ACCESSION NO: AP4013028

particles from a polonium source with a flux of $3 \cdot 10^8/cm^2$ had no effect on the intensity. No change was noted after reducing the samples to a powder. From these results it is concluded that the fluorescence of SiC is not related to superficial lattice defects. Orig. art. has: 1 diagram.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AN UzSSR)

SUBMITTED: 02Apr63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: MA, PH NO REF SOV: 002 OTHER: 001

Card 2/2

ZYTKOV, V.I.; RUBINOVA, E.

Reflection from germanium and silicon in the visible region of the spectrum. Izv.AN Uz.SSR.Ser.fiz.-mat.nauk. no.3: 35-38 '59. (MIRA 13:2)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Germanium--Spectra) (Silicon--Spectra)

S/166/60/000/02/10/013

AUTHORS: Zvyagin, V.I., and Blinkov, D.I.,
Blinkova, G.B., and Lobanov, Ye.M.

TITLE: Negative Photodiode Effect in the Prebreakdown Region of Germanium pn-Junctions

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, No.2, pp.84-88

TEXT: The negative photodiode effect consists in the diminution of the back current for a lighting of the crystal. During the switching in of the light there appears a sudden enlargement of the current intensity, whereafter it becomes slowly weaker and reaches a value smaller than the value measured in the darkness. If now the light is switched in again, then there appears a sudden decrease and a following slow increase of the current intensity. For the first time V.I.Murygin (Ref.5) has observed this effect at selenium cells. The authors investigate the same effect at specially produced germanium diodes D - 7 where the crystal surface was not varnished and which were radiated with gamma rays of Co^{60}. Beside of the above mentioned properties of the effect the authors proved a temperature dependence. The authors try to

Card 1/2

Negative Photodiode Effect in the Prebreakdown Region of Germanium pn-Junctions

S/166/60/000/02/10/013

explain the effect, but the sudden variation of the current intensity is not explained.
There are 9 references: 4 Soviet and 5 American.

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear Physics AS Uz SSR)

SUBMITTED: January 22, 1960

Card 2/2

~~24(4),18(7)~~ 24.7700 66532

AUTHORS: Zvyagin,V.I., and Rubinova,E. SOV/166-59-3-5/11

TITLE: Reflection from Germanium and Silicon in the Visual Part of the Spectrum

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 3, pp 35-38 (USSR)

ABSTRACT: The authors compare the electrical and optical properties of the surfaces of germanium and silicon. With different methods the authors measure the reflection coefficients of germanium, silicon, and a germanium-silicon alloy. In the case of silicon the measurements are carried out for different treatments of the surface (polished, cut, etched). In general the reflection coefficient at first decreases with an increasing wave length and then it becomes constant as far as in the infrared domain. A monotone dependence of the coefficient on the conductivity could not be observed. The treatment of the surface changes the coefficient by ca. 20%. A qualitative foundation of the observed appearances is not given.
There are 4 references, 2 of which are Soviet, and 2 American.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Uz SSR (Physical-Technical Institute,AS Uz SSR)

SUBMITTED: February 23, 1959

Card 1/1

KIST, A.A.; ZVYAGINA, L.S.; LOBANOV, Ye.M.; SVIRIDOVA, A.I.; MOSKOVTSEVA, G.
ZVYAGIN, V.I.

Activation analysis of copper and manganese in biological objects.
Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 8 no.2:77-80 '64. (MIRA 17:9)

1. Institut yadernoy fiziki AN UzSSR.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

ZVYAGIN, V.I.; [illegible]; ZVYAGIN, V.I.

Nondestructive activation analysis of biological specimens. Izv. AN Uz. SSR Ser. fiz.-mat. nauk 8 no.3:49-55 '64. (MIRA 17:10)

1. Institut yadernoy fiziki AN UzSSR.

NOSYREV, B.A., dotsent; ZVYAGIN, V.S., dotsent

Results of studying V-300-2K type compressors. Izv. vys. uch. zav.; gor. zhur. 5 no.6:174-177 '62. (MIRA 15:9)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.
(Air compressors)

ZVYAGIN, V.S., dotsent

Type of seal for sand pumps. Izv. vys. ucheb. zav.; gor. zhur. 6 no.4:101-103 '63. (MIRA 16:7)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.
(Mine pumps--Equipment and supplies)

ZVYAGINA, A. P.

Temperature dependence of actual characteristic temperatures in lattices of the CsCl type. Fiz. met. i metalloved. 14 no.4:636-637 O '62. (MIRA 15:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

(X-ray crystallography)
(Metals, Effect of temperature on)

ZVYAGINA, O.A.

Materials on the development of lizard fishes (Pisces, Synodontidae). Trudy Inst. okean. 80:146-161 '65.

Materials on the development of Therapon theraps Cuv. et Val. (Pisces, Theraponidae). Ibid.:162-166

(MIRA 18:10)

5.4700
24.7600

S/181/60/002/01/25/035
B008/B014

AUTHORS: Zvyagina, A. P., Iveronova, V. I.

TITLE: The Characteristic Temperature and the Spectrum of Thermal Lattice Vibrations

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 118-121

TEXT: As a model of a solid solution the authors took a simple cubic lattice consisting of two atoms with the masses m_1 and m_2 at a concentration of 50 at%. In an absolutely disordered state the solution was thought of as a monatomic cubic lattice with an effective atomic mass $m = \frac{m_1 + m_2}{2}$. The model of an ordered solution represents an NaCl-type lattice. The spectra indicated in Ref. 5 for lattices of this type were utilized for the purpose, and $\bar{u}^2$ (thermal lattice vibration frequency) was calculated for the disordered (Fig. 1) and ordered states (Fig. 2)

The Characteristic Temperature and the Spectrum of Thermal Lattice Vibrations

at a mass ratio of $\frac{m_1}{m_2} = 3$. A quantitative comparison between theory and experiment was impossible since the solid solution that was experimentally studied differed from the calculated model in its lattice and stoichiometric composition. It was, however, established that the characteristic temperature θ_r, which was measured by the X-ray technique via $\bar{u}^2$, cannot be regarded as an energy index of the intermolecular interaction in the solid solution. $\bar{u}^2$ depends not only on the cutoff frequency (binding energy) but also on the shape of the thermal vibration spectrum of the lattice. The latter is determined by such factors as lattice type, distribution of atoms in the lattice (degree of orientation), mass ratio of the components, and difference in binding energy between the individual atomic pairs. A close relationship between the change in θ_r and the change in the binding energy can be established only in the simplest cases if the lattices have the same spectra, i.e., if the lattice type, the degree of orientation etc. do not change with varying concentration

The Characteristic Temperature and the Spectrum of Thermal Lattice Vibrations

S/181/60/002/01/25/035
B008/B014

and thermal treatment of the solid solutions. Similar considerations hold for the characteristic temperature which was determined from the dependence of the heat capacity upon the temperature. This is why the heat capacity depends on the entire vibration spectrum, and not only on its fundamental frequency (Ref. 2). There are 2 figures and 9 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: May 4, 1959

Card 3/3

ZVYAGINA, E.S.; KIST, A.A.; [illegible]; ZVYAGIN, V.I.

