

USSR

UDC 621.385.6:621.373.423

ZYBIN, S.S.

"Stability Of Frequency And Output Power Of A Transit Self-Excited Oscillator With An Oscillatory System Of An Arbitrary Form"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue No 10, pp 30-42 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3A148)

Translation: By use of expressions for the active and reactive constituents of electron conductivity, formulas are obtained for computation of the parameters of a transit oscillator with a multicavity oscillatory system. Expressions are deduced which determine the instability of the generation frequency with respect to changes of the standing wave ratio of the load, the voltage, and the current of the oscillator. The amplitude of the voltage in the gap of the output cavity and the output power of the oscillator are also determined. 5 ref.

E.G.

1/1

USSR

UDC: 621.373.42

ARTEM'YEV, S. M., ZYRIN, S. S., RUSAKOV, V. N.

"Qualitative Comparison of Different Multiple-Tank Drift Type Self-Excited Oscillator Circuits From the Standpoint of the Possibility for Stabilization and Frequency Tuning"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, 13, No 7, pp 805-816 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D374)

Translation: The results of a steady-state analysis are taken as the basis for giving the characteristics of various multiple-tank drift type self-excited oscillator circuits from the standpoint of stabilization and frequency tuning. Resumé.

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USSR

JDC 669.35.018.52:669.018.2

ZYRYANKIN, G. A., IVANOV, V. I., NAM, B. P., and BOLGOV, I. S.

"Some Results of the Development of Hardened Vacuum-Melted Copper-Base Alloys With High Electric Conductivity"

Elektron. tekhnika. Nauchno-tekhn. sb. Materialy (Electronic Engineering. Collection of Scientific and Technical Works on Materials), 1970, vyp. 2, pp 20-25 (from RZh-metallurgiya, No 12, Dec 70, Abstract No 12 1844 by the authors)

Translation: The article considers the influence of microalloying additions Zr, Ti, Cr, Ni, Be, and B on the elevation of strength properties of vacuum-melted Cu at 400-600°. The alloys Cu-Zr (0.1-2.0%), Cu-Zr (0.03-0.08%)-Ti (0.005-0.010%), and Cu-Zr (0.05-0.10%)-Cu (0.05-0.10%) possess good mechanical properties at 400-600°, preserving high electric conductivity (95% or more of the electric conductivity of pure Cu) and technological effectiveness.

1/1

USSR

UDC: 621.317.799;621.382

BLAGOVESHCHENSKIY, V. S., ZYRYANOV, G. Kh., and YANYUSHKIN, V. L.

"Measuring Semiconductor Diode Loss Resistance"

Moscow, Pribory i Tekhnika Eksperimenta, No. 3, 1971, pp 145-147

Abstract: The loss resistance, usually designated r_s , is one of the semiconductor diode parameters determining the frequency range of the diode. This article describes an instrument for measuring this quantity which overcomes the defect of an earlier device for the same purpose by using a peak detector instead of the low-frequency filter used in the earlier system, thus increasing the signal obtained from the diode under test. A block diagram of the new system plus a schematic are given, together with an explanation of its operation. The instrument can be used for measuring the loss resistance in tunnel diodes and in varactors biased in the forward direction. The authors are associated with the Tomsk Polytechnical Institute.

1/1

USSR

UDC 669.71.472(086.8)

BELOV, Yu. I., VOROB'YEV, D. N., SOBOL', I. I., AYUSHIN, B. I., and
ZYRYANOV, L. P.

"Method of Utilizing the Spent Carbon-Material Lining of Aluminum Electro-
lyzers"

USSR Author's Certificate No 261701, Filed 30/10/68, Published 28/08/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract
No 2 G158 P)

Translation: To reduce the cost of production of Al, the used lining made
of carbon materials is ground to a grain size of 0.2 mm, then used to make
up 2-5% of the dry charge used to make the anode mass.

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1/2 011
UNCLASSIFIED
PROCESSING DATE--04DEC70
TITLE--EXTRACTION OF GOLD FROM GRAVITATION CONCENTRATES BY A
HYDROCHLORINATION METHOD -U-
AUTHOR-(02)-ZYRYANOV, M.N., GUBEIDULINA, A.V.
COUNTRY OF INFO--USSR
SOURCE--TSVET. METAL. 1970, 43(3), 74-6
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS
TOPIC TAGS--GOLD, ORE BENEFICIATION, CHLORINATION, EXTRACTIVE METALLURGY,
SULFIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/1408
STEP NO--UR/0136/70/043/003/0074/0076
CIRC ACCESSION NO--AP0126946
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126946

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN HYDROCHLORINATION, IT IS EXPEDIENT TO GIVE THE RAW MATERIAL A PRELIMINARY TREATMENT WHICH DOES NOT CONTAIN A POSSIBLE SOURCE OF A REDUCER OF FE PRIME2 POSITIVE TYPE. WITHOUT SUCH TREATMENT, ONLY PURE QUARTZ GRAVITATIONAL CONCS. CONTG. LESS THAN OR EQUALS TO 1.0 PERCENT SULFIDES CAN BE TREATED. GRAVITATIONAL CONCS. CONTG. SULFIDES (PYRITE, ARSENOPIRYTE) IN AMTS. GREATER THAN 1.0 PERCENT CAN BE HYDROCHLORINATED WITHOUT PRELIMINARY TREATMENT. ONE OF THE SIMPLEST METHODS OF PRELIMINARY TREATMENT IS OXIDIZING ROASTING, WHICH CONVERTS THE SULFIDES TO OXIDES WITH HIGHER VALENCES, WHICH ARE PRACTICALLY INERT TO GASEOUS CL IN THE AQ. MEDIUM. EXTN. OF AU FROM THE CINDERS OF OXIDIZING ROASTED GRAVITATIONAL CONCS. WAS IN MOST CASES 98-98.5 PERCENT. THE HIGHERST EXTN. WAS OBTAINED AT RELATIVELY SHORT TIMES (SIMILAR TO 2 HR) AND WITH LEAST CONSUMPTION OF CL. THREE VARIATIONS OF EXTN. OF AU FROM SOLN. WERE TRIED: REON. BY FE PRIME2 POSITIVE, SORPTION ON PITCH, AND EXTN. BY TRIOCTYLAMINE. EXTN. AND REON. BY FECL SUB2 GAVE PRACTICALLY COMPLETE RECOVERY OF AU FROM THE SOLN. THE RESIDUAL CONCN. OF AU WAS 0.09 MG-L. WHEN THE INITIAL CONCN. WAS 2000 AND 50 MG-L. SORPTION ON PITCH GAVE SOMEWHAT BETTER RESUTLS.

UNCLASSIFIED

USSR

UDC: 669.213

ZIRYANOV, M. N., and GUBEYDULINA, A. V.

"Extraction of Gold from Gravitational Concentrates by the Hydrochlorination Method"

Moscow, Tavetnyye Metally, No 3, Mar 70, pp 74-76

Abstract: Research in the gold extraction industry has recently turned to processes involving chlorination of the gold-bearing concentrate. Hydrochlorination of gravitational concentrates was found to yield 99% extraction of high-assay (999) gold. The gold content in gravitational concentrates ranges from 40 to 900 g per ton. Some of the gold is combined with sulfides (pyrite and arsenopyrite) and quartz. The experimental process described in this study was carried out on a small laboratory unit incorporating a 1.5 l plexiglass reactor with an agitator. The results of the hydrochlorination of unroasted gravitational concentrates and data on Au extraction into solution in hydrochlorination of cinder at 8 plants are summarized in tables in the original article. It is suggested that gravitational concentrates containing sulfides > 1.0% be pretreated by oxidizing firing to convert the sulfide compounds to oxides of higher valence, which are almost inert to Cl_2 in an aqueous medium. A total of three extraction variants from solutions were tested: reduction with $FeCl_2$, sorption with AM resin, and extraction with trioctylamine. Extraction and reduction with $FeCl_2$ have shown a higher yield while that of sorption with AM resin was somewhat lower.

