ZAKHAROV, A.A.

JPRS 59268
6-73

II-3. STUDY OF THE THERMODYNAMIC CONDITIONS OF GROWTH OF EPITAXIAL FILMS OF
GALLIUM ARSENIDE IN THE GaAs-H2O-H2 SYSTEM (I)

[Article by A. A. Barybin, A. A. Zakharov, N. K. Nedev, Leningrad; Novosibirsk,
III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i
Plenok, Russian, 12-17 June, 1972, p 1]]

The thermodynamics of the process of growth of gallium arsenide films in
the GaAs-H2O-H2 system were studied in papers by Michelitsch [1] and Gottlieb
[2]. In the given paper a study has been made of the thermodynamic analysis
of the chemical transport of gallium arsenide by water vapor in order to select
the optimal conditions of growth of epitaxial films. For this purpose, along
with the basic chemical reaction proceeding with the formation of the volatile
oxide Ga2O, a study was made of two competing reactions disturbing the
stoichiometric gas composition: one is with the formation of the nonvolatile
oxide Ga2O3, and the other, with the formation of liquid gallium. The calcu-
lation results on a computer permitted the selection of the range of stoichiometric
compositions of the gas phase, bounded by the operating temperature range of
650-900°C and the partial pressure of water from 0.3 to 30 mm Hg. Outside the
indicated region at low temperatures, Ga2O3 is formed, and at high temperatures,
liquid gallium. The experimental studies confirmed the calculation results.
The application of exact calculation of the gas phase considering the competing
reactions permitted the selection of the optimal conditions of the epitaxial
process.

BIBLIOGRAPHY

1. M. Michelitsch, et al., J. Electrochem. Soc., No 111, 124B, 1964 (Russian
    translation in the collection Metallurgiya v elektronike [Metallurgy in
    Electronics], Izd-vo Metallurgiya, Moscow, 185, 1970).

2. C. E. Gottlieb, J. Electrochem. Soc., No 112, 192, 1965.
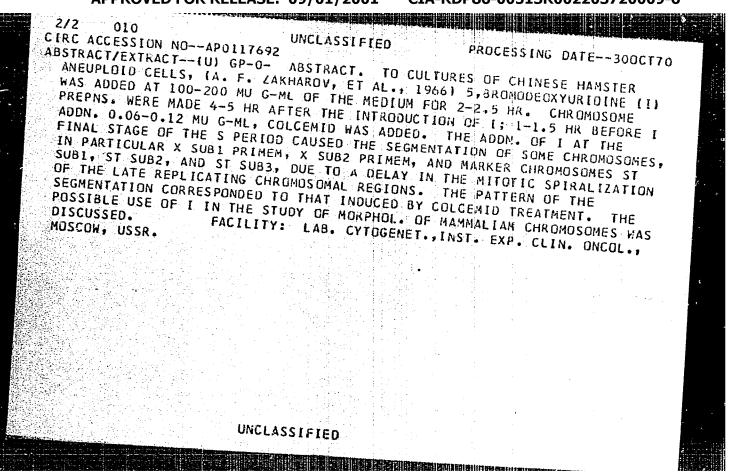
- 12 -

1/2   010

UNCLASSIFIED

TITLE--FUNCTIONAL MORPHOLOGY OF MAMMALIAN CHROMOSOMES IN CULTURED CELLS. II. CHROMOSOMES OF THE CHINESE HAMSTER ANEUPLOID CELLS AS STUDIED WITH

PROCESSING DATE--30OCT70

AUTHOR-(02)-ZAKHAROV, A.F., YEGOLINA, N.A.

COUNTRY OF INFO--USSR

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DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MORPHOLOGY, MAMMAL, CHROMOSOME, HAMSTER, CELL CULTURE, MITOSIS

CONTROL MARKING--NO RESTRICTIONS

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UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0117692

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO CULTURES OF CHINESE HAMSTER ANEUPLOID CELLS, (A. F. ZAKHAROV, ET AL., 1966) 5,BROMODEOXYURIDINE (I) WAS ADDED AT 100-200 MU G-ML OF THE MEDIUM FOR 2-2.5 HR. CHROMOSOME PREPNS. WERE MADE 4-5 HR AFTER THE INTRODUCTION OF I; 1-1.5 HR BEFORE I ADDN. 0.06-0.12 MU G-ML, COLCEMID WAS ADDED. THE ADDN. OF I AT THE FINAL STAGE OF THE S PERIOD CAUSED THE SEGMENTATION OF SOME CHROMOSOMES, IN PARTICULAR X SUB1 PRIMEM, X SUB2 PRIMEM, AND MARKER CHROMOSOMES ST SUB1, ST SUB2, AND ST SUB3, DUE TO A DELAY IN THE MITOTIC SPIRALIZATION OF THE LATE REPLICATING CHROMOSOMAL REGIONS. THE PATTERN OF THE SEGMENTATION CORRESPONDED TO THAT INDUCED BY COLCEMID TREATMENT. THE POSSIBLE USE OF I IN THE STUDY OF MORPHOL. OF MAMMALIAN CHROMOSOMES WAS DISCUSSED. FACILITY: LAB. CYTOGENET.,INST. EXP. CLIN. ONCOL., MOSCOW, USSR.

UNCLASSIFIED

ZAKHAROV, A. I.

Optics

TECHNICAL TRANSLATION

FSTC-HT-23-1428-72

ENGLISH TITLE: New Theodolites and Telescopic Range Finders

FOREIGN TITLE: "Novyye Teodolity i Opticheskiye Dal'nomery"

AUTHOR: A. I. Zakharov

SOURCE: Nedra Press, Moscow, Russian, 1970; 232 pages

Translated for FSTC by ACSI

NOTICE

USSR   UDO 621.394.5

ZAKRIY, LEONID PANOVICH: ZAKHAROV, ANATOLIY IVANOVICH, OKHORZIN, VIKTOR
MIKHAYLOVICH

"Elements Of The Theory Of The Transmission Of Discrete Information"

Elementy teorii peredachi diskretnoy informatsii (cf. English above), Moscow,
Izd. "Svyaz'," 1972. 232 pp. ill. 79 ref. 1 r. 15 k.

Abstract: In the book an account is given of the basic problems in the trans-
mission of discrete information: the statistical characteristics of communicat-
ion channels, codes, and systems. An increase of the reliability of transmission
of discrete information is considered, based on the statistical characteristics
of real communication channels. Methods and devices are described for a statis-
tical study of communication channels intended for data transmission; the prin-
cipal results are given of studies of cable, radio relay, tropospheric, and
shortwave channels. On the basis of the processing and generalization of the
results of statistical testing of the channels, methods are presented for eval-
uation of the effectiveness of groups of error correcting codes and a calculat-
ion of the parameters of some systems of transmission of discrete information.
The book is intended for development-engineers of apparatus for data trans-
mission, scientific workers, graduate students, and students of advanced courses
of corresponding specialities.
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USSR

ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy informatsii, Moscow, Izd. "Svyaz'," 1972. 232 pp. ill. 79 ref. 1 r. 15 k.

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ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy informatsii, Moscow, Izd. "Svyaz'," 1972. 232 pp. ill. 79 ref. 1 r 15 k.

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USSR

ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy
informatsii, Moscow, Izd. "Svyaz'," 1972. 323 pp. ill. 79 ref. 1 r 15 k.

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USSR

ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy
informatsii, Moscow, Izd. "Svyaz'," 1972.   232 pp. ill. 79 ref. 1 r 15 k.

Section II

Corrective Codes And Their Effectiveness

USSR

ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy informatsii, Moscow, Izd. "Svyaz'," 1972.   323 pp. ill. 79 ref. 1 r 15 k.

Section III

Systems For Transmission Of Discrete Information

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USSR

ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy informatsii, Moscow, Izd. "Svyaz'," 1972.   323 pp. ill. 79 ref. 1 r 15 k.

USSR

ZAMRIY, LEONID PANOVICH, et al., Elementy teorii peredachi diskretnoy informatsii, Moscow, Izd. "Svyaz'," 1972. 323 pp. ill. 79 ref. 1 r 15 k.

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Devices

USSR   UDC   621.394.662

ZAMRIY, A. S., ZAKHAROV, A. I.

"A Device for Transmitting Discrete Information by the Start-Stop Method"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 5, Feb 72, Author's Certificate No 327620, Division H, filed 17 Jul 70,
published 26 Jan 72, p 174

Translation: This Author's Certificate introduces a device for trans-
mitting discrete information by the start-stop method. The device con-
tains a cadence frequency generator, a keyboard with contacts and memory
cells, a keyboard interlock coding unit and a stop-start distributor, and
a flip-flop connected through an output unit to the communications channel.
As a distinguishing feature of the patent, interference suppression is
improved by connecting the input of the first cell of the preselector
through an OR circuit to the outputs of the memory cells of the keyboard.
The other cells of the preselector are connected to the output of the
coding unit, and the readout inputs of the preselector cells are connected
to the outputs of the start-stop distributor. The number of digital
places in the start-stop distributor is one digit greater than the number

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USSR

ZAMRIY, A. S., ZAKHAROV, A. I., USSR Author's Certificate No 327620

of information elements in the start-stop cycle. The outputs of the pre-
selector cells are connected through a second OR circuit to the counting
input of the flip-flop, and the outputs of the keyboard memory cells are
connected to the input of the coding unit directly.

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USSR   UDC 669.018.472

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

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

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

Abstract: Advances in quantum electronics and superhigh-frequency tech-
niques (precision toolmaking, metrology) have created an ever-increasing
demand for alloys with extremely low thermal expansivity including Super
Invar alloy (31-33% Ni; 4-6% Co; the balance--iron). This study concerns
the effect of Ni, Co, Si, Mn, Cu, Mo, Nb, Re, Cr, and Ti on the coefficient
of linear thermal expansion (CLTE) of Super Invar alloy within 20-80°C. It
was found that Cu (up to 0.6%), Mo (up to 0.6%), Nb (up to 0.6%), Cr (up
to 0.2%), Mn (up to 0.9%), Re (up to 0.6%) raise the stability of the
phase and concurrently increase the CLTE of Super-Invar alloy. Minor
additions of silicon markedly increase the CLTE but lower the stability of
the γ-phase. As the silicon content is increased from 0.06 to 0.1%, CLTE
increases from $-2\cdot10^{-7}$ deg^{-1} to $21\cdot10^{-7}$ deg^{-1} at 20-80°C and the initial
$\gamma\rightarrow\alpha$ phase transformation temperature increases from -40 to 0°C. It is
suggested that Ni content in the Super Invar alloy be kept down to a
minimum. (3 illustrations, 1 table, 6 bibliographic references)
1/1

Heat Treatment

USSR

UDC 538.245

VOROSHILOV, V. P., ZAKHAROV, A. I., KALININ, V. M., and URALOV, A. S., Institute of Precision Alloys, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, Ural State University imeni A. M. Gorkiy

"Effect of Plastic Deformation and Heat Treatment on Linear Thermal Expansion Coefficient and Magnetic Properties of Invar Alloys"

Abstract: Experiments were carried out with specimens made from 36NKh1 and 36NKh2 alloys which were subjected to homogenization at 1050°C for 100 hours. The linear thermal expansion coefficient (α) of these alloys reached its maximum value at 130-170°C and its minimum value at 25 and 270°C. The lowest value of α was observed for the specimen subjected to severe plastic deformation, and the highest was obtained with specimens subjected to tempering at 600°C for 5 hours, followed by cooling to 100°C for 90 hours. The plastic deformation of the alloy containing 36% Ni increased the magnetic susceptibility in the entire range of magnetic fields (up to 3000 oersted), as well as of magnetostriction. The increase in the magnetic susceptibility and magnetostriction of the paraprocess, and the decrease in the magnetization saturation as a function of plastic deformation of Ni-Fe alloys containing different amounts
1/2

USSR

VOROSHILOV, V. P., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 953-958

of Ni is attributed to a disintegration of regions with a short-range order (types NiFe or NiFe$_3$) and to a static distribution of the iron atoms in solid solution.