Nondestructive activation analysis of biological specimens. Izv. AN Uz. SSR Ser. fiz.-mat. nauk 8 no.3:49-55 '64. (MIRA 17:10)

1. Institut yadernoy fiziki AN UzSSR.

KIST, A.A.; ZVYAGINA, L.S.; LOBANOV, Ye.M.; MOSKOVTSEVA, G.A.

Determination of halogens in biological materials by the activation method. Zhur. anal. khim. 20 no.1:112-117 '65. (MIRA 18:3)

1. Institut yadernoy fiziki AN UzSSR, Tashkent.

AUTHOR: Lyakhov, G. M., Candidate of Technical Sciences 30-58-4-23/44

TITLE: Improving the Exploitation System in Very Thick Coal Beds (Sovershenstvovaniye sistem razrabotki moshchnykh ugol'nykh plastov). Conference at Prokop'yevsk (Soveshchaniye v Prokop'yevske)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 4, pp. 105-107 (USSR)

ABSTRACT: Many scientific research and planning organizations as well as individual specialists deal with the problem of improving of existing and the invention of new effective conveying systems. The scientific-technical conference called jointly by the Mining Institute of the AS USSR and other organizations to Prokop'yevsk on January 20-22 served for the discussion of results achieved in this field. Prokop'yevsk is the center of the Prokop'yevsk-Kiselevskiy region where the mightiest deposits of rich coal layers are situated and where most of the experience in its conveying was collected. The representatives at this

Card 1/4

conference were: representatives of the academic and branch-scientific research institutes, mining institutes and the Moscow faculties, as well as those from Leningrad, Tomsk, Sverdlovsk, Kemerovo, Stalinsk, Tbilissi and others, as well as the leading managers of the coal trusts. G. A. Bystrov, director of the Kuzbassugol' Kombinat opened the conference. Reports were delivered by:

1) A. P. Sudoplatov (Mining Institute of the AS USSR) on the principal directions for the perfection of existing as well as for the invention of new conveying systems.
2) V. F. Parusimov, on problems connected with the conveying of mighty coal layers.
3) P. Z. Zwyagin (All-Union Coal Institute) on the perfection of the conveying systems.
4) A. D. Panov, on a number of variants of conveying systems suggested by the All-Union Coal Institute.
5) S. I. Dmitriyev, on the most important research works

of the Coal Institute in this field.

6) A. S. Litvinenko (Chief Engineer of the Stalin Mine) on the conveying systems used in this mine.

7) A. A. Surnachev (Chief Engineer of the Prokop'yevsk--ugol' trust) on the conveying systems used there.

8) A. A. Mogilevskiy (Chief Engineer of the State Institute for the Design of Coal Mining Machinery) on the directions of the work of this organization .

9) A. A. Borisov (Leningrad Mining Institute) on the application of conveying systems.

1o) N. V. Marevich (Mining Institute of the Siberian V. T. Dzyubenko Branch of the AS USSR) on their experience in the use of shield conveying systems.

11) K. P. Voronov (Director of the Kuznetsk Mining District) criticized the backward

conveying systems from the viewpoint of security and loss of manpower.

12) N. V. Mel'nikov on the usefulness of applying a
B. A. Simkin conveying system.

In the decision of this conference it was mentioned that the introduction of the suggested measures could bring about an increase of the capacity of coal conveying of 1,5 times.

1. Coal—Production 2. Conveyors—Applications
3. Industrial production—USSR

ZVYAGIN, P.Z., kand. tekhn. nauk; MINEVICH, A.S., kand. ekon. nauk.

Some potentialities for increasing labor productivity and reducing coal costs in mines of the Rostovugol' Combine. Ugol' 34 no.1:16-20 Ja '59. (MIRA 12:1)
(Donets Basin--Mine management) (Coal--Costs)

GAMKAVI, S.M., kand.tekhn.nauk; ZVYAGIN, P.Z., kand.tekhn.nauk

Effect of their concentration on the labor requirements of underground mining operations in the Donets Basin. Ugol' Ukr. 4 no. 11:38-39 N '60. (MIRA 13:12)

1. Institut gornogo dela AN SSSR.
(Donets Basin--Coal mines and mining)

BAGASHEV, M.K., otvetstvennyy red.; BUCHNEV, V.K., otvetstvennyy red.; ZVYAGIN, P.Z., otvetstvennyy red.; SOSNOV, V.D., otvetstvennyy red.; ASTAKHOV, A.V., red.izdatel'stva; NADEINSKAYA, A.A., tekhn.red.

[Soviet coal industry; on the fortieth anniversary of the Great October Socialist Revolution] Ugol'naia promyshlennost' SSSR; k sorokaletiiu Velikoi Oktiabr'skoi sotsialisticheskoi revoliutsii. [Moskva] Gos.nauchno-tekhn.izd-vo lit-ry po ugol'noi promyshl., 1957. 635 p. (MIRA 10:12)

(Coal mines and mining)

ZVYAGIN, P.Z., kand.tekhn.nauk; LIVSHITS, I.I., kand.tekhn.nauk;
SUDOPLATOV, A.P., doktor tekhn.nauk.

Developing underground coal mining techniques in the U.S.S.R.
Ugol' 32 no.11:31-40 N '57. (MIRA 10:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut (for Zvyagin, Livshits). 2. Institut gornogo dela AN SSSR (for Sudoplatov).
(Coal mines and mining)

ZVYAGIN, P.Z., kand.tekhn.nauk.dots.

Economic grounds for yearly production norms and life of coal mines. Ugol' 32 no.12:1-9 D '57. (MIRA 11:1)
(Coal mines and mining)

ZVYAGIN, P.Z. (Moskva)

Considering the index of comparative efficiency of capital investments in determining the annual productivity and the life of coal mines. Izv. AN. SSSR. Otd. tekh. nauk. Met. i topl. no. 3:170-182 My-Je '61. (MIRA 14:7)
(Coal mines and mining--Finance)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

[illegible] kandidat tekhnicheskikh nauk; [illegible] kandidat tekhnicheskikh nauk.

Economic evaluation of coal losses. Ugol' 32 no.6:8-13 Je '57. (MIRA 10:7)

(Coal mines and mining)

ZVYAGIN, P.Z.