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1/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--QUANTUM THEORY OF GALVANOMAGNETIC PHENOMENA IN METALS AND SEMICONDUCTORS. I. EXPANSION OF THE ELECTRICAL CONDUCTIVITY TENSOR IN

AUTHOR--(Q2)-KULEYEV, I.G., ZYRYANOV, P.S.

COUNTRY OF INFO--USSR

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SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR, 1970, 29, (3), 484-495

DATE PUBLISHED----MAR 70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--GALVANOMAGNETIC EFFECT, SEMICONDUCTOR CONDUCTIVITY, MAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3003/0675

STEP NO--UR/0126/70/029/003/0484/0495

CIRC ACCESSION NO--AP0129840

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129840

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EXPANSION OF THE ELECTRICAL CONDUCTIVITY TENSOR IN TERMS OF IMPURITY CONCENTRATIONS (I.E., THE NUMBER OF SCATTERING CENTRES) IS DERIVED FOR METALS AND SEMICONDUCTORS SITUATED IN A QUANTIZING MAGNETIC FIELD. THIS EXPANSION IS REQUIRED, IN PARTICULAR, WHEN ANALYSING THE QUANTUM OSCILLATION OF THE HALL EFFECT AND THERMO GALVANOMAGNETIC PHENOMENA IN MATERIALS HAVING EQUAL ELECTRON AND HOLE CONCENTRATIONS. A GENERAL THEORY FOR EXPANDING THE KINETIC COEFF. IN POWERS OF IMPURITY CONCENTRATION IS DEVELOPED; THIS FACILITATES THE CALCULATION OF THE TENSOR COMPONENTS TO AN ACCURACY LIMITED BY QUADRATIC TERMS IN IMPURITY CONCENTRATION.

UNCLASSIFIED

1/2 027
UNCLASSIFIED
PROCESSING DATE--23OCT76
TITLE--QUANTUM WAVES IN A DEGENERATE ELECTRON FLUID OF METALS -U-
AUTHOR--(03)-ZYRYANOV, P.S., OKULOV, V.I., SILIN, V.P.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 4, PP 1295-1309
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRON OSCILLATION, ELECTRON GAS, QUANTUM OSCILLATION,
ELECTRON MOTION, ELECTRON SPECTRUM, SPIN WAVE, CRYSTAL LATTICE
VIBRATION, METAL ELECTRICAL CONDUCTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1570
STEP NO--UR/0056/70/058/004/1295/1309
CIRC ACCESSION NO--AP0106316
UNCLASSIFIED

2/2 027

CIRC ACCESSION NO--AP0106316

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EQUATION SET IS OBTAINED WHICH DESCRIBES THE OSCILLATIONS OF AN ISOTROPIC ELECTRON FLUID IN A QUANTIZED MAGNETIC FIELD. FERMI FLUID INTERACTION IS ASSUMED TO BE OF THE CONTACT TYPE AND IS DESCRIBED BY TWO CONSTANTS. BRANCHES OF THE PROPER FREQUENCY SPECTRUM WHOSE EXISTENCE IS COMPLETELY DUE TO QUANTIZATION OF THE ELECTRON ORBITAL MOTION (QUANTUM WAVES) ARE CONSIDERED IN THE CASE OF PROPAGATION ALONG THE DIRECTION OF THE MAGNETIC FIELD. IN CONTRAST TO SUCH WAVES IN AN ELECTRON GAS (PRIME4-8), QUANTUM WAVES IN A LIQUID, AS A RULE, ARE RELATED TO OSCILLATIONS OF THE SPIN DENSITY. UNDER CERTAIN CONDITIONS THE EXISTENCE OF QUANTIZED SPIN WAVES IS POSSIBLE. IT IS SHOWN THAT THE LONGITUDINAL QUANTUM WAVES STRONGLY INTERACT WITH OSCILLATIONS OF THE ION LATTICE OF THE METAL. LIMITS OF APPLICABILITY OF THE RESULTS ARE INDICATED WHICH ARE DUE TO THE EFFECT OF COLLISIONS AND OF TEMPERATURE SMEARING OUT OF THE FERMI DISTRIBUTION.

FACILITY: INST. FIZIKI METALLOV, AN SSSR, FIZICHESKIY INST. IM. P. N. LEVEDEVA, AN SSSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--X RAY SPECTRA AND STRUCTURE OF 3D, 4SP ENERGY BANDS OF BETA BRASS
-U-
AUTHOR--(02)-NEMNOV, S.A., ZYRYANOV, V.G.
COUNTRY OF INFO--USSR
SOURCE--FIZ. METAL METALLOVED. 1970, 29(3), 585-8
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--BRASS, COPPER ALLOY, X RAY SPECTRUM, ENERGY BAND STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--1997/1764 STEP NO--UR/0126/T0/029/003/0585/0588
CIRC ACCESSION NO--AP0120471
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120471

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY MEANS OF X RAY SPECTRA STUDIES AND BY COMPARING THOSE RESULTS WITH THE RESULTS OF THEORETICAL CALCNS. OF ENERGY BANDS, THE ELECTRONIC STRUCTURE OF ORDERED BETA BRASS (52PERCENT CU, 48PERCENT ZN) WAS INVESTIGATED. THE X RAY K AND L SUBIII EMISSION SPECTRA WERE COEXAMD. AND COMPARED WITH THE AVAILABLE LITERATURE DATA. CERTAIN QUESTIONS ARE DISCUSSED ASSOCD. WITH THE ELECTRONIC STRUCTURE AND THE NATURE OF THE FINE STRUCTURE DETAILS OF THE X RAY SPECTRA OF THE ALLOY. IN BETA PRIME BRASS THERE ARE TWO D SIMILAR NONOVERLAPPING BANDS, THE ENERGY POSITION OF WHICH CAN BE DETD. BOTH FROM THE POSITION OF THE L SUBIII SPECTRA AND FROM THE POSITION OF THE DETAILS OF THE K EMISSION SPECTRA OF THE COMPONENTS OF THE ALLOY STUDIED. FACILITY: INST. FIZ. METAL., SVERDLOVSK, USSR.

UNCLASSIFIED

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USSR

UDC 669.046.5

ANSHELES, I. I., FEDOSEYEV, V. V.; OYSK, G. N., YEGOROV, A. V., SOROKIN, S. P., TYURIN, Ye. I., DANILIN, V. I., SELIVANOV, V. M., SIVKOV, S. S., ZYRYANOV, Yu. Ye., and BALDAYEV, B. Ya.

"Use of Electromagnetic Stirring in Vacuum Melting of Steel in a Ladle"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS), (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 222-227

Translation of Abstract: Brief technical characteristics are given of the electromagnetic stirring of steel in a ladle. Data are presented on the effect of electromagnetic metal stirring on the uniform distribution of added deoxidizers and alloying elements, and also on the significant increase in the duration of vacuum smelting. A new production technology for the ShKh15 steel is presented in which complete deoxidation and alloying is conducted in the ladle at the end of vacuum smelting. The suggested method is theoretically substantiated. The results of the first experimental melts are presented. 3 tables.

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Acc. Nr: **AT0102945** - Abstracting Service:
CHEMICAL ABST. 6-70

Ref. Code:
URD148

114174b Thermodynamic bases for controlling the deoxidizing capacity of carbon during in vacuo alloying of steel. Fedoseev, V. V.; Zyryanov, Yu. E.; Ansheles, I. I.; Oiks, G. N. (Mosk. Inst. Stal's Spjavor, Moscow, USSR). Izr. Vyssh. Ucheb. Zaved., Chern. Met. 1970, 13(1), 43-7 (Russ). It was shown exptl. that electromagnetic mixing provided thorough homogenization of the added metals, which increased the time of the vacuum treatment of the steel, utilized more completely the deoxidizing capacity of C, and shortened the time the steel was under vacuum. The thermodynamic anal. of the overall reaction for the oxidn. of C and Cr during the melting of the steel in vacuo is given for various alloys (1%C, 1, 5%Cr-steel ShKh15; 0.3%C, 1%Cr-steel 30KhGSA and other Fe-C-O and Fe-C-O-Cr systems). The equil. capacity of the O in dependence upon the temp. and CO partial pressure is given. It follows from the results that it is better to change the present technol. of steel alloying.

