

USSR

UDC 612.489.014.49(575.4)

KHAZANOV, M. M., IVANOVA, G. N., and ~~REZVEEV~~ Y. A.. Laboratory of Endocrinology
Institute of Human Morphology, Academy of Medical Sciences USSR and Biochemistry
Laboratory, Moscow Oblast State Scientific Research Clinical Institute named
M. F. Vladimirskiy

"The Effect of Arid Zone Conditions (Turkmenia) on the Functional State of the
Adrenal Cortex of Healthy Persons"

Moscow, Problemy Endokrinologii, Vol 16, No 4, Jul/Aug 70, pp 40-44

Abstract: Urinary excretion of 17 hydroxycorticosteroids and 17-ketosteroids
was determined in 10 healthy persons who had resided in areas of moderate climate
and were called to military service in the southern region of Turkmenia. Ten ad-
ditional healthy subjects who had lived in the middle zone and were called to
military service in their native area served as controls. No significant differ-
ences were noted between the two groups in the basal level of 17 hydroxycorti-
costeroid or 17 ketosteroid excretion. In persons living in hot climate for 3, 6,
and 15 months however, a statistically significant reduction of 17-hydroxycorti-
costeroid and 17-ketosteroid excretion was noted in response to the administration
of ACTH.

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USSR

UDC 533.69.01+533.652.013

ZHARIY, Yu. I., KRAVETS, V. N.

"On the Motion of a Solid-Angle Profile Wing With a Variable Distance From a Screen"

V sb. Krayev. zadachi mat. fiziki (Boundary Value Problems of Mathematical Physics -- Collection of Works), Kiev, 1971, pp 264-274 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B295)

Translation: The plane problem of the motion of a solid-angle profile wing in an ideal incompressible fluid with a variable distance from a screen is discussed. Resume.

USSR

UDC 532.5.001.5

KRAVETS, V. N.

"The Influence of Walls on the Lifting Force of the Wing of a Solid Profile"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatstionnaya Tekhnika, No 2, 1973, pp 29-33

Abstract: A study was made of the influence of walls of a plane channel on the lifting force of the wing of solid profile. The solution of the problem is found with the aid of methods of the potential of accelerations and the asymptotic method of functional parameters. From plotted curves characterizing the change of the function of the influence $\psi = c_y/c_{y_{\infty}}$ for various profile-wall distances, the influence of walls on the lifting force of a wing of given geometry can be evaluated. The essential influence of walls on the wing lifting force is demonstrated on an example and the analysis of derived graphs of ψ changes. The figures, sixteen formulas, seven bibliographic references.

1/1

USSR

UDC: 617.9:533.7

KRAVETS, V. N.

"Motion of a Wing of Solid Profile Close to a Screen"

Mat. fizika. Resp. mezhved. s'. (Mathematical Physics. Republic Interdepartmental collection), 1970, v. 8, pp 102-107 (from Izh-Matematika, No 5, May 71, Abstract No 5B477)

Translation: The problem of motion of a wing of solid profile close to a screen is solved by using the acceleration potential method. The solution of the singular integral equation of the problem is found by an approximation method using a small parameter. As a result, a formula is derived for a wing profile and used for calculation in a specific instance. Author's abstract.

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Semiconductors and Transistors

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USSR

UDC: 53.082.52

ARTYSHEVSKIY, P. P., ZARINA, V. V., BAYTSEVA, A. K., ZEMLE SVYATIK, I. M.,
KRAVITSKIY, D. YA., STYKALTSOVA, V. I., CHEYKIN, P. M., All-Union Scien-
tific Research Institute of Electrothermal Equipment

"Photovoltaic Cells Made From Silicon Crystals With Special Cross Sec-
tional Shapes Grown by the Stepanov Method"

Moscow, Izv. AN SSSR: Ser. Fizicheskaya, Vol 36, No 3, Mar 72, pp 522-524

Abstract: A previously described method (Artyshevskiy, P. P. et al., Izv. AN SSSR: Ser. Fiz., Vol 35, 1972, p 469) was used for growing noncylindrical silicon crystals to be tested in solar batteries. Polycrystal and single crystal specimens of p-conductivity with resistivity ranging from 0.1 to 15 ohm-cm were grown, cut transversely into thin plates and polished on one face. The p-n junction was made by phosphorus diffusion. The finished cells had an area of 0.8-1.2 sq. cm. Cells made from polycrystals had higher efficiency than cylindrical cells. The sheet resistance of the polycrystals was high, showing high purity of the semiconductor material. The electrical resistivity of cells made from single crystals were markedly greater than those of the polycrystal cells, which was attributed

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FYSHEVSKIY, P. P. et al., IAN SSSR: Ser. Fiz., V 35, 1972, pp 522-524

to the low purity of the single crystal material as evidenced by low shunt resistance. This same index shows that contamination is a random factor rather than being due to the method of crystal growing. On the whole, the results show that photovoltaic cells made from noncylindrical crystal rods are at least as good as cells made from Czochralski crystals.

JSSR

UDC: 621.791.3.052:622.336+669.18.2/.8

LUKINA, E. YU., Candidate of Technical Sciences, KOKINA, T. A., Engineer, and
KRAVETSKIY, G. A., Candidate of Technical Sciences

"Particulars on the Thermal Expansion of Graphite-Metal Soldered Joints"

Moscow, Svarochnoye Proizvodstvo, No 6, Jun 73, pp 36-37

Abstract: The authors study the thermal expansion of specimens in the 20-500°C interval. Soldered specimens made from (M3 graphite and St3) steel were used. These were soldered at 1155°C at a heating rate of 575 and 140°C/minute. The study was carried out in the Shevenara (DR-49) horizontal quartz dilatometer. The maximum measurement error for the average linear coefficient of thermal expansion was $+0.2 \cdot 10^{-6} / ^\circ\text{C}$. Cylindrical specimens 3.5mm in diameter and 40mm long were used for measurement purposes. X-ray quality control shows that the specimens differ with respect to each other according to the depth of metal penetration into the graphite, and with respect to the nature of the distribution of the metallic inclusions in the transition zone of the joint. The results show that the coefficient of thermal expansion for the graphite-steel soldered specimens exceeds the index by seven percent, where the index is obtained by the computational method from the conditions for the additivity of the thermal expansion of carbon and steel. An evaluation of the thermal expansion of the zone of soldering shows that the coefficient of thermal expansion is determined by the depth and nature

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LUKINA, E. YU., et al, Svarochnoye Proizvodstvo, No 6, Jun 73, pp 36-37

of the graphite penetration by the metal. This depends on the general value of porosity and on the distribution of pores with respect to size.

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Graphite

USSR

LINC 539.216.2

3

GALKIN, YU. A., GUSEVA, N. P., DERGUNOVA, V. S., KONOKOTIN, V. V., KHAVETSKIY
G. A., KUDINOV, V. V., AND SHORSHOROV, H. KH., Moscow,

"Interaction of Refractory Oxides with Graphite In Spraying"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May-Jun 72, pp 94-99

Abstract: The interaction of refractory oxides with graphite in flame spray-
ing was investigated in order to develop protective means against oxidation of
carbographic materials. The investigated dependences included the effect
of base preheating on the bonding strength with the protective coatings and
its density, effects of silicate and borosilicate sublayers on the bonding
strength and the activation energy of the chemical interaction of sublayers
with oxide coatings, the effect of graphite porosity on the bonding strength,
and the effect of addition of molybdenum, silicon, and aluminum into the
sprayed oxide on the gas density and the oxidative resistance of coatings.
The kinetics of the increasing bond strength of Al_2O_3 and ZnO_2 coatings
sprayed on preheated graphite are analyzed. The required activation energy of
the graphite surface and its strong bond with the sprayed Al_2O_3 was found to
be close to the half of the energy of the atomic bond in the graphite lattice,
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GALKIN, YU. A., et al., Fizika i Khimiya Obrabotki Materialov, No 3, May-Jun 72, pp 94-99

which is in accordance with graphite preheating over 1000°C when spraying. Silicate and borosilicate sublayers are recommended; they guarantee a bond strength of coatings on the level of graphite strength. Five illustrations, one table, three bibliographic references.

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USSR

UDC 621.762.2:669.296

KOZLOV, A. N., DUBININ, G. N., ALEKSANDROVA, I. F., ~~KRIVITSKIY, G. A., RYZINOV,~~
L. P., SLOBODCHIKOVA, R. I.

"Optimization of the Processes of Obtaining Spherical Zirconium Powder by Plasma
Atomization of Wire using Mathematical Statistics"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1971, vyp. 22B,
pp 130-138 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G401)

Translation: The optimal conditions of plasma atomization of Zr-wire to obtain
spherical powder with a particle size of 400-800 microns sufficiently pure with
respect to N_2 and O_2 (with a granule microhardness $\leq 300-500$ kg/mm²) are defined.

When processing the experimental data, the ranging method was used. A vacuum
plasma atomization device was designed and manufactured for obtaining spherical
powders of chemically active refractory metals. The optimal conditions of the
Zr atomization process are as follows: current 500 ± 60 amps, argon flow rate
 3.2 m³/hour, rarefaction in the chamber 400 mm Hg, spacing between the wire and
the nozzle section 0.5 mm. The yield of the Zr powder fraction 400-800 microns
in size is 60%. 5 illustrations, 3 tables, and a 13-entry bibliography.

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USSR

UDC 621.762.2

KOZLOV, A. N., KRAVETSKIY, G. A., BOVINA, T. A.

"Effect of the Environment on the Composition and Microstructure of Spherical Refractory Metal Powder Obtained by the Plasma Atomization Method"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1971, vyp. 228, pp 139-148 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 46400)

Translation: The environment has a noticeable effect on the composition and microstructure of powders obtained by plasma atomization. The Zr powders, the composition of which is similar to the composition of the initial wire, can be obtained by atomization of the Zr in a chamber filled with Ar with cooling of the powder particles in spindle oil. When combining atomization with chemical-heat treatment of the granule during the atomization process, it is possible to obtain Zr granules coated with a film of ZrO_2 (when atomizing in the air and cooling the granules in water). It is also possible to obtain carbide granules or granules with a surface carbide film when atomizing Mo and Zr in hydrocarbon vapors and cooling the granules in transformer oil. In order to obtain pure spherical Mo powder, it is recommended that the atomization take place in Ar and the granules be cooled in water. Six illustrations and a 5-entry bibliography.

