUSION SCATTERING OF X RAYS IN HEXAGONAL POLYCRYSTALS  
-U-  
AUTHOR--(02)-GERMANOV, YE.P., SHIRVIN, O.N. S  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1228-31  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--THERMAL DIFFUSION, X RAY SCATTERING, DEBYE TEMPERATURE, HEAT  
CAPACITY, CRYSTAL, THERMAL EFFECT, MAGNESIUM, CADMIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/0213 STEP NO--UR/0181/70/012/004/1228/1231  
CIRC ACCESSION NO--AP0127824  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0127824  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN TERMS OF THE DEBYE THEORY OF  
HEAT CAPACITY OF CRYSTALS, IT IS POSSIBLE TO APPLY A PREVIOUSLY DERIVED  
EXPRESSION FOR THE MODULATION OF THERMAL SCATTERING OF X RAYS TO  
HEXAGONAL POLYCRYSTALS. THE OBTAINED EXPRESSION OF THE MODULATING  
FUNCTION OF THERMAL DIFFUSE SCATTERING WAS VERIFIED BY COMPARISON WITH  
MEASURED THERMAL SCATTERING OF X RAYS ON PURE SPECIMENS OF MG AND CO.  
SATISFACTORY AGREEMENT WAS OBTAINED BETWEEN EXPT. AND CALCNS.  
FACILITY: PETROZAVODSK. GOS. UNIV. IM. KUUSINENA, PETROZAVODSK, USSR.

UNCLASSIFIED

1/2 -019 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--SOLID SOLUTIONS IN CAGED SUB3 AND BAGED SUB3 AND SRGEO SUB3 AND  
BAGED SUB3 SYSTEMS -U-  
AUTHOR--(03)-GREBENSHCHIKOV, R.G., SHIRVINSKAYA, A.K., PARFENENKOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MAIER. 1970, 6(2), 323-6

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--SOLID SOLUTION, OPTIC PROPERTY, X RAY DIFFRACTION, ANALYSIS,  
CALCIUM COMPOUND, BARIUM COMPOUND, STRONTIUM COMPOUND, GERMANIUM  
COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0564

STEP NO--UR/0363/70/006/002/0323/0326

CIRC ACCESSION NO--AP0105549

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105549

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IZV. AKAD. NAUK SSSR, NEORG.

MATER. 1970, 6(2), 323-6 (RUSS). PHASE EQUIL. WERE STUDIED IN THESE BINARY SYSTEMS WHICH HAVE REGIONS OF SOLID SOLNS. BASED ON INTERMEDIATE INDIVIDUAL PHASES AND THE EXTREME MEMBERS OF THE SYSTEMS. THE OPTICAL AND X RAY DIFFRACTION CHARACTERISTICS FOR THE INDIVIDUAL PHASES AND FOR THE GERMANATE SOLID SOLNS. ARE PRESENTED.

UNCLASSIFIED

USSR

UDC: 621.315.592 (2)

AGEKYAN, V. T., ZAKHARCHENYA, B. P., IL'IN, V. V., SEYSYAN, R. P.,  
STEPANOV, Yu. A., and SHIRYAPOV, I. P.

"Exciton Magnetic Absorption in SnO<sub>2</sub> Monocrystals"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1924-1930

Abstract: This article is in the nature of a recapitulation of experimental work on the absorption spectra of various materials in a magnetic field, with the accent on prior papers published by the authors named above. Recent experiments in the spectroscopic examination of germanium testifying to the exciton origin of magnetic absorption oscillations are cited. The authors of the present paper, however, list a number of reasons for using SnO<sub>2</sub> in such experimentation for a magnetic field of more than 10 kOe, arguing that it is uniquely suited for clarifying the role of Coulomb interaction in magnetic absorption oscillation spectra. Referring to an experiment described in an earlier paper they published (Agekyan, V. T., et al, PTE, 2, 182, 1972), using a pulse electromagnet, a liquid helium cryostat, an ISSh-500 pulse lamp, and a DFS-S spectrograph, they reproduce the basic result of that

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USSR

UDC: 621.315.592

AGEKYAN, V. T., STEPANOV, Yu. A., and SHIRYAYEV, I. P.

"Analysis of the SnO<sub>2</sub> Exciton Absorption Spectrum"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1931-1935

Abstract: This article is in the nature of a survey of the work that has been done in the area of SnO<sub>2</sub> exciton absorption spectra. The method of perturbation theory has been used to compute corrections to exciton energy levels that appear when the anisotropy of the specimen crystal is taken into account. The formula for these energy levels in the first approximation is given. In the SnO<sub>2</sub> spectrum, a series of exciton lines with half-widths of no more than 1 cm<sup>-1</sup> are observed at a temperature of 1.5° K; such a series is classified as direct, forbidden exciton transitions with dipole nP states and quadrupole 1S state. Quantitative comparisons of theoretical and experimental results on the basis of the articles surveyed are made, and a table of exciton energy levels in SnO<sub>2</sub>, obtained through both theory and experiment, is provided. A bibliography of 11 titles is appended.

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- 124 -

USSR

ROZOVSKIY, B. L., SHIRYAYEV, A. N.

"On Infinite Systems of Stochastic Differential Equations Arising in the Theory of Optimal Nonlinear Filtering"

Moscow, Teoriya Veroyatnostey i yeye Primeneniya, Vol. 17, No. 2, Apr/May/June 72, pp 228-237

Abstract: The existence and uniqueness of the solution of the following system of stochastic differential equations are investigated:

$$dx_i(t) = \sum_{j=1}^{\infty} \lambda_{ji}(t) x_j(t) dt + x_i(t) \left[ A(i, \xi_t, t) - \sum_{j=1}^{\infty} A(j, \xi_t, t) x_j(t) \right] \times \\ \times \left[ d\xi_t - \sum_{j=1}^{\infty} A(j, \xi_t, t) x_j(t) dt \right] \quad (1)$$

with initial conditions  $x_i(0) = \pi_i(0) = P(0_0 = i), \sum_{i=1}^{\infty} x_i(0) = 1.$

This equation arises in problems of optimal nonlinear filtering. The following

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USSR

ROZOVSKIY, B. L., SHIRYAYEV, A. N., *Teoriya Veroyatnostey i yeye Primeneniya*,  
Vol. 17, No. 2, Apr/May/Jun 72, pp 228-237

theorem is proved: if  $x_i(0) = P(\theta_0 = i)$ , the system of equations (1) in class M has a unique solution. This solution is a probability solution: i.e.,

$x_i(t) \geq 0, \sum_{i=1}^n x_i(t) = 1$ . It follows from this theorem that the process  $\pi = (\pi_i(t),$

$i = 1, 2, \dots; 0 \leq t \leq 1)$  made up of a posteriori probabilities  $\pi_i(t)$  is a unique solution in class M satisfying the initial condition  $x_i(0) = \pi_i(0) = P(\beta_0 = i)$ . This theorem is proved by studying problems of the existence and uniqueness of an infinite system of linear stochastic equations, and it is shown that the initial problem for the system (1) can be reduced to a consideration of these systems of linear stochastic differential equations.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--CONTINUOUS THERMAL DESORPTION OF HYDROCARBONS IN MOVING LAYERS OF  
ZEOLITES -U-  
AUTHOR--(04)-PLACHENCO, I.G., REBIN, V.I., SEBALLO, A.A., SHIRYAYEV, A.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(5), 1047-51  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--DESORPTION, CARBON DIOXIDE, BENZENE, ZEOLITE, OCTANE,  
HYDROCARBON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3008/1500 STEP NO--UR/0080/70/043/005/1047/1051  
CIRC ACCESSION NO--AP0134501

~~UNCLASSIFIED~~

2/2 015

UNCLASSIFIED

PROCESSING DATE--11DEC76

CIRC ACCESSION NO--AP0139501

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESORPTION BY CO SUB2 OF ISOCTANE AND C SUB6 H SUB6 ON NAX ZEOLITE AND OF N-OCTANE ON CAA ZEOLITE MOVING CONTINUOUSLY THROUGH ADSORPTION AND DESORPTION COLUMNS OF THE SAME DIAM. WAS STUDIED. AT 0.5-2.5 L.-MIN, CO SUB2 INPUT RATE HAD ALMOST NO EFFECT ON THE DEGREE OF DESORPTION. AT SIMILAR TO 300DEGREES AND CONCNS. OF 15.6, 20.2, AND 9.1 MG, RESP., HYDROCARBON-L. AIR FLOWING INTO THE DESORPTION COLUMN, DYNAMIC ACTIVITY OF THE ZEOLITES WAS 100.3, 130, AND 58.9 MG-G, DESORPTION WAS QUANT., AND 85PERCENT OF THE DESORBED HYDROCARBONS WAS CONDENSABLE.

