

UNCLASSIFIED

PROCESSING DATE--20NOV70

1/2 016
TITLE--ALLOYING OF STEEL -U-

AUTHOR--(05)-LITVINENKO, D.A., RUDCHENKO, A.V., TORPANOVA, G.A., LEYKIN,
I.M., SHUSHLEBIN, B.A.
COUNTRY OF INFO--USSR

SCURCE--U.S.S.R. 263,637
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, ALLOY STEEL, STEEL MANUFACTURING PROCESS,
NITRIFICATION

CENTREL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1821

STEP NO--UR/0482/70/C00/000/0000/0000

SECTION NO--AA0132086 UNCLASSIFIED

2/2 016
CIRC ACCESSION NO--AA0132086
ABSTRACT/EXTRACT--(U) GP-0-
A STREAM OF HOT METAL OVER

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT. STEEL IS ALLOYED WITH N BY POURING
STABLE METAL NITRIDES.

UNCLASSIFIED

1/2 017

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--METHOD OF ALLOYING STEEL -U-

AUTHOR--(05)-SHUSHLEBIN, B.A., KOZLOV, N.P., ALYMOV, A.A., MALCHENKO, T.V.,
KHYAZEV, V.N.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,634

REFERENCE--OTKRYTIYA, (ZUBRET., PROM. OBRATSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, CRYOLITE, FLUORITE, ALLOY STEEL, ZIRCONIUM
STEEL, STEEL MANUFACTURE PROCESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3004/1822

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

CIRC ACCESSION NO--AA0132087

UNCLASSIFIED

2/2 017

CIRC ACCESSION NO--AA0132027

UNCLASSIFIED

PROCESSING DATE--ZGNOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STEEL IS ALLOYED ZR BY INTRODUCING
 A ZR CONTG. ALLOY WITH PARTICLE DIMENSICNS SMALLER THAN OR EQUAL TO 20
 UM SMALLER THAN OR EQUAL TO 1PERCENT ON THE LIQ. STEEL WT. AND A MIXT.
 CONTG. 3 PARTS CRYOLITE TO 1 PART FLUCRITE LARGER THAN OR EQUAL TO
 0.1PERCENT ON THE LIQ. STEEL WT. INTO THE MOLD. FACILITY:
 TSENTRAL'NYI NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT CHERNOY METALLURGI IM.
 I. P. BARDINA.

UNCLASSIFIED

USSR

Masers and Lasers

UDC: 621.372.8:535

VOLKOV, V. I., DYACHENKO, A. A., and SHUSHPANOV, C. Ye.

"Beam Guides With Pulsating Beams"

V sb. Aerotermodoptika i luchevidy (Aerothermal Optics and Beam Guides--collection of works) Minsk, 1970, pp 215-228 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B208)

Translation: A comparison is made of ordinary beamguides and those in which pulsating wave beams are propagated from the point of view of the reliability of the respective transmitting channels. The beam guide irregularity is assumed arbitrary with regard to its nature, extent, and distribution law. Curves are given of the integral probability distribution laws for the transmission losses resulting from computer modeling of a group of irregular Gaussian beam guides, whose working wavelength was increased by six to 16 times compared with the initial ones. Two illustrations, bibliography of seven. V. S.

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USSR

UDC: 621.372.8:535

VGLKOV, V. I., DYACHENKO, A. A., and SHUSHPANOV, O. Ye.

"Computer Investigation of the Reliability of Beam Guides with Gaussian Diaphragms"

V sb. Aerotermooptika i luchebody (Aerothermal Optics and Beam Guides--collection of works) Minsk, 1970, pp 174-193 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B211)

Translation: A comparison is made of the various beam waveguides for the purpose of clarifying the following possibilities: increasing the reliability of beam guide lines for specified requirements of the accuracy of setting up the waveguide elements, and weakening the requirements of the adjustment accuracy of transmission lines for maintaining their high reliability. A model of a Gaussian beam guide is described, and the results of the modeling are given. Six illustrations, bibliography of 10.

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USSR

DYACHENEC, A. A. and SHUSHPANOV, O. Ye.

UDC: 621.372.8:535

"Reflector Quasioptical Transmission Lines"

V sb. Aerotermostika i luchevidy (Aerothermal Optics and Beam Guides--collection of works) Minsk, 1970, pp 138-161 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B210)

Translation: The measurement methods and results of the experimental investigation of the characteristics of the natural waves of astigmatic reflector beam guides are described. The experiments were made on a laboratory model of the beam guide for which pairs of spherical mirrors with a radius of curvature of 105 m were used as correctors. The results of the modeling of irregular reflector beam guides are explained and the measurements of their reliability given. Seven illustrations, bibliography of 19. V. S.

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Fluid Dynamics

USSR

UDC: 532

SHUSHPANOV, P. I., ZAKHAVAYEVA, N. N., MIKHAYLOV, G. D., KONOVALOV, A. I.
"Effect of Ultrasound on Water in Fine Quartz Capillaries"

V sb. Primeneniye ul'traakust. k issled. veshchestva (Application of Ultra-
acoustics to the Study of Matter--collection of works), vyp. 25, Moscow,
1971, pp 335-339 (from RZh-Fizika, No 6, Jun 72, Abstract No 6Ye96)

Translation: The authors investigated crystallization and melting of water
in capillaries $\sim 10^{-4}$ cm in diameter. It was found in microscope studies
that dark spots randomly distributed throughout the entire column of water
appear in the premelting region. These spots disappear completely by the
time the ice has completely melted. Ultrasonic exposure of water-filled
capillaries led to the appearance of dark lines periodically spaced perpen-
dicular to the axis of the capillary instead of the chaotically spaced
points. These lines constitute a pattern of standing waves. Two series of
normal modes were observed which form doublet and triple configurations
when superimposed. This effect is explained within the framework of the
theory of longitudinal oscillations of tubes and rods. Ultrasonic exposure
was done on various frequencies in the 0.2-1.2 MHz range. The intensity of

1/2

USSR

SHUSHPANOV, P. I. et al., Primeneniye ul'traakust. k issled. veshchestva,
vyp. 25, Moscow, 1971, pp 335-339

the ultrasound was 0.5-2 w/cm². The maximum value of energy density leading to destruction of the ice lattice was $w_{max} \approx 9 \cdot 10^9$ ergs/cc. Corresponding to this value of w_{max} is the Poisson ratio $\mu = -\frac{1}{2}$, which coincides with μ for steel and glass. N. P. Pokrovskiy.

2/2

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USSR

UDC 547.26'118

MASLENNIKOV, V. P., SERGEYEVA, V. P., and SHUSHUNOV, V. A. (deceased), Gor'ki State University Imeni N. I. Lobachevskiy

"Decomposition of Organophosphoric Peroxide Compounds"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 5, Apr 73, pp 1109-1112

Abstract: The aim of this study has been the investigation of the effect of organic fragment connected to the phosphorus atom and of the radicals on the peroxide link oxygen on the reactivity of phosphorus containing peroxides. It has been established that during the thermal decomposition of organophosphoric peroxides the primary reactions appear to be the homolytic split of the peroxide bond and rearrangement of the starting material into the isomeric product. The rate of the conversion of organophosphoric peroxides in n-nonane is independent of the type of radical connected to the phosphorus atom. The use of solvents with high dielectric permeability or those specifically reacting with the substrate results in a breakdown of the peroxide via a rearrangement.

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UNCLASSIFIED
 TITLE--MECHANISM OF THE OXIDATION OF ORGANOTIN COMPOUNDS BY OZONE -U-
 PROCESSING DATE--27NOV70
 AUTHOR--(03)--ALEKSANDROV, YU.A., SHEYANOV, N.G., SHUSHUNOV, V.A.
 COUNTRY OF INFO--USSR
 SOURCE--DOKL. AKAD. NAUK SSSR 1970, 192(1), 91-4
 DATE PUBLISHED-----70
 SUBJECT AREAS--CHEMISTRY
 TOPIC TAGS--OXIDATION, ORGANOTIN COMPOUND, OZONE, DECANE, COMPLEX
 COMPOUND, LEAD COMPOUND, CHEMICAL REACTION TEMPERATURE
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--3004/1864
 CIRC ACCESSION NO--AT0132126
 STEP NO--UR/0020/70/192/001/0091/0094
 UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 020

CIRC ACCESSION NO--AT0132126

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC CURVES WERE SHOWN FOR THE REACTION OF ET SUB 2 SN(OH) SUB 2 WITH O SUB 3 IN DECANE WITH VARYING AMTS. O PRESENT; THE REACTION WAS RUN AT 20DEGREES AND AT 60DEGREES. THE REACTION WAS BIMOL. INITIAL COORDINATION OF O SUB 3 TO SN WAS PROVED BY ISOLATION OF A COMPLEX IN OZONOLYSIS OF ET SUB 3 SNCL IN HEXANE AT 0DEGREES, WHICH GAVE ACH AND A CRYST. SOLID. CONTG. BOUND O SUB 3, DECOMPD. 117-19DEGREES, IDENTIFIED AS THE COMPLEX 2ET SUB 3 SNCL.O SUB 3. ETSNCL.O. THIS DECOMPD., EVEN AT ROOM TEMP., SLOWLY TO FORM ACH AND ETSNCL.O.ET SUB 3 SNCL, M. 169-71DEGREES. EVIDENTLY ORGANOTIN COMPODS. REACT WITH O SUB 3 EITHER WITH OR WITHOUT LOSS OF O AND BY COMPLEX FORMATION. IN OZONOLYSIS OF ET SUB 3 SNCL THE HYDROPEROXIDIC PRODUCT ET SUB 3 SNOSNET SUB 2 OOH IS DIRECTLY CONVERTED INTO EXOH AND ETSNCL.O, BUT IN OZONOLYSIS OF ET SUB 3 PBCL IT WAS POSSIBLE TO ISOLATE ETPBCL.O, A YELLOW SOLID, WHICH WAS INSOL. AND INFUSIBLE. OZONOLYSIS OF ET SUB 2 SNCL SUB 2 IN CCL SUB 4 AT 15DEGREES GAVE COLORLESS COMPLEX ET SUB 2 SNCL SUB 2.ETSNCL SUB 2 OOH, M. 61-20DEGREES. THIS HYDROLYZED TO ET SUB 2 SNCL SUB 2 AND H SUB 2 O SUB 2. THE OZONOLYSIS OF ORGANOTIN COMPOS. IS CHARACTERIZED BY A LACK OF TEMPERATURE COEFF. OF THE REACTION RATE.