J. Stejskal J WE

REEL/FRAME
19861011

18

1/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--NEW VALUES OF BRANCHING RATIOS K-BETA PRIME POSITIVE -U-

AUTHOR--(02)-ZYRYANOVA, L.N., SUSLOV, YU.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 101-5

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--POSITRON, BETA DECAY, ELECTRON CAPTURE, ATOMIC MASS, ELECTRON
STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/2001

STEP NO--UR/0048/70/034/001/0101/0105

CIRC ACCESSION NO--AP0105075

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 014

CIRC ACCESSION NO--AP0105075

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

ABSTRACT. THE COEFFS. K-BETA PRIME POSITIVE WERE CALCD. WITHOUT CONSIDERATION OF THE OVERLAPPING AND EXCHANGE EFFECTS FOR W SUBO EQUALS 10-2600 KEV AND Z EQUALS 5-100. THE DETD. VALUES WERE COMPARED WITH THE ANALOGOUS DATA OF OTHER AUTHORS; THE PRESENTED DATA DIFFER BY 1.5-12PERCENT FROM THOSE PRESENTED BY OTHERS.

UNCLASSIFIED

ELECTRICAL ENGINEERING
Materials

UDC: 621.318.4

USSR

ZYRYANOVA, N. S.

"Potting Inductance Coils With KTZ-1 Compound"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry
—collection of works), vyp. 1, Moscow, 1971, pp 45-46 (from RZh-Radiotekh-
nika, No 5, May 71, Abstract No 5V371)

Translation: KTZ-1 compound product, which has a number of advantages over
"Silpen" foam sealant, is recommended for potting inductance coils. Resumé.

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ZYMOV, B.K.

220 / 10.960 / 5.11.73

Doc. 73

5

Lutkov, A. I., B. K. Zymov, and V. I. Voiga.
The relationship between thermal and electrical
conductivities of graphite. 1-Ezh, V. 22, no. 5,
1972, 932. (Annotation).

An attempt to correlate thermal conductivity λ with electric resistivity δ of graphite at high temperatures is described. Many researchers previously noted that the $\lambda \times \delta$ product is constant to a certain degree, but only at room temperature.

Experimental λ and δ data in the range 80 - 2,500°K range are given and the $(\lambda \times \delta)$ values are calculated for artificial graphites with 1.0 - 2.26 g/cm³ specific weights. At a low temperature, the $(\lambda \times \delta)$ of individual graphites varied significantly. At room temperature, $(\lambda \times \delta)$ was nearly the same for the graphites studied. At $T > 1,500^\circ\text{K}$, $(\lambda \times \delta) = 0.34 - 0.38 \text{ V}^2/\text{degree}$ and is independent of temperature for all graphites studied with the exception of those with lowest (1.0 g/cm³) and highest (2.26 g/cm³) specific weights.

Voronin, V. I., and A. Ye. Blazhkov.
Thermal boundary layer on a nonlinear
thermal plate. IVUZ Aviatcionnaya
tehnika, no. 1, 1972, 116-123.

The equation of energy of a compressible laminar boundary layer on a semi-finite plate with different local boundary conditions is analyzed. It is assumed that the $0 \leq \xi \leq 1$ area of the leading edge, where $\xi = x/l$ and l is the longitudinal coordinate, is cooled to a constant temperature T_w and its equation of energy is solved by the known Crocco integral. Using this integral and a

1/2 010
 TITLE--PREPARATION OF PURE TRIMETAPHOSPHIMIC ACID -U-
 UNCLASSIFIED
 AUTHOR--(03)-NIKOLAYEV, A.F., DREYMAN, N.A., ZYRYANOVA, T.A.
 COUNTRY OF INFO--USSR
 SOURCE--ZH. OBSHC. KHIM. 1970, 40(4); 937-8
 DATE PUBLISHED-----70

PROCESSING DATE--04DEC70

2

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHONITRILE, CHLORIDE, PHOSPHORUS ACID, AMINE DERIVATIVE,
 CHEMICAL SYNTHESIS, ION EXCHANGE RESIN/(U)KUZ ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--3006/0825

STEP NO--UR/0079/70/040/004/0937/0938

CIRC ACCESSION NO--AP01345/8
 UNCLASSIFIED

PROCESSING DATE--04DEC70

UNCLASSIFIED

2/2 010

CIRC ACCESSION NO--AP0134558
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. CYCLIC NA SUB3 (PO SUB2 NH) SUB3
TIMES 4H SUB2 O FROM HYDROLYSIS OF (PNCL SUB2) SUB3 WITH COLD NAOAC WAS
REPPTD. FROM AQ. SOLN WITH ETOH AND PURIFIED ON KU2 SULFONIC ACID ION
EXCHANGE RESIN IN H PRIME POSITIVE FORM, TO YIELD THE PURE SOLN. OF THE
FREE ACID THAT IS STABLE IN STORAGE EVEN IN LIGHT; EVAPN. IN VACUO GAVE
H SUB3 (PO SUB2 NH) SUB3 TIMES H SUB2 O, NEEDLES, M. 196 DEGREES; PPTD. BY
MEQH. THE ACID CONVERTED TO THE TRI NA SALT AND THIS PASSED IN AQ.
SOLN. OVER KU2 RESIN IN H PRIME POSITIVE FORM GAVE THE PURE ACID
MONOHYDRATE IN 86 PERCENT YIELD.
INST. IM. LENSOVETA, LENINGRAD, USSR.
FACILITY: LENINGRAD. TEKHNOL.

UNCLASSIFIED

USSR

UDC: 546.185

NIKOLAYEV, A.F., DREYMAN, N.A., and ZYRYANOVA, T.A., Leningrad Technological Institute imeni Lensovet, Leningrad, Ministry of Higher and Secondary Specialized Education RSFSR

"Synthesis of Pure Trimetaphosphimic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 937-938

Abstract: Continuing their work on the synthesis of stable trimetaphosphimic acid (TMPA), the authors developed a method for its synthesis in an aqueous solution free of admixtures of foreign ions which affect the stability of the acid, with subsequent isolation in the crystalline state. The initial product is the Na salt of TMPA, $\text{Na}_3(\text{PO}_2\text{NH})_3 \cdot 4\text{H}_2\text{O}$, obtained by hydrolysis of triphosponitrile chloride with sodium acetate.

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USSR

UDC: 621.165.175:536.1

ZYSIN, V. A., BARILOVICH, V. A.