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1/2   013   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--A HELIUM CRYOSTAT FOR X RAY STUDIES -U-

AUTHOR--ZAHKAROV, A.I.

COUNTRY OF INFO--USSR

SOURCE--CRYOGENICS, GB, VOL. 10, NO. 1, P. 65-7, FEB. 1970

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYOSTAT, X RAY DIFFRACTION CAMERA

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CIRC ACCESSION NO--AP0111687
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0111687
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CRYOSTAT HAS BEEN DEVELOPED FOR
STUDYING METALS AND ALLOYS BETWEEN 4.5 AND 300 K IN AN X RAY VACUUM
DIFFRACTOMETER.   FACILITY: SCI. RES. INST. FERROUS METALLURGY,
MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC 621.791:669.245

YUSHCHENKO, K. A., KAKHOVSKIY, N. I., and STARUSHENKO, T. M., Institute of
Electric Welding imeni Ye. O. Paton; IL'ICHEV, V. YA., Physicotechnical
Institute of Low Temperatures, Academy of Sciences Ukrainian SSR; ZAKHAROV, A.I.,
Central Scientific Research Institute of Ferrous Metallurgy

"Weldability and Properties of Invar Weld Joints at Low Temperatures"

Kiev, Avtomaticheskaya Svarka, No 9, Sept 72, pp 39-42

Abstract: The purpose of this investigation was to develop the technology of
welding Fe-Ni alloys (36N, 36NKh, and 39N) with a thickness up to 5 mm and to
evaluate the weldability of Invar with a thickness up to 12 mm in order to
obtain a strong and dense joint with the required mechanical and thermophysical
properties in the 20 to -253°C interval. Chemical composition of the Fe-Ni al-
loys was (in %):

	C	Si	Mn	S	P	Ni	Cr
36N	0.032	0.23	0.43	0.009	0.003	36.1	----
36NKh	0.035	0.15	0.52	0.004	0.004	37.0	0.49
36N	0.034	0.19	0.50	0.008	0.009	39.9	----

Samples were submerged-arc welded with a nonconsumable tungsten electrode
in argon, both with filler wire and without it, with AN-26 and AnF-5 fluxes.
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TUSHECHENKO, K.A., et al., Avtomaticheskaya Svarka, No 9, Sep 72, pp 39-42

Low-temperature studies of the weld joints were carried out at the physicotechnical Institute of Low Temperatures, Academy of Sciences Ukrainian SSR, the Central Scientific Research Institute of Ferrous Metallurgy, and the Institute of Electric Welding. Analysis of the mechanical and thermophysical properties of weld joints at low temperatures where 36NGT, 36NGTCe, and 36NGCe filler wires were used showed that alloying with Ti and Mn produces a dense joint where the alloy strength is equal to that of the base metal of the seam and possesses high impact strength and ductility at -253°C. Experimental studies of welded Invar (6 and 12 mm thick) showed that the use of 36NGT filler wire yields seams with defects (hot cracks). 6 figures, 2 tables, 8 bibliographic references.

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USSR   UDC 669.15'24-194:539.125.517.2

MEN'SHIKOV, A. Z., ARKHIPOV, V. Ye., ZAKHAROV, A. I., and SIDOROV, S. K.,
Institute of Metal Physics of the Ukrainian National Center of the Academy
of Sciences USSR

"Atomic Correlation in Invar Ferro-Nickel Alloys"

Abstract: An experimental investigation was made of the nuclear diffusion
scattering of neutrons on hardened specimens of ferro-nickel alloys (50,
65, and 70 at% Fe). The specimens contained the isotope of nickel 62 having
a negative amplitude of scattering. The parameters of the short-range order
(a < 0) in the first and the second coordination spheres were calculated by
the method of least squares from experimental curves of the dependence of
the differential scattering section on the wave vector. The calculation of
the number of atoms in the first coordination sphere indicates that in hard-
ened nickel alloys containing 65 and 70 at% Fe, a short-range order of the
NiFe or NiFe$_3$ types is being established. A parallel investigation was made
of the change of the linear expansion coefficient and parameters of the
short-range order depending on the annealing temperature of the Invar alloy.
The experiments revealed that temperature annealing, reducing to a development
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USSR

MEN'SHIKOV, A. Z., et al., Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 309-315

of a short-range order, decreases the anomaly of the linear expansion coefficient. Therefore, the atomic correlation of the short-range-order type can only attenuate the Invar phenomenon, but it cannot be its source. Two figures, one table, fifteen bibliographic references.

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ZAKHAROV, A.I.

Streamer breakdown

THEORY OF STREAMER BREAKDOWN

The development of the successive theory of streamer breakdown of a gas requires examination of transport of the zone of ionization in the direction of unionized gas in an electric field, depending on the form of streamer, which is governed, in turn, by the transport mechanism [1-3]. In such form this problem is very complex, and the theory proceeds along the path of analysis of various qualitative streamer models [4].

It is assumed in [4] that the velocities of the streamers traveling toward the anode and cathode are determined by the drift rate of electrons. The mechanism of propagation of an anode-bound streamer is considered to be the development of an avalanche from the leading edge of a electrons traveling toward the anode. On the cathode side electrons are formed ahead of the front of the cathode-bound streamer because of transfer of emission from the ionized zone [1]. It is shown in [5] that direct photoionization is ineffective because of the short path of the quanta, and a mechanism of development of a cathode-bound streamer, related to associative ionization of excited atoms, is proposed. These atoms are formed by far-traveling resonance photons from the spectral line.

A linear relationship between the velocity of streamers and their length turned out to be a very interesting prediction of theory [4]. This dependence was confirmed in experiments on streamer breakdown, initiated at the center of the discharge gap in spark chambers [6, 7]. At the same time, the velocity of the "breakdown wave" for streamers, developed from avalanches initiated at one of the electrodes, remains constant with satisfactory accuracy in intervals of length of the order of 1 m.

A qualitative theory that permits computation of the velocity of an anode-bound streamer in the case when velocity does not depend on length, is formulated in this article. Since the diffusion coefficient of excited

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UDC 621.315.592

ZAKHAROV, A. L.

"Performance of a High-Efficiency Avalanche Diode"

Abstract: A study was made of the theoretical physical principles of the per-
formance of an avalanche diode as a microwave generator (a converter of DC power
to AC power). The nonlinearity of the dependence of the impact ionization
factor on the electric field is the physical property on the basis of which it
is possible to realize a high-efficiency (close to 1) generator. The require-
ments on the time-space distribution of the currents and   electric fields
required for operating with high efficiency are formulated in most general
form. The use of TRARATT-mode as a means of realizing high-efficiency opera-
ting conditions is discussed.

        Any operating mode of an avalanche diode used as a DC-powered generator
with high efficiency is distinguished by the attribute that it is possible to
separate a two-dimensional region σ in the time-coordinate space encompassing
the entire space charge of the diode and the oscillation period into the follow-
ing three regions: a) the generation region σ_{gen} (the fields and conduction

currents in σ_{gen} are large) in which almost all the avalanche generation of

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USSR

ZAKHAROV, A. L., <u>Fizika i Tekhnika Poluprovodnikov</u>, Vol 6, No 2, 1972, pp 217–223

electron-hole pairs in the diode takes place during a period; b) the drift region σ_{dr} (in the σ_{dr} region the fields are small, and the conduction currents are high) the area of which is much larger than the area of σ_{gen} and in which the majority of the carriers generated by the avalanche travel almost their entire path through the space charge of the diode; c) the passive state region σ_{pas} (in σ_{pas} the conduction currents are negligibly small, the fields are on the average higher than in σ_{dr}, but they are appreciably lower than in δ_{gen}) occupying the greater part of σ.

Almost all the work of the field on the moving charges (that is, dissipation of electric power) takes place in the regions σ_{gen} and σ_{dr} (the set of these regions is, therefore, called the active state region σ_{act}) and is characterized by the values of V_{gen} and V_{dr} (the work per unit generated charge) respectively, and the mean voltage on the diode $\overline{U}$ is basically determined by the fields in the region σ_{pas}. The values of V_{gen} and V_{dr} are much less than 2/3

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ZAKHAROV, A. L., _Fizika i Tekhnika Poluprovodnikov_, Vol 6, No 2, 1972, pp 217-223

$\overline{U}$. The smallness of V_{gen} derives from the smallness of the area σ_{gen}, and the smallness of V_{dr}, from the smallness of the fields in σ_{dr}.

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USSR   UDC 669.018.1

SAVITSKIY, YE. M., ZAKHAROV, A. M., BURKHANOV, G. S., and KATAYEV,
R. S., Institute of Metallurgy imeni A. A. Baykov

"Study of the Trinary System Molybdenum-Nickel-Carbon"

Abstract: Microscopic and X-ray phase analysis plus determina-
tions of the solidus temperature and microhardness are used to
study molybdenum-carbon in the trinary system Mo-Ni-C up to 0.5
and 3.5% Ni. Isothermal cross sections are constructed at 1800
and 1200° and polythermal cross sections are constructed with
constant nickel content (0.35%) and carbon content (0.01%). At
1800°, a liquid phase and the carbide Mo_2 are in equilibrium with
the molybdenum solution, while at 1200°   the delta phase
(solution based on MoNi) and Mo_2C are in equilibrium. The Mo-Ni-C
system forms no complex carbides in the concentration range
studied. Alloying of molybdenum with nickel increases the solubi-
lity of carbon in the molybdenum in the solid state at high tem-
peratures: at 1800°, the solubility of carbon is increased from
0.04 to 0.07% by introduction of 0.8% Ni. Alloying of Mo-C with
nickel decreases the solidus temperature and expands the tem-
peratures range of crystallization.   1/1

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USSR

UDC   621.371:551.510.52

GORBACHEVA, N. P. and ZAKHAROV, A. M.

"Experimental Investigation of Angular Separation at the Far Tropospheric Scattering Line"

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 41-44 (from RZh—Radiotekhnika, No 10, 1972, Abstract No 10A355)

Translation: Results are given of an experimental investigation into the angular separation in the vertical plane at the far tropospheric scatter (FTS) line in the 4 GHz range. It is shown that, to counter slow signal fading at the FTS lines, an angular distance equal to the approximate width of the DN antenna (of the order of 1°) may be used. The presence of an optimal angle of antenna elevation, depending on meteorological conditions, is confirmed. Bibliography of two. A. L.

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ZAKHAROV, A. M.

JPRS 55941
9 May 72

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The ternary systems, Nb-Zr-C and Nb-Ti-C, were investigated in references [1-5]. The methods of microstructural analysis and x-ray micrography of annealed alloys were used to construct the isothermal sections of the Nb-Zr-C system at 1,700° and the Nb-Ti-C system at 1,500° [1] and 1,600° [2]. In reference [3] using the same methods on sintered alloys, as a result of constructing the isothermal section at 2,000° and the polythermal section, the authors confirmed the existence of the previously established phase domains and demonstrated that the polythermal section of Nb-Zr-C is not quasibinary. In reference [4] a study was made of the isothermal sections at 2,500 and 1,500 degrees, and the schematic of a three-dimensional diagram of state of Nb-Zr-C was constructed. In references [1-4], a study was made of alloys with a high carbon and zirconium (or titanium) content. The position of the phase boundaries in the niobium corner was determined by extrapolation from the domains with high concentration of the alloy elements. In reference [5] a study was made of the isothermal section of the niobium corner of the Nb-Zr-C system at 1,300°. The alloys for the investigation were annealed in advance and cooled slowly. Then they were again heated at 1,300° for three hours and quenched by blowing with argon. According to the results of reference [5], it must be concluded that heating at 1,200-1,300° for three hours, as our paper has shown, does not permit conversion of the excess phases precipitated out of solution during slow cooling into a solution and that the alloys investigated for the construction of the isothermal section at 1,300° had Widmanstatten structure (figure 4b-d in reference [5]) which is formed as a result of insufficiently rapid cooling during quenching. These alloys must be considered single-phase at the homogenization temperature.

In this paper, a study was made of the ternary system of Nb-Zr-C within the limits of 0.028-1.97% C and 0.56-18.5% Zr.