FACILITY: NAUCH. ISSLED. INST. KHIM., USSR.

UNCLASSIFIED

Acc. Nr:

A0048940

Abstracting Service:
CHEMICAL ABST. 5-70

Ref. Code:

HR0098

5

100209e Synthesis and properties of potassiumcumyl- and potassium-tert-butyl peroxides. Sokolov, N. A.; Usov, L. G.; Shushunov, V. A. (Nauch.-Issled. Inst. Khim., Gork. Gos. Univ., Gorki, USSR). Zh. Obshch. Khim. 1970, 40(1), 209-12 (Russ). Treating 2.2 g powd. KNH_2 in MePh with 3.04 g $\text{PhCMe}_2\text{O}_2\text{H}$ gave 92% $\text{PhCMe}_2\text{O}_2\text{K}$ (l); prepd. in heptane and treated with $\text{PhCMe}_2\text{O}_2\text{H}$, this salt formed a 1:1 complex, a hygroscopic solid. In C_6H_6 , I trimerizes. Similarly was prepd. $\text{Me}_2\text{CO}_2\text{K}$ and its 1:1 complex with $\text{Me}_2\text{CO}_2\text{H}$, and 1:2 complex with the peroxide. Treating $\text{PhCMe}_2\text{O}_2\text{K}$ with H_2O -MePh gave a cryst. dihydrate, also formed from similar reaction of dry KOH with the peroxide in MePh.

G. M. Kosolapoff

1/1

REEL/FRAME
19800712

70u

Acc. Nr:

AP0053427

Abstracting Service:

CHEMICAL ABST.

5/30

Ref. Code:

4R 0039

110597u Decomposition of tris(tert-butyl peroxy)boron to hydrocarbons. Gerbert, G. P.; Maslennikov, V. P.; Shushunov, V. A. (Nauch.-Issled. Inst. Khim., Gor'k. Gos. Univ. im. Lobachevskogo, Gorki, USSR). Zh. Obshch. Khim. 1970, 40(1), 131-5 (Russ). Kinetic data were presented for pyrolysis of $(Me_3CO)_2B(I)$ in nonane and in cumene in the 130-90° interval. The reaction products were H_2BO_2 , Me_3COH , CH_4 , and esters of H_2BO_2 . In cumene the latter esters were not formed, but they amounted to some 0.48 mole in nonane after pyrolysis at 180°. The product distribution was tabulated for the various temps.; while CH_4 was a minor product, Me_3COH was the main decompn. product. A reaction scheme was proposed. Addn. of the principal reaction products to the mixt. did not affect the rate of conversion of I but addn. of $(Me_3CO)_2$ did accelerate the reaction, as expected. The effective rate const. could be calcd. for the overall reaction on the basis of 1st order kinetics. The activation energy for the reaction in nonane is 18.4 kcal/mole.

G. M. Kosolapoff

REEL/FRA
ME 19830452

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USSR

UDC 576.851.214 (Enterococcus).06

SHUSTER, B. YU., LIKHOED, V. G., SERGEYEV, V. V., YELKINA, S. I., and
LITAREV, V. A., Moscow Institute of Vaccines and Sera imeni Mechnikov

"Transduction Analysis of the Virulence of Revertants of *S. enteritidis*
Streptomycin-Dependent Mutants"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 12, 1971,
pp 58-62

Abstract: Using the transduction method with phage P 22, the authors found that the virulence of avirulence of revertants of *S. enteritidis* No 921 *str-d* mutants varied with the nature of the reverse mutation. Virulence was restored in the true revertants while the suppressor revertants remained avirulent. In transduction of markers from the virulent *str-r* strain to the suppressor avirulent revertants, the *str-r* transductants exhibited segregation with respect to virulence. The virulence of the transductants was due to substitution of the *su-str⁻* gene suppressor for the *su-str⁺* gene suppressor. It would appear, therefore, that mutation in the *su-str* gene suppressor results in the loss of virulence.

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UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--THE MECHANISM OF IMMUNOGENESIS IN VACCINATION WITH S PRIMED MUTANTS OF SALMONELLAE AND SHIGELLAE, REPORT II. NONSUSCEPTIBILITY OF MICE TO S. SHUSTER, B.YU.

AUTHOR--(05)-SERGEYEV, V.V., FROLOVA, M.A., PROTASOVA, O.V., YELKINA, S.I.,
COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 5.
PP 126-130
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SALMONELLA, SHIGELLA, BACTERIA MUTATION, IMMUNIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0141

STEP NO--UR/0016/70/000/005/0126/0130

CIRC ACCESSION NO--AP0114537
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--180CY70

2/2 015

CIRC ACCESSION NO--AP0114537
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. IN COMPARING THE IMMUNOGENIC PROPERTIES THE AUTHORS FOUND THE VACCINE PREPARED FROM THE LIVE S PRIMED CULTURE OF S. ENTERITIDIS BACTERIA TO BE MORE EFFECTIVE IMMUNOLOGICALLY THAN THE VACCINE MADE OF KILLED BACTERIA OF A VIRULENT STRAIN. ALONG WITH INTENSE SPECIFIC IMMUNITY, ORAL IMMUNIZATION WITH S PRIMED MUTANT ALSO PRODUCED THE DEVELOPMENT OF NONSPECIFIC RESISTENCE. IMMUNOLOGICAL RECONSTRUCTION OF CELLS OF THE RETICULOENDOTHELIAL SYSTEM AND OF THE INTESTINE WAS ESTABLISHED BY THE REACTION OF CELLULAR PASSIVE SKIN ANAPHYLAXIS.
MECHNIKOVA.

FACILITY: MOSCOW INSTITUT VAKTSIN I SYVOROTOK IM.

UNCLASSIFIED

SHUSTER, G. I.

JPRS 53137
14 May 1971

ASYMMETRIC INSTRUMENTS ABOARD SOVIET
METEOROLOGICAL SATELLITES

[Article by V. A. Beskin, V. V. Zenkov, D. S. Orman, V. P. Timonin, B. V. Zilunov, V. A. Khrustalev and G. I. Shuster, Moscow, Trudy Tsentr. nauch.-issled. Inst. Kosmicheskoy Geofiziki, Fiz. Sverkhvuzv. Ambassy, Russian, No 100, 1970, submitted 30 June 1969, pp 125-135]

It is known [1] that the equipment of Soviet meteorological satellites consists of two types of actinometric instruments.

The first type is a narrow-angle scanning instrument (lucimeter) with an instantaneous field of view of $2^{\circ} \times 5^{\circ}$ with an operating viewing angle of $\pm 66^{\circ}$ from the vertical to the plane perpendicular to the flight trajectory of the satellite.

The second type is a wide-angle instrument (a flux density meter) with a viewing angle of $130-140^{\circ}$.

The instruments are duplicated in order to improve the operating reliability.

The energy brightnesses of the narrow-angle instrument are measured in three spectral ranges (0.3-3, 8-12 and 3-30 microns) over two independent channels; the 8-12 and 3-30 micron ranges are combined in one measuring channel, and they are selected by changing the corresponding optical filters.

In the 0.3-3 micron channel, the instrument operates as a single-beam system, and in the 3-30 and 8-12 micron channel, as a dual-beam system. The Earth-space modulation method is used in the last channel: the measurable radiation is compared with the radiation of outer space.

The density of the radiant flux from the Earth into outer space is measured by the wide-angle non-scanning instrument in two spectral ranges: 0.3-3 and 3-30 microns.

The modulation level for the 3-30 micron channel is determined by the modulator temperature, which in the steady-state mode is approximately equal

1/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--INHIBITION OF THE CENTRAL NERVOUS SYSTEM AND THE ACTIVITY OF
CHOLINESTERASE OF THE BRAIN IN TRAUMATIC SHOCK -U-

AUTHOR--SHUSTER, L.A.

COUNTRY OF INFO--USSR

SOURCE--PATLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970,

VOL 14, NR 2, PP 70-73

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRAUMATIC SHOCK, BRAIN, CHOLINESTERASE, INHIBITION, CENTRAL
NERVOUS SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0024

STEP NO--UR/0396/70/014/002/0070/0073

CIRC ACCESSION NO--AP0105123

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105123

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ACTIVITY OF CHOLINESTERASE OF THE TISSUE OF THE THALAMUS AND HYPOTHALAMUS IS REDUCED IN EXPERIMENTAL TRAUMATIC SHOCK; CHOLINESTERASE ACTIVITY OF THE GRAY MATTER IN THE REGION OF MOTOR AND SENSORY ANALYZERS ALSO BECOMES THE SAME IN ALL THE ANIMALS. CONFRONTATION OF THE CHANGES OF CHOLINESTERASE ACTIVITY OF THE TISSUE OF THE NERVOUS FORMATION TO STEREOTYPISM OF THE HIGHER NERVOUS ACTIVITY, CHARACTERISTIC OF SHOCK, PERMITS TO DRAW A CONCLUSION OF THEIR INTERRELATIONSHIP. FACILITY: NAUCHNO ISSLEDOVATEL'SKIY INSTITUT ONKOLOGII I MEDITSINSKOY RADIOLOGII MINISTERSTVA ZDRAVOOKHRANENIYA BELORUSSKOY SSR, MINSK.

UNCLASSIFIED

USSR

SEVERDENKO, V. P., et al, Vestsi Akademii Navuk BSSR, No 3, 1970, pp 87-89

of 10 microns of amplitude and only 1030 kg pressure for a 20-micron amplitude
excitation. Punched and die-cut surfaces of 3 to 3.5 mm thick plastics were
qualitatively much better with ultrasound than without. Orig. art. has 2 figs.
and 4 refs.

2/2

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USSR

UDC 621.313.322-81.013.8

ALEKSEYEVA, L. G., LAPAYEV, K. V., SHTRAFUN, YA. N., SHESTERMAN, M. N.