"Thermodynamics of a Flow of Evaporating Liquid in the Case of High Pressure Gradients"

Tr. Vses. nauchno-tekhn. konferentsii po termodinamike. Leningr. tekhnol. in-t kholodil'n. prom-sti (Works of the All-Union Scientific and Technical Conference on Thermodynamics. Leningrad Technological Institute of the Refrigeration Industry), Leningrad, 1970, pp 137-146 (from RZh-Turbostroyeniye, No 8, Aug 70, Abstract No 8.49.21)

Translation: The thermodynamic method is used with regard to peculiarities of the mechanism of the actual process to analyze and calculate the process of vaporization of a superheated liquid. Rather than taking the condition of bubble formation in the flow nucleus behind the boiling front as the determining factor, the authors proceed from the actual nature of hydrodynamics of viscous flow, taking the development of vapor formation throughout the cross section of the flow under limiting outflow conditions, since conditions which are more favorable for vapor formation are created in the boundary layer in this case. In effecting the initial thermodynamic analysis, the complexes which account for initial underheating and the work of forces
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USSR

ZYSIN, V. A., BARILOVICH, V. A., Tr. Vses. nauchno-tekhn. konferentsii po termodinamike. Lenigr. tekhnol. in-t kholodil'n. prom-sti Leningrad, 1970,
pp 137-146

of friction lead to quantitative changes in the evaluation of the process which coincides with reality. The way in which the critical ratio between pressure and the coefficient of velocity depends on the degree of underheating is determined, and a divergence within limits of 5% between theory and experiment indicates that flows of wet steam may be treated as mechanically one-dimensional at supercritical velocities. This makes it possible to study such flows by purely thermodynamic methods and to determine the degree of dryness of the flow, the enthalpy of the liquid phase and its temperature, and losses of energy due to disruption of thermodynamic equilibrium. Four illustrations, bibliography of five titles. L. F. Kallistova.

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USSR

UDC 536.717.001.24

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ZYSIN, V. A., KIRILLOV, I. I., OSHEROV, S. YA., ARSEN'YEV, L. V.,
PEL'USHTEYN, YA. M., KHODAK, YE. A. and SUKHOVA, N. V.

"Analysis of High-Temperature Gas-Steam Generators"

Tr. Vses. nauchno-tekhn. konferentsii po termodinamike. Sekts.
"Novye teploenerg. i kholodil'n. skhemy i tsikly" (Works of the All-
Union Scientific-Technical Conference on Thermodynamics. Section:
"New Thermal Energy and Cooling Circuits and Cycles"), Leningrad,
1969, pp 206-213 (from RZh-Teploenergetika, No 5, May 70, Abstract
No 5G3:)

Translation: At the Centr. Boiler-Turb.Inst. and Leningrad Polytechnic
Institute, gas-steam generators are being developed using high temp-
erature GTU (gas turbines). In these designs the heat removed via
turbine blade cooling is used in the cycle. Calculations are given
for steam generator designs which operate on exhaust heat from the
turbines. All the steam from the steam turbine VD (expansion unknown)
is applied toward cooling the gas turbine elements, thus achieving its
PP (expansion unknown). At a power of 300 Mw and initial gas and steam
conditions of respectively 9.2 atm.; 1200°C and 240 atm.; 450°C,

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USSR

ZYSIN, V. A., et al., Tr. Vses. nauchno-tekhn. konferentsii po termodinamike. Sekts. "Novye teploenerg. i kholodil'n. skhemy i tsikly," 1969, pp 206-213
(from RZh-Teploenergetika, No 5, May 70, Abstract No 5G31)

generator efficiency is 50% at an exhaust gas temperature of 150-160°C. Addition of a preheat chamber raises this figure by 1%. A significant increase in economy (up to 55%) is realized by conversion to 2-stage heating in the gas turbine. A large increase in gas turbine output can be obtained by adding recirculation lines--a portion of gas vaporized by the steam generator receives only one stage of compression, after which it is injected into the combustion chamber. The remainder of the output gas (at 2 atm. pressure) is expanded in the condenser. A semi-closed cycle design of this type, at an input pressure of 12 to 14 atm. and a turbine path length of 600 mm., can produce 650 to 700 Mw at 52% efficiency. The design of a cooled gas turbine remains a basic problem. Five illustrations.

Yu. V. Rzheznikov

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USSR

UDC 621.438.001.5

ZYSINA-MOLOZHEN, L. M., Doctor of Technical Sciences, and
KUROSH, V. D., Candidate of Technical Sciences, Central Boiler
and Turbine Institute

"Effect of Turbulence on Transition in the Boundary Layer of
Gas Turbine Profiles"

Moscow, Teploenergetika, No 12, 1971, pp 45 -46

Abstract : Results are presented of experimental investigation of the turbulence effect on transition in the boundary layer of typical gas turbine blades. Data of processing experimental results of turbulence measurements in the stator lattice of gas turbine blades under static conditions and conditions of lattice arrangement behind the rotating turbine wheel are discussed by reference to diagrams of characteristic Reynolds numbers (Re) at points of starting (Re_s) and ending (Re_e) transition. The presence of the rotating turbine wheel before the stator effects increased turbulence of the flow entering the nozzle lattice. At

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ZYSINA-MOLOZHEN, L. M., Teploenergetika, No 14, 1971, pp 45-46

values of the turbulence level $\varepsilon > 4.5 \%$, according to experiments on the dynamic test bed, a tendency to stabilization of Re_s around the value of 1.2×10^5 was observed. The relative expansion of the transition zone under static and dynamic test conditions of the characteristic parameter of the transition zone $r = Re_s / Re_c$ can be approximately rated by empiric formulas previously (Ibid., No 7, 1969) suggested by one of the authors. Four illustr., three formulas, ten biblio. refs.

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USSR

UDC 621.165-19.001.5

ZYSINA MOLOZHEN, L. M., Doctor of Technical Sciences, Professor, FEL'DBERG,
L. A., Engineer

"Holographic Analysis of the Particle Size of Two-Phase Media"

Leningrad, Energomashinostroyeniye, No 1, 1971, pp 10-12

Abstract: The application of hologram techniques for study of the distribution of small-size particles in space is set forth. Among the direct applications of the proposed method is its use for investigation of the structure of moist-steam flows in turbines. Three figures and 2 bibliographic entries.

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1/2 025 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--A COMPARATIVE EVALUATION OF THE ANALGETIC EFFECT OF ANALGESICS -U-
AUTHOR--ZYSKIN, A.I., GOLOGORSKIY, V.A.
COUNTRY OF INFO--USSR
SOURCE--VESTNIK KHIRURGII IMENI I. I. GREKOVA, 1970, VOL 104, NR 3, PP
97-99
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DRUG EFFECT, ANALGESIC DRUG, PAIN, MORPHINE, SURGERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY PEEL/FRAHE--1986/0854

STEP NO--UR/0589/70/104/003/0097/0099

CIRC ACCESSION NO--AP0102815

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102815

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE PAPER A COMPARATIVE EVALUATION OF SOME MOST FREQUENTLY USED ANALGESICS IS GIVEN. FOR MEASURING PAIN THRESHOLDS AN APPARATUS DOLORIMETRE, DEVISED BY THE AUTHORS HAS BEEN EMPLOYED. MORPHINE IN A DOSE OF 10 MG, OMNOPON, 20 MG AND PROMEDOL, 0.5 MG PER KG WEIGHT EXHIBIT A SIMILAR ANALGETIC ACTION. ANALGINE IN A DOSE OF 500 MG DOES NOT SHOW ANY CHANGES IN THE PAIN THRESHOLDS. A COMBINATION OF 10 MG OF PROMEDOL WITH 500 MG OF ANALGINE, ALSO INCREASING THE PAIN THRESHOLDS AS MORPHINE IN A DOSE OF 10 MG, DOES NOT SHOW ANY SIDE EFFECTS TYPICAL OF MORPHINE, THAT ENABLED TO RECOMMEND WIDELY THIS COMBINATION OF ANALGESICS FOR THE POSTOPERATIVE ANALGESIA.

UNCLASSIFIED

USSR

UDC 661.143(088.8)

BABITSKAYA, R. A., GORODINA, Z. F., ZYTNER, G. G., KOROVICHEVA, V. R., MAR-KOVSKIY, L. YA.

"Procedure for Obtaining a Luminescent Compound"

USSR Author's Certificate No 312864, filed 13 Aug 69, published 2 Dec 71 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L187P)

Translation: In order to reduce the cost and to obtain luminescent compounds which are efficient with respect to brightness of their luminescence a group III metal orthovanadate and orthophosphate are used in combination with mixed group II metal orthovanadate and orthophosphate. Various rare-earth elements or a mixture of a rare-earth element and Bi is used as the activator. The activator and Bi are taken in the amount of 0.01-0.2 g/atom per mole of final product. The luminous compound obtained by the proposed procedure corresponds, for example, to the formula: $Me_{(3-1.5x)}^{2+} Me_x^{3+} (P_{1-y} K_y C_4)_2$.