SAPITSKIY, Konstantin Fedorovich, kandidat tekhnicheskikh nauk; ZVYAGIN, P.Z., otvetstvennyy redaktor; SHUSHKOVSKAYA, Ye.L., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhnicheskiy redaktor

[Determining the most efficient length for longwalls used in the Donets Basin mine combine] Opredelenie ratsional'noi dliny lavy pri vyemke kombainom "Donbass." Moskva, Ugletekhizdat, 1957. 75 p. (MIRA 10:7)

(Donets Basin--Coal mines and mining)

ZVYAGIN, P.Z., otvetstvennyy redaktor; FEYTEL'MAN, N.G., redaktor izdatel'stva; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Labor consuming operations in the principal coal basins of the U.S.S.R.] Trudoemkost' rabot na shakhtakh osnovnykh ugol'nykh basseinov SSSR. Moskva, Ugletekhizdat, 1956. 326 p. (MLRA 10:1)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Coal mines and mining)

SKOGOREV, Viktor Alekseyevich; ZVYAGIN, Pavel Zakharovich, retsenzent; ASTAKHOV, Aleksandr Semenovich, otv. red.; GOLUBYATNIKOVA, G.S., red.izd-va; BOLDYREVA, Z.A., tekhn. red.

[Overall labor organization in stoping and development faces in coal mines] Kompleksnaia organizatsiia truda v ochistnykh i podgotovitel'nykh zaboiakh ugol'nykh shakht. Moskva, Izd-vo "Nedra," 1964. 135 p. (MIRA 17:3)

ZVYAGIN, R.A.

Conveyer device for dyring the armatures of G-21 generators. (MLRA 9:10)
Avt. i trakt. prom. no.7:41-43 Jl '56.

1. Nauchno-issledovatel'skiy institut avtopriborov.
(Automobiles--Electric equipment)

ZVYAGIN, S. B.

120-5-3/35

AUTHORS: Mironov, Ye.S., Nemenov, L.M., Zvyagin, S.B., and Meshcherov, R.A.

TITLE: An Application of a Ribbon Lens to the Focussing of the External Beam of a Cyclotron (Primeneniye lentochnoy linzy dlya fokusirovki vypushchennogo puchka tsiklotrona)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.5, pp. 18 - 21 (USSR)

ABSTRACT: An electrostatic focussing device for the external beam of the 1.5 m cyclotron (Ref.1) is described. The system is shown in Fig.1 and consists of a system of molybdenum ribbons. The system focusses the beam in the vertical direction focussing in the perpendicular direction being carried out by a magnet (not described in this paper). Fig. 7 indicates the performance of the focussing device. The measurements obtained using 12 Mev protons. The ribbons lens increases the current density by a factor of 10. Particle losses did not exceed 10%. The current density at the target was 15 $\mu A/cm^2$. V.I. Bernashevskiy, Ye.A. Minin and Yu.M. Pustovoyt assisted in this work. There are 7 diagrams and 1 Slavic reference.

SUBMITTED: December 21, 1956.

AVAILABLE: Library of Congress

Card1/1

BOGOMOLOV, V.D. [Bohomolov, V.D.]; KAZAKOV, N.I.; LINOV, G.Ye. [Linov, H.E.]; FADEYEV, I.F. [Fadieiev, I.F.]; VOINOV, I.P.; ZVYAGIN, S.D. [Zv'iahin, S.D.]; CHUDNOVSKIY, P.I. [Chudnovs'kyi, P.I.]; ROMANCHENKO, V.M.

In the economic councils of the Ukraine. Leh.prom. no.3:84-87 Jl-S '63. (MIRA 16:11)

1. TSentral'noye byuro tekhnicheskoy informatsii Moskovskogo gorodskogo soveta narodnogo khozyaystva (for Bogomolov, Kazakov, Linov, Fadeyev).

ZVYAGIN, S. G.

ZVYAGIN, S. G. - "The Variability of Tick Encephalitis Virus During Its Cultivation in the Tissue of a Developing Malignant Tumor (Crocker's Sarcoma)." Sub 27 Nov 52, Acad Med Sci USSR. (Dissertation for the Degree of Candidate in Medical Sciences).

SO: Vechernaya Moskva January-December 1952

ZVYAGIN, Solomon Davydovich; IVANOV, B.N., inzh., red.; VASIL'YEV, Yu.A., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Electric hy hygrometer for measuring the moisture content of liquid, loose and solid materials and new capacitor pickups] Elektricheskii vlagomer dlia izmereniia vlazhnosti zhidkikh, sypuchikh i tverdykh veshchestv i emkostnye datchiki novogo tipa. Leningrad, 1962. 28 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Pribory i elementy avtomatiki, no.3) (MIRA 15:8)
(Moisture--Measurement) (Electronic instruments)

ZVYAGIN, V.

Solar and atomic current. Znan.sila 30 no.11:1-5 N '55. (MLRA 9:1)
(Solar engines) (Atomic power)

ZVYAGIN, V.

First steps. Radio no.11:13 N '58. (MIRA 11:12)

1. Nachal'nik samodeyatel'nogo radiokluba, Yalta, Krym.
(Yalta--Radio clubs)

AUTHOR: Zvyagin, V., Chief SOV/107-58-11-11/40

TITLE: First Steps (Pervyye shagi)

PERIODICAL: Radio, 1958, Nr 11, p 13 (USSR)

ABSTRACT: The article describes the formation of a radio club in Yalta.

Card 1/1

24(3)

AUTHOR: Zvyagin, V.I., and Lyutovich, A.S.

SOV/166-59-1-3/11

TITLE: On the Measurement of the Capacity of a Semiconductor on the Boundary With an Electrolyte (Ob izmerenii yemkosti poluprovodnika na granitse s elektrolitom)

PERIODICAL: Izvestiya Akademii nauk, Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 1, pp 25-30 (USSR)

ABSTRACT: The paper starts with the statement that the agreement (obtained by Bohnenkampf and Engell [Ref 1]) between the calculated differential capacity of the limit phase germanium - electrolyte and the capacity measured experimentally is only a seeming one, since it bases on an incorrect interpretation of the process. By etching of the surface of the germanium or silicon there appears a thin oxide film while in the preceding layer there is either an electron diminution or an enlargement of the holes. With regard to these phenomena the authors propose methods for the measurement of the capacity of a semiconductor-electrolyte-system. As an equivalent scheme the authors recommend a combination of paralleled RC-chains. A measuring device basing on this principle is described shortly. The measurements carried out with this device are represented graphically. There result

Card 1/2

Sensitivity of silicon photoelements to X rays. Dokl.AN Uz.SSR no.6:11-12 '59. (MIRA 12:9)

1. Fiziko-tekhnicheskiy institut AN UzSSR i Institut yadernoy fiziki AN UzSSR. Predstavleno akademikom AN UzSSR S.V.Starodubtsevym.

(Photoelectric cells) (X rays)

LOBANOV, Yu.M.; SVIAGIN, V.I.; KIST, A.A.; ZVEREV, B.P.; SVIRIDOVA, A.I.; MOSKOVTSEVA, G.A.

Determination of manganese in silicon by the radioactivation method. Zhur. anal. khim. 18 no.11:1349-1355 N '63. (MIRA 17:1)

1. Institut yadernoy fiziki AN UzSSR, Tashkent.

ZVYAGIN, V.I.; LYUTOVICH, A.S.