"Study of the Excitation System of the 500 Megawatt Turbo Generator"

Elektrosila -- V sb. (Electric Power -- Collection of Works), No 28, Leningrad, Energiya Press, 1970, pp 15-18 (from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 Ye124)

Translation: All-around testing of the TVV-500-2 turbo generator with an excitation system and an automatic excitation regulator have been performed. A more powerful subexciter with permanent magnets (30 kilowatts) has been used for the first time in the excitation system of the TVV-5-0-2 turbo generator to feed the automatic regulator, and the PP measuring element, to improve the speed of the system. The excitation system studies were performed in the idling and short circuit modes of the turbo generators. The characteristics of the excitation system obtained coincide closely with the calculated characteristics. There are 3 illustrations.

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1/2 020 UNCLASSIFIED PROCESSING DATE--16NOV70
TITLE--ADVANCES IN THE STUDY OF THE THERMAL DECOMPOSITION OF COALS -U-
AUTHOR--(02)-SKLYAR, M.G., SHUSTIKOV, V.I.
COUNTRY OF INFO--USSR
SOURCE--KHM. TVERD. TOPL. 1970, (2), 30-9
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS
TOPIC TAGS--THERMAL DECOMPOSITION, COAL, PRESSURE EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2008 STEP NO--UR/0467/70/000/002/0030/0039
CIRC ACCESSION NO--AP0125596
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0125596
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMPILATION OF EXPTL. TECHNIQUES
USED FOR THE STUDY OF THERMAL DECOMP. OF COALS AND THEIR INFLUENCE ON
COAL STRUCTURE, MECHANISM OF THERMAL PROCESSES, DESTRUCTION UNDER
PRESSURE, AND HEAT SHOCK. FACILITY: UKR. NAUCH. ISSUED.
UGLEKHM. INST., KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC [669.243 + 669.31]:669.052

MASH'YANOV, N. P., KOLESNIKOV, B. I., LAPIN, Yu. D., MECHEV, V. V., RYABOV, V. G.,
VASIL'YEV, M. G., and SHUSTITSKIY, V. D.

"Certain Problems of the Production of Copper and Nickel From Complex Crude Sulfides"

Moscow, Tsvetnyye Metally, No 10, Oct 70, pp 11-14

Abstract: Difficulties encountered in the production of copper and nickel from sulfide copper-nickel ores are discussed. Procedures used in the USSR for separating these metals as well as cobalt are evaluated, and the necessity for the reconstruction of present copper-nickel production combines is stressed. A plan is recommended which would involve the parallel production of copper and nickel with an exchange of semi-products between them. A schematic production chart and a table containing the compositions of basic materials used in processing sulfide copper-nickel ores are presented. The recommended plan would ensure the recovery of 98-99% Cu, 96-97% Ni, and 85-87% Co, and would increase the recovery of noble metals and platinum. The plan involves a substantial increase in the use of oxygen, not only for melting but also for converting ores and concentrates. The plan would also make it possible to utilize more complete-

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USSR

MASH'YANOV, N. P., et al, Tsvetnyye Metally, No 10, Oct 70, pp 11-14

ly the crude sulfides, and to obtain pig-iron and construction materials from the high-ferrous converter mattes.

2/2

1/2 010 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--HOMOATOMIC UNSATURATED SYSTEMS AS LIGANDS. II. COORDINATION OF
SYSTEMS, N SUB2 AND N SUB4 WITH TRANSITION METALS -U-
AUTHOR--(03)-SHUSTOROVICH, YE.M., KAGAN, G.I., KAGAN, G.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 108-20
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--NITROGEN, TRANSITION METAL, CALCULATION, CYCLIC GROUP,
DIMERIZATION, METAL COMPLEX COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1653 STEP NO--UR/0192/70/011/001/0108/0120
CIRC ACCESSION NO--AP0125275
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125275

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A QUANT. EXAMN. OF POSSIBLE FORMS OF THE COORDINATION OF SYSTEMS N SUB2 AND N SUB4 AS A FUNCTION OF THE NO. M OF "EFFECTIVE" VALENCE ELECTRONS OF THE CENTRAL ATOM IN THE COMPLEX WAS CONDUCTED. CALCNS. ARE CARRIED OUT WITHIN THE FRAMEWORK OF THE EXPANDED HUECKEL METHOD IN THE BROAD INTERVAL OF PARAMETERS OF VALENCE ORBITALS OF THE METAL AND WITH VARIATION OF THE INTERNUCLEAR DISTANCES AND VALENCE ANGLES. ENERGETIC DIFFERENCES OF THE CONFIGURATIONS ARE SMALL, WHICH PERMITS EXPECTATION OF THE EXISTENCE OF SOME STABLE ISOMERIC FORMS. RATHER CHARACTERISTIC RELATIONS OF THE RELATIVE ENERGIES OF CONFIGURATION TO THE MAGNITUDE OF M ARE FOUND, ON THE BASIS OF WHICH THE KNOWN EXPTL. DATA IS CONSIDERED AND A SERIES OF PREDICTIONS IS MADE SUCH AS THE MECHANISM OF THE FIXATION OF MOL. N ON COMPLEXES OF LIGHT TRANSITIONAL METALS WHERE THE ADVANTAGE OF THE FORMATION OF DIMERIC AND CYCLIC STRUCTURES IS SHOWN. FACILITY: INST. OBSSHCH. NEORG. KHIM. IM. KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

Industrial

USSR

UDC: 621.396.6.72:621.791

SHUSTOV, B. N., SHUGAYEV, V. A.

"An Installation for Thermocompression Welding of Metal to Ceramic"

Elektron. prom-st'. Nauchno-tekhn. sb. (The Electronics Industry. A Scientific and Technical Collection), 1970, No 1, p 111 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V290)

Translation: The installation described has two technological chambers with a common control panel and power supply. The drive is hydraulic. Technical data are given.

N. S.

1/1

1/2 042 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--HEAT AND MASS TRANSFER IN A HEAT PIPE WITH A SODIUM HEAT TRANSFER
AGENT -U-
AUTHOR--(04)-IVANOVSKIY, M.N., SORDKIN, V.P., SUBBOTIN, V.I., SHUSTOV, M.V.
COUNTRY OF INFO--USSR
SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(2), 319-25
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--HEAT TRANSFER, MASS TRANSFER, HEAT PIPE, SODIUM, STAINLESS
STEEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1407 STEP NO--UR/0294/70/008/002/0319/0325
CIRC ACCESSION NO--AP0133359

UNCLASSIFIED

2/2 042 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0133359
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEAT AND MASS TRANSFER STUDIES
BASED ON CAPILLARY ACTION IN WICKS, APPLICABLE TO WEIGHTLESS CONDITIONS,
WERE CONDUCTED AT HIGH TEMPS. IN HEAT TUBES (500 MM LONG, 25.5 MM INSIDE
DIAM.) LINED WITH A NA WETTED AND SATD., WOVEN STAINLESS STEEL SCREEN
1.5 MM THICK WITH PERMEABILITIES OF 70-260 DARCIES AND EFFECTIVE PORE
RADII OF 0.023-0.13 MM. THE VAPOR PRESSURE VARIATIONS AND PRESSURE
DROPS (DELTA P) ALONG THE LENGTH OF THE TUBE WERE DETD. AS A FUNCTION OF
TEMP. (600-800DEGREES); HEAT TRANSFER RATE (q) LESS THAN 3.7 KW, AND
VAPORIZATION ZONE REYNOLDS NO. OF 1900-3700 AND 24-47 IN THE
LONGITUDINAL AND RADIAL DIRECTIONS, RESP; THE WEDGE SHAPE PORE OPENINGS
OF THE WICKS PERMITTED HEAT AND MASS TRANSFER DETNS. AT DELTA P GREATER
THAN 0.07 BARS BETWEEN THE PHASES. FACILITY: FIZ.-ENERG. INST.,
MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC:629.78.018.1

SHUSTOV, V. I.

"Experimental Study of the Influence of Re Number on the Nature of Flow Around Axisymmetrical Bodies with a Recess in the Nose Portion"

Uch. Zap. Tsentr. Aerogidrodinam. In-ta [Scientific Writings of Central Institute of Aerodynamics and Hydrodynamics], 1973, 4, No 3, pp 105-109 (Translated from Referativnyy Zhurnal Raketostroyeniye, No 11, 1973, Abstract No 11.41.99, from the resume)

Translation: The influence of Re and M numbers and shape of leading edge on the nature of flow around an axisymmetrical body with a spherical recess in the nose portion is studied. The experiments were performed at M numbers of about 6 and 5 in the range of Re numbers of approximately $(0.035-0.6) \cdot 10^6$. The nature of flow around the nose portion of the model was determined by shadow pictures produced at various moments in time. It is shown that the instability of flow around bodies with recesses in the nose portion depends on the Re number and geometric peculiarities of the edge of the model. The maximum separation of the shock wave before an axisymmetrical body with a recess is approximately three times the separation of the shock wave from a circular end washed by a flow with the same M number. 6 Figures; 3 Biblio. Refs.

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USSR

UDC 632.95.024.1

DRUY, E. G., KHOKHRYAKOVA, V. S., SHUSTOVA, V. P., and AKISHINA, L. F., All-Union Scientific Research Institute of Chemical Means for Plant Protection

"Effect of Organochlorine Insecticides on Azotobacter"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 7, 1971, pp 42-44

Abstract: DDT or hexachlorane applied for the treatment of the soil of wheat and cotton fields had no effect on the azotobacter in the soil. Application of hexachlorobutadiene (I) in amounts of 75-700 g/m² to the loamy chernozem soil of vineyards in Moldavia for the control of phylloxera inhibited the development of azotobacter in the soil, as shown by tests carried out 18 mos. after the spraying of I. Laboratory experiments with soil that had been inoculated with a culture of Azotobacter chroococcum showed that I applied to the soil in amounts of 15-60 g/m² did not have a harmful effect on the development of the microorganism. Soil of the chernozem and sod-podzol types treated with I in amounts of 5-500 mg/kg was not toxic to azotobacter (the amount of I present in the soil under practical conditions does not exceed 150-500 mg/kg). It had been established by Khokhryakova, et al (Khimiya v Sel'skom Khozyaystve, No 5, 1966) that I in amounts >50 g/m² has a toxic effect on grapevines. One

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USSR

DRUY, E. G., et al., Khimiya v Sel'skom Khozyaystve, Vol 9, No 7, 1971, pp 42-44

must assume that substances evolved by the roots of grapevines subjected to the action of I had an inhibiting effect on the azotobacter, because I acting on azotobacter directly or on the soil in the concentrations that were present could have had no effect on the microorganism, on the basis of the results obtained in the study. G. N. Deniskina participated in the work reported.