*ZA where Me^{2+} are Ca^{2+} or Sr^{2+} ions with partial replacement by Zn^{2+} or Mg^{2+} ions; the Me^{3+} are Y^{3+} or La^{3+} or Al^{3+} ions; K is a group V element of the periodic system, for example, V; A are the activator ions Sn^{2+} or Eu^{3+} or Sm^{3+} or combined with a sensitizer, for example, Bi; $0.05 \leq x \leq 0.5$; $0 \leq y \leq 0.5$; $0.01 \leq z \leq 0.2$. In order to obtain the compound, the charge components are $1/2$

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BABITSKAYA, R. A., et al., USSR Author's Certificate No 312864, filed 18 Aug 69, published 2 Dec 71

mixed in advance and baked in the air or (in the case of using Sn^{2+}) in the presence of a reducing agent at a temperature of 600-1,200° for 2-4 hours. The luminescent compounds obtained are excited by a broad range of UV radiation.

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USSR

UDC 621.314.632

ZYUBIN, V.F., MURZIN, YU.M.

"Microelectronics In Control Systems Of Rectifier Converters"

Sb.nauch.tr. po probl. mikroelektron. Mosk. in-t elektron.tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1971, Issue 7, pp 73-82 (from RZh:Elektronika i yeye primeneniye. No 5, May 1972, Abstract No 5B539)

Translation: The paper considers problems of the construction of the control systems of thyristorized converters using the discrete principles of the computing arts with the application of integrated circuits, using the control system of a 3-phase bridge circuit as an example. The control voltage is converted into a code and is recorded in a digital delay unit. The latter converts the recorded number into a time interval between the synchronizing pulses being produced by the zero organs and the output pulse of the delay unit which is fed to the register. The register carries out a distribution of the pulses from the thyristors which are previously amplified by an amplifier. The feedback unit converts the output parameter of the power part into code which is introduced into the digital delay unit. The principal requirements imposed on the integrated circuit used in the control system are presented. 6 ill. 7 ref.

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USSR

UDC 621.314.61

ZYUBIN V.F."Null Element"

Sb. nauchn. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electrical Engineering), 1969, Issue 2, pp 242-246 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B452)

Translation: It is proposed to fulfill a null element [нуль-орган] on the base of an integrated circuit which includes two type n-p-n planar transistors with the collectors and emitters connected among themselves: the transistor base is connected across limiting resistors to the terminals of the secondary winding of the transformer; the midpoint of this winding is lead up to the emitters of the transistors mentioned; stabilitrons are provided between the midpoints of the limiting resistors and the emitters. Because of the pronounced nonlinear characteristics of the integrated circuit, it is possible to obtain a pulse width of 1-2⁰ of the period of the control voltage, and the duration of the front is one microsecond; the power which is consumed is ~100 mwatt. It is possible to assemble an analagous circuit using ordinary transistors, but with some worse characteristics. 3 ill. 3 ref. I.R.

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USSR

UDC 621.314.61

ZYUBIN, V.F., MINKIN, L.K., KISHCHIK, A.P.

"Unit For Control Of Thyristors"

Sb. nauchn. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electrical Engineering), 1969, Issue 2, pp 247-250 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 18452)

Translation: The paper describes a one-channel system for control by a bridge circuit of a thyristor rectifier [выпрямитель] during which asymmetry in the units for control of the thyristors is excluded. The control system consists of 1) Three null elements [нуль-орган] connected to line voltage; 2) Unit for summation of pulses synchronized with a-c voltage which are obtained through the null elements; 3) Units for phase control where shift of all pulses is accomplished simultaneously; 4) Distributor of pulses to the six channels for control of the thyristors; and 5) Amplifier-shaper. In addition to elimination of asymmetry, the circuit has the advantage that it has a smaller number of elements and the logical possibilities of the system are better utilized. Construction of a one-channel system using integral elements is possible. 3 ill.

3 ref. I.R.

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1/3 020 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--SEMICONDUCTOR GLASSES IN THE ZNAS SUB2-CDAS SUB2 SYSTEM -U-
AUTHOR-(02)-ZYUBINA, T.A., ALEJNIKOVA, K.B.
COUNTRY OF INFO--USSR Z
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 266-70
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--SEMICONDUCTOR GLASS, ZINC, ARSENIC, CADMIUM, GLASS COMPOSITION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0612 STEP NO--UR/0363/70/006/002/0266/0270
CIRC ACCESSION NO--AP0119525
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119525

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

ABSTRACT. THE ZN SUBX CD SUB1-SUBX AS SUB2 SOLID SOLNS. ARE MATERIALS, THE ELEC. PARAMETERS OF WHICH CAN EASILY BE CONTROLLED BY CHANGES IN THEIR COMPN. SINGLE CRYSTALS OF ZN SUBX CD SUB1- SUBX AS SUB2 WERE GROWN, AND THEIR ELEC. PROPERTIES WERE DETD. WHEN THESE SOLID SOLNS. ARE RAPIDLY COOLED IN WATER, THEY CAN BE PREPD. IN THE VITREOUS STATE. WHEN ZN SUBX CD SUB1-SUBX AS SUB2 GLASSES ARE HEATED AT 400-500DEGREES, CRYSTN. TAKES PLACE WITH A CONSIDERABLE EVOLUTION OF HEAT. MEASUREMENTS OF RESISTIVITY AT 80-800DEGREESEK SHOWED THAT AT 50-80 MOL. PERCENT CDAS SUB2 IN ZN SUBX CD SUB1-SUB X AS SUB2. NO SECTIONS WITH IMPURITY COND. ARE OBSD. ADDING SI, GE, SE, P, TE, AND MO TO VITREOUS ZN SUBX CD SUB1-SUBX AS SUB2 MATERIALS DOES NOT CHANGE THE ACTIVATION ENERGY OR THE ELEC. COND. OF THESE GLASSES. MOST OF THE SAMPLES INVESTIGATED HAD PHOTOCOND., THE VALUE OF WHICH DEPENDED NOT ONLY ON THE COMPN. AND THE IMPURITY CONTENT, BUT ALSO ON THE COOLING RATE OF THE MELT. PHOTOCOND. WAS NOT THE SAME IN ALL SECTIONS OF A GIVEN SAMPLE. DIFFERENTIAL THERMAL EMF. AND THERMAL COND. FOR ALL COMPNS. ARE NOT LARGE, AND VARY ONLY INSIGNIFICANTLY WITH THE TEMP. THE FREE CARRIER CONC. AS DETD. FROM HALL-CONST. MEASUREMENTS IS OF THE ORDER OF 10^{10} - 10^{12} CM⁻³. IN GLASSES CLOSE IN COMPN. TO CDAS SUB2, SECTIONS OF IMPURITY COND. WERE OBSD. WITH INCREASED TEMP., THERE TOOK PLACE AN INVERSION OF THE DIFFERENTIAL THERMAL EMF. AND THE HALL CONST. AMORPHOUS ZN SUBX CD SUB1-SUBX AS SUB2 HAS SEMICONDUCTOR PROPERTIES, AS DO THE ZNAS SUB2, CDAS SUB2, AND ZN SUBX CD SUB1-SUBX AS SUB2 MELTS.

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3/3 020 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0119525
ABSTRACT/EXTRACT--ON LONG TERM X IRRADN., CRYSTALLITES APPEAR IN THESE
GLASSES. FACILITY: VORONEXH. POLITEKH. INST., VORONEZH, USSR.

