USSR

UDC 669.71.004.2

ZAGORSKAYA, M. K., VULIKH, A. I., and KSENZENKO, V. I.

"Removal of Hydrogen Fluoride from Gases by the Use of Anion Exchangers"

Sb. nauchno. tr. NII tsvetn. met. (Collection of Scientific Works of the Scientific Research Institute of Nonferrous Metallurgy), 1970, No 31, pp 133-142 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 G229 by authors)

Translation: An investigation was made of the sorption of HF from mixtures with air by anion exchangers AV-17, AV-17P, EDE-10P, AN-2F, AN-21, and AN-1. Sorption takes place mainly through the complexing of HF with amino groups of the anion exchangers. The dynamic capacity of the anion exchangers in removing from ~ 1 to $5 \cdot 10^{-4}$ mg/1 HF from gases ranges from 10 to 20 mmol. HF/g of matrix. In HF desorption by water from strongly basic and intermediate-base anion exchangers, solutions of $\sim 10\%$ HF are obtained. The method is recommended for use in purifying waste gases containing HF. Six illustrations. Two tables. Bibliography with 16 titles.

1/1

1/2   C20   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--DISTRIBUTION OF ALKALI METAL IMPURITIES DURING CRYSTALLIZATION FROM
  SOLUTIONS OF CESIUM AND RUBIDIUM PERCHLORATES -U-
AUTHOR-(02)-SHKLOVSKAYA, R.M., VULIKH, A.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 872-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CRYSTALLIZATION, SOLID SOLUTION, POTASSIUM PERCHLORATE, SODIUM
  COMPOUND, RUBIDIUM COMPOUND, CESIUM COMPOUND, PERCHLORATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0947   STEP NO--UR/0080/70/043/004/0872/0874

CIRC ACCESSION NO--AP0131532
                    UNCLASSIFIED

2/2   020   UNCLASSIFIED   PROCESSING DATE--11DEC70
CIRC ACCESSION NO--AP0131532
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTIONS OF K, NA, OR RB
    PERCHLORATE ADMIXED WITH CSCLO SUB4 AND OF K, NA, OF CS PERCHLORATE
    ADMIXED WITH RBCLO SUB4, BETWEEN THE SOLID AND THE MOTHER LIQUOR
    OBTAINED ON COOLING AQ. SOLNS. OF CSSLO SUB4 OR RBCLO SUB4 SATD. AT 99
    PLUS OR MINUS 1DEGREE (WITH DEFINITE AMTS. OF THE ADMIXT. ADDED) SLOWLY
    TO 23.0 PLUS OR MINUS 0.2DEGREES, WERE FOLLOWED BY FLAME PHOTOMETRY.
    ACCORDING TO DISTRIBUTION COEFF. INITIAL CONCN. OF ADMIXT. PLOTS, THE
    COPPTN. OF NACLO SUB4 IS OF THE ADSORPTION TYPE IN BOTH THE CASES.   THE
    COCRYSTN. OF K OR RB PERHCLORATE WITH CSCLO SUB4 AND THAT OF K OR CS
    PERCHLORATE WITH RBCLO SUB4 LEADS TO SOLID SOLNS., AND THE PLOTS
    INDICATE ISOMORPHISM OF KCLO SUB4, RBCLO SUB4, AND CSCLO SUB4.   THE
    CRYSTN. PROCEDURES ARE PROPOSED AS WAYS OF FREEING RB SIMULTANEOUSLY
    FROM K AND CS OF FREEING CS FROM K.

UNCLASSIFIED

USSR

NIKOLAYEV, A. V., BOGATYREV, V. L., ZHURKO, F. V., VULIKH, A. P.,
SOKOLOVA, S. I., LYUBMAN, N. YA., Institute of Inorganic Chemistry,
Siberian Department, Academy of Sciences of the USSR

"Ion Exchange Equilibrium Between Ionite Grains"

Abstract: Known formulas to determine the equilibrium state in
the case of inter-grain affinity can be applied only if the inter-
bond exchange by counterions takes place by the predominantly
simple mechanism involved in direct contact between grain surfaces.
If other factors besides contact play any considerable role (such
as ionite hydrolysis), these must be considered as well, and be
brought into the formula for equilibrium state. The authors de-
rive empirically several formulas for ion exchange between ionite
grains.

1/1

- 2 -

USSR

VULIS, L. A.

UDC 536.46:533.6

"Turbulent Combustion of Gases (Outline of the Current State of the Theory)"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 265-275 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B946)

Translation: A survey. The current state, basic trend, and probable developments in the theory of the turbulent combustion of gases is discussed. The close relationship is shown between these problems and the general theory of turbulent motion with a shift. Particular attention is given to an experimental study of the pulsation structure of a jet and modern methods of numerical calculation. Particular attention is also given to the aerodynamic theory of a turbulent gas jet. New studies in the field of semiempirical theories of turbulence and certain results of a model numerical experiment are also presented. 45 ref. Author's abstract.

1/1

USSR

VULIS, M.L., ZAGORSKIY, A.YE., FURMAN, V.B., CHELNOKOV, R.S., GUSOVSKIY, V.V.
[Vses. n.-i. i proyektno-tekhnol. in-t kran i tyag elektrooborud. -- All-Union
Scientific-Research Design And Planning Technological Institute Of Crane And
Haulage Electrical Equipment]

UDC 621.314.58 (088.8)

"Static Frequency Converter With Direct Coupling"

USSR Author's Certificate No 256054, filed 23 Sept 68, published 8 Apr 70 (from
RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B458P)

Translation: The invention pertains to a frequency converter with direct coupling,
accomplished by a bridge circuit using thyristors. With the object of eliminating
the third and multiples of three harmonics in the output voltage of the converter,
it is proposed to provide the converter with a choke coil with a ferromagnetic
core, three identical windings of which are connected series--cumulatively [-soglasno]
at each of the output phases of the converter. 1 ill. I.R.

1/1

USSR

VUL'MAN, I. D., DOROGOV, A. Ye.

UDC: 681.326.7

"A Method of Detecting and Preventing Incipient Failures in Electronic Systems Based on Measuring and Analyzing Output Signals at Several Points in the Monitored System"

Moscow, Otkrytiya Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, Mar 73, Author's Certificate No 367428, Division G, filed 12 Sep 67, published 23 Jan 73, p 129

Translation: This Author's Certificate introduces a method of detecting and preventing incipient failures in electronic systems based on measuring and analyzing output signals at several points in the monitored system. As a distinguishing feature of the patent, the effectiveness of prediction is improved by isolating subsystems in the monitored system where the output signal is independent of the amplitude of the input signal within predetermined limits. The output signals of these subsystems are mixed and resolved into frequency components, and the voltages of the different frequencies are then compared with standards. The subsystem of the monitored system for which the resultant signals are greater than the permissible

1/2

USSR

VUL'MAN, I. D., DOROGOV, A. Ye., USSR Author's Certificate No 367428

level is isolated, and the voltages at the output of each element of this isolated subsystem are compared,for a fixed input signal,with the voltages resulting at the output of this element as standard elements are succes- sively connected to it. From the resultant difference waveforms, signals are shaped which correspond to the monitored parameters of the subsystem element. These signals are compared with the nominal values, and the element of the subsystem is isolated for which the difference signals are greater than the permissible limit.

2/2

- 11 -

USSR

VUL'PE, I. M.

UDC 519.3 : 62-50

"On a Problem in Controlling the Finite State of a Linear System With Random Parameters"

Kishinev, Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 3, 1971, pp 3-7

Abstract: Let an object be given whose current state is described by the finite-dimensional vector $x = \{x_1, x_2, \ldots, x_n\}$; and control action, by the n-dimensional vector u. It is assumed that the motion of $\{x_i\}$ (t) is defined by a linear system of stochastic differential equations:

$$\frac{dx}{dt} = A(t, \omega)x + B(t, \omega)u + w(t, \omega),$$

1/3

USSR

VUL'PE, I. M., Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 3, 1971, pp 3-7

The problem is to find a stochastic control $u(t, \omega)$ which converts the object from the random state $x|t=t_\alpha = x^\alpha(\omega)$ to a finite state in such a way that

$$p(u) = \int_{t_\alpha}^{t_\beta} (M[u(t, \omega)])^2 \, dt$$

and the functional

2/3

- 78 -

USSR

VUL'PE, I. M., Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 3, 1971, pp 3-7

$$M[x_i(t_\beta)] = M_{i\beta},$$
$$D[x_i(t_\beta)] = 0 \qquad (i = 1, 2, \ldots, n)$$

assumes the minimum value. For simplicity of calculations it is assumed that $B(t, \omega) = b(t, \omega)$ is an n-dimensional stochastic vector, $u(t, \omega)$ is a scalar stochastic control function, and (4) takes place only if $i = k$. An example is given of the control of a d.c. motor.

3/3

USSR

VVEDENSKAYA, N. D., ORLOVA, M. G.

UDC: 532.526

"Concerning a Property of Flow in a Three-Dimensional Laminar Boundary Layer"

Translation: A qualitative description is given of the results of numeri-cal analysis of singularities in the behavior of the solution of a three--dimensional system of Prandtl equations on the leeward side of a body (blunt and sharp circular cones in a supersonic flow at small angles of attack α). The results show that when $\alpha < \alpha_{cr}$ there is a smooth solution of the problem in the region $x \geqslant 0$, $0 \leqslant z \leqslant L$, $|\theta| \leqslant \pi$. When $\alpha > \alpha_{cr}$ a smooth solution exists only when $x < x_{cr}$, but when $x > x_{cr}$ a singularity arises at $\theta = \pi$. Here x is the coordinate along the generatrix of the body reckoned from its vertex, z is the coordinate normal to the washed surface, θ is the angular coordinate from the plane of symmetry on the windward side. V. A. Bashkin.

1/1

- 7 -

USSR

BERKINBLIT, M. B., VVEDENSKAYA, N. D., DUDZYAVICHUS, I., KOVALEV, S. A., FOMIN, S. V., KHOLOPOV, A. V., and CHAYLAKHYAN, L. M. Institute of Problems of Information Transmission, Academy of Sciences USSR, Moscow and Moscow State University imeni M. V. Lomonosov

"Study of Propagation of Excitation in Purkinje Fibers of the Heart Studied in a Mathematical Model"

Abstract: Propagation of the action potential in a uniform Purkinje fiber was modeled on a computer using Noble and McAlister models. The velocity of impulse propagation in the Noble model is shown to be five times lower, and in the McAlister model two times lower, than that measured experimentally. This discrepancy can be explained by the underestimated value of the rate of growth of the forward front of the action potential in the models used, since the calculations showed that the velocity of the impulse propagation to a first approximation linearly depends upon the growth of velocity of the forward front. The action potential in the region of fiber expansion was modeled on the Noble Model. It passes through larger expansions than the impulse in the Hodgkin-Huxley model, apparently because of the more extended time of the heart impulse. It is also shown that geometric nonuniformity can provide a

1/2

USSR

BERKINBLIT, M. B., et al., Biofizika, Vol 15, No 3, May/Jun 70, pp 521-527

temporary delay in impulse propagation, which comprises a considerable part of
atrioventricular delay. It is suggested that the experimentally observed "hollow"
and "hump" on the background of the plateau of cardiac action potentials are caused
by the electrotonic "reflection" of the potential from geometric nonhomogeneities,
since the potentials of such a shape are reproduced in model calculations.