The alloys were prepared in an electric arc furnace with a tungsten electrode on a copper water-cooled tray in an atmosphere of purified helium. The burden materials were niobium of a cathode-ray melt (0.01% C, 0.007% N,

ZAKHAROV, A. M.

SOLUBILITY OF CARBON IN NIOBIUM

The diagram of state of Nb-NbC was first constructed in reference [1]. It was later investigated and more precisely defined in references [2-7]. A eutectic is formed between niobium and carbide Nb_2C, the melting point of which and the position of the line of limited solubility of carbon in niobium differ according to the data of different authors (see the table).

In this paper, alloys containing up to 1.84 percent by weight C were prepared in an arc furnace with a tungsten electrode on a copper water-cooled sole in an atmosphere of purified helium. The burden materials were niobium from cathode-ray melting (0.01 percent C, 0.007 percent N, < 0.01 percent O, 0.001 percent H) and carbide NbC. The cast alloys (specimens 4 x 4 x 7 mm) were 40-70 percent upset in a vacuum device [8] at 1,600 degrees. The deformed test pieces were annealed in a TVV-2A furnace ($1 \cdot 10^{-5}$ - $5 \cdot 10^{-6}$ mm Hg) in a niobium basket in stages: 2,100 degrees for 27 hours, 2,000 degrees for 10 hours, 1,800 degrees for 40 hours, 1,600 degrees for 25 hours, 1,200 degrees for 150 hours. The temperature of the test pieces was controlled by the VR5/VR20 thermocouple. For quenching, the test pieces 2 x 3 x 6 mm were placed between two tungsten electrodes, heated in a vacuum ($1 \cdot 10^{-4}$ mm Hg) by direct passage of current to temperatures of 2,100, 2,000, 1,800 and 1,600 degrees for 1 hour and quenched, shutting off the current. The 1 hour holding was sufficient for conversion of the excess phases to the solid solution, from which they were separated with slow cooling of the test pieces in the TVV-2A furnace. The individual two-phase test pieces were held at the quenching temperature for two and four hours, but their microstructure did not change on increasing the holding time.

The heating temperature of the test pieces for quenching was controlled by an optical pyrometer which was graduated with respect to brightness of the niobium surface heated to the corresponding temperature. The mean cooling

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USSR

SAVITSKIY, YE. M., ZAKHAROV, A. M., BURKHANOV, G. S., and KATAYEV,
R. S., Institute of Metallurgy Imeni A. A. Baykov

"Study of the Trinary System Molybdenum-Nickel-Carbon"

Abstract: Microscopic and X-ray phase analysis plus determina-
tions of the solidus temperature and microhardness are used to
study molybdenum-carbon in the trinary system Mo-Ni-C up to 0.5
and 3.5% Ni. Isothermal cross sections are constructed at 1800
and 1200° and polythermal cross sections are constructed with
constant nickel content (0.35%) and carbon content (0.01%). At
1800°, a liquid phase and the carbide Mo_2 are in equilibrium with
the molybdenum solution, while at 1200° the delta phase
(solution based on MoNi) and Mo_2C are in equilibrium. The Mo-Ni-C
system forms no complex carbides in the concentration range
studied. Alloying of molybdenum with nickel increases the solubi-
lity of carbon in the molybdenum in the solid state at high tem-
peratures: at 1800°, the solubility of carbon is increased from
0.04 to 0.07% by introduction of 0.8% Ni. Alloying of Mo-C with
nickel decreases the solidus temperature and expands the tem-
peratures range of crystallization. 1/1

TITLE--DEPENDENCE OF RESIDUAL STRESSES IN A GLASS FIBER REINFORCED PLASTIC
    BINDER ON HARDENING CONDITIONS -U-

AUTHOR-(05)-ABIBOV, A.L., TITARENKO, G.S., KORINDVASOVA, M.YU., ZHERDEV,
    YU.V., ZAKHAROV, A.M.

COUNTRY OF INFO--USSR

SOURCE--MEKH. POLIM. 1970, 6(1), 176

DATE PUBLISHED------70

SUBJECT AREAS---MATERIALS

TOPIC TAGS--GLASS FIBER, REINFORCED PLASTIC, RESIDUAL STRESS, POLYMER
    BINDER/(U)EDT10 PLASTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0516   STEP NO--UR/0374/70/006/001/0176/0176

CIRC ACCESSION NO--AP0107121
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0107121
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESIDUAL STRESSES IN AN EDT-10
COMPN. (I) WERE STUDIED AS A FUNCTION OF THE HARDENING TEMP. (UNDER
ISOTHERMAL CONDITIONS) AND OF THE EXPTL. TEMP. FOLLOWING SUPPLEMENTAL
HEATING. THE NO. OF ISOCHROMES STEADILY DECREASED WITH HEATING REACHING
0 AT A TEMP. (FIXED STRUCTURE TEMP.) WHICH EXCEEDED THE HARDENING TEMP.
BY 8-10DEGREES, SUGGESTING THE COMPLETE DISAPPEARANCE OF STRAIN IN I.
THE HARDENING TEMP. WAS PROPORTIONAL TO THE FIXED STRUCTURE TEMP. AT
85-180DEGREES.

UNCLASSIFIED

Miscellaneous

ZAKHAROV, A. M., NOVIKOV, I. I., PARSHIKOV, V. G., and PORTNOY, V, K.,
Moscow, Institute of Steel and Alloys

"Age-Hardening of Molybdenum Alloys with Titanium and Zirconium Carbides"

Abstract: Age-hardening from 900°C to 1500°C for 0.5-20 hrs in the TVV-2A
furnace with a residual gas pressure of 2×10^5 mm Hg of molybdenum alloys of
systems Mo-Ti-C, Mo-Zr-C, and Mo-Ti-Zr-C, hardened from 2100°C, was investi-
gated by the method of hardness measuring. The phase composition in late
aging stages was analyzed electron-microscopically. In the aging of hardened
alloys for 10-20 hrs, the same phases are isolated from the molybdenum solu-
tion which must be present in the alloys in accordance with equilibrium
state diagrams of Mo-Ti-C, Mo-Zr-C, and Mo-Ti-Zr-C. Aging at 1200-1300°C
(0.5-0.55 melting temperature) for 2-4 hrs produced maximum hardness. The
ZrC carbide hardens most intensely. The effects of aging temperature and
duration on the hardness are shown. The Mo_2C carbide decreases the hardening
effect by aging. Two figures, two tables, eight bibliographic references.

1/1

1/2   027   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--STUDY OF THE TERNARY DIAGRAM COPPER, IRON, TITANIUM -U-

AUTHOR-(03)-KHAN, M.G., ZAKHAROV, A.M., ZAKHAROV, M.V.

COUNTRY OF INFO--USSR

SOURCE--ISVETNAIA METALLURGIIA, VOL. 13 NO 1 1970 P 104-109

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--COPPER ALLOY, IRON ALLOY, TITANIUM ALLOY, BIBLIOGRAPHY,
   THERMAL ANALYSIS, INTERMETALLIC COMPOUND, ELECTRIC RESISTANCE,
   SOLUBILITY, TERNARY ALLOY, CARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0444   STEP NO--UR/0149/70/013/001/0104/0109

CIRC ACCESSION NO--AP0121118
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0121118
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE TERNARY SYSTEM
 CU-FE-TI CONTAINING TO 5PERCENT FE AND TO 5PERCENT TI, USING
 MICROSCOPIC, X RAY, AND THERMAL ANALYSES, MEASUREMENTS OF MICROHARDNESS
 AND ELECTRICAL RESISTIVITY, AND MAGNETOMETRY. ISOTHERMAL SECTIONS OF
 THIS SYSTEM ARE CONSTRUCTED FOR 650, 850, AND 900DEGC; THE QUASI BINARY
 SYSTEM CU-TIFE2 IS ALSO STUDIED. THE SOLVUS LINE OF THE INTERMETALLIC
 COMPOUND IN COPPER IS DETERMINED. IT IS FOUND THAT THE MAXIMUM
 SOLUBILITY OF TIFE2 IN COPPER AT 1095DEG C IS ABOUT 2PERCENT AND
 DECREASES TO 0.4PERCENT AT 650DEGC.   FACILITY: MOSKOVSKII
 INSTITUT STALI I SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

ZAKHAROV, A. P., SHARAPOV, V. M., and YEVKO, E. I., Institute of Physical Chemistry, Moscow

"Hydrogen Permeability of Molybdenum and Tungsten Polycrystals and Single Crystals"

Abstract: The coefficients of permeability and diffusion of hydrogen in polycrystals and single crystals of molybdenum and tungsten were determined and relationships describing these processes were obtained for the 400-1200 C temperature range 1-200 torr hydrogen pressure interval. It was established that as grain size increases, hydrogen permeability in polycrystals gradually decreases, approaching values possessed by single crystals. Thus it was concluded that grain boundaries have a decided effect on diffusion of hydrogen in polycrystals. Expressions for diffusion coefficients of hydrogen in molybdenum and tungsten were obtained from test results. 4 figures, 2 tables, 14 bibliographic references.

1/1

GORODETSKIY, A. Ye., TESNER, P. A., LUK'YANOVICH, V. M., POLYAKOVA, M. M., ZAKHAROV, A. P., and YAGMIN, A. G., Institute of Physical Chemistry, Acad. Sc. USSR, All Union Scientific Research Institute of Natural Gasses, Moscow

"The Structure of Thin Pyrocarbon Films Obtained From Methane"

Abstract: Structure of pyrocarbon films obtained from methane under known growth kinetics has been studied. Platinum and polished quartz were used as bases, yielding two types of films. Films on quartz consist of relatively homogeneous finely crystalline pyrocarbon with low degree of tridimensional ordering. The films on platinum are heterogeneous with two distinct structures: finely crystalline and crystalline. The first resembles the films on the graphite – the second is a well ordered tridimensional graphite. The structure of the film depends on the pressure of methane: lowering the pressure favors formation of graphite crystals. The observed difference in the type of film, depending on the base, is due to the competition between the seeding and propagation processes: on quartz they are about equal, on platinum the seeding rate changes from sample to sample and is a function of pressure. It is proposed that pyrocarbon film formation is due to a direct decomposition of methane molecules on the surface of the base.
1/1

ZAKHAROV, A. P.

FIFTH INTERNATIONAL SYMPOSIUM ON MATERIALOGY

Article by Candidate of Physico-Mathematical Sciences A. P. Zakharov, Candidate of Physico-Mathematical Sciences A. N. Pilyankevich, Moscow, Vestnik Akademii Nauk SSSR, Russian, No 3, March 1972, pp 96-98]

The symposium took place at the University of California in Berkeley (U.S.) from 12-17 September 1971. Two-hundred twenty-eight specialists from 17 countries participated in the symposium and 80 reports were heard and discussed.

International symposia on the study of materials have been held since 1961 and usually concern some comparatively narrow subject. The 5th symposium was devoted to the technology and application of electron microscopy, in particular high-voltage transmission and scanning microscopy, for investigating processes of corrosion, plastic deformation and destruction, radiation damage in metals, alloys, ceramics, polymers, etc.

The development of new materials with prescribed properties requires analysis of their structural features and processes that take place in them on the atomic level, for which purpose various methods of physico-chemical analysis are employed, especially electron microscopy. It is often the only method of monitoring the structure during the development of compositions. Moreover, electron microscopy is an effective means of analyzing processes of corrosion, plastic deformation and failure of materials, development and behavior of defects in their crystal structure under the influence of various types of external actions. High-voltage and scanning electron microscopy are being used ever more extensively.

Most important among the numerous investigations done with the aid of high-voltage electron microscopy were the works of the Swedish scientists A. Asterlin and M. Tolen on analysis of the process of sintering of particles of nickel, copper, aluminum, silver, measuring a few hundredths of an angstrom, data of I. Greenfield (U.S.) on the diffusion of copper along grain boundaries in silver, obtained by means of electron diffraction, investigations of the mechanism of plastic deformation of beryllium on the basis of transmission electron microscopy, x-ray topography and analysis of thin foils of metal films (F. Weissmann and V. Cannon, U.S.). It was

JPRS 55889
4 May '72

-116-

USSR

PLASKIY, V. T., ZAKHAROV, A. P., SVETLICHNYY, V. M., STAROSTENKO, V. V.