UNCLASSIFIED

172 026 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--INCREASING THE RESISTANCE OF CARBON STEEL WELDS TO CORROSION
CRACKING ON REDUCING THE RESIDUAL WELDING STRESSES BY WORKING -U-
AUTHOR--(05)-ZYUBRIK, A.I., VASILENKO, I.I., TEREKH, O.I., DIKY, I.I.,
KARPENKO, G.V.
COUNTRY OF INFO--USSR
SOURCE--FIZ.-KHIM. MEKHAN. MAT., 1970, 6, (2), 42-45
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS
TOPIC TAGS--CORROSION CRACKING, CARBON STEEL, STEEL WELDING, RESIDUAL
STRESS, ELECTROCHEMICAL PROPERTY, PLASTIC DEFORMATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0216 STEP NO--UR/0369/70/006/002/0042/0045
CIRC ACCESSION NO--AP0129472
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--04DEC76

CIRC ACCESSION NO--AP0129472

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF PLASTIC DEFORMATION (WORKING) ON (I) THE RESIDUAL STRESSES ARISING IN THE NEIGHBOURHOOD OF WELDS IN C STEEL PARTS, (II) THE ELECTROCHEMICAL PROPERTIES OF THE WELD METAL, AND (III) THE RESISTANCE OF THE WHOLE TO CORROSION CRACKING WAS STUDIED. THERE WAS A SHARP FALL IN RESIDUAL STRESSES ON SUBJECTING TO 1-2PERCENT DEFORMATION; THE ELECTROCHEMICAL HETEROGENEITY OF THE METAL ALSO DIMINISHED, AND THE RESISTANCE OF THE WELDS TO CORROSION CRACKING IN BOILING ALKALI AND NITRATE SOLUTIONS INCREASED SUBSTANTIALLY.

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Coatings

USSR

UDC 620.194.4

ZYBRIA, A. I., RUBINSHEVYI, G. M., and VASILENKO, I. I., Institute of Physico Mechanics, Academy of Sciences Ukrainian SSR, L'vov; Bogoslovskiy Aluminum Plant

"Metallized Coatings to Protect Welds from Corrosion Cracking"

L'vov, Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-June 70, pp 22-24

Abstract: Welded samples of St. 3 steel measuring 300 x 500 x 7 mm and 250 x 500 x 4 mm with a seam length of 500 mm and with a residual welding stress of the seams approaching the yield point of the base metal were subjected to corrosion cracking with the application of an external load. A portion of the plates were cut transverse to the weld seam to produce samples measuring 300 x 30 x 7 and 250 x 20 x 4 mm which were subjected to a bend load to the yield point (one before coating, the other after coating). Both types of samples were sandblasted to clean and roughen their surfaces. The surfaces of the samples were electroplated with nickel, copper, zinc, iron, St. 3 steel, or 1Kh18N9T steel using alternating current at 25 v. Coating thickness ranged from 0.1 to 1.2 mm to permit determination of the optimum thickness which would provide the best coating-base metal bonding and the most reliable protection of the surface from corrosive media, and which would allow the metal sample to be strained without rupture of the coating.

The best results were produced with a coating of 1Kh18N9T stainless steel. Out of 10 samples coated with this steel, not one ruptured. This was true whether

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USSR

ZYUBRIK, A. I., et al., Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-June 70, pp 22-24

the corrosive medium was a nitrate (NH_4NO_3 -50% solution) or alkali (NaOH-40% solution), where the corrosion rate was 0.3 and 0.9 kg/m^2 -hr respectively. Optimum coating thickness was 0.4 mm, where the time to cracking was close to 100 hours in the nitrate solution.

The authors state that additional protection against corrosion cracking may be achieved by using resins and lacquers.

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USSR

UDC 620.194:621.785.7

KHITARISHVILI, M. G., DIKIY, I. I., ZYUBRIK, A. I., VASILENKO, I. I.

Physicomechanical Institute, Academy of Sciences, Ukrainian SSR, L'vov

"An Investigation of Corrosive Cracking of High-Strength Steels in Some Media"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 4, 1971, pp 19-23

Abstract: The present article is a continuation of research dealing with the cracking of high-strength hardened USA carbon steel in acid and neutral media. The development of a crack in a sample undergoing testing for corrosive cracking brings about a gradual decrease of cross section. Therefore, if equally loaded samples are preliminarily held in the medium for different lengths of time, and are then tested for short-time strength in air, this short-time strength must continually decrease with increase of the time the sample is held in the medium. The indicated nature of the change between the short-term strength of the samples and the kinetics of crack development has a specific relationship; various sectors of the curves correspond to various stages of corrosive crack development. These stages of crack development are explained from the point of view of the electrochemical theory of corrosive cracking. 5 figures. 2 tables. 8 references.

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1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--FORMATION OF CARBON BLACK DURING THE THERMAL DECOMPOSITION OF
HYDROCARBONS -U-
AUTHOR--(03)-TSYGANKOVA, E.I., ZYUEV, V.P., YEVREINGVA, M.D.
COUNTRY OF INFO--USSR
SOURCE--GAZOV. PROM. 1970, 15(2), 40-3
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CARBON BLACK, THERMAL DECOMPOSITION, PYROLYSIS, ANTHRACENE,
NAPHTHALENE, XYLENE, BENZENE, TOLUENE, PENTANE, CYCLOHEXANE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/0055 STEP NO--UR/0492/70/015/002/0040/0043
CIRC ACCESSION NO--AP0125890
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125890

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PYROLYSIS OF SMALLER THAN 5PERCENT HYDROCARBON IN N WAS STUDIED AT A FEED RATE OF 500 ML-MIN IN 10, 20, AND 30 MM DIAM. TUBES OVER A 360-MM ZONE HEATED TO 1100DEGREES. THE HYDROCARBONS STUDIED WERE ANTHRACENE, NAPHTHALENE, TETRALIN, DECALIN, XYLENE, PHME, C SUB6 H SUB6, PENTANE, CYCLOHEXANE, AND SOME OF THEIR MIXTS. REDUCING THE TUBE DIAM. LOWERED THE YIELD OF C AND INCREASED ITS SPECIFIC SURFACE. YIELDS FROM ALL COMPOS. WERE SIMILAR AND REACHED A MAX. OF 0.5-0.6 G-G HYDROCARBON AT 3PERCENT CONC., EXCEPT NAPHTHALENE (0.65 G-G AT 1PERCENT), AND ANTHRACENE (0.9 AT 2.5PERCENT AND STILL INCREASING). SPECIFIC SURFACE FOR ALL COMPOS. BECAME CONST. AT 20 M PRIMEZ-G AT SIMILAR TO 2PERCENT CONC. BINARY MIXTS. BEHAVED LIKE THE SUM OF THE INDIVIDUAL COMPOS. COMPOS. PRESENT IN LOW CONC. HAD NO EFFECT.

UNCLASSIFIED

USSR

UDC 621.383.4.004.14

ZYUGANOV, A.N., SVECHNIKOV, S.V., SMCVZH, A.K.

"On The Problem Of The Application Of Photopotentiometers As Function Generators"

Radiotekhnika i elektronika, Vol XVII, No 5, May 72, pp 1067-1072

Abstract: A computation of the profile of the resistor of a function photopotentiometer is presented, based on the solution of a two-dimension Laplace equation with the condition of the existence of a leakage current lengthwise of the entire device. A criterion is obtained for the applicability of a one-dimensional approximation during computation of a function photopotentiometer. The conditions imposed on the transfer function are determined. The theoretical positions of the paper are confirmed by experimental studies conducted with models of function photopotentiometers made of electrical conducting paper. A cosine function was chosen as a control transfer function. Measurements were made with the aid of the EEDA-60 integrator of the Institute Of Mathematics, Academy Of Sciences, Ukrainian SSR. A comparison is shown of the dependence of the error of a function generator on the magnitude of the scaling constant for one-dimensional and two-dimensional approximations. The potential distribution at the resistor--photolayer boundary is shown for a function photopotentiometer operating in a regime of leakage currents. The elimination of the errors of a function generator connected with the presence of leakage currents across the photolayer is the principal result of the paper. This offers the prospect of

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ZYUGANOV, A.N., et al, Radiotekhnika i elektronika, Vol XVII, No 5, May 72, pp 1067-1072

using semiconductor materials as the photoconducting layers of function photopotentiometers which have smaller magnitudes of the ratio of light and dark conductivity as compared with CdS and CdSe, and are also characterised by a smaller inertia of the photoconductivity, which makes it possible to expand substantially the frequency range of function generators based on photopotentiometers. 3 fig. 5 ref. Received by editors, 8 April 1971.