2/2

1/2   020

TITLE--SUBSTITUTION IN BARBITURIC ACIDS. I. CONDENSATION OF BARBITURIC ACID WITH OXO COMPOUNDS -U-

UNCLASSIFIED   PROCESSING DATE--30OCT70

AUTHOR--VVEDENSKIY, V.M.

CCUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1969, (6), 1092-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BARBITURATE, CONDENSATION REACTION, ALIPHATIC ALDEHYDE, AROMATIC ALDEHYDE, KETONE, POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1349

STEP NO--UR/0409/69/000/006/1092/1095

CIRC ACCESSION NO--AP0054227

UNCLASSIFIED

CIRC ACCESSICN NO--AP0054227   UNCLASSIFIED   PROCESSING DATE—30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE CONDENSATION OF BARBITURIC ACID (I) WITH OXO COMPDS. REVEALED THAT ALIPHATIC ALDEHYDES, WITH THE EXCEPTION OF HCHO, REACT WITH THE ACTIVE 5,CH SUB2 GROUP OF I TO YIELD THE CORRESPONDING 5,ALKYLIDENE DERIVS. OF I (II, R PRIME1 EQUALS H). A SIMILAR REACTICN PROCEEDS WITH CINNAMALDEHYDE AND FURALDEHYDES AND WITH MOST AROMATIC ALDEHYDES EXCEPT M,HYDROXYBENZALDEHYDE (III), RHO,HYDROXYBENZALDEHYDE (IV) AND 2,HYDROXY,5,AMINOBENZALDEHYDE (V). BETA,HYDROXYNAPHTHALDEHYDE YIELDS VI. SOME AROMATIC ALDEHYDES (III IV, V) AND KETONE, UNDERGO WITH I A 1:2 REACTION TO GIVE VII. A SIMILAR REACTION WITH HCHO YIELDED POLYMERS. METHYL STYRYL KETONE YIELD ANOMALOUSLY THE TYPE III CONDENSATION PRODUCT. THUS, 0.1 MOLE I IN 100 ML H SUB2 O WAS MIXED WITH 0.1 MOLE ALDEHYDE IN 65 ML ETOH AND THE MIXT. REFLUXED 5 MIN. TO 2 HR, OR 0.025 MOLE I AND 0.025-0.05 KETONE IN 50 ML 50PERCNET ETOH WAS BOILED 5 HR. THUS WERE PREPD. (COMPD. TYPE, R, R PRIMEl, M.P., AND PERCENT YIELD GIVEN): SHOWN ON MICROFICHE.

UNCLASSIFIED

1/2   009
TITLE--REACTIONS OF TRITHIOBARBITURIC ACID -U-   UNCLASSIFIED   PROCESSING DATE--16OCT70

AUTHOR-(02)-TURKEVICH, N.M., VVEDENSKIY, V.M.

COUNTRY OF INFO--USSR

SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER. B 1970, 32(1), 60-2

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BARBITURATE, ORGANIC SULFUR COMPOUND, CHEMICAL SYNTHESIS,
MOLECULAR STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1565

STEP NO--UR/0444/70/032/001/0060/0062

CIRC ACCESSION NO--AT0107985

UNCLASSIFIED

2/2   009

CIRC ACCESSION NO--AT0107985   UNCLASSIFIED   PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EFFECT OF S ATOMS SUBSTITUTED FOR O IN BARBITURIC ACID ON REACTIVITY WAS STUDIED. TRITHIOBARBITURIC ACID (I) WAS PREPD. (86PERCENT) BY MIXING 0.05 MOLE BARBITURIC ACID WITH 40 G P SUB2 S SUB5, THEN WITH 400 ML DIOXANE, AND REFLUXING THE MIXT. 4 HR; I PPTD. ON COOLING OVERNIGHT. DERIVS. OF I PREPD. (8) INCLUDED THIOSEMICARBAZONES AND THIRZOLIDINYLHYDRAZONES. CONDENSATION OF I WITH 2,HYDROXY,1, NAPHTHALDEHYDE WAS ACCOMPAINED BY A SIMULTANEOUS DEHYDRATION TO YIELD II. THE ACTIVITY OF RESP. POSITIONS OF I WERE HIGHER THAN THOSE IN BARBITURIC ACID.   FACILITY: L'VIV. MED. INST., LVOV, USSR.

UNCLASSIFIED

1/2   021

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--INTRAMOLECULAR SUBSTITUTION OF BARBITURIC ACIDS. IV. REACTIONS WITH HYDRAZINES AND HYDRAZIDES OF CARBOXYLIC ACIDS -U-

AUTHOR-(02)-VVEDENSKIY, V.M., ZHVALEYSKAYA, A.I.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (1), 95-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--UV SPECTRUM, MOLECULAR INTERACTION, BARBITURATE, CARBOXYLIC ACID, HYDRAZINE COMPOUND, KETONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1379

STEP NO--UR/0409/70/000/001/0095/0096

CIRC ACCESSION NO--AP0054251

UNCLASSIFIED

CIRC ACCESSION NO--AP0054251 UNCLASSIFIED PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. OF 0.01 MOLES BARBITURIC ACID, 0.02 MOLES H_2 ANH SUB_2 .H USB_2 O, AND 25 ML H_2 O HEATED ON A WATER BATH 2 HRS GAVE 79.4PERCENT I, M 230DEGREES (DIL. ETOH). SIMILARLY, THE FOLLOWING II WERE PREPD. (R PRIME1, R PRIME2, M.P., AND PERCENT YIELD GIVEN): PH, H, 250DEGREES, 45.9; PH, PH, 257DEGREES, 44.2; 2.4, (NO SUB_2) SUB_2 C SUB_6 H SUB_3, H, 205DEGREES, 43.3; BZ, H, 248DEGREES, 44.7, H-O SUB_2 NC SUB_6 H SUB_4 CO, H, 260DEGREES, 18.5; GAMMA NC SUB_5 H SUB_4 CO, H, 250DEGREES, 21.2. ALSO PREPD. WAS 74PERCENT III (N EQUAL 0), M. 250DEGREES, AND 12.7PERCENT III (N EQUAL 4), M. 274DEGREES. UV MAX. IN ETOH ARE GIVEN.

UNCLASSIFIED

USSR

VVEDENSKIY, V. N., CHERNYAYEV, Ye. N., KRYLOV, I. S., and ROMANOV, S. I.

UDC: 538.574.4

"Transformation of the Stokes Parameters in Electromagnetic Wave Backscattering"

Abstract: The purpose of this paper is to establish a connection between the elements of the interaction matrix and the parameters of the scattered field that can be measured in practice with relative ease, where the interaction matrix is the expression of the interaction of the radiation with a reflecting object and can be defined by $\vec{S}_2 = M\vec{S}_1$, where $\vec{S}_2$ and $\vec{S}_1$ are the vector parameters of the reflected and incident waves respectively and M is the matrix. The analysis is conducted under the following limitations: the object is irradiated by a plane electromagnetic wave; the polarization transformation is considered for the reflection only; and only the case of reflection is considered in which it is described by linear, homogeneous equations. The computation of the generalized correlation coefficient of the linear orthogonal scatter field components for radiation with arbitrary elliptical

1/2

USSR

UDC: 538.574.4

polarization is given as an example of implementation of the authors' methods. The authors thank Ye. M. Kuchkov for his assiduous attention to the work.

2/2

USSR

VYACHESLAVOV, P. M.

UDC: 621.357:669.3...8(04)

Electrolytic Deposition of Alloys (Elektroliticheskoye osazhdeniye splavov)
Leningrad, "Mashinostroyeniye" Press, 1971, No. 6, 144 p., graphs, tables,
bibliographic references.

The series of brochures "Bibliotechka gal'vanotekhnika" (Specialized Library
on Electroplating Technology) outlines basic information on the theory and
practice of galvanic processes including copper plating, nickel plating, chrome
plating, zinc plating, tinning, lead lining, deposition of noble and rare metals
as well as some alloys. Discussed are procedures of applying galvanic coatings
to light metals, oxidizing and phosphating of metals, chemical methods of pro-
ducing metallic coatings, and modern equipment of galvanic shops. The series is
intended for trained personnel, laboratory assistants, and foremen of galvanic
shops. It may also be valuable to engineering and technical personnel interested
in electroplating technology. This brochure (2nd edition published under the
title "Coating With Alloys") presents elementary data on the theory and of electro-
deposition of alloys, their properties, and areas of application. As compared to
the 2nd edition (1961), this issue covers a greater number of alloys. Primary
emphasis is placed on galvanic alloys which have gained acceptance in
industry   Includedalso are alloys holding greater promise in terms
of commercial application. Described are simple methods of chemical analyses
of both electrolytes and coatings under shop laboratory conditions.
1/3

- 9 -

USSR

VYACHESLAVOV, P. M., Electrolytic Deposition of Alloys, Leningrad, "Mashino-stroyeniye" Press, 1971, No 6, 144 p, graphs, tables, bibliographic references

TABLE OF CONTENTS

FOREWORD

2/3

USSR

VYACHESLAVOV, P. M., Electrolytic Deposition of Alloys, Leningrad, "Mashino-
stroyeniye" Press, 1971, No 6, 144 p., graphs, tables, bibliographic
references

3/3

- 10 -

USSR

SERGEYEV, G., Col Med Serv, Distinguished Physician RSFSR, and VYADRO, M.,
Doctor of Medical Sciences, Distinguished Physician RSFSR

"Guarding the Health of Airmen"

Moscow, Aviatsiya i Kosmonavtika, No 7, 1973, p 40

Abstract: Since its establishment in World War II, the Central Scientific
Research Hospital has been seeking ways to improve the diagnosis and treatment
of flight-related illnesses. Many years of analyzing clinical data have pro-
duced adequate criteria for flight certification commissions to judge the
fitness of airmen, particularly those being released after illness. Limita-
tions imposed on flight by particular illnesses are now known more precisely.
The hospital has also been studying responses of the healthy body to flight-
related stresses in order to develop a standard with which pathological con-
ditions could be compared. Some of the hospital's achievements -- for example,
stress testing apparatus and a vibration procedure for removing urinary calculi
-- have found application outside the air force and civil aviation. The staff
is active in information dissemination outside the hospital, consultation, and
degree program sponsorship.

