

USSR

NAGAYEV, A. V.

"Limiting Distribution of Extreme Terms of a Variational Series Under Conditions of the Large Deviation Type Imposed on the Sample Mean"

Moscow, Teoriya Veroyatnostey i yeye Primeneniya, Vol 16, No 1, Jan/Feb/Mar 71, pp 118-131

Abstract: It is assumed that the random quantities ξ_j , $j = 1, 2, \dots$, are independent and have a common distribution $F(x)$ so that $M\xi_1 = 0$, $D\xi_1 = \sigma^2$, $M|\xi_1|^3 < \infty$. It is assumed that the one-sided condition of Cramer is fulfilled:

$$f(s) = M e^{s\xi_1} < \infty, \quad 0 \leq s < s_0. \quad (A)$$

Condition (A) is fulfilled if

$$P\{\xi_1 \geq x\} \sim Lx^\beta e^{-x^\alpha}, \quad x \rightarrow \infty, \quad (B)$$

where L , β , and α are constants such that $L > 0$, $\alpha > 1$, and β is $1/2$

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NAGAYEV, A. V., Teoriya Veroyatnostey i yeye Primeneniya, Vol 16, No 1, Jan/Feb/Mar 71, pp 118-131

arbitrary. Normalizing sequences a_n , b_n , A_n , and B_n determined by the following equations are found:

$$nLa_n^{\alpha}e^{-a_n^{\alpha}} = 1, \quad ab_n a_n^{\alpha-1} = 1,$$

$$2ne^{-A_n^2/2} = A_n \sqrt{2\pi}, \quad B_n = A_n^{-1}.$$

Theorems are proved to show that the limiting distribution of the maximum value in the realization ξ_1, \dots, ξ_n , under the condition that the sum $\zeta_n = \xi_1 + \dots + \xi_n$ is moderately different from zero, coincides with the unconditional limiting distribution. If the sum takes on a deviation x of any order, the extreme terms of the variational series behave as if all ξ_j were distributed normally with parameters $(x/n, (\alpha(\alpha-1)(x/n)^{\alpha-2})^{-1/3})$.

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USSR

UDC: 519.214

DZHAKHANGIROVA, F. A., NAGAYEV, A. V.

"A Multidimensional Integral Limit Theorem Which Accounts for Large Deviations"

V sb. Sluchayn. protsessy i smezhn. vopr. Ch. 2 (Random Processes and Related Problems--collection of works. Part 2), Tashkent, "Fan", 1971, pp 25-35 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V74)

Translation: The authors consider a sequence $\{\xi_n\}$ of independent identically distributed two-dimensional random vectors with bounded probability density function $p(x) = p(x_1, x_2)$, which satisfies the condition $p(x) \sim \exp\{-|x|^\beta\}$ when $|x| \rightarrow \infty$, where $\beta > 1$. An investigation is made of the asymptotic behavior of the probability $P(\xi_1 + \dots + \xi_n \in A_{\gamma n})$ as $\gamma \rightarrow \infty$, where A_α is the same region as in Abstract No 9V73. V. Petrov.

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USSR

UDC: 519.214

ANORINA, L. A., NAGAYEV, A. V.

"An Integral Limit Theorem for Sums of Independent Two-Dimensional Random Vectors With Regard to Large Deviations in the Case Where Cramer's Condition is not Satisfied"

V sb. Sluchayn. protsessy i smezhn. vopr. Ch. 2 (Random Processes and Related Problems--collection of works. Part 2), Tashkent, "Fan", 1971, pp 3-11 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V73)

Translation: Let A_α be a region bounded by the closed contour $\alpha_\alpha(\varphi) = (\alpha_\alpha(\varphi), \alpha_\alpha(\varphi))$, and let $\{\xi_n\}$ be a sequence of independent identically distributed two-dimensional vectors with mathematical expectations equal to zero and with finite second moments. It is assumed that the distribution of ξ_1 is absolutely continuous with density $\rho(x) = |x|^{-\beta} (1 + \varepsilon(x))$, where $\beta > 4$, $\varepsilon(x) \rightarrow 0$ as $|x| \rightarrow \infty$, $x = (x_1, x_2)$, $|x| = \sqrt{x_1^2 + x_2^2}$. If the contour of A_1 has at most a finite number of points at which $\alpha_1'(\varphi) = \alpha_1'(\varphi) = 0$, and if the point $(0,0)$ is inside region A_1 , then

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ANORINA, L. A., NAGAYEV, A. V., Sluchayn. protsessy i smechn. voпр. Ch. 2,
Tashkent, "Fan", 1971, pp 3-11

$$P\left(\frac{1}{\sqrt{n}}(\xi_1 + \dots + \xi_n) \in A_\alpha\right) \sim nP(\xi_1 \in A_\alpha)$$

when $n \rightarrow \infty$ and $\frac{\alpha}{\sqrt{n \log n}} \rightarrow \infty$. V. Petrov.

USSR

NAGAYEV, E. L.

"State of a Conduction Electron in a Crystal for the Case of Nonlocal Interaction with Elementary Excitations"

Moscow, Teoreticheskaya i Matematicheskaya Fizika; January, 1973; pp 91-101

ABSTRACT: It is shown, with the example of electron-exciton interaction, that the interaction of conductivity electrons with noncharged elementary excitations in a crystal can be nonlocal. In the case of such interaction the state of the charge carrier is essentially different from the polaron state. The energy spectrum of the charge carriers is investigated for the case of nonlocal electron-exciton interaction at $T = 0$ in limiting cases of strong and weak electron-exciton coupling. The upper and lower bounds of the ground-state energy of such a quasi particle (the "transferon") are found for the case of arbitrary electron-exciton coupling.

The article includes 31 equations. There are 14 references.

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USSR

UDC: 537.226+537.311.33:537+535

LIDORENKO, N. S., Corresponding Member of the USSR Academy of Sciences;
KOZLOV, V. A.; NAGAYEV, E. L.

"Two-Stage Attraction of Electrons by Ions"

Moscow, Doklady Akademii Nauk SSSR, vol 204, No 4, 1972, pp 820-827

Abstract: The thermo-emf of nondegenerate semiconductors under conditions of hydrodynamic flow of phonons under the action of an applied temperature gradient is considered in this article. Under these conditions, the phonon flow attracts charge carriers and the system becomes a quantum analog of the electrohydrodynamic generator; the charge carriers are attracted by quasi-particles of essentially quantum origin rather than by the flow of neutral particles. The authors begin their analysis with a statement of the kinetic equations for thermal and electronic phonons, in which it is assumed the dominant role belongs to the mutual collisions of the thermal phonons while the effect of the electronic phonons on them may be neglected. It is shown that the attraction of electrons by the phonons may cause unusually high thermo-emf values in the case of very well formed crystals. The authors express their gratitude to R. N. Gurzhi, V. M. Kontorovich, and I. B. Rubashov for their helpful comments.

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1/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--UNSATURATED FERROMAGNETISM OF LOCALIZED D ELECTRONS -U-

AUTHOR--NAGAYEV, E.L. *N*

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1109-18

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FERROMAGNETISM, FERROMAGNETIC STRUCTURE, FERROMAGNETIC MATERIAL, ELECTRON ENERGY LEVEL, MAGNETIC MOMENT, PARAMAGNETIC MATERIAL, ANTIFERROMAGNETIC MATERIAL, IMPURITY LEVEL, SPIN WAVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1306

STEP NO--UR/0181/70/012/004/1109/1118

CIRC ACCESSION NO--AP0124957

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0124957

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

ABSTRACT. IF EXCHANGE INTERACTION BETWEEN LOCALIZED D ELECTONRS CANNOT BE DESCRIBED IN TERMS OF THE HEISEN BERG THEORY, FERROMAGNETIC STATES ARE POSSIBLE WITH UNSATD. MAGNETIC MOMENT. THIS SITUATION CAN BE REALIZED IN NONMETALLIC PAULI ANTIFERROMAGNETIS OF PARAMEAGNETIS SO STRONGLY DOPED WITH DONOR IMPURIT THAT INDIRECT EXCHANGE TAKES PLACE BY MEANS OF CONDUCTION ELECTRONS. A MICROSCOPIC THEORY IS CONSTRUCTED UNSATD. FERROMAGNETIC STATES SUFFICIENTLY CLOSE TO SATN. SATD. FERROMAGNETISM AT ELECTRON CONCNS. SMALLER THAN SOME CRIT. VALUE IS UNSTABLE RELATIVE TO SPIN FLUCTUATIONS. HOWEVER, ANHARMONIC EFFECTS LIMIT THE AMPLITUDE OF THE SPIN WAVES, AND AS A RESULT A STATE CAN BE STABILIZED WITH UNSATD. FERROMAGNETISM. THE LATTER IS INTERPRETED AS SATD. IN WHICH A MACROSCOPICALLY LARGE NO. OF MAGNONS ARE EXCITED. "DEMAGNETIZATION" IS PROPORTIONAL TO THE DIFFERENCE BETWEEN THE CONCEN. OF ELECTRONS IN THE CRYSTAL AND ITS CRIT. VALUE.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--CURRENT CARRIERS IN ANTIFERROMAGNETIC SEMICONDUCTORS -U-
AUTHOR--NAGAYEV, E.L. N
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 4, PP 1269-1279
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ANTIFERROMAGNETIC MATERIAL, SEMICONDUCTOR BAND STRUCTURE,
ELECTRON SPIN, CONDUCTION ELECTRON, ELECTRON MOBILITY, HOLE MOBILITY,
CARRIER LIFETIME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/1487 STEP NO--UR/0056/70/058/004/1269/1279

CIRC ACCESSION NO--AP0106243
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106243

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STATES OF CURRENT CARRIERS IN ANTIFERROMAGNETIC SEMICONDUCTORS WITH A NARROW BAND ARE INVESTIGATED UNDER CONDITIONS WHEN MAGNETIC POLARONS ARE NOT PRODUCED. SINCE IN THIS CASE THE CARRIER SPIN IS RIGIDLY FIXED TO THE SPIN OF THE MAGNETIC ATOM ON WHICH IT IS LOCATED, THE ATOM LOADED BY THE ELECTRON MAY BE REGARDED AS A DEFECT IN MAGNETIC ORDERING. A TRANSITION IS MADE TO THE REPRESENTATION IN WHICH CONDUCTIVITY ELECTRON SPIN PROJECTIONS AND PROPER SPINS OF THE MAGNETIC ATOMS WHICH PLAY THE ROLE OF VARIABLES ARE REPLACED BY MAGNETIC DEFECT SPINS AND PROJECTIONS OF THE MAGNETIC ATOM SPINS WITH ALLOWANCE FOR DEFECTS EXISTING AMONG THEM. MOVEMENT OF CURRENT CARRIERS IS POSSIBLE ONLY WITH THE PARTICIPATION OF VIRTUAL MAGNONS. FOR A POSITIVE S MINUS D EXCHANGE INTEGRAL AN ELECTRON ENCOUNTERING A MAGNETIC ATOM CREATES A VIRTUAL MAGNON AND ON LEAVING THE ATOM ANNIHILATES A MAGNON. FOR SMALL ATOMIC SPINS THE EFFECTIVE MASS OF SUCH A CARRIER IS COMPARABLE WITH THE EFFECTIVE MASS OF A BAND ELECTRON. WHEN THE S MINUS D EXCHANGE INTEGRAL IS NEGATIVE AN AUTOLOCALIZED STATE OF THE QUASI OSCILLATOR TYPE IS FORMED. THE QUASIOSCILLATOR IS CHARACTERIZED BY A LARGE EFFECTIVE MASS WHOSE VALUE AT T EQUALS 0 IS DETERMINED BY SPIN ZERO OSCILLATIONS.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--RESONANCE SHIFT OF THE CURIE TEMPERATURE IN MAGNETIC SEMICONDUCTORS
-U-
AUTHOR--NAGAYEV, E.L. N
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(2), 607-8
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--CURIE POINT, SEMICONDUCTOR PLASMA EXCITON, EXCITED ELECTRON
STATE, CONDUCTION ELECTRON, MAGNETIC MATERIAL, PLASMA RESONANCE, GREEN
FUNCTION, MOTION EQUATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1897 STEP NO--UR/0181/70/012/002/0607/0003
CIRC ACCESSION NO--AP0054700
UNCLASSIFIED

2/2 031
CIRC ACCESSION NO--AP0054700

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PLASMA EXCITON INTERACTION MIXES THE GROUND AND EXCITED STATES OF MAGNETIC ATOMS, ESP. CLOSE TO PLASMA EXCITON RESONANCE. FOR SIMPLICITY, IT IS ASSUMED THAT THE ENERGY OF EXCHANGE OF CONDUCTING ELECTRONS WITH MAGNETIC ATOMS IS MUCH SMALLER THAN THE FERMI ENERGY OF CARRIERS. IT IS ASSUMED THAT THE EXCITON TRANSITIONS ARE ALLOWED IN THE DIPOLE APPROXN. AND THE GREEN FUNCTIONS ARE FOUND BY THE METHOD OF EQUATIONS OF MOTION.