"High-Frequency Noises of a Metal-Semimetal Point Contact"

Abstract: The relative noise temperature of the point contact formed by
a tungsten point with rounding radius of a few microns and a single crystal
specimen of bismuth antimonide is experimentally determined by measurements
in the 3-cm band by using P5-10 low-level power meters. Analysis of the
results shows that possible noise sources may be thermal noises of the
internal resistance of the semimetal and of the contact itself, noises due
to fluctuations in the thermoelectric voltage, and also noises due to non-
uniform passage of the charge carriers through the potential barrier at the
metal-semimetal interface.

1/1

S

UDC 620.193.01

USSR

TOMASHOV, N. D., CHUKALOVSKAYA, T. V., CHERNOVA, G. P., PLAVNIK, G. M.,
NAZAROVA, N. I., ZAKHAROV, A. P., and SHESHENINA, Z. YE., Academy of Sciences
USSR, Institute of Physical Chemistry

"Structural Study of Surface Layer on Ti-Pd Alloys"

Abstract: The article describes results of an electron microscopic, elec-
tron diffraction and X-ray study of the surface layer forming on Ti-Pd alloy
(Ti-0.2 percent Pd and Ti-1 percent Pd) during corrosion in 40 percent H_2SO_4
and 20 percent HCl at 100°. The electron microscopic study of the surface of
Ti-Pd alloys after their corrosion confirms the supposition as to the accumu-
lation of palladium on the surface in the form of very finely dispersed crys-
talline formations. After treatment of the surface with hot concentrated
HNO_3, which dissolves Pd, the electron microphotographs show no particles.
In the case of Ti-1 percent Pd palladium mainly forms very fine particles
on the surface. The Pd accumulations on Ti-0.2 percent Pd alloy reveal a
tendency towards the branched growth of primary crystallization centers.

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USSR

The results of the electron diffraction study of the surface of Ti-1 percent Pd alloy show that after corrosion in 20 percent HCl at 100° there are strong lines characteristic of Pd and very weak lines characteristic of TiO_2 and TiH_2. After treatment of the alloy in HNO_3 the lines characteristic of Pd disappear, and only TiH_2 and TiO_2 are found on the surface. The relative intensity of the reflections characteristic of Pd increases with an increase in the corrosion time, while it decreases for TiH_2 and TiO_2. After corrosion in 40 percent H_2SO_4 at 100° reflections characteristic of Pd, TiH_2, and TiO_2 are observed. However, the intensity of the Pd-characteristic lines is considerably weaker than after corrosion in 20 percent HCl at 100°, and they are of a diffuse character, while the intensity of the reflections characteristic of TiH_2 and TiO_2 is stronger.

X-ray analysis of the powdered surface layer that forms on Ti-1 percent Pd alloy shows that after corrosion in 20 percent HCl at 100° the alloy

2/3

USSR

TOMASHOV, N. D., et al., Zashchita Metallov, Vol 8, No 3, May-Jun 72, pp 291-294

preferentially contains metallic palladium. After corrosion of the alloy in 40 percent H_2SO_4 at 100°, along with the strongest Pd lines, considerably weaker lines characteristic of Ti_2N are observed.

3/3

USSR

UDC 669.28:539.4:539.125.18:669-977

ALEKSANDROV, S. I., BAZYUKIN, V. G., VOTINOV, S. N., ZAKHAROV, A. R., KAZAKOV, V. A., and RAZOV, I. A.

"Effect of Initial State of Molybdenum on Radiation Hardening at High Temperatures"

V sb. Radiatsion. fiz. tverd. tela i reaktornoye materialoved. (Radiation Solid-State Physics and Reactor Materials Science -- Collection of Works), Moscow, Publishing House of the State Committee of the Council of Ministers USSR for the Use of Atomic Energy, 1970, pp 139-140 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 31733 by V. Kudryashov)

Translation: The authors studied the effect of irradiation with an integral dose of up to $1.5 \cdot 10^{20}$ neutrons/cm^2 (E $\geq$ 1 Mev) at high temperatures (750 and 1200°) on Mo produced by different methods (single crystal, powder metallurgy, and cast) in different states (recrystallized and unrecrystallized). Tensile testing was performed by remote control on an MM-150D machine at a deformation rate of 10^{-3} sec^{-1} at 20-800o in a vacuum of 10^{-4} mm Hg. After irradiation at 750° an increase is observed in strength properties, lattice spacing and microhardness and a decrease in ductility, with the radiation
1/2

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USSR

ALEKSANDROV, S. I., et al., Radiatsion. fiz. tverd. tela i reaktornoye
materialoved., Moscow, 1970, pp 139-140

hardening of cast Mo higher than that of p/m Mo. There is found to be a
decline in the uniform elongation of specimens of single-crystal Mo from 8.5
to 4.5% without an appreciable decline in the overall specific elongation.
The brittle point of cast Mo rises after irradiation. Bibliography with 17
titles.

2/2

USSR

ZAKHAROV, A. V.

"The Problem of the Modulus of a Trigonometric Sum"

Tr. Mosk. Energ. In-ta. [Works of Moscow Power Engineering Institute],
1972, No 146, pp 36-44 (Translated from Referativnyy Zhurnal, Kibernetika,
No 3, Moscow, 1973, Abstract No 3 V16 by V. Prelov).

Translation: The sum $S_n = \sum_{k=1}^{n} \cos \varphi_k + i \sum_{k=1}^{n} \sin \varphi_k,$ is studied, where $0 \le$

$\le \phi_k \le 2\pi$, ϕ_k are identically distributed, independent random quantities.
With large n, certain top and bottom limits are indicated for $|S_n|$, in
which the value of $|S_n|$ is included with a probability near 1. In certain
particular cases, the asymptotic distribution of $|S_n|$ is produced.

1/1

USSR

ZAKHAROV, A. V., SIDOROV, A. B.

"Devices for Investigating the Time Dependence of the Strength of Glass and Polymer Fibers in a Vacuum and Various Media"

Moscow, Zavodskaya Laboratoriya, Vol XXXVII, No 4, 1971, pp 491-492

Abstract: A device developed at the Moscow State Pedagogical Institute imeni Lenin to study the life of glass fibers is introduced. This device permits 20 samples of glass and polymer fibers of different length (from 1 to 100 mm) to be tested simultaneously under different static loads in a vacuum and various inert media (helium, argon, nitrogen, and so on) and also in the atmosphere. Differences between the vacuum version which also may be used for testing in inert media and the version for testing in the atmosphere are pointed out. A graph is presented showing the time dependence of the strength of alumoboro-silicate glass fibers 10 microns in diameter and 10 mm long in the atmosphere determined by the device.

1/1

Graphite

USSR   UDC 661.666.2;543.872

ZAKHAROV, B. A., BAGROV, G. N., and VOSKOBOYNIKOVA, G. S.

"Effect of Certain Salts on the Failure of Graphite at 900°C in Air"

Moscow, Neorganicheskiye Materialy, Vol 10, No 1, Jan 74, pp 157-158

Abstract: Data are presented which characterize the effect of certain inorganic substances and compounds on the failure of synthetic graphite in the course of one hour at 900°C, created by thermal shock. Large losses due to burning (up to 50%) are typical for graphite under these conditions. Consequently, the failure of graphite (grade MG-OSCh) and the effect of the chosen inorganic substances were characterized by the distribution of mass according to particles of varying size after heat treatment. Soaking graphite for one hour at 900° C in air causes a breakdown of the graphite particles by 25% and the appearance of new particles measuring 630 (15%), 400 (4%), 250 (1%), and 160 microns (5%). Graphite saturated with phosphoric acid had the same amount of breakdown. Application of haloids (potassium chloride and bromide and ammonium chloride) sequentially lowered the breakdown of graphite from 25 down to 11-5%. Saturation with calcium acetate completely eliminated the breakdown of graphite;
1/2

USSR

ZAKHAROV, B. A., et al., Neorganicheskiye Materialy, Vol 10, No 1, Jan 74, pp 157-158

after heat treatment only particles of the initial size of 800 microns were present. Fourteen inorganic substances were used in this study and a table is presented which shows the percentage of these used along with the particle sizes of graphite resulting from saturation with these substances. One table.

2/2

ZAKHAROV, B.G.

JPRS 5808
6.73

5

- 165 -

XI-12. GROWTH FROM THE LIQUID PHASE AND SOME PROPERTIES OF $In_xGa_{1-x}As$ FILMS

[Article by B. G. Abramov, B. G. Zakharov, U. M. Kulita, F. I. Vedinova, B. Ye. Samorukov, Izraki, Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 158]

A study was made of the structural perfection, mechanical stresses, the component distribution and the optical and luminescent properties of the $In_xGa_{1-x}As$ epitaxial layers. The method of epitaxy was used to obtain $In_xGa_{1-x}As$ layers in the $0 < X < 0$ region on the Ga (111) side of GaAs and in the $1 > X > 0.8$ region on the In (111) side of InAs.

The growth rate was calculated as a function of the growth conditions. The results obtained are compared with the experimental results. The growth rate as a function of the cooling rate is nonmonotonic. This leads to the growth dependence of the component distribution in the direction perpendicular to the growth plane on the growth conditions.

The structural perfection and mechanical stresses in the films were caused physically by the difference both of the linear expansion coefficients and the lattice parameters. The dislocation density on the surface and the morphology of the films depend on the growth conditions. The optical and luminescent studies show that the dependence of the width of the forbidden zone in $In_xGa_{1-x}As$ on composition can be described by a linear expression.

ZAKHAROV, B.G.

JPRS 69008
c.73

XIV-15. STRESSES AND STRUCTURAL DEFECTS IN EPITAXIAL SOLID SOLUTIONS OF GaPAs

[Article by V. M. Ustinov, B. G. Zakharov, G. V. Bolshakova, A. A. Matyash, Kaluga Novosibirsk, III Simpozium Po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Novosibirsk, 10-15 June 1972, p 301]

A study was made of the causes of the occurrence of stresses and structural defects in epitaxial layers of solid solutions of GaPAs.

Measurements were made of the bending of the structures at different temperatures, and the difference of the coefficients of thermal expansion of the substrate and the films with different composition of the solid solutions was determined. The dislocation structure of the solid solutions was investigated.

It was demonstrated that the stresses causing bending of the structures were caused both by the difference of coefficients of thermal expansion of the film and the substrate and inhomogeneity of the distribution of the composition of solid solutions with respect to depth of the epitaxial layer. The dislocation structure of the epitaxial solid solutions was basically caused by local inhomogeneities of the composition and also the stresses as a result of the difference in the coefficient of thermal expansion of the film and the substrate.

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USSR   UDC 621.315.592

MAMONTOV, A. P., OKUNEV, V. D., GAMAN, V. I., ZAKHAROV, B. G., Siberian Physi-
cotechnical Institute imeni V. D. Kuznetsov, Tomsk

"Distribution of Radiation Defects in Gallium Arsenide in the Presence of
Deuteron Irradiation"

Abstract: On the basis of an electron probe study of the distribution of the
luminescence intensity in gallium arsenide when irradiated with deuterons as
a function of the deuteron energy and the integral deuteron flux, a quantita-
tive estimate was made of the defect distribution with respect to the path
lengths of the deuterons. The dependence of the path length on the deuteron
energy was calculated, and the results are compared with the experimental val-
ues of the path lengths obtained from the data on the spatial variation of the
cathode luminescence. The coefficient of radiation variation of the lifetime
K in n-type gallium arsenide increases with an increase in the initial con-
centration of the carriers, and at the end of the deuteron path it varies from
$1.35 \cdot 10^{-2}$ (sec·deuteron/cm^2)$^{-1}$ for a specimen with a carrier concentration of
$n = 7 \cdot 10^{-15}$ cm^{-3} to $8.4 \cdot 10^{-2}$ (sec·deuteron/cm^2)$^{-1}$ for a specimen with $n = 4.5 \times$
10^{17} cm^{-3}. The defect distribution with respect to the deuteron path length
   1/2

USSR

UDC 621.315.592

is characterized by the spatial variation of the coefficient K.   Good agreement of the experimental data with respect to the K distribution with the calculated data for the distribution of the rate of introduction of defects n_d is observed.