1/1

- 2 -

MEDICINE
Aerospace Medicine

USSR

VYADRO, M., Col Med Serv, Honored Physician RSFSR, Candidate of Medical Sciences, and IOSELIANI, K., Lt Col Med Serv, Candidate of Medical Sciences

"Sports and Flying Longevity"

Moscow, Aviatsiya i Kosmonavtika, No 12, Dec 70, pp 40-41

Abstract: Proper physical exercises, by improving the flier's general physical fitness, increase his resistance to in-flight neural and psychological strain, high G-load, and hypoxia, and thus prolong his flying longevity. Common, everyday emotional irritations are detrimental to health. It is best to convert them into motion: a stroll, a tennis game, or a swim in the neighborhood swimming pool. Sports improve the functioning of nerve centers and shorten reflex time. They increase the power and endurance of the heart, lungs, and skeletal muscles, including tendons and joints. At the same time, they raise the body's resistance to infections. Morning gymnastics are very effective for switching from rest to work. Flight personnel should also exercise in groups, including exercise on special equipment and such sports as skiing, skating, and swimming. Mountain hiking induces adaptation to high altitude. To develop resistance to high G-forces and prevent

1/2

USSR

VYADRO, M., et al, Aviatsiya i Kosmonavtika, No 12, Dec 70, pp 40-41

accumulation of blood in abdominal vessels, fliers should perform special isotonic and isometric exercises with abdominal muscles. To lower the body's sensitivity to motion and prevent nausea, exercises involving various motions of the head should be performed. In any type of exercise, it is of crucial importance to perform the exercises every day and to increase the difficulty of the exercises gradually but consistently.

USSR

KOVAL', A. D., VYaGIN, G. I., BOBKOV, V. V., KLIMOVSKIY, Yu. A., STRAL'ChENKO, S. S., and FOGEL', Ya. M., Khar'kov State University, imeni A. M. Gor'kiy

"On the Question of the Difference in Composition of Charged and Neutral Particles Knocked out of Gallium Arsenide by a Beam of Ar^+ Ions"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 43, No 8, Aug 73, pp 1753 - 1754

Abstract: A previous study in which Ar^+ particles had an energy of 2 kev showed that the positively charged secondary particles were primarily Ga^+_n ions and complexes, with As^+_n particles being 2 - 3 orders of magnitude less frequent, while the neutral secondary particles were all arsenic atoms or complexes. Two types of gallium arsenide crystals were used as targets,(100) and (111), with no discernible difference in the distribution of secondary particles ejected between the two types. It is theorized that the difference in distribution is related to processes between the departing secondary particles and the surface of the solid and that these processes are determined by the velocity of the departing particles and the relative arrangement of energy zones of the solid body and excited levels of the particles.

The present work extends this investigation, using a beam of Ar^+ particles at 25 kev. The spectrum of the emitted particles in the visible light range was recorded. It consisted entirely of two resonance lines of GaI at 4172 and 4033 angstroms. These were found to be produced by Ga particles at energies on the

1/2

- 59 -

USSR

KOVAL', A. D. et al., Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 43, No 8, pp 1753 - 1754

order of 2 - 3 kev. This is understandable, since the resonance level at 3.1 ev of the Ga atom, the transition from which to the base level produces fast excited Ga particles, is in resonance with a zone of free conductivity levels of the GaAs monocrystal, leading to a high probability of resonance ionization, while a significant portion of the levels of the As atom is in resonance with a forbidden zone of the crystal, making resonance ionization unlikely for these atoms. The neutral, emitted As atoms radiate in the vacuum ultraviolet, and were not recorded in the experimental spectrum. Resonance ionization can occur for As atoms at an energy level of 7.6 ev, but only a small percentage reaches this level.

2/2

USSR

UDC: 51:155.001.57:681.3.06

PUPKOV, K. A., VYALOV, A. F., GALUSHKIN, A. I.

"Geometric Recognition of Sets With Various Structures. I"

Translation: The authors consider problems of constructing systems for geometric recognition of types of sets in which the number of points is limited from above. The authors propose an algorithm for preparing a space of distinctive features as well as an algorithm for estimating the accuracy of the coordinates of singular points in the set and an algorithm of a system for recognizing the type of set. Authors' resumé.

1/1

- 65 -

USSR   UDC: 51:155.001.57:681.3.06

PUPKOV, K. A., VIALOV, A. F., GALUSHKIN, A. I.

"Geometric Recognition of Sets of Various Structure"

Translation: The paper deals with problems of constructing systems of
geometric recognition of types of sets in which the number of points is
bounded from above. An algorithm is proposed for preparing a space of
characteristics as well as an algorithm for estimating the accuracy of the
coordinates of singular points of a set and an algorithm for a system of
recognition of the type of sets. Authors' resumé.

1/1

USSR

UDC: 8.74

PUPKOV, K. A., VYALOV, A. F.

"Geometric Recognition of Sets of Various Structure"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of
Electronic Machine Building--collection of works), 1971, vyp. 23, pp
137-144 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V573)

Translation: For part 1, see RZhMat 1971, 11V876. The paper deals with
problems of evaluating the accuracy of determining the coordinates of
singular points. Algorithms are proposed for instructing the system of
determining singular points and for evaluating the parameters which de-
termine the operating quality of the system. Authors' abstract.

1/1

USSR   UDC   621.371.333

VYAL'TSEVA, E. Ye. and RUKINA, A. N.

"Investigating the Index of Refraction for Air in the 300 m Atmospheric Layer"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 2 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 2—collection of works) "Nauka," 1972 pp 29-32 (from RZh—Radiotekhnika, No 10, 1972, Abstract No 10A352)

Translation: Results are given for the determination of the N profile at altitudes of 2-300 m for various meteorological conditions. From the obtained profiles, gradients of the refraction index g_n were determined. It is established that daily variations in the index of refraction are more clearly expressed in good weather. At altitudes of up to 25 m, critical refraction and superrefraction were observed. Layer 2, at 300 m, is characterized by higher refraction. Bibliography of two. A. L.

1/1

VYAL'TSEVA, E. Ye.

JPRS 65793
4 May 72

VARIABILITY OF THE COEFFICIENT OF REFRACTION OF THE ATMOSPHERE FOR ULTRASHORT WAVES IN THE BOUNDARY LAYER

UDC 551.510.3

The results of an experiment in determining the coefficient of refraction of the air and its gradients in the 300-meter layer of the atmosphere are discussed. Profiles are presented for the value of N for different types of weather in the summer-fall period, the diurnal variations of this variable and the gradient recurrence table of the value of N for different layers of the atmosphere.

Successful operation of radar is determined not only by its technical specifications but also by the state of the atmosphere, that is, the medium in which the radio waves are propagated. The primary electrical parameters of the troposphere are the dielectric constant ε and the coefficient of refraction n related by the simple expression $n = \sqrt{\varepsilon}$. Inasmuch as for the atmospheric air the coefficient of refraction $n = n(P, T, e)$, the propagation rate of the radio waves is also determined by the values of these parameters. This is the physical essence of the effect of meteorological conditions on the propagation of ultrashort radio waves expressed in refraction, reflection and scattering of the radio waves by atmospheric inhomogeneities.

In spite of a continuous increase in the amount of information on the variability of the refractive index of air, there are insufficient data on the variability of the refractive index with respect to the lower 300-meter layer of the air.

Results are presented in this paper from the experimental measurements of meteorological elements on a high-altitude meteorological tower in Obninsk. On the basis of these measurements, the behavior of the refractive index of air in the 200-meter layer of the atmosphere is analyzed.

- 8 -

1/2   017
UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--PREPARATION OF AN EXPERIMENTAL BATCH OF THE ADDITIVE DF11 AT THE
POLOTSK PETROLEUM REFINERY -U-
AUTHOR-(04)-MELKIN, YU.A., VYALTSIN, N.I., SHAPOVALOVA, L.M., SAVONKINA,
M.G.
COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (5), 48-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CHEMICAL SYNTHESIS, ANTIOXIDANT ADDITIVE, ZINC OXIDE,
PETROLEUM REFINERY/(U)DF11 ANTIOXIDANT ADDITIVE, (U)VNIINP360 ADDITIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1959
                        STEP NO--UR/0318/70/000/005/0048/0049
CIRC ACCESSION NO--AP0133803
                UNCLASSIFIED

2/2   017
CIRC ACCESSION NO--AP0133803   UNCLASSIFIED   PROCESSING DATE--13NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE ANTIOXIDANT DF-11 WAS PREPD.
BY TREATING P SUB2 S SUB5 WITH MIXED ISO-BUOH,2,ETHYLHEXANOL,
NEUTRALIZING THE ACID WITH ZNO, DILG. WITH SOLVENT GASOLINE "KALOSHA",
SEPG. THE MECH. IMPURITIES, AND DISTG. THE SOLVENT.   THE SAME EQUIPMENT
WAS USED FOR PREPG. THE ADDITIVE VNIINP-360.   FACILITY: POLOTSK.
NEFTEPERERAB. ZAVOD, POLOTSK, USSR.

1/2   021

UNCLASSIFIED

TITLE--DEVELOPMENT OF A MODEL OF CHRONIC INFLUENZA INFECTION OF A CELL
LINE DERIVED FROM NONPRIMATE ANIMAL -U-

PROCESSING DATE--18SEP70

AUTHOR-(03)-GAVRILOV, V.I., SOLOVYEVA, A.I., VYALUSHKINA, S.D.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 14-20

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CONTINUOUS CULTURE, CELL CULTURE, INTERFERON, INFLUENZA VIRUS,
BIOLOGIC MODEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0067

STEP NO--UR/0402/70/000/001/0014/0020

CIRC ACCESSION NO--AP0103747

UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHRONIC INFECTION OF CONTINUOUS
CULTURES OF PIG EMBRYO KIDNEY CELLS (RES) CAUSED BY INFLUENZA A VIRUS
(WSN) WAS STUDIED. IN THE FIRST 5 PASSAGES (38 DAYS) THE VIRUS COULD BE
DETERMINED IN RESWSN CULTURE FLUID IN TITERS OF 10 PRIME6.0 10 PRIME8.7
ELD SUB50 ONEFOURTH ML. FROM THE 5TH TO THE 16TH PASSAGE THE VIRUS
COULD BE DETECTED ONLY BY MEANS OF SUCCESSIVE PASSAGES IN CHICK
EMBRYOS, THE ZONE PHENOMENON BEING OBSERVED. AT SOME PASSAGE LEVELS
ATTEMPTS TO DETECT VIRUS WERE NEGATIVE. THE LAST DETECTION OF VIRUS WAS
SUCCESSFUL IN THE 16TH PASSAGE OF RESWSN CELLS (98TH DAY). FROM THE 17TH
PASSAGE ALL ATTEMPTS TO DETECT INFECTIOUS INFLUENZA VIRUS IN RESWSN
CELL CULTURE FLUIDS BY MEANS OF SUCCESSIVE PASSAGES IN CHICK EMBRYOS,
INOCULATION OF ORGAN CULTURES OF HUMAN EMBRYO LUNGS AND MOUSE EMBRYO
LUNGS AND BY MEANS OF MIXED CULTURES OF RESWSN AND RES CELLS, CHICK
EMBRYO FIBROBLASTS AND RESWSN CELLS WERE NEGATIVE. NEGATIVE RESULTS OF
INTERFERON DETERMINATION IN SPECIMENTS OF TISSUE CULTURE FLUID FROM
DIFFERENT PASSAGE LEVELS SUGGEST THAT INTERFERON APPARENTLY PLAYED NO
ROLE IN CREATION OF A RELATIVE BALANCE BETWEEN RES CELLS AND INFLUENZA A
(WSN) VIRUS. IT IS SUGGESTED THAT THE MAIN REASON OF "SPONTANEOUS"
RECOVERY OF RESWSN CULTURES COULD LIE IN AUTOLOGICAL INTERFERENCE.
MECHANICAL REMOVAL OF VIRUS AND OF DETACHED INFECTED CELLS DURING
CHANGES OF THE MEDIUM MIGHT ALSO BE CONDUCIVE TO IT.