UNCLASSIFIED

USSR

UDC 621.314.61 (088.8)

SEMISALOV, Ye. M., SHIRYAYEV, V. I. [NII postoyan. toka--Scientific-Research  
Institute of Direct Current]

"Multiphase Generator"

USSR Author's Certificate No 261550, filed 10 May 67, published 25 May 70 (from  
RZh--Elektronika i veye primeneniye, No 4, April 1971. Abstract No 4B570P)

Translation: The invention is a multiphase generator of pulses which are variable in width, for grid control of [semiconductor] rectifiers of a converter device. The generator contains a control unit and charging and discharging thyristors. To increase the stability of operation, the control unit is made in the form of two pulse synchronized shapers, the outputs of which are connected respectively to the inputs of the charging and discharging thyristors.  
1 ill. I.R.

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63

USSR

UDC 621.373.531(088.8)

SEMISALOV, YE. M., SHIRYAYEV, V. I.

"Oscillator"

USSR Author's Certificate No 265260, Filed 28 Jun 68, Published 12 Aug 70 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G217P)

Translation: An oscillator with series capacitive commutation and regulated pulse width containing transistors in the charge and discharge circuits of the commutating capacitors, a control unit, a power supply, a smoothing reactor in the DC circuit and independent discharge circuits of the commutating capacitors in the form of a series connected transistor, reactor and resistor to which one of the plates of the commutating capacitor is connected, is proposed. In order to improve the reliability, the other plates of the commutating capacitors are connected to each other. Uniform voltage division between the operating and discharge transistors is achieved by including an additional power supply in the discharge circuits. The smoothing reactor in the DC circuit is connected by one terminal to the common point of the commutating capacitors, and the second, to the cathodes of the charge rectifiers. In order to improve stability, an auxiliary circuit containing a thyristor and a  
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USSR

SEMISALOV, YE. M., et al., USSR Author's Certificate No 265260, Filed 28 Jun 68, Published 12 Aug 70

capacitor shunted by a resistance is connected in parallel to the discharge circuits, and a smoothing reactor is connected to the common circuit of the discharge thyristors.

2/2

- 115 -

SHIRYAYEV, V.I.

DESIGN AND PRE-REACTOR TESTING OF CONTROL UNITS OF THE BN-350 REACTOR

Paper by V. I. Shirayev, I. I. Zhurkov, I. A. Fedotkin, O. B. Samoilov and V. I. Shchegolev, Institute of Atomic Energy, Moscow, USSR, International Working Group for Fast Reactors Specialists Meeting, Miltovgrad, 4-8 June 1973

THIS IS 57863/6  
20 May 73  
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In this paper, the basic principles of the design-  
ing and testing of rods for a fast-neutron reactor  
with sodium coolant, of type BN-350, are explained.  
The basic requirements imposed upon the control  
units are formulated, their characteristics are  
given, and also attention is directed to the de-  
sign features of the control units of the BN-350  
reactor. The features of the designing of con-  
trol units are considered, and data concerning  
materials applied for the absorber and the rod  
jacket are reported. The design of the control  
units of the BN-350 reactor is given. Brief data  
on the test of the rods are reported. A list of  
test stands intended for the testing of control  
units and slave mechanisms of the SZR (reactor  
control and safety) devices is given. A tenla-  
tive volume of the work conducted at the test  
stands in the testing of the rods is indicated,  
and also the results of the experiments obtained.  
The role of tests of the SZR units on the stand  
is evaluated, in the selection of the optimum de-  
sign of them for application in the BN-350 reac-  
tor.

Features of the designing of control units for the BN-350 fast reactor

The selection of the method of regulating reactivity of a fast power reactor is determined by the efficiency of this

UDC 577-391

USSR

RYAZANOV, V. M., SHIRYAYEV, V. G., PARKHOMENKO, I. M., and KUDRYASHOV, Yu. B.,  
Biophysics Department, Moscow State University

"Role of Phospholipids in Radiation Lesions of Mammals Differing in Radio-  
sensitivity"

Moscow, Vestnik Moskovskogo Universiteta, No 3, 1973, pp 36-41

Abstract: Lipid metabolism and antioxidant activity of phospholipids were studied in various organs of the highly radioresistant Mongolian gerbil *Meriones unguiculatus* (LD<sub>50/30</sub> 1180 rad) and much more radiosensitive guinea pig *Cavia porcella* (LD<sub>50/30</sub> 190 rad). Both groups of animals were exposed once to whole-body irradiation at 700 r. Irradiation caused a significant decrease in the phospholipid content of the brain, liver, and small intestine within 2 hours. The decrease persisted or intensified thereafter in the guinea pigs but gave way to an increase in the gerbils. Irradiation also altered the composition of the animals' total lipids, increasing the percentage of phospholipids in the gerbils but decreasing it markedly per unit of tissue weight in the guinea pigs. Antioxidant activity of the phospholipids decreased sharply in the guinea pigs but increased in the gerbils. The high degree of resistance to ionizing radiation exhibited by

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USSR

RYAZANOV, V. M., et al., Vestnik Moskovskogo Universiteta, No 3, 1973, pp 36-41

gerbils is attributed to the increased phospholipid content of the liver after exposure and intensified antioxidant activity of the phospholipids. These reactions prevent "intestinal death," which results from the use of 400 to 500 rad in guinea pigs (compared to a dose of 1500 rad or more in gerbils).

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AA0052657

SHIRYAYEV V.M.

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,  
Derwent,

244806

HEAT SHIELD on the hot plate spot of the exhaust manifold of ship or locomotive diesel engine, is improved by coating the manifold 1 with asbestos sheet 2 and an outer coating of insulating and heat resisting material 5 which consists of solidified mixture of soluble glass, white heat resisting clay and asbestos fibre. The material 5 is held round the manifold 1 by a steel net held by wires 4 and hooks 3 (Sec. A.A.). The heat shield 6 is mounted over the asbestos coverings and consists of internal perforated sheet 9 and plain sheets 7 and 8 welded inside the carcass of 6 and having air spaces. (Sect. B.B.).

12.4.68 as 1233258/24-6 A.I. KAMYSHOV et al. V.V. Kubishev Kolomenski Locomotive Plant (9.10.69) Bul. 18/28.5.69. Class 46c, Int. Cl. F 02f.

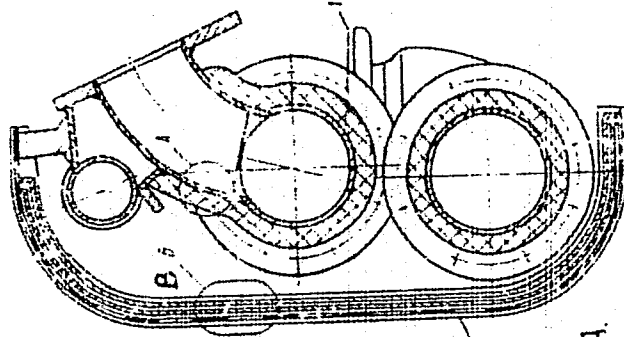
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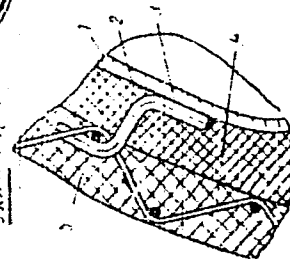
Kamyshov, A. I.; Vorozhikin, V. A.; Shirayayev, V. M.;  
Pakhomov, V. V.; Kolomenskiy Teplovozostreitelnyy Zavod im. V. V. Kuy-  
bysheva



В.В.



А.А.



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1980

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PROCESSING DATE--16OCT70

UNCLASSIFIED

1/2 028

TITLE--THE MECHANISM OF PARTICIPATION OF BLOOD PLATELETS IN THE  
MAINTENANCE OF VASCULAR WALL RESISTANCE -U-  
AUTHOR--SHIRYAYEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,  
NR 5, PP 53-54  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BLOOD PLATELET, RADIATION SICKNESS, GAMMA IRRADIATION, COBALT  
ISOTOPE, SKIN, CAPILLARY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1998/0215

STEP NO--UR/0219/70/069/005/0053/0054

CIRC ACCESSION NO--AP0120913

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120913

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE ACME OF ACUTE RADIATION SICKNESS (CO PRIME60 GAMMA IRRADIATION, TOTAL DOSE 600 R, DOSE CAPACITY 50 R-SEC) TO WISTAR RATS OF BOTH SEXES WEIGHING 160-280 GM THE AUTHOR INJECTED A SUSPENSION INTO THE JUGULAR VEIN OF INTACT PLASMA BLOOD PLATELETS (FIRST SERIES), WASHED BLOOD PLATELETS IN A 0.85PERCENT SOLUTION OF NACL (SECOND SERIES) A SUSPENSION OF DESTROYED BLOOD PLATELETS IN A 0.85PERCENT NACL SOLUTION (THIRD SERIES). IN THE FIRST SERIES 60 MINUTES AFTER INJECTION OF THE SUSPENSION THE SKIN CAPILLARY RESISTANCE OF THE HYPOGASTRIC REGION INCREASED BY FOUR TIMES IN COMPARISON WITH THE INITIAL DATA, WHEREAS IN THE SECOND AND THIRD SERIES , BY 1 AND ONE HALF TIME, NOTWITHSTANDING THE GREATER QUANTITY OF CIRCULATING BLOOD PLATELETS. IN THE FIRST AND SECOND SERIES OF EXPERIMENTS 60 MINUTES AFTER INJECTION OF THE SUSPENSION THE RESISTANCE WAS HIGHER THAN 10 MINUTES AFTER INTRODUCTION, ALTHOUGH THE QUANTITY OF CIRCULATING BLOOD PLATELETS WAS SIMILAR. FACILITY: INSTITUTE OF MEDICAL RADIOLOGY OF THE ACADEMY OF MEDICAL SCIENCES OF THE USSR, OBNINSK.