UNCLASSIFIED

USSR

UDC 612.816-087.5

NAGAYEV, I. YA., OKSENGENDLER, G. I., and TZHEVKIN, V. A., First Medical
Institute imeni I. P. Pavlov, Leningrad

"A Method of Determining the Threshold of Neuromuscular Excitation in Laboratory Animals"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 5, 1971, pp 48-49

Abstract: The authors describe a device capable of recording threshold values of neuromuscular excitation in response to electrical and chemical stimulation more objectively than current methods based on measurement of chronaxy. The device provides for uniform increase in voltage at the electrodes. It automatically turns off the current, measures the internal resistance of the animal's body, and records the results. Experiments on mice showed that the device was able to detect the minimum doses of hydrazine and tetraethyl lead capable of affecting the threshold of neuromuscular excitability.

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UDC 539.4

NAGAYEV, R. F., Leningrad

"General Problem of Quasiplastic Impact"

Moscow, Mekhanika tverdogo tela, No 3, May/Jun 71, pp 94-103

Abstract: The problem of quasiplastic impact inside a mechanical system of a very general type is considered. The mechanical system has an arbitrary, but finite number of degrees of freedom with one fixed impact pair. It is assumed that the impact in this pair is direct and can be described using Newtonian hypotheses, i.e., the relative rate of approach at the time of impact of the areas of contact of the colliding bodies should change sign and its absolute magnitude is decreased by a factor $R(0 < R < 1)$. In the intervals between impacts the motion of the system is described by nonlinear differential equations that are generally nonintegrable in quadratures. It is assumed, however, that the additional, essentially nonlinear factors of a discontinuous type in the system such as a second impact pair, Coulomb friction, clearance, etc., are generally absent or do not manifest themselves in any way during the process of quasiplastic impact. The proposed method is a natural generalization of a method proposed earlier by the author and is based on the use of series in terms of increasing powers of the argument. The results of the study can

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NAGAYEV, R. F., Mekhanika tverdogo tela, No 3, May/Jun 71, pp 94-103

be used to determine with any preassigned degree of accuracy the change in the characteristics of completion of the impact and the region of the existence of impact in the space of the parameters and initial conditions.

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USSR

UDC 534

NAGAYEV, R. F., YAKIMOVA, K. S.

"Impact Interaction Between a 2-Mass Elastic System and a Nonmoving Plane"

Mekhanika Tverdogo Tela, No 6, 1971, pp 14-24.

ABSTRACT: The process of interaction of a nonmoving plane with a free system consisting of two bodies connected by a linear spring (2-mass system) is studied. It is demonstrated that in the process of the interaction, the number of impacts of one of the bodies of the system with the plane is determined exclusively by the ratios of masses of the body and the velocity restoration factor upon impact R . Using methods developed in an earlier work, the area of change of these dimensionless parameters of the problem within which the number of impacts is infinite and, therefore, quasiplastic impact occurs, is determined. Statements are made concerning the correspondence between initial and final dynamic states of the system and, related to this, the effective velocity restoration factor upon impact. The results of the work can be used in the investigation of the dynamics of a number of vibration-impact mechanisms.

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NAGAYEV, S.

"Necessary and Sufficient Conditions for the Strong Law of Large Numbers"

Teoriya Veroyatnostey i Ee Primeneniya [Theory of Probabilities and its Applications], 1973, Vol 18, No 1, pp 609-618 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V20, by V. Petrov).

Translation: Suppose $\{X_n; n = 1, 2, \dots\}$ is a sequence of independent symmetrical random quantities, $F_n(x) = P(X_n < x)$,

$$I_n(h, \epsilon) = \int_{-n\epsilon}^{n\epsilon} e^{hx} dF_n(x).$$

$h_r(\epsilon)$ is the solution of the equation

$$\Psi_r(h, \epsilon) = \sum_{2^r < n \leq 2^{r+1}} \frac{d}{dh} I_n(h, \epsilon) / I_n(h, \epsilon) = \epsilon n_r.$$

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Nagayev, S., Teoriya Veroyatnostey i Ee Primeneniya, 1973, Vol 18, No 1, pp 609-618.

Here $n_r = 2^{r+1}$, if $\sup_h \Psi_r(h, \epsilon) \geq \epsilon n_r$. We assume $h_r(\epsilon) = \infty$ in the opposite case. In order for

$$P\left(\frac{1}{n} \sum_{k=1}^n X_k \rightarrow 0\right) = 1,$$

it is necessary and sufficient that the conditions

$$\sum_{n=1}^{\infty} P(X_n > n\epsilon) < \infty \quad \text{и} \quad \sum_{r=1}^{\infty} \exp\{-\epsilon h_r(\epsilon) n_r\} < \infty$$

be fulfilled for any $\epsilon > 0$.

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USSR

UDC 621.385.64

NAGAYEV, V.F.

"Optimization Of Space Interactions Of Magnetron Oscillators"

Elektron. tekhnika. Nauch.-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1971, Issue 6, pp 25-35
(From RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10A156)

Translation: On the basis of simple energy and kinematic relations which describe the process of the interaction of an electron flow with an electromagnetic field in a multicavity magnetron, formulas are derived which make it possible to establish an optimized construction and electrical parameters of magnetrons of various wave bands (size of space interaction, electronic efficiency, number of interactions of gaps [cuts], induction of the magnetic field and others). Particular attention is allotted to an analysis of the performance of magnetrons of the decimeter and meter wave band of special construction. 4 ref. Summary.

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NAGAYEV, V.V.

URS 57351
27 Oct 72

- 12 -

Most scientists dealing with the problem of alcoholism conclude that it develops in early youth, and the earlier one consumes excessive alcoholic beverages, the faster he becomes an alcoholic; the sooner he develops neuro-psychic disorders. In particular, A.H. Korovin wrote that individuals who start abusing alcohol after the age of 35 years rarely develop alcoholism with all its personality, neuropsychic, and somatic consequences.

Of the 500 people surveyed, 50 percent were men and ten percent were women. With respect to age, they were distributed as follows: 11% 19-29 years old, 49% 30-39 years, 35.2% 40-49 years, 4.8% 50 or more years of age. In other words more than half (60%) were young people. Blue collar workers constituted 71.6%, technical engineering workers and white collar workers constituted 22.6%, and 5.8% were unemployed. They were distributed as follows according to stages (classification of A.A. Portnov, 1962): 3.6% (28 people) -- beginning stage, 63% intermediate (315), and 31.4% (157 people) ultimate ["skhodnyaya"] stage.

The purpose of our investigation was to study some aspects of alcoholism as a social problem. Using the method of direct observation we surveyed 500 alcoholics on the records of the narcological office of the Perm' municipal psychiatric dispensary and treated in the narcological (drug addiction) department of Perm' Oblast Psychiatric Hospital No 1. A comprehensive study of the patients' histories served as the basis of our study. By questioning the patients and their relatives, determination was made of the distinctions of their development and upbringing, tendencies, interests, and needs of the patient during the period preceding alcoholism; we assessed the conditions under which he grew up and was reared, the situations and circumstances that influenced development of his personality, etc.

SOME ASPECTS OF THE SOCIAL APPROACH TO INVESTIGATION OF ALCOHOLISM

UDC: 613.81.058

Social hygiene & health

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USSR

UDC 616.988.6-078-093+576.856.63.093.35

NAGAYEVA, L. I., and PLANDERE, E. M.

"A Study of Sensitivity of MS-1 Cells to Some Viral Strains

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, No 5, (274), 1970, pp 49-52

Abstract: MS-1 cells were obtained from a mouse tumor which retained its oncological characteristics after 84 passages. The sensitivity of this cell line to a series of viruses was tested.

It was found that MS-1 cells have a high degree of sensitivity to the following viruses which cause a marked cytopathic reaction, influenza A (strain WSH), vaccinia, and Sindbis virus.

MS-1 cells were insensitive to the following strains of viruses: influenza A -- Leningrad strain, influenza B -- Singapore, Tokyo and Johannesburg strains, ECHO (4,7,11,16), the virulent Radom strain, and vaccinal H strain of Newcastle disease virus, and the West Nile fever virus.

USSR

UDC 547.26'118

PUDOVIK, A. N., PUDOVIK, M. A., SHULYNDINA, G. S., and NAGAYEVA, KH. KH., Institute of Organic and Physical Chemistry imeni A. Ye. Arbusov, Academy of Sciences USSR

"2-Substituted N-Phenyl(benzyl)-1,3,2-oxazaphospholanes"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1477-1480

Abstract: The interaction of phosphorus trichloride with β -phenyl-(benzyl)aminoethanol gives 2-chloro-N-phenyl(benzyl)-1,3,2-oxazaphospholane. These acid chlorides readily react with alcohols, secondary amines to form corresponding amides and esters. The same products are obtained by a transesterification reaction -- transamidation of some trivalent phosphorus acid derivatives. Thus, heating of hexaethyltri-aminophosphine with β -phenylaminoethanol in a benzene solution gives 2-diethylamino-N-phenyl-1,3,2-oxazaphospholane. The latter on heating with alcohol readily becomes 2-ethoxy-N-phenyl-1,3,2-oxazaphospholane.

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USSR

UDC 632.95

MANDEL'BAUM, YA. A., NIKISHOVA, G. YE., ~~MAKAYUK, I. N.~~ and ZAKS, P. G.

"Phosalone"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 25-28 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N455 by T. A. Belyayeva)

Translation: The article shows the physical and chemical properties of phosalone, its toxicity, the method of producing it from $(EtO)_2PSSNa$ and chloromethylchlorobenzoxazolone, and the method of analysis. A method is devised for chloromethylation of chlorobenzoxazolone. Phosalone can be used in the form of a 20% emulsion concentrate and a 30% wettable powder.

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USSR

UDC: 621.372:530.145.6

NAGIBAROV, V. R.

"On the Theory of Migration Lasers"

V sb. Peredacha energii v kondensirovan. sredakh (Energy Transmission in Condensed Media--collection of works), Yerevan, 1970, pp 26-32 (from RZh--Radiotekhnika, No 5, May 71, Abstract No 5D227)

Translation: The author calculates the effect of migration processes in lasers resulting in creation of a negative population of metastable levels of acceptor impurities so that emission of coherent photons may be realized. Some methods of non-cavity excitation of coherent optical oscillations are considered. A. K.