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USSR

UDC: 621.791.052:669.046.558.22:630.17

ANIKIN, L. T. (Candidate of Technical Sciences), ~~UNIVERSITY, G. S.~~
DERGUNOVA, V. S. (Candidate of Technical Sciences)

"High-Temperature Strength of Joints of Graphite Materials"

Moscow, Svarochnoye proizvodstvo, No 1, Jan 72, pp 18-19

Abstract: Discussed is a method of joining graphite materials by the use of an intermediate carbide-forming interlayer. It is shown that the high-temperature strength of the brazed joint is a function of the interaction of the molten solder with the graphite, the depth of its penetration in the pores of the material, the newly formed phase composition, and the strength of the graphite. Comparison tests on graphite specimens bonded by a zirconium interlayer indicate that the strength of the brazed specimens heated above the melting temperature of zirconium is 30 to 35% higher than that of specimens heated below this temperature. The tensile strength of the brazed joints increases with the penetration depth of the solder up to a specific value (2-2.5 μ m) and then remains constant. The failure which had occurred in the specimens in tensile tests at 2000°C was found to be

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ANIKIN, L. T. (Candidate of Technical Sciences), et al, Svarochnoye proizvodstvo, No 1, Jan 72, pp 18-19

along the graphite outside the brazing zone. It is suggested that brazing of large-pore graphite be done with solders capable of forming (on contact) carbon saturated fusions under compression to afford maximum solder penetration and complete carburization to a composition close to stoichiometric. The study includes test data on solders from hafnium, molybdenum, and tungsten. (5 illustrations, 9 bibliographic references).

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USSR

UDC 621.3.035.2

KRAVETSKY, G. A., DERGUNOVA, V. S., SLAVINA, L. M., GUSEVA, N. P., and
SAHOSUDOV, V. V.

"Joining Graphite With Graphite and Metal by Electric-Arc Welding"

Moscow, Tsvetnyye Metally, No 7, Jul 71, pp 44-47

Abstract: A method of joining graphite parts with graphite and metallic parts by means of a metallic interlayer deposited on the surface of the graphite part by the electric-arc welding practice is discussed. The following materials with a mean linear expansion coefficient with respect to graphite and metal were investigated for their utilization as interlayers: V, Ti, Mo, W, Zr, Nb, and Kovar. It was found that Ti and Zr are the most promising interlayer materials. The use of Kovar as an interlayer material is recommended for welding graphite with stainless steel and other steel types. Three illustrations, three tables, six biblio. refs.

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1/2 033

UNCLASSIFIED

PROCESSING DATE--27. 07. 70

TITLE--EXPERIMENTAL STUDY OF THE EFFECT OF A TRANSVERSE MAGNETIC FIELD ON

THE VOLT AMPERE CHARACTERISTICS OF THE THERMIONIC CONVERTER IN A KROUSSER

AUTHOR--(05)-BADANIN, V.I., BARABASH, M.B., GAYDO, G.R., DUMAYEV, YULII, KRAVINSKIY, YU.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. TEKH. FIZ. 1970, 40(3), 561-6.

DATE PUBLISHED-----70

SUBJECT AREAS--ENERGY CONVERSION (NON-PROPULSIVE), PHYSICS

TOPIC TAGS--VOLT AMPERE CHARACTERISTIC, CATHODE, ANODE, BARIUM, CESIUM, MAGNETIC FIELD EFFECT, THERMIONIC ENERGY CONVERSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/2259

STEP NO--UR/0057/70/040/003/0561/0566

CIRC ACCESSION NO--AP0125837

UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125837

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OVER A WIDE RANGE OF CATHODE TEMPS. AND OF BA AND BA PLUS CS PRESSURES, THE INCREASE IN THE FIELD STRENGTH RESULTS IN A DECREASE IN THE SATN. CURRENT FOR THE CONVERTER. THIS IS IN GOOD QUAL. AGREEMENT WITH THE THEORETICAL CONCLUSIONS. IN A TRANSVERSE MAGNETIC FIELD THE CURRENT DOES NOT ACHIEVE SATN. WITH AN INCREASE IN THE POS. POTENTIAL ON THE ANODE BUT CONTINUES TO INCREASE, THE EFFECT BEING MORE PRONOUNCED FOR LOW CURRENT VALUES. THE INCREASE IN THE CURRENT MAY BE DUE TO A NO. OF REASONS, ONE OF WHICH IS THE WIDENING OF THE PREANODE ZONE.

UNCLASSIFIED

1/2 031

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--EXPERIMENTAL STUDY OF THE WIDTH OF THE NEAR ANODE LAYER IN A
KNUDSEN SYSTEM FOR A THERMIONIC ENERGY CONVERTER --U--
AUTHOR--(05)--BABANIN, V.I., BARABASH, M.B., GAIDO, G.K., DUVAYEV, YU.A.,
KRAVINSKIY, YU.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. TEKH. FIZ. 1970, 40(4), 833-8

DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRODE PROPERTY, THERMIONIC ENERGY CONVERSION, VOLT AMPERE
CHARACTERISTIC, BARIUM, CESIUM, TRANSVERSE MAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--2000/1196

STEP NO--UR/0057/70/040/004/0833/0838

ARC ACCESSION NO--AP0124850

UNCLASSIFIED

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IRC ACCESSION NO--AP0124850

UNCLASSIFIED

PROCESSING DATE--30DCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WIDTH OF THE NEAR ANODE LAYER IN A THERMIONIC ENERGY CONVERTER FILLED WITH BA,CS IN A TRANSVERSE MAGNETIC FIELD WAS INVESTIGATED EXPTL. VOLT AMPERE (V,A) CHARACTERISTICS ARE SHOWN FOR CATHODE, BA, AND CS TEMPS. OF 1893, 936, AND 373DEGREEK, RESP. A SMALL CURRENT INCREASE IN THE SATN. REGION IS EXPLAINED BY WIDENING OF THE NEAR ANODE LAYER. THE VALUES OF THIS WIDTH CALCD. BY V. I. KUZNETSOV, ET AL. (1970) WERE CONFIRMED EXPTL. BY ANAL. OF THE V/A CHARACTERISTICS. THE COMPENSATION DEGREE MAY BE DETD. IF THE WIDENING OF THE NEAR ANODE LAYER IS TAKEN INTO ACCOUNT.

UNCLASSIFIED

USSR

UDC: 661.143:534-8

KRAVKOVA, I. A., MANDRUGIN, V. A., MEN'SHIKOVA, N. I., SAVU-KHINA, T. A.

"Treating Suspensions of Electrophosphors and Titanium Dioxide in an Acoustic Field"

Sb. nauch. tr. VNI Iyuminoforov i osobo chist. veshchestv (Collected Scientific Works of the All-Union Scientific Research Institute of Phosphors and Extra Pure Materials), 1971, vyp. 5, pp 114-118 (from REh-Khimiya, No 7, Apr 72, Abstract No 74183)

Translation: A method is proposed for preparing suspensions of electroluminescent compositions of all phosphorescence colors as well as TiO_2 in liquid or in ultrasonic installation. In this connection, there is an appreciable reduction in the time of preparation of the suspensions (by a factor of 2-10), and an improvement in the quality of the electroluminescent and radiating layers. Resumé.

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USSR

UDC: 661.145

MANDRUGIN, V. A., SAVUKHINA, T. A., FILATOVA, L. A., KRAYKOVA,
I. A., VAVILOV, V. A., DANILOV, V. P.

"Investigation of Electrophosphors of the CRT Type"

Sb. nauch. tr. VNI lyuminoferov i osobo chist. veshchestv (Col-
lected Scientific Works of the All-Union Scientific Research
Institute of Phosphors and Extra Pure Materials), 1971, vyp. 5,
pp 73-82 (from RZh-Khimiya, No 7, Apr 72, Abstract No 71184)

Translation: Electroluminescent compositions of yellow, blue, green and red
luminescence colors are developed with a granulometric composition of sub-
particles of less than 12 microns and a maximum particle size of 10 microns or
less having a brightness of up to 170% of the standards at the "Krasnoyarsk" Plant. A technique is developed for making electroluminescent devices with
voltage of 115 V at a frequency of 500 Hz. Bibliography of 6 titles. Ref. 1.

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USSR

UDC 629.783.014.525(47)

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BALAYEV, N. F., GRODZOVSKIY, G. I., DANILOV, Yu. I., ZAKHAROV, V. K.,
~~KRAVTSOV, N. F.~~, KUZ'MIN, R. N., MAROV, M. Ya., MOROZOV, F. P.,
NIKITIN, V. Ye., PEROV, S. P., PETUNIN, A. N., UKHIN, V. B., and
SHVIDKOVSKIY, Ye. G.

"Scientific Data on the Flight of Automatic Ionospheric "Yantar"
Laboratories"

Uch. zap. Tsentr. Aerogidrodinam. in-ta (Scientific Notes of the
Central Aerohydrodynamic Institute) 1971, Vol. 2, No 2, pp 58-65
(from Referativnyy Zhurnal, Raketostroyeniye, No 11, Nov 71,
Abstract 11.41.87 Resume)

Abstract: Launches of automatic ionospheric "Yantar" laboratories
with gaseous plasma-ionic engines up to 100-400 km altitudes were
conducted with the aid of geophysical rockets, for the purpose of
studying prospects of controlled flight, in upper layers of the
atmosphere. Performance of gaseous plasma-ionic engines under ione-
spheric conditions was studied. Parameters characterising the
ion jet-ionospheric plasma interaction, as well as parameters of
neutral atmosphere were measured. Scientific data on conducted ex-
periments is presented. 8 figures, 1 table, 11 references.