UNCLASSIFIED

AA 0040726

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Shirinyayev, V. V.  
UR 0482

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

242344 COOLING FRAME FOR INSIDE CASTINGS composed of parallel members (1) whose compartments (2) are free transversely to form vertical channels; the cross areas of these compartments reduce in stages from the top down starting at the feeder head. This allows directed access of molten metal to parts of the mould furthest from the feeder head. The staged reduction ensures that the lower compartments (a-a) harden first, allowing metal in from the central compartments (2a-a) and so on up.

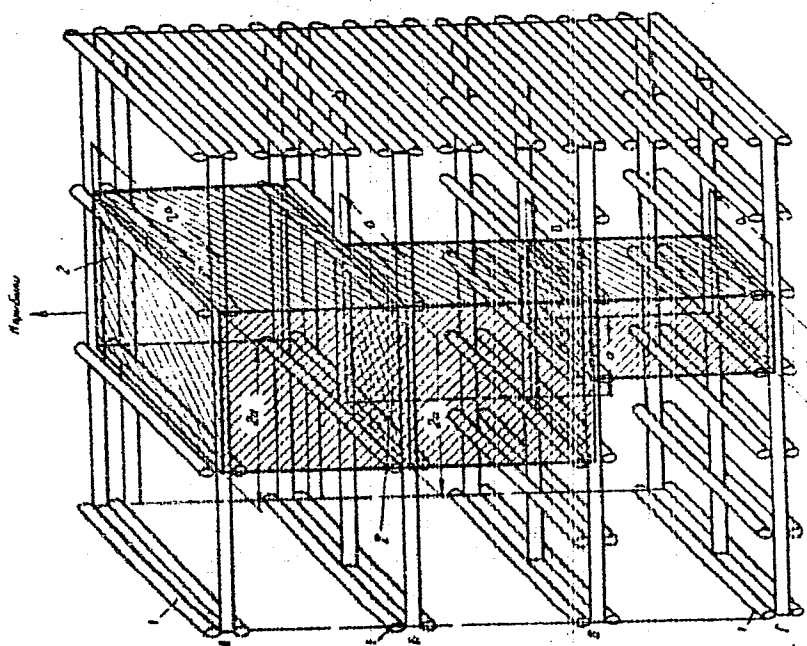
4.7.66 as 1089813/22-2. VASILEVSKII, P.F. et al. CENTRAL ENGINEERING TECHNOLOGY INST. (11.9.69) Bul 15/25.4.69 Class 31b<sup>2</sup>. Int.Cl.B 22d.

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AA0040726



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AUTHORS: Vasilevskiy, P. F.; Kuznetsov, G. A.; Shirayev, V. V.;  
Blokhin, I. Ye.; Bel'tsov, P. F.; and Litvyakova, U. N.

Tsentralnyy Nauchno - Issledovatel'skiy Institut Tekhnologii  
Mashinostroyeniya

19750378



Composite Materials 1

USSR

UDC 669.715

KOLPASHNIKOV, A. I., MANUYLOV, V. F., TRUTNEV, V. V., BUKHAYEV, A. A. and SHIRYAYEV, YE. V.

"Reinforced Material Based on Aluminum and Weldable Aluminum Alloys"

Moscow, Tsvetnyye metally, No 2, Feb 72, pp 56-57

Abstract: This study concerns the mechanical properties of composites, the structure of transition zones, and the metal flow in rolling prefabricated blanks designed for service under high work loads in assemblies and structures. Composite sheet metal blanks based on A836 alloy reinforced with Kh10S9T and EP322 steel wire fibers show a tensile strength of 53.6 and 69.2 kg/mm<sup>2</sup> and a bend angle of 55.7 and 36.5° at a specific weight of 3.46 g/cm<sup>3</sup>. Reinforcement with EP322 steel fibers produces composites with a strength exceeding that of Kh10S9T steel-wire reinforced composites by 29.1%. The amount of wire reinforcement is 15% in both materials. Tables in the original article show the relationship between the percentage of fibers and the strength of the composite material. (3 illustrations, 4 tables, 3 bibliographic references).

1/1

USSR

UDC 669.018.472

ZAKHAROV, A. I., PEREPELKINA, A. M., and SHIRYAYEVA, A. N., Central Scientific Research Institute of Ferrous Metallurgy (ISNILCHERMET)

"Effect of Alloying on the Thermal Expansion of Super Invar Alloy"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1972, pp 62-64

Abstract: Advances in quantum electronics and superhigh-frequency techniques (precision toolmaking, metrology) have created an ever-increasing demand for alloys with extremely low thermal expansivity including Super Invar alloy (31-33% Ni; 4-6% Co; the balance--iron). This study concerns the effect of Ni, Co, Si, Mn, Cu, Mo, Nb, Re, Cr, and Ti on the coefficient of linear thermal expansion (CLTE) of Super Invar alloy within 20-80°C. It was found that Cu (up to 0.6%), Mo (up to 0.6%), Nb (up to 0.6%), Cr (up to 0.2%), Mn (up to 0.9%), Re (up to 0.6%) raise the stability of the phase and concurrently increase the CLTE of Super-Invar alloy. Minor additions of silicon markedly increase the CLTE but lower the stability of the  $\gamma$ -phase. As the silicon content is increased from 0.06 to 0.1%, CLTE increases from  $-2 \cdot 10^{-7} \text{ deg}^{-1}$  to  $21 \cdot 10^{-7} \text{ deg}^{-1}$  at 20-80°C and the initial  $\gamma \rightarrow \alpha$  phase transformation temperature increases from -40 to 0°C. It is suggested that Ni content in the Super Invar alloy be kept down to a minimum. (3 illustrations, 1 table, 6 bibliographic references)

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USSR

UDC 619:614.9-07:637.5:612-086

GLADKOV, I. M., Candidate of Veterinary Sciences, SHIRYAYEVA, A. P., and SHEMYAKIN, G. V., Rostov Meat Processing Plant and North Caucasus Branch of All Union Scientific Research Institute of the Meat Industry

"Effect of Size of Meat Portion on Contamination With Microbes"

Moscow, Veterinariya, No 1, 1972, pp 100-102

Abstract: The total number of microbes in 1 g of meat taken from a portion originally weighing 20 g was much larger than in samples from portions weighing 1, 5, 10, or 15 g. The isolability of microbes (*E. coli*) from a portion of meat ground in a mortar by hand was greater than from the same amount of meat ground in an RT-1 tissue pulverizer (8000 rpm for 5 min). The pulverizer had no effect on the viability of the microbes. Use of the pulverizer requires little physical effort and it precludes additional contamination by the microflora of the material being examined because the grinding is done in a tightly covered container.

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Polymers and Polymerization

USSR

UDC 541.64:547.39:674.03

LEBEDEV, V. T., SUMINOV, S. I., SHIRYAYEVA, G. V., KARPOV, V. L., and NOVIKOV, V. Ya.

"Effect of the Addition of Organophosphorus Compounds on the Polymerization of Methyl Methacrylate in Cellulose"

Moscow, Vysokomolekularnyye Soyedineniya, Vol 14, No 2, Feb 72, pp 422-426

Abstract: The effect of various classes of organophosphorus compounds on the kinetics of radiation induced polymerization of methyl methacrylate [MMA] in cellulose was studied. The influence of dialkyl-, and trialkyl phosphites and trialkyl phosphates, as well as the effect of the size of alkyl radical within a group on the polymerization rate of MMA in wood was found to be increasing in the order: dialkyl phosphites < trialkyl phosphites < trialkyl phosphates, and within the radical group: methyl < ethyl < butyl analog. It was demonstrated that the concentration of tributyl phosphate [TBP] in MMA has a positive effect on the combustibility of the wood-plastic material [WPM]: a 30% content of TBP imparts fire retarding properties on the WPM. Study of the physical-mechanical properties of WPM containing various concentrations of TBP showed that optimal resistance to static bending across the fibers and to shearing along the fiber length is shown in WPM prepared from a 9:1 mixture of MMA:TBP.