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USSR

UDC 669.14.018.8

SHUSTOVA, Z. F., SINYAVINA, R. A., YEMEL'YANOVA, V. A., ROZENFEL'D, I. L.,
KUZNETSOV, G. G., RAYMOND, E. D., and NEFEDOV, V. P.

"Inclination toward Stress Corrosion Cracking of 1Kh16N4B (EP-56) High-Strength
Stainless Steel"

Moscow, Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 696-700

Abstract: This article contains the results of a study of the effect of heat treatment conditions on the inclination of welded joints of 1Kh16N4B steel to stress corrosion cracking. This steel is a high-strength steel of the martensitic class heat-treated by quenching from 950-1,050° and annealing at 300 or 600°. The stress-rupture strength of the steel is ≥ 120 kg/mm² in the former case and ≥ 100 kg/mm² in the latter case. It was established earlier that neither the basic metal nor the welded joints of this steel in the fully heat-treated state were inclined to stress corrosion cracking. In the present investigation the inclination toward stress corrosion cracking was evaluated by the time of occurrence of cracks in the welded joint in a saline mist at room temperature.

From the tabulated data it is noted that unannealed samples and samples annealed at 300° exhibit an inclination toward stress corrosion cracking.

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USSR

SHUSTOVA, Z. F., et al., Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 696-700

Welded joints annealed at 600° are not inclined to such cracking. Pictures are presented showing the microstructure of a welded joint made of 1Kh16N4B steel and the hardness distribution in the welded joint. Comparison of metallographic and corrosion studies shows that the section near the weld subjected to heating in the temperature range of 475-550° is distinguished by lower corrosion resistance. It is possible to decrease the tendency toward corrosion cracking of 1Kh16N4B steel joints not only by high temperature annealing (600°) but also by high temperature quenching of the steel before welding. The tendency of the welded joints toward corrosion cracking was found to depend on the structural state of the basic metal before welding. A table is presented showing the effect of slow cooling and induced heating on the stress corrosion cracking of 1Kh16N4B thick sheet steel in a saline mist atmosphere.

It is concluded that welded joints of 1Kh16N4B steel made of material with a strength of 100 kg/mm² and annealed at 300 and 600° are not inclined to stress corrosion. Slow cooling of the steel during quenching increases the tendency of the unannealed and low-temperature (300°) annealed welded joints to stress corrosion cracking. Heating 1Kh16N4B steel subjected to high tempera-

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USSR

SHUSTOVA, Z. F., et al., Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 696-700

ture annealing in the 475-550° range can cause a tendency toward corrosion under stress. When quenching with slow cooling the inclination toward cracking is exhibited after a short delay (5 minutes) at 475-550°. In the case of air quenching this inclination is exhibited after a longer period (2 hours).

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USSR

UDC 620.194

SHUSTOVA, Z. F., KUZNETSOV, G. G., ROZENFEL'D, I. L., and FRIDMAN, V. S., Academy of Sciences USSR, Institute of Physical Chemistry

"The Tendency of Type EP-65 Steel to Corrosion Cracking"

Moscow, Zashchita Metallov, Vol 7, No 2, Mar-Apr, 1971, pp 183-187.

Abstract: The authors studied the tendency of specimens of EP-65 steel and welded joints of the steel to corrosion cracking, as well as methods of corrosion protection of this metal. EP-65 steel is a Martensitic steel based on 12% chromium with Ni, W, Mo and V. The tests were performed by periodic submersion in sea water, exposure to an atmospheric salt fog and exposure to a moist atmosphere without salt. The welded joints were found to be more inclined to corrosion cracking than the base metal. The main factor influencing the corrosion cracking of welded joints is the heat treatment used after welding, not the method of welding. Welded joints hardened in air from 1050° then tempered at 500° show corrosion cracking resistance almost as good as the base metal. The best protection for the metals and welded joints consists of a narrow strip of zinc coating on the welded joint, plus one base coat and three coats of enamel over the entire surface of the object.

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1/2 009 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--CATALYST REGENERATION -U-
AUTHOR--(04)-PRISTAVKO, YE.V., SHUTOV, YU.M., SHTEYNBERG, B.I., SEMENOVA,
T.A.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 264,358
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CATALYST REGENERATION, CHEMICAL PATENT, METAL OXIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/0842 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0136276
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 009

CIRC ACCESSION NO--AA0136276

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

ABSTRACT. A CATALYST, CONSISTING OF A MIXT. OF OXIDES OF AL, MG, MN, CR, ZN, CU AND (OR) FE, IS REGENERATED BY TREATING IT WITH A MIXT. CONTG. H SUB2 O VAPOR, N, AND O AT 350-500DEGREES.

UNCLASSIFIED

UDC: 538.56:543.42

USSR

KRUPNOV, A. F., GERSHTEYN, L. I., SHUSTROV, V. G., and BELOV, S. P.

"Millimeter and Submillimeter Radio Spectroscopes with Acoustical Indication"

Gor'kiy, Izvestiya VUZ -- Radiofizika, Vol. 13, No. 9, pp 1403-1405

Abstract: As far as the authors know, the device they propose is the first of its kind to use the principle of acoustic sensing in radio spectroscopy -- i.e., in investigating the microwave absorption spectrum of a gas filling the sensor cell. The authors designed and tested their spectroscopes, basically following the design proposed by M. Golay (Rev. Sci. Instr. 18, 1947, p 357), in the wavelength range of 0.5 to 2.4 mm. This brief communication gives the preliminary results of those tests and considers some of the advantages of acoustical sensing. A block diagram of the system is shown. The cell has a side wall which is a membrane forming one plate of a condenser microphone. The power absorbed heats the gas, which expands and bends the membrane, thus setting

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KRUPNOV, A.F., et al, Izvestiya VUZ - Radiofizika, Vol 13, No 9, pp 1403-1405

up a signal which is amplified. The constant component of the pressure on the membrane is eliminated by mechanical decoupling, and the spectral lines are observed on an oscilloscope. In the tests, a backward wave tube was used as the radiation source. It was found that the sensitivity of this device exceeds that of the best centimeter wavelength radio spectroscopes, at least in theory. The authors admit, however, that their prototype's sensitivity was less than the limiting 10^{-6} watts as a consequence, primarily, of the poor construction of the microphone, which was insensitive and subject to vibration. They express their gratitude to Ye. N. Karyakin and N. N. Sem'yanskiy for their help in setting up the equipment, and to Yu. A. Dryagin, A. I. Naumov, and L. I. Fedoseyev for their valuable comments and their contribution of the backward wave tube, and finally to A. V. Gaponov for his comments on the manuscript.

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1/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--MICROWAVE SPECTROSCOPY OF FORMALDEHYDE -U-
AUTHOR--(04)-KRUPNOV, A.F., GERSHTEYN, L.I., SHUSTROV, V.G., POLYAKOV, V.V.
COUNTRY OF INFO--USSR
SOURCE--OPT. SPEKTROSK. 1970, 28(3), 480-6
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--MICROWAVE SPECTROSCOPY, FORMALDEHYDE, ROTATIONAL SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0802 STEP NO--UR/0051/70/028/003/0480/0486
CIRC ACCESSION NO--AP0119709

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119709

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ROTATIONAL SPECTRUM OF HCHO WAS STUDIED IN THE FREQUENCY RANGE 350-580 GHZ. FREQUENCIES OF 29 LINES WERE MEASURED CORRESPONDING TO THE TRANSITIONS $I \text{ YIELDS } I \text{ PLUS } 1$ ($I \text{ EQUALS } 4 \text{ YIELDS } 5, I \text{ EQUALS } 5 \text{ YIELDS } 6, I \text{ EQUALS } 6 \text{ YIELDS } 7, I \text{ EQUALS } 7 \text{ YIELDS } 8$). ON THE BASIS OF THE EXPTL. RESULTS COR. VALUES OF CENTRIFUGAL CONSTS. WERE USED FOR CALCN. OF THEORETICAL SUB,MM SPECTRUM OF HCHO. THE CALCD. SPECTRUM AGREED WELL WITH THE EXPTL. ONE (ROOT MEAN SQUARE ERROR 3 TIMES 10 PRIME NEGATIVE 6). ALSO MORE PRECISE ROTATIONAL CONSTS. B SUBO (38835.369 PLUS OR MINUS 0.004 MHZ) AND C SUBO (34003.282 PLUS OR MINUS 0.004 MHZ) WERE CALCD.

UNCLASSIFIED

USSR

UDC 533.697

AMARANTOVA, I. I., SADOVSKIY, V. S., TAGANOV, G. I., SHUSTOV, V. I.

"Experimental Study of Total Pressure Loss in Turning a Supersonic Flow Through a Large Angle in Curved Channels"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamics Institute), 1971, Vol. 2, No. 2, pp 11-17 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B575)

Translation: The results of an experimental study of velocity fields and total pressures at the output of curved channels of great length are presented. Three channels with circular and rectangular cross sections were investigated. The expansion of the channel with circular cross section was 1.8 calibers of the internal cross section (the channel expanded slightly along the flow) and was approximately 2.2 calibers for the plane channel (length relative to height of the input cross section). The flow turned through an angle of 80° in the channel with circular cross section and through 72° in the channels with rectangular cross section. The ratio of the sides in the channel of rectangular cross section was 3.7. The studies were conducted for a flow rate at the input

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USSR

USSR

UDC 546.821:(546.882+546.883):543.7.063

NAZARENKO, V. A., and SHUSTOVA, M. B., Institute of General and Inorganic Chemistry, Academy of Sciences UkrSSR, Laboratories in Odessa

"Extraction-Photometric Determination of the Microadmixture of Titanium in Niobium and Tantalum"

Moscow, Zavodskaya Laboratoriya, No 2, 1971, pp 146-147

Abstract: Complexing agents bonding niobium and tantalum are used to increase the selectivity of titanium extraction by acid alkyl-phosphoric ethers. Titanium separates from the base by extraction of oxalate solutions by a mixture of acid isoamyl-phosphoric ethers. The tetrad titanium-salicyl-fluoron-antipyrine-perchlorate complex is measured with a photometer directly in the extract. The method is applied for the determination of titanium in pentochlorides of niobium and tantalum. The sensitivities of Ti in $NbCl_5$ and $TaCl_5$ are $1.5 \times 10^{-5}\%$ and $2 \times 10^{-4}\%$, respectively.