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1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--PARTIAL WAVE ANALYSIS OF PI N YIELDS PI PI N REACTION IN THE
290-480 MEV ENERGY REGION IN THE FRAMEWORK OF THE OLSSONYOJH MODEL -U-
AUTHOR--KRAVTSOV, A.V.
COUNTRY OF INFO--USSR *R*
SOURCE--YAD. FIZ. 1970, 11(2), 387-94
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PION SCATTERING, INELASTIC SCATTERING, NUCLEAR MODEL, NUCLEAR
ISOBAR, SCATTERING CROSS SECTION, CALCULATION, PHASE SHIFT ANALYSIS,
PARTICLE SYMMETRY, NUCLEON INTERACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1991/1032 STEP NO--UR/0367770/011/002/038770394
CIRC ACCESSION NO--AP0110722
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110722

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY USING THE METHOD OF LEAST SQUARES, THE PARAMETERS OF THE DLSSONYODH MODEL ARE DETERM. FOR T PI ENERGIES OF 290, 338, 360, 430, AND 480 MEV. THE CONTRIBUTIONS FROM RESONANCE CHANNELS (VIA DELTA SUB33 ISOBAR PRODUCTION) AND FROM NONRESONANCE CHANNELS TO THE PI N YIELDS PI PI N REACTION ARE CALCD. THE CALCD. INELASTIC CROSS SECTIONS IN THE P SUB11, D SUB13, P SUB31, AND D SUB33 STATES COINCIDE WITH THE RESULTS OF THE PI N PHASE SHIFT ANAL. THE OBTAINED SQUARE RATIO OF THE ISOTOPIC AMPLITUDES A SUBONE HALF AND S SUBTHREE HALVES FOR THE PI N YIELDS PI DELTA REACTION CONTRADICTS THE VALUE OF 10 PREDICTED FOR SU(6)W. FACILITY: FIZ. TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
 TITLE--USE OF GAMMA RESONANCE SPECTROSCOPY TO STUDY COORDINATION IN
 SOLUTIONS OF ORGANOTIN MONOHALIDES -U-
 AUTHOR--(05)-GOLDANSKIY, V.I., ROCHEV, V.YA., KHRAPOV, V.V., KRAVTSOV,
 D.N., ROKHILINA, YE.M.
 COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 134-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MOSSBAUER EFFECT, ORGANOTIN COMPOUND, COORDINATION CHEMISTRY,
 POLYNUCLEAR HYDROCARBON, HALIDE, CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--3001/0017 STEP NO--0570020770710170017013470137

CIRC ACCESSION NO--AT0125097

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AF0125857

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

ABSTRACT.

THE MOSSBAUER EFFECT WAS USED TO

STUDY THE COORDINATION OF PH SUB3 SNF, PH SUB3 SNCL, PH SUB3 SNBr, PH SUB3 SNI, AND THEIR ET AND ME ANALOGS IN SOLVENTS SUCH AS HEPTANE, ET SUB2 O, CHCL SUB3, PYRIDINE, TETRAHYDROFURAN, ME SUB2 NCHO, ME SUB2 SO, (CH SUB2 OME) SUB2. THE SPECTRAL CHARACTERISTICS ARE TABULATED.

COORDINATION WAS DETECTED FOR THE URGANDIN HALIDES IN STRONGLY SOLVATING SUBSTANCES AND COORDINATION WAS OBSERVABLE IN CRYSTALS IN THE INDIVIDUAL SUBSTANCES. THIS WAS CAUSED BY THE FACT THAT IN PASSAGE FROM INDIVIDUAL HALIDES TO THEIR SOLNS. IN STRONGLY SOLVATING SOLVENTS

THE CHANGE IN QUADRUPOLE SPLITTING IS DETERM. BY THE DIFFERENCE IN INTENSITY OF COORDINATIONAL INTERACTIONS IN THE CRYSTALS OF THE INDIVIDUAL SUBSTANCE AND ITS SOLN.

FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 621.373(088.8)

ZALEVSKIY, A. A., KRAVTSOV, E. L.

"An SHF Noise Generator"

USSR Author's Certificate No 264461, filed 11 Apr 67, published 19 Jan 70
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A403 F)

Translation: The Author's Certificate introduces an SHF noise generator made in the form of a waveguide section within which a gas-discharge diode is placed. As a distinguishing feature of the patent, the working frequency band is expanded by using a section of H or E waveguide, and by locating the gas-discharge diode in a longitudinal slot in the ridge of the waveguide section. E. L.

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USSR

UDC 594.01

BORTNIK, E. M., KRAVTSOV, M. P., BORTNIK, S. M., and MINNAYKOVA-LUKASHEVA, V. D., Gerontology Section, Academy of Sciences Belorussian SSR

"Age-Associated Changes in the Concentration of SH-Groups in the Cortical Section of the Visual Analyser in Some Mammal"

Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1,138-1,139

Translation: It is known that many substances present in the mammalian body contain SH-groups. Among these substances are proteins, enzymes, some co-enzymes, and low-molecular-weight compounds such as cysteine, homocysteine, eogothioneine, and others. They participate in such important physiological processes as muscular contraction, tissue growth and regeneration, and nervous excitation and inhibition (1-4).

The literature contains scanty data on age-associated shifts in the concentration of SH-groups and the information is contradictory. These investigations were done by various methods with unequal specificity and sensitivity.

Some investigators have demonstrated that in advanced senility, the concentration of SH-groups in the proteins of the cerebral cortex, liver, kidneys, skeletal muscles, and heart of guinea pigs and rats decreased. Other

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USSR

BORTNIK, E. M., et al., Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1,138-1,139

researchers have found that the concentration of SH-groups in the cerebrum was greater in old rats than in young rats. However, age-associated shifts in the concentration of SH-groups in different tissues proceed at a different rate as a result of the fact that the process of aging is heterochronous. In view of the importance of SH-groups in oxidative phosphorylation, we became interested in investigating the concentration of SH-groups in the cortical section of the visual analyzer (field 17). As experimental subjects we used newborn dogs, 1 and 6 months old, and 2 and 18 years old as well as newborn rats and 1, 6, 14, and 32-month-old rats. Tissues were fixed in a 1% solution of trichloroacetic acid in 60% alcohol. Protein-bound SH-groups were determined by the method of Barnet and Zeligman.

The concentration of SH-groups was analyzed in the following segments of neurons: cytoplasm, cytoplasmic membrane, processes, nuclear membrane, and nucleolus.

The highest concentration of SH-groups was observed in neurons and surrounding structures in the fourth layer. A smaller concentration of SH-groups was found in the cytoplasm of nerve cell bodies in the supra and

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USSR

BORTNIK, E. H., et al., Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1,138-1,139

third layers, while the concentration in the star-shaped cells in the fifth layer was greater. Nuclear and cytoplasmic membranes and nucleoli had the highest concentration of SH-groups. The karyoplasm was found to be relatively poor in this substance.

Within one layer, neurites and dendrites had approximately the same concentration of SH-groups.

Investigation of the SH-groups in correlation with age showed that the distribution of SH-groups in the neurons and their processes was different in animals of different ages. The concentration of SH-groups in newborn animals was fairly high, increased at the age of 6 months, was highest in rats aged 14 months and in dogs aged 2 years, and then gradually decreased. Rats aged 32 months and dogs aged 18 years had a small concentration of SH-groups in the neurons and in the surviving structures. Of special interest was the following observation: the decrease with advancing age proceeded in the reverse order than the previous increase.

Analyses performed on young embryos, newborn animals, and those aged 1 month, 6 months, and more revealed that the SH-groups accumulated first in nuclear and cytoplasmic membranes and then in nucleoli, cytoplasm, and

3/4

USSR

BORTNIK, E. M., et al., Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1,138-1,139

karyoplasm. During aging, the concentration decreased first in the karyoplasm, then in the nucleoli, and finally in the nuclear and cytoplasmic membranes.

Thus, this study has revealed that with advancing age, shifts take place in the concentration of SH-groups in the cortical segments of the visual analyzer in rats and dogs. The concentration of SH-groups in neurons is high in newborn animals, reaches a peak in rats aged 14 months and in dogs aged 2 years, and considerably decreases in senility.

The speed of protein regeneration in ontogenesis decreases with advancing age. One of the reasons may be the decreasing concentration of SH-groups in the tissue.

4/4

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USSR

UDC: 532.536.013.2

KRAVTSOV, N. A., PORFIR'YEV, S. K.

"The Problem of Unstable Filtration of Liquids in a Medium with Elliptical Boundaries"

Tr. Sev.-Kavkaz. NII Prirod. Gazov [Works of Northern Caucasus Scientific Research Institute for Natural Gases], 1972, No 5, pp 200-204 (Translated from Referativnyy Zhurnal Mekhanika, No 12, 1972, Abstract No 12B1110, by M. I. Khmel'nik)

Translation: Unstable filtration flow of water through the boundary of an oil stratum located in a water-bearing area is studied under the condition that the pressure satisfies the piezoconductivity equation

$$a \nabla^2 p = \frac{\partial p}{\partial t}$$

while the boundary of the oil deposit is an elliptical cylinder. Two cases are studied: the boundary of the water-bearing contour is an ellipse, confocal with the boundary of the oil deposit, or similar to it. A conformal

1/2

USSR

Kravtsov, N. A., Porfir'yev, S. K., Tr. Sev.-Kavkaz. Nil Prirof. Gazov, 1972, No 5, pp 200-204.

mapping is selected, for which the system of corresponding ellipses (lines of equal pressure) is converted to a system of concentric circles, and the piezoconductivity equation is converted to a system of coordinates in which the variables are the radii of these circles r and the central angles ϕ . An approximate method is presented for solving these equations; the solution is sought in the form $P(r, \phi, t) = \bar{P}(r, t)F(\phi)$, where \bar{P} is the mean pressure along the ellipse, and the problem is thus reduced to solution of the equation for variables r and t . The author notes that the results of numerical solution of the precise equation and the approximate equations produced give satisfactory agreement, and also studies the problem of the possibility of replacement of the elliptical area of filtration with a circular area (in order to simplify calculation).

2/2

- 82 -

USSR

UDC: 621.376:530.145.6

BAKALOV, V. I. and KRAVTSOV, N. A.

"Resonance Optical Deflectors"

V sb. Vopr. radiotekhniki (Problems in Electronic Engineering--
collection of works) Tula, Tula Polytechnical Institute, 1970,
pp 53-56 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No.
3D377)

Translation: This paper gives the results of a theoretical investi-
gation into the development of resonance deflecting systems in the
optical range. It is shown that such systems may possess more re-
solving power, higher sensitivity and lower inertia than existing
deflectors. Resume

1/1

USSR

UNO: 621.572.132.1

BAKALOV, V. I., IARINSKIY, A. Ya., and ANAVTSOV, K. L.

"Investigating a Resonance Angle Filter in the Optical and UHF Ranges"

V sb. Vopr. radiotekhniki (Radio Engineering Problems--collection of works) Tula, Tula Polytechnical Institute, 1970, pp 28-44 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 33155)

Translation: Results are given of a theoretical and experimental investigation of an angular selective system of the single-layer resonance angle filter. The spectral (angular and frequency) characteristics of the interference system and the local and integral transmission characteristics with rectangular and sinusoidal spaced pulses at the input are obtained.