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USSR

LEBEDEV, V. T., SUMINOV, S. I., SHIRYAYEVA, G. V., and KARPOV, V. V.

"Effect of the Addition of Organophosphorus Compounds on the Polymerization of Vinyl Monomers in Wood Cellulose"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 3, Mar 71, pp 601-603

Abstract: Gamma initiated modification of wood cellulose was studied with mixtures of vinyl monomers and different levels of organophosphorus compounds (OPC). Many OPC accelerated polymerization of vinyl monomers in wood cellulose, this action decreasing in the following order: trialkyl phosphates > trialkyl phosphites > dialkyl phosphites, and within these groups methyl > ethyl > butyl. Treating birch with a mixture of methylmetacrylate and tri-butyl phosphate (9:1 ratio) gave a fire resistant material of greater strength than comparable control. Styrene, which normally polymerizes with difficulty under the influence of radiation was also studied. Addition of 10% of di-methyl phosphite to styrene increased its polymerization in aspen by 4 times. When the phosphite fraction was increased to 20%, the polymerization rate was increased 6-7 fold in comparison to the control.

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Polymers and Polymerization

USSR

UDC: 691.11:678.744:541.15

GLUKHOV, V. I., SHIRYAYEVA, G. V. and KARPOV, V. L., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"A Study of the Kinetics of Radiation Polymerization of Methylmetacrylate in Wood"

Moscow, Khimiya Vysokikh Energiy, Vol 4, No 2, 1970, pp 139-142

Abstract: The radiation-chemical modification of wood is a promising and widely-used method of obtaining wood-plastic materials offering substantial advantages in physico-mechanical properties and improved water- and moisture-resistance. The authors studied the kinetics of the radiation polymerization used in this method by treating aspen wood impregnated with methylmetacrylate with gamma-radiation from  $Co^{60}$ . Results showed that reduction of dose rate promotes monomer-to-polymer conversion: output of polymer per dose unit diminishes by 90% with a 100-fold increase in intensity. Temperature dependence of polymerization rate was studied and molecular weights of the extracted polymer were measured. Findings of the study are illustrated graphically.

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USSR

UDC 678.762.2-134.532:66.095.262

GLUKHOV, V. I., SHIRYAYEVA, G. V., and KARPOV, V. L.

"Radiational Modification of Wood Cellulose With a Styrene-Acrylonitrile Copolymer"

Moscow, Plasticheskiye Massy, No 11, 1972, pp 28-30

Abstract: Experimental results are reported of the study of copolymerization kinetics of styrene monomers with acrylonitrile in wood cellulose under the influence of  $\gamma$ -irradiation. Physical-mechanical properties of modified wood cellulose-polymer materials in relationship to the composition of impregnating material are described. It was shown that the use of styrene and acrylonitrile mixtures for radiational chemical modification of wood cellulose leads to the production of a stronger material with greater dimensional stability in aqueous media. Addition of acrylonitrile to styrene lowers the irradiation dose required for a complete polymerization of styrene. Best properties of modified wood cellulose are obtained with a 30-50 vol-% content of acrylonitrile in the impregnating material.

1/1

USSR

UDC 537.312.62

IL'ICHEV, A. I., MOLOTILOV, B. V., SUVOROV, V. A., FEDOTOV, L. N., SHIRYAYEV, YU. P.

"Properties of Superconducting Materials"

Sb. tr. TsNII chern. metallurgii (Collected Works of the Central Scientific Research Institute of Ferrous Metallurgy), 1971, vyp. 78, pp 108-110 (from RZh-Radiotekhnika, No 6, Jun 72, Abstract No 6D450)

Translation: In recent years the Central Scientific Research Institute of Ferrous Metallurgy has developed and mastered the production of the following superconducting materials: 65BT, wire (ChMTU 1-29-66); 50BT, wire (ChMTU/TsNIICHM 1458-67); 35BT, wire (ChMTU/TsNIICHM 1489-69); 70B, tape (ChMTU/TsNIICHM 1491-69); SKM, compositional material (ChMTU/TsNIICHM 1487-69). In this survey a study is made of the technological and the physical-mechanical properties of the indicated materials, and recommendations are made with respect to their application.

1/1



USSR

UDC 621.791.754

KUMYSH, I. I., Engineer, Institute of Electric Welding imeni Ye. O. Paton, and  
SHIRYAYEVA, A. N., Engineer, Central Scientific Research Institute of Ferrous  
Metallurgy

"Mechanized Welding of a Super Invar Alloy"

Kiev, Avtomaticheskaya Svarka, No 5, May 73, pp 43-44

Abstract: Super invar alloy sheet 4-9 mm thick was welded for the purpose of obtaining welds in which the coefficient of linear expansion was very close to that of the base metal. The alloy had the following composition (in %): 32.5 Ni, 4.3 Co, 0.2 Mn, 0.2 Si, 0.02 C, 0.008 S, and 0.0003 P. Welding rod made from the same heat as the base metal was used. When ANF-5 and AN-292 neutral fluxes were used, cracks were found in the seams. When AN-26 and AK-348-A fluxes were used there were no defects. Helium leak testing showed the seams to be vacuum-tight. In comparison with welding under a flux, argon-arc welding is more universal since it permits welding seams in all special positions. Consequently, tests were carried out for argon-arc welding of the super invar after it has been electronlag remelted. In this case there were no pores or cracks in the weld seams. 3 figures, 3 tables.

1/1

- 48 -

UDC 678.744:542.952.68

USSR

GLUKHOV, V. I., and SHIRYAYEVA, G. V.

"Some Parameters of Radiation Polymerization of Vinyl Monomers in Wood Pulp"

Moscow, *Plasticheskiye Massy*, No 6, 1973, pp 35-36

Abstract: The results are reported of the investigation of heat evolution during radiation polymerization of vinyl monomers in wood pulp under the influence of  $Co^{60}$  gamma-radiation. It was established that maximal temperature of the reaction mixture rises with increasing value of the gamma-radiation dose. A proportional relationship is observed between  $t_{max}$  and the quantity of the monomer added to the wood pulp; the temperature in the wood pulp is always lower than during the polymerization process of methyl methacrylate in the "mass". The degree of the filling of radiation-chemical apparatus has a definite effect on the warming up of the reaction mixture.

1/1

- 62 -

UDC: 547.963.3

USSR

KOROTYAYEV, A. I., MAKSIMOV, V. F., ORLOV, V. G., SHIRYAYEVA, I. N., and  
ASTAPOV, A. A., Kuban' State Medical Institute, Krasnodar

"Unusual Changes in the DNA Content of Some Escherichia coli Strains in the  
Process of Growth"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 6, 1970, pp 1433-1436

Abstract: The amount of DNA and the rate of synthesis were investigated at different stages of growth of three Escherichia coli strains, K-12S, M, and O26. The DNA content of the K-12S strain increased more than threefold at the end of the lag phase as compared with the control. The M strain differed significantly from the K-12S strain in the dynamics of DNA content. At the start of the lag phase, the M strain contained only one-half to one-third as much DNA as the K-12S strain. The E. coli O26 strain was similar to the M strain in this respect. From the start of the lag phase to the stage of logarithmic growth, the amount of DNA decreased by a factor of  $\sim 2.5$ . In K-12S, all of the chromosomes replicated completely, whereas in M and O26 the chromosomes did not replicate completely in either the original or daughter cells. As a result, the rate of DNA synthesis was lower in M and O26 than in K-12S, but these experimental results are preliminary.

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ACC. NO.

AP0053892

Abstracting Service:  
CHEMICAL ABST. 6/70

Ref. Code

4R0025

117430t. Increase in the sensitivity of the vector-polarographic determination of selenites. Kaplan, B. Ya.; Shiryayeva, O. A. (State Sci.-Res. Des. Inst. Rare Metal Ind., Moscow, USSR). *Zh. Anal. Khim.* 1970, 25(1), 185-7 (Russ). During the inverse polarography of selenite in H<sub>2</sub>SO<sub>4</sub> as supporting electrolyte, the redn. peak of accumulated Se are 7-10 times higher when CuSO<sub>4</sub> is present. The mechanism of the electrode process is suggested on the basis of data obtained by the anal. of products of prolonged electrolysis at a const. potential on a stationary and a dropping Hg electrode in the presence and the absence of Cu.

