

PRIM, A.M.

24(7),24(0)
AUTORI

Stepanov, B. I., Academician AS
Beloruskaya SSR 307/50-59-1-9/57

TITLE: Investigations by Belorussian Scientists in the Field of Spectroscopy and Luminescence (Naboty beloruskikh uchenykh po spektroskopii i lyuminestsentsii)

Vestnik Akademii nauk BSSR, 1959, Nr 1, pp 66-76 (USSR)

PERIODICAL:

These investigations are being carried out at the Institute fiziki i matematiki (Institute of Physics and Mathematics) and the fizicheskii fakul'tet (Faculty of Physics and Mathematics) (Physics Department) of Beloruskaya SSR (University) under the direction of Prof. B. I. Stepanov, Director, M. A. Iol'yashovich, Academician AS BSSR, and P. I. Fedorov, Corresponding Member, Academy of Sciences, BSSR. In the field of theoretical spectroscopy, the investigations by P. A. Apashevich, B. I. Stepanov and others are mentioned. Further, the following investigations are indicated:

A. P. Prishivalko, B. I. Stepanov developed a theory of dispersion light filters.
E. A. Borisovich, Ya. S. Kravchikovskaya, I. P. Lankovskaya examined, by experiment, dispersion light filters for the infrared range.
A. P. Prishivalko analyzed the accuracy and the field of application of existing determination methods of optical constants of dispersed and not dispersed materials.
I. G. Fikshantsev, A. A. Labuda, Ya. G. Martynov obtained important results concerning the kinetics of one single spark discharge (spectral intensity and discharge temperature).
A. A. Iankovskiy, E. M. Buzikay examined the mutual influence for their own spectrum analysis, and explained the methods of their own.

G. V. Orzechin suggested a series of methods to eliminate the influence of third elements.
G. V. Orzechin, E. P. Krivokozov suggested in working out a control method of benzyl penicillin in ordinary penicillin.
E. A. Borisovich, E. V. Kabanovskaya, I. Buzikay examined the infrared spectra of various products.
E. A. Borisovich, Ya. I. Buzikay, I. P. Lankovskiy examined a series of structural peculiarities of alcohol oxides.
E. A. Borisovich worked out a luminescence method for the detection of the germinating power of the seed of some kind of trees.

A. Ya. Prokhorchik obtained good results by the use of luminescence analysis in dermatology.
B. A. Zverchenko examined the absorption spectra of the polymers polyacrylates copolymers.
B. A. Zverchenko worked out a method for analyzing albuminous fractions in the blood serum.
M. M. Pavlyuchenko, G. A. Lazevko, carried out an extensive spectrophotochemical examination of the formation of molecular and complex compounds in solutions.
B. A. Zverchenko spectroscopically examined the structure of various silicones.
B. I. Stepanov, A. M. Prim* carried out theoretical investigations of the vibrational spectra of various silicate crystals

Card 5/6

Card 6/6

S/051/60/009/004/006/034
E201/E191

AUTHOR: Prima, A.M.

TITLE: Vibrational Spectra of Silicates. III. Equations
Representing Vibrations of Plane Silicon---Oxygen
Rings of Silicates ✓

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, No 4, pp 452-459

TEXT: The author analyses theoretically vibrations of plane silicon---oxygen rings of D_{nh} symmetry, present in many silicates and bound by metal atoms to the crystal lattice. Using complex coordinates to allow for symmetry, general matrices were obtained for reduced kinematic and dynamic coefficients. Selection rules were found which were applicable to various types of structure and symmetry. Symmetry types whose frequencies were independent of the number of silicon atoms in a ring were determined. The results of the paper can be used to interpret the spectra of crystalline silicates. The paper is entirely theoretical. Acknowledgement is made to B.I. Stepanov and N.A. Borisevich for their advice. ✓

There are 1 figure, 6 tables and 10 references: 7 Soviet and 3 German. SUBMITTED: January 4, 1960. Card 1/1

Cond
PRIMA, A.M., Phys-Math Sci—(disc) *Discrete* "Commutation and Invariance of
microscopy spectra of
oscillations *of plane spectra.*" *Dokl.*, 1958. 11 pp. (In: "Higher Education
USSR. Belorussian St to U in V.I.Lenin. Phys-Math Faculty), 150 series
(IL,47-58,130)

7(3), 5(4), 24(7)

SOV/48-23-10-18/39

AUTHORS: Borisevich, N. A., Makarevich, N. I., Prima, A. K.,
Bardyshev, I. I., Cherches, Ye. A.

TITLE: Identification of Resin Acids by Means of Their Infrared Spectra

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1219-1221 (USSR)

ABSTRACT: Coniferous resins, which essentially contain terpene hydrocarbons and resin acids, have many industrial uses. As the chemical analysis and the separation of the individual acids causes considerable difficulties in a mixture of pure resin acids, the infrared spectroscopic analysis of these substances is of particularly great importance. Hitherto, however, not many resin acids have been investigated in this way. In the present paper the authors give the results obtained by investigating four such resin acids, the structural formulas are mentioned: abietic acid (I), levopimaric acid (II), dextropimaric acid (III), and dehydroabietic acid (IV). Solutions of these acids in CCl_4 as well as pressed samples of acid +

Card 1/2

potassium bromide were investigated by means of a IKS-11-type

SOV/48-23-10-18/39

Identification of Resin Acids by Means of Their Infrared Spectra

spectrometer. The spectra of the solution and the pressed sample show practically no difference whatever. The spectra obtained are shown by four diagrams. Their particular features are discussed. Within the range of the valence oscillations of the groups CH, CH₂, and CH₃ the spectra of I, II, and IV are very similar, and only III deviates, which is due to the existence of the group -CH=CH₂. The frequency of the bands corresponding to the groups C=O and COH (1685 and 1282 cm⁻¹) depends only to a small extent on the structure of the remaining acid molecule; the intensity of these bands, however, differs considerably according to the individual acids. Within the range of the double bond C=C a band was found at 1544 cm⁻¹ in I, II, and IV, and one was found in III at 1631 cm⁻¹ as well as one at 1409 cm⁻¹. In IV the band (1502 cm⁻¹), which is characteristic of the benzene ring, was found. A number of intense bands was also found in the range 800-1100 cm⁻¹: 893 (I), 1007 and 1024 (II), 821 (IV) and 905 cm⁻¹(III). There are 1 figure and 1 Soviet reference.

Card 2/2

PRIMA, A.M.; MAKAREVICH, N.I.; BARDYSHEV, I.I.; CHERCHES, Kh.A.

Infrared spectra of resin acids. Zhur. fiz. khim. 36 no.3:620-
624. Mr '62. (MIRA 17:8)

1. Institut fiziki AN BSSR i Institut fiziko-organicheskoy khimii
AN BSSR.

VOYTCVICH, A.P. [Vaitovich, A.P.]; PRIMA, A.M. [Pryma, A.M.]; BORISFVICH,
N.A. [Barysevich, M.A.]

Determining the optical constants of synthetic quartz in the
infrared spectral region. Vestsi AN BSSR. Ser. fiz.-tekh. nav.
no.2:39-43 '64. (MIRA 18:1)

PRIMA, A.M.; MAKAREVICH, N.I.; CHERCHES, Kh.A.; BARDYSHEV, I.I.

Study of the molecular association of resin acids by infrared spectroscopy methods. Izv. AN SSSR.Ser.fiz. 26 no.10:1313-1316
0 '62. (MIRA 15:10)

1. Institut fiziki AN BSSR i Institut fiziko-organicheskoy khimii AN BSSR.

(Resin acids ~ Spectra) (Molecular association)

SOV/51-4-6-5/24

AUTHORS: Stepanov, B.I. and Prima A.M.

TITLE: Vibrational Spectra of Silicates (Kolebatel'nyye spektry silikatov)
I. Calculation of Frequencies and Intensities of Silicate Spectral
Lines (I Raschet chastot i intensivnostey liniy spektrov silikatov)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol IV, Nr 6, pp. 734-749 (USSR)

ABSTRACT: In order to investigate vibrational spectra of silicate glasses, it is necessary to study first the simpler spectra of silicate crystals. The latter consist of silicon-oxygen groups (tetrahedra, chains, layers), which are sometimes bound by atoms of metals and other elements. The present paper reports calculations of vibrational spectra of atoms in silicate crystals. All calculations were made using the method developed by Yel'yashevich and Stepanov (Ref 17) for calculation of molecular vibration frequencies. This approach made it possible to simplify the solution of the problem and to discuss various crystals using the same vibrational coordinates. All vibrations were made in the harmonic approximation, taking into account deformational and torsional vibrations. Time equations were obtained for vibrations of various types of symmetry. All these calculations are not difficult

Card 1/2

Vibrational Spectra of Silicates. I. Calculation of Frequencies and Intensities
of Silicate Spectral Lines

SOV/51-4-6-5/24

but are very cumbersome. For this reason the authors give in their paper only the main results which apply to valency vibrations. Details and results of calculations for deformational vibrations are given elsewhere (Refs 19, 20). The authors obtained frequencies, forms of normal vibrations, intensities and polarizations of vibrational lines of the following silicate crystals: pyroxenes (structure is shown in Fig 1), SiO_4 tetrahedra joined into an infinite layer (as shown in Fig 2), β -cristobalite (structure is shown in Fig 3) and β -quartz (structure is shown in Fig 4). Figs 5 and 6 show the infrared and Raman spectra calculated for all the silicates mentioned above. The height of the lines corresponds to the relative values of intensities calculated for random distributions of chains, layers and crystallites, of cristobalite and quartz, i.e. for glasses and strongly disordered crystals. The results of calculations shown in Figs 5 and 6 are approximate (the main approximation is due to exclusion of the effect of deformational coordinates). There are 6 figures and 23 references, 16 of which are Soviet, 2 German, 2 American, 1 French, 1 Indian and 1 translation of a Western work into Russian.