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1/2 044 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--OVERLAPPING PEAK TRAINS OF GIANT LASER PULSES AND PHOTON ECHO
GENERATION -U-
AUTHOR--(02)-NAGIBAROV, V.R., SAMARTSEV, V.V. *N*
COUNTRY OF INFO--USSR
SOURCE--CHEMICAL PHYSICS LETTERS, VOL. 5, MAR. 1, 1970, P. 61-63
DATE PUBLISHED--01MAR70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PHOTON, LASER PULSE, GLASS PROPERTY, WAVE PROPAGATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0732 STEP NO--NE/0000/70/005/000/0061/0063
CIRC ACCESSION NO--AP0111925
UNCLASSIFIED

272 044

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0111925

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUGGESTION THAT A SUPERPOSITION OF TRAINS OF GIANT PULSES BE USED FOR THE PRODUCTION OF COHERENT PHOTON RESPONSES IN LIQUIDS AND GLASSES. THE CONDITIONS FOR SUCH A GENERATION ARE DISCUSSED. THE TIME AT WHICH THE PHOTON ECHOES APPEAR AND THEIR WAVE VECTORS FOR A SUCCESSION OF FIVE PULSES ARE TABULATED. IT IS POINTED OUT THAT FOR ACHIEVING A SPATIAL SEPARATION OF THE COHERENT RESPONSES FROM THE EXCITING RAYS IT IS CONVENIENT TO COMBINE PULSE TRAINS OF THREE AND MORE RAYS. FACILITY: AKADEMIIA NAUK SSSR, FIZIKO-TEKHNICHESKII INSTITUT, KAZAN, USSR.

UNCLASSIFIED

172 039 UNCLASSIFIED PROCESSING DATE--3006170
TITLE--PEAK STRUCTURE OF LASER PULSE AND PHOTON ECHO -U-

AUTHOR--(04)-KOPVILLEM, U.H., ERSHOV, G.M., NAGIBAROV, V.R., SAMARTSEV,
V.V.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS, NETHERLANDS, VOL. 31A, NO. 2, P. 87-8, 26 JAN. 1970

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE LENGTH, PHOTON EMISSION, LASER EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1992/0501

STEP NO--NE/0000/70/031/002/0087/0088

CIRC ACCESSION NO--AP0111694

UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0111694

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS GIANT PULSES CONSIST OF MANY
ULTRASHORT PEAKS (SIMILAR TO 10 NEGATIVE PRIMEL3 SEC) THERE IS A
POSSIBILITY OF USING THEM FOR THE EXCITING OF PHOTON ECHO IN MEDIA WITH
INTENSIVE INNER MOTION (LIQUIDS, GASES, GLASSES AND CRYSTALS AT A
TEMPERATURE HIGHER THAN THAT OF LIQUID HELIUM). THE CONDITIONS OF THIS
EXCITEMENT ARE DISCUSSED. FACILITY: KAZAN PHYSICAL TECHNICAL
INST. ACAD. SCI., USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--INDUCTIONS AND ECHOES IN SYSTEMS WITH UNEQUIDISTANT SPECTRUM -U-
AUTHOR-(02)-NAGIBAROV, V.R., SOLOVAROV, N.K. *N*
COUNTRY OF INFO--USSR
SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 889-906
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PARTICLE SPECTRUM, PULSE GENERATOR, PULSE SIGNAL,
ELECTROMAGNETIC INDUCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1072 STEP NO--GE/0030/70/037/002/0889/0906
CIRC ACCESSION NO--AP0107581
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0107581

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A GENERAL METHOD IS DEVELOPED OF CALCULATION OF RESPONSE SIGNALS OF N-PARTICLE SYSTEMS WITH AN UNEQUIDISTANT SPECTRUM TO PULSE ACTION OF COHERENT PHYSICAL FIELDS RESONANT FOR ANY TRANSITION OF THE SYSTEM. THE CASE OF A PARTICLE SYSTEM WHERE EACH PARTICLE HAS THREE ENERGY LEVELS E_{SUB1} SMALLER THAN E_{SUB2} SMALLER THAN E_{SUB3} IS ANALYSED. IT IS SHOWN THAT IF SUCH A SYSTEM IS SUBJECTED TO PULSE ACTION OF TWO GENERATORS EXCITING TRANSITIONS E_{SUB1} EQUILIBRIUM E_{SUB2} AND E_{SUB2} EQUILIBRIUM E_{SUB3} AT INITIAL TIME AND AT TIME τ TO PULSE ACTION OF A GENERATOR WITH FREQUENCY Ω_{SUB31} EQUALS $H'_{PRIME NEGATIVE 1}$ (E_{SUB3} MINUS E_{SUB1}), THE SYSTEM GENERATES INDUCTION AND ECHO SIGNALS WITH POWER PROPORTIONAL TO $N_{PRIME 2}$ AT ALL POSSIBLE TRANSITIONS. ECHO SIGNALS ARISE AT TIMES $(1 \text{ PLUS } \epsilon) \tau$, 2τ , AND $(1 \text{ PLUS } 1 \text{ OVER } \epsilon) \tau$ AFTER THE FIRST PULSE, WHERE ϵ EQUALS E_{SUB2} MINUS E_{SUB1} OVER E_{SUB3} MINUS E_{SUB2} . THE OBSERVED RESPONSES MAY HAVE A PHYSICAL NATURE WHICH IS BOTH IDENTICAL WITH THE EXCITATION AND DIFFERENT FROM IT. SUPPLEMENTS ARE GIVEN BY WHICH THE RESPONSES OF PARTICLE SYSTEMS MAY BE CALCULATED TO A SERIES OF PULSES DIFFERENT FROM THOSE CONSIDERED HERE. WHEN ϵ YIELDS 1 THE RESULTS TRANSFORM TO THE CASE OF EQUIDISTANT SPECTRUM. FACILITY: PHYSICO-TECHNICAL INSTITUTE, ACADEMY OF SCIENCES OF THE USSR, KAZAN.

UNCLASSIFIED

USSR

UDC 539.18

GADOMSKIY, O. N., NACIBAROV, V. R., SOLOVAREV, N. K., Kazan' State
Pedagogical Institute of the Ministry of Education RSFSR

"Toward a Theory of the Radiation of Systems of Weakly Interacting Particles"

Manuscript deposited at VINITI No. 4583-72 Dep. from 12 July 1972 (from
RZh-Fizika, No 10, Oct 72, Abstract No 10D7DEP)

Translation: The Hamiltonian for the interaction of a system of atoms with an external electromagnetic field, considering the delaying part of the Coulomb interaction between them, is obtained. The radiation intensity (absorption) of electromagnetic fields is calculated with the resulting Hamiltonian. It is shown that consideration of the delaying portion of the Coulomb interaction between atoms leads to the appearance of formulas for the intensity, along with the usual new terms. Numerical calculations show that consideration of the latter is especially important for the infrared region of frequencies under the condition of coherence of the exciting field. The intensity of the superradiant signals, in addition to the ordinary term $\sim N^2$, contains many terms with higher powers of N , where N is the number of atoms. The intensity of the superradiant signals of the light induction and

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GADOMSKIY, O. N., et al, Manuscript deposited at VINITI No. 4538-72 Dep.
from 12 July 1972

echo type was calculated with the Hamiltonian obtained. Analysis of the expression showed that under certain conditions the system of atoms, besides emitting on the basic frequency ω_{12} , can emit (absorb) detectable power on the double frequency $2\omega_{12}$, where ω_{12} is the frequency of splitting in the spectrum of the isolated atom. For $N = 2$ this corresponds to simultaneous radiation transition of both atoms to the ground (excited) state. Authors abstract.

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USSR

UDC 669.721.042.6(088.8)

TAGAKIN, A. N., KORZNIKOV, V. M., BELKIN, G. I., ALONTSEV, V. S., PROVODNIKOV, A. A., MAZUROV, G. A., TITAYEV, I. A., PUTINA, O. A., MATSUY, N. V., BOCHKAREV, G. V., NAGIBIN, V. M.

"Method of Processing of Magnesium Ingots"

USSR Author's Certificate No 313908, filed 16/03/70, published 10/11/71, (Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G248 P by G. Svodtseva).

Translation: A method of processing of Mg ingots including transportation, cooling, mechanical working, washing, etching, drying and covering with a protective layer is proposed. In order to reduce the labor expenditures for the process and process time, the ingots are subjected to forced cooling to 450-100°, mechanically worked during transportation, and washed at 350-100°. This reduces labor consumption, decreases the time of the process, and increases the productivity of labor by 40-80%.

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1/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DENSITY OF MOLTEN ALUMINUM OXIDE -U-
AUTHOR--(02)-MITIN, B.S., NAGIBIN, YU.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. FIZ. KHIM. 1970, 44(5), 1325-6
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--FLUID DENSITY MEASUREMENT, ALUMINUM OXIDE, TEMPERATURE
DEPENDENCE, MELTING POINT, PHASE TRANSITION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1423 STEP NO--UR/0076/70/044/005/1325/1326
CIRC ACCESSION NO--AP0135097
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135097

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A HYDROSTATIC WEIGHING METHOD WAS USED FOR THE DETN. OF TEMP. DEPENDENCE OF THE D. OF MOLTEN AL SUB2 O SUB3 IN THE TEMP. RANGE FROM THE M.P. OF AL SUB2 O SUB3 TO 2550DEGREES. MEASUREMENTS WERE PERFORMED BOTH IN A VACUUM OF 10 PRIME NEGATIVE 4 TORR AND IN AN ATM. OF AR. RESULTS FIT (PLUS OR MINUS 3PERCENT ERROR) THE LINEAR EQUATION $\gamma = 3.04 - 1.15 \times 10^{-3} T$ (T MINUS 2030DEGREES), WHERE γ IS THE DETD. D. OF MOLTEN AL SUB2 O SUB3 AND T IS THE TEMP. MOLAR VOL. OF MOLTEN AL SUB2 O SUB3 WERE CALCD. FOR ALL TEMPS. STRONGLY MARKED CHANGE OF THE MOLAR VOL. OF AL SUB2 O SUB3 AT ITS M.P. GAVE EVIDENCE FOR THE PROFOUND STRUCTURAL TRANSFORMATION AT THE TRANSITION OF AL SUB2 O SUB3 FROM THE SOLID TO THE LIQ. STATE.

FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 546.623-31:537.311

YELYUTIN, V. P., MITIN, B. S., and NAGIBIN, Yu. A., Moscow Institute of Steel and Alloys

"Electric Conductivity of Liquid Aluminum Oxide"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 7, No 5, May 71, pp 880-881

Abstract: An experimental determination of the electric conductivity of liquid aluminum oxide in the range of temperature from the melting point to 2800°C is described. Measurements were carried out in a vacuum and in a purified helium atmosphere by a voltmeter-ammeter with a molybdenum measuring cell. The experimental setup and measuring technique are briefly described. The results show that the values of the specific electric conductivity in a vacuum and in helium are the same. The electric conductivity increases with temperature while the activation energy of ion migration decreases with temperature, and in magnitude corresponds to the activation energy of silicate melts. It is concluded that $Al_2O_3 \rightarrow AlO_2 \rightarrow AlO^+$ is the most favorable scheme of liquid Al_2O_3 dissociation.