Chaim Weiner /

REEL/FRAME  
19830969

PN. 18

1/2 007 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--EXPERIENCE WITH INTERNATIONAL STANDARDIZATION OF BIOLOGICAL  
ACTIVITY OF CHLORTETRACYCLINE -U-  
AUTHOR--(04)-YAKOBSON, L.M., SHIRYAYEVA, V.L., SNEZHNOVA, L.P., YERMOLOVA,  
O.B.  
COUNTRY OF INFO--USSR, UNITED KINGDOM, WORLD WIDE  
SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 3, PP 232-235  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--TETRACYCLINE, TECHNICAL STANDARD, BIOLOGIC SCIENTIFIC SOCIETY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1985/0465 STEP NO--UR/0297/70/015/003/0232/0235  
CIRC ACCESSION NO--AP0100943  
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100943

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 2ND PROPOSED SERIES OF THE INTERNATIONAL ACTIVITY STANDARD OF CHLORTETRACYCLINE WAS STUDIED WITH THE THREE DOSE AGAR DIFFUSION METHOD. THE CAVES WITH THE WORKING CONCENTRATIONS OF THE TEST SOLUTION AND THE STANDARD WERE SITUATED ACCORDING TO THE LATIN SQUARE. AT P-95 ACTIVITY OF THE PREPARATION IN 13 TESTS WAS 1038 TO 1060 MUG-MG. THE DATA FROM 9 LABORATORIES IN 6 COUNTRIES WERE STATISTICALLY TREATED IN THE CENTER FOR ANTIBIOTIC STANDARDIZATION OF THE WORLD HEALTH ORGANIZATION IN LONDON. THE AVERAGE ACTIVITY OF THE PROPOSED STANDARD OF CHLORTETRACYCLINE WAS FOUND TO BE 1004 MU G-MG. THE WHO EXPERT COMMITTEE APPROVED THE NEW INTERNATIONAL STANDARD OF CHLORTETRACYCLINE AND ASSUMED ITS SUPPOSED ACTIVITY TO BE 1000 MU G-MG. THE UNIT OF ACTIVITY WAS EQUAL TO 1 MU G.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--PREPARATION OF CYCLODODECANONE BY THE LIQUID PHASE OXIDATION OF  
CYCLODODECANOL -U-

AUTHOR--(05)--SOKOVA, K.M., ANDREYEVA, T.P., ZELENAYA, G.A., KRUGLIKOVA,  
V.S., SHIRYAYEVA, V.YE.

COUNTRY OF INFO--USSR

S  
SOURCE--NEFTEKHIMIYA 1970, 10(2), 236-41

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

OPIC TAGS--CYCLIC GROUP, HYDROXYL RADICAL, OXIDATION, AROMATIC KETONE,  
ALCOHOL, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

ROXY REEL/FRAME--3006/0963

STEP NO--UR/0204/70/010/002/0236/0241

ARC ACCESSION NO--AP0134681

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

IRC ACCESSION NO--AP0134681

BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SELECTIVITY OF THE OXIDN. OF CYCLODECANOL (I) BY O DEPENDED MAINLY ON THE DEGREE OF CONVERSION OF I AND THE CONCN. OF O IN THE OXIDN. GAS. AT LESS THAN OR EQUAL TO 10PERCENT CONVERSION OF I, THE SELECTIVITY OF THE REACTION APPROACHED 100PERCENT AND AT 45PERCENT, IT WAS 77PERCENT. THE PRODUCTS WERE TREATED WITH H SUB3 BO SUB3, AND THEN WITH BOILING H SUB2 O, AND THE ALCS. SEPD. BY EXTN. WITH ET SUB2 O. FACILITY: INST. NEFTEKHIM. SIN. IM. TOPCHIEVA, MOSCOW, USSR.

UNCLASSIFIED



Theoretical Physics

UDC: 539.1.01

USSR

ZHUKOVSKIY, V. Ch., SHISHANIN, O. Ye., Moscow State University imeni M. V. Lomonosov

"Emission of an Electron Moving in a Weakly Focusing Magnetic Field. (Quantum Theory)"

Tomsk, Izvestiya VUZov: Fizika, No 4(131), 1973, pp 60-64

Abstract: The authors investigate quantum transitions when an electron radiates in a weakly focusing magnetic field with regard to betatron oscillations. An expression is found for the intensity of synchrotron radiation. The influence of betatron oscillations on the polarization properties of electron emission is studied. It is found that inhomogeneity of the magnetic field has an appreciable effect only on angular and spectral-angular distributions of emission. The authors thank A. A. Sokolov for continued interest in the work.

1/1

USSR

UDC 621.373.531(088.8)

SHISHAYEV, N. P.

"Pulse Generator"

USSR Author's Certificate No 250986, Filed 28 Oct 66, Published 30 Jan 70  
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G245P)

Translation: This author's certificate introduces a pulse generator executed from two transistors and equipped with series oscillatory circuits. In order to increase the limiting pulse repetition rate and to obtain two bell-shape pulse trains out of phase, the inductance coil of the first circuit is connected to the emitter of PT1, and the capacitor of the second circuit is connected to the emitter of PT2. The midpoint of the first circuit is connected directly to the base of PT2, and the midpoint of the second circuit is connected via the capacitor to the base of PT1, and circuits tuned to a frequency higher than the pulse frequency are connected to the collector circuits of the transistors.

1/1

USSR

UDC: 539.4.629.12

KOZLYAKOV, V. V., KHARKHURIM, I. Ya., SHISHENIN, Ye. A.

"Investigation of Combined Flexure of a Ship and a Floating Dock by the Method of Finite Elements"

Tr. Leningr. korablestroit. in-ta (Works of the Leningrad Shipbuilding Institute), 1971, vyp. 75, pp 77-85 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9V667)

Translation: A "dock-ship" system is represented in the form of two girders of stepped variable cross section connected by keel-block spacers. The lower girder is lying on an elastic base; therefore differentiation is taken care of automatically during the computational process. The length of the keel track can be broken up into no more than 20-40 sections. Each spacer may represent several keel-blocks. Loading is reduced to nodal form. The calculation is done by the method of displacements. Two linear and one angular displacement of the end of the rod are taken as the principal unknowns. A matrix of rigidity is found for a rod lying on an elastic base. The initial data for digital computer calculation include information on the construction design scheme, the external load and the parameters of the

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USSR

KOZLYAKOV, V. V. et al., Tr. Leningr. korablestroit. in-ta, 1971, vyp. 75, pp 77-85

terminal elements (rods). The computer gives the displacements and forces for each element. The results of some calculations are given. The described computational scheme is recommended for practical application of sector-wide standard ON-964-69. Bibliography of 9 titles. I. I. Tryanin.

2/2

- 98 -

Acc. Nr.: APD041292

S

Ref. Code: UR 0209

USSR

UDC: None

SEROV, A. and SHISHINA, V. Engineers

"Thermal Control"

Moscow, Aviatsiya i Kosmonavtika, No. 1, 70, pp 26-27

Abstract: The subject of this article is defined as a complex of methods of providing maintenance of a given thermal situation in equipment designed for space travel. These methods may be passive or active. The operating temperature range of apparatus in space is from 0 to 40° C; maintaining this interval under space conditions is not a simple problem. The many factors affecting the operating conditions of the equipment may be classed as internal and external. The first are directly connected with the peculiarities of the equipment itself, its makeup, and its mode of operation. Inside the space vessel, heat in the equipment is a problem since natural convection is impossible under conditions of weightlessness. The power used by the equipment inside is also a factor; the greater the power consumption, the greater the heat

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emitted. The function of space equipment can also be divided into two classes: active and standby. Active equipment uses the major portion of the energy supplied, and its chief components are those devoted to communication. Hence, in designing the heat control system, the demands of the communications system must first of all be considered. An example of this was the Soviet experience with "Venus 5" and "Venus 6" probes, when the program of the landing communications exchange was set up with an eye to equipment overheating in the thermally insulated capsule. Conditions in space are sometimes better than in the lower layers of the Venusian atmosphere; the heat accumulated in the space ship can be gotten rid of by means of radiation. External factors, such as the heat radiated by the sun, the planets, and other heavenly bodies, also affect the heating of the space ship. The sun supplies most of the radiation; its maximum output occurs at the wavelength of 0.47 microns, with more than half its total in the wavelength range of 0.2 to 1.0 microns. The ship flying near the planets must take account of the planet's natural radiation -- that of its atmosphere and surface -- as well as its albedo factor, characterized by the ratio of the reflected solar radiation to the total solar radiation incident on the planet. For the earth, the albedo factor is 0.32 in July and 0.52 in October; for

2/3

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Venus it is 0.73, and for the moon, 0.07. The natural radiation of the planets is variable and depends on the temperatures and radiating characteristics of their atmospheres and surfaces. For artificial satellites of Mars, Venus, and the earth, the total external heat flow is 800, 4000, and 1600 kcal/m<sup>2</sup>hr respectively. The temperature of the space vessel may be controlled by making changes in the optical characteristics of its surface. Internal cooling, such as was done in the Soviet cosmic station "Venus 4" with a single-contour gas system of the closed type, can also be accomplished. In general, space equipment with high-energy installations (in tens of kilowatts) should use thermal regulators operating on the principle of home air conditioners and fed from the energy network on board the space vessel.