Card 2/2

ASSOCIATION: Institut Fiziki i Matematiki AN BSSR; Belorusskiy Gosudarstvennyy Universitet (Institute of Physics and Mathematics, Academy of Sciences of the Belorussian S.S.R.; Belorussian State University)

SUBMITTED: July 26, 1957

PRIMA, A.M.; ZHIBANKOV, R.G.; MARUFOW, R.

Study of the characteristics of infrared spectra of mono- and diac-
charides. Zhur. strukt. khim. 5 no. 2:245-252 N-B 164. (MIRA 1970)

1. Institut fiziki AN BSSR.

PRIMA, A.M.

Calculation of vibrational spectra of silicates. Trudy Inst.fiz.
i mat. AN BSSR no.2:124-173 ' 57. (MIRA 12:1)
(Silicates--Spectra)

SOV/51-5-1-3/19

AUTHORS: Stepanov, B.I. and Prins, A.M.

TITLE: Vibrational Spectra of Silicates (Kolebatel'nyye spektry silikatov)
II. Interpretation of Spectra of Glasses (II. Interpretatsiya
spektrov stekol)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 1, pp 15-22 (USSR)

ABSTRACT: In Part I (Optika i Spektroskopiya, 1958, Vol IV, Nr 6, p 784) the authors give the results of calculations of frequencies and forms of vibrations of several silicate crystals (α -quartz, tourmaline, silicic-oxygen chains and laminae). A detailed discussion of the results of Part I is given in the present paper. These results are also used to interpret Raman and infrared spectra of silicate glasses and of certain crystals. It is shown that metasilicate and bisilicate spectra differ qualitatively. The spectra of glasses of bisilicate composition can be interpreted satisfactorily only if existence of lamellar combinations of SiO_4 tetrahedra in the glass is assumed. Figs 1, 2 and 3 show the results of calculation of infrared (Figs 1a, 2a, 3a) and Raman (Figs 1b, 2b, 3b) spectra of silicate crystals. The results for crystals with chain structure of the silicic-oxygen base (pyroxene type) are given in Fig 1. The results for crystals with lamellar structure (e.g. talc) are given in Fig 2 and for α -quartz

Card 1/2

SOV/61-11-7/13

Vibrational Spectra of Silicates. II. Interpretation of Spectra of Glasses

in Fig 3. The height of the lines gives the relative intensities. The forbidden lines are shown dashed. The letters A_1 , A_2 , E_g , B_g give the type of symmetry of the normal vibrations. The authors carried out calculations only for the valence frequencies in the region $400-1200 \text{ cm}^{-1}$. Figs 1-3 show the results of five variants of calculations with different values of quasielastic constants, as well as experimental results. Fig 4 gives the Raman spectra of glasses of metasilicate and bisilicate composition and of natural quartz, obtained experimentally (Fig 4b), and in Fig 4a the spectra of polycrystals consisting of chains, laminae and of quartz, calculated theoretically using the 5th variant (the 5th row in Figs 1-3) are given. It is seen that the theoretical and experimental spectra agree well and it is possible to interpret the experimental results using the theory given in this paper. There are 4 figures and 15 references, 13 of which are Soviet, 1 German and 1 American.

Card 2/2

ASSOCIATION: Institut fiziki i matematiki AN BSSR, Belorusskiy gosudarstvennyy universitet (Institute of Physics and Mathematics of the Academy of Sciences of the Byelorussian S.S.R., Belorussian State University)

SUBMITTED: July 26, 1967 1. Silicate crystals-Vibrations 2. Silicate crystals - Spectrographic analysis

L 6299-65 EWT(1) IJP(c)

ACCESSION NR: AR501.2227

UR/0058/65/000/003/D013/D014

SOURCE: Ref. zh. Fizika, Abs. 3D86

AUTHOR: Prima, A. M.

TITLE: Possible application of iteration methods and "relaxation" methods for the calculation of the constants of the potential energy of translation

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 99-105

TOPIC TAGS: potential energy constant, molecular potential energy, potential energy matrix, iteration method, relaxation method

TRANSLATION: A scheme is proposed for the calculation of the diagonal elements of the matrix of the potential-energy constants on the basis of an iteration method, and also a scheme for the calculation of the diagonal and nondiagonal elements of this matrix on the basis of the relaxation method, using the squares of the vibration frequencies of

Card 1/2

L 46299-65

ACCESSION NR: AR5012227

the molecule and its hetero-substitutes. An estimate of the advantage of each of these procedures in practical applications is presented.

SUB CODE: GP, OP

ENCL: 00

Card ^{2/2} 2/2

L 49769-65 EWT(m) RM
ACCESSION NR: AR5012250

UR/0058/65/000/003/D032/D032

SOURCE: Ref. zh. Fizika, Abs. 3D231

12

AUTHORS: Zhbankov, R. G.; Marupov, R.; Ivanova, N. V.; Prima, A. M.

B

TITLE: Features of infrared spectra of hydrocarbons

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 337-348

TOPIC TAGS: infrared spectrum; hydrocarbon; saccharide; cellulose

TRANSLATION: The spectra of a large number of hydrocarbons, namely mono-, di-, and polysaccharides and their substitutes, are compared. It is shown that changes in the structure have a strong effect on the infrared spectra of this class of compounds. The interpretation of a series of fundamental frequencies is made more precise. It is concluded that account must be taken of the conformational factors in the analysis of infrared spectra of hydrocarbons. Considerable attention is paid to an investigation of the spectra of the most important natural high polymer - cellulose in different structural modifications.

SUB CODE: QP, CC.
Card 1/1

ENCL: 00

P. RIMA, A.M.

16(1) 84(45) TRANSMISSION SPECTRA 887/1999

Abstracts with Bibliography. Ed. Zvezdovskii I. (Moscow)

Trudy, 779. 2. (Transactions of the Institute of Physics and Mathematics, Belorussian SSR Academy of Sciences, Br 2) Minsk, 1971. 265 p. Russian slip inserted. 750 copies printed.

Ed.: B. T. Stepanov, Academician, USSR Academy of Sciences; Ed. of Publishing House: S. Murlov; Tech. Ed.: I. Volobuzhnik.

FOREWORD: This book is intended for mathematicians, physicists, and graduate students in mathematics and physics.

CONTENTS: This book contains a series of articles on recent contributions by authors and their bibliographies (Institute of Physics and Mathematics) of the Academy of Sciences, USSR in the fields of mechanics, mathematics, optics, and spectroscopy, as well as applications of analysis, tensor analysis, linear groups, theory of adjointness, and differential equations. The

first article contains a brief account of the work of the Institute, including names of scientists and mathematicians connected with it, facilities, scientific accomplishments, and fields of interest.

Translations of the Institute (Cont.) 887/1999

Gedury, T.S.; R. V. Yefremov, and L. A. Ervov. On the Spectral Properties of Chlorophyll and Carotenoporphyrin Complexes With Protein and Certain Other Compounds. 89

Kripich, A. M. Spectroscopic Interaction of Sulphur and Iron in Sources of Light for Spectral Analysis. 93

Yakovlev, A. A. On the Role of Electric Parameters of a Discharge Contour With an Excitation of the Spectrum by a Low-voltage Impulse Discharge. 110

Prism, A. M. Calculating the Oscillating Spectrum of Silicones. 128

Volod'ko, L. V. Electronic Spectra of Solutions of Uranium Salts. 176

Stepanov, B.I., and A. P. Prishivalov. On the Theory of Dispersion Light Filters. 189

Prishivalov, A. P. The Filtration of Light by Layers of Absorbent Dust. 206

Cont 3/5

PRIMA, A.M.

Vibrational spectra of silicates. Part 3: Equations for the
vibrations of plane silicon-oxygen rings of silicates. Opt. i
spektr. 9 no.4:452-459 0 '60. (MIR, 13:11)
(Silicates) (Chemical bonds)

ACC NR: AP6020965 SOURCE CODE: UR/0226/66/000/006/0077/0087

35
A

AUTHOR: Yeremenko, V. N. ; Buyanov, Yu. I. ; Prima, S. B.

ORG: Institute for Problems in the Science of Materials, AN UkrSSR (Institut problem materialovedeniya AN USSR)

TITLE: Structure of a phase diagram of a titanium-copper system

SOURCE: Poroshkovaya metallurgiya, no. 6, 1966, 77-87

TOPIC TAGS: titanium ^{compound} ~~copper system~~, phase diagram, ^{metal} ~~microdurometric~~ analysis, ^{copper compound}

ABSTRACT: Phase diagrams of a titanium-copper system have been studied by metallographic, x-ray and microdurometric analyses at concentrations of 20 to 100 at % Cu. The results obtained and the data in the literature have enabled the authors to construct a phase diagram of the Ti-Cu system. The system has six metalloides, of which $Ti_2 Cu$, $Ti Cu$, and $Ti Cu_4$ form phases of variable composition with narrow regions of homogeneity. Orig. art. has: 3 tables and 2 figures.

[Based on authors' abstract]

[AM]

SUB CODE: 11/ SUBM DATE: 19Mar66/ ORIG REF: 002/ OTH REF: 014/

Card 1/1 11t

ACC NR: AP7009071

SOURCE CODE: UR/0413/67/000/003/0047/0047

INVENTOR: Furman, N. I.; Shcherban', A. N.; Grishko, V. G.; Primak, A. V.;
Belogolovin, N. S.; Chopovskiy, Yu. I.