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USSR

UDC 546.824-31

MITIN, B. S., and NAGIBIN, Yu. A., Moscow Institute of Steel and Alloys

"The Properties of Liquid Titanium Dioxide"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 7, No 5, May 71, pp 814-816

Abstract: An experimental determination of the density, viscosity, and surface tension of a liquid, analytically pure, titanium dioxide in the temperature range from melting to 2600°K is presented. Viscosity was measured in a vacuum not higher than 1×10^{-4} mm Hg and in a purified argon atmosphere by the method of damping torsional vibrations. The obtained experimental data made it possible to establish the dependence of the dynamic viscosity logarithm on the inverse temperature. The dependence was shown to be exponential.

The calculated activation energy of the viscous flow of a liquid titanium dioxide is equal to 32.4 kilocalorie/mol. The free activation energy of a viscous flow was calculated by the Eyring formula and its dependence on temperature was plotted. The values of surface tension were calculated by $1/2$

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MITIN, B. S., and NAGIBIN, Yu. A., Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 7, No 5, May 71, pp 814-816

formula $\sigma = 1/4 Fv/\pi R$, where R is the cylinder mean radius; F is the separation force of the cylinder from the liquid surface; and V is the Vershafelt correction determined from cylinder parameters or graphically. The analytical dependence of surface tension on temperature is expressed by the equation $\sigma = 355 - 0.174 (T - 2125^\circ K)$.

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USSR

UDC 620.178.1:669.15

MAKSIMOVICH, G. G., ^N~~NAGIRNYI, S. V.~~, LYUTYY, YE. M., and IGNATYV, M. I.,
Institute of Physico Mechanics, Academy of Sciences Ukrainian SSR

"Change in the Fine Structure of 1Kh18N9T Steel After Extended Stressing in Molten Lithium"

L'vov, Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-June 70, pp 67-70

Abstract: A study was made of dislocation structural changes occurring in 1Kh18N9T steel when it is immersed in molten lithium under stress. Both the surface (less than 50 microns) and center of the steel samples were studied after holding the samples in lithium at temperatures of 500 and 650°C under stress.

A low dislocation density ($10^7/\text{cm}^2$) was noted in the initial samples, and the dislocation distribution was not uniform. Small masses of dislocations were noted near the grain boundaries and near the twin boundaries, as well as near a different site of inclusions and stacking faults. A large portion of the sample cross section was free of dislocations. After holding samples at 500°C for 100 hours, dislocation density was reduced further ($10^6/\text{cm}^2$), and was concentrated primarily between the carbides. Slip traces of dislocation groups and some growth of carbides in the dislocations were detected. Holding samples in lithium for 100 hours at 500°C under a stress of 17 kg/mm^2 caused a significant increase in dislocation

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USSR

MAKSIMOVICH, G. G., Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-June 70, pp 67-70

density. In the sample center, dislocation density was much higher than in the surface layer and they formed complex and tightly joined masses, especially around precipitated constituents. In the surface layer, dislocations were grouped around coarse carbides, where individual dislocation loops and lattices were observed close to large carbides and grain boundaries.

For samples held in lithium for 100 hours at 650°C under a load of 11.9 kg/mm² the fine structure was similar to that described above--as to dislocation distribution. In this case the dislocation density gradient in the surface layers and in the center of the samples was much larger than at 500°C. In the sample centers growth of both small and large carbide chains was noted while around the precipitated particles there was a dense, barely discernible dislocation lattice. In the surface layers there were fewer carbides, lower dislocation density, and a more uniformly distributed dislocation density. Individual dislocations interacted to form dislocation loops, and there were large areas free of dislocations. Near the grain boundaries a true dislocation lattice is formed. Moreover, twins were noted which in the center zone of the sample were surrounded by dense dislocation masses. Dislocations were absent in the surface layer.

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USSR

MAKSIMOVICH, G. G., et al, Fiziko-Khimicheskaya Mekhanika Materialov, No 3,
May-June 70, pp 67-70

From the above-described observations it was deduced that molten lithium dissolves the oxide film on the sample surface and dissolves impurities and inclusions in 1Kh18N9T steel as a result of which the number of barriers retarding dislocation movement to the surface is diminished.

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USSR

UDC 541.182

SHTERENTAL', M. I., Candidate of Technical Sciences, SUDIT, ZH. M., Candidate of Technical Sciences, and MAGIRNYY, YU. P., State Special Bureau for the Design of Machines for Chemical Plant Protection

"Number of Drops Recorded During Study of Aerosol Dispersion"

Moscow, Vestnik Sel'skokhozyaystvennoy Nauki, Vol 183, No 3, Mar 71, pp 130-132

Abstract: In view of the widespread use of liquid-dispersing devices in agriculture and industry and the necessity to know the exact degree of dispersion achieved, the authors analyze the methods available for counting the drops into which a unit volume of the liquid is dispersed, point out the shortcomings of the methods, recommend a special logarithmic approach, and explain the derivation of the equation proposed.

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USSR

UDC 541.183

NAGIYEV, M. F., and IBRAGIMOV, Ch. Sh., Institute of Theoretical Problems of
Chemical Technology, Acad. Sc., AzerbSSR

"Theoretical Analysis of Vapor Adsorption Isotherms on Nonuniformly Porous
Sorbents"

Baku, Azerbaydzhanskiy Khimicheskiy Zhurnal, No 5-6(71-72), 1971, pp 93-98

Abstract: Actual porous sorbent materials are very complex, their structures consisting of pores with all possible sizes and shapes, making a theoretical analysis of the sorption process very difficult. In an attempt to approach reality, model adsorbents were selected with diverse porosity and their vapor adsorption isotherms were analyzed theoretically. The model of a porous body developed by Adzuma was used for adsorbents with cylindrical capillary pores. Sorption characteristics of this model adsorbent are treated mathematically.

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1/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--PHASE EQUILIBRIUMS IN GE TE A PRIMEII TE SYSTEMS -U-

AUTHOR--(03)-NAGIYEV, V.A., ZARGAROVA, M.I., GLAZOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 569-71

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--THERMAL ANALYSIS, GERMANIUM COMPOUND, ZINC COMPOUND, MERCURY COMPOUND, CADMIUM COMPOUND, PHASE DIAGRAM, TELLURIDE, PHASE EQUILIBRIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0897

STEP NO--UR/0363/70/006/003/0569/0541

CIRC ACCESSION NO--AP0118066

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--APO118066

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHASE EQUIL. AND PHASE DIAGRAMS OF THE GETE A PRIMEII TE (A IS CA, HG, AND ZN) SYSTEMS WERE STUDIED BY SUBJECTING A SERIES OF ALLOYS TO DTA, MICROSTRUCTURAL, AND X RAY PHASE ANAL. THE DTA CRUVES OF ALLOYS OF THESE SYSTEMS ARE CHARACTERIZED BY THE PRESENCE OF 3 (AND IN SOME CASES, 2) THEMAL EFFECTS. THE PHASE DIAGRAMS ARE SIMILAR; THE INTERACTION OF THE HIGH TEMP. FORM OF GETE WITH ZNTE, COTE, OR HGTE IS DESCRIBED BY PHASE DIAGRAMS OF THE EUTECTIC TYPE WITH A LIMITED SOLY. IN THE SOLID STATE, IN WHICH THE EUTECTIC TEMP. DECREASES REGULARLY AND THE EUTECTIC CONC. INCREASES IN THE A PRIMEII TE SERIES BY THE CATIONIC SUBSTITUTION WITH THE HEAVIER ELEMENT. THE NATURE OF THE INTERACTION OF THE LOW TEMP. PHASE OF GETE WITH ZNTE, CDTE, OR HGTE IS DESCRIBED BY THE PHASE DIAGRAM OF THE EUTECTOIDAL TYPE WITH A LIMITED SOLY. THE GETE A PRIMEII TE SECTIONS IN THER TERNARY GE A PRIMEII TE SYSTEMS ARE QUASIBINARY AND ARE CHARACTERIZED BY RELATIVELY SIMPLE PHASE DIAGRAMS. THE A PRIMEII B PRIMEVI COMPOS. DISSOLVE IN GETE TO GREATER THAN OR EQUAL TO 1.5-2 MOLE PERCENT. INTRODUCTION OF 0.5 MOLE PERCENT A PRIMEII TE INTO GETE CONTG. A 2ND PHASE DUE TO DEVIATIONS FROM STOICHIOMETRY RESULTS IN DISAPPEARANCE OF THE 2ND PHASE. ALL THE ALLOYS ARE SINGLE PHASE AT 0.5-1.5 MOLE PERCENT A PRIMEII TE. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 581.163+576.312.32+575.23

DISHLER, V. YA., FILIPEKA, V. F., and NAGLE, E. F., Institute of Biology,
Latvian Academy of Sciences

"Effect of Ionizing Radiation on Barley Fertility and Frequency of Chromosome
Aberrations in Meiosis"

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, No 7, 1973, pp 42-46

Abstract: Air-dried seeds of the Maya spring barley variety were irradiated with fast neutrons (0.05 to 0.8 krad) or gamma rays (0.5 to 8.0 kr) to determine which form of irradiation produces the largest number of chromosome translocations. Increasing the dose of fast neutrons produced a linear increase in the number of M_1 plants with semisterile central heads and sterile flowers, whereas sterility was not affected significantly by increasing the dose of gamma rays. Plants with completely sterile heads were found when the seeds were irradiated with fast neutrons at 0.2 krad or more or gamma rays at 2 kr or more. The frequency of cytogenetic injuries in meiotic cells after irradiation was 9.1 to 19.9% in prophase-metaphase I and 0.2 to 2.9% in anaphase I. The frequency of injury was independent of the kind and dose of radiation used. Fast neutrons at 0.1 to 0.4 krad and gamma rays at 8.0 kr induced the largest number of major chromosome translocations.

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1/2 025

UNCLASSIFIED

PROCESSING DATE--04DEC70
-U-

TITLE--STIMULATED LUMINESCENCE AND H CENTRES IN KBr, TL CRYSTALS

AUTHOR--(02)-NAGLI, L.YE., ROT, M.L.

COUNTRY OF INFO--USSR

N

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS FIZ. TEHN. SER. (USSR), NO. 2, P. 38-9 (1970)

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--LUMINESCENCE, POTASSIUM BROMIDE, THALLIUM, CRYSTAL, EXCITATION ENERGY, ABSORPTION BAND SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1732

STEP NO--DR/0371/70/000/002/0038/0039

CIRC ACCESSION NO--AP0136973

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136973

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT HAS BEEN SHOWN THAT AT STATIONARY EXCITATION OF CRYSTALS IN THE F ABSORPTION BAND REGION THE OPTICAL BURST IS STIMULATED IN THE F, AS WELL AS IN THE M COLOUR CENTRES. AT PULSE EXCITATION A QUICK RESPONSE ENERGY TRANSFER IS STIMULATED IN THE F ABSORPTION BAND, APPARENTLY, ONLY BY THE M COLOUR CENTRES.

UNCLASSIFIED

NAGLIS, Ya. A.

SOI PRS 59279
14 June 73

Obtaining Epitaxial Layers of Germanium and Silicon by the Chloride Method at Reduced Temperatures

Articles by E. O. Timoshin, A. Ya. Odalova, I. I. Vavere, Ya. A. Naglis, Novosibirsk, Teoriya i Eksperiment, No. 1, 1969, pp. 52-56; Poluprovodniky - Teoriya i Eksperiment, No. 1, 1969, pp. 52-56

At the present time, thin weakly alloyed epitaxial layers of n and p-type conductivity on strongly alloyed substrates of the same type and also epitaxial structures of germanium and silicon with defined distribution of the alloying devices. Even in advance are widely used in the production of semiconductor

These epitaxial structures usually are obtained by reducing the germanium tetrachloride and silicon by hydrogen. For a long time it was considered [1] that the epitaxial layers of high structural perfection can be obtained only at temperatures above 1200°C for silicon and 850°C for germanium. Such high temperatures cause a basic deficiency in the chloride process - redistribution of the admixtures in the epitaxial layers as a result of a sharp increase in the diffusion with an increase in temperature. The reduction in growth temperature would significantly expand the region of application of the chloride method.