1/1

USSR

UDC: 621.373:535

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

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

Leningrad, Optika i Spektroskopiya, No 4, October 1973, pp 775-776

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

1/1

USSR

UFG 691.378.205

KORNIYENKO, L. S., KRAVTSOV, M. V., LARIONTSEV, Ye. G., NAUMKIN, N. I., Scientific Research Institute of Nuclear Physics, Moscow State University and M. V. Lomonosov

"Injection of a Short Light Pulse Into a Laser With a Long Cavity"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 4, 1 Apr 73, pp 806-808

Abstract: The authors discuss certain effects which arise when a short pulse of light is injected into a cavity with a transit time much greater than the pulse duration. Two injection modes are considered. If emission has already taken place in the laser before arrival of the external pulse, a mode of competitive interaction between the short pulse and the "inherent" emission of the laser takes place. In the second case, injection takes place before emission has developed. Conditions are discussed which lead to a quasistationary "traveling" pulse mode under the action of an external pulse. It is experimentally shown that the duration of emission in the traveling pulse mode is greater than in the mode of free emission. The envelope of the emission pulse train approximates the shape of the pumping pulse. Other modes of emission are to be treated in future papers.

1/1

- 3 -

USSR

UDC: 621.373.029.7

KORNIYENKO, L. S., KRAYTSOV, N. V., and NAUMKIN, N. I.

"Structure of the Oscillation Pulses of a Laser With Linear Delay Inside the Resonator"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1760-1762

Abstract: Lasers with linear delay inside the resonator may have as much as one hundred simultaneously generating modes when the effective length of the resonator is in the tens of meters. Experiments are described in this paper aimed at determining the characteristics of the "fine" radiation pulses caused by the presence of so many different types of modes. A description of the equipment, including a diagram, is given, and an oscillogram of the radiation pulses clearly indicating their fine structure. Formulas are given for the intensity of the radiation field in multimode radiation and for the distribution probability of the radiation amplitude fluctuations. The length of the resonator used in the experiment was 60 m.

1/1

Information Theory

USSR

UDC: 62-523.8; 535.8:661.2

KRAVTSOV, N. Y., CHIRKOV, L. Ye., and POLYACHENKG, V. L. (edited by Academician B. N. Petrov)

Elementy Optoelektronnykh Informatsionnykh Sistem (Elements of Optoelectronic Information Systems), book, 223 pp, 1970. Published by the Academy of Sciences USSR, Ministry of Instrument Construction, Automation Techniques and Control Systems, Order of Lenin Institute of Control Problems (Automation and Remote Control), Printed by "Nauka" Publishing House, Moscow

Extract: The authors attempt to demonstrate the enormous potentialities of optical electronics in information technology, to systematize the various methods of constructing optoelectronic devices, and to classify them.

Many problems in optoelectronics have not been adequately covered in this book; a number have merely been stated, while others have been ignored. The authors attempted not so much to treat exhaustively all possible optoelectronic elements in information systems and their design principles, but to interest the reader in the new trends in modern science and to focus attention on the great promises it represents.

1/4

USSR

KRAVTSOV, N. V., et al, Elementy Optoelektronnykh Informatsionnykh Sistem (Elements of Optoelectronic Information Systems), book, 223 pp, 1970. Published by the Academy of Sciences USSR, Ministry of Instrument Construction, Automation Techniques and Control Systems, Order of Lenin Institute of Control Problems (Automation and Remote Control), Printed by "Nauka" Publishing House, Moscow

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2/4

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USSR

KRAVTSOV, N. V., et al, Elementy Optoelektronnykh Informatsionnykh Sistem (Elements of Optoelectronic Information Systems), book, 223 pp, 1970. Published by the Academy of Sciences USSR, Ministry of Instrument Construction, Automation Techniques and Control Systems, Order of Lenin Institute of Control Problems (Automation and Remote Control), Printed by "Nauka" Publishing House, Moscow

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USSR

KRAVTSOV, N. V., et al, Elementy Optoelektronnykh Informatsionnykh Sistem (Elements of Optoelectronic Information Systems), book, 223 pp, 1970, Published by the Academy of Sciences USSR, Ministry of Instruction Construction, Automation Techniques and Control Systems, Order of Lenin Institute of Control Problems (Automation and Remote Control), Printed by "Nauka" Publishing House, Moscow

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Bibliography
[Note: Approximately half of the 225 references cited in the bibliography are to USSR papers and publications.]

4/4

USSR

UDC 535.24

KRAVTSOV, N. V., SHEVCHENKO, A. K.

"Modulation Method for Measuring the Speed of Light"

Minsk, Zhurnal Prikladnoy Spektroskopii (Journal of Applied Spectroscopy),
Vol 12, No 2, Feb 1970, pp 339-340

Abstract: A laser method is proposed for more exact measurement of the speed of light. The apparatus consists of a laser, optical modulator, Fabry-Perot interferometer, an optical system with a diaphragm, photodetector, measuring circuit, and an oscillator.

The laser beam passes through the optical modulator and interferometer, which produces interference rings that are recorded by the photodetector. The side frequencies of the main beam are shifted by the frequency of the optical modulator, and these frequencies produce additional interference rings at the output of the interferometer.

By adjustment of the modulation frequency, the interferometer becomes transparent in a given direction for two frequencies, and two orders of $1/2$

USSR

KRAVTSOV, N. V., SHEVCHENKO, A. K., Zhurnal Prikladnoy Spektroskopii (Journal of Applied Spectroscopy), Vol 12, No 2, Feb 1970, pp 339-340

frequency can then be superimposed. An equation is given for calculating the speed of light to within an error of 10^{-7} .

Orig. art. has 1 fig. and 2 refs.

2/4

USSR

KORNIYENKO, L. S., KRAVTSOV, N. V., NAUMKIN, N. I., and PROKHOROV, A. M., Institute of Nuclear Physics, Moscow State University

"Single-Frequency Ruby Ring Laser"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 58, No 2, Feb 70, pp 541-543

Abstract: The authors' purpose was to obtain a single mode for a traveling-wave ruby ring laser from the very start of generation, as well as to measure the width of the radiation spectrum and the radiation frequency shift during generation. It is shown that the radiation of such a laser in a single mode represents a regular sequence of a small number of spikes (usually 3-5 spikes) with a repetition interval of the order of 30 microseconds. The temperature drift of the radiation frequency during generation is small (less than 7 Mc).

Acc. Nr: **AP0043678**

KRAVTSOV N.V.
Ref: Gladen UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp. 541-543

SINGLE MODE RUBY RING LASER
Korn'yenko, L. S.; Kravtsov, N. V.;
Naumkin, N. I.; Prokhorov, A. M.

Results of investigation of a ruby travelling-wave ring laser are presented. It is shown that such laser operates under regular oscillation conditions. The width of the radiation spectrum is measured. It is demonstrated that during the generation time the temperature drift of the radiation frequency is small (< 7 Mc).

JDI

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REEL/FRA
19770082

1/2 012
 TITLE--ON UTILIZATION OF OPTIC MODULATORS FOR FULFILLING LOGICAL
 OPERATIONS -U-
 AUTHOR--(02)--KRAVTSOV, N.V., CHIRKOV, L.YE.
 COUNTRY OF INFO--USSR
 SOURCE--AVTOMATIKA I TELEMEXHANIKA, 1970, NR 2, PP 124-128
 DATE PUBLISHED-----70
 SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
 TOPIC TAGS--LOGIC DESIGN, COMPUTER LOGIC, OPTIC MODULATOR
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRA--1983/1975
 SECTION NO--AP0054773
 UNCLASSIFIED
 STEP NO--UR/0103/70/000/002/0124/0128
 PROCESSING DATE--1983
 K

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/2 012
CIRC ACCESSION NO--AP0054773
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE PROBLEM OF USING OPTIC
MODULATORS FOR THE DESIGN OF LOGICAL FUNCTIONAL SCHEMES IS CONSIDERED.
IT IS SHOWN THAT THE COMBINATION OF TWO OPTIC MODULATORS PROVES TO BE
SUFFICIENT FOR THE REALIZATION OF THE MAJORITY OF LOGICAL SCHEMES. THE
MAIN VARIANTS OF THEIR REALIZATION ARE CONSIDERED.

UNCLASSIFIED

1/2 040 UNCLASSIFIED PROCESSING DATE--27NOV77
 TITLE--MODULATION METHOD FOR MEASURING THE SPEED OF LIGHT -U-
 AUTHOR--(02)-KRAVTSOV, N.V., SHEVCHENKO, A.K. K
 COUNTRY OF INFO--USSR
 SOURCE--MINSK, ZHURNAL PRIKLADNOY SPEKTROSKOPII (JOURNAL OF APPLIED SPECTROSCOPY), VOL 12, NO 2, FEB. 1970, PP 339-340
 DATE PUBLISHED-----70
 SUBJECT AREAS--PHYSICS
 TOPIC TAGS--LIGHT VELOCITY, OPTIC MEASUREMENT, LASER MODULATION, FABRY PEROT INTERFEROMETER
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAHE--2000/1407 STEP NO--UR/0368/70/012/002/0334/0340
 CIRC ACCESSION NO--AP0125048
 UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 040

CIRC ACCESSION NO--A0125048
ABSTRACT/EXTRACT--(U) GP-C-

ABSTRACT. A LASER METHOD IS PROPOSED FOR MORE EXACT MEASUREMENT OF THE SPEED OF LIGHT. THE APPARATUS CONSISTS OF A LASER, OPTICAL MODULATOR, FABRY PEROT INTERFEROMETER, AN OPTICAL SYSTEM WITH A DIAPHRAGM, PHOTODETECTOR, MEASURING CIRCUIT, AND AN OSCILLATOR. THE LASER BEAM PASSES THROUGH THE OPTICAL MODULATOR AND INTERFEROMETER, WHICH PRODUCES INTERFERENCE RINGS THAT ARE RECORDED BY THE PHOTODETECTOR. THE SIDE FREQUENCIES OF THE MAIN BEAM ARE SHIFTED BY THE FREQUENCY OF THE OPTICAL MODULATOR, AND THESE FREQUENCIES PRODUCE ADDITIONAL INTERFERENCE RINGS AT THE OUTPUT OF THE INTERFEROMETER. BY ADJUSTMENT OF THE MODULATION FREQUENCY, THE INTERFEROMETER BECOMES TRANSPARENT IN A GIVEN DIRECTION FOR TWO FREQUENCIES, AND TWO ORDERS OF FREQUENCY CAN THEN BE SUPERIMPOSED. AN EQUATION IS GIVEN FOR CALCULATING THE SPEED OF LIGHT TO WITHIN AN ERROR OF 10 NEGATIVE PRIME7.