ORG: None

TITLE: A frequency meter for telemetry. Class 21, No. 190968

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1967, 47

TOPIC TAGS: telemetry, frequency meter, magnetic amplifier, positive feedback,
electronic feedback

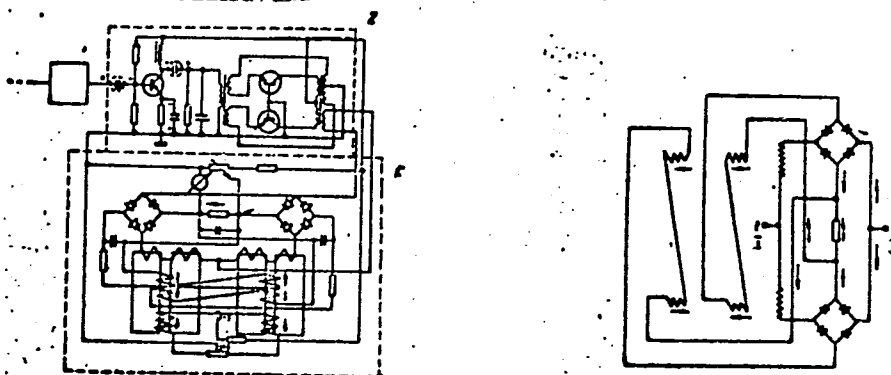
ABSTRACT: This Author's Certificate introduces: 1. A frequency meter for telemetry. The unit is based on the mutual effect of two magnetic fluxes in a magamp: the variable flux produced by a sinusoidal AC input signal and a constant flux produced by current from an independent power supply with bridge rectifiers. To increase accuracy and make provision for monitoring the operation of the transmission channel, the installation contains a square pulse buffer generator with a natural frequency below the "zero" frequency of the signals being transmitted. The generator input is connected to the transmission channel through a synchronizing stage, while the output is connected to the AC winding of the magamp. 2. A modification of this frequency meter with automatic temperature compensation. One end of each of the two circuits of the external positive feedback windings in the magnetic amplifier is connected to the negative output of the bridge rectifiers for left and right cycles respectively tied into the AC circuit of

Card 1/2

UDC: 621.317.761:621.398

ACC NR: AP7009071

the signal to be measured. The other ends of the feedback windings are connected to the positive output of the bridge rectifiers for right and left cycles respectively, and interconnected through a resistor. The feedback windings for right and left cycles are connected in opposition.



1--magnetic amplifier; 2--square pulse generator

SUB CODE: 09/ SUBM DATE: 22Jul64

Card 2/2

SHCHERBAN', A.N., akademik; FURMAN, N.I., kand.tekhn.nauk; PRIMAK, A.V.
BELOGOLOVIN, N.S.; TARASEVICH, V.H.

High-stability transmission device of a frequency system for
telemetering weak pickup signals. Avtom. i prib. no. 1:47-50
Ja-Mr '64. (MIRA 17:5)

PRIMACHEK, N.V.

Standardizing and grading coal. Ugol' 33 no.9:42-43 S '58.
(MIRA 12:1)

1. Yuzhinskokaugol'
(Coal--Grading) (Coal--Standards)

PRIMACHENKO, N.B.

Problem of intradermal reactions in dysentery. Zhur. mikrobiol. epid.
i immu. 29 no.12:15-21 D '58. (MIRA 12:1)

1. Iz kliniki infektsionnykh bolezney Kubanskogo meditsinskogo instituta.
(DYSENTERY, BACILLARY, immunology,
intradermal reactions as immunol. index (Rus))

L 20401-66 EWP(t) IJP(e) JD

ACC NR: AP5024755

SOURCE CODE: GE/0030/65/011/002/0711/0718

AUTHOR: Primachenko, V. E.; Snitko, O. V.; Milenin, V. V. 4A
B

ORG: Institute of Semiconductors, Academy of Sciences UkrSSR, Kiev

TITLE: Nonequilibrium field effect on Si in the region of high depletion 27

SOURCE: Physica status solidi, v. 11, no. 2, 1965, 711-718

TOPIC TAGS: silicon semiconductor, electric conductivity, semiconductor band structure, nonequilibrium

ABSTRACT: The features of the non-equilibrium field effect are investigated for silicon in the region of high majority carrier depletion and non-equilibrium between the energy bands. The observed effects are a strong asymmetry of the amplitude dependence of conductivity with respect to the sign of the external field, a current-pinch effect, and a strong dependence of the kinetics of field effect

Card 1/2 2

L 20401-66

ACC NR: AP5024755

on field strength, temperature, and light intensity. A mechanism is proposed for the non-equilibrium field effect in the depletion region which involves a strong retardation of screening by surface states at low temperatures and thus allows penetration of the field into the volume of the crystal. The experimental data agree quantitatively with the calculation. Orig. art. has: 4 formulas, 10 figures. [Based on author's abstract]

SUB CODE: 20,09/ SUBM DATE: 16Jul65/ SOV REF: 003/ OTH REF: 003/

Card 2/2 BK

PRIMACHENKO, V.Ye.; SNITKO, O.V.; MATSAS, Ye.P.

Study of gold alloyed natural surface of germanium. Radiotekh.
i elektron. 10 no.9:1733-1735 S '65. (MIRA 18:9)

L 5266-66 EWT(l)/EWT(m)/T/EWP(t)/EWP(b)/EWA(h) LJP(c) JD/AT
ACG NR: AP5022445 SOURCE CODE: UR/0109/65/010/009/1733/1735

AUTHOR: Primachenko, V. Ye.; Snitko, O. V.; Matsas, Ye. P. 44.05 44.05 44.05

43
B

ORG: none

TITLE: Investigation of the gold-doped physical surface of germanium 27

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1733-1735

TOPIC TAGS: germanium semiconductor, semiconductor research

ABSTRACT: The results of an experimental ^{21.44.05} investigation of n-Ge specimens (45 ohms-cm, volume lifetime, 1 msec) etchant-doped with Au are reported. Fast-state charge vs. surface potential and surface recombination rate vs. surface potential curves are shown. It is found that the Au-doping produces a second recombination level located above the E_1 ($E_2 = +6kT$) with capture cross-sections of $C_{n2} = 10^{-16} \text{ cm}^2$, $C_{p2} = 3 \times 10^{-13} \text{ cm}^2$ (acceptor level). The Au-doping also creates a set of fast nonrecombination states located higher and lower than the center of the forbidden band E_1 as compared to E_1 and E_2 . "The authors wish to thank N. A. Petrova for her help in doping the specimens." Orig. art. has: 2 figures. 44 55

UDC: 539.293.011.7:535.215.12:546.289

Card 1/1 SUB CODE: EC/ SUBM DATE: 23Nov64/ ORIG REF: 003/ OTH REF: 003

0701 1148

PRIMACHENKO, V.Ye. [Prymachenko, V.IE.]; SNITKO, O.V.; MILENIN, V.V.

Nonequilibrium effect of the depletion of silicon of its majority
current carriers. Ukr. fiz. zhur. 10 no.4:382-388 Ap '65.

(MIRA 13:5)

1. Institut poluprovodnikov AN UkrSSR, Kiyev.

L 51444-65 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(h) Pz-6/PeB IJP(c)

JD/AT

ACCESSION NR: AP5011065

UR/0185/65/010/004/0389/0397

AUTHOR: Prymachenko, V. Ye. (Primachenko, V. Ye.); Snitko, O. V.; Milenin, V. V.

TITLE: Concerning the mechanism of the non-equilibrium effect of depletion of majority carriers from silicon

SOURCE: Ukrayins'kyi fizychnyy zhurnal, v. 10, no. 4, 1965, 389-397

TOPIC TAGS: field effect, nonequilibrium effect, silicon, carrier depletion, conductivity modulation

ABSTRACT: This is a theoretical explanation of the field effect in non-equilibrium depletion, proposed in the preceding paper in the same source (Accession Nr. 5011064). The change in the space charge, the electric field, the conductivity, and capacitance of the semiconductor are calculated as functions of the potential drop across the semiconductor in the non-equilibrium mode. It is shown that the calculated value of the depth of penetration of the field at the instant of the blocking of the current coincides with the thickness of the silicon plate, while the calculated value of the mobility of the field effect, with account of the change in the capacitance coincides in the case of large fields with the drift

Card 1/2

L 51444-65

ACCESSION NR: AP5011065

mobility of the holes in the volume. This offers evidence of the quantitative agreement between the theoretical model and the experimental data, and confirms the main idea of the proposed mechanism, in which the dominant role is played by the majority carriers and the change in the conductivity and in the slowing down of the rate of their generation with decreasing temperatures from the surface level. The generation of the majority carriers within the volume of the semiconductor from local centers, and the generation of the minority carriers, apparently play no essential role. Orig. art. has: 8 figures and 14 formulas.

ASSOCIATION: Instytut napivprovidnykiv AN URSSR, Kyiv [Institut poluprovodnikov AN UkrSSR, Kiev] (Institute of Semiconductors, AN UkrSSR)

SUBMITTED: 07Aug64

ENCL: 00

SUB CODE: 88

NR REF SOV: 004

OTHER: C03

ml
Card 2/2

PRIMAK, D.C.
TISHCHENKO, I.T., PRIMAK, D.C.

Epidemiological significance of non-hospitalized scarlet fever patients and secondary complications. Zhur.mikrobiol.epid. i immun. 29 no.6:60-63 Je '58 (MIRA 11:7)

1. Iz Kiyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii. (SCARLET FEVER, epidemiol. aspects & compl. in non-hospitalized patients (Rus))

PRIMACHEK, N.V.

"Technical control in ore-dressing plants" by A.G. Raikhtsaum.
Reviewed by N.V. Primachek. Ugol' 32 no.9:47-48 S '57.
(MIRA 10:10)

1. Upravleniye Yuzhinskoksugol'.
(Ore dressing) (Raikhtsaum, A.G.)

DEKIN, A. P.; FRIMACHENKO, M. A.

Hemp

Hemp growers of the Novgorod-Severdk Region., Sov. agron., 10, No. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 1952. ~~1953~~, Uncl.

FRINACHENKO, N. B.

"Clinico-immunological indices in various forms of bacillary dysentery."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists
and Infectionists, 1959.