UNCLASSIFIED

USSR

GAVRILOV, V. I., SOLOV'YEVA, A. I., and VYALUSHKINA, S. D., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"A Model of Chronic Influenzal Infection of a Line of Swine Cells"

Moscow, Voprosy Virusologii, No 1, 1970, pp 14-20

Abstract: Fetal pig kidney cells were inoculated with type A influenza virus and grown on medium 199 with bovine serum, streptomycin, and penicillin. A total of 31 passages were made over a period of 214 days. Virus was isolated up to the 16th passage (98 days) from chronically infected cultures. From the 17th passage on, however, all attempts to detect the virus in the culture fluid by means of consecutive passages in chick embryos, human embryonic lung tissue, chick embryo fibroblasts, etc. were unsuccessful. Samples of fluid were assayed at various times for interferon with negative results.

1/1

1/2   024
UNCLASSIFIED
TITLE--LABORATORY CONTROL OF THE USE OF TOXIC CHEMICALS AND METHODS OF
IMPROVING THIS CONTROL IN BELORUSSIA -U-   PROCESSING DATE--04DEC70
AUTHOR-(04)-ADAMOVICH, YE.L., BUSLOVICH, S.YU., VYATCHANNIKOV, K.A.,
PAROMCHIK, YE.I.
COUNTRY OF INFO--USSR

SOURCE--MOSCOW, GIGYENA I SANITARIYA, NO 1, 1970, PP 100-101

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FOOD ANALYSIS, TOXICITY, CHEMICAL AGENT DECONTAMINATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605014/D08 STEP NO--UR/0240/70/000/001/0100/0101

CIRC ACCESSION NO--AP0140498
UNCLASSIFIED

CIRC ACCESSION NO--AP0140498   UNCLASSIFIED   PROCESSING DATE--04DEC70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTENT OF TOXIC CHEMICALS IN
FOOD PRODUCTS HAS BEEN STEADILY INCREASING SINCE 1964. THE PRESENCE OF
SUCH RESIDUES IN AMOUNTS ABOVE MAXIMUM PERMISSIBLE LIMITS IS DUE TO
VIOLATION OF THE REGULATIONS GOVERNING THE USE OF COMPOUNDS. SINCE ONLY
A SMALL NUMBER OF FOOD PRODUCTS CAN BE ANALYZED, THE LABORATORIES TRY TO
MONITOR THE TIMES AND CONDITIONS OF APPLICATION OF THE CHEMICALS.
INTRODUCTION OF A SYSTEM OF CERTIFICATION OF FINISHED FOOD PRODUCTS IS
PROPOSED. THE FOOD PRODUCTS WOULD BE LABELED, SHOWING THE NAMES OF THE
CHEMICALS USED IN GROWING THEM, DATES AND METHODS OF APPLICATION.
INSPECTION AGENCIES WOULD CHECK ON COMPLIANCE WITH THE CERTIFICATION
PROCEDURE, WHILE THE LABORATORIES WOULD MAKE SPOT CHECKS WHEN THE DATA
ON THE CERTIFICATES SUGGESTED A POSSIBLE VIOLATION OF THE RULES FOR
PROPER USE OF PESTICIDES, HERBICIDES, ETC.   FACILITY:
BELORUSSIAN SCIENTIFIC RESEARCH SANITARY HYGIENIC INSTITUTE.

UNCLASSIFIED

USSR

UDC 614.37:632.95(476)

ADAMOVICH, YE. L., BUSLOVICH, S. YU., VYATCHANNIKOV, K. A., and
PAROMCHIK, YE. I., Belorussian Scientific Research Sanitary-Hygienic
Institute

"Laboratory Control of the Use of Toxic Chemicals and Methods of
Improving This Control in Belorussia"

Moscow, Gigyena i Sanitariya, No 1, 1970, pp 100-101

Abstract: The content of toxic chemicals in food products has been
steadily increasing since 1964. The presence of such residues in
amounts above maximum permissible limits is due to violation of the
regulations governing the use of compounds. Since only a small
number of food products can be analyzed, the laboratories try to
monitor the times and conditions of application of the chemicals.
Introduction of a system of certification of finished food products
is proposed. The food products would be labeled, showing the names
of the chemicals used in growing them, dates and methods of applica-
tion. Inspection agencies would check on compliance with the certifi-
cation procedure, while the laboratories would make spot checks when
the data on the certificates suggested a possible violation of the
rules for proper use of pesticides, herbicides, etc.
1/1

USSR

ARANOVICH, R. M., VYATICH, L. A., FUKS-RABINOVICH, S. I., ALEKSEYEV, V. YA.

UDC 536.5.082.6(088.8)

"Non-Contact Temperature Measurement of the Surfaces of Heated Objects"

USSR Author's Certificate No 250500, filed 28 Feb 66, published 12 Jan 70
(from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 8, Aug 70, Abstract
No 8.32.569 P)

Translation: A method of non-contact measuring of the temperature of sur-
faces of heated objects by means of scanning the thermal image of the object
on the screen of a cathode ray tube and its analysis is patented. In order
to raise the accuracy of measurement, two standard control heaters are
introduced into the field of vision, the radiation intensity of one of them
and a selected point on the image line are equalized and using this value
as the known level of measurement and the known difference in radiation
intensity of standard heaters as the temperature scale. The measured temper-
ature is judged according to the corresponding voltage curve on the recording
instrument.
V. S. K.

1/1

- 146 -

USSR

VILISOV, A. A., VYATKIN, A. P., MAKSIMOVA, N. K., MILOSERDOVA, L. I., and POKARSKIY, Ye. N.

UDC: 621.376.234

"Sensitivity of Gallium Arsenide Detector Diodes"

Abstract: This brief communication offers the results of research of the behavior of point contact and Schottky barrier diodes of electronic GaAs. In their experiments, the authors measured the sensitivity of the diodes in the three-centimeter wavelength range at a power level of 10 μW under short-circuit conditions. The tuning of the detector section or a matched transformer produced a standing wave ratio less than or equal to 2 to 2.5. The diodes tested had an electron concentration of from $1 \cdot 10^{16}$ cm^{-3} to $1 \cdot 10^{19}$ cm^{-3} for the point-contact, and a material of $n = 1 \cdot 10^{16}$ to $1.2 \cdot 10^{17}$ cm^{-3} for the Schottky barrier devices. The two types of diodes are compared with regard to their detector character- istics. Curves are given for the sensitivity of both types as functions of the bias current and the frequency. The experiments showed that the sensitivity of the diodes could be significantly increased by applying pulses of the proper shape.

1/1

Semiconductors and Transistors

VYATKIN, A. P., MAKSIMOVA, N. K., PEKARSKIY, YE. N.

"Gallium Arsenide Schottky Barrier Pulse Diodes"

Abstract: Results are presented from a study of Schottky barrier diodes. The diodes were manufactured by electrochemical deposition of nickle on monocrystalline gallium arsenide with a charge carrier concentration of $n_0 = (3-5) \times 10^{16}$ cm^{-3}. Diodes with a diameter of the rectifying contacts of 10 microns were obtained by means of photolithography. The diodes were assembled in cermet cases with a capacitance of 0.12-0.18 picofarads. The volt-ampere characteristics and volt-capacitance characteristics of the diodes are plotted. The frequency dependence of the barrier capacitance is plotted for different junction biases. The differential resistance of the pulse diode and the parameters τ_b and Q_n are plotted as functions of the forward current. The studies demonstrated that the capacitance of the diodes does not depend on frequency in the frequency range from 465 kilohertz to 45 megahertz, the differential resistance of the diodes decreases with an increase in the forward current and reaches saturation at

currents of 5-10 milliamps. The speed of the diodes was estimated by measuring the recovery time of the inverse resistance τ_b and the switching charge Q. The recovery time of the developed gallium arsenide Schottky barrier pulse diodes does not exceed 0.3-0.5 nanoseconds. The data again confirm the conclusion that the current is carried by the basic charge carriers in diodes of the investigated type and the speed of the diodes is determined by their structural parameters.

2/2

USSR

UDC 621.382

VYATKIN, A. P., and VORONKOV, V. P., Siberian Physico-Technical Institute imeni
V. D. Kuznetsov at Tomsk State University

"Influence of the Conditions of Formation on the Electrical Properties of
Alloyed p-n-Junctions in Germanium"

Abstract: The electrical properties of alloyed p-n-junctions depend sub-
stantially on the conditions of their formation: the crystallographic
orientation of the semiconductor surface, the purity of the surface and
medium in which the interaction takes place between the semiconductor and the
molten metal, the temperature made of the alloying. All these factors ultima-
tely determine the geometry of the p-n-junction. The authors briefly describe
the method used to set up the problem and cite their results using schematics
as illustration; these schematics predict the manner in which the p-n-junctions
will vary by increasing the alloying temperature from 400 to 800°C. They
find that: 1. the solubility of In in solid germanium increases as the
alloying temperature is raised; 2. an intense thermal conversion takes
place in the Ge at temperatures higher than 550°C; 3. as the value of σ_n

1/2

- 72 -

USSR

VYATKIN, A. P., and VORONKOV, V. P., Izvestiya Vysshikh Uchebnykh Zavedeniy,
Fizika, No 7, 1971, pp 123-125

becomes higher, the temperature at which the thermal conversion of the semi-
conductor takes place becomes higher; 4. the substantial change in α that
takes place at temperatures greater than the extremal is due to the creation
of an n-i-p-structure as a result of thermal conversion. The article con-
tains 4 figures and 5 bibliographic entries.

2/2

USSR

KULISH, U.M., VASIL'YEV, A.P., VYATKIN, A.P., YELISEYEV, P.G., GEORMOGENOV, V.P.