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Television

USSR

UDC 621.396.6-215

SHUT', G. Ye.

"Chambers for Drying Television Cabinets"

V sb. Obmen opytom v radiopromyshlennosti (Experience Pooling in the Electronics Industry--Collection of Works), Vyp. 6, Moscow, 1970, pp 50-51 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V418)

Translation: The author describes the operation and construction of drying cabinets for drying television enclosures. The introduction of vertical drying cabinets of the conveyer type has made it possible to organize sections for finishing the cabinets of color television sets in minimum production areas by complete utilization of the volume of the room. Besides this, operation with drying chambers of this type precludes the possibility of errors in the spacing between coats, which assures a high quality finish on the cabinets. Resumé.

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USSR

UDC 621.396.6.049.75

SHUT', G. Ye.

"A Conveyor for Assembly of Printed Circuit Boards"

V sb. Obmen opytom v radiopromyshlennosti (Experience Pooling in the Electronics Industry--collection of works), Vyp. 6, Moscow, 1970, pp 41-43 (from RZh-Radiotekhnika, No 10, 1970, Abstract No 10V271)

Translation: The paper describes the construction and operation of a conveyor line for assembling and soldering printed circuit boards. The carriages on individual sections of the line move at different rates of speed. To prevent one carriage from overrunning another, a unit is introduced for regulating the length of the working branch of the additional tension mechanism. Resumé.

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JSSR

UDC: 8.74

ARAYS, Ye. A., SHUTENKOV, A. V.

"Solution of Problems of Linear Algebra in the Auto-Analitik System"

V sb. Vopr. programmir. i avtomatiz. proyektir. (Problems of Design Programming and Automation--collection of works), Tomsk, Tomsk University, 1971, pp 191-196 (from RZh-Kibernetika, No 1, Jan 72, Abstract No IV1053)

Translation: An algorithm is described for solution of the following matrix problems of linear algebra in symbolic form in the Auto-Analitik system: 1) a matrix is given whose elements may be both numbers and analytical expressions. It is necessary to determine the rank and determinant of the matrix; 2) the matrix of coefficients of some system of linear equations is given. It is necessary to solve this system; 3) the initial matrix gives a system of $m \times n$ -dimensional vectors. It is required to isolate an independent subsystem of vectors from the given system; 4) it is required to write out with respect to the predetermined number $k > 0 (k < m, k < n)$ a system of equations whose satisfaction results in vanishing of all determinants of order k in the initial matrix; 5) it is

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USSR

ARAYS, Ye. A., SHUTENKOV, A. V., Vopr. programmir. i avtomatiz. proyektir., Tomsk, Tomsk University, 1971, pp 191-196

required to find a matrix which is the inverse of the initial matrix. The principal cycle of transformations for solving the problems enumerated above is reduction of the matrix to triangular form. A modified method (the equivalent matrix method) is used as the reduction procedure. It is noted that the program which realizes the described algorithm can be used with matrices of order (70 x 70). The program for formulating the given problems is made up in the form of an operator in the Auto-Analitik system (BESM-6) under the general title PAL (Programs of Algebra, Linear).
V. Mikheyev.

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USSR

UDC: 8.74

ARAYS, Ye. A., SIBIRYANOV, G. V., SHUTENKO, A. V.

"Interpretation System for Solving Large Problems"

V sb. Vopr. programmir. i avtomatiz. proyektir. (Problems of Design Programming and Automation--collection of works), Tomsk, Tomsk University, 1971, pp 37-43 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1010)

Translation: The authors describe the "Reader" interpretation system specialized for solution of large problems on the BESM-4 computer. The component parts of the Reader system are: a) a library of standard operators; b) a table of characteristics; c) the working board; d) the Reader interpretation program. The characteristic of each operator appearing in the library of standard operators is comprised of: the octal number of the operator, the instruction for use of the operator, and its description. The table of characteristics contains information on each operator in the library of standard operators. The working board is a section of the core store in which the standard operators are located. It is noted that the given system does not eliminate possibilities for simultaneous use of the conventional IS-2 interpreting system.

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USSR

UDC: 577.4

ZYABLOV, V. V., AFANAS'YEV, V. B., IVANOVA, L. A., SHUTIKOV, I. V.

"Results of Modeling Three-Dimensional Codes With Error Localization"

Moscow, V sb. Peredacha diskret. soobshch. po kanalam s gruppiruyushchimisya oshibkami (Transmission of Discrete Information Along Channels With Grouped Errors--collection of works) "Izuka," 1972, pp 47-52 (from RZh--Matematika, No 7, 1972, Abstract No 7V456)

Translation: The results are given of the use of electronic digital computers for modeling decoding procedures for three-dimensional iterative codes used for the transmission of digital information in standard telephone channels. Records of errors for four different channels are used in channel modeling. The results obtained permit evaluations of the limiting possibilities for the codes and of the effect of the structure, length, and redundancy on the probability of erasure and wrong decoding of the information. Experimental verification has shown that the modeled variants of the three-dimensional codes are only slightly inferior to cascade codes of the same length and redundancy with regard to the probability of erasure. Authors' abstract

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USSR

UDC 577.4

ZYABLOV, V. V., AFANAS'YEV, V. B., IVANOVA, L. A., SHUTIKOV, I. V.

"Results of Simulation of Three-Dimensional Codes with Error Localization"

V sb. Peredacha diskret. soobshch. po kanalam s gruppiruyushchimisya oshibkami
(Transmission of Digital Messages over Channels with Group Errors -- collec-
tion of works), Moscow, Nauka Press, 1972, pp 47-52 (from RZh-Kibernetika, No
7, Jul 72, Abstract No 7V456)

Translation: Results are presented from simulating procedures on a digital com-
puter for decoding three-dimensional iterated codes used to transmit the digital
data in standard telephone channels. Error recordings for four different chan-
nels were used as the channel model. The results obtained permit us to estimate
the limiting possibilities for the investigated codes and the effect of the
structure, length and redundancy on the erasure probability and the probabili-
ties of erroneous decoding of the messages. An experimental check demonstrated
that the modulated versions of the three-dimensional codes are insignificantly
inferior with respect to the probability of erasure to cascade codes of the
same length and redundancy.

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USSR

UDC 621.315.592.3:669.782-416

SHACHNEV, V. I., USKOV, A. G., SHUTIKOV, V. G.

"Thermodynamics of the process of Growing Autoepitaxial Layers of Silicon Alloyed with Phosphorus in the Chloride Process"

Elektron. tekhnika. Nauchno-tekhn. sb. Materialy (Electronic Engineering. Scientific and Technical Collection. Materials), 1970, vyp. 5, pp 137-138 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G487)

Translation: A thermodynamic analysis of the $\text{PCl}_3(\text{gas})-\text{SiCl}_4(\text{gas})-\text{H}_2(\text{gas})$ system is performed for standard conditions of the process of growing auto-epitaxial layers of Si with n-type conductivity (the ratio of the reagents in the initial mixture is $\text{SiCl}_4(\text{gas}) : \text{H}_2(\text{gas}) = 1 : 500$ and $\text{PCl}_3(\text{gas}) : \text{SiCl}_4(\text{gas}) = 10^3 - 10^8$). The yields of Si (μ_{Si}) and (μ_{P}) in the 800-1,600° K range are calculated by joint solution of the system of equations relating the calculated equilibrium constants of the reaction of reduction of $\text{SiCl}_4(\text{gas})$ and $\text{PCl}_3(\text{gas})$ by hydrogen. For the indicated composition of the initial gas mixture, μ_{Si} and μ_{P} reach one at 1,200°K and 800°K.

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USSR

UDC 621.315.592:669.782-416

SHACHNEV, V. I., AFANAS'YEVICH, V. F., USKOV, A. G., SHUTIKOV, V. P.

"Thermodynamics of the Process of Obtaining Autoepitaxial Layers of Silicon by Pyrolysis of Silane"

Elektron. tekhnika. Nauchno-tekhn. sb. Materialy (Electronic Engineering. Scientific and Technical Collection. Materials), 1970, vyp. 5, p 139 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G486)

Translation: The equilibrium constants of the decomposition reactions of monosilane and hydrides of the alloying elements of the third and fifth groups (diborane, phosphine, and arsine) are calculated. For the standard conditions of the process of epitaxial growth of Si (the ratio in the initial gas mixture $\text{SiH}(\text{gas}):\text{H}_2(\text{gas}) = 1 : 10^3$ and $\text{EH}_3(\text{B}_2\text{H}_6(\text{gas}) : \text{SiH}_4(\text{gas}) = 10^3-10^8$), the relative transition coefficients of the alloying admixtures are calculated ($\eta_e = \mu_e / \mu_{\text{Si}}$, where μ_e and μ_{Si} are the yields of the alloying element and Si) in the temperature range of 800-1,600° K. For all the investigated alloying elements (B, P, and As) the relative transition coefficient is constant and equal to one under the indicated conditions.

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Atomic and Nuclear

USSR

UDC: None

ANTOKOL'SKIY, G. I., CHARNAYA, Ye. V., and SHUTILOV, V. A.

"The 'Defect' Mechanism of the Nuclear Spin-Phonon Connection"

Leningrad, Fizika tverdogo tela, No 11, 1973, pp 3250-3259

Abstract: Noting discrepancies between theory and experiment in the study of the spin-phonon connection in nuclei with a spin greater than $\frac{1}{2}$, the authors find that these discrepancies can be explained by the assumption that in the saturation of the quadrupole transitions of such nuclei by ultrasonics, there is a special mechanism which opposes the effect of relative ion shift in the acoustical wave. This type of mechanism can be associated with lattice defects that are present in every real crystal. Near these defective points, in dynamic deformations of the crystal, strong electric-field gradients may arise which act on the quadrupole moments of adjoining nuclei. The perturbations from these gradient centers are then propagated throughout the entire spin system by spin diffusion. Based on the defect mechanism, expressions for the spin-lattice reaction time are obtained. A table of these reaction times for various types of crystal is presented. Also shown is a curve for the quadrupole shift of resonant frequencies as a
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USSR

UDC: None

ANTOKOL'SKIY, G. L., et al, Fizika tverdogo tela, No 11, 1973,
pp 3250-3259

function of the distance from the defect point.