19751131

3/3

USSR

UDC 681.325.65

BAZILEVICH, R. P., ZAMORA, Ye. F., KOTLYAROV, A. V., SAVENKO, N. M.,  
SEREDYUK, A. I., and SHISHKA, A. V.

"A Logic Device"

USSR Author's Certificate No 276525, Filed 29 Mar 68, Published 19 Nov 70  
(from Referativnyy Zhurnal — Avtomatika, Telemekhanika, i Vychislitel'naya  
Tekhnika, No 8, 1971, Abstract No 8B132 P)

Translation: A logic device is proposed. In order to determine the parity of permutations, the device will contain: a diode matrix which transmits signals in one direction along all columns and along all rows; programing switches for forming sequences of time-separated interrogation pulses (the inputs of the switches are connected to the outputs of a multiphase multi-vibrator, and the outputs of the switches are connected to the cathodes of the diodes of the matrix); programing switches whose inputs are connected to the cathodes of the diodes of the matrix and whose outputs are connected to the inputs of the corresponding parity flip-flops; dual programing switches for forming sequences of time-separated interrogation pulses and for feeding the appropriate pulses to the appropriate inputs of the parity flip-flops concerned with the number of inversions between individual  
1/2



USSR

BAZILEVICH, R. P., et al., USSR Author's Certificate No 276525, Filed 29 Mar 68, Published 19 Nov 70 (from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B132 P)

elements of the permutations. The device will also contain an indications flip-flop which is connected with the positive-sign indicator and the negative-sign indicator. The first input of this flip-flop is connected to the outputs of the parity flip-flops, and the second input is connected to the output of the multiphase multivibrator.

2/2

- 31 -

USSR

UDC: 539.31:624.074.4

GUZ', A. N., ~~Shishkanova, S. E.~~, Institute of Mechanics, Academy of Sciences of the USSR, Kiev; Zaporozh'ye Machine Building Institute

"Concerning the Solution of Problems for a Circular Cylindrical Shell on an Elastic Base When the Shell is Weakened by Circular Holes"

Kiev, Prikladnaya Mekhanika, Vol 8, No 4, Apr 72, pp 112-115

Abstract: A method previously proposed by A. N. Guz' for solving problems of stress concentration around circular and curvilinear openings of moderate sizes in thin elastic shells weakened by a finite number of holes is used in conjunction with a method of perturbation theory -- representation of the solution in the form of a series in powers of a small parameter -- to study the stressed state in a cylindrical shell on an elastic base in the case where the shell is weakened by a finite number of circular openings of different diameters. In each of the approximations, the problem reduces to an infinite system of linear algebraic equations. In the first four approximations, quasiregularity and uniqueness of the solution of these systems is proved with certain assumptions concerning the load applied to the edges of the openings. The method is illustrated by an example of a thin cylindrical shell weakened by two equal circular holes loaded by constant external pressure. One figure, one table, bibliography of ten titles.

1/1

1/2 015

TITLE--SOLUTION OF PROBLEMS FOR A SHALLOW SPHERICAL SHELL ON AN ELASTIC  
BASE IN THE CASE OF MULTIPLY CONNECTED REGIONS -U-  
AUTHOR--SHISHKANOVA, S.F. UNCLASSIFIED PROCESSING DATE--11SEP70

S

COUNTRY OF INFO--USSR

SOURCE--PRIKLADNAIA MEKHANIKA, VOL. 6, FEB. 1970, P 30-37  
DATE PUBLISHED----FEB70

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

TOPIC TAGS--SPHERIC SHELL STRUCTURE, ELASTICITY, STRESS STRAIN DIAGRAM,  
BIBLIOGRAPHY, LINEAR EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1325

STEP NO--UP/0198/70/006/000/0030/0037

CIRC ACCESSION NO--AP0106102

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11SEP70

2/2 015  
CIRC ACCESSION NO--AP0106102

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

BY GUZ' (1964) FOR SOLVING STRESS STRAIN PROBLEMS OF SHALLOW SPHERICAL SHELLS FOR MULTIPLY CONNECTED REGIONS TO A SPHERICAL SHELL WITH TWO IDENTICAL CIRCULAR HOLES RESTING ON A WINKLERIAN BASE. A SOLUTION IS OBTAINED BY REDUCING THE PROBLEM TO AN INFINITE SYSTEM OF LINEAR ALGEBRAIC EQUATIONS. THE QUASI REGULARITY AND UNIQUENESS OF THE SOLUTIONS OF THIS SYSTEM IS DEMONSTRATED.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--SOLUTION OF PROBLEMS FOR A SHALLOW SPHERICAL SHELL ON AN ELASTIC  
BASE IN THE CASE OF MULTIPLY CONNECTED REGIONS -U-  
AUTHOR--SHISHKANOVA, S.F.  
COUNTRY OF INFO--USSR  
SOURCE--PRIKLADNAIA MEKHANIKA, VOL. 6, FEB. 1970, P 30-37  
DATE PUBLISHED----FEB70  
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--SPHERIC SHELL STRUCTURE, ELASTICITY, STRESS STRAIN DIAGRAM,  
BIBLIOGRAPHY, LINEAR EQUATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY PEEL/FRAME--1988/1325 STEP NO--UR/0198/70/006/000/0030/0037  
CIRC ACCESSION NO--AP0106102  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106102

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. APPLICATION OF A METHOD PROPOSED BY GUZ' (1964) FOR SOLVING STRESS STRAIN PROBLEMS OF SHALLOW SPHERICAL SHELLS FOR MULTIPLY CONNECTED REGIONS TO A SPHERICAL SHELL WITH TWO IDENTICAL CIRCULAR HOLES RESTING ON A WINKLERIAN BASE. A SOLUTION IS OBTAINED BY REDUCING THE PROBLEM TO AN INFINITE SYSTEM OF LINEAR ALGEBRAIC EQUATIONS. THE QUASI REGULARITY AND UNIQUENESS OF THE SOLUTIONS OF THIS SYSTEM IS DEMONSTRATED.

UNCLASSIFIED

USSR

UDC 621.396.6-381.5

PRECHUKHIN, L. N., SHENKREVLICH, A. A.

"On the Problem of a Functional Approach to the Design of Large-Scale Integrated Circuits"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 1(27), pp 53-63 (from RZh-Radiotekhnika, No 8, Aug 71, Abstract No SV244)

Translation: The article deals with one of the "formal" methods of functional design of large-scale integrated circuits based on tree-like circuits with current switching. It is shown how finite automata with and without storage can be realized in the chosen basis. An algorithm is proposed for minimizing the original tree-like circuit with current switching. Resumé.

1/1

AA0051861

SHISHKEVICH, A.A.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/10

242497 BINARY SUMMATOR suitable for a digital computer has been designed and contains two resistors 1 and 2, the emitters of which are connected through a common resistor 3 to the displacement source - E2. The transistor base 2 is earthed and base of transistor 1 through resistor 4 is connected to the displacement source and through diode 5 to the entry of circuit 6 (through resistor 7).  
21.12.67 as 1205608/18-24.A.P.BUDENNYI et al.  
(5.9.59) Bul 15/25.4.69. Class 42a3. Int.Cl.G 06f.

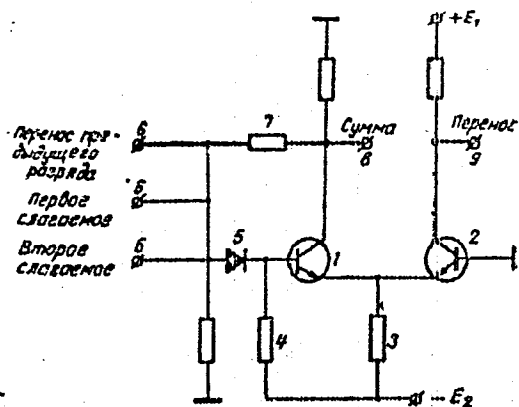
AUTHORS: Budennyi, A. P.; Lutskiy, V. A.; Kontarev, V. Ya.;  
Nazarov, S. I.; Kramarenko, O. L.; Shishkevich, A.A.

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AA0051861



19820297

SHISHKEVICH, A. A.

Microelectronics

MICROELECTRONICS

JPRS 57313  
25 October 1972

Excerpt from Russian-language book edited by E. V. Lukin:  
Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House,  
Moscow, UDC 621.382:621.396.6-181.5.