UDC 621.382.2:546.19'681

"Effect Of Formation Conditions On The Electrical Properties Of Epitaxial P-N Junctions In Gallium Arsenide"

V sb. Arsenid galliya (Gallium Arsenide--Collection Of Works), Issue 3, Tomsk, Tomsk University, 1970, pp 152-162 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B384)

Translation: The electrical properties were investigated of p-n junctions in GaAs obtained by the method of liquid epitaxy. The electrical characteristics of p-n junctions obtained in a narrow temperature interval depend on the epi- taxy temperature,which is explained by the corresponding dependences of the solidus curves of the corresponding quasi-binary systems. During subsequent heat treatment even short-duration annealings lead to a leveling of the elect- rical characteristics of "abrupt" p-n junctions and a disappearance of the de- pendence of their parameters on the epitaxy temperature.The crystallographic orientation of the substrate significantly influences the electrical and optic- al properties of laser junctions. Acceptor impurities exert various effects on the electrical and optical properties of epitaxial laser semiconductor diodes. 8 ref. Summary.
1/1

1/3   025
UNCLASSIFIED
TITLE--EFFECT OF ELECTRON IRRADIATION ON PARAMETERS OF GALLIUM ARSENIDE
PULSED DIODES -U-   PROCESSING DATE--20NOV70
AUTHOR-(05)-BRUDNYY, V.N., VILISOV, A.A., VYATKIN, A.P., KRIVOV, M.A.,
MALYANOV, S.V.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ, 1970, 13(4), 109-13

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--GALLIUM ARSENIDE SEMICONDUCTOR, DIODE CICRUIT, VOLT AMPERE
CHARACTERISTIC, ELECTRON BOMBARDMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1473
                                    STEP NO--UR/0139/70/013/004/0109/0113
CIRC ACCESSION NO--AT0130403
                              UNCLASSIFIED

2/3   025
CIRC ACCESSION NO--AT0130403   UNCLASSIFIED   PROCESSING DATE--20NOV70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE EFFECT OF ELECTRON IRRADN. ON
VOLTAGE CURRENT (V-A), VOLTAGE CAPACITANCE, AND PULSE CHARACTERISTICS OF
POINT CONTACT PULSED GAAS DIODES WAS STUDIED.   THE DIODES WERE PREPD,
FROM N TYPE GAAS WITH RESISTIVITES OF 0.06 AND 0.9 OHM-CM, CARRIER
CONCNS. OF (3-5) TIMES 10 PRIME16 AND (1-2) TIMES 10 PRIME15 CM PRIME3,
AND MOBILITIES OF 4500 AND 5500 CM PRIME2 V SEC, RESP.   AFTER ASSEMBLY
COMPLETION, ELEC. FORMING WAS CARRIED OUT BY HALF PERIOD CURRENT PULSES
IN THE FORWARD DIRECTION.   THE DIODES WERE IRRADIATED BY 1.5-MEV
ELECTRONS, AND CAPACITANCE MEASUREMENTS WERE MADE AT 30 MHZ.   FROM THE
V-A CURVES, IT CAN BE SEEN THAT BREAKDOWN VOLTAGE AND FORWARD RESISTANCE
INCREASE, AND RECTIFICATION COEFF. DECREASES UNDER IRRADN.   THE CHANGES
ARE ATTRIBUTED TO AN INCREASE IN THE RESISTIVITY AT THE EXPENSE OF A
DECREASE IN THE CONCN. OF CHARGER CARRIERS.   CAPACITANCE DECREASES UNDER
IRRADN., AND THE DEPTH OF THE CAPACITANCE MODULATION DECREASES AT THE
COST OF CHANGES IN IMPURITY DISTRIBUTION IN THE SPACE CHARGE REGION
(HIGHLY FORMED DIODES).   THIS BEHAVIOR CAN BE EXPLAINED IN THE LIGHT OF
THE THEORY DEVELOPED FOR P-N PLANE JUNCTIONS AND SCHOTTKY TYPE BARRIERS.
FROM THE PULSE EXPTS., THE RECOVERY TIME (T SUBRECOV) UNDER IRRADN.
INCREASES FOR SCHOTTKY BARRIERS (SLIGHTLY FORMED) AT THE EXPENSE OF
INCREASING RC (R AND BAR C ARE MEAN VALUES OF RESISTANCE AND
CAPACITANCE, RESP., IN THE SWITCHING PROCESS).   FOR HIGHLY FORMED
DIODES, BEHAVIOR OF T SUBRECOV UNDER IRRADN. IS GOVERNED BY A RELATION
BETWEEN LIFETIME OF MINORITY CARRIERS (T) AND BAR RC.

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO---AT0130403

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--AT LOW RADIATION DOSES, A DECREASE OF T SUBRECOV CAN BE OBSD. AT THE EXPENSE OF T DECREASE, WHILE AT HIGH DOSES (SIMILAR TO 10 PRIME16 ELECTRONS-CM PRIME2) T SUBRECOV ALWAYS INCREASES.

FACILITY: SIB. FIZ.-TEKH. INST. IM. KUZNETSOVA, TOMSK, USSR.

UNCLASSIFIED

1/2   028
UNCLASSIFIED
PROCESSING DATE--23OCT70
TITLE--ANISTROPY OF GALLIUM ANITMONIDE ETCHING STUDIED BY MEANS OF LIGHT FIGURES -U-

AUTHOR-(02)-VYATKIN, A.P., FEDOROV, K.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 107-10

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--GALLIUM ANTINOMIDE, ANISOTROPY, CRYSTALLOGRAPHY, ETCHED CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1399

STEP NO--UR/0139/70/013/002/0107/0110

CIRC ACCESSION NO--AT0120192

UNCLASSIFIED

2/2   028   UNCLASSIFIED   PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AT0120192
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREORIENTED GASB SINGLE CRYSTALS
HAVING SURFACES PARALLEL TO THE PLANES (111), (110), AND (100) WERE
ETCHED BY SOLNS. OF THE FOLLOWING COMPN.: H SUB2 O SUB2:H SUB2 SO
SUB4:HCL EQUALS 10:3:25 BY VOL. DISTINCT LIGHT FIGURES WERE THUS
OBTAINED ON THE MAIN CRYSTALLOGRAPHIC PLANES THAT YIELDED DISTINCT
REGLECTION DIAGRAMS. WITH PROLONGED ETCHING, A PROGRESSIVE LEVELING OUT
OF THE ANISOTROPY OF THE SINGLE CRYSTAL DISSOLN. WAS OBSD. THE FORM OF
THE LIGHT REFLECTION FIGURES DIFFERED MOST FROM THOSE OBTAINED WITH GE
AND SI AND ALSO WITH GAAS, ALTHOUGH, ACCORDING TO THE SYMMETRY ORDER,
THE CORRESPONDING GASB PLANES COINCIDED WITH THOSE OF GAAS. THE
ETCHING RATES ON GASB SINGLE CRYSTAL PLANES B(111), (100), (110) AND
A(111) AT ROOM TEMP. WERE MEASURED ACCORDING TO THE THICKNESS OF THE
DISSOLVED LAYER. THE NUMERICAL VALUES OF THE RATES (MU-MIN) OT ETCHING
WERE: V SUBSB(111) EQUALS 11.5, V SUB(100) EQUALS 7.5, V SUB(110)
EQUALS 7.2, V SUBGA(111) EQUALS 5.7. AN OPTICAL METHOD OF THE SINGLE
CRYSTAL ORIENTATION ACCORDING TO THE MAIN CRYSTALLOGRAPHIC PLANES,
APPLICABLE TO GASB, WAS WORKED OUT. FACILITY: SIB. FIZ. TEKH.
INST. IM. KUZNETSOVA, TOMSK, USSR.

UNCLASSIFIED

USSR

VYATSKIN, A. Ya., KABANOV, A. N., TRUNEV, V. V.

"Transmission, Reflection and Absorption of High-Power Electron Beams in Thin Films of Some Metals and Alloys"

Abstract: A simultaneous study is made of the integral coefficients of transmission, absorption and reflection of electron beams with current densities of 1-3 A/cm^2 and initial electron energy of 10-35 keV in free thin films of aluminum, copper and nichrome alloy. An analysis of curves for the coefficients of transmission η, reflection r and absorption γ as functions of film thickness x showed satisfactory agreement with the previously found empirical expressions

$$(1) \qquad \eta(x) = \exp[-\alpha x^p],$$
$$(2) \qquad r(x) = r_0\{1 - \exp[-\mu x^p]\},$$

where α and μ are factors which depend on the initial energy, while p is independent of energy and depends only on the properties of the material; r_0 is the coefficient of reflection for a massive specimen. Values of the

1/2

USSR

VYATSKIN, A. Ya. et al., Radiotekhnika i Elektronika, Vol 17, No 9, Sep 72, pp 1893-1899

experimental coefficients p, α, μ, and r_0 are determined. An expression is found for the mean transverse flight paths of "stopped" and reflected electrons as a function of the initial energy. It is shown that within the investigated range of beam energies and current densities the behavior of electron transmission, absorption and reflection as characterized by formulas (1) and (2) is independent of the current density and holds up to destruction of the materials.

2/2

- 50 -

USSR   UDC: 539.124.17

VYATSKIN, A. Ya., TRUNEV, V. V.

"Concerning the Interaction Between Electrons and Thin Dielectric Films"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 9, Sep 72, pp 1899-1905

Abstract: The paper presents the results of a simultaneous study of the characteristics of transmission η, reflection r, and absorption γ of electrons with initial energies between 4 and 30 keV in thin films of Al_2O_3 and SiO_2. Film thickness varied from 50 to 1200 nm. The measurements were done on free films to eliminate the possible distorting effect of a substrate. A pulse measurement mode was used to eliminate the effect of surface charge. The pulse duration was 1-100 μs at a repetition rate of 1-10 Hz. The results show that the behavior of electron transmission, reflection and absorption in these materials is similar to that observed with metal and semiconductor specimens.

1/1

USSR   UDC 669.183.18.046.58

POVOLOTSKIY, D. YA., MISHCHENKO, V. YA., VYATKIN, G. P., and
PUZYREV, A. V., Chelyabinsk Polytechnical Institute

"Physiocochemical Properties of Melts of the $CaO-Al_2O_3-CaF_2$
System"

Abstract: An experimental study was made of the electrical con-
ductivity, ductility, and surface tension of synthetic slags
of the $CaO-Al_2O_3-CaF_2$ system (2 -- 61% CaO; 29 -- 56% Al_2O_3;
0 -- 60% CaF_2) at temperatures at 1400-1800° C. The effect of
temperature and chemical composition on the properties of slags
is presented graphically on sections of ternary diagrams. In
the studied area of composition slags adjacent to the angle
CaF_2 possess maximum electrical conductivity and slags adjacent
to the angle CaF_2 possess minimum ductility. Calcium fluoride
possesses the highest surface activity. Introduction of 0 to
60% of calcium fluoride into the melt reduces the surface ten-
sion at t = 1700° C from 550 to 254 erg/cm^2.
1/1

USSR

UDC: 669.162.12:622.782.004.12

OSTROUKHOV, M. Ya., RUSKOVA, A. G., PERMINOV, N. I., RUSAKOV, L. N., VYATKIN, G. P., and ABROSIMOV, A. S.