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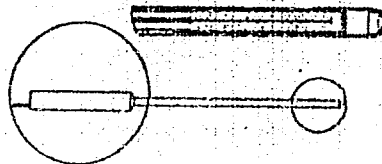
UDC: 615.473.9:615.832.9

SHAL'NIKOV, A. I., ~~ZYUKIN, N. A.~~, GDOVSKIY, V. A., LUR'YE, Yu. Yu., MASLOV, F. M., FREYDOVICH, A. I., Institute of Physical Problems imeni S. I. Vavilov

"A Device for Directional Freezing of Tissues"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzysy, Tovarnyye Znaki, No 12, Apr 72, Author's Certificate No 333951, Division A, filed 11 Nov 70, published 30 Mar 72, p 19

Translation: This Author's Certificate introduces a device for directional freezing of tissues which contains a vacuum-insulated vessel holding two parallel tubes for delivery and removal of a cooling agent. The device also contains a heat-insulation liner, a charcoal getter and a tip. As a distinguishing feature of the patent, in order to freeze tissues arranged eccentrically relative to the longitudinal axis of the device, a wire helix with high heat conductivity is placed in fixed contact with the tip.



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RYUKO, A. G.

Signal Theory

SOJPRS 58116
31 JAN 73

NEW BOOKS ON COMMUNICATIONS REVIEWED

[Book review; Moscow, Vestnik Svyazi, Russian, No 8, August 1972, inside back cover]

Following are brief reviews of books recently published by Izdatel'stvo Svyazi, which are of interest to readers of the magazine Vestnik Svyazi.

Ryuko, A. G., Korobov, Yu. P., Teoriya Peredachi Signalov (Signal Transmission Theory), 1972, 220 pages. Price 77 kopeks.

This book represents a textbook written in accordance with the program of a course by the same name given in communications higher educational establishments.

The book examines the theory of signal transmission as a unified scientific discipline whose basis consists of the signal theory, resistance to interference, and information theory.

General features involved in the transmission of data via communication channels are described, potential possibilities of signal transmission and reception methods are presented, comparisons are made between various communications systems, and new directions in the technical realization of modern systems are discussed.

Principal attention in the book is focused on a description of methods and concepts necessary for the molding of principal ideas inherent in signal theory. The authors strive to free their description from an abundance of mathematical facts for the purpose of making clear the physical interpretation of the obtained results. For the same reason the basic theoretical positions are illustrated with concrete examples from various fields of communications technology.

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UDC: 621.391.519.2

USSR

ZYUKO, A. G. (editor)

"Methods of Interference-Free FM and PM Reception. Collection of Articles on Materials of the Second All-Union Symposium on Problems of Interference Resistance in Communications Systems With Frequency and Phase Modulation"

Metody pomokhoustoychivogo priyema CHM i FM. Sb. statoy po materialam II Vses. simpoziuma po vopr. pomokhoustoychivosti sistem svyazi s chislotoy i fazovoy modulyatsiyey (cf. English above), Moscow, "Sov. radio", 1970, 239 pp, ill. 62 k. (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A41 K)

Translation: In connection with the rapid and quite extensive introduction of interference-free FM and PM reception in space and tropospheric studies and other types of radio lines, chiefly in tracking reception systems, there has been somewhat of a lag between theory and practice in tracking reception, frequently leading to non-optimum systems design. Like some other books which have come out in recent years, this collection aims at helping to narrow this gap. The book contains works of leading specialists in this area dealing with the general theory of interference resistance and FM tracking reception, with some methods of theoretically investigating tracking reception systems, with a new physical threshold model, and also the results of theoretical and experimental studies of various specific systems of interference-free FM recep-

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USSR

ZYUKO, A. G. (editor), Metody pomekhoustoychivogo priyema ChM i FM, Moscow, 1970

tion (a tracking filter, a system with frequency feedback, a synchronous phase demodulator, a frequency demodulator with band separation, etc.). Ninety-four illustrations, five tables, bibliography of 127 titles. Resumé.

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UDC: 621.391:519.2

USSR

ZYUKO, A. G.

"On Setting up a Course in the Theory of Signal Transmission"

Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR (Works of Educational Institutes of Communications. Ministry of Communications of the USSR), 1970, vyp. 50, pp 85-89 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A66)

Translation: A course in the theory of signal transmission is outlined as a united scientific discipline, including signal theory, the theory of resistance to interference and information theory. A system is proposed for dividing the course into sections. Its relationship to other disciplines is considered. The formulation of laboratory classes is discussed. N. S.

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USSR

UDC: 621.891:519.2

ZYUKO, A. G.

"Optimum Processing of Continuous Signals"

V sb. Metody pomekhoustoychivogo priyema ChM i FM (Methods of Interference-Free FM and PM Reception--collection of works), Moscow, "Sov radio", 1970, pp 5-11 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A81)

Translation: It is shown on the basis of the theory of potential resistance to interference that optimum reception of continuous messages may be realized either by using a receiver which contains a linear optimum filter and demodulator, or by using a receiver which realizes correlation processing of received signals. In the second case, optimum reception is realized by a filter with variable parameters, or a follow-up correlator. Existing circuits for reducing the threshold of interference stability in the case of frequency modulation are modifications of circuits for optimum reception of continuous signals. Resumé.

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U.S.R.

UDC 543.28+576.80

MAKSIMENKO, O. A., ZYUKOVA, L. A., and FEDOROVICH, R. N., All Union Scientific Research Institute of Protein Biosynthesis

"Determination of Total Soluble Organic Acids in the Culture Fluid During Deep Cultivation of Some Micro-organisms"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 6, No 4, Jul/Aug 70, pp 462-466

Abstract: A modification of the Van Slyke-Palmer method was used to determine potentiometrically the concentration of carboxylic acids in the culture fluid during deep cultivation of certain micro-organisms. The phosphates with calcium hydroxide and the calcium salts titrated with dilute hydrochloric acid. The end point of titration was established for valeric acid and then tested on propionic, caprylic, and adipic acids. The mean relative error for these acids ranged from 2 to 8%. Candida yeasts were used in the experiments. The procedure makes it possible to determine total carboxylic acids more accurately than by direct potentiometric titration of fatty acids. It is particularly useful when the concentrations of carboxylic acids are so low that the calcium salts do not precipitate.

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UDC: 533.951

USSR

ZYUNDER, D. and RUKHADZE, A. A.

"Theory of Parametric Electrostatic Wave Excitation in a Fully Ionized Plasma"
Gor'kiy, Izvestiya VUZ--Radiofizika, Vol 14, No 1, 1971, pp 36-43

Abstract: This paper considers the stability of a relatively dense and fully ionized plasma in an external weak uhf field. The assumption is made that the oscillation wavelength is much smaller than the dimensions of the system and the nonuniformity in the uhf field, but is greater than the length of the mean free path of the particles. The case of parametric interaction of the uhf field with the plasma when the frequency of the field is close to the electron Langmuir frequency is examined, since it is in this case that a variation in the plasma oscillations can occur even at relatively low uhf field intensities. The basic problem of the article is to determine the threshold values of the uhf field intensity corresponding to the excitation of the various modes of electrostatic oscillation in the plasma, and find the increments of instability near the thresholds. The authors show that aperiodic as well as periodic instabilities can occur in hydrodynamic as well as in kinetic oscillation regions.