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- A -

[I - USSR - F]

UDC 681.382.65

Analysis of the Operation of a Logic Element Type S1704 on a Transmission Line, Chudin, Yu. A. In the Collection Mikroelektronika, edited by I. V. Dikin, No 5, p. 253, Sovetskoye Radio Publishing House, 1972.

The article analyzes the interaction between a high-speed logic element type S1704 (transistor logic on circuits with connected emitters) and length of the lines. In view of the complexity of the system its investigation is done by a numerical method using a computer.

The article gives the results of numerical computation indicating the influence of the parameters of the circuit on the distortion of the transmitted signals. On the basis of this analysis the author gives recommendations for selecting the allowable length of the matched and unmatched connections in several specific cases.

The article contains 10 figures and 5 bibliographic references.

UDC 621.382.6-0.9.4

The Question of Interblock Bonds of Digital Equipment on Integrated Circuits of Transistor-Transistor Type, Avinov, N. A. In the Collection Mikroelektronika, edited by I. V. Dikin, No 5, p. 267, Sovetskoye Radio Publishing House, 1972.

The author cites data on the parameters of lattice-type impulse noises generated in the interblock communication lines of digital equipment on integrated circuits of transistor-transistor logic (TTL). He examines a circuit with elevated noise stability, intended for reception from communication lines constructed on the basis of standard integrated circuits appearing in the TTL series.

The article contains 5 figures and 7 bibliographic references.

UDC 621.382.5

Selection of a Constant Current Source in Logic Circuits for Current Switches, Memudrov, V. G., Strukov, V. H., and Shishkevich, A. A. In the Collection Mikroelektronika, edited by I. V. Dikin, No 5, p. 275, Sovetskoye Radio Publishing House, 1972.

To ensure the required noise stability in integrated circuits for current switches, especially in multilevel cir-

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USSR

UDC 533.916

ALEKSIN, V. F., SHISHKIN, A. A.

"Plasma Equilibrium in a Heliotron"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb.  
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 141-147 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G163)

Translation: The equilibrium of a low-pressure plasma in a heliotron is investigated. The heliotron consists of a trap of the stellarator type, the magnetic configuration of which is developed by a large longitudinal field, a field of helical windings, and a field of axial current. An expression is obtained on the basis of the magnetohydrodynamic equation for the equilibrium value of the plasma pressure as a function of the parameters of the heliotron.

1/1

- 45 -

Power, Turbine, Engines, Pumps

USSR

UDC 621.133.713.001.5

KIRSH, A. K., SHISHKIN, A. G.

"Results of Experimental Adjustment Operations on the LMZ Feed Pump Group of a 300 Megawatt Unit"

Moscow, Teploenergetika, No 8, August 1970, pp 15-22

Abstract: The article presents the results of experimental adjustment operations on the main feed turbopump and the starting and reserve electric pump produced by the LMZ (Leningrad Metal Plant), carried out by the ONGRES (State Trust for the Organization and Rationalization of Regional Electric Power Plants and Networks) in the process of developing 300 megawatt units. The basic characteristics of the pump units and their components are given, as well as efficiency indicators; the load range handled by these pump units is defined.

1/1

USSR

UDC 681.327.2

TSVETAYE, V. K.P., ANTONOV, V. N., KONDRAT'YEV, P. P., SHISHKIN, A. M., and  
FUFLYGIN, G. I., Moscow Power Institute

"Recording Device"

USSR Author's Certificate No 372557, kl G 06 f 3/14, filed 4 Jul 69,  
published 25 Apr 73 (from RZh Avtomatika Telemekhanika i Vychislitel'naya  
Tekhnika, No 11, Nov 73, abstract No 11, A431P)

Translation: A device is proposed for recording, containing the following units  
arranged sequentially along one optical axis: a light source, system of  
controlling the light beam containing sequentially arranged polarizers, crystal  
blocks with controllable planes of polarization and an analyzer, an optical  
system, and an information carrier. To improve the speed, the crystals of the  
light beam control system contain openings corresponding to the shapes of the  
symbols to be recorded. Two illustrations.

1/1

USSR

UDC 621.372.413(088.8)

DOREMAN, L. G., SHISHKIN, A. S. S

"Resonator"

USSR Author's Certificate No 254604, Filed 24 Nov 67, Published 3 Apr 70  
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B126P)

Translation: The proposed resonator contains a parallel connected capacitance branch formed by an air capacitor and a short-circuited segment of a coaxial line and an inductive branch. In order to decrease the size and improve the Q-factor, the inductive branch is executed in the form of a diaphragm located in the plane of connection of the connecting coaxial lines perpendicular to the axis of the resonator and constituting the stator of the exciting capacitor. There are two illustrations.

1/1

UDC 547.341

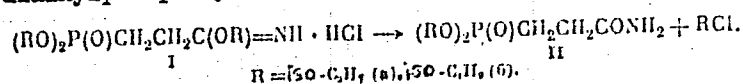
USSR

SHISHKIN, B. YE., YELFIMOVA, S. N., and NO, B. I., Volgograd Polytechnical Institute

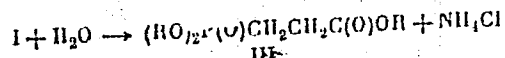
"Conversion of Hydrochlorides of C-Phosphorylated Imidates Into Amides and Phosphonylcarboxylate Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 10, 1972, pp 2346

Abstract: Thermal decomposition of the hydrochlorides yielded alkyl chlorides and amides of  $\beta$ -dialkylphosphonylcarboxylic acids according to



The reaction was carried out at 110-130°C; alkyl chlorides were collected in a trap cooled to -70°C, amides were viscous liquids which crystallized in 1-2 months. Hydrolysis of (I) yielded  $\beta$ -dialkylphosphonylpropionate esters (III):



1/2



USSR

SHISHKIN, B. YE., et al., Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 10, 1972, p 2346

Boiling points of amides (IIa) and (IIb) were 103-105 and 112-113°C, respectively.

Ester (IIIa) was characterized by b.p. 110°C,  $d_4^{20}$  1.0430,  $n_D^{20}$  1.4350,  $M_R^D$  70.04, and ester (IIIb), b.p. 156°C,  $d_4^{20}$  1.0020,  $n_D^{20}$  1.4360,  $M_R^D$  84.00.

Both esters had an absorption band at 1740  $\text{cm}^{-1}$  in their IR spectra.

2/2

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70  
 TITLE--INFLUENCE OF AROMATIC RINGS AND THEIR SUBSTITUENTS ON THE MUTAGENIC  
 ACTIVITY OF NITROGEN MUSTARDS -U-  
 AUTHOR--(04)-KOVALENKO, S.P., SHISHKIN, G.V., PANCHENKO, V.K., RAPP, L.B.  
 CCOUNTRY OF INFO--USSR  
 SOURCE--GENETIKA 1970, 6(2), 103-9  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
 TOPIC TAGS--NITROGEN MUSTARD, MUTAGEN, ASPERGILLUS  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--1999/0597 STEP NO--UR/0473/70/006/002/0103/0109  
 CIRC ACCESSION NO--AP0122718  
 UNCLASSIFIED

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2/2 012

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0122718

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE MUTAGENIC ACTIVITY OF THE FOLLOWING N MUSTARD DERIVS. WAS TESTED BY THE REVERSE MUTATION METHOD IN AN ARGININE REQUIRING STRAIN OF ASPERGILLUS NIDULANS: RN(CH SUB2 CH SUB2 X) SUB2 .HX (I) AND P,R PRIME C SUB6 H SUB4 N(CH SUB2 CH SUB2 CL) SUB2. HCL (II), WHERE R EQUALS BENZYL, PH, OR 5,MEC SUB6 H SUB4, X EQUALS CL OR BR, R PRIME EQUALS ME, F, CL, BR, OR I. THE MUTAGENIC ACTIVITY OF THE COMPS. WAS COMPARED WITH THAT OF ETHYLENIMINE (EI) AND TRICHLOROETHYLAMINE (TCE). THE MOST ACTIVE MUTAGEN OF THE I DERIVS. WAS BIS(2,BROMETHYL) BENZYLAMINE, FOLLOWED BY BIS(2,BROMETHYL),5,METHYLPHENYLAMINE, BIS(2,CHLOROETHYL) BENZYLAMINE AND BIS(2,BROMOETHYL)PHENYLAMINE (IN DECREASING ORDER). ALL 4 WERE MORE ACTIVE THAN EI OR TCE; THE REMAINING 2 CL DERIVS. WERE MORE ACTIVE THAN TCE ONLY. SUBSTITUTION OF THE ME OF II BY HALOGENS DECREASED THE MUTAGENIC ACTIVITY IN DIRECT RELATION TO THE AT. WT. OF THE SUBSTITUENT.

FACILITY: DIV. MOL. BIOL. GENET., AKAD. SCI. UKR. SSR, KIEV, USSR.