2/2

1/2   034   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--DISTRIBUTION OF RADIATION DEFECTS IN GALLIUM ARSENIDE DURING PROTON
    IRRADIATION -U-
AUTHOR-(04)-OKUNEV, V.D., MAHONTOV, A.P., ZAKHAROV, B.G., AZILOV, B.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 101-5

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RADIATION DAMAGE, GALLIUM ARSENIDE, PROTON BOMBARDMENT,
    CRYSTAL LUMINESCENCE, IMPURITY CENTER, RADIATION INTENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1708   STEP NO--UR/0449/70/004/001/0101/0105

CIRC ACCESSION NO--AP0054550
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0054550

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION OF RADIATION
DEFECTS IN GAAS DURING PROTON IRRADN. WAS OBTAINED FROM THE DEPENDENCE
OF THE DISTRIBUTION OF LUMINESCENCE INTENSITY ON THE ENERGY (2-5 MEV)
AND THE DOSE (4.17 TIMES 10 PRIME10-4.17 TIMES 10 PRIME12 PROTONS-CM
PRIME2) OF PROTONS.   THE DISTRIBUTION OF THE LUMINESCENCE INTENSITY
OVER THE CRYSTAL DEPTH WAS MEASURED BY MEANS OF AN ELECTRON MICROPROBE.
THE EXPTL. VALUES OF THE DEPTH OF PROTON PENETRATION ARE IN GOOD
AGREEMENT WITH CALCD. ONES.   THE MAGNITUDE OF THE CHANGE OF THE
LUMINESCENCE INTENSITY DURING PROTON IRRADN. DEPENDS ON THE TYPE AND
CONCN. OF IMPURITIES IN GAAS.   FOR TE DOPED GAAS, THE INTENSITY CHANGE
OBTAINED IS EXPLAINED AS DUE TO THE FORMATION OF COMPLEXES LIKE GA SUB2
V SUBGA TE SUB3 (V SUBGA IS A GA VACANCY).

USSR

GLADSHTEIN, B. M., ZAKHAROV, B. L., SOSINA, M. M., SPITSYN, A. A.

"Reaction of Perchloromethylmercaptan with Di- and Mono-esters of Methyl-phosphonous Acid"

Abstract: The reaction of perchloromercaptan in a dry N atmosphere with di-and mono-esters of methylphosphonous acid was studied. In the case of monoalkyl methylphosphonite at -20°, taken in an equimolar amount with perchloromercaptan, O-alkyl methylchlorophosphonate (75% with respect to the monoalkyl methylphosphonite), thiophosgene (35% with respect to the perchloromethylmercaptan), and a small amount of hexachlorodimethyl disulfide were studied. The diesters of methylphosphonous acid react with perchloromercaptan in different ways, depending on the order of mixing of the reagents. When the dialkyl methylphosphonite is added to perchloromethylmercaptan at -50°, O-alkyl methylchlorophosphonate, hexachlorodimethyl disulfide, and alkyl chloride were isolated. The reverse order of addition of the reagents led to the formation of O-alkyl S-tris(alkylmethylphosphonyl)-methyl methylthiophosphonate (60% with respect to the dialkyl methylphosphonite) and alkyl chloride. These results are apparently in agreement with the results obtained by other researchers.
1/1

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1/2   019

UNCLASSIFIED

TITLE--A VESSEL WITHOUT THE PROPELLER SHAFT -U-

PROCESSING DATE--04DEC70

AUTHOR--ZAKHAROV, G.

COUNTRY OF INFO--USSR

SOURCE--SOTSIALISTICHESKAYA INDUSTRIYA, AUGUST 23, 1970, P 4, COLS 1-5

DATE PUBLISHED--23AUG70

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

TOPIC TAGS--HYDRAULIC PUMP, HYDRAULIC ENGINEERING, SHIPBUILDING
ENGINEERING, SHIP PROPELLER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1675

STEP NO--UR/0533/70/000/000/0004/0004

CIRC ACCESSION NO--AN0138651

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AN0138651 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ENGINEERS NIKOLAY BORODAVKIN, VYACHESLAV SKVORTSOV, AND SERGEY SMIRNOV ARE GIVEN CREDIT FOR DEVELOPING THE FIRST SOVIET VESSEL IN WHICH A HYDRAULIC DRIVE WAS SUBSTITUTE FOR THE PROPELLER SHAFT. THE WORK WAS DONE UNDER THE GUIDANCE OF CANDIDATE OF TECHNICAL SCIENCES GENNADIY KONAKOV AT THE GOR'KIY INSTITUTE FOR WATER TRANSPORT ENGINEERS. TODAY A RESEARCH LABORATORY OF THE INSTITUTE IS TESTING A HYDRAULIC DRIVE DESIGNED FOR A SEA GOING SEINER, IN THIS SYSTEM, THE 200 ATM PUMP IS MOUNTED ON THE SHAFT OF A DIESEL ENGINE. THE PRESSURE DEVELOPED BY THE PUMP IS TRANSMITTED THROUGH MINERAL OIL TO THE OUTBOARD MOTOR ASSEMBLED AS ONE UNIT WITH THE PROPELLER AND STEERING DEVICE.

UNCLASSIFIED

USSR

UDC 629.23.56-943.6

VOL'PERSON, M.N., IL'YIN, A.G., FEDYUNYAYEV, A.M., ZAKHAROV, G.A., SPIVAK, A.Ya.

"The Power Plant in Tankers of the 'Mangyshlak' Type"

Abstract: In the article are presented the composition and a general description of the ship power plant for twin-screw tankers of the 'Mangyshlak' type. 2 figures, 1 photographic illustration.

1/1

- 81 -

USSR

UDC:539.12.173

ABDULLAYEV, R.S., GURVICH, L.G., ZAKHAROV, G.E., POLYAK, YU.V.
and SKRIPNIKOV, YU.S.

"Experimental Determination of Energy Release due to Radiation in Certain
Construction Materials"

Tashkent, Sb. Dozimetriya i Radiats. Protsessy v Dozimetr. Sistemakh
(Symposium on Dosimetry and Radiation Processes in Dosimetric Systems),
1972, pp 197-200 (from Referationyy Zhurnal-Yadernyye Reaktory, 1973, Ab-
stract No 3.50.78)

Translation: Investigation results are presented on static temperature
distribution inside a sphere located in the radiation field of a reactor, specific
heat release for various metals was determined. Calculation of specific heat
release was based on the assumption of uniform and exponential distribution of
heat release sources through the depth of the material. Measurement of
temperature field inside the sphere provided data on absorption on gamma-
radiation by lead. 1 illustration. 2 references.
1/1

UNCLASSIFIED   PROCESSING DATE--23OCT70

TITLE--OPTIMAL PROCESSES WITH TWO GROUPS OF CONTROL PARAMETERS -U-

AUTHOR-(02)-ZAKHAROV, G.K., PLOTNIKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL VYCHISLITEL'NOI MATEMATIKI I MATEMATICHESKOI FIZIKI, VOL. 10, JAN.-FEB. 1970, P. 55-66

DATE PUBLISHED-------70

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

TOPIC TAGS--OPTIMAL AUTOMATIC CONTROL, AUTOMATIC CONTROL PARAMETER, NONLINEAR AUTOMATIC CONTROL SYSTEM, INTEGRODIFFERENTIAL EQUATION, FUNCTIONAL EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1979/1553   STEP NO--UR/0208/70/010/000/0055/0066

CIRC ACCESSION NO--AP0047881
                              UNCLASSIFIED

PROCESSING DATE--23OCT70

UNCLASSIFIED

2/2   012
CIRC ACCESSION NO--AP0047381
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   DERIVATION OF NECESSARY CONDITIONS
OF OPTIMALITY IN THE FORM OF THE MAXIMUM PRINCIPLE FOR A NONLINEAR
PROBLEM WITH TWO GROUPS OF CONTROL PARAMETERS.   NECESSARY CONDITIONS OF
OPTIMALITY ARE PROVEN FOR A GENERAL NONLINEAR CASE WHERE THE CONTROL
PLANTS ARE CONTROLLED WITH THE AID OF TWO OR MORE DIFFERENT GROUPS OF
CONTROLS, EACH OF WHICH POSSESSES FUNCTIONAL TRAITS PECULIAR ONLY TO IT,
THUS PREVENTING THE DIFFERENT GROUPS FROM BEING COMBINED INTO A SINGLE
CLASS.   THE METHOD EMPLOYED IN DERIVING THESE CONDITIONS IS SHOWN TO BE
APPLICABLE TO THE SOLUTION OF A WIDE CLASS OF OPTIMAL PROBLEMS IN WHICH
THE BEHAVIOR OF THE CONTROL PLANT CAN BE DESCRIBED BY INTEGRAL
EQUATIONS, INTEGRODIFFERENTIAL EQUATIONS, EQUATIONS WITH A DELAY, ETC.
IN DEVELOPING THIS METHOD, AN ATTEMPT IS MADE TO REDUCE TO A MINIMUM THE
REQUIREMENTS IMPOSED ON THE RIGHT HAND SIDES OF THE EQUATIONS AND ON THE
FUNCTIONAL.   FOR EXAMPLE, THE EXISTENCE OF A DERIVATIVE WITH RESPECT TO
T IS NOT REQUIRED IN THE NONAUTONOMOUS CASE.

UNCLASSIFIED

PROCESSING DATE--11SEP70

UNCLASSIFIED

TITLE--BROACHES FOR MACHINING OPENINGS IN HIGH STRENGTH STEEL PARTS -U-

1/2   026

AUTHOR--ZAKHAROV, G.K., MIKHAYLOYUK, E.A., SINITSYN, V.I.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, STANKI I INSTRUMENT, NO 3, 1970, PP 36-37

DATE PUBLISHED-------70

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

TOPIC TAGS--HIGH STRENGTH STEEL, METAL MACHINING, ALLOY DESIGNATION, LOW
ALLOY STEEL, METAL BROACHING, HARD STEEL, TECHNICAL STANDARD/(U)30KHGSA
LOW ALLOY STEEL, (U)30KHGSNA LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/1565

STEP NO--UR/0121/70/000/003/0036/0037

CIRC ACCESSION NO--AP0114153

UNCLASSIFIED

UNCLASSIFIED

2/2   026
CIRC ACCESSION NO--AP0114153
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE MACHINING OF HARDENED STEELS
OF THE TYPES 30KHGSA AND 30KHGSNA BY BROACHING INVOLVES CONSIDERABLE
TECHNICAL DIFFICULTY.   AS A RULE, IT IS NOT POSSIBLE REGULARLY TO
OBTAIN A SURFACE CLEANNESS HIGHER THAN CLASS 6, WHEREAS IT IS NECESSARY
TO PROVIDE FOR CLEANNESS OF THE MACHINED SURFACES TO MEET THE STANDARD
OF CLASS 7-8.   AS A RESULT OF EXPERIMENTAL WORK, BROACH DESIGNS HAVE
BEEN DEVELOPED WHICH PERMIT THIS PROBLEM TO SOLVED.   THE NEW BROACH
DESIGNS ARE DESCRIBED, AND THEIR APPLICATION IS INDICATED.