Measuring the capacitance of semiconductors on the boundary with the electrolyte. Izv.AN Uz.SSR.Ser.fiz.-mat.nauk no.1: 25-30 '59. (MIRA 12:5)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Semiconductors--Measurement)

ZVYAGIN, V. I., CAND PHYS-MATH SCI, "EXCESS CURRENT AND PHOTOCURRENT OF GERMANIUM DIODES subjected TO GAMMA-RAY RADIATION." TASHKENT, 1960. (ACAD SCI UZSSR. INST NUCLEAR PHYS). (KL, 2-61, 199).

ZVIAGIN, V.I.; BLINKOV, D.I.; BLINKOVA, G.B.; LOBANOV, Ye.M.

Negative phtodiode effect in the prebreakdown region of germanium electron-hole transitions. Izv.AN Uz.SSR. Ser.fiz.-mat.nauk no.2: 84-88 '60. (MIRA 13:10)

1. Institut yadernoy fiziki AN UzSSR.
(Germanium diodes)

30148
S/608/61/000/000/003/007
B143/B102

9.4160

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M., Rubinova, E., Blinkov, D. I.

TITLE: Reflection coefficient of visible light reflected from germanium

SOURCE: Nekotoriye voprosy prikladnoy fiziki, 1961, 51 - 54

TEXT: The light reflection coefficient R is more dependent on the state of the surface than is the rest of physical parameters. Since R and the absorption coefficient depend on the energy structure of the crystal surface, measuring these coefficients permits to infer the energy structure of the germanium surface. Chemical polish of germanium results in the formation of an oxide coating on the crystal surface. R is not changed by etching crystals with different crystallographic directions. However, the same etching agent lays bare quite definite faces, independent of the orientation of the crystal. This means that either the ratio of the area of faces remains unaltered, or R is not dependent on the type of crystallographic faces. To decide for one or the other possibility, R_o was measured for germanium treated with etching agents of this type.

Card 1/3

30148
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B143/B102

Reflection coefficient of...

Measurements showed that differently worked crystals furnished values for R differing by 20 - 30%. This implies that R is not dependent on the type of crystallographic faces but on the composition and structure of the 10 - 50 Å thick oxide coating. Some etching agents cause R to be changed when the crystal is rotated around an axis perpendicular to the surface investigated, passing through a number of maxima and minima. If the crystals are worked with other etching agents, R is independent of the orientation of the crystal. In this case, the correct value of R is obtained. Differences in the values of R, occurring as a result of treating the crystal with the same etching agent, are related to the structure of the monoxide film which is gradually converted into dioxide in the atmosphere. Irradiated with shortwave light, this film generates an anomalously high negative photocurrent in the diodes due to the shortwave light being absorbed by the film. Gamma irradiation of germanium in moist atmosphere reduces the value of R. Apparently, irradiation of the germanium surface causes the formation of a film resembling the monoxide film. Indicative of this is the existence of the anomalously high negative photocurrent. Gamma irradiation of germanium, protected from moisture, has no effect on R. There are 1 figure and 5 references: 2

Card 2/3

30148
S/608/61/000/000/003/007
B143/B102

Reflection coefficient of...

Soviet and 3 non-Soviet. The three references to English-language publications read as follows: Hancock R., Edelman S. Rev. Scient. Instr., 27, 1082, 1956; Mc. Kelvey I., Longini R. J. Appl. Phys., 25, 5, 634, 1954; Ellis S. G. Journ. Appl. Phys., 28, No 11, 1262, 1957.

Card 3/3

24.3420

S/058/62/000/003/050/092
A061/A101

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M., Rubinova, E., Blinkov, D. I.

TITLE: Coefficient of visible light reflection from germanium

PERIODICAL: Referativnyy zhurnal, Fizika, no.3, 1962, 1, abstract 3G4 (Sb. "Nekotoryye vopr. prikl. fiz.", Tashkent, AN UzSSR, 1961, 51-54)

TEXT: Reproducibility and divergence of the reflection coefficient R of silicon and germanium crystals treated with standard pickling agents were examined on an СФ-2М(SF-2M) spectrophotometer. It was established that "grinding" and "polishing" pickling agents modify R in individual intervals of the visible spectrum region by more than 20 - 30%. These changes are explained by the composition and structure of the oxide layer. For some pickling agents and for crystal rotation about the axis perpendicular to the surface considered, the curve $R = f(\lambda)$ was found to have a series of maxima and minima, the number of which depends on crystal orientation. Curves $R = f(\lambda)$ were measured for germanium surfaces that were ground and pickled by agents used in the production of H_2O_2 and NaOH semiconductor instruments, following irradiation by Co^{60} γ-rays. An attempt is made to explain the results obtained.

[Abstracter's note: Complete translation]

G. Gorodinskiy

Card 1/1

S/194/62/000/002/048/096
D201/D301

9,4340

AUTHORS: Lobanov, Ye. M., Zvyagin, V. I., Blinkov, D. I. and Blinkova, G. B.

TITLE: The effect of gamma-rays on germanium diodes

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 2, 1962, abstract 2-4-12ts (V sb. Nekotoryye vopr. prikl. fiz., Tashkent, AN UzSSR, 1961, 55-57)

TEXT: An investigation is made into the mechanism of a negative photo-current generation in germanium type D semiconductor diodes under the effect of γ-rays. It is shown that the generation of this photo-current is related to the absorption of quanta in the oxide layer not in the surface layer of germanium. The experimentally determined dependence of the reverse photo-current on the wavelength is given. The empirical formula for the photo-current, which describes the transient process after the suppression of light, has the form

The effect of gamma-rays ...

$$I(t) = I_{\infty} + A_1 \ln (1 - c_1 e^{-\alpha_1 t})$$

where I_{∞} - the steady state value of dark current; A_1, c_1, α_1 - constants, depending on voltage and temperature. 3 references. [Abstracter's note: Complete translation.]

36722
S/194/62/000/002/047/096
D201/D301

9,4340

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M. and Rzhanov, A. V.