UNCLASSIFIED

USSR

SHVETSKIY, et al., USSR Author's Certificate No 347909 klh 03 K 13/20, filed 9 Aug 68, published 4 Sep 72

The outputs of the discharge and transfer instruction shaper are connected respectively to the apparatus memory discharge bus and the apparatus transfer bus; the sign flipflop is connected to the output of the high-order position of the counter, and its output is connected to one of the inputs of the phase-sensitive detector and to the control input of the transfer apparatus.

To reduce conversion error, the discharge and transfer instruction shaper contains flipflops, an inverter, and coincidence circuit. One set of flipflop inputs is connected to the output of the frequency divider; the other flipflop inputs (except for the first) are connected to the output of the cyclic pulse generator.

The input of the first flipflop is connected to the output of the zero unit; the direct output of the second and the inverted output of the third flipflop are connected to one coincidence circuit, to which the direct output of the sign flipflop and the output of the cyclic pulse generator are also connected. The direct output of the third and the inverted output of the fourth flipflops are connected to the other coincidence circuit, to which the inverted output of the sign flipflop and the output of the cyclic pulse generator are also connected; the outputs of the coincidence circuits are connected through an inverter to the transfer bus. Three illustrations.

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UDC: 577.4

USSR

KRAVTSOV, S. S.

"Concerning Some Topological Properties of Logic Algebra Functions"

Novosibirsk, Diskretn. analiz--sbornik (Discrete Analysis--collection of works), 1972, vyp. 21, pp 10-25 (from RZh-Kibernetika, No 7, Jul 72, abstract No 7V438 by L. Sholomov)

Translation: Let N_f be the set of vertices of the cube $\{0,1\}^n$ on which the logic function $f(x_1, \dots, x_n)$ is equal to 1. The elements of the set N_f are called topologically identical if the same number of elements k_l of N_f is located at a distance l from each of these elements, $l=1, \dots, n$, the distance being measured by the number of noncoincident digital places. The number of sets N_f containing at least one pair of topologically equivalent elements is designated by $\psi(n)$. It is proved that

$$\log_2 \frac{\psi(n)}{2^n} \sim -\frac{n}{8 \ln 2}$$

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UDC: 577.4

USSR

KRAVTSOV, S. S."Some Topological Characteristics of Algebraic Logic Functions"

Novosibirsk, V sb. Diskretn. analiz (Discrete Analysis--collection of works) No 21, 1972, pp 10-25 (from RZh--Matematika, No 7, 1973, Abstract No 7V438)

Translation: Let N_f be a set of vertices of a cube $\{0,1\}^n$ in which the logic function $f(x_1, \dots, x_n)$ is equal to 1. The elements of set N_f are known as topological identities if at a distance $\frac{1}{2}$, $\frac{1}{2} = 1$, \dots, n , from each of them is the same number k_i of elements of N_f (the distance is measured by the quantity of noncoincident digits). The symbol $\psi(n)$ is used for the number of sets of N_f containing at least one pair of topologically identical elements. It is proved that

$$\log_2 \frac{\psi(n)}{2^{2^n}} \sim - \frac{n^2}{8 \ln 2} .$$

I. Sholozov

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UDC 621.396.677

USSR

KRAVTSOV, V. A.

"Field of a Longitudinal Dipole Located Near a Circular Ideally Conducting Cylinder"

Tr. NII radio (Works of the Radio Scientific Research Institute), 1971, vyp. 4, pp 94-102 (from RZh-Radiotekhnika, No 6, Jun 72, Abstract No 6B3)

Translation: The field is defined at any point in a space created by a longitudinal electric dipole located near an ideally conducting circular cylinder. Strict expressions are obtained for the natural and mutual resistances of the radiation of dipoles located near the cylinder for the case of a sinusoidal current distribution along the dipole. The results of calculating the natural and mutual radiation resistances of the dipoles are presented. There are 5 illustrations and an 8-entry bibliography.

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- 14 -

Luminescence

USSR

UDC 621.3.032.35:541.182.65

OSIPOV, B. S., MERKUSHEV, O. M., LAVOROV, I. S., and KRAVTSOV, V. D., Leningrad Technological Institute imeni Lenolet

"Electrophoretic Precipitation of the Suspensions of Electroluminophores"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 46, No 4, Apr 73, pp 796-800

Abstract: The process of electrophoretic precipitation of electroluminophores from suspensions, and their behavior in electric field was studied in order to determine basic laws of the formation of electroluminescent panels (ELP). To obtain desired ELP by the electrophoretic method, it is necessary to use a luminophore with uniform distribution of the activator's concentration among its particles, or the direction of the electric field and the concentration of the suspensions have to be selected so that they would fall in the range of the aggregation of particles. The brightness of the ELP obtained in this fashion should exceed the brightness of the panels obtained by the pulverization method.

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USSR

UDC: 551.508.54

GORENSHTEYN, I. A., AYLAMAZYAN, A. K., ~~KRAVTSOV, Y. G.~~

"True Air Speed Indicator"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obratzysy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332383, Division G, filed 20 Oct 70, published 14 Mar 72, p 174

Translation: This Author's Certificate introduces a true air speed indicator which contains a tube with ionizing and measurement electrodes connected to a generator of periodic pulses and placed in the direction of flow. As a distinguishing feature of the patent, in order to reduce distortions introduced into the flow, the electrodes are located symmetrically in ridged sections in the body of the tube with internal section in the form of a figure formed by two intersecting circles of the same diameter, the distance between the points of intersection being at least ten times less than the diameter.

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UDC: 681.3:51

USSR

AYLAMAZYAN, A. K., BELOTELOV, V. P., DOLGOPOLOV, V. V., KHAVTSON, V. G., LOZA, T. M., MARKINA, N. V., KHAKHIN, M. D.

"A Device for Computing Aerodynamic Parameters"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzysy, Tovarnyye Znaki, No 23, 1970, Author's Certificate No 276528, Filed 28 May 69

Abstract: This Author's Certificate introduces a device for computing aerodynamic parameters such as altitude, velocity, and Mach number. The unit contains converters of primary information to binary code which are connected through a shift register and adder to the input of an arithmetic device. Also included in the computer are a memory unit, decoder, pulse generator, control device, and recording unit. As a distinguishing feature of the patent, the electrical circuit is simplified and the overall dimensions are reduced by connecting the most significant digital places of one of the registers in the arithmetic device to the least significant digital places of the address section of the command register in the control unit through diodes controlled by the decoder and the pulse generator. The most significant digital places of the address section and the code section of the command register in the control device are connected to the memory unit.

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Acc. Nr:

AP0034211

Abstracting Service:
CHEMICAL ABST. H-70

K

Ref. Code:

UR 0078

71108p Effect of background cations on the rate of activation of iridium(III) hexachloride complexes. ~~FRANTSOV, V. A.; Tsventarovi, E. G.; Tsayun, G. P.; ~~Usatov, V. V.; ~~Levitskiy, A. I.~~~~~~ grad. Gos. Univ., Leningrad, USSR). Zh. Neorg. Khim. 1978, 15(1), 87-3 (Russ.). Rate const. (k) of $IrCl_6^{3-}$ aquation was detd. in 0.1, 1, and 3M solns. of LiCl and NaCl and in 0.1M KCl at 25-60° and at pH 3. At const. alkali chloride concn., k decreased with cations in the order $Li > Na > K$. It decreased also with increasing LiCl or NaCl concn. Apparently, alkali cations affect the orientation of water mols. around $IrCl_6^{3-}$. For 0.1M LiCl, NaCl, and KCl, the activation energy of $IrCl_6^{3-}$ aquation is 25.3, 26.5, and 28.9 kcal/mole, resp. The activation energy decreased with increasing alkali chloride concn.

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UNCLASSIFIED

PROCESSING DATE--17JUL70

TITLE--NATURE OF THE METAL COMPLEXES PARTICIPATING IN THE ELECTROCHEMICAL
STEP (OF REVERSIBLE REACTIONS) -U-
AUTHOR--KRAVISOV, V.I.

63/23

COUNTRY OF INFO--USSR

SOURCE--ELEKTRKHIMIYA 1970, 6(2), 275-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION MECHANISM, ELECTRODE, CHEMICAL COMPOSITION,
ELECTRODE POTENTIAL, CHEMICAL REACTION KINETICS, DIPPING MERCURY
ELECTRODE, CHLORIDE COMPLEX, PLATINUM COMPLEX, AMALGAM, PALLADIUM,
COMPLEX MOLECULE, ELECTROCHEMICAL REACTION, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/1787

STEP NO--UR/C364/70/006/002/0275/0277

CIRC ACCESSION NO--AP0100366

UNCLASSIFIED

ACC. NO.

AP01.00366

Abstracting Service:
CHEMICAL ABST. 6-70

Ref. Code

U/P 0364

117166m Nature of the metal complexes participating in the electrochemical step [of reversible reactions]. Kravtsov, V. I. (Leningrad Gos. Univ. im. Zhdanova, Leningrad, USSR). *Elektrokhimiya* 1970, 6(2), 273-7 (Russ). The nature of the complex participating in the electrochem. stage is detd. from the effect of the electrode material on the kinetic characteristics of this stage. In the case of an inner-spherical mechanism the characteristics should depend to a larger extent on the electrode material than with an extra-spherical mechanism. The nature of adsorption of the reacting particles can be inferred from the cor. Tafel dependences obtained for various backgrounds concns. and various electrodes. These dependences found for the elec. redn. of $Fe(CN)_6^{4-}$ on Hg, Ta, and In amalgams points to the absence of a specific adsorption of the reacting complex at high neg. electrode potentials, thus to an extra-spherical mechanism. The redn. of $PdCl_4^{2-}$ on a Hg cathode proceeds by the inner-spherical mechanism. The redn. of chloride complexes of bivalent Pd on Pd and Hg dropping electrodes is preceded by the splitting-off of two Cl^- ions from the $PdCl_4^{2-}$ complexes prevailing in the soln. Since near the equil. potential of the $Pd/PdCl_4^{2-}$ system the reaction rate of $Pd(II)$

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redn. on a Pd electrode is by 3 orders of magnitude higher than on a Hg electrode, the adsorption conditions of the complexes are different. Analogous results were obtained with PdBr_4^{2-} . The more favorable results for Pd(II) redn. on solid Pd are due to the formation of a stable bond metal-metal between the surface atoms of Pd and the Pd(II) ions in the inner-spherical complexes.
L. Holl

2/2

19841788

P.N.

ACC. NO.