UNCLASSIFIED

112479f   Effect of x-ray radiation on the rate of polyisoprene diffusion into rubber.   Vladimirskii, Yu. B.; Zakharov, G. M.; Rylov, S. A. (Leningrad. Politekh. Inst. im. Kalinina, Leningrad, USSR).   *Vysokomol. Soedin.*, *Ser. B* 1970, 12(2), 165-6 (Russ). The diffusion of tagged polyisoprene (I) (mol. wt. 2×10^4) into natural rubber (II) irradiated with x-rays at a dose rate of 700 R/sec in Ar, O, or air was studied. The diffusion coeff. of I declined from 1.8×10^{-13} to 0.6×10^{-13} cm^2/sec after II had been irradiated in Ar with 0 to 2.6×10^5 rads, suggesting that radiative crosslinking had occurred.   Irradn. of II with 7×10^5 rads in the presence of O was accompanied by increased mol. mobility and lower diffusion coeff. due to competing degradation and crosslinking.   CKJR

CB 7

1/3`   022   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--THE EFFECTS OF MUTATIONS TOWARDS ULTRAVIOLET SENSITIVITY IN YEAST
-U-

AUTHOR-(03)-ZAKHAROV, I.A., KOZINA, T.N., FEDOROVA, I.V.

COUNTRY OF INFO--USSR

SOURCE--MUTAT RES 9(1): 31-39. ILLUS. 1970

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--YEAST, MICROORGANISM MUTATION, UV RADIATION, RADIATION
  SENSITIVITY, SACCHAROMYCES, ESCHERIACOLI, DNA, RADIATION DAMAGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0591   STEP NO--NE/0000/70/009/001/0031/0039

CIRC ACCESSION NO--AP0113481
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0113481
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UV SENSITIVE MUTANTS WERE INDUCED
BY THE ACTION OF UV LIGHT AND WERE ISOLATED BY THE REPLICA PLATING
METHOD. HIGHLY HOMOZYGOUS STOCKS OF YEAST SACCHAROMYCES CEREVISIAE
DESCENDING FROM RACE XII WERE UTILITZED. TWO MUTANTS, DESIGNATED UVS
SUB1 AND UVS SUB2, CARRYING NONALLELIC MUTATIONS OF RADIOSENSITIVITY,
WERE STUDIED MORE CAREFULLY. UV SENSITIVITY APPEARED TO BE OF A
RECESSIVE MONOGENIC CHARACTER; HETEROZYGOUS DIPLOIDS WERE UV RESISTANT
AND SEGREGATED 1:1 RESISTANT AND SENSITIVE CLONES IN THE RANDOM
ASCOSPORE SAMPLES. THE UV SENSITIVITY OF THE STRAINS BEARING MUTANTS
UVS SUB1 AND UVS SUB2 DIFFERS. THE HAPLOID UVS SUB1 MUTANT AND THE
HAPLOID UVS SUB2 MUTANT HAVE SENSITIVITIES 25 AND 1.8 TIMES HIGHER,
RESPECTIVELY, THAN THE WILD TYPE HAPLOID. THE UVS SUB1 MUTANTS EXHIBIT
AN EXPONENTIAL SURVIVAL CURVE, WHILE THE UVS SUB2 MUTANTS AND THE WILD
TYPE HAPLOID HAVE SIGMOIDAL SHAPED CURVES. THE RADIORESISTANCE OF THE
ISOGENIC STRAINS, CARRYING THE MUTATIONS AT THE UVS SUB1 LOCUS,
INCREASES WITH POLYPLOIDY. WE WERE ABLE TO STUDY THE EFFECT OF UVS
MUTATIONS ON THE FREQUENCY OF INDUCED GENIC MUTATIONS DUE TO THE FACT
THAT THE RESISTANT MUTANTS COULD EASILY BE DETECTED IN THE MEDIA WITH A
HIGH SERINE CONCENTRATION. THE RESULTS INDICATE THAT THE UVS SUB1 AND
UVS SUB2 MUTATIONS SIGNIFICANTLY INCREASE THE SENSITIVITY OF HAPLOIDS TO
MUTAGENIC ACTION OF UV LIGHT. THE UVS SUB1 AND UVS SUB2 MUTATIONS ALSO
RESULT IN AN INCREASE IN SENSITIVITY TO MUTAGENIC ACTION OF UV LIGHT TO
REGARD TO CYTOPLASMIC DETERMINANTS.

UNCLASSIFIED

CIRC ACCESSION NO--AP0113481
ABSTRACT/EXTRACT--THE DIPLOIDS HOMOZYGOUS FOR UVS SUB1 AND UVS SUB2
MUTATIONS PROVED TO BE HIGHLY SENSITIVE TO THE ACTION OF UV LIGHT
CAUSING RECOMBINATION WHEN THE FREQUENCY OF INDUCED MITOTIC
RECOMBINATION IN RESISTANT AND SENSITIVE DIPLOIDS HETEROZYGOUS FOR AD
SUB1 AND AD SUB2 GENES WAS RECORDED. THE FREQUENCY OF SPONTANEOUS
MUTATIONS INDEPENDENT OF ADENINE WAS RECORDED IN HAPLOIDS OF GENOTYPE AD
SUB2, AD SUB2 UVS SUB1 AND AD SUB2 UVS SUB2. THE MUTATIONS TOWARDS UV
SENSITIVITY CAUSE A SHARP INCREASE IN SPONTANEOUS MUTABILITY, THE RISE
BEING EXPECIALLY SIGNIFICANT DUE TO UVS SUB2 MUTATIONS. THE SPECIFIC
FEATURES OF UVS SUB2 MUTANTS OF SACCHAROMYCES ARE SIMILAR TO THOSE OF UV
SENSITIVE MUTANTS OF E. COLI; THEREFORE, ONE MIGHT SUGGEST THAT THE UVS
MUTANTS IN YEAST ALSO HAVE A LESS EFFICIENT OR BLOCKED SYSTEM FOR REPAIR
OF UV DAMAGE IN THE DNA. THE FACT THAT THE UV SENSITIVE MUTANTS ARE
SENSITIVE NOT ONLY TO THE LETHAL ACTION OF UV LIGHT BUT ALSO TO THE
MUTAGENIC AND RECOMBINOGENIC ONES SUGGESTS THAT SIMILAR MOLECULAR
DAMAGES OF THE DNA UNDERLIE ALL THESE EFFECTS. THE INDUCTION OF
CYTOPLASMIC MUTATIONS IN UV SENSITIVE MUTANTS SUGGESTS THAT THE REPAIR
SYSTEM UNDER CONSIDERATION IS LOCALIZED NOT ONLY IN THE NUCLEOUS BUT
ALSO IN THE CYTOPLASM OF THE CELL. THE SHARP INCREASE IN SPONTANEOUS
MUTABILITY IN UV SENSITIVE MUTANTS INDICATES THAT THE MAIN FUNCTION OF
THE REPAIR SYSTEM IS TO MAINTAIN THE STABILITY OF GENETIC MATERIAL UNDER
NATURAL CONDITIONS.   FACILITY: INST. PHYS. TECH., A. F. IOFFE
ACAD. SCI., LENINGRAD, USSR.

UNCLASSIFIED

USSR   UDC 621.391:519.2

ZAKHAROV, I. A.

"Noiseproofness of an Optimal Receiver for a Pilot System with Phase-Manipulated Signals"

Tr. Mosk. elektrotekhn. in-ta svyazi (Works of Moscow Electrotechnical Communications Institute), 1970, vyp. 1, pp 80-88 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9A33)

Translation: This article contains a study of noiseproofness of the optimal receiver of a pilot system for transmitting phase-manipulated signals operating in a channel with general slow fading as a function of the system parameters. The estimate is made by calculating the so-called "decision probability" -- the probability of selecting an arbitrarily given message from the total number of possible messages. The effect of the power distribution between the information and pilot signals on the error probability in a two-phase system is calculated. Means of improving the noise resistance are illustrated. There are four illustrations and a three-entry bibliography.

1/1

UDC: 577.391:575.24

USSR

ZAKHAROV, I.A., Physico-Technical Institute, Academy of Sciences, USSR, Leningrad

"Genetic Control of Radioresistance of the Cell and Some General Problems of Genetics"

Kiev, Tsitologia i Genetika, Akademiya Nauk Ukrainskoy SSR, Vol 4, No 2, Mar/Apr 70, pp 123-139

Abstract: This article is a review of genetics and a discussion of the photo-sensitivity and radio resistance of various microorganisms and their mutants.

1/1

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1/2   038

TITLE--NOISE SUPPRESSION IN A PILOT PM RECEIVING SYSTEM SUBJECTED TO
  FADING AND NOISE -U-   UNCLASSIFIED   PROCESSING DATE--02OCT70

AUTHOR-(02)-ROSOV, V.M., ZAKHAROV, I.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA, VOL 25, NO 3, MAR 70, PP 62-67

DATE PUBLISHED----MAR70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--SIGNAL TRANSMISSTION, SIGNAL NOISE SEPARATION, NOISE
  REDUCTION, PHASE MODULATION, COMMUNICATION CHANNEL, DATA TRANSMISSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/1336
                              STEP NO--UR/0108/70/025/003/0062/0067
CIRC ACCESSION NO--AP0110910
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0110910
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS BELIEVE THAT THE
METHOD OF PHASE MANIPULATION WITH TRANSMISSION OF A PILOT SIGNAL TO AN
ADJACENT FREQUENCY IS ONE OF THE FUTURE METHODS FOR SOLVING THE PROBLEM
OF TRANSMISSION OF DISCRETE INFORMATION ON COMMUNICATION CHANNELS WITH
VARIABLE PARAMETERS. THE PRESENT PAPER IS DEVOTED TO AN EVALUATION OF
THE NOISE SUPPRESSION OF SUCH A SYSTEM, OPERATING IN CHANNELS WITH
FADING AND NOISE. CURVES ARE SHOWN IN CONNECTION WITH THE FOLLOWING:
(1) NOISE SUPPRESSION AND A MULTIPLICITY OF MANIPULATION; (2) NOISE
SUPPRESSION AND CORRELATION OF INFORMATION AND PILOT SIGNALS; AND (3)
NOISE SUPPRESSION ABSTRACT: AND DISTRIBUTION OF POWER BETWEEN
INFORMATION AND PILOT SIGNALS.   FACILITY: SCIENTIFIC AND
TECHNICAL SOCIETY OF RADIO ENGINEERING, ELECTRONICS, AND COMMUNICATION
IM. A. S. POPOV.

UNCLASSIFIED

1/2   040

TITLE--STATISTICAL TREATMENT OF RESULTS OF SOME RADIOBIOLOGICAL EXPERIMENTS USING A COMPUTER -U-

UNCLASSIFIED

PROCESSING DATE--30OCT70

AUTHOR-(03)-ZHELEZNYAKOVA, N.YU., ZAKHAROV, I.A., ILYUSHIN, S.A.

COUNTRY OF INFO--USSR

SOURCE--RADIOBIOLOGIYA 1970, 10(1), 153

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHLORELLA, RADIATION DOSAGE, UV RADIATION, RADIOBIOLOGY, COMPUTER APPLICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0465

STEP NO--UR/0205/70/010/001/0153/0153

CIRC ACCESSION NO--AP0121139

UNCLASSIFIED

CIRC ACCESSION NO--AP0121139   UNCLASSIFIED   PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STATISTICAL TREATMENT OF THE
RESULTS OF RADIOBIOL. EXPTS., USING A COMPUTER FOR THE CALCN. OF THE
DOSE EFFECT PARAMETERS IS DISCUSSED. THE SURVIVAL RATE OF CHLORELLA
CELLS AFTER TREATMENT WITH VARIOUS DOSES OF UV RAYS IS GIVEN IN AN
EXAMPLE.   FACILITY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--RESISTANCE OF A YEAST LIKE FUNGUS PULLULARIA PULLULANS (DE BARY) BERK, TO THE LETHAL AND MUTAGENIC ACTION OF UV AND X RAYS -U-

AUTHOR-(03)-KOVALTSOVA, S.V., ZAKHAROV, I.A., LEVITIN, M.M.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA: 12: 233-7, FEB 1970

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FUNGUS, UV RADIATION BIOLOGIC EFFECT, X RAY EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0299

STEP NO--UR/9053/70/012/000/0233/0237

CIRC ACCESSION NO--AP0122501

UNCLASSIFIED

CIRC ACCESSION NO--AP0122501   UNCLASSIFIED   PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESISTANCE OF A YEAST LIKE
FUNGUS PULLULARIA PULLULANS TO UV AND X IRRADIATION WAS COMPARED WITH
THAT OF DIPLOID STRAINS OF SACCHAROMYCES CEREVISEAE. THE RESULTS
OBTAINED REVEALED A HIGH RESISTANCE OF P. PULLULANS TO LETHAL UV AND X
IRRADIATION; AT UV AND X IRRADIATION LD SUB90 WAS FOUND TO BE 10,000
ERG-MM PRIME2 AND 170 TO 225 KR, RESPECTIVELY. AT THE SAME TIME, FOR
DIPLOID STRAINS OF YEAST THE CORRESPONDING VALUES WERE 3000 ERG-MM
PRIME2 AND 85 KR. THE HIGH RESISTANCE OF P. PULLULANS WAS ALSO REVEALED
FOLLOWING THE MUTAGENIC ACTION OF UV LIGHT (INDUCTION OF REVERSIONS TO
ADENINE INDEPENDENCE). P. PULLULANS WAS REGARDED AS AN ORGANISM
EXTREMELY RESISTANT TO IRRADIATION.   FACILITY: ALL UNION RESEARCH
INST. OF PLANT PROTECTION, LENINGRAD.