Comparatively recently in reference [2, 3] there was a report on the growth of the epitaxial layers of germanium, silicon and other semiconducting materials at reduced temperatures. Good quality epitaxial layers were obtained at temperatures of several hundreds of degrees below the ordinary temperatures. The growth process was carried out in two steps:

- 1) Growth of the thin layer several tenths of a micron thick at the ordinary high temperature,
- 2) Growth of the rest of the layer at a reduced temperature.

It was of interest to investigate the conditions of reproducibly obtaining high-quality epitaxial layers of germanium and silicon by this method and their properties.

NAGLIS, Ya. A.

50:3P25 59279
14 June 73

SELECTIVE GROWTH OF EPITAXIAL STRUCTURES OF GERMANIUM AND SILICON

Article by L. O. Hironaka, et al. - J. Appl. Phys., Vol. 44, No. 1, p. 100 (1973)

In the development of various semiconductor devices, local epitaxial structures are of great importance. One of the most promising methods of obtaining them is the selective growth of epitaxial layers. In a number of local epitaxial structures even of this material are of significant interest in practice.

This paper is devoted to the investigated optimal conditions of selective growth of the epitaxial layers of germanium and silicon.

- 1) The local epitaxial structures must satisfy the following requirements: regions must not be raised above the remaining surface of the substrate or be in the form of depressions;
- 2) The interface of the local epitaxial regions and the substrate must be quite perfect and not cause the formation of defects in the epitaxial regions during growth;
- 3) The local epitaxial structures must have uniform electrophysical properties with respect to their plate.

The selective growth of both germanium and silicon was carried out in the windows of a protective mask made of silicon dioxide. The germanium and silicon plates cut from the mask were round and polished to surface finish the substrates was (111). After depositing and chemical etching, a layer of silicon dioxide was applied to the plates. The dioxide layer was applied to the germanium plates by thermal decomposition of tetraethoxysilane in an atmosphere of pure argon at a temperature of 800° C. The silicon plates were oxidized in wet or dry oxygen at a temperature of -1,200 to 1,300° C.

USSR

UDC: 621.315.52

AZIMOV, S. A., SULTANOV, N. A., ISLAMOV, I., and NAGMATOV, R. N.
"Infrared Quenching of the Photoconductivity of Silicon With a
Nickel Impurity"

Leningrad, Fizika i Tekhnika Poluprovodnikov, No 9, September 1973,
pp 1837-1839

Abstract: The purpose of this paper is to supplement the data already gathered concerning Ni energy levels in silicon by measuring the long-wave limits of the photoconductivity-quenching spectral distribution. The nickel was diffused in the silicon from a sputtered layer at a temperature of 1200° C in air for 10-30 hours. The initial silicon was n-type monocrystalline with an electron concentration of $2 \cdot 10^{15}/\text{cm}^3$ to $8 \cdot 10^{15}/\text{cm}^3$. After the diffusion, the specimens maintained their n conductivity but their resistivity increased to the order of 10^2 - 10^3 ohms-cm. The spectral distribution measurements were conducted with the SPM-2 monochromator with a LiF prism, using d-c and at 80° K, and a constant white light was used to observe the infrared quenching of the photoconductivity. The spectral distribution curve is presented. A model for the

USSR

AZIMOV, S. A., et al, Fizika i tekhnika poluprovodnikov, No 9,
September 1973, pp 1837-1839

UDC: 621.315.52

mechanism of the quenching is proposed, together with an explanatory
diagram.

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GOVERNNO-MEDITSINSKIY ZHURNAL, NO. 4, 1970, PP. 54-56
SURVIVATIVE COMPLICATIONS OF SURGICAL WOUNDS
IN THE NORTH
BY
A.N. MARCHENKO, Major of Med. Serv.

The prevention of survivative complications of operative wounds has a special importance under the unfavorable conditions then in the North where the incidence of survivative complications is much greater than in the middle zones of the country. At the analysis of results of 3000 operations performed on men of the 20-30-year age group during 1955-1967 we found that a great operative interest is 3.54% of the cases; an chronic appendicitis, wound survivative complications and hernial repair in 1.75%. The distribution of survivative complications depending upon the colder day or night is shown in Table 1.

Table 1

From the date of observation	1 - Colder day		2 - Warmer day		3 - Colder day		4 - Warmer day		5 - Colder day		6 - Warmer day	
	Number of cases	%	Number of cases	%	Number of cases	%	Number of cases	%	Number of cases	%	Number of cases	%
1 - Acute appendicitis	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65
2 - Chronic appendicitis	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65
3 - Inguinal hernia repair	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65
4 - Incidence of operated cases	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65
5 - Colder day	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65
6 - Warmer day	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65
7 - Daily alternation of day and night	103	3.43	20	0.67	41	1.37	24	0.78	18	0.58	20	0.65

- Legend:
- 1 - Period of observation
 - 2 - Acute appendicitis
 - 3 - Chronic appendicitis
 - 4 - Inguinal hernia repair
 - 5 - number of operated cases
 - 6 - Incidence of operated cases
 - 7 - Colder day
 - 8 - Warmer day
 - 9 - Daily alternation of day and night

From the data of Table 1 it follows that postoperative complications more often developed in the colder day than in the warmer day. In the periods of colder day (January) the number of postoperative complications dropped by a factor of 1.8 for acute appendicitis, by a factor 2.3 for inguinal hernia repair, and by more than 4 times in operations for chronic appendicitis. Thus, in August the frequency of complications after emergency appendectomy was only 0.35%, and after hernia repair there was no survivation at all.

One of the main factors determining the character of operative wounds healing, is the condition of the immune biological defense forces of the organism at the moment of the operation. Specific and other factors present in the North, among them: hypothermia, unfavorable conditions of the environment, lack of vitamins, and a change in the resistance and reactivity of the organism. Unfavorable effects of the polar night upon the activity of the liver, disturbance of the prothrombin forming function of the liver, these changes bring about changes in blood coagulation, whose clinical manifestation is a marked bleeding tendency of the tissues during operations.

023

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--THE SOLUTION OF THE RELAXATION FOR GAS MIXTURES WITH NONEQUILIBRIUM
CHEMICAL REACTIONS -U-

AUTHOR--NAGNIBEDA, YE.M.

N

COUNTRY OF INFO--USSR

SOURCE--VESTNIK Leningradskogo Universiteta, no 7, Matematika, Mekhanika,
Astronomiya, 1970, nr 2, pp 121-143

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--GAS, CHEMICAL REACTION RATE, BOLTZMANN DISTRIBUTION, NONLINEAR
EQUATION, ASYMPTOTIC EXPANSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3005/1391

CIRC ACCESSION NO--AP0133343

STEP NO--UR/0043/70/000/002/0121/0143

UNCLASSIFIED

2/2 023

CIRC ACCESSION NO--AP0133343

UNCLASSIFIED

PROCESSING DATE--20NDV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SYSTEM OF THE NON LINEAR EQUATIONS, DESCRIBING THE NON EQUILIBRIUM CHEMICAL REACTIONS IN THE HOMOGENEOUS SPACE GAS MIXTURE, RELAXATION OF THE INTERNAL DEGREES OF FREEDOM BEING TAKEN INTO ACCOUNT, IS CONSIDERED. THE ASYMPTOTIC EXPANSION OF THE SOLUTION OF THESE EQUATIONS IS OBTAINED FOR ANY TIME INTERVAL. THIS SOLUTION IS USED BOTH FOR THE OBTAINING THE MACROSCOPIC EQUATIONS OF THE NON EQUILIBRIUM REACTANT GASES IN VARIOUS APPROXIMATIONS AND THE RATIO OF THE RATE CONSTANTS OF THE DIRECT AND INVERSE REACTIONS. THE RELAXATION OF THE INITIAL BOLZMANN DISTRIBUTION IS CONSIDERED.

UNCLASSIFIED

USSR

NAGOLKIN, A. N.

"The Information Field of ESAP"

Avtomatiz. Proyecktir. REA [Automation of Planning of Electronic Equipment -- Collection of Works], Moscow, 1973, pp 176-180 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V598)

Translation: If we study the composition of the design documentation accompanying the electronic device of an electronic computer during planning and production, we see that when standardized structures are used, some 90% of all documentation reflects the structure of the product in its electrical installation, while 10% reflects the elements of mechanical assembly, rules for adjustment and operation of the product. The use of an automation system (ASP) for planning of such devices is designed to model the structural and circuit decisions, plan electrical installation and produce documents supporting the manufacture and testing of products included in the device.

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USSR

UDC 612.8+612.766.1

NAVAKATYKYAN, O. O., KUNDIYEV, Yu. I., LYSYNA, G. G., BEZINOV, V. P.,
HRYSHKO, F. I., DERKACH, V. S., KAPSHUK, O. P., KYRYENKO, A. Ye., KARAKASHYAN,
A. N., KOVAL'OVA, G. I., RATUSHINA, A. M., TOMASHEVC'KA, L. I., NAGORNA, A. M.,
and MAYDYKOV, Yu. L., Kiev Institute of the Work Hygiene and Occupational
Diseases, Kiev

"Nervous Emotional Stresses as a Problem of Modern Work Physiology"

Kiev, Fiziologichnyy Zhurnal, Vol 18, No 4, Jul/Aug 72, pp 535-546

Abstract: The introduction of machines and automatic control instrumentation into production lines at plants and factories and at many other institutions requires of workers rapid coordination of actions combined with mental activity. The volume of information input which requires a combination of physical and mental ability has been increasing tremendously for the last decade. This has produced nervous and emotional stresses and disturbances in the normal functions of many human organs. Analysis of many workers from various branches of industry as well as people occupied with mental work has shown that modern technology imposes heavy stresses on an individual which are accompanied by abnormal function of the adrenal glands, and hypothalamus, and the hypophysial and sympatho-adrenal systems. Measurements have shown that corticosteroid blood and urine
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USSR

NAVAKATYKYAN, O. O., et al., Fiziologichnyy Zhurnal, Vol 18, No 4, Jul/Aug 72, pp 535-546 (10)

levels exceed the norm by as much as 42-57% in people under heavy stress. Emotional stress with distortion in the function of many systems were more often encountered among the young (17-18 year olds). These malfunctions included the secretion of adrenalin and noradrenalin, and disturbances in hemodynamics. Shifts in physiological functions among different occupational groups under identical stresses occur at different times and are closely related to age. They were more pronounced among older people (31-40 years old). The cardiovascular system occupies a prominent place in labor physiology, and there are many methods and approaches to study it. Some literature methods and those of the authors are described, including instrumentation. Mental work which is accompanied by nervous-emotional stresses influences profoundly the cardiovascular system within a wide range of deviations, including pathological functional disturbances and hypertension. The same is true for other occupations as well. The authors recommend the rational use of working hours and rest periods to avoid overstresses.

2/2

U18

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--USE OF NINHYDRIN FOR SPOT TESTS OF DRUGS -U-

AUTHOR--(03)-ZAPUTRAYEV, B.A., BYKOVA, K.N., NAGORNAYA, I.P.