TITLE: Differential resistance of germanium diodes

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 2, 1962, abstract 2-4-12zh (V sb. Nekotoryye vopr. prikl. fiz. Tashkent, AN UzSSR, 1961, 58-63)

TEXT: A study of the differential resistance R_d of germanium diodes. The diodes were prepared by the method of fusing indium into an electron conducting germanium. The resistivity of germanium was varied from 3.5 to 35 ohm/cm. R_d was evaluated from the measurements by a valve millivoltmeter with small a.c. voltage ($V < \frac{kT}{e}$) superimposed on the reverse d.c. bias and from the voltage drop across a calibrated resistor connected in series with the diode. The results of investigations, at a frequency of 70 c/s, were obtained by statistical processing of a large quantity of experimental material. Ty-

Card 1/ 3

Differential resistance of, ...

pical graphs of the dependence of R_d on $\sqrt{V}$ at different temperatures are given, together with $\log_e R_d$ on the reciprocal of temperature $(\frac{1000}{T^oK})$ for various voltages and a table of values of activation energy calculated from graphs of semiconductor diodes made of material with different specific resistances. Graphs of dependence of $\log_e \tau_p$ (τ_p - lifetime of holes) on reciprocal of temperature are also given for typical diodes and diodes made of germanium with a lower specific resistivity. The graphs show the values of activation energy ΔE's at low temperatures and those for temperatures higher than 40^oC ($\Delta E''$). It is shown that the whole set of experimental data may be successfully described by the formula of K. V. Tolpygo and E. I. Rashba (see ZhT Fiz. 1956, XXVI, 7), if one assumes in it $\tau_p = \tau_o e^{\frac{\Delta E}{kT}}$, provided $\Delta E = -\Delta E'$ at low and $\Delta E = \Delta E'$ at high temperatures. It follows from this formula that R_d increases with de-

Differential resistance of ...

creasing specific resistivity. As an example R_d is given in the form of graphs for diodes with different specific resistivities at V = 30 V. 1 reference. [Abstracter's note: Complete translation.]

Card 3/3

ILYUKHOV, Ye.N.; ZVYAGIN, V.I.; BARTNITSKIY, I.N.

Effect of gamma radiation on a germanium oxide film. Izv.AN Uz. SSR.Ser.fiz.-mat.nauk 6 no.1:88-90 '62. (MIRA 15:4)

1. Akademiya nauk UzSSR.
(Semiconductors--Effect of radiation on) (Gamma rays)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

a) the density of [illegible] based on the effect of the α-particle [illegible] section in silicon. The sensitivity of this method is [illegible] rule.

[illegible] Nuclear Physics Institute, AN

[illegible] HP [illegible]

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

ACCESSION NR: AT4046914

9.4340 (also 1143,1150)

30149
S/608/61/000/000/004/007
B143/B102

AUTHORS: Lobanov, Ye. M., Zvyagin, V. I., Blinkov, D. I., Blinkova, G. B.

TITLE: Effect of gamma rays on germanium diodes

SOURCE: Nekotoriye voprosy prikladnoy fiziki, 1961, 55 - 57

TEXT: Gamma irradiation causes a negative photoeffect in germanium diodes. The authors discovered this effect in Д-7 (D-7) diodes, and reported on it earlier (Izv. AN UzSSR, ser. fiz. mat. nauk, 1960, no. 2). They assumed that this effect is due to inhomogeneities in the volume (Frenkel' defects). The negative photocurrent depends on the temperature and the spectral distribution of light. It increases with increasing frequency of the illuminating light. In the photocells examined, the increase in photocurrent was particularly striking at $\lambda \approx 0.6\mu$. For waves longer than 0.8μ, the negative photocurrent is practically vanishing. This means that it is due to the light being absorbed by the oxide coating and not by the surface-near layer. This was confirmed by a series of experiments. Gamma irradiation of germanium in moist atmosphere causes

Card 1/3

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B143/B102

Effect of gamma rays on...

the formation of a film on the surface whose reflection coefficient is similar to that of monoxide-coated (etched) germanium. This results in the occurrence of the characteristic negative photocurrent. Thus, the strong change of the diode characteristics is not only due to inhomogeneities of the crystal lattice but also to the conversion of the dioxide coating into monoxide. Since surface electrons are transferred to the monoxide coating, it is assumed that it is negatively charged by applying a voltage in the blocked direction. This results in the formation of holes in the surface-near layer that provide a channel for excess conductivity. Light absorption transmits the electrons from the acceptor levels to the conduction band of the coating, and from there, overcoming a potential barrier, to the volume of the germanium. The oxide coating is positively charged due to accumulation of bound holes, which reduces their concentration in the channel and, subsequently, the reverse current. This model permitted to find empirical formulas for the excess reverse current and for the photocurrent in a germanium diode. The transient characteristics of the diode were computed, experimentally verified, and graphically compared. They were found to agree fairly well. After applying a voltage, the reverse current increases, whereas it decreases

Card 2/3

Effect of gamma rays on...

when the light is turned on. There are 2 figures, 3 tables, and 3 references: 1 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: Ellis S. Journ. Appl. Phys., 28, No. 11, 1262, 1957; Brattain W., Bardeen J. Bell. Syst., Techn. J., 32, 1, pp. 1 - 41, 1953.

Card 3/3

22972

9,4300

S/166/61/000/002/003/006
B112/B202

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M., Leushkina, G., Bartnitskiy, I. N.

TITLE: Anomalously negative current and anomalously positive photocurrent

PERIODICAL: Izvestiya Akademii nauk UzSSR. Seriya fiziko-matematicheskikh nauk, no. 2, 1961, 29 - 32

TEXT: The authors observed the following behavior of germanium: If a voltage is applied, the inverse current increases to a certain maximum value after which it slowly decreases to a value near the saturation value of the current. Irradiation with visible light causes an increase of the inverse current up to a certain value which is much higher than the value of the ordinary positive photocurrent. Due to this behavior, the authors use the term "anomalously negative" current and "anomalously-positive" photocurrent in contrast to the ordinary current and photocurrent. An "anomalously positive" current and an "anomalously negative" photocurrent correspond to the "pre-anomalous" behavior. The analysis of experimental

Anomalously negative...

data yielded more exact data on the energy scheme of the germanium surface. This scheme is reproduced in Fig. 3.

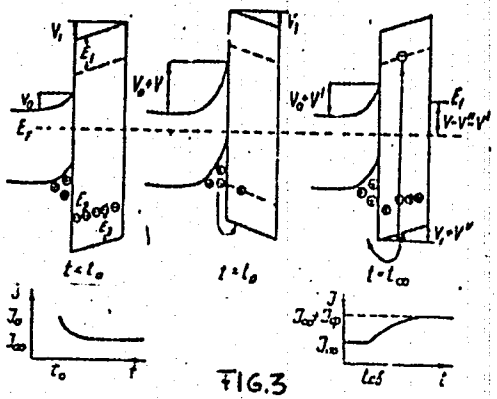

FIG.3

Anomalously negative...

In equilibrium state, the potential difference between inversion layer with a potential $V_o + V'$ and the oxidation layer with a potential $V_1 + V''$ corresponds to the external voltage. The authors give empirical formulas for the transition characteristics of the anomalously negative current and the anomalously positive photocurrent:

$$I(t) = I_\infty - A_1 \ln(1 - C_1 e^{-\alpha_1 t})$$

characterizes the transition state of the anomalously negative current. I_∞ is the value of the dark current, A_1, C_1, α_1 are constants depending on voltage and temperature. The transition characteristics of the anomalously positive photocurrent is given by the formula:

$$I(t) = I_\infty + \left[I_{ph} + A_2 \ln(1 - C_2 e^{-\alpha_2 t})\right]$$

where I_{ph} is the value of the stationary photocurrent, A_2, C_2, α_2 are constants depending on voltage, temperature, and illumination. The inverse current which appears after the illumination is switched off, has the following transition characteristics:

S/166/61/000/002/003/006
B112/B202

Anomalously negative...

$$I(t) = I_{\infty} + I_{ph} - \left[I'_{ph} + A_3 \ln(1 - C_3 e^{-\alpha_3 t}) \right].$$

There are 3 figures and 2 Soviet-bloc references.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics, Academy of Sciences, UzSSR)

SUBMITTED: November 10, 1960

ACCESSION NR: AT3007254 S/2952/63/000/000/0056/0067

AUTHORS: Zvyagin, V.I.; Lobanov, Ye.M.; Zverev, B.P.; Lenchenko, V.M.