UNCLASSIFIED

USSR

ROSOV, V. M., et al, Radiotekhnika, Vol 25, No 3, Mar 70,
pp 62-67

Abstract: and distribution of power between information and
pilot signals. 4 fig. 4 ref. Submitted 4 July 69.

2/2

USSR   UDC   621.396.69:621.314.2(088.8)

IVANOV, A. B., ZAKHAROV, I. N., KUZNETSOV, V. I.

"A Ferrovariometer With Magnetic Control"

USSR Author's Certificate No 252418, Filed 9 Sep 67, Published 17 Feb 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V376 P)

Translation: The proposed ferrovariometer with magnetic control is based on an auto-transformer with a ferrite core and contains an input control winding with magneti-zation, and an output winding with variable inductance. As a distinguishing feature of the patent, the inductance control range is extended and core cooling is improved by making the core of the ferrovariometer in the form of a set of rectangular ferrite bars with longitudinal openings in which the above-mentioned output winding is located. The output winding is made in the form of segments of hollow copper tubes which are electrically interconnected on the end surfaces of the core.

1/1

ZAKHAROV, I.S.

JPRS 59008

G-73

H

XII-7. EFFECT OF CRYSTALLIZATION CONDITIONS ON THE ANISOTROPY OF THE GROWTH
AND ALLOYING OF GERMANIUM IN GAS TRANSPORT SYSTEMS

[Article by L. G. Lavrent'yeva, I. S. Zakharov, V. Izvmin, S. M. Toropov,
Tomsk; Novosibirsk, III Simposium po Protsessam Rosta i Sinteza Poluprovodni-
kovvkh Kristallov i Plenok, Russian, 12-17 June 1972, p 170]

1. It was previously demonstrated that the anisotropy of the growth
rate Ar of germanium in the Ge-HI-H₂ system has a significant feature: the
growth rate decreases on deviation from (111) and (110) to (111). It is as-
sumed that this phenomenon is caused by significant difficulties in the dis-
charge of adatoms in the faces arising on increasing the angle of deflection
(Kristallografiya [Crystallography], Vol 15, No 4, 854, 1973).

2. The study of the anisotropy of the germanium growth rate in the
same system in the (111)-(110) range confirmed that the (111) plane actually
corresponds to a sharp peak. The appearance of the growth rate peak at first
glance contradicts the thermodynamic data predicting the minimum growth rate
for this plane.

3. In order to discover the generality of the observed laws, studies
were made of Ar in the Ge-Ge system. It was found that the growth anisotropy
in this case differs essentially from the preceding anisotropy. The (111) and
(100) planes have sharp growth rate minima. The growth rate increases on devi-
ation from (111) and (100) by a small angle, and then it drops sharply on devi-
ation from the faces by an angle of more than 10°. Thus, the significant diffi-
culties with the adatom discharge in the stage arise in this state in the mid-
dle of the investigated interval.

4. It is assumed that the cause of the difficulties which arise with
the adatom discharge in this stage is adjustment of the surface structure
caused by the effect of a number of thermodynamic and kinetic factors.

5. The electron microscope studies of the surface of germanium layers
of different orientation confirming the stated proposition were performed.

6. A comparison and analysis of anisotropy of the alloying level in
the investigated systems are made. The report contains a discussion of the
consequences arising from the studies made, and the conclusion is drawn of
the necessity of considering additional parameters when calculating the anis-
otropy of the growth rate in such systems.

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UDC 542.97:547.1'118

USSR

KABACHNIK, M. I., GODOVIKOV, N. N., PISARENKO, V. V., and ZAKHAROV, L. S.,
Institute of Metal Organic Compounds, Acad. Sc. USSR

"Preparation of Polyfluoroalkyl Esters of Alkyl and Aryl Phosphonates"

Abstract: Phosphorylation of polyfluoroalkanols with acid chlorides of the
alkyl- or arylphosphonic acids is catalyzed by the metal salts of the II group
of periodic system. A series of polyfluoroalkyl esters of alkyl and arylphos-
phonic acid has been obtained by this reaction in quite a pure state.

1/1

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UDC 621.391.1

USSR

ZAKHAROV, I. V.

"Estimating the Effectiveness of Communications Systems"

Moscow, Elektrosvyaz', No 6, 1971, pp 13-14

Abstract: A study is made of the multiplicative method of forming the coeffi-cient of effectiveness of communications systems characterizing the measure of satisfaction of all the demands imposed on the systems. This method can be used for optimal planning and design of communications systems with many parame-ters.

The essence of the method consists in the fact that the coefficient of effectiveness of a device is defined as the product of a series of parametric normalized coefficients characterizing the measure of satisfaction of the demands imposed on the device:

$$P = \prod_{i=1}^{n} k_i,$$

1/2

USSR

ZAKHAROV, I. V., Elekmrosvyaz', No 6, 1971, pp 13-14

where P is the coefficient of effectiveness, k_1 is the normalized parametric coefficient, and n is the number of parameters. The method permits comparison of radioelectronic devices of the same type and different types. Some parameters of the devices are interrelated and variation of one of them leads to variation of the others, but the multiplicative method permits investigation of such parameters autonomously without touching on the values of the normalized coefficients of the remaining parameters of the device. Application of the method during the planning and design process helps clearly to formulate the requirements on the parameters, to determine the optimal structural diagram, to discover bottlenecks, to estimate compatibility of the devices, and to determine the degree of perfection of the given device by comparison with others.

2/2

TITLE—CHEMILUMINESCENCE AND KINETICS OF TETRALINE OXIDATION IN ACETIC
-ACID CATALYZED BY COBALT ACETATE AND SODIUM BROMIDE -U-
AUTHOR-(03)-ZAKHAROV, I.V., BALANOV, L.A., POPOVA, O.G.

COUNTRY OF INFO—USSR

SOURCE—DOKL. AKAD. NAUK SSSR 1970, 190(5), 1132-5

DATE PUBLISHED————70

SUBJECT AREAS—CHEMISTRY

TOPIC TAGS—CHEMILUMINESCENCE, PEROXIDE, METAL COMPLEX COMPOUND,
NAPHTHALENE, ORGANOCOBALT COMPOUND, SODIUM COMPOUND, BROMIDE, OXIDATION

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—3001/0041   STEP NO—UR/0020/70/190/005/1132/1135

CIRC ACCESSION NO—AT0125877
                    UNCLASSIFIED

2/2   019
CIRC ACCESSION NO--AT0125877
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC CURVES WERE SHOWN FOR
CONSUMPTION OF O AND FOR PRODUCTION OF CHEMILUMINESCENCE IN THE TITLE
REACTION 50-60DEGREES UNDER VARIOUS CONDITIONS. ADDED NABR NOT ONLY
ENHANCED CHEMILUMINESCENCE BUT ALSO ACCELERATED THE UPTAKE OF O AND AT
NABR CONCN. UP TO 0.5 RELATIVE TO CO(OAC) SUB2, THE INTENSITY OF
CHEMILUMINESCENCE IS NEARLY PROPORTIONAL TO THE RATE OF OXIDN.
TETRAHYDRONAPHTHALENE (I) CONCN. AFFECTS THE RATE OF OXIDN. WHICH
FOLLOWS A SQUARE ROOT LAW IN THE ABSENCE OF NABR; IN THE PRESENCE OF
NABR, ON DECREASING CONCN. OF I THE RATE OF OXIDN. TENDS TO REACH A
CONST. VALUE DEPENDENT ON CO(AC) SUB2 AND NABR CONCNS. THE SAME APPLIES
TO INTENSITY OF LUMINESCENCE. WITH A MUCH GREATER AMT. OF CO(OAC) SUB2
THAN NABR IN THE SYSTEM, THE RATE OF OXIDN. REACHES A CONST. VALUE AND
DOES NOT CHANGE AFTER FURTHER INCREASE OF ADDED SALT, AS EVIDENTLY ALL
NABR IS BOUND AS CO MONOBROMIDE. EVIDENTLY THE EXPECTED METATHETIC
REACTION EQUIL. OF NABR AND CO(OAC) SUB2 DOES EXIST IN THE SYSTEM AND
COBROAC IS ACTIVE IN CHAIN PROPAGATION WHILE COHBR PRIME POSITIVE
POSITIVE TAKES PART IN CHAIN BRANCHING. THE CHAIN INITIATION REACTIONS
ARE GIVEN. THE USUAL CHAIN PROPAGATION AND TERMINATION STEPS ARE
DISCUSSED. THE OVERALL REACTION IS AUTOXIDN. WITH 2 PATHS FOR FORMATION
OF PEROXIDE: FROM HYDROCARBON AND PEROXIDIC RADICALS, AND FROM
PEROXIDIC RADICAL AND THE HBR COMPLEX WITH THE METAL SALT.
FACILITY: MOSK. FIZ.-TEKH. INST., MOSCOW, USSR.

UNCLASSIFIED   PROCESSING DATE--18SEP70

1/2   035

TITLE--COMPARATIVE EVALUATION OF THE CONTENT OF CERTAIN TRACE ELEMENTS IN THE BLOOD OF PATIENTS WITH PEMPHIGUS -U-

AUTHOR-(04)-TORSUYEV, N.A., ROMANENKO, V.N., ZAKHAROV, I.YA., SOROKA, V.R.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 3, PP 25-28

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRACE ELEMENT, BLOOD CHEMISTRY, DERMATITIS, SILICON, ALUMINUM, TITANIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1489   STEP NO--UR/0206/70/000/003/0025/0028

CIRC ACCESSION NO--AP0101573

UNCLASSIFIED

CIRC ACCESSION NO--AP0101573

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTENT OF SILICON, ALUMINIUM AND TITANIUM WAS DETERMINED BY MEANS OF SPECTROCHEMICAL ANALYSIS IN THE WHOLE BLOOD OF 42 PATIENTS WITH PEMPHIGUS ACANTHOLYTICUS AND OF 31 PATIENTS WITH DERMATITIS HERPETIFORMIS DUHRING. THESE TRACE ELEMENTS PARTICIPATE ACTIVELY IN CONSTRUCTION OF EPITHELIAL AND CONNECTIVE TISSUE STRUCTURES OF THE SKIN, AND THEIR CONCENTRATION IN THE BLOOD IS CLOSELY CONNECTED WITH MORPHOLOGICAL CHANGES IN THE SKIN. IN THE BLOOD OF PATIENTS WITH DERMATITIS HERPETIFORMIS DUHRING THE CONTENT OF ALUMINIUM, TITANIUM AND ESPECIALLY SILICON IS REDUCED, SINCE THESE TRACE ELEMENTS ARE UTILIZED IN LARGE AMOUNTS FOR REHABILITATION OF TRANSITORY DISORGANIZATION OF CONNECTIVE TISSUE STRUCTURES . IN PATIENTS WITH PEMPHIGUS ACANTHOLYTICUS THE CONTENT OF THESE TRACE ELEMENTS, ESPECIALLY OF SILICON, IS MARKEDLY INCREASED WHICH IS EXPLAINED BY THEIR INCREASED RELEASE DURING DEGENERATION OF THE EPIDERMIS. IN PEMPHIGUS ACANTHOLYTICUS THE INTERCELLULAR CEMENTING MATERIAL IS DISSOLVED, AND SILICON MAY POSSIBLY BE ONE OF THE IMPORTANT COMPONENTS OF THE LATTER.