AP0100366

Abstracting Service:
CHEMICAL ABST. 6-70

Ref. Code

UR 0364

117166m Nature of the metal complexes participating in the electrochemical step (of reversible reactions). Kravtsov, V. I. (Leningrad Gos. Univ. im. Zhdanova, Leningrad, USSR). *Elektrokhimiya* 1970, 8(2), 275-7 (Russ). The nature of the complex participating in the electrochem. stage is detd. from the effect of the electrode material on the kinetic characteristics of this stage. In the case of an inner-spherical mechanism the characteristics should depend to a larger extent on the electrode material than with an extra-spherical mechanism. The nature of adsorption of the reacting particles can be inferred from the cor. Tafel dependences obtained for various background concns. and various electrodes. These dependences found for the elec. redn. of $\text{Fe}(\text{CN})_6^{4-}$ on Hg, Ta, and In amalgams points to the absence of a specific adsorption of the reacting complex at high neg. electrode potentials, thus to an extra-spherical mechanism. The redn. of PtCl_6^{2-} on a Hg cathode proceeds by the inner-spherical mechanism. The redn. of chloride complexes of bivalent Pd on Pd and Hg dropping electrodes is preceded by the splitting-off of two Cl^- ions from the PdCl_4^{2-} complexes prevailing in the soln. Since near the equil. potential of the Pd/PdCl₄²⁻ system the reaction rate of Pd(II)

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REEL/FRAME
19841787

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AP0100366

redn. on a Pd electrode is by 3 orders of magnitude higher than on a Hg electrode, the adsorption conditions of the complexes are different. Analogous results were obtained with PdBr_4^{2-} . The more favorable results for Pd(II) redn. on solid Pd are due to the formation of a stable bond metal-metal between the surface atoms of Pd and the Pd(II) ions in the inner-spherical complexes.
L. Holl

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Pd.

1/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--KINETICS OF ELECTRODE PROCESSES IN ELECTROLYTE SOLUTIONS OF
VARIABLE COMPOSITION -U-
AUTHOR--(03)-DURDIN, YA.V., KRAVTSOV, V.I., MALEV, V.V. *K*
COUNTRY OF INFO--USSR
SOURCE--VSTN. LENINGRAD. UNIV., FIZ., KHIM. 1970, (4), 80-99
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ELECTRODE REACTION, ELECTROLYTE, MASS TRANSFER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1313 STEP NO--UR/0054/70/000/004/0080/0099
CIRC ACCESSION NO--AP0116773
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/2 016

CIRC ACCESSION NO--AP0116773
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THIS EXTENSIVE REVIEW CONCNS. ON EFFECTS OF SUPPORTING ELECTROLYTE ON THE RATE OF ELECTRODE REACTION THROUGH AFFECTING MASS TRANSFER IN THE DIFFUSION AND DIFFUSE LAYERS UNDER THE CONDITIONS WHEN A SIMULTANEOUS CHEM. REACTION IN THE FLUID VOL. CAN BE NEGLECTED. IT ALSO DEALS WITH MUTUAL EFFECTS OF THE STATE OF METAL IONS IN THE SOLN. AND THE RATE OF ELECTRODE PROCESS, BY NEGLECTING MIGRATION OF IONS IN THE SOLN., CHANGES IN COMPN. OF THE DOUBLE LAYER, AND CHANGES OF THE ACTIVITY COEFFS.

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AA0047075 -

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NR 0482

1/70

Soviet Inventions Illustrated, Section II Electrical, Derwent,

241537 MEASUREMENT OF PHASE SHIFT
 based on the transposition of
 phase into a time interval. The
 equipment consists of incoming block
 (1), integrating amplifier (2), encoder
 of potential into frequency (3) and
 counter (4). One signal is converted
 into impulses of a duration equal
 to the distance between null points and
 the second signal-into impulses of
 a duration equal the cycle time, of
 the tested signal. After passing
 through block (3) the phase shift is
 converted into a series of pulses
 passing into counter (4).

15.3.68 as 1225003/18-10. E. N. LAVROV & V. V. KRAVTSOV.
 L'VOV POLYTECHNIC. (8.9.69) Bul 14/18.4.69. Claim 21W
 Int.Cl.G O1r.

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AA0047075

L'vovskiy Ordena Lenina Politeknicheskij Institut



19790543

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USSR

UDC 632.95

OSATSKIY, L. G., MERKULOV, A. A., KRAVTSOV, YE. YH.

"Herbicide"

USSR Author's Certificate No 235511, filed 4 Aug 67, published
25 Feb 70 (from RZh-Khimiya, No 18, 25 Sep 70, Abstract No 18N713 P,
by L. Shelestenko)

Translation: Acidic fumigating resins are used as herbicides in
controlling quarantined weed plants. Acidic fumigating resins are
a resinous black liquid, with $d_{20} 1.06 \text{ g/cm}^3$, readily soluble in
water. The composition is as follows: 40% sulfuric acid -- 6-10%
and sulfoacids -- 40-50%.

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USSR

UDC 621.818

KRAVTSOV, Yu. I., STEPANOV, A. I.

"A Magnetic Pulse-Duration Modulator for Controlling Transistorized Amplifiers"

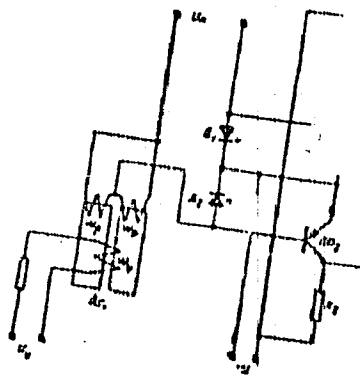
Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 36, Soviet Patent No 288036, class 21, filed 22 Apr 68, published 3 Dec 70, p 54

Translation: This Author's Certificate introduces a magnetic pulse-duration modulator for controlling transistorized amplifiers. The unit contains a choke-type magnetic amplifier and controlled transistors. As a distinguishing feature of the patent, in order to increase the sensitivity of the magnetic amplifier as well as to reduce the dimensions of its core, two tunnel diodes connected in series-opposition are placed in series with the magnetic amplifier windings. The common point of these diodes is connected to the emitters of the transistors, while the anodes of the diodes are connected to the bases of the transistors.

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USSR

KRAVTSOV, Yu. I., STEPANOV, A. I., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 36, Soviet Patent No 268036, class 21, filed 22 Apr 68, published 3 Dec 70, p 54



2/2

USSR

UDC 615.214.22.015:/612.824.1.612.388-064

KOMENDANTOVA, M. V., KRAVTSOVA, G. N., and SERGEYEV, P. V., Chair of Pharmacology, Moscow Medical Institute of Stomatology, and Chair of Molecular Pharmacology, Medico-Biological Faculty, 2nd Moscow Medical Institute imeni N. I. Pirogov

"The Effects of Chlorpromazine and Tizercine on the Permeability of the Hematoencephalic Barrier Under Normal Conditions and in Experimental Inflammation"

Moscow, Farmakologiya i Toksikologiya, Vol 35, No 1, Jan/Feb 72, pp 55-60

Abstract: The effects of the neuroleptics chlorpromazine and tizercine on the permeability of the hematoencephalic barrier under normal conditions and in experimental inflammation produced by a subcutaneous injection of a mustard suspension in sterile sunflower seed oil were studied in experiments on rats. ^{131}I -albumin derived from human serum albumin and uranine (Na-fluorescein) were used as tracers to determine the permeability of the barrier. The neuroleptics were administered in doses of 1 and 5 mg/kg. After a single administration of either neuroleptic, the permeability for ^{131}I -albumin increased. That for uranine decreased after a single administration of chlorpromazine and remained unchanged after a single administration of tizercine. On repeated administration of these drugs, the effect produced by them changed in a direction that

USSR

KOMENDANTOVA, M. V., et al., Farmakologiya i Toksikologiya, Vol 35, No 1, Jan/
Feb 72, pp 55-60

could be opposite to that produced by a single administration and that varied depending on the dose of the drugs. In experiments on the animals with inflammation, either drug produced a shift in the permeability to ^{131}I -albumin opposite to that produced by the inflammation - i.e., the drugs corrected the disturbances in the permeability of the hematoencephalic barrier that were due to the inflammation.

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- 36 -

1/2 026 UNCLASSIFIED PROCESSING DATE--16OCT70
 TITLE--THE PRINCIPAL WORK OF ERNEST JULIUM EWALD -U-
 AUTHOR--KRAVTSOVA, L.I. K
 COUNTRY OF INFO--USSR
 SOURCE--VESTNIK OTORINOLARINGOLOGII, 1970, NR 3, PP 46-51
 DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL SCIENCES
 TOPIC TAGS--VESTIBULAR ANALYZER, BIRD, REPTILE, AMPHIBIAN, FROG, DOG, MEDICAL PERSONNEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1989/1251

STEP NO--UR/0607/70/000/003/0046/0051

CIRC ACCESSION NO--AP0107727

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--160CT70

2/2 026

CIRC ACCESSION NO--AP0107727

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

ABSTRACT. EWALD'S EXPERIMENTS LIE AT THE BASIS OF OUR NOTIONS ON THE FUNCTION OF THE VESTIBULAR ANALYZER.

EXPERIMENTS WERE CARRIED OUT ON DOVES, COLIBRI, GOOSE, SALAMANDERS, FRUGS, DOGS, ETC. IN THE FIRST FIVE CHAPTERS, ALONG WITH A DESCRIPTION OF THE STRUCTURE OF THE DOVE VESTIBULAR ANALYZER, THE AUTHOR DISCUSSES THE METHOD OF BIRD FIXATION, AS WELL AS A NUMBER OF GENERAL MEASURES PRIOR TO OPERATIONS ON THE LABYRINTH OF GREAT INTEREST IS THE SIXTH CHAPTER WHERE A DETAILED DESCRIPTION IS GIVEN OF THE TECHNIQUE OF SECTION OF SEMICIRCULAR CANALS AND THE METHOD OF THEIR PLOMBAGE. THE SEVENTH CHAPTER IS DEDICATED TO VERTIGO DURING ROTATION. THE FOURTEENTH CHAPTER CONTAINS CONCLUSIONS.

FACILITY: KLINIKI SOLEZNEY URHA, NOSA T GURLA TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY, MOSCOW.