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1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--SYNTHESIS AND REACTIONS OF CHLOROPYRAZOLE ALDEHYDES -U-
AUTHOR-(03)-PORAIKOSHITS, B.A., KVITKO, I.YA., SHUTKOVA, E.A.
COUNTRY OF INFO--USSR
SOURCE--KHM. FARM. ZH. 1970, 4(3), 19-24
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ALDEHYDE, ORGANIC AZOLE
COMPOUND, CHEMICAL SYNTHESIS, MOLECULAR STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0290 STEP NO--UR/0450/70/004/003/0019/0024
CIRC ACCESSION NO--AP0119283
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0119283

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SERIES OF I AND II WAS PREPD.
A COLD (0-5DEGREES) MIXT. OF 17.5 G DMF, 71.2 G POCL SUB3, AND 22.4 G I
(R EQUALS H) (III) WAS SLOWLY HEATED TO 80DEGREES, THEN HEATED 8 HR AT
80DEGREES TO YIELD 70PERCENT (R PRIME1 EQUALS H, R PRIME2 EQUALS CL)
(IV), M. 78-9DEGREES (PETROLEUM ETHER). ANALOGOUSLY, 60PERCENT
5,CHLORO,1,METHYL,3,PHENYL, PYRAZOLE,4,CARBOXALDEHYDE, M 63DEGREES
(ETOH), WAS PREPD. ADDITIONAL PREPD. AND DERIVS. SHOWN ON MICROFICHE.
FACILITY: LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD,
USSR.

UNCLASSIFIED

172 - 020 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--THE ROLE OF BIOTIN IN METABOLISM OF STREPTOMYCES AUREOFACIENS -U-
AUTHOR--(02)--SHUTO, SH., ZELINKA, YA.
COUNTRY OF INFO--USSR
SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 5-10
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--STREPTOMYCES, CULTURE MEDIUM, BIOSYNTHESIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1415 STEP NO--UR/0220/70/039/001/0005/0010
CIRC ACCESSION NO--AP0109477
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0109477

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ADDITION OF BIOTIN TO A DEFINED MEDIUM UNDER LABORATORY CONDITIONS IMPAIRED CHLOROTETRACYCLINE YIELD IN STREPTOMYCES AUREOFACIENS CF. THE CONTROL BUT INCREASED BIOMASS OF THE CULTURE AND RNA PHOSPHORUS CONTENT IN THE MYCELIUM. AN ADDITION OF BIOTIN TO MEDIA WITH NATURAL NITROGEN SOURCES (STARCH, SOYA, CORN STEEP EIGNCR, MGLASSA) GAVE THE SAME RESULTS; HOWEVER, AN INTRODUCTION OF BENZYL RHODANIDE IN THE MEDIUM CANCELED NEGATIVE EFFECT OF BIOTIN ON CHLOROTETRACYCLINE BIOSYNTHESIS. THE ROLE OF BIOTIN IN METABOLISM OF STREPTOMYCES AUREOFACIENS IS DISCUSSED.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--POSSIBLE USE OF SODIUM, CALCIUM, AND COPPER, II CHLORIDES IN THE
PRODUCTION OF COPPER, I CHLORIDE -U-
AUTHOR--(03)-UTKIINA, I.N., KUNIN, T.I., SHUTOV, A.A. S
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(3), 437-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--SODIUM, CALCIUM, CHEMICAL PRODUCTION, COPPER CHLORIDE,
SOLUBILITY, THERMAL EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3008/0622 STEP NO--UR/0153/70/013/003/0437/0439
CIRC ACCESSION NO--AT0137707
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

DIRC ACCESSION NO--AT0137707

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. IN G-L. OF CUCL IN A
 SOLN. CONTG. 100 G NA₂CO₃-L. IS 25 AT 25DEGREES AND 70 AT 95DEGREES; IN A
 SOLN. CONTG. 300 G NA₂CO₃-L. THESE VALUES ARE 225 AND 350. SIMILARLY, IN
 A SOLN. CONTG. 100 G CaCl₂ SUB₂-L., THE VALUES ARE 25 AND 60 G-L., AND IN
 500 G CaCl₂ SUB₂-L., THEY ARE 345 AND 430 G CUCL-L. CONSEQUENTLY,
 BECAUSE OF THE LARGE DIFFERENTIAL IN THIS TEMP. RANGE, NA₂CO₃ AND CaCl₂
 SUB₂ MAY BE USEFULLY APPLIED IN THE PRODN. OF CUCL. HOWEVER, FOR SOLNS.
 CONTG. 200-600 G CUCL SUB₂-L., THE INCREASE IN SOLY. OF CUCL IS ONLY
 20-23 G-L. ON INCREASING THE TEMP. FROM 25 TO 95DEGREES.
 FACILITY: IVANOV. KHIM.-TEKHNOL. INST., IVANOVO, USSR.

UNCLASSIFIED

Welding

USSR

UDC: 621.791.053:678-1:66.012

SHUTOV, B. A. (Engineer) and YEROKHIN, A. A. (Doctor of Technical Sciences)

"Control of Weld Composition in Electron-Beam Welding of Dissimilar Metals"

Moscow, Svarochnoye proizvodstvo, Oct 71, no 10, pp 10-12

Abstract: In welding dissimilar metals it is essential to assure that the composition of the weld metal be maintained within specified and sometimes narrow limits. Inasmuch as the weld composition is determined by the melting extent of each of the metals being joined, it becomes necessary to distribute the source energy flux between the elements in such a manner as to achieve the required ratio of melting rates between each of the elements. The central point of interest here is therefore the rated position of the heating spot relative to the weld axis. This study discusses conditions for electron-beam welding to provide a specific composition of the weld metal as well as regularities in the distribution of the electron beam heat energy between the edges of dissimilar-grade metals for cases involving beam axis displacement relative to the butt. Formulas have been derived to calculate the proper position of the welding source with permissible deviations. A method

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USSR

SHUTOV, B. A. (Engineer), et al, Svarochnoye proizvodstvo, Oct 71, no 10,
pp 10-12

is proposed involving the use of two independent electron beams to make possible proper proportioning and distribution of heat energy over the weld edges and insure high-quality welds. A case of welding copper to low-carbon steel is discussed for illustration. The experimental results show good agreement with the rated data.

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Heat Treatment

USSR

SHUTOV, I. A., Leningrad Technological Institute of the Refrigeration Industry
"Effect of Heat Treatment on the Cold Resistance of 3kp Steel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Chernaya Metallurgiya, No 9,
1970, pp 141-143

Abstract: A study was made of the effect of heat treatment and experimental conditions on the mechanical properties of 3kp steel at low temperatures. Two samples with different carbon content were studied. The samples (20 mm in diameter) were water hardened at 900°C and tempered at 600°C. The results show that at ordinary test temperatures an increase of 20-30% in tensile strength and 40-50% in yield stress is obtained, while the temperature interval for transition of the steel into the brittle state is displaced by about 50°C toward lower temperatures. This ensures a high impact strength at temperatures from -60 to -70°C.

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USSR

UDC 620.193:669.296

GROMOVA, A. I., GERASIMOV, V. V., KABANKOVA, N. A., SHUT'KO, I. G., and VOLKHONSKIY, YE. V.

"Corrosion and Electrochemical Behavior of Zirconium-2.5 Percent Niobium Alloy in Water and Steam at High Temperature"

Moscow, Atomnaya Energiya, Vol 29, No 5, Nov 70, pp 364-365

Abstract: A study was made of the corrosion and electrochemical behavior of zirconium-2.5 percent niobium alloy in water of varying composition at 285°C. In a deaerated environment at ~3000 C the passive region remains up to +1.8 (NHE). Higher positive potentials are marked by transition to the transpassive region. An increase in the pH of the deaerated environment to 10 (compared to pH = 7) does not intensify corrosion of the alloy during irradiation or outside the reactor. The presence of ammonia (pH=10) and oxygen in the water at 3000 C increases the alloy corrosion rate.

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USSR

UDC: 621.372.837(088.8)

SAVSHINSKIY, V. A., ~~SHUTOV, K. K.~~

"A Switching Device"

USSR Author's Certificate No 263007, filed 11 Dec 68, published 8 Jun 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B173 P)

Translation: The proposed switch is based on a rectangular waveguide with resonance diaphragm containing capacitive gaps and an inductive rod. This rod is arranged perpendicular to the wide walls of the waveguide and is in electrical contact with them. The number of inductive rods in the central part of the waveguide and the number of capacitive gaps between the rods and the narrow walls of the waveguide depends on the magnitude of the working power, the dimensions of the waveguide cross section, and the type and dimensions of the constituent elements. A description is given of the operating principle of the switch, which has high working power. One illustration. A. K.

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SHUTOV MD

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243951 SELECTIVE, THERMAL RECEIVER OF RADIATION for absorption analytical instruments of the type comprising a selective radiation absorber in form of a gas mixture and a sensing element in form of a diaphragm. The proposed receiver comprises a solid radiation absorber, and the sensitive element is in form of a series of metal wires with a high TC of electric resistance.

The absorbers can be made of a material whose dimensions vary in time owing to ageing etc., such as PTFE or similar plastic. It is proposed for use for carbon dioxide gas analysers. The absorber and the sensing element do not constitute a single unit, but are in form of separate components close to or in contact with each other.

Other organic plastics (celluloid, polyethylene etc) can be used as absorbers for determination

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of other organic compounds (methane, ethane etc.).

Such receivers are highly selective, the absorber material is easily removable and selected, and the receiver components can be easily standardised.

18.1.68 as 1210964/26-25. PAVLENKO.V.A. et al.
ANALYTICAL INSTRUMENTS MANUFACTURE DES OFFICE ACAD.
SCIENCES USSR. (1.10.69) Bul 17/14.5.69. Class 421.
Int.cl.G 01n.

AUTHORS: Pavlenko, V. A., Shutov, M. D., Budylin, Yu. L., Sall', A. O.,
Yuzupov, G. G., Sankin, V. A.