"Structural Specifics and Metallurgical Properties of Pellets Made of Titanium-Magnetite Ore Concentrates. Report 1"

Izv. VUZ, Chernaya Metallurgiya, No 6, 1970, pp 33-37

Abstract: Pellets made of ilmenite-titano-magnetite ores from the southern Urals (60.87% Fe; 10.14% TiO_2) with basicity (CaO: SiO_2) 0.40-1.38, roasted under isothermal conditions in a current of air (60 1/hr) for 30 minutes were studied. The composition and structure of the pellets were determined by the roasting temperature. With low-temperature roasting (1150-1220° C), the processes of sintering and recrystalization occur in parallel with oxidation of the ore grains, and highly porous, but low-strength pellets are produced consisting of hematite, pseudobrookite, calcium ferrites (influxed pellets) and silicate glass. With high-temperature roasting (1250-1300° C), oxidation precedes the recrystallization and sintering processes of the titano magnetite. These pellets have increased strength but low porosity, and consist of hematite (solid solution) and silicate binder; the predominate mass of the titanium oxides is present as a solid solution consisting of hematite. Two illustrations; one table; three biblio. refs.
1/1

- 59 -

USSR

VYATKIN, I. P., ZIMIN, V. M., KUNGINA, N. I., MUSHKOV, S. V., and DZHONS, M. M.

UDC: 669.295

"Lining Smelting of Briquetted Titanium Sponge"

Abstract: The authors study the possibility of using pressed titanium briquets without presmelting as consumable electrodes. This involved the selection of the optimal technological parameters which would ensure smelting stability. The solution of this problem would make shaped casting inexpensive. The smelting was conducted in a lined vacuum arc furnace designed by VIAM (All-Union Scientific Research Institute of Aviation Materials). The TG-100, TG-120, and TG-ChM grades of titanium sponge were used as the charging material. The sponge was pressed in the B-654 briquet press at 630 tons into briquets of 140 and 160 mm in diameter and 120 mm high. In all more than 50 smelts were conducted. It was shown that sponge quality during the smelting of briquets made from the TG-100, TG-120, and TG-4M grades did not affect smelting. The visually observable gas generation was practically the same or significantly greater than during the smelting of monolithic electrodes. An attempt to reduce gas generation by smelting in a helium atmosphere proved unsuccessful. The pressed electrodes also need more heat than the monolithic electrodes since their thermal conductivity and density are lower. It was also shown that the use of large diameter electrodes is more advantageous. During test-

1/2

USSR

VYATKIN, I. P., et al, Tsvetnyye Metally, No 10, Oct 73, pp 41-42

ing the obtained liquid metal was poured into forms, producing either ingots or shaped parts. Specimens were cut from these and their chemical composition and mechanical properties determined. The corrosion resistance of these specimens was determined using standard methodology in HCl gas and acid media. The corrosion rate was quite high during the first 800 hours and reached maximum at 150-200 hours. Specimens made from TG-ChM corrode more than specimens made from TG-100. As the test duration is increased, the difference in the rate of corrosion dimini- shes and becomes identical.

2/2

- 59 -

Magnesium

USSR   UDC: 669.721.41

KECHIN, V. A., VYATKIN, I. P., CHUKHROV, M. V., SHPAKOV, V. I.

"Relationship Between Quality of Magnesium and its Degree of Degassing During Refining"

Liteyn. Proiz-vo, Metalloved. i Obrabotka Met. Davleniyem [Foundry Production, Metal Science and Pressure Working of Metals -- Collection of Works], No 6, Krasnoyarsk, 1972, pp 46-48 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G205, by the authors).

Translation: The influence of the degree of oxidation of Mg on the effect of its degassing during refining is demonstrated. The degassing effect of Mg raw material is twice that of bar remelt. It is recommended that raw Mg be used as the raw material for the manufacture of Mg-based working alloys. 1 table, 5 biblio. refs.

1/1

Magnesium

UDC 669.721

USSR

VYATKIN, I. P., KECHIN, V. A., MUSHKOV, S. V., SHCHELKONOGOV, A. A., and STOLBOVA, A. D.

"On the Continuous Production of High-Purity Magnesium"

Moscow, Tsvetnyye Metally, No 6, Jun 73, pp 47-48

Abstract: The continuous production of high-purity magnesium by processing the melt with titaneium-containing additives in a casting complex is described. The quality of the magnesium produced satisfies the purity requirements for all admixtures, except for iron admixtures. To eliminate iron, the titanium-containing additives are introduced into the refining chamber of the furnace together with crude magnesium; as a result of titanium reacting with iron in the crude, the generated compounds precipitate on cooling on the bottom of the refining chamber. The iron-purified magnesium, under pressure of the next portion of the cast crude, overflows into the pouring chamber; from there it is fed onto the casting conveyer. The iron content, its analysis, and the dynamics of C_{Fe} change are discussed. Industrial results showed that melts contained 0.003-0.004%Fe and 0.006-0.014%Ti. Two tables, three bibliographic references.

1/1

USSR

UDC 669.721.4

KECHIN, V. A., VYATKIN, I. P., and CHUKHROV, M. V.

"Degassing Primary Magnesium by Different Refining Methods"

Moscow, Tsvetnyye Metally, No 5, May 73, pp 52-53

Abstract: This work was devoted to studying the change of gas content (hydrogen) in the refining of magnesium by settling and be treating with VI-2 flux and a titanium-containing flux. The raw magnesium was heated to 700, 740, and 780°C and saturated with hydrogen. Results showed that the amount of hydrogen remaining after refining was least for the titanium-containing flux process while the settling process left the most hydrogen. 1 figure, 2 bibliographic references.

1/1

UDC 669.721

USSR

VYATKIN, I. P., KECHIN, V. A.

"Titanium Content in High-Purity Magnesium"

Moscow, Tsvetnyye metally, No 3, Mar 72, pp 36-38

Abstract: An analysis is made of the factors responsible for Ti fluctuations in high-purity Mg during its production on the basis of statistical data on the quality control of high-purity Mg for the 1968-70 period. A correlation has been established between the absolute moisture content in atmospheric air and the Ti content in Mg. It is shown that the Ti content in Mg increases with decreasing air humidity. A decrease in the Ti content by thoroughly refining the Mg from Fe may be achieved by Ti charge optimization. Experimentation with various weighed amounts of Ti charges in the melt indicates 0.1% Ti as the optimum charge ensuring minimum contents of Ti and Fe. A test series of ten melts has shown that charges of lower Ti chlorides with 0.1-0.15% Ti resulted in $<0.015\%$ Ti and $<0.004\%$ Fe.

3 illustrations
1/1

- 22 -

USSR   UDC 669.721.053.4

VYATKIN, I. P., GULYAKIN, A. I., KECHIN, V. A., MUSHKOV, S. V.

"Protection of Magnesium from Saturation with Iron During Remelting in Steel Crucibles"

Translation: High purity Mg is produced in a steel crucible by processing of the Mg raw material with Ti-containing additives, followed by cooling for various periods of time. The content of Fe is decreased from 0.03-0.04%, the content of Mg raw material to 0.001-0.005% following Ti treatment. Remelting of high purity Mg is possible in the production of alloys based on Mg or Al at consumer plants. High purity pig Mg containing 0.001% Fe was charged into a steel crucible, melted for 4 hours, heated to 710° and held for 1.5 hours, then repoured. The content of Fe remained at the same level during all stages of remelting. The content of other impurities also remained unchanged.

1/1

- 14 -

USSR

UDC 669.721.41

VYATKIN, I. P., KECHIN, V. A., MUSHKOV, S. V., BRANDMAN, O. I., BONDAREVA, E. P.

"Composition and Structure of Highly Pure Primary Magnesium"

Metalloved. splavov legkikh met -- V sb. (Physical Metallurgy of Alloys of Light Metals -- collection of works), Moscow, Nauka Press, 1970, pp 185-189 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G220)

Translation: A new procedure has been developed and introduced for purifying Mg by treating the Mg with Ti-containing additives. The dependence of the Mg structure on its composition has been studied in special samples with Ti and Be additives. The Be additive used to decrease the oxidizability of highly pure Mg does not lead to enlargement of the Mg macrograin in the presence of Ti admixture. There are 4 illustrations, 1 table, and a 7-entry bibliography.

1/1

Magnesium

USSR
UDC 669.715

VYATKIN, I. P., KECHIN, V. A., BRANDMAN, O. I., and MUSHKOV, S. V.

"Variation of Iron Content in Refining and Holding Magnesium Melts in
Industrial Furnaces"

Moscow, Tsvetnyye Metally, No 5, May 70, pp 47-48

Abstract: A study was made of the variation of iron content in magnesium
melts. It is noted that the variation of iron content probably depends not
only on the magnesium cooling rate, but also on its state and on the nature
of impurities. The dispersion of iron content in magnesium in SMT-1 furnaces
is explained by the wide range of magnesium temperature variation and the
related iron solubility in magnesium. The magnesium temperature stabiliza-
tion in continuous refining furnaces with capacities of 6 to 15 tons of Mg
made it possible to obtain a constant iron content in magnesium.

1/1

USSR

UDC 669.721

VYATKIN, I. P., KECHIN, V. A., MUSHKOV, S. V., BRANDMAN, O. I., and BONDAREVA, E. P.

"Composition and Structure of High-Purity Initial Magnesium"

Translation: A new method of refining magnesium by processing magnesium with titanium-containing additives has been developed and introduced. The composition dependence of the magnesium structure was investigated on special specimens with titanium and beryllium additions. It is shown that the addition of beryllium with a view to decreasing the oxidizability of high-purity magnesium does not affect an enlarging of the macrograin in presence of a titanium admixture. Four figures, one table, seven bibliographic references.

1/1

Magnesium

USSR   UDC 669.721.884

VYATKIN, I. P., MUSHKOV, S. V., KECHIN, V. A., and AKININA, N. K.

"PUrity of the Starting Material for Magnesium-Lithium Alloys"

Tsvetnye Metally, No 4, Apr 71, p 53

Abstract: Since traces of sodium in a magnesium-lithium alloy increase its brittleness, a study was made to determine the maximum allowable amounts of sodium which may be present in the raw materials used for the electrolytic production of the alloy. The use of carnallite with a maximum amount of 7.5% magnesium chloride for electrolysis allowed the production of magnesium-lithium alloy ingots with a maximum sodium content of 0.003%.

1/1

Magnesium

VYATKIN, I. P., KECHIN, V. A., and STOLBOVA, A. D.

"Hydrogen in Electrolytic Magnesium and Initial Magnesium Alloys"

Abstract: The presence of gases -- primarily hydrogen -- in magnesium
and magnesium alloys adversely affects the quality of the finished
product. Bar materials are among the principal hydrogen sources. This
study deals with hydrogen content in crude magnesium as a function of
the electrolyzer feed system and other related electrolytic and pro-
duction processes. The results obtained offer a positive evaluation
of producing castings directly from molten alloys and bypass pouring
and remelting operations of bar metals and alloys in order to reduce the
hydrogen content. Maximum hydrogen contents are shown to occur during
stirring operations. (2 illustrations)

1/1

Magnesium

USSR   UDC 669.721'884

VYATKIN, I. P., MUSHKOV, S. V., KOECHIN,V.A., and YELKIN, F. M.