UNCLASSIFIED

USSR

UDC 621.357.7:660.45'5(088.2)

KOCHMAN, E. D., KRAVTSOVA, R. I., and KOMAROV, N. V., Kazakhstan Agricultural Institute

"Process for the Electrolytic Precipitation of Tin Zinc Alloys"

Author's Certificate 344027, filed 28 Dec 70, published 11 Aug 72 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L322P)

Translation: A process is patented for the electrochemical precipitation of tin zinc alloys. It is improved in that in order to increase the stability of the electrolyte and the velocity of the precipitation of the alloy, hydrazine sulfate and ethylamine are added to the electrolyte resulting in the following composition: (g/liter) SnCl_2 , 12-18; ZnSO_4 , 25-38; $\text{K}_4\text{P}_2\text{O}_7$, 150-230; the hydrazine sulfate 2-6; the ethylamine (20% solution), 1-3; gelatin, 0.5-1; the process is carried out at a pH of 8.5-9, a temperature of 40-70°, during the application of a variable current density of 1-10 amps/decimeter² on a stationary current density 0.5-10 amps/decimeter² using different alloys of zinc and tin. The concentration of tin in the alloy was 80-60%. Theoretical yield was about 81%.

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USSR

UDC 621.357.7.035.4:649.738.7(088.8)

KRAVTSOV, YE. YE., and PILAVOV, SH. S

"A Process for Electrolytic Cadmium Plating"

Authors' Certificate no 344025, filed 22 Oct 70, published 11 Aug 72 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L308P)

Translation: A process is patented for the electrolytic cadmium plating in an electrolyte containing $CdSO_4$, H_2SO_4 and a surface-active compound. It is improved in that in order to obtain a bright surface and increase the diffusing strength of the electrolyte, acidic resins and an extract of starch syrup were used as surface active agents giving the following components, in g/liter: $CdSO_4$, 45-60; H_2SO_4 , 20-50; the acid resin 30-55; the extract of starch syrup, 10-15; and the process was carried out at a temperature of 18-25° and a D_k of 3-5 amps/decimeter².

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Steels

USSR

UDC 669.15.018.44:620.166

SPASSKIY, V. V., POPOV, V. I., GLINKIN, A. S., KRAVTSOVA, T. N., BOBYLEV, F. K.,
MESHCHERYAKOV, A. S., TROSHKIN, G. N.

"Effect of Phase Composition on the Properties of Austenitic Chromium-Nickel
Steels in Castings and Welded Parts"

Liteyn. proiz-vo (Casting Production), 1970, No 11, pp 29-30 (from RZh-Metal-
lurgiya, No 4, Apr 71, Abstract No 41649)

Translation: A study is made of EI572 heat-resistant steel containing (in %)
C 0.28-0.33, Mn 1.08-1.27, Si 0.60-0.80, Cr 18.20-20, Ni 8.1-9.7, W 1.48-1.50,
Mo 1.20-1.35, Ti 0.22-0.78, Nb 0.26-0.50. The castings were austenitized at
1,160°, and they were cooled in water before aging at 650-820° for 15 hours.
The δ-ferrite content in the samples was determined after austenitization and
aging. Increasing the Cr, Ni, and Ti content increases the δ-ferrite content.
With an increase in the content of C > 0.30%, the amount of $M_{23}C_6$ carbides

increased along the grain boundaries. The cooling rate of the casting has a
noticeable effect on the amount of δ-ferrite in the steel: in the case of
accelerated cooling of the casting in water (4°/second) the amount of δ-
ferrite was about twice that obtained with ordinary cooling in the air
(0.15°/second). Castings made of EI572 steel for welding must contain 1-2
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USSR

SPASSKIY, V. V., et al., Liteyn. proiz-vo, 1970, No 11, pp 19-30

δ -ferrite, This is somewhat higher than for the same steel during hot working. The required amount of δ -ferrite is insured by a 0.3-0.45% Ti content in steel.

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Acc. Nr: AT0046177

Abstracting Service: 5/70
GEOPHYSICAL ABST.

Ref. Code:
UR0068

K

92021v Improvement in the quality of regenerated sodium hydroxide solutions. Markus, G. A.; Kravtsova, T. P. (USSR). *Koks Khim.* 1970, (2), 30-3 (Russ). The NaOH used in the PhOH extn. is recovered. After treatment with CO₂ and removal of PhOH by steam distn., the remaining water is treated with Ca(OH)₂ to restore NaOH, but on recycling the NaOH soln. several by-product salts of the coking process accumulate. To lower the salt content of the NaOH soln., it is advisable to improve the efficiency of the NH₃ scrubbers, the main source of impurities, to remove residual PhOH by a 2-step extn. which diminishes the salt content of the NaOH soln. to be recycled, and by cooling, pptn., and filtration. A. P. Mueller

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gc.

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REEL/FRAME
19781254

USSR

UDC: 517.9:535.4

BABICH, V. M. and KRAVTSOVA, T. S.

"Propagation of Transverse Elastic Oscillations of the Type of a Wave Film with Quantum Thickness"

Zan. nauchn. seminarov Leningr. otd. Mat. in-ta AN SSSR (Science Notes of Seminars of the Leningrad Division, Mathematics Institute of the Academy of Sciences, USSR) 1970, vol. 17, pp 25-37 (from RZh-Matematika, No. 3, March 71, abstract no. 3E300)

Translation: An asymptotic expansion is obtained for the solution of the problem of oscillations in an elastic medium as $\omega \rightarrow \infty$ (ω is the frequency of the wave process) under the assumption that there exists a solution of the form $u = e^{-i\omega \int_0^x \sqrt{1-K(\xi)} d\xi} \varphi(x)$, concentrated near some smooth surface S . The transverse elastic oscillations thus obtained are concentrated near the surface S in films of thickness $|\varphi| \sim \omega^{-1/\sqrt{2n+1}}$, $n = 0, 1, \dots$ V. Belov

UDC 621.375.421.029.62

USSR

GALASHENKOV, V. N., COLOVKOV, A. A., KRAYCHIK, A. B.

"Wide-Band Transistorized Power Amplifiers in the Meter Range"

Moscow, Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 100-102

Abstract: Two versions of transistorized amplifiers with wide-band matching circuits executed on the basis of filter circuits assembled with common base and emitter are presented. They have Chebyshev characteristics. A schematic is presented of an amplifier operating in the frequency range of 95-155 megahertz and assembled from three transistors with parameters analogous to the 2N3375 transistor with a common base. The output circuit of the amplifier matching the output impedance of the third cascade with a 50 ohm load was made three-element and insures a load resistance for the output transistor of 30 ohms. The overall dimensions of this amplifier are $140 \times 30 \times 20$ mm³. The mean output power in the operating range is 3.2 watts, and the power amplification coefficient $K_p \sim 23$ decibels.

The second version of the amplifier for the 220-290 megahertz range was assembled from two transistors analogous to the 2N3632 with a common emitter. The input and intercascade circuits are two-element to match the input impedance of the transistor with the generator and the output impedance of the transistor. The intercascade matching circuit insures a load resistance for 1/2

USSR

GALASHENKOV, V. N., et al., Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 100-102

the first transistor of 40 ohms. The mean output power in the operating range is 9 watts, the power amplification coefficient was 10 decibels, and the efficiency, 43 percent.

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UDC 542.91:547.963.3

USSR

TARUSOVA, N. B., MAZUROVA, V. V., ~~KRAYENSKIY, A. A.~~ and GOTTIKH, B. P.,
Institute of Molecular Biology, Academy of Sciences USSR

"Aminoacylation of Nucleosides, Nucleotides and Polynucleotides. 11.
Synthesis of 3'(2')-O-L- α -Aspartyl-adenosine-5'-phosphate"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 8, Aug 71,
pp 1736-1740

Abstract: The article shows that the imidazolide method can be extended to dicarboxylic amino acid derivatives and used for the synthesis of α -aspartyl ester of adenosine-5'-phosphate as a result of the reaction of the imidazolide of β -tert.-butyl ester of N-tert.-butylhydroxycarbonyl-aspartic acid with pA. The structure of the resultant compound was confirmed by hydrolysis and ammonolysis. The stability of the compound in aqueous solutions at various pH values was determined.

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Nitrogen Compounds

UDC 542.91:547.963.3

USSR

KRAYEVSKIY, A. A., DEGTAREV, Ye. V., GOTTIKH, B. P., and NIKOLENKO, L. N.,
Institute of Molecular Biology, Academy of Sciences USSR

"Aminoacyl Derivatives of Nucleosides, Nucleotides and Polynucleotides. 10.
The Feasibility of Using Diethyl Phosphate Imidazolide for the Synthesis of
3'(2')-O-Aminoacyl Nucleotides"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 8, Aug 71, pp
1730-1736

Abstract: In the search for imidazole compounds which react in an aqueous medium with carboxylic acids to give their imidazolides, the authors studied the interaction of diethyl phosphate imidazolide with acetic acid and tert.-butylhydroxycarbonyl alanine in an aqueous medium and in absolute isopropanol. It was found spectrophotometrically that the corresponding imidazolides are formed. It is shown that it is possible in principle to use diethyl phosphate imidazolide as activating agent for the synthesis of 3'(2')-aminoacyl nucleotides as a result of the reaction between amino acid and nucleotide in an aqueous medium, but that this reactant is not effective enough, since the rate of its hydrolysis is of the same order as the rate of N-acylimidazole hydrolysis.

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USSR

KRAYEVSKIY, A. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya,
No 8, Aug 71, pp 1730-1736

The authors thank Yu. A. TETERIN for taking PMR spectra.

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USSR

UDC 542.91 + 547.963

PURYGIN, P. P., KRAYEVSKIY, A. A., GOTTIKH, B. P., Institute of
Molecular Biology, Moscow, Academy of Sciences USSR

"Synthesis of Aminoacyl Derivatives of Nucleosides, Nucleotides,
and Polynucleotides. VI. Synthesis of 3'(2')-O-Peptidyl-nucleoside-
5'-triphosphates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6,
Jun 70, pp 1369-1372

Abstract: It was shown that the synthesis method for O-aminoacyl
derivatives of nucleotides and nucleoside triphosphates could be
extended to the preparation of 3'(2')-O-peptidyl-nucleoside-5'-
triphosphates. N,N'-carbonyldimidazole (11.6 mg) was added to a
solution of 13.2 mg of BOC-Ala-AlaOH in 0.1 ml of DMFA, stirred for
5-10 min at 20-22°, and the imidazolide formed was added to a
solution of about 0.018 mmole of the nucleoside-5'-triphosphate in
0.5 ml water (adenosine-or guanosine-5'-triphosphate). The reaction
mixture was stirred for 3.5 hrs at 20-22°, and paper chromatographed,
the product was eluted at 4° and lyophilized. In a similar manner

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USSR

PURYGIN, P. P., et al, Izvestiya Akademii Nauk SSSR, Seriya
Khimicheskaya, No 6, Jun 70, pp 1369-1372

BOC-Leu-Gly-TrpOH reacted with cytidine- and uridine-5'-triphosphate
giving the respective 3'(2')-O-peptidynucleosides-5'-triphosphates.