Spetsial'noye Konstruktorskoye Byuro Analiticheskogo Priborostroyeniya
AN SSSR

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19771628

USSR

UDC: 632.951+661:718.1:632.732

SELEZNEV, V. N., and SHUTOVA, S. S., All-Union Scientific Research
Institute of Tobacco and Makhorka imeni A. I. Mikoyan

"Effectiveness of the Application of New Insecticides Against Tobacco
Aphid"

Moscow, Khimiya v Sel'skom Khozyaystve, no 11, Nov 70, pp 28-30

Abstract: Tobacco aphid (*Myzodes persicae* Sulz) draws the sap from tobacco leaves, contaminates them with sticky excretions and reduces the quality of the raw material. The All-Union Scientific Research Institute of Tobacco and Makhorka conducted a series of tests on a number of new compounds-insecticides. It was found that metathion, folithion, methyl-nitrophos, and Nexion may be used against the tobacco aphid instead of the toxic thiophos group. Saiphos and metathion in 0.3% concentrations are recommended for wider large-scale testing in the tobacco-growing

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USSR

SELEZNEV, V. N., et al, Khimiya v Sel'skom Khozyaystve, no 11, Nov 70,
pp 28-30

areas of the Union. Treatment of plants with rogor and metathion promotes higher crops and yields of light tobacco varieties. The various concentrations of insecticides used in this study as well as their effectiveness in these concentrations are cited.

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USSR

UDC 621.317.75:621.376

SHUTOVICH, Yu. A.

"Automatic Modulation Depth Meter"

Materialy nauchnotekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp.3
(Materials of the Scientific and Technical Conference. Leningrad Electrotechni-
cal Communications Institute, Vyp. 3), Leningrad, 1970, pp 16-20 (from RZh-
Radiotekhnika, No 8, Aug 70, Abstract No 8A448)

Translation: This article contains an investigation of the operating principles of an automatic meter for measuring the modulation depth of a TV transmitter carrier. A block diagram is presented for a device permitting measurement of the modulation depth directly during transmission. The level ratio in the envelope of the radio frequency oscillations is also presented.

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USSR

KONDRATYEV, A. G., KONOVA, K. I., SHUTOVICH, Yu. A.

UDC 621.397:621.396.4

"System of Allowable Control of Television Signal Parameters"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 3 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 3), Leningrad, 1970, pp 11-16 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8G224)

Translation: This article contains an investigation of the necessity of introducing variable values of the tolerances on individual parameters of a complete TV signal as a function of the quality class of TV transmission. It also contains descriptions of devices for signal coding and decoding of the transmission class and automatic setting of current allowable values of the controllable parameters of the complete TV signal.

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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70
 TITLE--A PSEUDOTUMOROUS FORM OF CHRONIC PNEUMONIA -U-
 AUTHOR--(05)--PRISS, B.N., FEOFILOV, G.L., SHUTSKAYA, YE.I., RYBINA, I.A.,
 NEPOMNYASHCHIKH, G.I.
 COUNTRY OF INFO--USSR
 SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 3, PP 54-60
 DATE PUBLISHED-----70
 SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS--PNEUMONIA, CANCER, LUNG, SURGERY
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 ORIXY REEL/FRAME--2000/1859
 00125470 UNCLASSIFIED
 STEP NO--UR/0497/70/048/003/0054/0060

PROCESSING DATE--30OCT70

UNCLASSIFIED

2/2 019
CIRC ACCESSION NO--AP0125470

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS ANALYZE OBSERVATIONS
OVER 20 PATIENTS WITH A PROTRACTED PNEUMONIA, IN WHOM THE CLINICAL COURSE
MORE CORRELATED WITH THE PICTURE OF PERIPHERAL LUNG CANCER. OUT OF 20
PATIENTS 16 UNDERWENT SURGICAL INTERVENTION. THE AUTHORS ASSOCIATE THE
SYMPTOMS OF LUNG CANCER WITH PROFOUND ALTERATIONS IN THE DRAINING
BRONCHI (PANBRONCHITIS) IN THE INVOLVED PULMONARY SEGMENTS.
FACILITY: NOVOSIBIRSKOGU MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

30OCT70

UDC 621.762.5:669.29:669.018.4:620.18

USSR

KISLYY, P. S., SHVAB, S. A., GAYEVSKAYA, L. A., NESCHETNYI, V. A., and BUTUZOV, S. S., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Structure and Properties of Titanium Diboride With 20% Titanium Carbide"
Kiev, Poroshkovaya Metallurgiya, No 9, Sep 73, pp 35-38

Abstract: Samples of titanium diboride powder with 20% titanium carbide (particle size of initial powder = 1 micron) with a porosity of almost 32% were sintered in a graphite resistance furnace in hydrogen at 2000-2300°C for 0 to 180 minutes. After a specified soaking time at a given temperature the samples were cooled, and grain size, bend strength, porosity and electric resistance were determined. It was found that grain size increases with sintering time (the higher the temperature the larger the grain size). Bend strength increases with sintering time up to a point (around 40 minutes) and then starts declining. The highest bend strength value is achieved for a sintering temperature of 2300°C but after the 40-minute mark it diminishes more quickly than a sample sintered at 2200°C. Porosity curves were the opposite of the bend strength curves with porosity dropping during the first 40 minutes and then increasing. Electrical resistance curves followed the same pattern

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USSR

KISLYY, P. S., et al., Poroshkovaya Metallurgiya, No 9, Sep 73, pp 35-38

as the porosity curves although samples sintered at 2300°C reach a low value after 40 minutes of sintering and this value remains constant for the subsequent sintering time. The conclusion was reached that titanium diboride samples with 20% titanium carbide possess the best qualities after sintering at 2200-2250°C for 40 minutes. 6 figures, 1 table, 3 bibliographic references.

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UDC: 620.193.2:669.717

USSR

MIKHAYLOVSKIY, Yu. N., KLARK, G. B., SHUVAKHINA, L. A., AGAFONOV, V. V.,
ZHURAVLEVA, N. I., Institute of Physical Chemistry, Academy of Sciences of
the USSR

"Calculating the Rate of Atmospheric Corrosion of Aluminum and its Alloys
in Different Climatic Zones With Respect to Meteorological Parameters"

Moscow, Zashchita Metallov, Vol 9, No 3, May/Jun 73, pp 264-269

Abstract: The purpose of the paper was to study the influence of meteorological parameters (humidity and air temperature, time of saturation of the metal surface by phase layers of moisture, chemical composition of the atmosphere) on the rate of corrosion of aluminum and its alloys under natural conditions, and to develop engineering methods of calculating the corrosion effects to be expected on these materials in any climatic zone. The research procedure is described in a previous paper (Yu. N. Mikhaylovskiy et al., Zashchita Metallov, 1971, Vol 7, p 154). The specimens were aluminum and alloys D16T, AMG-6 and O1915. The studies were done in rural and industrial regions in the central zone, and in the coastal regions of the North and South. The results of previous tests in tropical zones with

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USSR

MIKHAYLOVSKIY, Yu. N. et al., Zashchita Metallov, Vol 9, No 3, May/June 73, pp 264-269

known meteorological characteristics were also used. The specimens and instrumentation were exposed in an open area and in a louvered enclosure where phase layers of moisture settled on the metal surface due to precipitation, dew, and drop condensation. In the open atmosphere, the specimens and sensors were exposed on stands turned toward the south at an angle of 45° to the horizontal. In the louvered booths, the specimens were held vertically. An analysis of the results of the corrosion sensors shows that in spite of the complex influence of temperature, aluminum corrosion can be calculated with respect to averaged quantities, yielding satisfactory agreement with natural tests. The average rate of aluminum corrosion under "clean" atmospheric conditions is nearly independent of the nature of the moisture film, which is typical of metals which retain their passive state under atmospheric conditions. Corrosion parameters were determined which are necessary for calculating the rate of corrosion of aluminum and its alloys in any climatic zone from meteorological data.

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UDC 620.193.2

USSR

MIKHAYLOVSKIY, YU. N., KLARK, G. B., ~~SHUVAKHINA, I. A.~~, SAN'KO, A. P.,
GLADKIKH, YU. P., and AGFONOV, V. V., Institute of Physical Chemistry,
Academy of Sciences USSR

"Calculation of the Atmospheric Corrosion Rate of Zinc and Cadmium Coatings
in Different Climatic Areas"

Moscow, Zashchita Metallov, Vol 7, No 5, 1971, pp 534-539

Abstract: Zinc and cadmium are taken as examples in developing a general method of calculating the rate of atmospheric corrosion for any climatic zone in which corrosion related both to adsorption and phase moisture layers is taken into account. The meteorological factors involved included relative humidity, air temperature, the time during which the metal was wetted with phase moisture layers, and the content of corrosive admixtures in the atmosphere. Artificial climate chamber studies confirmed the linear dependence of the rate of zinc and cadmium corrosion on the SO_2 concentration (within the range $0.18-5 \text{ mg/m}^3$). The maximum rate of zinc and cadmium corrosion in rural areas in any climatic zone cannot exceed $\sim 10 \text{ g/m}^2 \cdot \text{year}$ in closed quarters and $\sim 30-40 \text{ g/m}^2 \cdot \text{year}$ out in the open. These values climb sharply when SO_2 is present in the

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USSR

MIKHAYLOVSKIY, YU. N., et al., Zashchita Metallov, Vol 7, No 5, 1971, pp 534-539

atmosphere. For example, in an industrial atmosphere containing 0.2-0.3 mg/m³ SO₂, the rate of zinc and cadmium corrosion increases by an order of magnitude and in a heavily contaminated atmosphere with high humidity can reach a level of 100-200 g/m².year. The difference between the corrosion rates of relatively thick (> 20-30 microns) zinc and cadmium coatings and pure zinc and cadmium is not great, generally.

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UDC 620.193.2

USSR

MIKHAYLOVSKIY, YU. N., SHUVAKHINA, L. A., KLARK, G. B., and
AGAFONOV, V. V., Academy of Sciences USSR, Institute of Physical
Chemistry

"Method of Studying the Influence of Climatic Parameters on the
Rate of Atmosphere Corrosion of Metals"

Moscow, Zashchita Metallov, Vol 7, No 2, Mar-Apr 71, pp 154-158

Abstract: A method is suggested allowing continuous recording
of the rate of atmospheric corrosion of metals. The method is
based on measurement of the electrical resistance of a thin
layer of the metal (vacuum condensate or thin foil) during the
process of corrosion. The design of sensors for the method is
described and illustrated.