"Technological Requirements For the Production of Magnesium-Lithium Alloys"

Moscow, Tsvetnyye Metally, No 6, 1972, pp 43-44

Abstract: Two methods were considered for the preparation of magnesium-lithium alloys. One method required the use of a protective flux consisting of molten lithium chloride and lithium fluoride. It was unacceptable because of many difficulties encountered during the work. The second method uses argon as a protective atmosphere in a 500-kg crucible equipped with a cover. The charge elements are added in the following sequence: at first, a small amount of magnesium ingot with 1.8-2.5% Mn is melted in the crucible at 700^{0} for 4-5 hr, then a high-purity magnesium ingot with not more than 0.005% Na is added at the same temperature, followed by aluminum, zinc, cadmium, and lithium, in that order. The alloy was mixed for 5-15 min after the addition of each alloying element. All metals were added as ingots in order to eliminate impurities, especially Na. Lithium ingots were washed in kerosene at first, wiped up, and dried in air before being placed into the crucible. The whole production process took 9-10 hr. The pouring of the alloy was done at 700-710°C. The alloys (several smeltings) contained
1/2

USSR

VYATKIN, I. P., et al., Tsvetnyye Metally, No 6, 1972, pp 43-44

7.79-8.14% Li, 4.64-5.09% Al, 1.42-1.56% Zn, 4.12-4.48% Cd, 0.34-0.39% Mn, and 81% Mg. The concentration of components varied, depending on smelting. Special precautions were taken to exclude Na and chlorides from the alloys.

2/2

USSR

UDC 669.295:539.292

SYUTKIN, N. N., VYATKIN, N. N., Institute of Physics of Metals, UNTs of the Academy of Sciences USSR

"Features of the Allotropic Transformation of Titanium Observed by Means of a Field-Emission Microscope"

Abstract: The features of allotropic transformation in crystals (size ~0.3 μ) of pure titanium and the kinetics of the re-crystallization process were investigated by the method of field-emission microscopy, according to the schema α-state $\rightarrow$ β-state $\rightarrow$ $\rightarrow$ heating up to 200-300 degrees higher than $T\beta$ $\rightarrow$ temperature reduction to $T\beta$. The results are discussed by reference to field-emission pictures of α- and β-state titanium. At room temperature, the investigated titanium specimens showed a hexagonal lattice, during the heating process a recrystallization took place, and instead of several crystals a single crystal developed. Repeated $\alpha \rightleftarrows \beta$ transitions with subsequent high-temperature annealing

1/2

USSR

SYUTKIN, N. N., et al, Fizika Metallov i Metallovedeniye, Vol 32,
No 3, Sep 71, pp 515-519

led to emergence of new grains in the specimens. The observed
phenomenon is explained as recrystallization brought about by
phase cold hardening. 3 illustrations, 6 bibliographic
references

USSR

UDC 548.0

SYUTKIN, N. N., VLARKIN, N. N., and IVCHENKO, V. A., Institute of Metal Physics, Academy of Sciences USSR

"Microcrystals of Titanium on Tungsten"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 1, pp 70, pp 581-586

Abstract: The possibility is demonstrated of growing microcrystals of titanium by condensation onto a single crystal tungsten substrate. When heated, the microcrystals produced undergo $\alpha \to \beta$ conversion. Recrystallization of the titanium occurs upon cyclical transitions through the phase conversion temperature with subsequent heating to above T_β.

1/1

1/2   018
UNCLASSIFIED
TITLE--ADOPTION OF A FOUNDRY COMPLEX FOR REFINING AND TEEMING MAGNESIUM
-U-

PROCESSING DATE--02OCT70

AUTHOR-(05)-VYATKIN, I.P., KANAYEV, I.YE., MUSHKOV, S.V., USHAKOV, V.D.,
  BRANDMAN, O.I.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1) 53-4

DATE PUBLISHED------70

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

TOPIC TAGS--METAL REFINING, MAGNESIUM, METALLURGIC FURNACE, ELECTROLYTE,
  MAGNESIUM CHLORIDE, POTASSIUM CHLORIDE, SODIUM CHLORIDE, MAGNESIUM
  OXIDE, ECONOMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0748

STEP NO--UR/0136/70/043/001/0053/0054

CIRC ACCESSION NO--AP0107290
UNCLASSIFIED

2/2   018   UNCLASSIFIED   PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0107290
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TEEMING COMPLEX HAS BEEN ADOPTED
  FOR PRODUCTION OF PIG MG, INCLUDING A CONTINUOUSLY OPERATING FURNACE
  WITH SALT HEATING, ELECTROMAGNETIC CONDUCTION PUMP, AND A TEEMING
  CONVEYER OF DOMESTIC CONSTRUCTION. THESE PARTS ARE DESCRIBED. THE
  CONSTRUCTION OF THE FURNACE PRECLUDES MG FROM BEING IN CONTACT WITH THE
  LINING AND THE ATM., PROVIDES FOR FAST AND UNIFORM HEATING OF MG TO THE
  REQUIRED TEMP., AND MAKES IT POSSIBLE TO MAINTAIN THAT TEMP. WITH A MIN.
  OF ENERGY LOSSES. AS COMPARED TO THE LAB. FURNACE, THE COM. PROTOTYPE
  COULD TAKE 1.5 TIMES AS MUCH MG. THE OPERATING TEMP. OF THE ELECTROLYTE
  AND MG IS 700-10DEGREES; THE CURRENT IS 5 KA, AND THE VOLTAGE IS 30-40
  V; THE CAPACITY FO THE HOPPER IS 6 TONS, AND THE AMT. OF THE ELECTROLYTE
  (MGCL USB2 10, KCL 60-70, NACL 10-15, AND BA CL SUB2 5-10PERCENT) IN THE
  FURNACE IS 13 TONS. THE TEEMING OF THE REFINED MG CAN BE CARRIED OUT
  DURING THE PURING IN OF THE MG RAW MATERIAL. THE ESSENCE OF THE
  REFINING OPERATION CONSISTS IN SETTLING DOWN OF THE FREE, OR COMBINED
  WITH MGO, CHLORIDE PARTICLES. IN THE REFINED MG THERE IS LESS THAN
  0.003PERCENT CL PRIME NEGATIVE. DURING THE SETTLING DOWN, THE EXCESS
  MAT. OF FE, RELATIVE TO THE EQUIL. AMT., ALSO SETTLES DOWN. THE
  ADOPTION OF THE TEEMING COMPLEX MADE IT POSSIBLE TO REDUCE THE SP.
  CONSUMPTION OF ELEC. ENERGY BY 2.5 TIMES; IT ALSO MADE IT POSSIBLE TO
  REDUCE THE WASTE OF THE METAL AS WELL AS OF LABOR.

                          UNCLASSIFIED

VYATKINA, Z. S.

The wide circle of problems that epidemiologists and their assistance
must solve makes it imperative to continuously improve the set of preventive
measures on the basis of investigating their effectiveness.

We have gained some experience in organizing epidemiological work in the
sanitary and epidemiological stations of Kemerovo. The planning method
is consistent with the current official instructions (preparation of annual
and quarterly plans, monthly-plan graphs).

Clearcut planning permits epidemiologists to examine a larger number
of therapeutic and children's institutions for the purpose of preventive
treatment against various infections, to conduct systematic epidemiological
analysis of morbidity rates throughout the year as well as of effectiveness
of prophylactic measures, and thus to make prompt amendments in the plans.

All of the organizational methodological work with polyclinics, child-
ren's and other institutions is planned and conducted mainly by the staff of
the epidemiological department of the municipal SES in order to concentrate
the activities of rayon and district epidemiologists toward immediate adminis-
tration of the most important prophylactic and epidemic control measures.

Analysis of the morbidity rates for the last 50 years revealed certain
patterns in distribution of infectious disease in the city; it was found that
35-40 percent of all infections, with the exception of influenza and acute
respiratory disease, are referable to intestinal pathology, including dysentery.
Keeping this in mind, we concentrated on investigation of the epidemiological
distinctions of dysentery and the effect of sanitary and hygienic conditions
on distribution of acute intestinal infection, demonstration of the epidemio-
logical distinctions of dysentery in preschool institutions, determination of

- 45 -

UNCLASSIFIED   PROCESSING DATE--20NOV70

1/2   025

TITLE--INTERACTION OF INERT GAS IONS WITH THIN FILMS OF A SOLID -U-

AUTHOR-(03)-VYATSKIN, A.YA., MAKAROV, K.A., ALEKSEYEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 3, 1970, PP 558-564

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--INERT GAS, ION, METAL FILM, GERMANIUM SEMICONDUCTOR, SILICON
   SEMICONDUCTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1302   STEP NO--UR/0109/70/000/003/0558/0564

CIRC ACCESSION NO--AP0123320
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0123320

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS PRESENT A THEORETICAL
DISCUSSION OF EXPERIMENTAL CHARACTERISTICS OBTAINED IN EARLIER WORK
(1-4) FOR THE PENETRATION, REFLECTION, AND ABSORPTION OF INERT GAS IONS
(HE PRIME POSITIVE, NE PRIME POSITIVE, AND AR PRIME POSITIVE) WITH MEAN
ENERGY VALUES OF E SUB0 EQUALS 3-30KEV IN THIN FILMS OF METAL (AL, CU,
AG, AND AU) AND SEMICONDUCTORS (SI AND GE). A METHOD IS PROPOSED FOR
DETERMINING THE SCATTERING (DISTRIBUTION) OF TRANSVERSE MEAN FREE PATH
(IONS WHICH DID NOT PASS THROUGH), OF ABSORBED AND OF REFLECTED IONS.
TRANSVERSE MEAN FREE PATH SCATTERING CURVES ARE OBTAINED FOR THE
MATERIALS STUDIED. AVERAGE TRANSVERSE MEAN FREE PATHS ARE INTERPOLATED
AND THEIR DEPENDENCE ON INITIAL ION ENERGY EXPLAINED. CHARACTERISTICS
ASSOCIATED WITH THE INTERACTION OF INERT GAS IONS WITH A SOLID ARE
DISCUSSED.

UNCLASSIFIED

172   028

UNCLASSIFIED

TITLE--REFLECTION OF ELECTRONS BY THIN FILMS OF A SOLID -U-   PROCESSING DATE--04DEC70

AUTHOR-(04)-VYATSKIN, A.YA., KABANOV, A.N., MAKAROV, K.A., TRUNEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 3, 1970, PP 565-570

DATE PUBLISHED------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ELECTRON REFLECTION, THIN PLATE, FREE PATH, MATHEMATIC ANALYSIS, THIN FILM SEMICONDUCTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1361   STEP NO--UR/0109/70/000/003/0565/0570

CIRC ACCESSION NO--AP0123319

UNCLASSIFIED

CIRC ACCESSION NO--AP0123319   UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SEMIEMPIRICAL METHOD HAS USED TO DERIVE EXPRESSIONS FOR THE INTEGRAL COEFFICIENT OF REFLECTION, PATH DISPERSAL OF REFLECTED ELECTRONS, AND MEAN FREE PATH AS A FUNCTION OF INITIAL ENERGY. THIS WAS DONE ON THE BASIS OF EXPERIMENTAL RESULTS OBTAINED EARLIER (1-2) FOR THE COEFFICIENTS OF REFLECTION AND PENETRATION OF MEAN ENERGY ELECTRONS (KEV UNITS AND KEV TENS) IN THIN FILMS OF A SOLID (METALS AND SEMICONDUCTORS). THE OBTAINED RESULTS ARE IN GOOD AGREEMENT WITH TEST DATA.