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172 031 UNCLASSIFIED PROCESSING DATE--090070
TITLE--PARAMETRIC EXCITATION OF POTENTIAL WAVES IN A COMPLETELY IONIZED
PLASMA NEAR ELECTRON CYCLOTRON RESONANCE -U-
AUTHOR-(02)-GRADOV, O.M., ZYUNDER, D.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 3, PP 979-988
DATE PUBLISHED--70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--CYCLOTRON RESONANCE, PLASMA OSCILLATION, PLASMA STABILITY,
KINETIC THEORY, ULTRAHIGH FREQUENCY, ELECTRIC FIELD, CONSTANT MAGNETIC
FIELD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1977/0004 STEP NO--UR/0056/70/058/003/0979/0928
SERIAL ACCESSION NO--AP0043604
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0043604

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PARAMETRIC EXCITATION OF POTENTIAL OSCILLATIONS IN A COMPLETELY IONIZED PLASMA LOCATED IN A WEAK U.H.F. ELECTRIC AND STATIONARY MAGNETIC FIELDS IS CONSIDERED WITHIN THE FRAMEWORK OF THE KINETIC THEORY. A DISPERSION EQUATION IS DERIVED FOR DETERMINING THE POTENTIAL OSCILLATION SPECTRUM ON BASIS OF THE KINETIC EQUATION CONTAINING A LANDAU COLLISION INTEGRAL. PARAMETRIC EXCITATION OF WAVES PROPAGATING ALMOST ALONG THE MAGNETIC FIELD IS INVESTIGATED FOR THE CASE WHEN THE EXTERNAL U.H.F. FIELD FREQUENCY Ω SUBO IS CLOSE TO THE ELECTRON CYCLOTRON FREQUENCY Ω SUBE. THRESHOLD VALUES OF THE U.H.F. FIELD STRENGTH ARE FOUND ABOVE WHICH THE PLASMA IS UNSTABLE WITH RESPECT TO POTENTIAL OSCILLATION BUILD UP. IT IS SHOWN THAT DEPENDING ON THE PLASMA PARAMETERS, A STATIONARY MAGNETIC FIELD MAY EXERT A STABILIZING AS WELL AS AN UNSTABILIZING EFFECT ON THE INSTABILITIES. A QUALITATIVE COMPARISON WITH AVAILABLE EXPERIMENTAL DATA IS MADE AND AGREEMENT WITH THE THEORETICAL PREDICTIONS IS FOUND.

UNCLASSIFIED

USSR

UDC: 681.325.65:621.383

KRUPITSKIY, E. I., KARPOV, L. P., ZYUZIN, O. M., Leningrad Electrical Engineering Institute of Communications imeni M. A. Bonch-Bruyevich

"An Electron-Optical Learning System"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 278229, class 42, filed 31 Jan 69, published 5 Aug 70, p 135

Translation: This Author's Certificate introduces an electron-optical learning system for recognition of acoustic and radar signals. Two-dimensional moments of the "instantaneous amplitude spectrum" are taken as the input signal characteristics. The device contains an "instantaneous spectrum" shaper, a specialized electronic computer, and a control module. As a distinguishing feature of the patent, the system is simplified and operating effectiveness is improved by connecting to the output of the "instantaneous spectrum" shaper a device which generates light flux modulated by the "instantaneous spectrum" of the signal to be recognized. This light generator is coupled to a multiple-channel optical correlator with electrical outputs proportional to the two-dimensional moments of the instantaneous amplitude spectrum. These electrical outputs are connected to the electronic computer.

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USSR

UDC: 621.391.19

KRUPITSKIY, E. I., KARPOV, L. P., ZYUZIN, O. M., BLOK, A. S.

"Device for Formation of Characteristics During Recognition of Patterns"

USSR Author's Certificate Number 307411, filed 6/04/70, published 29/07/71, (translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 3, 1972, Abstract No 3 A379 P)

Translation: For formation of characteristics during recognition of patterns a device is suggested containing a source of coherent light, a collimator, a transparency with the pattern to be recognized, and a Fourier transform lens along the optical axis of the device. In order to increase the speed and reliability of recognition, an optical system to multiply the light flux—such as a matrix of a small-diameter lens and a converting lens—is placed between the collimator and transparency, while a matrix of masks and photoreceptors, based on the number of light fluxes multiplied, is placed in the output plane of the device. 1 figure.

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USSR

UDC: 621.375.8

KRUPITSKIY, E. I., KARPOV, L. P., ZYUZIN, O. M., BLOK, A. S., Leningrad
Electrical Engineering Institute of Communications imeni Professor M. A.
Bonch-Bruyevich

"A Multichannel Optical Correlator"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 7, Mar 72, Author's Certificate No 329612, Division H, filed 29 May 70,
published 9 Feb 72, p 212

Translation: This Author's Certificate introduces: 1. A multichannel optical correlator with two-dimensional channels. The device contains a coherent light source, a collimator, a transparency carrying an image of the pattern to be recognized, a Fourier-transform lens, and a photocell matrix. As a distinguishing feature of the patent, in order to improve the accuracy of registration of correlation functions, a reflecting diffraction grating is placed in the rear focal plane of the lens, which performs Fourier transformation of the light flux passing through the transparency carrying a recording of the image to be processed, and a reference-mask matrix is placed together with the photocell matrix in the forward focal

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KRUPITSKIY, E. I. et al., USSR Author's Certificate No 329612

plane of the lens. 2. A modification of this correlator distinguished by the fact that stray light beyond the photocell inputs is reduced by making the diffraction grating with an opening for filtering out the fixed component of the image being processed.

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UNCLASSIFIED
TITLE--AXISYMMETRIC LOADING OF A SPACE WITH A SPHERICAL CUT --U-
AUTHOR--(02)--ZYUZIN, V.A., MASSAKOVSKIY, V.I.
COUNTRY OF INFO--USSR
SOURCE--PRIKLADNAIA MATEMATIKA I MEKHANIKA, VO. 34, JAN.--FEB. 1970, P.
179-183
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELASTICITY THEORY, STRESS LOAD, CALCULATION, INTEGRAL
EQUATION, MATHEMATIC TRANSFORMATION, SPHERIC GEOMETRY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/1445
STEP NO--UR/0040/70/034/000/0179/0183
CIRC ACCESSION NO--AP0106201
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0106201

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

ABSTRACT. SOLUTION OF THE FIRST MAIN PROBLEM OF THE THEORY OF ELASTICITY FOR A SPACE WITH A SPHERICAL CUT, USING AS THE INITIAL DEPENDANCES CERTAIN INTEGRAL RELATIONS OBTAINED WITH THE AID OF A TRANSFORMATION DEVELOPED BY POLOZHII AND ALEKSANDROV (1961, 1962, 1965). A SPECIFIC EXAMPLE IS GIVEN, INVOLVING A SPHERICAL CUT UNDER THE ACTION OF SYMMETRICAL AND ANTISYMMETRICAL UNIFORM LOADS APPLIED AT THE EDGES. CLOSED FORM EQUATIONS ARE DERIVED FOR DETERMINING THE NORMAL AND TANGENTIAL STRESSES.

UNCLASSIFIED

USSR

UDC 669.716:621.746.55.047:621.771.23

BORISOV, V. G., MARAYEV, S. Ye., and ZYUZ'KO, I. I.

"Some Problems of the Theory and Practice of Ingot-Free Rolling of Aluminum Bands"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970, pp 165-171, resume

Translation: Thermophysical constants of the melt and the solidified metal in the range of the crystallization temperature are investigated as constants not depending on temperature. The production process of the band by the method of ingot-free rolling is analyzed. As a result of processing data of all ingot-free rolling parameters, the liquid metal temperature dependence of the process rate was established. Two figures, four bibliographic references.

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