TITLE: Employment of the reaction B-super-10 (n, alpha) Li-super-7 for the determination of boron and silicon

SOURCE: Radiatsion. effekty* v tverd. telakh. Tashkent, Izd-vo AN UzbSSR, 1963, 56-67

TOPIC TAGS: silicon, Si, boron, B, impurity, acceptor element, isotope, B-super-10 (n, alpha) Li-super-7 reaction, pulse, pulse amplitude, diode

ABSTRACT: The paper describes an experimental investigation and sets forth theoretical relationships governing the presence of the extremely active acceptor element B in Si. The reaction $B^{10}(n, \alpha)Li^{7}$ for neutrons with an energy of 0.03 ev has a large cross section (4,000 barn). This reaction yields an α particle with an energy of 1.47 Mev, which has a short path in Si (appx. 5 micron) and a Li^{7} nucleus with 0.88 Mev energy. This particle and this nucleus are distinguished by their great total energy (2.35 Mev) and their great ionization density which affords a highly effective registration if the carrier medium exhibits counting properties. In this respect Si is a very convenient material. The block scheme of the measuring

Card 1/2

ACCESSION NR: AT3007254

equipment employed is described. It comprises a Si diode, a power-supply battery, a load resistance, and a preamplifier, all of which are placed in an aluminum shield and are placed at the output of the horizontal channel of the reactor. The pulses arising in a Si n-p junction irradiated with reactor neutrons are rendered visible in an oscillogram. It is shown that the irradiation of Si junctions with reactor neutrons provides a fundamentally sound means for the determination of some impurities in the material, especially H and B. It is also shown how a junction can be employed as a fast-neutron counter, even though only for assessment purposes. The theory of the formation of the pulses in the surface-barrier n-p junction is traced, using an equivalent circuit to represent the surface-hole and -p junction. Expressions are developed for I(t) by the solution of the diffusion equation for various particular cases, depending on whether the point source of the charge lies within the n region or the region of body charge, or whether the track of the particle lies entirely within the n region. The formulas obtained will be employed for the calculation of the effective volume for prescribed bounds of the changes of the amplitude of the pulses excited by the neutrons in a diode and also for the calculation of the pulse-amplitude spectra. Orig. art. has: 6 figures and 17 numbered equations.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 14Oct63 ENCL: 00

SUB CODE: PH, EL NO REF SOV: 003 OTHER: 004

Card 2/2

ZVYAGIN, V.S., dotsent

Some problems in increasing the efficiency and longevity of sand pumps. Izv. vys. ucheb. zav.; gor. zhur. 6 no.3:138-145 '63. (MIRA 16:10)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.

BYAGIN, V.S., kandidat tekhnicheskikh nauk.

Investigating losses through suction pipelines of mine pumps. Gor. zhur. no.12:44-46 D '56. (MLRA 10:1)

1. Sverdlovskiy gornyy institut.
(Mine pumps)

ZVIRGIN, V.S., dotsent

Use of pumps with a high number of revolutions per minute for pumping water out of mines and shafts. Izv. vys. ucheb. zav.; gor. zhur. no.11:124-130 '61. (MIRA 15:1)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.

(Mine pumps)

ZVYAGIN, V.S., kand. tekhn. nauk.

Investigating the performance of a sinking pump station. Izv. vys. ucheb. zav.; gor. zhur. no.1:169-179 '58. (MIRA 11:5)

1. Sverdlovskiy gornyy institut.
(Mine pumps)

ZVYAGIN, V.S., kand.tekhn.nauk

Analyzing the performance of drainage equipment in certain Ural mines. Izv.vys.ucheb.zav.; gor.zhur. no.5:106-111 '58. (MIRA 12:1)

1. Sverdlovskiy gornyy institut.
(Ural Mountains--Mine drainage)
(Mine pumps)

FROLOV, Petr Prokhorovich, dotsent. Prinimali uchastiye: KVYAGIN, V.S., dotsent; PETROV, I.P., dotsent. VESELOV, A.I., prof., doktor tekhn.nauk, retsenzent; BORODKOVICH, A.I., dotsent, retsenzent; KHOMITSEVICH, K.I., otv.red.; D'YAKOVA, G.B., red.izd-va; SABITOV, A., tekhn.red.; LOMILINA, L.N., tekhn.red.

[Mine compressor equipment] Rudnichnoe kompressornoe khoziaistvo. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1961. 227 p. (MIRA 14:4)

(Air compressors)

USSR/Physical Chemistry - Crystals. B-5

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 188

Author : V.I. Iveronova, A.P. Zvyagina, A.A. Katsnel'son.
Inst : -
Title : Distortions of Crystal Lattices in Solid Solutions.

Orig Pub : Kristallografiya, 1957, 2, No 3, 414-418

Abstract : Mean quadratic shifts of atoms from the equilibrium position $\sqrt{\bar{u}^2_{st}}$ in lattices of solid solutions of FeCo, NiCr, NiTi, FeC and NiFe obtained experimentally are compared with those computed using data obtained with an elastic model as a function ΔR of the concentration and difference of atom radii of the components. The coincidence of experimental and computed magnitudes of u_{st}, as far as their magnitude order is concerned, and the absence of parallelism between $\sqrt{\bar{u}^2_{st}}$ and ΔR are shown. It is assumed that the latter is caused by the weakness of the elastic model, the present short range order and systema-

Card 1/2 tic

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 188

errors in the determination of $\sqrt{\bar{u}^2_{st}}$ that have not been taken into consideration. A drop of the characteristic temperature after ordering was found to be 20° in Cu_3Au and 70° in Ni_3Fe. It is shown that it is necessary to analyse the conditions of the preparation of alloys, when the results of the study of solid solutions are appraised.