COUNTRY OF INFO--USSR

SOURCE--FARMALSIYA (MOSCOW 1970, 19(1), 85-6

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TEST, DRUG ANALYSIS, ALKALOID, TERPENE, PHENOL, BARBITURATE,
SULFA DRUG, ETHER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1163

STEP NO--UR/0466/70/019/001/0085/0086

CIRC ACCESSION NO--AP0115182

UNCLASSIFIED

272 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0115182

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

ABSTRACT. 1PERCENT SOLN. OF NINHYDRIN (I) IN CONC. H SUB2 SO SUB4 IS PROPOSED FOR SPOT TESTS OF SOME ALKALOIDS, TERPENES, PHENGLS, BARBITURATES, SULFONAMIDES, AND ETHERS. RESULTS ON TIME OF APPEARANCE AND COLOR OF THE SPOT AND NIN. NECESSARY QUANTITY OF DRUG FOR 17 DRUGS ARE GIVEN. SUBSTITUTION OF CO GROUPS OF I BY CH SUB2 NH, OR CHCO SUB2 ET GROUPS ELIMINATES THE COLOR OF THE SPOTS.

FACILITY: LENINGRAD, KHIM.-FARM. INST. LENINGRAD, USSR.

UNCLASSIFIED

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USSR

UDC 633.51:631.524.86

MIRPULATOVA, N. S., KAMILOVA, M. Kh., RYSBAYEVA, A. S., NAGORNAYA, N. M.,
and TESHABEYeva, R., Scientific Research Institute of Plant Protection,
All Union Academy of Agricultural Sciences imeni V. I. Lenin

"Maintaining Resistance to Verticillium Wilt in Cotton Strains"

Moscow, Seleksiya i Semenovodstvo, No 5, Sep/Oct 71, pp 12-15

Abstract: Verticillium dahliae grows readily in the soil of Uzbekistan and destroys large amounts of cotton. To bring the situation under control, wilt-resistant cotton strains should be grown on threatened fields. On cotton farms, the sowing of cotton should alternate with the sowing of alfalfa, which is resistant to this fungus and inhibits its growth. After harvest, the fields should be cleared of all residual weeds to prevent proliferation of the fungus. All instructions on fertilization should be strictly observed to harvest healthier, more resistant seeds. Similarly, sprays should be applied at the right time (which varies for the various strains of cotton). Before seeds are collected, all wilted plants should be removed from the field. To prevent infection during transport, all
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USSR

MIRPULATOVA, N. S., et al., Seleksiya i Semenovodstvo, No 5, Sep/Oct 71,
pp 12-15

seeds must be pretreated prior to shipment. All waste material must be
burned, and the highest sanitary standards should be enforced on cotton
farms.

2/2

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USSR

UDC 632.4

NAGORNAYA, N. M., Scientific Research Institute of Plant Protection, Tashkent

"Life Processes of Verticillium Dahliae in Soil and Cotton Wilt"

Moscow, Sel'skokhozyaystvennaya Biologiya, No 5, 1971, pp 773-774

Abstract: The soil and ambient temperatures are important factors in the activity of the fungus Verticillium dahliae. Low soil and air temperatures in the winter and slow thawing of the soil in the spring delay the ripening of the sclerotium. But the fungus develops rapidly thereafter and attacks cotton plants with special vigor. Favorable temperatures early in the spring promote the accumulation of the pathogen in the soil. The attack rate is a function of the temperatures prevailing during the growing season. The more days there are with a maximum ambient temperature over 30°C, the longer the incubation period of the fungus and the fewer the diseased plants. Winter and spring soil and ambient temperatures can be used to make short-term forecasts of the susceptibility of cotton to wilt.

1/1

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--X RAY SPECTRAL INVESTIGATION OF THE ELECTRON STRUCTURE OF A
TITANIUM CHROMIUM ALLOY IN THE REGIONAL OF EXISTENCE OF THE TICR2
AUTHOR--(02)-NEMOSHKALENKO, V.V., NAGORNLY, V.YA.

COUNTRY OF INFO--USSR

SOURCE--UKRAINS'KII FIZICHNII ZHURNAL, VOL. 15, MAR. 1970, P. 512-514.

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--TITANIUM ALLOY, CHROMIUM ALLOY, INTERMETALLIC COMPOUND,
ELECTRON STRUCTURE, CHROMIUM COMPOUND, X RAY ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1922

STEP NO--UR/0185/70/015/000/0512/0514

CIRC ACCESSION NO--AP0118884

UNCLASSIFIED

Z/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--APO119884

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE X RAY K SPECTRA OF TITANIUM AND CHROMIUM FOR THE ALLOY TI PLUS 65 WT DEGREES CR, BOTH IN THE REGION OF THE TICR2 PHASE AND IN THE REGION OF EXISTENCE OF A CONTINUOUS SERIES OF SOLID SOLUTIONS (ABOVE 1350 C). ELECTRON EXCITATION WAS USED TO OBTAIN BETA 2.5 EMISSION LINES. ANALYSIS OF THE RESULTS IN INCREASED RELATIVE AND SPECTRAL INTENSITIES OF THE K BETA 2.5 LINE OF CHROMIUM WITH SIMULTANEOUS REDUCTION OF ITS WIDTH.

UNCLASSIFIED

USSR

UDC: 533.6.011.8

ZUSMAN, V.B. and NAGORNYKH, YU.D.

"Forming High-Velocity Molecular Beams by Ion Beam Recharging Method"

Novosibirsk, Sb. Vzaimodeystviye Gaza I Poverkhnust'yu Tverd. Tela
(Symposium on Interaction of Gas with Solid Body Surface), 1971, pp 87-92
(from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B263 by
A.A. Pyaripun)

Translation: Results are given of an investigation of high-velocity molecular beams obtained by a known electrophysical method, based on ionization of gas followed by acceleration and recharging of ions at the gas target. A variety of this method with an ion beam, where ions are extracted from plasma by an electrostatic field, is investigated. It is shown that the deceleration of high-velocity nitrogen atoms on dense gas targets is independent of the kind of atoms of the target and that its intensity decreased by one order of magnitude with the change of velocity by 14 Km/sec. It is claimed that the method of ion beam recharging can be used to obtain neutral nitrogen flow at 10-20 Km/sec velocity.

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USSR

UDC: 621.396.679.46

GORDEYEV, V. A., NAGORNOV, A. I., VASIL'YEV, V. P., STRYGIN, Yu. F.

"A New Ferrite Commutator"

Moscow, Radiotekhnika, Vol 27, No 7, Jul 72, pp 97-100

Abstract: The paper gives the principle of operation and design of a commutator which utilizes a ferrite with induced unidirectional anisotropy. The results of an experimental check of a pilot model of the proposed commutator are presented, and it is shown that the suggested treatment of the ferrite gives a waveguide commutator which is simple and reliable and can be extensively used as a microwave switch and modulator. Pulse-chain carriers can be modulated with respect to position, amplitude or duration (PTM, PAM and PDM). The advantages of small size and weight make the device attractive for use in navigational and radar equipment on aircraft and space vehicles, as well as in measurement technology.

1/1

Waveguides

USSR

UDC 621.372.832.43

NAGORNOV, A. I., VASIL'YEV, V. P., GORDEYEV, V. A., STRYGIN, Yu. F.

"A Miniature Magnetless Ferrite Diode Waveguide"

V sb. Radioelektron. v nar. kh-ve SSSR (Radio Electronics in the Soviet National Economy--collection of works), Kuybyshev, 1971, pp 371-373 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11B189)

Translation: The paper presents the results of an experimental study of a magnetless miniature diode for the cm band based on a cylindrical ferrite with induced unidirectional anisotropy. The diode is based on a rectangular waveguide with an absorber located in a depression in one of its walls. A dielectric plate is placed in front of the absorber to improve matching and tuning of the electrical length. The height of the ferrite cylinder is 80-95 percent of the size of the narrow wall of the waveguide. The operating principle of such a diode is described and the characteristics of a model of the diode are presented. One illustration, bibliography of five titles. A. K.

1/1

USSR

UDC 621.372.85

KOSHKIN, L. I., GORDEYEV, V. A., STRYGIN, YU. F., NAGORNOV, A. I., VASIL'YEV, V. P.

"Small Wave Guide Devices"

Issled. po fiz., metodike fiz. i astron. -- V sb. (Research in Physics and Physics and Astronomy Procedures -- collection of works), Kuybyshev, 1970, pp 43-44 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B177)

Translation: The development of a number of small wave guide devices is reported: a ferrite rectifier weighing 80 grams, a "nonmagnetic" ferrite circulator with unidirectional anisotropy and some ferrite devices with induced anisotropy.

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USSR

UDC: 539.4

NAGORNOV, G. M.

"Particulars of Tangential Stress Relaxation in the Case of Multiple Impact Compression at Pressures up to 200 kbar"

V sb. Metallovedeniye i prochnost' materialov. T. 3 (Metal Physics and Strength of Materials--collection of works, Vol 3), Volgograd, 1971, pp 203-209 (from RZh-Mekhanika, No 5, May 72, Abstract No 5V991)

Translation: The author gives the results of experiments on repeated sequential compression of materials by shock waves in which the process of hardening of metals and relaxation of tangential stresses was investigated. Frontal collision of shock waves in the specimen was realized in the experiments. The paper compares hardness distributions with respect to the thickness of specimens as a function of pressure in the shock wave and the number of repeated compressions due to the action of reflected waves. An increase of hardness in the zone of multiple compression is due not only to higher pressure, which increases even in the case of twice-repeated compression by a factor of 2.5 as compared with single compression, but also to the peculiarities of the deformation mechanism itself. The phenomenon

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USSR

NAGORNOV, G. M., Metallovedeniye i prochnost' materialov. T. 3, Volgograd, 1971, pp 203-209

of more intensive hardening with repeated compression as compared with single compression at an identical pressure level in the shock wave is due to the specifics of the process of material compression in shock waves which differs from the single-stage process in a higher ratio of internal to kinetic energy, and a higher ratio of elastic to thermal energy, as well as a lower deformation temperature, the nature and time of relaxation of tangential stresses, the lower level of tangential stresses, and the change in mass velocity. Bibliography of 7 titles. I. M. Korovin.

2/2

- 139 -

L/2 051 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CHARACTERISTICS OF THE HARDENING OF COPPER ON SUBJECTION TO SHOCK
WAVES -U-
AUTHOR--(03)-MANTAROSHIN, A.P., NAGORNQV, G.M., PASHKOV, P.D.
COUNTRY OF INFO--USSR
SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970, 29,(2), 370-374
DATE PUBLISHED----- 70

SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--COPPER, METAL CREEP, CRYSTAL STRUCTURE, METAL HARDENING, SHOCK
WAVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0203

STEP NO--UR/0126/70/029/002/0370/0374

CIRC ACCESSION NO--AP0129459

UNCLASSIFIED

2/2 051

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0129459

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF VARIOUS CONDITIONS OF SHOCK LOADING (SHOCK WAVES) ON THE HARDENING OF CU WERE STUDIED AND INTERPRETED IN TERMS OF THE STRESSED STATE CREATED IN THIS MATERIAL BY THE PASSAGE OF SHOCK WAVES. THE STABILITY OF THE DISLOCATION STRUCTURE FORMED UNDER VARIOUS CONDITIONS WAS INVESTIGATED BY ANALYSING THE SHORT TERM CREEP CHARACTERISTICS. THE STABILITY OF THE DISLOCATION STRUCTURE WAS VERY SENSITIVE TO THE SHOCK WAVE PARAMETERS (AMPLITUDE, PULSE LENGTH), AND BY VARYING THESE PARAMETERS A WIDE RANGE OF MECHANICAL CHARACTERISTICS WAS OBTAINED.