UNCLASSIFIED

USSR

UDC 547.1'13

YERMOLAYEV, V. I., SOROKIN, YU. A., GLADYSHEV, YE. N., VYAZANKIN, N. S., and RAZUVAYEV, G. A., Institute of Chemistry, Academy of Sciences USSR

"Triethyl(triphenylphosphine- π -cyclopentadienylnickel)germane"

Abstract: Previously unknown triethyl(triphenylphosphine- π -cyclopentadienylnickel)germane was synthesized by the authors by two new methods: 1. An equimolar mixture of π -C_5H_5 $(C_6H_5)_3P$ NiCl and bis(triethylgermyl)-mercury is allowed to stand in 25 ml benzene for one hour at $\sim$ 20°. After separation of the mercury the solvent is boiled down under vacuum. The residue is crystallized twice from hexane at -75°. 2. The same compound is obtained by adding 7.7 g bis(triethylgermyl)-mercury to a solution of 2.9 g nickelocene and 3.9 g triphenylphosphine in 50 ml benzene (molar ratio of reactants 1:1:1) and heating the mixture to 40° (70 hours). The mercury is separated from the mixture and the product isolated, as above.

1/1

1/2   009
TITLE--REACTION OF SULFUR WITH BIS TRIETHYLSILYL AND BIS TRIETHYLGERMYL
    MERCURY -U-   UNCLASSIFIED   PROCESSING DATE--04DEC70
AUTHOR-(04)-GALDYSHEV, YE.N., ANDREYEVICHEV, V.S., VYALANKIN, N.S.,
    RAZUVAYEV, G.A.
COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 4(4), 939

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SULFUR, ORGANOSILICON COMPOUND, ORGANOGERMANIUM COMPOUND,
    ORGANOMERCURY COMPOUND, EXOTHERMIC REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1440
                              STEP NO--UR/0079/70/040/004/0939/0939
CIRC ACCESSION NO--AP0135111
                    UNCLASSIFIED

2/2   009

CIRC ACCESSION NO--AP0135111   UNCLASSIFIED   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ET SUB3 SI)SUB2 HG REACTED EXOTERMICALLY WITH S WITHOUT A SOLVENT TO YIELD 94PERCENT ET SUB3 SISHGSIET SUB3, UNDISTILLABLE GREENISH LIQ., WHICH IN UV LIGHT DECOMPD. TO 100PERCENT HG AND (ET SUB3 SI)SUB2 S, B SUB7 125-7DEGREES. REACTION WITH HBR AT ROOM TEMP. RAPIDLY GAVE HG, ET SUB3 SIBR, AND ET SUB3 SISH. SIMILARLY, S AND (ET SUB3 GE)SUB2 HG GAVE AFTER 0.5 HR AT 5DEGREES HG AND (ET SUB3 GE)SUB2 S, AS EVIDENTLY THE EXPECTED INTERMEDIATE ET SUB3 GESHGGEET SUB3 IS VERY UNSTABLE. ONLY 1 EQUIV. S REACTED DESPITE ANY EXCESS PRESENT.   FACILITY: LAB. STABIL. POLIM., GORKI, USSR.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--11SEP70

1/2   028
TITLE--IR SPECTRA OF VINYL DERIVATIVES AND CONJUGATION EFFECTS WITH THE
PARTICIPATION OF PI ELECTRONS OF THE VINYL GROUP -U-
AUTHOR--YEGOROCHKIN, A.N., SEMCHIKOV, YU.D., VYAZANKIN, N.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 152-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IR SPECTRUM, CONJUGATE BOND SYSTEM, SPECTROSCOPIC ANALYSIS,
SILANE, ALCOHOL, ORGANOTIN COMPOUND, ORGANOGERMANIUM COMPOUND,
CHLORINATED ORGANIC COMPOUND, BROMINATED ORGANIC COMPOUND, IODINATED
ORGANIC COMPOUND, FLUORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1054   STEP NO--UR/0062/70/000/001/0152/0154

CIRC ACCESSION NO--AP0104452
                       UNCLASSIFIED

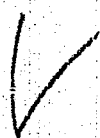CIRC ACCESSION NO--AP0104452 UNCLASSIFIED PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IR SPECTRAL FREQUENCIES OF THE ME DEFORMATIONS IN 41 COMPDS. INCLUDING HYDROCARBONS, ALCS., ETHERS, HALIDES, SILANES, GERMANES AND STANNANES CONTG. THE VINYL GROUP WERE TABULATED. THE FANNING MOTION OF THE VINYL GROUP IN SUCH COMPDS. IS REFLECTED IN RESULTS OF THE INDUCTIVE EFFECT OF SUBSTITUENTS AS WELL AS RESULTS OF INTERACTION OR CONJUGATION OF PI, PI PRIME NEGATIVE, PI, P PRIME NEGATIVE, AND (D-P) PI-TYPES.

UNCLASSIFIED

ICC. Nr **APCO32549**

Abstracting Service:
CHEMICAL ABST. *3-70*

Ref. Code
NE0000

55601p ·Reactions of bis(triphenylgermyl)cadmium with protic reagents. Vyazankin, N. S.; Bychkov, V. T.; Linzina, O. V.; Razuvaev, G. A. (Polym. Stabil. Lab., Gorki, USSR). J. Organometal. Chem. 1970. 21(1), 107-13 (Eng). Reactions of bis(triphenylgermyl)cadmium with H₂O, EtOH, PhOH and carboxylic acids occur with heterolytic cleavage of one of the germanium-cadmium bonds. Ph₃GeCdOR (R = H, Et, Ph, Ac, CF₃CO, Bz), are formed as the final or intermediate products. In the latter case they decomp. to cadmium and Ph₃GeOR or react immediately with protic reagents with scission of the Ge–Cd bond. Some complexes of bis(triphenylgermyl)cadmium, and related compds., with electron donors were investigated.

RCLC

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19700836

UDC: 534.322.3+534.83

USSR

VYAZ'MENSKAYA, L. M.

"On the Theory of Noise of Turbulent Jets"

Vestn. Leningr. un-ta (Leningrad University Herald), 1973, No 1, pp 88-93
(from RZh-Fizika, No 5, May 73, abstract No 5Zh586 by the author)

Translation: The paper uses a form of solving the wave equation that is dif-
ferent from that used in known works on noise generation by turbulence. This
enables accounting for the relation between the derivatives with respect to
time and coordinate in turbulent flow, which was not considered previously.
Analysis of the resultant formula for intensity shows that the noise intensity
for subsonic jets in the direction perpendicular to the axis of the jet is
proportional to the sixth power of the discharge velocity, which relation agrees
well with experimental data. The discrepancy between this conclusion and
Lighthill's "eighth power law" is attributed to the accounting for the above-
mentioned relation in a turbulent flow.

1/1

USSR

UDC 681.327.64'18

BEL'CHENKO, A. A., VYAZEMSKIY, V. O., and SUKHODOL'SKIY, V. Yu.

"Some Problems in the Design of Digital Magnetic Tape Storage"

Izv. Leningr. Elektrotekhn. In-ta (News of Leningrad Electrical Engineering Institute), No 92, 1971, pp 41-43 (from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B272, by B. K.)

Translation: Problems connected with the design of tape drive mechanisms for memory units with a capacity of 10^5--10^6 bits are discussed for those mechanisms which allow recording at tape speeds on the order of several microns per second and which allow read-out at considerably greater speeds (2--3 millimeters per second). It is noted that a change in the speed of revolution of the drive motor during the transfer from recording to repro-duction and stabilization of its number of revolutions may be ensured by one electronic control bloc. It is recommended that the tape be pulled through with the help of a friction drive with a double loop of the tape, resulting in a complete wrap around angle of more than 360°. In connection with the small consumption of tape, the receiving and feeding cassettes of the tape drive mechanism could be joined by a spring-loaded connection,

1/2

USSR

BEL'CHENKO, A. A., et al., Izv. Leningr. Elektrotekhn. In-ta (News of
Leningrad Electrical Engineering Institute), No 92, 1971, pp 41-43 (from
Referativnyy Zhurnal — Avtomatika, Telemekhanika, i Vychislitel'naya
Tekhnika, No 8, 1971, Abstract No 8B272, by B. K.)

which would replace the winding assemblies. The authors' data on a tape
drive mechanism which is being transferred to series production at the
present time is cited. 2 titles in bibliography.

2/2

USSR

UDC 681.327.64.001.5:681.327.17

VYAZEMSKIY, V. O., and SUKHODOL'SKIY, V. Yu.

"Methods and Apparatus for Monitoring Digital Storage on Magnetic Tape"

Translation: A method and apparatus are suggested which make it possible to implement objective monitoring of equipment for digital magnetic transcription in the stages of design, manufacturing, and operation. The method is based on direct measurement of time intervals of reproduction signals and their subsequent statistical processing. In connection with this, the distribution functions, moments, and autocorrelation function are computed; from the Fourier transform of the latter the spectral density of the time intervals being investigated is found. With the help of a time-interval analyzer, histograms are obtained for the differential distribution law of the periods of a signal during reproduction of the test transcription on magnetic recorders of various types. 2 titles in bibliography.

1/1

- 40 -

USSR

VYAZITSKIY, P. O., and KUZANICHKIN, S. D.

UDC 613.693

"The Effect of Hypodynamia on the State of External Respiration Under Various Micro-climatic Conditions"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 7, 1970, pp 38-40

Abstract: The effect of hypodynamia on respiration was studied in eight young men under conditions of comfortable temperature, heat with humidity, and cold. The subjects remained for 6 days in a sitting position, with restricted movement. Oxygen consumption was determined prior to the tests and at the end of the 6 day period. It was established that hypodynamia under various climatic conditions does not lower the permeability of the lung diffusion membrane. The greatest changes were noted in the functional indicators of external respiration after hypodynamia during physical exercise at a comfortable temperature. Analysis of shifts in individual parameters of external respiration led to the conclusion that these shifts are related to the state of the cardiovascular system, namely its capability to adopt to changing situations. Examination of the subjects after exposure to hypodynamia showed that those kept in a comfortable microclimate exhibited the largest decrease in circulatory volume, both as compared to the initial value and in relation to the two other groups.

1/1

TITLE--STATE OF THE CARDIOVASCULAR SYSTEM IN PATIENTS SUFFERING FROM
  ADDISON'S DISEASE -U-

AUTHOR-(02)-VYAZITSKIY, P.O., SERGEYEV, A.I.

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