PRIMACHENKO, N.B., aspirant

Problem of the reflex factor in the mechanism of the intradermal reaction in dysentery. Zhur. mikrobiol., epidem. i immun. 27 no.3: 27-30 Mr' 56. (MLRA 9:7)

1. Iz kliniki infektsionnykh bolezney Kubanskogo meditsinskogo instituta.

(DYSENTERY, BACILLARY, immunology,
reflex mechanism of intradermal reactions (Rus))

BELUKHA, P.G.; SHAKHNOVICH, I.G.; PRIMACHENKO, V.V.

Firing of Vladimir kaolin in rotary kilns. Ogneupory 29 no.4:
148-151 '64. (MIRA 17:4)

1. Veliko-Anadol'skiy shamotnyy zavod.

PRYMACHENKO, V. YE.

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S/185/60/005/003/006/020
D274/D303

AUTHORS: Prymachenko, V. Ye., Lytovchenko, V.G., Lyashenko, V.I. and Snitko, O.V.

TITLE: The study of fast and slow electron states on a germanium surface

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 3, 1960, 345-356

TEXT: The effect of an external electric field is studied on the dark conductivity (the field effect) and on the surface recombination of thin germanium plates in vacuo. The field effect was investigated at a d.c. voltage, as well as by applying rectangular pulses; this made it possible to determine separately the parameters of the fast and slow surface states. The method of investigation used is more advantageous than earlier methods; in particular, it permits studying all the surface states on a single specimen. The size of the specimens was approximately 1.5 x 0.5 x 0.015 cm. The specimens

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Card 1/5

26591

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The study of fast and slow electron...

D274/D303

were treated with CP-4 and, after measurements, with boiling H_2O_2 . The germanium plates were p-type with specific resistance 40 - 50 Ohm. The specimen served as one plate of a capacitor to which a d.c. voltage of 2500 v was applied as well as an a.c. voltage (rectangular pulses). The dark conductivity σ was measured by a compensation method. The change in conductivity $\Delta\sigma$ (following the application of the rectangular pulses), was measured by a special circuit. The rate of surface recombination was determined by the effective relaxation time τ of the photoconductivity, following the illumination of the middle part of the specimen by the rectangular pulses of light. The relaxation of the photocurrent followed an exponential law. A diagram is given of the circuit used for the investigation. Curves are given for $\Delta\sigma$ as a function of the charge Q induced on the germanium surface. The presence of a minimum on the experimental curve $\Delta\sigma(Q)$ permitted determining the surface potential χ for each Q . The total surface potential reaches $15 \text{ kT/e} \approx 0.38 \text{ eV.}$, i.e. it is approximately equal to half the width of the forbidden germanium zone. Further, the field effect makes it

Card 2/5

26591

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The study of fast and slow electron...

possible to determine the charge Q_s in both fast and slow states, ($Q_s = Q - Q_0$, where Q_0 is the space charge). The surface charge in fast states changes relatively little for small Y , whereas for large Y it changes rather sharply. The dependence of Q_s on Y leads to the interpretation of the energy levels (discrete vs. continuous). The authors assume discrete interior levels; this assumption is supported by the results of recombination measurements and is also in agreement with A. Many's results (Ref. 21: J. Phys. Chem. Solids. 8, 87, 1959). Therefore, the results obtained from the field effect for the fast states are interpreted by the authors by means of a model of four discrete levels, whose parameters are given in a table; for the slow states, two discrete levels are assumed. The charge of the slow states is much greater than that of the fast states. Hence the slow states are of basic importance in screening the constant external field. Further, the dependence of the rate of surface recombination s on the surface potential Y is plotted and discussed. The fast levels are responsible for the recombination; two or even three such levels can substantially contribute to it; but, in gen-

Card 3/5

26591

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D274/D303

The study of fast and slow electron...

eral, one of the fast levels is predominant in surface recombination. The values of the capture cross-sections of electrons and holes are given in the table. The measured values of the parameters of the surface levels depend on the etching method (by means of CP-4 or by H_2O_2) and on whether the surfaces were freshly etched or a long time ago (their previous history); thereby the difference in the parameters is, however, not as considerable as should have been expected; the concentration of the fast states, and especially their recombination capacities show considerable dependence on the previous history of the specimens. Finally, the presence of an oxide layer on the germanium surface is considered as definitely established; this layer has a complex chemical and polycrystalline structure. The layer is the main reason for the complex system of surface states of germanium. The slow states are found on the outer surface of the oxide, being mainly determined by adsorbed atoms, whereas the fast states are on the interface Ge-oxide, being mainly due to imperfections of structure and extraneous atoms. There are 5 figures, 1 table and 36 references: 14 Soviet-bloc and 22 non-Sov-

Card 4/5

26591

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The study of fast and slow electron...

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iet-bloc. The 4 most recent references to English-language publica-
tions read as follows: E. Harnik. G. Margoninski, Phys. a.Chem.
Solids, 8, 96, 1959; A. Many, J. Phys. Chem. Solids, 8, 87, 1959;
R.E. Schlier, H.E. Farnsworth, J. Chem. Phys., 30, 917, 1959; G.A.
Barnes, P.C. Banbury, J. Phys. Chem. Solids, 8, 111, 1959.

ASSOCIATION: Instytut fizyki AN USSR (Physics Institute, AS Ukr
SSR)

SUBMITTED: November 5, 1959

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Card 5/5

L 31027-65 EWT(1)/EWT(m) ENP(t)/T/ENP(b) SMA(h) Pz-6/Feb YJP(c) JD/AT

ACCESSION NR: AP5004321

S/0185/65/010/001/0039/0046

AUTHOR: Frymacheako, V. Ye. (Primachenko, V. Ye); Milenin, V.V.; Snitke, O.V.

33
39
B

TITLE: Investigation of gold-doped silicon surface

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 1, 1965, 39-46

TOPIC TAGS: silicon, surface state, doping, surface recombination, recombination rate, photo efm

ABSTRACT: The method of single high-voltage pulses was used to investigate the field effect of 20 p-type silicon samples etched and doped with gold from the etching substance. The samples had an approximate resistivity 3500 ohm-cm and a non-equilibrium volume carrier lifetime 700 microseconds. The orientation of the investigated surface was (111). The method of etching and electrode deposition is described. Measurements were made of the conductivity, photoconductivity, and capacitive photoemf as functions of the external electrical field applied to the sample surface through a mica plate. The experimental set-up for measuring the field effect is shown in Fig. 1 of the Enclosure. The photoconductivity and

Card 1/4

L 31047-65

ACCESSION NR: AP5004321

capacitive photoemf were measured by applying rectangular pulses of white light with fronts up to 5×10^{-7} sec, produced by a rotating mirror. Details of the sample preparation and of the experimental procedure were described by one of the authors elsewhere (Snitko, with G. V. Litovchenko, FTT v. 2, 591 and 815, 1960). The measurements were made at 20C, with the temperature maintained constant with an ultrathermostat. By comparing the experimental results with the theory, the authors determined the parameters of the surface states on doped and undoped surfaces. The presence of 1×10^{-6} -- $1 \times 10^{-3}\%$ of gold in the etchant gives rise to an additional system of fast surface states, and also influences the parameters of the slow states. The most effective recombination level produced by the gold on the silicon surface lies 0.222 eV below the center of the forbidden band. This level is of the donor type ($C_n = 6 \times 10^{-15} \text{ cm}^{-2}$, hole concentration $1 \times 10^{-22} \text{ cm}^{-2}$), and the concentration of the level depends on the content of gold in the etchant, lying in the range $(0.8 \text{ -- } 4) \times 10^{12} \text{ cm}^{-3}$. To obtain small surface-recombination rates in silicon it is necessary to employ extremely pure reagents and to treat the surface in a way that precludes the introduction of harmful impurities. "The authors thank N. A. Petrov for help with etching the samples." Orig. art. has: 6 figures.

Card 2/4

L 31047-65

ACCESSION NR: AP5004321

ASSOCIATION: Instytut nap!vprovidnykiv AN UkrSSR (Institute of Semiconductors AN UkrSSR), Kiev

SUBMITTED: 12May64

ENCL: 01

SUB CODE: SS

NR REF SOV: 008

OTHER: 007

Card 3/4

L. 31047-55

ACCESSION NR: AP5004321

ENCLOSURE: 01

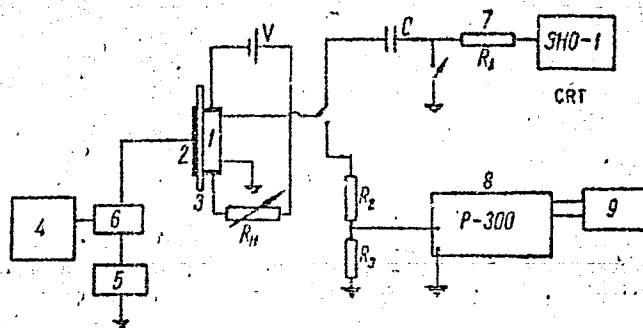


Fig. 1. Circuit for measuring the field effect.

- 1 - silicon sample, 2 - electrode, 3 - mica, 4 - square-wave generator,
- 5 - high-voltage pulse source, 6 - relay for hv pulses, 7 - oscillograph coupling circuit, 8 - circuit for measurement of the conductivity change,
- 9 - galvanometer

Card 4/4

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S/181/62/004/010/045/063
B102/B112

8/11/77

10 15 1962

AUTHORS: Primachenko, V. Ye., Litovchenko, V. G., Lyashenko, V. I.,
and Snitko, O. V.