AUTHOR: Zvyagina A.P. and Iveronova, V.I. 70-5-7/31

TITLE: A Method of Determining the Amplitudes of the Thermal Vibrations of Atoms of Various Kinds in a Solid Solution (Metod opredeleniya amplitud teplovykh kolebaniy atomov raznogo sorta v tverdom rastvore)

PERIODICAL: Kristallografiya, 1957, Vol.2, No.5, pp. 613 - 617 (USSR)

ABSTRACT: An X-ray method for calculating the temperature factors B_1 and B_2 (mean square displacements) for each of two kinds of atoms has been developed and applied to an ordered solid solution, Cu_3Au, and a 1.9% solution of W in Fe. The r.m.s. amplitudes were found to be 0.18 and 0.12 A for Cu and Au, respectively at 240 °K and 0.11 and 0.05 A for Fe and W, respectively, at 425 °K.
If $n = \sin^2\theta / \lambda^2$ the atomic scattering factor for a solid solution can be expressed as:

$$f = (1 - c)f_1 \exp(-B_1 n) + cf_2 \exp(-B_2 n).$$

c is the concentration of the second component. Any pair of experimentally measured intensities I(n) can be solved for B_1 and B_2 if the structure factors are calculable. The

A Method of Determining the Amplitudes of the Thermal Vibrations of Atoms of Various Kinds in a Solid Solution.

equations can be expressed in terms of one variable B_1 :

$$f'' = (1-c)f_1'' \exp(-B_1 n'') + cf_2'' \left[\left\{ f' - (1-c)f_1'' \exp(-B_1 n') \right\} / cf_2' \right]^{n''/n}$$

This expression is plotted out for Cu_3Au for different pairs of n' and n'' . The Cu_3Au was only partly ordered so that the static distortion ($\alpha_{st.} = 0.66$) was eliminated by taking photographs at two different temperatures which gave $B = 0.60$. Introducing the parameter α , correction can be made for the different types of bonds to the solute atoms. The dependence of α on B_x , (r.m.s. amplitude of the solute atom) can be found by constructing the family of curves of f against B_x for different values of α . The observed dependence of f on $\sin\theta / \lambda$ enables the curve $\alpha(B_x)$ to be found.

There are 2 figures, 3 tables and 3 non-Slavic references.

ASSOCIATION: Moscow State University im. M. V. Lomonosov (Moskovskiy Gosudarstvennyy Universitet im. M. V. Lomonosova)

70-5-7/31

A Method of Determining the Amplitudes of the Thermal Vibrations of Atoms of Various Kinds in a Solid Solution.

SUBMITTED: February 22, 1957.

AVAILABLE: Library of Congress

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

S/185/63/008/002/009/012
D234/D308

AUTHORS: Iveronova, V. I. and Zvyagina, A. P.

TITLE: Phonon spectrum and some thermodynamical characteristics of CsCl type lattices

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 2, 1963, 238-242

TEXT: The authors refer to a previous paper of theirs (FMM, v. 14, 141, 1962) and conclude that v/a_o and other elastic constants can be used as direct characteristics of interactions of atoms, while C_v and Δ_u^{-2} cannot generally be so used within the limits of Debye's theory. An example connected with the computation of characteristic temperatures is given. The authors also indicate a graphical method for estimating the interaction parameters from the above quantities. There are 5 figures.

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State University im. M. V. Lomonosov)

Card 1/1

IVERONOVA, V.I.; ZVYAGINA, A.P.; AYNBINDER, B.Yu.

Effect of the spectral line shape of thermal vibrations in a CaCl-type lattice on heat capacity, mean square shift of atoms from the state of equilibrium, and the speed of sound. Fiz. met. i metalloved. 14 no.1:141-144 Jl '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Crystal lattices) (Spectrum, Atomic)

S/139/60/000/006/015/032
E032/E414

AUTHORS: Iveronova, V.I. and Zvyagina, A.P.

TITLE: Determination of the Characteristic (Debye) Temperature by X-Ray Methods

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No.6, pp.105-108

TEXT: The X-ray method of determination of the Debye temperature of alloys is based on an application of the theory of X-ray scattering due to Debye. This theory incorporates the following two assumptions: 1) the solid behaves as an isotropic continuous medium as far as thermal vibrations are concerned and (2) all the deductions from the theory obtained for a monatomic substance automatically hold for a diatomic lattice. The present authors point out that both these assumptions are not strictly correct. In the majority of papers concerned with the X-ray measurement of Θ as a function of temperature, attempts are made to obtain information on the corresponding change in the interatomic forces. However, analysis of experimental data has led the present authors to the conclusion that the characteristic temperature Θ, as measured

Determination of the Characteristic (Debye) Temperature by X-Ray Methods

by the X-ray method, cannot be a simple characteristic of the interatomic forces in the lattice of a solid solution. Among the points quoted in support of this conclusion are: 1) small changes (of the order of 1 or 2% at.) in the concentration of the second component give rise to large changes in Θ (20 to 30%) (V.A.Il'ina, V.K.Kritskaya, Ref.5); such a change in Θ cannot be due only to a change in the interatomic forces; 2) the characteristic temperature Θ is irreversibly dependent on the heat treatment to which the alloys have been subjected and is not uniquely determined by the short-range order parameter on the first coordination sphere; 3) V.A.Il'ina et al (Ref.7) pointed out an analogy between Θ and Young's modulus E in their dependence on heat treatment. Analysis of numerical data for $\Delta\Theta/\Theta$ and $\Delta E/E$ shows that the observed correspondence is only apparent. The debye theory predicts that $\Theta \sim \sqrt{E}$ so that $\Delta\Theta/\Theta = 1/2(\Delta E/E)$. Experimental data, on the other hand, show that Θ changes by

Determination of the Characteristic (Debye) Temperature by X-Ray Methods

20 to 30% while the corresponding change in E is less than 3 or 4%; 4) finally, V.I.Iveronova et al (Ref.8) and S.A.Nemnonov and Finkel'shteyn, L.D. (Ref.9) have shown that the measured values of Θ are smaller in the ordered than in the unordered state (in the case of Cu_3Au, Ni_3Fe, Fe_3Al). The present authors argue that the characteristic temperature Θ, as measured by X-ray methods, depends not only on the interatomic forces but also on other factors such as the spectrum of thermal lattice vibrations, the relation between the dynamic and static displacements, variation of the mean square static displacement u^2_{st} with temperature etc. It is concluded that no definite conclusions can be made about changes in the interatomic forces in the lattice on the basis of the X-ray measurements of Θ alone. There are 1 figure and 15 references: 9 Soviet and 6 non-Soviet.

S/139/60/000/006/015/032
E032/E414

Determination of the Characteristic (Debye) Temperature by X-Ray Methods

ASSOCIATION: Moskovskiy gosuniversitet imeni M.V.Lomonosov
(Moscow State University imeni M.V.Lomonosov)

SUBMITTED: July 11, 1960

Card 4/4

ZVYAGINA, A.P.; IVERONOVA, V.I.

Characteristic temperature and spectrum of thermal lattice vibrations. Fiz. tver. tela 2 no.1:118-121 Jan '60. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy universitet.
(Crystal lattices)

ZVYAGINA, A.P.; IVERONOVA, V.I.

Thermal oscillation spectrum and characteristic temperature of a CsCl type crystal lattice. Izv. AN SSSR. Ser. fiz. 26 no.3:340-344 Mr '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Crystal lattices)

S/048/62/026/003/002/015
B107/B102

AUTHORS: Zvyagina, A. P., and Iveronova, V. I.