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USSR

UDC 533.6.011

KRAYKO, A. N., TILLYAYEVA, Moscow

"Construction of the Minimum Wave Drag Outline in a Nonuniform Supersonic Flow"

Moscow, Prikladnaya Matematika i Mekhanika, Vol 37, No 3, 1973, pp 469-487

Abstract: A study was made of the variation problem of the construction of the generatrix of a flat or axisymmetric body insuring minimum wave drag when there is flow by a nonuniform (nonisoentropic and nonisoenergetic) supersonic flow of an ideal (nonviscous and nonthermally conducting) gas in the case where a zone of sharp variation of the parameters retained (in the absence of discontinuities) along the current line, that is, the entropy and total enthalpy, falls in the region of definition of the desired outline. At the limit, the indicated zone degenerates into a tangential discontinuity. The investigation is limited to configurations (for example, nozzles or the afterbodies), for which there are no shock waves (including the bow shock) in the investigated region. The known solution [Yu. D. Shmyglevskiy, Nekotoryye variatsionnyye zadachi gazovoy dinamiki, M., Tr. VTs AN SSSR, 1963; A. N. Krayko, Variatsionnyye zadachi sverkhzvukovykh techeniy gaza s proizvol'nymi termodinamicheskimi svoystvami, M., Tr. VTs AN SSSR, 1963] obtained previously for nonuniform flows and giving a smooth (without internal breakpoints) optimal outline can not in such cases be realized and must be replaced by the solution for which the generatrix of

1/2

USSR

KRAYKO, A. N., ET AL., *Priladnaya Matematika i Mekhanika*, Vol 37, No 3, 1973, pp 469-487

the optimal body contains no less than one internal breakpoint. Since the configurations of this type can not be investigated using the transition used in the above-cited papers to the control outline, in order to obtain the necessary conditions of the extremum defining the shape of the optimal generatrix it is necessary to use the general method of Lagrange factors in the previously developed form [K. G. Guderley, et al., Teoriya optimal'nykh aerodinamicheskikh form., Moscow, Mir, 172-194, 1969; A. N. Krayko, PMA, Vol 28, No 2, 285-295, 1964; Vol 30, No 2, 312-320, 1966]. On the basis of the optimality conditions obtained, a numerical algorithm is developed and examples of the optimal generatrices of flat bodies are constructed in the case of a flow with a tangential discontinuity.

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USSR

UDC 533.5.011.31

KRAYKO, A. N., and OSIPOV, A. A., Moscow

"Investigation of the Reflection of Disturbances From the Subsonic Part of the Laval Nozzle"

Moscow, Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 73, pp 84-93

Abstract: The problem of the reflection of longitudinal disturbances from subsonic and transonic parts of the Laval nozzle is investigated. It is assumed that the nozzle is next to the cylindrical tube and that the incoming disturbance is a plane harmonic Riemann wave. The numerical integration of proximate equations of axisymmetric transitional flow of an ideal nonviscous and non-heat-conducting gas is used for solving the problem. This method makes it possible to rate the influence of nonlinear effects as well of effects of the two-dimensionality of the flow. The results are compared with outcomes of calculations carried out in conformity with

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USSR

KRAYKO, A. N., and OSIPOV, A. A., Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 73, pp 84-93

the well-known theory of H. S. Tsien, L. Crocco, and Chshen Sin'yi, based on the linearization of equations of one-dimensional flow. The effect of the nozzle shape on the reflection of disturbances is analyzed by reference to calculations for nozzles differing from the investigated Laval nozzle. Five figures, twelve formulas, twenty three bibliographic references.

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UDC 518.517.9:533.011

USSR

IVANOV, M. Ya., KRAYKO, A. N., MIKHAYLOV, N. V., Moscow

"Method of 'Direct' Calculation for Two-Dimensional and Three-Dimensional Supersonic Flows. I"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 2, Mar/Apr 72, pp 441-463

Abstract: The "direct" or "shock-capturing" method for calculating two-dimensional (plane and axisymmetrical) and three-dimensional supersonic flows of an inviscid, nonconducting gas is investigated. The basis of the method is a difference scheme which represents a steady-state analog of a known difference scheme proposed by S. A. Godunov for solving non-stationary problems in gasdynamics. The proposed method is not explicit and does not require special separation of shock waves, regions close to the angular points, and other singularities arising inside and on the boundaries of the region occupied by the flow. The method is very simple from the aspect of utilizing a computer, thus justifying its use in calculating both discontinuous and smooth flows. The efficiency of the method is illustrated in examples of calculating two-dimensional and three-dimensional flows. The accuracy of the calculation is controlled
1/2

USSR

IVANOV, M. Ya., et al., Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 2, Mar/Apr 72, pp 441-463

by internal control methods and by a comparison with the results of a calculation by the characteristics method. All calculations were made on the M-220 computer. The programs were compiled in ALGOL-60 language for the TA-1M translator.

2/2

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USSR

UDC [629.7.03:533.011].001.2

VERESHCHAKA, L. P., KRAYKO, A. N., STERNIN, L. Ye.

"Grid-Characteristic Method for Calculating Plane and Axisymmetric Supersonic Two-Phase Flows"

V sb. Lopatochn. mashiny i struyn. apparaty (Vane Machines and Jet Equipment — Collection of Works), No. 6, Moscow, "Mashinostroyeniye", 1972, pp 163-178 (from RZh - 34. Aviatsionnyye i raketnyye dvigateli, No 9, Sep 72, Abstract No 9.34.104)

Translation: The problems of calculating plane and axisymmetric supersonic two-phase flows by the grid-characteristic method are discussed. Basically the two-liquid model was discussed, which replaces the actual flow with a mutually penetrating motion of two interacting continuous media: the actual gas and a "gas" of particles deprived of pressure. Methods for solving elementary problems and determining the parameters at characteristic points are described and a general method of calculating the flow in the channel is given. Sample calculations are presented for the flow of a gas mixture with particles of different natures in an axisymmetric nozzle using the proposed method. The results of a one-dimensional approximation and the results of

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USSR

VERESHCHAKA, L. P., et al. Lopatochn. mashiny i struyn. apparaty, No. 6, Moscow, "Mashinostroyeniye", 1972, pp 163-178

a calculation using the quasi-one-dimensional two-layer model are compared. The effectiveness of the grid-characteristic method and the ordinary method of characteristics is compared. 8 ill., 1 table, 12 ref. Resume.

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USSR

UDC: 533.6.011.5:518.5

IVANOV, M. Ya., KRAYKO, A. N., NAEAROV, V. P., Moscow

"Some Results of a Numerical Study of Unconventional Plumes of Ideal Gas"

Moscow, Izv. AN SSSR: Mekhanika Zhidkosti i Gaza, No 4, Jul/Aug 72, pp
102-109

Abstract: The authors give the results of an investigation of supersonic jets of an ideal (inviscid and thermally nonconductive) gas escaping into space with reduced pressure in cases where the cross section of the jet at the nozzle tip is noncircular. The study is based on numerical integration of equations of three-dimensional supersonic flow using a "continuous" difference method of computation which enables flow calculation without isolating the shock waves which are typically formed in this type of problem. Principles governing the behavior of nonstandard exhaust plumes are given for nozzles with elliptical and nearly rectangular output. Calculations were done on the "BESM-6" computer.

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USSR

KRAYKO, A. N., TILLYAYEVA, N. I., Moscow

"Solution of the Variation Problem of Constructing the Outline of the Composite Nozzle"

Moscow, Prikladnaya Matematika i Mekhanika, Vol 35, No 4, 1971, pp 619-632

Abstract: A solution was found to the variation problem of constructing the outline of the supersonic part of an optimal composite nozzle designed for operation in two different modes. The complete nozzle operates in the mode which is characterized by the larger pressure drop. The end section of the nozzle is retracted (or extended) in the mode with lower pressure drop. The maximum allowable length of the complete nozzle and the counterpressure determining each mode and the probabilities of using the complete nozzle or part of it are given. The nozzle design is optimized with respect to the average thrust. The necessary conditions under which the optimal outline can be constructed are obtained, and the corresponding numerical algorithm based on these conditions is developed. Examples are presented of optimal composite nozzles constructed using the indicated algorithm. They are compared with the optimal continuous nozzles designed for the average counterpressure. The evolution of the shape of the optimal composite nozzle in the entire range of possible values of the maximum allowable length is analyzed.

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USSR

KRAYKO, A. N., OSIPOV, A. A., Moscow

"On Plotting the Contour of a Laval Nozzle with Regard to Change of Flight Conditions of a Space Vehicle"

Moscow, Prikladnaya Matematika i Mekhanika, Vol 34, No 6, Nov/Dec 70,
pp 1067-1075

Abstract: A solution is found for the problem of plotting the rigid (nonadjustable) contour of the convergent-divergent section of a nozzle which is optimum in the sense of solving some trajectory problem with regard to change in the flight conditions and the mode of engine operation. The space vehicle is assumed to be a material point of variable mass, and drag at each instant is assumed to be equal to the corresponding steady-state value. The same approach is used to analyze flow in the nozzle. This means that the pressure and other parameters at each instant are defined by the equations of steady-state flow (in the coordinate system associated with the nozzle) under the conditions which exist at the nozzle inlet at that instant. In addition to the general results, two cases are studied in detail where the solution of the problem with the use of derived optimality conditions is comparatively simple. The first case is realized when the distribution of Mach numbers at

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KRAYKO, A. N., OSIPOV, A. A., Prikladnaya Matematika i Mekhanika, Vol 34, No 6,
Nov/Dec 70, pp 1067-1075

the nozzle inlet does not change during flight. It is found that the optimum contour in this case is a member of a family of contours which correspond to solution of a variational problem with fixed conditions. The second case is realized when the flow at the nozzle inlet remains uniform and supersonic throughout the flight, and the nozzle is flat and "short". In this instance, the resultant optimum nozzle is rectilinear. The problem of profiling the convergent-divergent section of a flat or axisymmetric nozzle which realizes maximum thrust with a fixed flow at the inlet and predetermined external conditions has already been fairly completely solved. The problem as formulated in this paper deals with the fact that changes in flight conditions and the parameters at the inlet in many applications may be quite considerable, the flow at the inlet to the Laval section of the nozzle changing as a result of variations in flight conditions and changes in engine operation.

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