TITLE: Minority carrier adhesion on the silicon surface

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2925-2930

TEXT: This paper is aimed to show that under certain conditions a charge accumulation may occur on the silicon surface and that the bipolarity ($\Delta n = \Delta p$) may be disturbed. This is, however, contradictory to the observations made by other authors (see e.g. Phys.Rev.101, 1272, 1956; Semic.Surf.Phys.,85,1957). The disturbance of bipolarity of the intrinsic photoconductivity observed is attributed to minority carriers accumulating on fast surface levels. The same method of investigation was used as described in previous papers (FTT 1,980,1959; FTT 2, 591, 1960; UFZh,5,345,1960). The specimens were n-type Si single crystal platelets 200-400 μ thick with resistivities of 30 - 200 ohm-cm and volume lifetimes of $\sim 1000\mu$ sec, the surfaces of which had been etched with CP-8. In germanium the bipolarity of the surface photocurrent may be disturbed

Card 1/3

Minority carrier adhesion on ...

S/181/62/004/010/045/063
B102/B112

only at low temperatures, but in etched silicon it may be disturbed even at room temperature. This is proved (1) by the nature of the photo-conductivity relaxation of thin samples if the oscillogram shows two exponents with widely differing time constants; (2) by the constant τ_{sh} of the short-term photocurrent component being inversely proportional to the electric field applied, whereas the constant of the long-term component is independent of it; (3) by the fact that the long-term component can be caused to vanish by the usual method of trap filling; (4) by the long-term component increasing as the temperature decreases, while the short-term component decreases and almost vanishes completely, this being related to the intensified charge accumulation; in both cases $\ln \tau = f(1/T)$ follows a linear course; (5) by the results obtained in a study of the kinetics of the field effect also indicating a disturbance of bipolarity. This bipolarity is also indicated by the field dependence of τ_{sh} and τ_l and (7) it is particularly pronounced in samples kept on air for a longer period of time after they had been etched. (8) Experiments on the condenser photo-emf proved that the disturbance of the photocurrent bipolarity of Si is related to a change in the surface charge. Such a

Card 2/3

Minority carrier adhesion on ...

S/181/62/004/010/045/063
B102/B112

disturbance occurs when $\frac{C_n}{C_p} \exp \frac{E_{tv} - \mu_{nc}}{kT} \ll 1$ and $\tau_c N_v C_p \exp(-E_{tv}/kT) \leq 1$

where C_p and C_n are the electron and hole trapping cross sections, E_{tv} the energy of the levels relative to the valence band, μ_{nc} the electron Fermi quasilevel relative to the conduction band, τ_c the recombinative lifetime and N_v the effective number of levels in the valence band.

There are 3 figures.

ASSOCIATION: Institut poluprovodnikov AN USSE, Kiyev (Institute of Semiconductors AS UkrSSR, Kiyev)

SUBMITTED: February 6, 1962 (initially) June 12, 1962 (after revision)

Card 3/3

PRIMACHENKO, V.Ye.; SNITKO, O.V.

Role of a dielectric in the investigation of the field effect in
semiconductors. Fiz. tver. tela 3 no.1:15-18 Ja '61.
(MIRA 14:3)

1. Institut fiziki AN USSR, Kiyev.
(Semiconductors) (Dielectrics)

89270

S/181/61/003/001/002/042

B102/B212

9.4300 (1043, 1143, 1155)

AUTHORS: Primachenko, V. Ye. and Snitko, O. V.

TITLE: The role of a dielectric in investigations of the field effect in semiconductors

PERIODICAL: Fizika tverdogo tela, v. 3, no. 1, 1961, 15-18

TEXT: One of the most important methods used to study the surface properties of semiconductors is the method of the field effect (change of the surface conductivity under the influence of an external electric field); here, the semiconductor is a capacitor plate which is covered with a dielectric (mica, strontium titanate) to increase the breakdown voltage. Therefore it is of interest to know the effect of the dielectric on the surface properties of the semiconductor; several studies made for this purpose (among others, by Shao and Morrison) are briefly discussed in the introduction. In the following, the authors report on their own experiments. First, they repeated the experiments of Shao and found that a considerable charge remains on the mica after the electrode has been removed under voltage. Then, experiments have been undertaken to measure

Card 1/5

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The role of a dielectric in...

the field effect and the capacitor photo-e.m.f. directly, with and without mica, in a vacuum and in air. These experiments were made with n- and p-type Ge and n-type Si. As the results obtained were similar, only those concerning the n-type Ge ($\rho = 28 \text{ ohm}\cdot\text{cm}$, thickness 340μ) are discussed. Fig. 1 shows the change of the conductivity $\Delta\sigma$ and the capacitor photo-e.m.f. V_{ph} , measured for 15 seconds after a constant field had been applied, as a function of the capacitor charge ($Q=CV$); C with mica has $25 \mu\mu\text{F}$, without mica, $10.5 \mu\mu\text{F}$. Fig. 2 illustrates the long-period relaxation effect of the field for various cases. It is demonstrated again that curves recorded with and without mica coincide in dry air and in a vacuum, while those recorded in humid air deviate considerably from each other. Relaxation is more rapid with mica. All experiments showed consistently that in fields up to $1-2 \cdot 10^7 \text{ v/cm}$, no charges are transferred from the semiconductor to the dielectric in dry air and in vacuo. Results obtained for humid air are indicative of a partial charge transfer to mica, which increases with humidity; this is related to the surface conductivity of mica in humid air. There are 2 figures and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc.

Card 2/5

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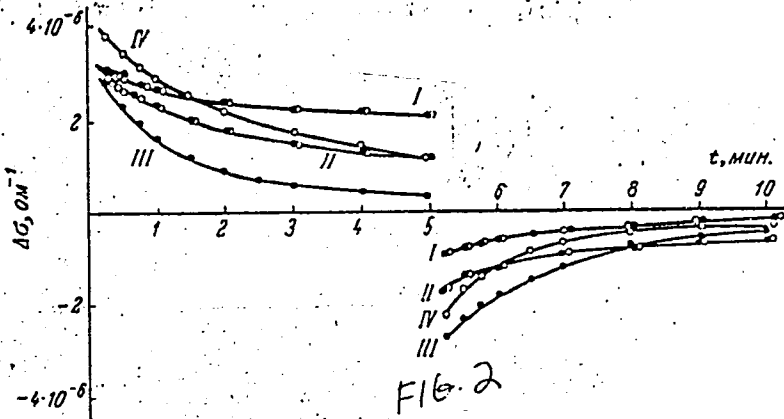
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B102/E212

The role of a dielectric in...

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics of the AS UkrSSR, Kiyev)

SUBMITTED: April 30, 1960

Legend to Fig. 2:
Field effect relaxation for a capacitor charge of $4.2 \cdot 10^{-9}$ coul/cm² ($t > 5$ min).
I - vacuum; II - dry air; III, IV - humid air; • with mica; o without mica.



Card 3/5

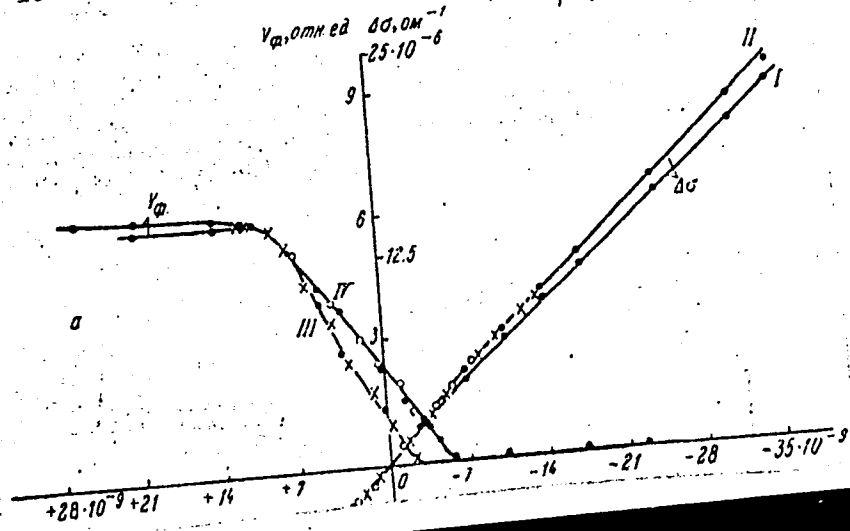
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The role of a dielectric in...

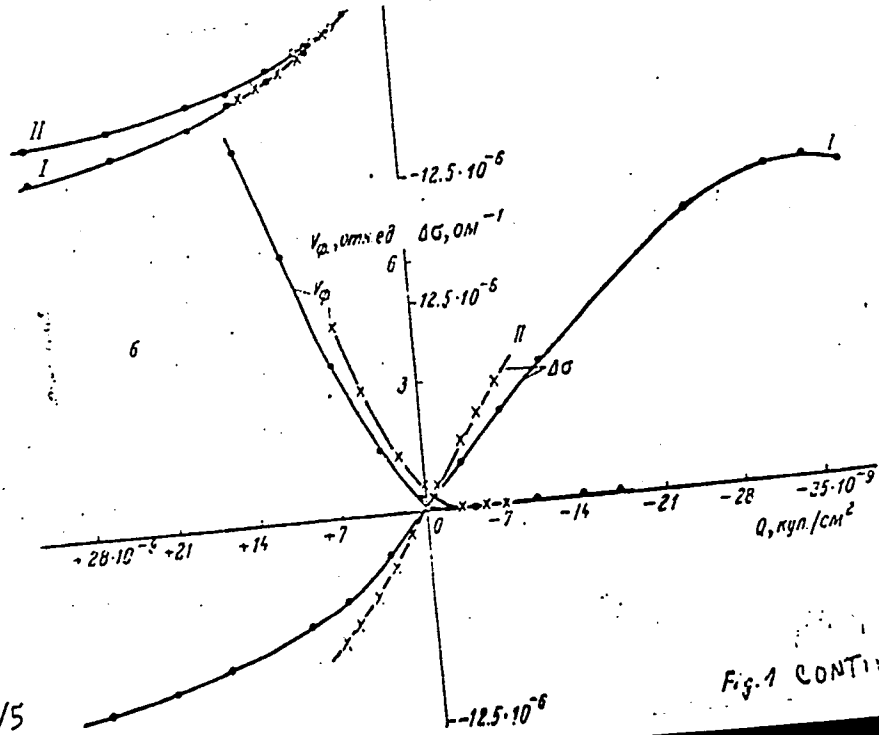
Legend to Fig. 1: $\Delta\sigma$ and V_{ϕ} as functions of Q ; V_{ϕ} given in relative units, $\Delta\sigma$ in ohm^{-1} , and Q in coul/cm^2 . Upper diagram: I, II - vacuum, III, IV - dry air; lower diagram: \bullet - with mica; \times without mica.