USSR   UDC 541.124:541.6:547.1'118

KOSTYANOVSKIY, R. G., FOMICHEV, A. A., ZAGURSKAYA, L. M., and ZAKHAROV, K. S.,
Institute of Chemical Physics, Academy of Sciences, USSR

"The Nature of Lowering the Pyramidal Inversion Barrier of Phosphorus
in Acylphosphines"

Abstract: High sensitivity of the pyramidal inversion to the type of sub-
stituent at the acyl group leads to the conclusion that the factor responsi-
ble for the lowering of the inversion barrier in acylphosphines is the
p-π-conjugation of the unshared electron pair of phosphorus with the
carbonyl group. The antiinductive substituents, activating the conjuga-
tion of the CO group with the electronic pair of the phosphorus facilitate
the inversion, while the mesomeric favoring ones counteract the inversion.

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Ultrasonic and Acoustic

USSR   UDC 534.614

ZAKHAROV, L. N., Chair of Acoustics of the Moscow State University.

"On Calibration Methods of Hydroacoustic Receivers of Vibrational Speed"

Moscow, Akusticheskiy Zhurnal, Vol 17, No 4, 1971, pp 558—562

Abstract : Calibration methods of receivers of vibrational speed (of the pressure gradient) in a plane water layer with acoustically soft lower boundary (fresh water reservoir) by use of the sound pressure receiver in the capacity of a calibrating hydrophone are discussed. The performed mathematical derivation shows that the calibration of the vibrational speed leads to taking distributions of sound pressure and horizontal and vertical components of vibrational speed by depth of the layer, and to averaging of derived results and determination of the sensitiveness by pressure according to a differentiated formula. The experimental calibration of receivers of vibrational speed was carried out in a fresh water reservoir of 8 m depth with a plane horizontal bottom. The illustrated results are in good agreement with theoretical calculations. Three illustr., 12 formulas, four biblio. refs.

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USSR

VESELYANSKIY, YU. S., GORUSHKINA, L. P., ZAKHAROV, V. I., KURILO, YU. P., and
SOSOV, A. I., Ukrainian Correspondence Polytechnic Institute

"Method of Studying the Microrelief of Fractures in an Al-Al$_3$Ni Composite"

Abstract: The fractures of samples of an Al-Al$_3$Ni composite material produced
by directed crystallization of an Al-Ni eutectic alloy were studied. The
samples, 5-6 mm in diameter and 60-70 mm long, were grown in vacuum by the
Chokhral'skiy method at crystallization rates of 30-500 mm/hr. The samples had
a unidirectional fibrous structure consisting of an aluminum matrix reinforced
with Al$_3$Ni fibers with a diameter of 1 to 0.2 microns. Microsections of frac-
tures revealed tiny rods of the reinforcing phase, free from the matrix material.
This proved that cracks are propagated not only across the fibers, breaking them,
but along the fibers into the fiber-matrix interface. 1 figure, 1 bibliographi-
cal reference.

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USSR   UDC 542.91:547.1'118

ZAKHAROV, L. S., PISARENKO, V. V., GODOVIKOV, N. N., and KABACHNIK, M. I.,
Institute of Heteroorganic Compounds, Academy of Sciences USSR

"Catalytic Phosphorylation of Polyfluorinated Alcohols. 1. Preparation of
Tripolyfluoroalkyl and Arylpolyfluoroalkyl Phosphates"

Abstract: The authors found that phosphorus exychloride reacts with alcoholates
of polyfluorinated alcohols in absolute ether at room temperature to give
symmetric polyfluorotrialkyl phosphates. However, in the interaction of aryl
chlorophosphates with alcoholates of polyfluorinated alcohols there is a
rearrangement of ether radicals and the formation of a mixture of phosphates.
Polyfluorotrialkyl phosphates are not decomposed by hydrogen chloride even during
prolonged heating. This made it possible to check the catalytic activity of
metal salts in the phosphorylation of polyfluorinated alcohols. Many salts of
metals of groups I-III of the periodic system are effective catalysts. The
catalytic effect was studied in detail by the authors in the phosphorylation
of 1,1-dihydroperfluorobutyl alcohol with phosphorus oxychloride. Salts of
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USSR

ZAKHAROV, L. S., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2503-2509

group II metals are the most effective catalysts, with $CaCl_2$ and Mg the most convenient preparation-wise. Salts of group I metals are not as effective as salts of group II metals, but they can be used for preparative purposes (ammonium salts). It is suggested as a mechanism for the catalytic phosphorylation of polyfluorinated alcohols that nucleophilic attack on the phosphorus oxychloride molecule is facilitated as a result of the interaction of catalyst with phosphoryl group. A series of symmetric polyfluoroalkyl phosphates and arylpolyfluoroalkyl phosphates were synthesized by using the catalytic method devised for the phosphorylation of polyfluorinated alcohols.

Analysis of all the resultant compounds was performed at the Microanalysis Laboratory by TM. SHANINA, T. S. SEREBRYAKOVA and N. I. LARINA, whom the authors thank. The authors also thank A. G. OSHUYEV, YE. K. TSIRUL' and N. P. ANTONOVA for providing the specimens of polyfluorinated alcohols.

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Acc. Nr.: _AP0046763_   Z   Ref. Code: _URO125_

USSR   UDC 621.791.756:669.15-194

KAKHOVSKIY, N. I. FARTUSHNYY, V. G., DEM'YANENKO, G. P., ZAKHAROV, L. S.,
LIPODAYEV, V. N., KAKHOVSKIY, YU. N., BRUSENTSOVA, V. M., KOTOV, V. V.

"Welding of Chrome-nickel-molybdenum Single-Phase Austenitic Steel"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 39-43
(from Avtomaticheskaya Svarka, No 1, 1970, p 80)

Translation: This article contains a study of the effect of manganese
and nitrogen on crack resistance of purely austenitic welds. Chrome-
nickel-manganese-molybdenum wire with nitrogen EP690 and ANV-17 electrodes
for welding 0Kh17N16M2T, 00Kh17N16M3B and 000Kh16N15M3 steels have been
developed. These developments insure uniform strength, uniform corrosion
resistance of the joints made of these steels and sufficiently high
plasticity and viscosity of the weld metal. There are 4 tables, 1 illus-
tration and a bibliography with 15 entries..

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1/2   022
TITLE--ANALYSIS OF THE CORRELATIONS BETWEEN GEOLOGICAL AND GEOPHYSICAL
   PARAMETERS OF THE EARTH'S CRUST IN SOUTHERN TURKMENISTAN -U-
AUTHOR-(05)-ODEKOV, O.A., ZAKHAROVA, L.I., KESELMAN, S.I., MURADOV, CH.,
   YUVSHANOV, A.
COUNTRY OF INFO--USSR

SOURCE--ASHKHABAD, IZVESTIYA AKADEMII NAUK TURKMENSKGY SSR, SERIYA
   FIZIKO-TEKHNICHESKIKH, KHIMICHESKIKH I GEOLOGICHESKIKH NAUK, NO 3, 1970,

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CIRC ACCESSION NO--AP0137488

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN SOUTHERN TURKMENISTAN THE DEPTH
TO THE MOHOROVICIC DISCONTINUITY CORRELATES WELL WITH THE GRAVITY FIELD
AND AGREES POORLY WITH THE MAGNETIC FIELD; IT AGREES SATISFACTORILY WITH
RELIEF OF THE EARTH'S SURFACE. THE BEST CORRELATION WITH DEPTH TO THE
MOHO IS WITH THE GRAVITY AND MAGNETIC FIELDS TOGETHER; RELIEF OF THE
EARTH'S SURFACE IN COMBINATION WITH THE GRAVITY FIELD ALSO IMPROVES THE
CORRELATION, BUT TO A LESSER DEGREE THAN IN THE PRECEDING CASE, BUT IN
COMBINATION WITH THE MAGNETIC FIELD THE STANDARD DEVIATION IS BETTER
THAN WHEN ONLY THE MAGNETIC FIELD IS TAKEN INTO ACCOUNT. IN A
GEOSYNCLINAL REGION THE CLOSEST CORRELATION BETWEEN DEPTH TO THE MOHO IS
OBSERVED WITH THE RELIEF OF THE EARTH'S SURFACE. AFTER COMPARING THE
MEAN SQUARE ERRORS AND VARIATIONS OF DEPTH TO THE MOHOROVICIC
DISCONTINUITY ONE CAN NOTE THAT IN THE GEOSYNCLINAL REGION THE DEPTH TO
THE MOHO CAN BE PREDICTED FROM RELIEF OF THE EARTH'S SURFACE; IN
PLATFORM REGIONS AND IN A ZONE OF DOWNWARPING IT CAN BE PREDICTED FROM
THE GRAVITY FIELD. WITH RESPECT TO OPERATORS OBTAINED BY COMBINING
GEOPHYSICAL PARAMETERS, IN ALL GEOTECTONIC REGIONS A SATISFACTORY
PREDICTION CAN BE MADE WHEN THE GRAVITY AND MAGNETIC FIELDS ARE TAKEN
TOGETHER.   FACILITY: INSTITUTE OF PHYSICS OF THE EARTH AND
ATMOSPHERE.

UNCLASSIFIED

USSR

UDC 669.716:621.777.2

BARANCHIKOV, V. M., GLEBOV, Yu. P., GOROKHOV, V. S., DENISOV, S. M.,
ZAKHAROV, M. F., MILORADOVA, O. N., KHARENKO, V. F., and TSAREV, V. I.

"Development and Investigation of the Process of Pressing Rods and Shapes
of Aluminum Alloys with Lubricant Without Press-Residue"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970,
pp 129-137, resume

Translation: A number of problems related to the investigation of the process
of pressing aluminum alloys with lubricant and the investigation of mechanical
properties, macrostructure, and geometric dimensions of products are discussed.
Technological-economical data on the process are presented. Five figures, nine
tables, seven bibliographic references.

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USSR   UDC 669.716:621.787.2

ZAKHAROV, M. F., ALEKSANDROV, Yu. N., ALEKSANDROV, A. S., and SIN'KO, P. P.

"Experience in the Implementation of Conveyer System Production of Shapes of
the AD31 Alloy"

Translation: Some construction characteristics of the equipment of the first
conveyer production line in the USSR for pressing and working shapes of easily
deformable alloys and also the experience of its technological implementation
are discussed. Three figures, five bibliographic references.

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USSR   UDC 669.2:621.774.38

SHCHEGOLEVATYKH, V. D., ALEKSANDROV, A. S., ZAKHAROV, M. F., and ALEKSANDROV,
Yu. N.

"Study of the Influence of Pressure on the Strength of Seams Produced by
Press Welding"

Moscow, Tsvetnyye Metally, No. 11, Nov 70, pp. 66-71

Abstract: Of the many factors influencing the quality of press welding,
the most important are the degree of plastic deformation and the hydro-
static pressure. A method is briefly described for testing the strength
of press-welded joints, which was used to study press-welded joints in
AV alloy and Al. Graphs illustrate the influence of pressure on weldability
of the alloy and the pure metal. It is found that aluminum is more suitable
for press welding than the alloy.

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USSR   UDC 669.046.5

KRAMAROV, A. D., ZAKHAROV, M. M., and GUTOVSKIY, I. B.

"Removal of Oxygen From Steel in Deoxidation by Manganese, Silicon, and Aluminum"

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 22-29

Translation of Abstract: Data are presented on an investigation of the oxygen removal process from low-carbon steel in deoxidation by manganese, silicon and aluminum, separately and jointly. 6 figures, 6 references.

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