UNCLASSIFIED

UDJ 621.396.621

USSR

ARTAMONOV, A.F., ~~SHISHKIN, I.F.~~ [Members, Scientific-Technical Society of  
Radio Engineering, Electronics, And Communication imeni A.S. Popov]

"Contrast Reception At Nonlinear Receiver"

Radiotekhnika, Vol 27, No 6, June 1972, pp 94-97

Abstract: A calculation is presented of the probability of false alarm and of correct detection during reception of signals by the contrast method. Two possible versions of the functional diagram of a contrast receiver are shown. 2 fig. 6 ref. Receiver by editors, 16 March 1971; after further improvement, 6 December 1971.

1/1

USSR

SHISHKIN, L. A., PEREVERZEV, Yu. V., Physicotechnical Institute of Low Temperatures, Academy of Sciences, Ukrainian SSR; Kharkov State University imeni A. M. Gor'kiy

"The Effect of a Magnetic Field on the Thermal Conductivity of Ferromagnetic Dielectrics"

Leningrad, Fizika Tverdogo Tela, No 9, September 1970, pp 2762-2764

Abstract: It has been shown that spinwaves substantially affect the thermal conductivity of ferromagnetic and antiferromagnetic dielectrics; up to now, however, account has not been taken of a magnetic field. Since the spectrum of spin waves generally depends upon the magnetic field, a relationship should be expected between the magnetic field and thermal conductivity. In the present article, this relationship is found for the thermal conductivity coefficient of a uniaxial ferroelectric of the "light axis" type. It is found that changing the intensity of the magnetic field  $H$  brings about a change in the nature of the ratio of the coefficient of thermal conductivity to  $H$ . 7 bibliographic entries

1/1

- 8/4 -

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--MOLECULAR ORIENTATION IN AMORPHOUS POLYSTYRENE STUDIED BY MEANS OF  
BIREFRINGENCE AND INFRARED SPECTROSCOPY -U-  
AUTHOR-(03)-MILAGIN, M.F., GABARAYEVA, A.D., SHISHKIN, N.I.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOLOMOL SOEDIN., SER. A 1970, 12(3), 513-19  
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SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POLYSTYRENE RESIN, AMORPHOUS POLYMER, IR SPECTROSCOPY, POLYMER  
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ABSTRACT/EXTRACT--(U) GP-0-

AMORPHOUS POLYSTYRENE (I) (MOL. WT. 2 TIMES 10<sup>5</sup> PRIMES AND 7 TIMES 10<sup>5</sup> PRIMES) WAS EVALUATED BY BIREFRINGENCE ( $\Delta N$ ) AND IR DICHOISM. A PLOT OF  $\Delta N$  VS.  $F \sin^2 \theta$  GAVE  $\Delta N = 0.66 F \sin^2 \theta$ , WHICH, WHEN COMPARED WITH STEIN'S THEORY (R. S. STEIN, 1961), SUGGESTED THAT ANGLE BETWEEN A NORMAL TO THE BENZENE PLANE AND THE AXIS OF THE POLYMER SEGMENT WAS CONST. EQUAL TO 34 DEGREES, REGARDLESS OF THE DEGREE OF ORIENTATION OR THE LENGTH OF THE ORIENTED CHAINS IN I. THE EVIDENCE ALSO SUGGESTED THAT  $\alpha_1 - \alpha_2$  (I.E., THE DIFFERENCE BETWEEN LONGITUDINAL AND TRANSVERSE POLARIZABILITY OF A STATISTICAL SEGMENT) WAS ALSO A CONST. AT ANY DEGREE OF DRAWING. FACILITY: FIZ. TECH. INST. IM. IOFFE, LENINGRAD, USSR.

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PROCESSING DATE--20NOV70

1/3 028

TITLE--RELE OF A CORONAL DISCHARGE IN THUNDERSTORM DEVELOPMENT -U-

AUTHOR--SHISHKIN, N.S.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, DOKLADY AKADEMII NAUK SSSR, VOL 192, NO 2, 1970, PP 317-319

DATE PUBLISHED--70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--DROPLET, CORONA DISCHARGE, THUNDERSTORM, ATMOSPHERIC CLOUD, IONIZATION, CHARGED PARTICLE, COAGULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. WHEN A CLOUD CONTAINS HIGHLY CHARGED PRECIPITATION PARTICLES A NEW ION FORMATION MECHANISM APPEARS WHICH IS ASSOCIATED WITH THE CORONAL PHENOMENON. THE AUTHOR MADE COMPUTATIONS OF THE CHARGING OF FINE CLOUD DROPLETS FOR HIGH IONIZATION RATES ROOT EQUALS 10 PRIME<sup>3</sup>, 10 PRIME<sup>4</sup>, 10 PRIME<sup>5</sup> PAIRS OF IONS-CM PRIME<sup>3</sup> TIMES SEC. IT WAS FOUND THAT A SUDDEN INCREASE IN THE IONIZATION RATE IN COMPARISON WITH THE ORDINARY LEVEL LEADS TO A RAPID CHANGE IN THE CHARGE CONCENTRATED ON DROPS IN THE UPPER PART OF THE CLOUD FROM PLUS(100-200) E-CM PRIME<sup>3</sup> TO MINUS (10,000-20,000) E-CM PRIME<sup>3</sup> IN THE COURSE OF SEVERAL TENS OF SECONDS. IN THIS CASE THE SPECIFIC CHARGE OF CLOUD DROPLETS, THAT IS, THE CHARGE PER UNIT MASS OF CLOUD WATER, ATTAINS 2-4 ESU-G. THEREAFTER, WITH RETENTION OF THE ION FORMATION RATE, THE CHARGING OF FINE DROPLETS REMAINS VIRTUALLY UNCHANGED. IF CORONAL DISCHARGES AFFECT A CLOUD COLUMN WITH A THICKNESS OF SEVERAL KILOMETERS, THE CHARGE OF PRECIPITATION PARTICLES COAGULATING WITH HIGHLY CHARGED CLOUD DROPLETS INCREASES RAPIDLY DURING FALLING AND ATTAINS SUCH HIGH VALUES THAT THE STRENGTH OF THE RESULTANT FIELD CAN BECOME ABOUT 3-5 TIMES 10 PRIME<sup>3</sup> V-CM OR MORE. WITH SUCH A FIELD THE FORMATION OF STREAMERS WITHIN A CLOUD IS ALREADY POSSIBLE. THE MINIMUM STRENGTH FOR THE PROPAGATION OF STREAMERS FROM A SMALL CHARGED BODY AT NORMAL ATMOSPHERIC PRESSURE IS 4,400 V-CM. WITH THE REDUCED PRESSURE IN THE CENTRAL OR UPPER PART OF THE CLOUD THE CRITICAL STRENGTH IS NATURALLY REDUCED.

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3/3 028

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ABSTRACT/EXTRACT--AFTER THE ONSET OF THE CORONAL PHENOMENON IN THIS ZONE OF THE CLOUD A NEGATIVE CHARGING OF THE CLOUD DROPLETS, AND THEREFORE THE PRECIPITATION PARTICLES, OCCURS. THEIR CONVERGENCE DURING FALLING WITH PARTICLES STILL RETAINING A POSITIVE CHARGE INCREASES THE PROBABILITY OF A CORONAL PHENOMENON. MOREOVER, IN ADDITION TO ENSURING ACCELERATION OF CHARGING CLOUD AND PRECIPITATION PARTICLES, CORONAL DISCHARGES CREATE THE THUNDERSTORM DISCHARGE CARRIER, A HIGHLY IONIZED MEDIUM CONTAINING A LARGE NUMBER OF FREE ELECTRONS. IT CAN THEREFORE BE CONCLUDED THAT A CONDITION FOR CONVERSION OF A CLOUD FROM A THUNDERSTORM STATE IS THE FORMATION OF QUITE LARGE AND STRONGLY CHARGED PRECIPITATION PARTICLES, DURING WHOSE CONVERGENCE DURING FALLING AN INTENSIVE CORONAL PHENOMENON DEVELOPS, GIVING RISE TO A SINGULAR PROCESS OF ELECTRIC SELFEXCITATION OF A CLOUD.

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USSR

UDC 678.029.43

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"Chemical Welding of Hardened Plastics for the Mass Production of Large-Scale Products"

Kiev, Avtomaticheskaya Svarka, No 12 (249), Dec 73, pp 59-62

Abstract: The authors describe in this article the results of research on the chemical welding of hardened polymer materials such as grades AP-66-151 and AP-65-101 using high-frequency heating. These materials are used for the manufacture of parts for automobile bodies and interiors. This high-frequency heating not only allows intensifying the welding process but also creating a new one, that is, point welding. A seam produced by such welding has comparatively higher strength and is distinguished by good wear resistance in operation. The article contains 2 figures, 2 tables, and 5 bibliographic references.

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