FIG. 1



The role of a dielectric in...

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 $Q, \text{dyn/cm}^2$



Card 5/5

Fig. 1 CONT'D

PRIMACHENKO, V.Ye. [Prymachenko, V.IE.]; SNITKO, O.V.

Effect of an external electric field on condenser photo-e.m.f.
in germanium and silicon. Ukr. fiz. zhur. 5 no.4:488-503 J1-
Ag '60. (MIRA 13:11)

1. Institut fiziki AN USSR. (Photoelectricity)
(Germanium--Electric properties)
(Silicon--Electric properties)

PRIMACHENKO, V Ye.

12345
S/185/60/005/007,007/021
D274/D300

9.4179 (105,1114)

AUTHORS: Primachenko, V. Ye. and Snitko, O. V

TITLE: Effect of the external electric field on capacitor photo-emf in germanium and silicon

PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 5, no. 4, 1966, 488-502

TEXT: An experimental study is described which had the purpose of ascertaining the effect of an external electric field on the capacitor photo-emf in germanium and silicon, and to verify the dependence of this emf on the surface buckling (flexure) of zones and on the surface states, as predicted by theory. In addition, the kinetics of the photo-emf was investigated. Reasons are given for the failure to observe the effect of the external field on the photo-emf. In the present investigation, the necessary steps were taken to avoid such a failure. Thus, e.g. the electric field-strength in the capacitor was increased to $1.5 \cdot 10^6$ v/cm. Under the

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Card 1/8

2794
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D274/D306

Effect of the external electric...

conditions of the experiment, a strong effect was observed of the external field on the photo-emf in all the investigated specimens (nearly 20). Partial results of the investigation were published in earlier works. Experimental method. Thin plates of germanium and silicon single crystals were investigated. To one side of the plate, electrodes and probes were applied for measurements of dark and photoconductivity, whereas a mica plate was applied to the other side of the specimen. The capacitance Q of the capacitor thus formed, was measured, it turned out to be much less than the calculated one. The specimens were illuminated by rectangular pulses. The capacitor photo-emf was measured by means of the usual circuit (as given in references). A figure shows the time dependence of the photo-emf V_p on switching on and switching off the external field. The experiments were conducted both at normal pressure and in a vacuum. The most important feature of the dependence of V_p on the external field U is the existence of two limiting values of V_p , between which V_p changes in a comparatively narrow interval of U . As a rule, both the germanium and silicon specimens show a

Card 2/8

2794*
S/185/60/005/004/007/021
D274/D306

Effect of the external electric...

shift of the dependence $V_p(U)$ towards positive values of V_p in the case of n-type crystals, and towards negative values of V_p in the case of p-type crystals. Simultaneously, the effect of the external field on the dark conductivity was measured. The change in surface conductivity $\Delta\sigma$ is a result of a change in electron- and hole concentration in the space-charge layer. Thereby the conductivity passes (depending on zone buckling) through a minimum when the reduction in majority carriers is compensated by an increase in minority carriers. It is noted that the correlation between the minimum of $\Delta\sigma$ and the region of sharp change of V_p is so strong, that the slightest change in the method of surface treatment which shifts the minimum of $\Delta\sigma(U)$ along the U-axis, leads at one to a corresponding shift of the curve $V_p(U)$. This shows the importance of surface zone buckling for the generation of the photo-emf. Measurements of dark conductivity and the minimum of the curve $\Delta\sigma(U)$ make it possible to determine for each value of U the surface potential Y which corresponds to surface zone buckling. For that purpose the theoretical curve $\Delta\sigma(Y)$ was calculated for each speci-

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Card 3/8

27948 S/185/60/005/004/007/021
D274/D306

Effect of the external electric...

men. By comparing it with the experimental curve $\Delta\sigma(U)$, it was possible to determine the dependence between U and Y . Further, the kinetics of the capacitor photo-emf was investigated. This is important in connection with E.O. Johnson's method of determining the lifetime of minority carriers by means of the relaxation time of the photo-emf (Ref. 28: J. Appl. Phys., 28, 1549, 1957). Where, as the author obtained, in the absence of an external field, a time constant which agreed with the results of Ref. 28 (Op. cit), he was unable to investigate the relaxation time of the photo-emf in the presence of an external field; this was due to the small magnitude of the photo-emf (hundreds of microvolts) and to background effects. It was established that the majority of silicon specimens has a nearly-exponential relaxation of the photo-emf with time constant τ_p of the order of tens of microseconds. Some of the silicon specimens showed a sharp non-exponential relaxation of the photo-emf. The surface photo-emf V_p^s was approximately computed by several authors, the best of these computations being E.O. Johnson's (Ref. 12: Phys. Rev., 111, 153, 1958), this computation was done

Card 4/8

27948

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D274/D306

Effect of the external electric...

for a single surface state only. As the germanium and silicon surfaces have 4 fast states, it is of interest to generalize Johnson's formula for any number of states. V_p^s is determined from

$$V_p^s = \frac{kT}{e} \Delta Y \approx \frac{kT}{e} \cdot \frac{dY}{d\Delta p} \Delta p, \quad (2)$$

where Δp is the relative increase in hole-concentration during illumination of the specimen. After some transformations one obtains

$$\frac{dY}{d\Delta p} = \frac{\lambda(e^Y + e^{-Y} - 2) + \sum_j \beta_j \Phi_j}{(\lambda e^{-Y} - \lambda^{-1} e^Y + \lambda^{-1} - \lambda) + \sum_j \Phi_j}, \quad (11)$$

where

$$\beta_j = \begin{cases} +1 & \text{при } T_j \gg 1 \\ -\lambda^2 & \text{при } T_j \ll 1 \end{cases}, \quad (12)$$

$$\Phi_j = -\frac{2FN_j}{n_i L} [1 + e^{-(Y - \ln \lambda + \nu_j)}]^{-2} e^{-(Y - \ln \lambda + \nu_j)}$$

Card 5/8

27948 S/185/60/005/004/007/021
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Effect of the external electric...

Formulas (2) and (11) determine the dependence of the photo-emf V_p^S on the surface potential and surface states. Figures are shown with theoretical and experimental curves $V_p^S(Y)$. It is noted that the agreement between theory and experiment is good qualitatively only, whereas quantitatively there are discrepancies; these may be due to neglecting slow surface states, and to errors in determining the surface potential and surface states. Further, the drop is considered in the capacitor photo-emf which depends on Δ_p . For silicon, the time constants τ_p and τ_s are not only of different magnitude (in the absence of an external field), but their dependence on Y is of a different character too. It is likely that the formation of a p-n junction at the silicon surface hinders the relaxation of the photo-emf. The magnitude of τ_p is determined by diffusion processes and surface recombination. The surface conditions (zone buckling and surface states) have a considerable effect on the photo-emf of silicon and germanium. The surface potential Y can be determined in principle by comparing experimental and theoretical values of $V_p(U)$ and $V_p(Y)$. But such

Card 6/8

2794⁸

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D274/D306

Effect of the external electric...

a method is inaccurate owing to the difficulties of taking into account all the surface states by means of Eq. (11). Without knowing the parameters of the surface states, Y can be estimated (to an accuracy of (2-4) kT/e). In principle, it should be possible to determine Y from $\gamma_p = R_j C_j$ (j denoting the p-n junction). Such a method has the advantage of being independent of the model of surface states. The authors object to Johnson's method (Ref. 12: Op. cit) of determining Y , for two reasons. They also object to the method of determining the sign of the photocarriers by means of the capacitor photo-emf, as set forth in a number of works. There are 8 figures, 1 table and 35 references: 24 Soviet-bloc and 11 non-Soviet-bloc. The 4 most recent references to English-language publications read as follows: J. Brattain, C.G.B. Garrett, Bell. Syst. Techn. J., 35, 1019, 1956; E.O. Johnson, Phys. Rev., 111, 153, 1958; E.O. Johnson, J. Appl. Phys., 28, 1349, 1957; A. Many, J. Phys. Chem. Solids, 8, 87, 1959.

Card 7/8

Effect of the external electric...

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ASSOCIATION: Instytut fizyki AN USSR (Physics Institute AS UkrSSR)

SUBMITTED: November 5, 1959

7

Card 8/8

PRIMACHOK, N.V., gornyy inzh.

Concerning V.A. Koibash's book "Sampling and control in coal preparation plants." Ugol' 38 no.6:61-62 Je '63.

(MIRA 16:8)

1. Ukrainskiy proyektno-konstruktorskiy i nauchno-issledovatel'skiy institut po obogashcheniyu i briketirovaniyu ugley.
(Coal preparation plants--Equipment and supplies)

PRIMACHOK, N.V.; BAYBEKOV, K.A.

Preparation of representative samples. Standartizatsiia 29
no.1:57 Ja '65. (MIRA 18:4)

SHCHERBAN', A.N. [Shcherban', O.N.] (Kiyev); KAPLAN, R.A. (Kiyev);
PRIMAK, A.V. [Prymak, A.V.] (Kiyev)

Transmitting device of a frequency telemetry system of low-
power output signals. Avtomatyka 8 no.6:42-46 '61.
(MIRA 17:8)

SHCHERBAN', A.N., akademik; FURMAN, N.I., kand. tekhn. nauk; BELOGOLOVIN,
N.S.; PRIMAK, A.V.; TARASEVICH, V.N.