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- 17 -

USSR

UDC 621.316.722.1:546.28

KISETS, D.KH., SHUVALOV, B.A.

"Parametric Voltage Regulator With Control By Differential Resistance"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices In Electrical Communications Technology--Collection Of Works), No 5, Moscow, "Svyaz'," 1970, pp 216-224 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8B480)

Translation: This paper describes the circuit of a low-voltage regulator based on a silicon power transistor operating in a regime close to saturation. On the basis of an experimental investigation, it is shown that the introduction of feedback into the regulator circuit effectively makes it possible to regulate the voltage at the collector-emitter junction of a transistor operating from a current generator. 10 ill. 1 tab. 1 ref. Summary.

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USSR

UDC: 681.326.3

MYACHEV, A. A., SHUVALOV, L. G.

"A Converter for Coupling a Device for Control of External Objects to a Channel"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292158, Division G, filed 27 Aug 69, published 6 Jan 71, p 131

Translation: This Author's Certificate introduces a converter for coupling a device for controlling external objects to a channel. The converter contains a control unit, a command register, data register, "subscriber information" flip-flop, a diode for setting and resetting the "subscriber information" flip-flop, and a delay circuit. As a distinguishing feature of the patent, the throughput capacity and flexibility of the system are increased by adding an operation code decoder, an accelerated operating mode flip-flop, a duplex operating mode flip-flop, a second data register, a second delay circuit, diodes, merging circuits for shaping the "subscriber information" signal. The input of the decoder is connected to the output of the command register, and the outputs of the decoder are connected respectively to the inputs of the accelerated mode flip-flop and the duplex mode flip-flop. The output of the duplex mode flip-flop is connected to the input of the control

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USSR

MYACHEV, A. A., SHUVALOV, L. G., USSR Author's Certificate No 292158

unit and the input of the first merging circuit. The output of this merging circuit is connected through the diode for setting the "subscriber information" flip-flop to the first delay circuit. The output of the accelerated mode flip-flop is connected to the input of the control unit and the diodes for resetting the "subscriber information" flip-flop. The outputs of these diodes are connected through the second merging circuit to the "subscriber information" flip-flop. The output of the first delay circuit is connected to the first diode for resetting the "subscriber information" flip-flop. The first and second data registers are connected to the control unit and to the information lines.

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USSR

UDC 621.3.087

LAPSHIN, V. G., RYKALIN, V. I., SHUVALOV, R. S.

"Procedure for Recording Weak Light Fluxes"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzay, Tovarnyye Znaki,
No 17, 12 May 70, p 60, Patent No270910, Filed 15 Mar 68

Translation: This Author's Certificate introduces a procedure for recording weak light fluxes based on invariability and the shape of the single-electron pulse from a photomultiplier. In order to separate the signal from noise, the time interval between the beginning and the center of gravity of the output pulse of the photomultiplier is measured, the average time interval between the beginning and center of gravity of the noise pulse of the photomultiplier is subtracted from the measured value. The light pulse is considered recorded if the indicated difference exceeds some value predetermined by the experimental conditions.

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1/2 017

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--EFFECT OF THE CONTAMINATION OF THE SURFACE OF AUSTENITIC STAINLESS
STEEL ON CORROSION CRACKING AT VARIOUS TEMPERATURES -U-

AUTHOR-(103)-ANDREYEV, YU.V., SHUVALOV, V.A., GERASIMOV, V.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-KHIM. MEKHAN. MAT., 1970, 6, (2), 107-109

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CORROSION CRACKING, THERMAL EFFECT, IRON CHLORIDE, COPPER
CHLORIDE, CHROMIUM NICKEL STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0223

STEP NO--UR/0369/70/006/002/0107/0109

CIRC ACCESSION NO--AP0129479

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 017

CIRC ACCESSION NO--AP0129479
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE EFFECT OF THE SURFACE CONTAMINATION OF AUSTENITIC STAINLESS CR-NI STEELS ON THE LIABILITY OF THESE MATERIALS TO CORROSION CRACKING AT ORDINARY AND HIGH TEMP, IS DISCUSSED IN THE LIGHT OF PRACTICAL EXPERIENCE. FECL SUB3 IN A VAPOUR, AIR MIXTURE PASSING OVER THE STEEL SUBSTANTIALLY ACCELERATES CORROSION CRACKING AT 100-110DEGREESC. THE PRESENCE OF PRIME2POSITIVE AND-OR FE PRIME3POSITIVE IONS IN A MEDIUM CONTG. CHLORIDES SOMETIMES HAS THE SAME EFFECT EVEN AT ROOM TEMP. THUS THE PRESENCE OF

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--USE OF AMMONIA TO PROTECT STAINLESS STEEL 1KH18N10T FROM CORROSION
CRACKING IN A VAPOR AIR MEDIUM -U-
AUTHOR-(03)-SHUVALOV, V.A., ANDREYEV, YU.V., GERASIMOV, V.V.
COUNTRY OF INFO--USSR S
SOURCE--ZASHCH. METAL. 1970, 6(2), 236-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--CORROSION CRACKING, STAINLESS STEEL, CHROMIUM NICKEL STEEL,
TITANIUM STEEL, AMMONIA, CORROSION INHIBITOR, NUCLEAR POWER PLANT, WATER
VAPOR, AMMONIUM HYDROXIDE, ALLOY DESIGNATION/(U)1KH18N10T STAINLESS
STEEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1990/1313 STEP NO--UR/0365/70/006/002/0236/0237
CIRC ACCESSION NO--AP0109397
UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--A0109397

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PREVIOUS USE OF A NG SUB4 JH ADDN. TO INHIBIT THE CORROSION BY IMPURE H SUB2 D PLUS AIR FOR PEARLITIC STEEL WAS EXTENDED TO THE CONDITIONS FOR NUCLEAR ENERGY PLANTS IN THE USE OF THIS CR-NI-TI STEEL, WHICH AS AT 110DEGREES IS NORMALLY INADEQUATE. A PH OF 10.5-12.0 CORRESPONDED TO 10-150 MG NG SUB4 NEGATIVE OH-KG STEAM. TESTS WERE MADE WITH A U-TUBE PREVIOUSLY COATED WITH A NACL FILM. WHEREAS THE NORMAL APPEARANCE OF CORROSION CRACKING APPEARED AFTER 100-120 HR, NO CRACKING WAS OBSD. EVEN OVER 1000 HR.

UNCLASSIFIED

USSR

UDC: 621.394.147

SHUVALOV, V. P.

"Indirect Methods of Error Detection in Discrete Information Transmission Systems"

Kosvennyye metody obnaruzheniya oshibok v sistemakh peredachi diskretnoy informatsii, Moscow, Izd-vo "Svyaz", 1972, 81 pp w. ill.

Translation: This pamphlet considers indirect (uncoded) methods for detecting errors. The probability characteristics of indirect methods are presented and a method for computing them is proposed. A comparison is made of various indirect methods for error detection.

The pamphlet was written for specialists in the field of discrete information transmission, as well as for graduates and students in the senior courses of the VUZ communications schools.

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UDC 621.355.8

SHUVALOVA, I. N., FEDOROVA, T. V., and ARKHANGEL'SKAYA, Z. P.,

"The Principles of Decreasing the Capacity of the Silver-Oxygen Electrode for Linear Reversible Operations"

Sb. rabot no khim. istochnikam toka. Vses. n.-n akkumulyator. in-t (collection of Works on the Chemical Source of Current. All-Union Scientific Study Institute for Storage Batteries), Vyp 7, 1972, pp 175-181 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L244 by V. S. Levinson)

Translation: A study was made of the reasons for the deterioration in the efficiency of the AgO electrode prepared from different active materials (industrial silver powder, Ag₂O fine grained material, and silver powder with traces of ZrO₂) for a linear cycling in silver-cadmium batteries. A decrease in the coefficient of the utilization of the active areas according to the size of the increase in the operation time of the electrode is related to the deterioration of the discharging area as a result of its aggregation. A high frequency of linear operation characteristics and battery conditions are retained by the electrode made from Ag₂O.

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USSR

UDC 621.355.8.035.2

SHURVALOVA, I. N., GEDOROVA, T. V., and ARKHANGEL'SKAYA, Z. P.,

"Anode Process on a Silver-Oxygen Electrode of Silver Cadmium Batteries"

Sb. rabot na khim. istochnikam toka. Vses. n.-n akkumulyator in-t (Collection of Works on the Chemical Source of Current. All-Union Scientific Study Institute for Storage Batteries), Vyp 7, 1972, pp 171-174 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 81242)

Translation: A study was made of the features of the anode process on a Ag_2O electrode, prepared from the application of active materials of different sizes. For a large depth of oxidation the fine grained active part in the first potential step of the discharge into the electrode in the second step results in the increase in the potential and is accompanied by the evolution of small amounts of O_2 . By measuring the increase in the work time, basic and secondary processes may be separated.

USSR

UDC 581.132

SHUYALOVA, N. P., and BELL, L. N., Institute of Plant Physiology imeni K. A. Timiryazev, Academy of Sciences USSR, Moscow

"The Effect of Blue Light on the Energy Yield of *Chlorella* Photosynthesis, as Measured in the Red Region of the Spectrum"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 5, 1970, pp 1,223-1,225

Abstract: An attempt was made to determine whether blue light, which changes the structure of chloroplasts, can increase the energy yield of photosynthesis as measured in red light. A *Chlorella pyrenoidosa* suspension maintained at a temperature of 34-38°C and subjected to controlled light irradiation served as the test object. Energy yield was measured with a photocalorimeter in monochromatic red light and in red light against a blue background. The results obtained indicate that blue light has a regulating effect on the photoenergy of *Chlorella*. In experiments carried out during the summer, it was found that the energy yield in red light increased under the influence of a relatively strong background of blue light. In experiments during the fall and winter, blue light reduced the energy yield in red light. The observed effect of blue light may be responsible for the abnormally high energy yield previously observed in the blue-green region of the spectrum.

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