UNCLASSIFIED

L/2 030 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--ANALYSIS OF ANOMALOUS LOW FREQUENCY NOISE OF A MASTER -U-
AUTHOR--(05)-GUDNOV, V.M., ZOTOV, V.V., NAGORNYKH, L.M., SORUCHENKO, R.L.,
SHTEYNHLEYGER, V.B.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 3, MAR 70, PP 632-633
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--MASER, TRAVELING WAVE, ELECTROMAGNETIC NOISE, NOISE ANALYZER,
SPECTRUM ANALYZER, RADIOMETER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1987/1459 STEP NO--UR/0109/70/000/003/0632/0633
CIRC ACCESSION NO--AP0104756
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0104756

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS ARE PRESENTED OF AN EXPERIMENTAL INVESTIGATION OF THE NOISE SPECTRA OF RECEIVING DEVICES WITH A TRAVELING WAVE MASER AT THE INPUT. THE INVESTIGATION WAS CONDUCTED WITH THE AID OF A SPECTRUM ANALYZER WITH A 0.25 HZ BAND AND AN ACCURACY OF THE EQUIPMENT FREQUENCY OF 0.1 HZ IN THE 3 TO 995 HZ RANGE. THE ANALYZER WAS CONNECTED TO THE LOAD OF THE SQUARE LAW DETECTOR OF THE RECEIVING DEVICE INVESTIGATED. THE NOISE OF THE MATCHED LOAD WITH T SUBNOISE EQUALS 290DEGREEESK SERVED AS THE INPUT SIGNAL. TO ELEMENATE THE NECESSITY FOR ADJUSTING THE FREQUENCY CHARACTERISTICS OF THE RECEIVING DEVICE WITH THE MASER AND WITHOUT IT, THE SPECTRAL DENSITY OF THE NOISE WAS NORMALIZED TO UNITY AT THE HORIZONTAL PART OF THE SPECTRUM, AND IRREGULARITY OF THE SPECTRUM WAS MEASURED IN RELATIVE UNITS. MEASUREMENTS OF THE SPECTRUM WERE CONDUCTED AT THE OUTPUT OF A 5 CM BAND RADIOMETER WITH A TRAVELING WAVE MASER AT THE INPUT. IN THE MEASURING PROCESS, THE MASER OPERATED IN A SATURATION REGIME OF THE ILLUMINATION POWER. THE DEPENDENCE OF THE SPECTRAL DENSITY OF THE NOISE ON THE FREQUENCY IS SHOWN. IT IS CONCLUDED THAT BOILING HELIUM IN THE RETARDING SYSTEM OF THE TRAVELING WAVE MASER PRODUCES AN ANOMALOUS LOW FREQUENCY NOISE, THE SPECTRAL DENSITY OF WHICH INCREASES WITH A DECREASE OF THE FREQUENCY, BEGINNING WITH A FREQUENCY ON THE ORDER OF 100 HZ. IN ORDER TO REALIZE SENSITIVITY IN RADIOMETERS WITH A TRAVELING WAVE MASER WHICH HAVE ANOMOLOUS LOW FREQUENCY NOISE, IT IS NECESSARY TO SELECT A MODULATION FREQUENCY ABOVE 100 HZ. ANOMOLOUS NOISE IS ABSENT IN TRAVELING WAVE MASERS WITH A RETARDING SYSTEM NOT FILLED WITH LIQUID HELIUM.

UNCLASSIFIED

USSR

UDC: 621.375.121:621.375.421(088.8)

NAGORNOV, V. I.

"A Wide-Band Amplifier"

USSR Author's Certificate No 255997, filed 9 Jul 68, published 2 Apr 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D164 P)

Translation: It is pointed out that the overwhelming majority of existing wide-band amplifier circuits employ shunting and various types of reactive circuit compensation, which frequently increases the reactive component of the input and output impedances, thus making for poorer matching conditions as well as narrowing the passband in an attempt to achieve maximum power amplification. In the proposed amplifier, low-frequency K or M type II and T filters are connected in the feedback circuits between the collector and base, and between the emitter and the common bus respectively. With proper selection of parameters, these filters give a passband commensurate with the limiting amplification frequency while simultaneously providing maximum amplification and keeping the nonuniformity of the frequency response low. In contrast to existing amplifiers, matching is improved when the band is widened in the proposed amplifier.

1/1

1/2 . 024 UNCLASSIFIED
TITLE--ABRASIVE WEAR OF CHROMIUM STEELS -U-

PROCESSING DATE--13NOV70

AUTHOR--(02)-POPGV, V.S., NAGORNY, P.L.

COUNTRY OF INFO--USSR

SOURCE--LITEINDE PROIZVOD. 1970, (3), 27-8

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHROMIUM STEEL, AUSTENITE STEEL, CARBIDE, MARTENSITIC STEEL,
WEAR RESISTANT METAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1938

STEP NO--UR/0128/70/000/003/0027/0028

CIRC ACCESSION NO--AP0132200

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132200

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WEAR RESISTANCE WAS DETD. BY USING THE STEEL PLATES IN A PRESS FOR THE MANUF. OF CR SUB2 0 SUB3,MGO BRICKS. EXPTL. FACINGS FROM THE CR STEEL WERE CAST INTO A METALLIC MOLD PREHEATED TO 300-50DEGREES. THE RESULTING STRUCTURE WAS COMPOSED OF A MIXT. OF PEARLITE AND CARBIDES; THIS STRUCTURE EXHIBITED A LOW RESISTANCE TO WEAR. THE BEST WEAR RESISTANCE IS EXHIBITED BY A STRUCTURE OF RESIDUAL, HIGHLY ALLOYED AUSTENITE WITH SOME CARBIDES AND MARTENSITE. TEN STEELS WITH COMPNs. C 1.49-2.80, MN 0.29-0.70, SI 0.15-0.30, AND CR 4.56-13.22 WT. PERCENT WERE HEAT TREATED TO OBTAIN SUCH A STRUCTURE, AS FOLLOWS: PUTTING THE STEELS INTO A FURNACE AT 900-50DEGREES, HEATING AT 50-75DEGREES PER HR TO 1100-1200DEGREES AND HOLDING FOR 30-180 MIN (TO DISSOLVE CARBIDES), AND QUENCHING IN OIL TO 200-500DEGREES, ISOTHERMAL HOLDING FOR MORE COMPLETE FORMATION OF CARBIDES WHILE RETAINING THE AUSTENITIC MATRIX, AND FINAL COOLING IN OIL OR AIR. THE STEEL CONTG. C 2.58, MN 0.70, SI 0.15, AND CR 12.65 WT. PERCENT, HAD THE HIGHEST WEAR RESISTANCE; ITS STRUCTURE WAS COMPOSED OF AN AUSTENITIC MATRIX WITH HIGHLY DISPERSED CARBIDES.

UNCLASSIFIED

USSR

UDC 621.375.2

BELYAYEVSKIY, L. S., NAGORNYI, L. Ya.

"Algorithms for Analyzing the Stability of Electronic Circuits in the Case of Small Deviations of Element Parameters"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 107-114

Abstract: The paper deals with problems of analyzing the stability of electronic circuits with regard to deviations in the parameters of elements. Algorithms are proposed for analyzing the stability of electronic circuits when there are small deviations of the parameters of the elements. These algorithms are derived on the basis of frequency criteria of stability as well as on the use of the methods of sensitivity theory. The language of generalized numbers is used to record the algorithms. Three illustrations, bibliography of eight titles.

1/1

NAGORNYY, L. Ya.

"Determination of the Transfer Functions of Autonomous Four-Terminal Networks Using the Digital Computer"

Avtomatiz. proyektir. v elektronike. Resp. mezhved. nauchno-tekhn. sb. (Automation of Design in Radioelectronics. Republic Interdepartmental Scientific-Technical Collection) 1970, No. 1, pp 123-131 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A168)

Translation: An algorithm is proposed for determining the transfer function of a linear electronic circuit with zero initial conditions, useful for automation with an electronic digital computer. The algorithm can be used to obtain a general expression and the coefficients of the polynomials of the transfer function with excess terms excluded. Two illustrations, one table, bibliography of six. Resume

1/1

USSR

UDC 621.762.4

KIPARISOV, S. S., NARVA, V. K., DALYAYEVA, L. I., and NAGORNIY, N. YU., Moscow Institute of Steel and Alloys, Chair of Rare and Radioactive Metals and Powder Metallurgy

"Investigation of the Process of Dross Molding of Titanium Carbide"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 3, 1973, pp 147-152

Abstract: Conditions are analyzed for production of highly porous billets from titanium carbide by the method of injection molding of thermoplastic drosses. The degree of porosity of the specimens (40-70%) was dictated by their further use for producing materials of the ferro-TiC class by the impregnation method and with a specified relationship of titanium carbide in steel. Porous objects of titanium carbide were produced by injection molding of thermoplastic drosses according to the schema of mixing titanium carbide (screen undersize) with the bond and the filler followed by injection molding, bond distillation, filler separation, and sintering. The best bonds are 85% paraffin and 15% wax and 91% paraffin, 6% wax, and 3% oleinic acid. Alcohol, starch, and dextrin are recommended as fillers. The porosity of titanium
1/2

- 77 -

USSR

KIPARISOV, S. S., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 3, 1973, pp 147-152

carbide samples produced by injection molding of thermoplastic drosses can be varied depending on the quantitative correlation of titanium carbide, the bond, and the filler, and also depending on the sintering temperature of porous objects. Four figures, two table, six bibliographic references.

2/2

USSR

VDC 331.011

NAGORNYI, V. E. (Editor)

"Problems of Mental Work"

Problemy Umstvennogo Truda, No 2, Moscow, 1972 Izdatel'stvo Moskovskogo Universiteta, 158 pp

Translation

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USSR

NAGORNYI, V. E., Izdatel'stvo Moskovskogo Universiteta, Problemy Umstvennogo Truda, No 2, 1972, 158 pp

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NAGORNYI, V. E., Izdatel'stvo Moskovskogo Universiteta, Problemy Umstvennogo Truda, No 2, 1972, 158 pp.

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NAGORNY, V. E., Editor

Moscow, Umstvennyy Trud i Fizicheskaya Kul'tura (Mental Work and Physical Culture), Moscow, Izdatel'tstvo Moskovskgo Universiteta, 1970, 83 p

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NAGORNYI, V. E., Umstvennyy Trud i Fizicheskaya Kul'tura, Moscow, Izdatel'tstvo Moskovskogo Universiteta, 1970, 83 p

- Podol'skaya, O. V. and Storozhakova, I. A., Some characteristics of cerebral hemodynamics (from the rate of propagation of pulse waves, rheoencephalography, phlebography of the coagulation and anticoagulation systems) in persons suffering from logoneurosis during excessive mental fatigue 32
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Akimova, N. A., Gvirtzman, L. YE., and Nagornyy, V. E., Use of methods of autogenic training for the purpose of muscular relaxation during mental fatigue 53

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Translation: One of the main tasks in preparing young specialists for their careers is to develop in them a high degree of physical fitness while in school. Physical culture is an important means of doing so. Systematic physical exercise, athletic activity, hiking, and so forth increase physical fitness substantially and at the same time enhance mental efficiency. This is due in most cases to the broad, nonspecific spectrum of influence

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exerted by physical activity on the human body, which has a beneficial effect on the development of general endurance, strengthening of health, improvement of volitional and moral qualities, and creation of a positive emotional attitude to life, i.e., the qualities which, other things being equal, undoubtedly contribute to success in work, including mental work.

Besides its positive nonspecific effect on mental efficiency, exercise may also have a more specific effect by developing in students those qualities and skills of the greatest value in their occupations.

In 1962, Moscow University introduced a physical exercise program in the field faculties (geography, geology, biology and soil science) which included a course of occupational-applied physical training aimed at teaching students the skills needed on field expeditions. It was logical for the question to arise of using physical culture in other specialties, including physics and mathematics, in conjunction with occupational preparation. The matter is now being worked on in Moscow University where it has been included with major combined interfaculty studies.