Transistorized contactless relay device. Avtom. i prib. no.3:
47-49 JI-S '64. (MIRA 18:3)

1. Akademiya nauk UkrSSR (for Shcherban').

FRIMAK, A.V., inzh.; FURMAN, N.I., kand. tekhn. nauk; SHCHERBAN', A.N., doktor tekhn. nauk, prof.

Controlled high-stability IC oscillator with a low threshold of response. Priborostroenie no.3:20-22 Mr '65.

(MIRA 18:4)

NAGORNYI, Ivan Sergeevich [Nahornyi, I.S.]; PRIMAK, Aleksey
Yakovlevich[Prymak, G.IA.]; ANDREYEVSKIY, V.Ya.
[Andriievs'kyi, V.IA.], dots., red.; DOBRZHANSKIY, V.M.,
[Dobrzhans'kyi, V.M.], red.; POTOTSKAYA, L.A.[Potots'ka,
L.A.], tekhn. red.

[Udder diseases in cows] Khvoroby vym'ia u koriv. Kyiv,
Derzhsil'hospvydav URSR, 1962. 90 p. (MIRA 16:5)
(Udder--Diseases)

BLEDNYKH, A.G.; PRIMAK, A.Ya.; CHEBOTAR'OV, R.S.

Application of the products of primary brown coal tar in control of the
parasites of farm animals. *Visnyk Akad. Nauk Ukr. R.S.R.* '53, No.2, 56-60.
(CA 47 no.22:12744 '53) (MLRA 6:3)

Country : USSR
Category : Microbiology. Microbes Pathogenic For Man and Animals
Bacteria. Bcccl.
Abs. Jour : Ref Zhur-Biol., No 26, 1958, No 103823
Author : Tishchenko, I. T.; Prinsak D.O.
Institut. : --
Title : The Problem of the Epidemiological Significance of
Scarlet Fever Patients Left at Home and of Secondary
Complications in Them
Orig. Pub. : Zh. mikrobiol., epidemiol. i immunobiol., 1958, No 6,
60-63.
Abstract : No abstract.

Card: 1/1

F-46

PRIMAK, D.O.

TISHCHENKO, I.T.; PRIMAK, D.O.; SHEKHET, A.L.

Results of discharging patients in scarlet fever cases on the 14-15th day of the disease. Zhur.mikrobiol.epid.i immun. no.3:29-33 Mr '54.
(MLRA 7:4)

1. Iz Kiyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach F.I.Yuvzhenko) i kliniki detskikh infektsionnykh bolezney (zaveduyushchiy - professor A.V.Cherkasov) Kiyevskogo meditsinskogo instituta na baze 5-y Kiyevskoy detskoy infektsionnoy bol'nitsy (glavnyy vrach A.L.Shekhet). (Scarlet fever)

DANILEYCHENKO, O. A.; BELYAKOVA, Ye. M.; KABANOVA, T. A.; PRIMAK, D. O.

Study of the effectiveness of antipoliomyelitis vaccination in
the city of Kiev. Mikrobiol. zhur. 24 no.1:10-15 '62.
(MIRA 15:7)

1. Kiyevskiy nauchno-issledovatel'skiy institut epidemiologii
i mikrobiologii i Kiyevskaya gorodskaya sanitarno-epidemiolo-
gicheskaya stantsiya.

(~~KIEV~~—POLIO~~MYELITIS~~—PREVENTIVE INOCULATION)

TISHCHENKO, I.T.; PRIMAK, D.O.; SILYAVKINA, A.N.; SOFIYENKO, N.Ya.;
SHEKHET, A.L.; NEVIDNIKH, A.A.

Ways for decreasing and eradicating diphtheria in Kiev. Zhur.
mikrobiol., epid.i immun. 32 no.12:106-109 D '61. (MIRA 15:11)

1. Iz Kiyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii
i 5-y detskoy klinicheskoy infektsionnoy bol'nitsy.
(KIEV--DIPHTHERIA--PREVENTION)

ACCESSION NR: AP4020319

S/0302/64/000/001/0047/0050

AUTHOR: Shcherban', A. N. (Academician); Furman, N. I. (Candidate of Technical Sciences); Primak, A. V.; Belogolovin, N. S.; Tarasevich, V. N.

TITLE: High-stability transmitter for a frequency-type telemeter with a weak-signal sensor

SOURCE: Avtomatika i priborostroyeniye, no. 1, 1964, 47-50

TOPIC TAGS: telemeter, frequency type telemeter, telemeter sensor, telemeter weak signal sensor, telemeter transmitter, frequency type telemeter transmitter

ABSTRACT: The development of two versions of a new transmitter: (a) with a magnetic d-c amplifier and (b) with a semiconductor d-c amplifier, is reported. The magnetic amplifier was invented by A. N. Shcherban', R. A. Kaplan, and A. V. Primak (Author's Certificate no. 153676). A controlled transistorized LC oscillator is used as a source for supplying a differential magnetic amplifier which, in turn, controls the oscillator frequency. The sensor frequency may vary from d-c to 1,000 cps. Laboratory tests demonstrated the frequency

Card 1/2

ACCESSION NR: AP4020319

stability at 0-60C ambient temperature and -25%+10% variation in the supply voltage. An IM-3 methane indicator was used as a sensor. However, "the use of the transmitting device in mines was hampered by the complexity of the magnetic amplifier, difficulty in its alignment, large size, and considerable inertia which caused a frequency-conversion collapse on rapidly varying signals." Hence, a semiconductor amplifier was developed instead; input impedance, 230 ohms; load impedance, 60 ohms; input current, 61 microamp; output current, 4 ma; $K_v = 65$; $K_p = 1,200$. The transmitting device is being adapted for IM-3 and AMT-2 methane monitors at the "Krasny*y metallist" Electromechanical Plant, Konotop. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: Institut teploenergetiki AN UkrSSR (Institute of Thermal-Power Engineering, AN UkrSSR)

SUBMITTED: 00

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: CG, IE

NO REF SOV: 001

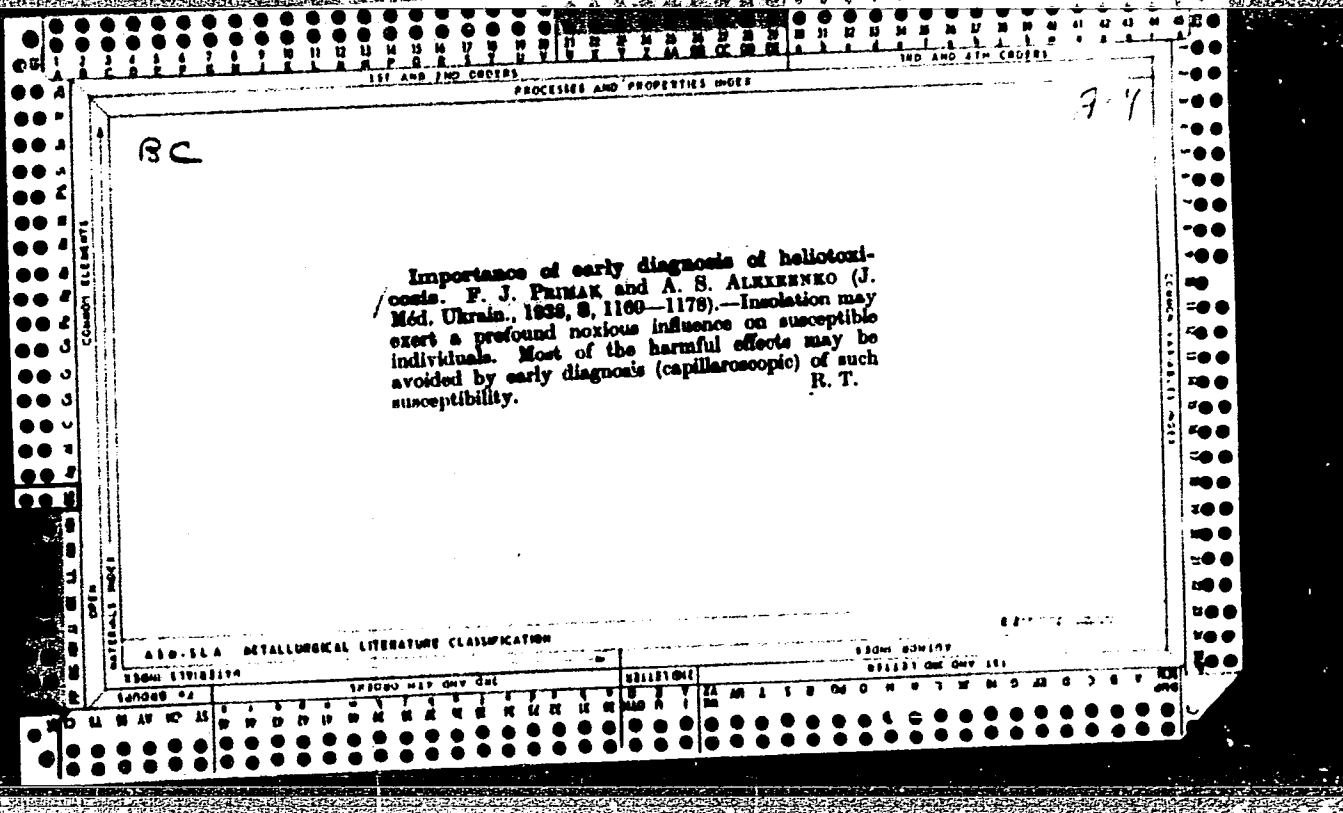
OTHER: 000

Card 2/2

FRINAK, A.N.

Some indices of the blood coagulation system in women with a normal and disturbed menstrual cycle. Akush. i gin. 49 no. 1: 105-110 Ja-F '64. (NIDA 2718)

I. kafedra akusherstva i ginekologii (zav. - prof. A.N. Frinak)
I Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova.