In deciding on the means of preparing people for their careers, the first thing to be determined is the elements that will bear the greatest load. Accordingly, specific means are chosen that will primarily develop those elements. What part of the body bears the heaviest load in mental work?

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The answer is clear - the brain. Man can be deprived of hands and legs and yet successfully do mental work, but the slightest injury to the brain has a pronounced effect on his intellectual capabilities.

In recent years investigators working on the theory and methods of physical education developed techniques for directed action not only on individual muscle groups but on systems and organs. However, the human brain remained outside their field of view.

Numerous studies have shown that the brain is more dependent on its blood supply than any other organ. It has also been found that functional disturbances of the blood flow to the brain manifested in pain, feeling of heaviness and other disagreeable sensations in the head are fairly common, even among young people. To be sure, serious pathology of the cerebral circulation generally appears much later, but this does not lessen the tragedy of the situation because it often coincides with the peak of human creativity which occurs in the forties and fifties. There is an alarming trend toward the lowering of the age boundaries (even to the age of students) of such serious diseases as transient impairment of the cerebral circulation and even strokes.

Incontrovertible experimental evidence indicates that one of the first

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NAGORNYY, V. E., Umstvennyy Trud i Fizicheskaya Kul'tura, Moscow, Izdatel'tstvo Moskovskogo Universiteta, 1970, 83 p

aftereffects of any impairment of the cerebral circulation, including initial functional disorders, is a decrease in mental efficiency.

Extensive research on "the use of physical exercise to prepare physics and mathematics students for their careers" has shown that the cerebral vascular system is adversely affected by chronic excessive mental fatigue. Such fatigue tenses the walls of the main arteries, increases resistance to the blood flow in the small vessels, and slows the outflow of venous blood, thereby sharply worsening conditions for the circulation of blood in the brain.

Thus, the problem of increasing the efficiency of the cerebral circulatory system and making it more resistant to unfavorable factors, including excessive mental fatigue, from which most people now suffer, is a very urgent one. The experiments performed by the research laboratory of the physical education department of Moscow State University showed that the problem can be solved by the use of specific exercises.

Pedagogical observations and experimental studies provide abundant confirmation of the fact that systematic use of these exercises has a beneficial effect on the mental efficiency of undergraduates and graduates and prevents it from deteriorating in elderly scientists.

This work has been carried out in the laboratory for a little over three years (a short period of time for such a complex problem), but some

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NAGORNYY, V. E., Umstvennyy Trud i Fizicheskaya Kul'tura, Moscow, Izdatel'tstvo Moskovskgo Universiteta, 1970, 83 p

interesting data have laready been collected which have both theoretical and practical value for persons engaged in strenuous mental work.

The collection Problemy Umstvennogo Truda, prepared by the Coordinating Council, sums up the initial results of the work. This material is naturally only preliminary. Much of it will require additional verification and analysis.

The compilers of the collection and the authors of the articles express their deep appreciation to the following workers in the clinical institutes of the Academy of Medical Sciences USSR who were invariably helpful to the laboratory's staff members and graduate fellows on matters pertaining to both the organization and execution of the research: Professor B. N. Klosovskiy, member of the Academy of Medical Sciences USSR, Professors F. V. Bassin, Z. I. Kolarova, and Kh. Kh. Yarullin, V. R. Purin, Doctor of Medical Sciences, and E. B. Golland, T. P. Zhukova, and V. M. Salazkina, Candidates of Medical Sciences. Coordinating Council

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Acc. Nr:

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Abstracting Service:
GEOPHYSICAL ABST.

N

5/70

Ref. Code:
UR0467

91797r Effect of structure on some physical properties of carbon materials. Nagornyi, V. G.; Ostrovskii, V. S. (USSR). *Khim. Tverd. Topl.* 1970, (17), 116-117 (Russ). The dependence of the amt. of closed pores, P_c , assumed to be filled with amorphous C not forming crystallites, and of Young modulus of elasticity, E , on the temp., t , at which the coke had been treated is analogous. E and the sp. elec. resistivity increased with P_c . The pycnometric d. of the material $d_i = d_{cr}(1 - n) + d_{am}n$, where d_{cr} is the x-ray d. of the cryst. phase, n is the relative content of non-ordered phase with a d. d_{am} , and $n/P_c = d_{cr}/(d_{cr} - d_{am})$. The P_c of petroleum coke increased with t to a max. at 600°. Beyond the max. it decreased sharply as t increased. But at $t = 1500-2500^\circ$ a slight max. appeared at 2100°. It was similar to the max. of the Hall const., R . At $t = 1500-2500^\circ$, R increased linearly with P_c . Crystallites and non-ordered material detd. the phys. properties of coke. GBJR

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1/2 017 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--CATALYTIC ACTION OF ALUMINOSILICATES ON THE GRAPHITIZATION OF
CARBON MATERIALS -U-
AUTHOR--(03)--FROLOV, V.I., OSTRONOV, B.G., NAGORNYY, V.G.
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CIRC ACCESSION NO--AP0126953

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN 10PERCENT POWD. NAX, KA, NAA, AND CAX ZEOLITES, NEPHELINE, SERICITE, KAOLIN, OR CHLORITE WERE ADDED TO PETROLEUM COKE KNPS AND THE MIXTS. WERE HEATED IN AN INERT ATM. IN A TUBE FURNACE AT 2000DEGREES FOR 3 HR, THE DEGREE OF GRAPHITIZATION WAS RAISED FROM 0.36 FOR THE CONTROL SAMPLE TO 0.70, 0.69, 0.63, 0.49, 0.69, 0.66, 0.62, AND 0.56, RESP., AND THE INTERLAMELLAR DISTANCE D SUB002 IN THE GRAPHITE WAS REDUCED FROM 3.409 TO 3.380, 3.381, 3.386, 3.398, 3.381, 3.383, 3.387, AND 3.392, RESP. ON THE BASIS OF THE DIAMAGNETIC SUSCEPTIBILITY (5.2 TIMES 10 PRIMENEGATIVE6 CM;G,SEC UNITS-G) OF THE GRAPHITIZED KNPS,NAX MIST., THE CONTENT OF PERFECT GRAPHITE CRYSTALS WAS 25PERCENT. REPEATED FORMATION AND DECOMP. OF CARBIDES COULD NOT EXPLAIN THIS RESULT BECAUSE D SUB002 DECREASED ONLY DURING THE FIRST 2 HR OF HEATING AND THEN REMAINED ALMOST CONST. AND THE PERFECT GRAPHITE PHASE WAS NOT DETECTED IN X RAY DIAGRAMS. IMPROVED GRAPHITIZATION OF THE KNPS,NAX MIST. RESULTED FROM INCREASED MOBILITY OF THE CRYSTALS AS A RESULT OF RECRYSTN. OF CARBIDES ON SURFACES HAVING LOWER ACTIVATION ENERGIES (75 COMPARED WITH 86 KCAL-MOLE).

UNCLASSIFIED

NAGORNYY, V. I.

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SOME ISSUES PERTAINING TO RATIONAL USE OF HOSPITAL BEDS IN A RURAL AREA

Article by N.F. Viter, Shcherskiy Rayon Central Hospital (Chief Physician: V.I. Nagornyy), Chernigovskaya Oblast; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 1, 1972, submitted 31 August 1971, pp 23-29

The article by L.V. Loshkina, L.L. Lunsakaya, and M.P. Roytman, "On the Efficiency of Using Hospital Beds," is timely and opportune. Hospitals are an important element in the system of therapeutic and preventive care for the people. In them are concentrated the main material resources, they employ qualified specialists, in most cases seriously ill patients are treated there, doctors and intermediate medical personnel are trained there and improve their qualifications.

According to most authors, only about one-fifth of the patients who go to polyclinics are referred to hospitals (17.3% according to S.Ya. Froydlin, 16% according to G.A. Popov). Those hospitalized are mainly patients for whom a complete workup, qualified treatment and care are difficult due to the nature and severity of the disease, as well as social, personal, and other reasons.

The problem of meeting the demands of the people to the utmost degree is being solved both by putting new hospitals in operation, as well as departments, placing them purposefully, and more rational use of the existing bed resources.

L.M. Kiberdin observes that there is considerable economic advantage to utilization of internal reserves; in his opinion, with the same hospital capacity, it is possible to hospitalize more patients, and for this he recommends a critical analysis of factors having a direct or indirect effect on quantitative and qualitative indices of hospital activities, and that the necessary steps be taken to improve them. N.G. Kitels maintains that some of the hospitalized cases could have been successfully treated as outpatients or in their beds, and he recommends that in each concrete case strict determination be made of indications for hospitalization, that the quality of polyclinic care be improved, that maximum workups be done on a regularly scheduled basis under

Sovetskoye Zdravookhraneniye, No 7, 1971, p 36.

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AP0048803

Abstracting Service:
CHEMICAL ABST.

5-70

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7R0077

N

91045u Effect of the chemical structure of the thermoplastic binding layer on the nitrogen diffusion permeability of films. Nagornii, V. I.; Maslovskaya, R. S.; Uspenskii, V. I. (Vses. Gos. Nauch. Assled. Priekt. Inst. Khim. Fotogr. Prom., Moscow, USSR). *Zh. Nauch. Prikl. Fotogr. Kinematogr.* 1974, 15(1), 63-5 (Russ). The N diffusion and permeability coeffs. of CH₂:CHCN (I)-Me methacrylate (II)-CH₂:CCl₂ (III) terpolymer (IV) films contg. different ratios of monomers were detd. and their dependence on temp. and phys. state investigated. IV films contg. the following I-II-III ratios (wt. %) were studied: 20:0:80; 19:10:71; 15:16:69; 14:25:61; 13:35:51. Samples with approx. the same mol. wt. were chosen. Increasing the amt. of II in the IV chains raised the glass temp. (T_g), and increased the permeability coeff. (P), apparently because N penetration in IV depends on structure (form and special orientation of the mols., size of the side chains, and interactions of the IV mols.). Introduction of even 10% II increased the N diffusion coeff. (D) by a factor of 2, while addn. of 35% II raised D by a factor of 7. The rates of diffusion and permeability of all films increased with temp., and discontinuities were obsd. at T_g. Thus, above and below T_g, the curves log P = f(T) and log D = f(T) were linear. The change in photographic characteristics of the vesicular layers derived from IV is detd. chiefly by the change in the diffusion properties of the binder.

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NAGORNYY, V. N., YADRENKO, M. Y.

"Polynomial Interpolation of Random Processes"

Visnyk Kiyiv. un-tu. Ser. mat. ta mekh. (Kiev University Herald. Mathematics and Mechanics Series), 1971, No 13, pp 10-12, 145 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V86)

Translation: Interpolation of random processes using S. N. Bernshteyn's polynomials is considered. The behavior of the mean-square error is examined. Authors' abstract.

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NAGORNYI, V. N.

"On Optimum Prognosis for Random Processes Which are Powers of a Gaussian Process"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, vyp. 4, pp 112-116 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V227)

Translation: Problems of prognosis for processes of the form $\eta(t) = a[\xi(t)]^{2k+1}$ are considered, where $a > 0$ is a parameter, $k \geq 0$ is a whole number, and $\xi(t)$ is a Gaussian process. An explicit formula is derived for an optimum prognosis (in the sense of minimum mean-square deviation). In the case where $\xi(t)$ is an Ornstejn-Ulenbek process, explicit formulas are derived for predicting processes of the form $\eta(t) = a[\xi(t)]^{2k}$. Examples are considered. Author's abstract.

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