PROCESSES AND PROPERTIES INDEX

LIST ANY EMP CODES

TITLE AND EMP NUMBER

BC

Q-4

Therapeutic effect of antithyroid cytotoxic serum in guinea patients.
F. J. Svinnak (U. S. S. R. Ukraine, 1960, 24, 943-947).—No therapeutic effect of cytotoxic antithyroid serum on myxedema, or severe forms of chronic hypothyroidism was observed. In guinea patients with lowered and disturbed thyroid function, antithyroid cytotoxic serum increased basal metabolism and cardiac activity and improved the general condition. The therapeutic effect lasts for 4—6 months.
 M. K.

A18-51A METALLURGICAL LITERATURE CLASSIFICATION

SUBJECT INDEX

ALPHABETIC INDEX

SYMBOLIC INDEX

ALPHABETIC INDEX

PRIMAK, F.Ya., prof., doktor med.nauk

State of the cardiovascular system in wound infections and sepsis.
Medych.zhur. 17:199-215 '47. (MIRA 11:1)

1. Z klinichnogo viddilu (zav. - akad. M.D.Strazhesko) Institutu
klinichnoi fiziologii AN URSS (direktor - akad. O.O.Bogomolets')
(CARDIOVASCULAR SYSTEM--DISEASES) (WOUNDS)

Primak, F.Ya.
PRIMAK, F.Ya., prof., doktor med.nauk

Main clinical peculiarities of anergic and hypoergic forms of
wound sepsis. Medych.zhur. 17:216-225 '47. (MIRA 11:1)

1. Z viddilu funktsional'noi terapii (zav. - prof. F.Ya.Primak)
Ukrains'kogo institutu klinichnoi meditsini (direktor - akad.
M.D.Strazhesko)
(WOUNDS)

PRIMAK, F.Ya., prof.

State of capillary circulation, arterial and venous pressure, and
oxygen consumption in hypertension. Medych.zhur. 19 no.1:79-89
'49. (MIRA 10:12)

1. Z klinichnogo viddilu Institutu klinichnoi fiziologii im. akad.
O.O.Bogomol'taya AN URSS (zav. viddilu - akad. M.D.Strazhesko).
(HYPERTENSION) (BLOOD PRESSURE)

PRIMAK, F.Ya., prof.

Chronic pulmonary insufficiency in hypertension. Medych.zhur. 21
no.6:14-19 '51. (MIRA 11:1)

1. Z fakul'tetskoj terapeutichnoi kliniki (zav. klinikoyu - akad.
M.D.Strazhesko) Kyivs'kogo medichnogo institutu (direktor - dots.
T.Ya.Kalinichenko)
(HYPERTENSION) (RESPIRATION)

PRIMAK, F.Ya.

Significance of pulmonary and coronary insufficiency in hypertension.
Klin.med., Moskva 29 no.2:31-40 Feb 51. (CLML 20:7)

1. Of the Ukrainian Institute of Clinical Medicine (Director--
Academician N.D. Strashesko, Hero of Socialist Labor), Kiev.

PRIMAK, F. Ya.

ALEKSEYENKO, I.P., dotsent, redaktor; SHAMRAY, Ye.F., professor, redaktor; CHAYKA, Ye.I., professor, redaktor; MAN'KOVSKIY, B.N., professor, redaktor; CHERKES, A.I., professor, redaktor; PRIMAK, F.Ye., professor, redaktor; LIKHTENSHTEYN, Ye.I., dotsent, redaktor; FROL'KIS, V.V., dotsent, redaktor; GLUZMAN, F.A., redaktor; LOKHMATYY, Ye.G., tekhnicheskij redaktor

[Pathology of the cardiovascular system in clinical treatment and experiment] Patologiya serdechno-sosudistoi sistemy v kliniki i eksperimente. Kiev, Gos. med. izd-vo USSR, 1956. 241 p. (MLRA 10:2)

1. Kiyev, Meditsinskiy institut imeni A.A.Bogomol'tsa. 2. Deystvitel'-nyy chlen Akademii meditsinskikh nauk SSSR (for Man'kovskiy) 3. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Cherkas)
(CARDIOVASCULAR SYSTEM--DISEASES)

STRAZHESKO, Nikolay Dmitriyevich; AYZENBERG, A.A., professor, redaktor;
YEVTUKHOVA, M.L., dotsent, redaktor; KAVETSKIY, P.Ye., professor,
redaktor; LIOZINA, Ye.M., dotsent, redaktor; MIKHNEV, A.L.,
professor, otvetstvennyy redaktor; PRIMAK, F.Ya., professor,
redaktor; SAYKOVA, V.V., dotsent, redaktor; CHEBOTAROV, D.F.,
professor, redaktor; YANOVSKIY, D.N., professor, redaktor;
SHEZHIN, M.I., redaktor isdatel'stva; RAKHLINA, N.P., tekhnicheskij
redaktor.

[Selected works] Izbrannye trudy. Kiev, Izd-vo Akademii nauk
USSR. Vol.1. [Problems in the pathophysiology of the circulation
of the blood] Problemy patofiziologii krovoobrashchenia. 1955. 398 p.
Vol.2. [Problems of sepsis, endocarditis, rheumatism, physiology
and pathology of the organs of digestion] Problema sepsisa, endokardita,
revmatizma, fiziologiya i patologiya organov pishchevarenia. 1956.
365 p. (MIRA 9:7)

1. Deyatvitel'nyy chlen AN USSR (for Kavetskiy)
(PHYSIOLOGY, PATHOLOGICAL)

PRIMAK, F. Ya.
PRIMAK, F. Ya., prof.

Clinical aspects of vascular asthenia in diseases of the digestive
organs. Vrach.delo no.12:1275-1278 D '57. (MIRA 11:2)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. F. Ya.
Primak) Kiyevskogo meditsinskogo instituta.
(DIGESTIVE ORGANS--DISEASES)
(BLOOD VESSELS--DISEASES)

EXCERPTA MEDICA Sec 6 Vol 13/3 Internal Med. Mar 59

1581. ACUTE TOXIC SEROUS MYOCARDITIDES AND THEIR SIGNIFICANCE IN THE CLINIC OF INTERNAL DISEASES (Russian text) - Primak F. Ya. SOVR. MED. 1958, 22/4 (59-64) Tables 2

The clinical picture of acute toxic serous myocarditis is given and the fact is stressed that in the majority of cases a discrepancy is found between the patient's subjective state and the clinical findings. Generally acute toxic serous myocarditis may be present in focal infection (especially when it became more active), in intoxications, etc. Wound infection with general septic reaction and wound sepsis may be accompanied by acute toxic serous myocarditis. Acute toxic serous myocarditis was observed in 126 patients; in 8 patients the cause was unknown, in 70 patients it was due to recurrent tonsillitis, in 35 patients to hepatocholecystitis and in 13 patients to polyserositis. Relapses of myocarditis may initiate a chronic myocarditis.

Měšan - Prague (XVIII, 6)

PRIMAK, F.Ya., prof.

Role of serous myocarditis in clinical aspects of diseases of the myocardium [with summary in English]. Vrach. delo no.1:9-14 '59.
(MIRA 12:3)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. F.Ya. Primak) Kiyevskogo meditsinskogo instituta i I-II terapevticheskiye otdeleniya bol'nitsy imeni Oktyabr'skoy revolyutsii.
(HEART---DISEASES)

FRIDAK, F.Ya., prof., doc.; MD, Biol., med.

[Cardiovascular insufficiency and hypoxia in internal pathology] Serdchno-sosudistaya nepodostannost' i gipoksi-
dozy vo vnutrennei patologii. Kiev, Gosmed. izd-vo USSR,
1963. 179 p. (MIRA 18-1)

1. Kiev. bespunny in 1964.

ERATUS', V.D., prof. red.; ZAYK, N.I., prof. red.; PANTAL, I.I.,
L.B., prof., red.; PANKO, P.Ya., prof. red.; SH...
M.S., prof. red.; P... Ya.P., prof. red.; ...
Ye.I., prof. red.; CHERNYI HEK... L.V., red.; ...
P.Ya., red.

[Physiology and pathology of connective tissues] Fizioloz-
giia i patologiia soedinitel'noi tkani. Kiev, Zdorov'ia,
1964. 251 p. (MIRA 18:1)

1. Kiev. Medychnyy instytut.

PRIMAK, F.Ya., prof.

Respiratory function of the blood and hypoxic states. Vrach.
delo no.12:3-7 D '63. (MIRA 17:2)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof.
F.Ya. Primak) Kiyevskogo meditsinskogo instituta.

PRIMAK, F. Ya., prof.

Senility, hypoxidosis, and the lymphatic system. Vrach. delo
no.6:57-62 Je '62. (MIRA 15:7)

1. Kafedra propedevtiki vnutrennikh bolezney Kiyevskogo medi-
tsinskogo instituta.

(AGING) (ANOXEMIA) (LYMPHATICS)

PRIMAK, F.Ya., prof.

Problem of general and particular factors in clinical pathology.
Nek.filos.vop.med.i est. no.2:319-328 '60. (MIRA 15:7)

1. Kafedra propedevtiki vnutrennikh bolezney Kiyevskogo meditsinskogo
instituta imeni Bogomol'tsa.
(PATHOLOGY) (MEDICINE, INTERNAL)

PRIMAK, F. Ya., prof. (Kiyev)

Feofil Gavrilovich IANOVSKII as a teacher. Vrach. delo no, 9:143-145
S '61. (MIRA 14:12)
(IANOVSKII, FEOFIL GAVRILOVICH, 1860-1928)

PRIMAK, F.Ya., prof.

Role of the October Revolution Hospital in Kiev in the development
of Russian angiocardiology. Vrach. delo no. 3:144-146 Mr '61.

(MIRA 14:4)

1. Kafedra propedevtiki vnutrennikh bolezney Kiyevskogo meditsinskogo
instituta na baze bol'nitsy imeni Oktyabr'skoy revolyutsii.

(CARDIOVASCULAR SYSTEM—DISEASES)