TITLE: Spectrum of thermal vibrations and the characteristic temperature of a CsCl-type lattice

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 3, 1962, 340-344

TEXT: The mean square displacement of the atoms from equilibrium, is given by

$$\overline{u^2} = \frac{1}{6N^3}\int_0^{\nu_m} u^2(\nu)\,g(\nu)\,d\nu = \frac{A}{6N^3}\int_0^{\nu_m}\frac{1}{\nu}\left(\frac{1}{e^{h\nu/kT}-1}+\frac{1}{2}\right)g(\nu)\,d\nu,$$

where $g(\nu)d\nu$ is the number of frequencies in the interval between ν and $\nu+d\nu$, $g(\nu)$ is the distribution function of the frequencies, i.e. the spectrum of thermal vibrations, $2N^3$ is the number of atoms in the crystal, ν_m is the maximum frequency. According to Debye, $g(\nu) = c\nu^2$, but the real spectrum shows considerable deviations from Debye's parabolic law,

Card 1/4

especially for diatomic crystals. The spectrum of thermal vibrations was calculated for a CsCl-type body-centered cubic lattice by Montroll's method (Refs. 2, 3, see below). Central forces were assumed and interaction of atoms with the nearest and next nearest neighbors was taken into consideration. The spectrum is represented by expansion into Legendre polynomials:

$$g(\nu_m x) = a_0 + a_2 P_2(x) + a_4 P_4(x) + \ldots + a_{14} P_{14}(x),$$

where $x = \nu/\nu_m$, $0 \leqslant x \leqslant 1$. The coefficients a_{2k} are expressed in terms of the even moments of the distribution function

$\mu_{2k} = \frac{1}{6N^3} \int_0^{\nu_m} \nu^{2k} g(\nu) d\nu$. The moment μ_{2k} is calculated as the trace of the characteristic matrix raised to the k-th power. The matrix elements depend on the ratio of the four parameters

$$a = \frac{2\alpha_{11}}{3\pi^2 m_1 \nu_m^2}, \quad b = \frac{2\alpha_{12}}{3\pi^2 m_2 \nu_m^2}, \quad c = \frac{\beta_{11}}{\pi^2 m_1 \nu_m^2}, \quad d = \frac{\beta_{22}}{\pi^2 m_2 \nu_m^2},$$

where m_1 and m_2 are the masses of the two types of atoms; α_{ij} and β_{ij} are

Spectrum of thermal vibrations ...

the coefficients of quasielastic interaction of the i-th and j-th types of atoms in the first and second sphere of coordination, respectively. The even moments of the distribution function are given explicitely. For equal atomic masses (a = b), but different coefficients of quasielastic interaction, the shape of the spectrum is given by the parameters

$$\gamma = \frac{c}{a} = \frac{3\beta_{11}}{2\alpha_{12}} \quad \text{и} \quad \delta = \frac{d}{a} = \frac{3\beta_{22}}{2\alpha_{12}},$$

which are within -0.2 and +0.2. Fig. 1 shows the spectra for $\gamma = -0.2$ and various δ values. Breaking off the series had a great effect and did not permit the spectra to be calculated for different atomic masses. The quantity $\overline{\Delta u^2} = \overline{u_R^2} - \overline{u_N^2}$ which can be determined experimentally was calculated from the spectra; $\overline{u_R^2}$ and $\overline{u_N^2}$ are the mean square displacement of the atoms at room temperature and at liquid-nitrogen temperature, respectively. Fig. 2 shows the dependence of $\overline{\Delta u^2}$ on δ at various γ values. The lower families of curves hold for

equal ratios of the binding parameters, but for an absolute value increased to 4/3 and 2, respectively. The authors thank B. Yu. Aynbinder for assistance. There are 2 figures. The two most important English-language references are: Ref. 2: E. W. Montroll, J. Chem. Phys., 11, 481 (1943); Ref. 3: E. W. Montroll, D. C. Peaslee, J. Chem. Phys., 12, 98 (1944).

ASSOCIATION: Moskovskiy gos. universitet.im. M. V.Lomonosova(Moscow State University imeni M. V. Lomonosov)

Fig. 1: Spectra of thermal vibrations for CsCl-type lattices with the binding parameter $\gamma = -0.2$.

Fig. 2: Dependence of $\Delta \overline{u^2}$ on γ and δ.

ACC NR: AT6003427 SOURCE CODE: UR/0181/66/008/012/3459/3462

AUTHOR: Iveronova, V. I.; Tikhonov, A. N.; Zaikin, P. N.; Zvyagina, A. P.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Determination of the phonon spectrum of crystals from the specific heat

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3459-3462

TOPIC TAGS: phonon spectrum, distribution function, specific heat, crystal property, thermodynamic function, aluminum

ABSTRACT: By using an approximate relation between the frequency distribution function and the specific heat, the authors demonstrate that in the harmonic approximation it is possible to calculate the phonon spectrum of crystals from the specific heat and from other thermodynamic functions. The approximate frequency distribution function is obtained directly from the experimental data on the specific heat. The determination of the approximate distribution function is facilitated by the fact that, in the approximation considered, the phonon spectrum is a continuous and piecewise smooth function with a derivative haveing a finite number of discontinuities. The resultant approximation is a smooth function which carries a minimum of characteristic information (line structure) and satisfies the equation with a specified accuracy. By way of an example, the frequency distribution function of aluminum, obtained from the integral equation using experimental information on the specific heat of aluminum,

Card 1/2

is presented. It is noted in the conclusion that the method can be used without modification to determine the energy spectrum of any Bose system from its thermodynamic functions. Orig. art. has: 2 figures and 9 formulas.

SUB CODE: 20/ SUBM DATE: 03Jan66/ ORIG REF: 005/ OTH REF: 003

ZVYAGINA, F.E.; LESHKEVICH, L.G.; CHECHIK, F.L.; YAKOVLEV, N.N.

Mechanism of the activation of lipolysis by phosphates. Vop.med.khim. 3:73-81 '51. (MIRA 11:4)

1. Otdeleniye obmena veshchestv Leningradskogo nauchno-issledovatel'skogo instituta fizicheskoy kul'tury.
(LIPOLYSIS) (PHOSPHATES)

ZVYAGINA, G. A.

Varioliform dermatitis following synthomycin treatment. Vest. ven. i. derm. no.5:53-54 S-O '55. (MIRA 9:1)

(CHLOROMYCETIN)
(SKIN-DISEASES)

VOTCHAL, B.Ye.; BELOUSOV, A.S.; ZVYAGINA, L.N.; BRAYTSEVA, N.N.

Radiotelemetric determination of gastric and duodenal temperature under normal and pathological conditions. Vest. AMN SSSR 19 no.6: 75-81 '64. (MIRA 18:4)

1. TSentral'nyy institut usovershenstvovaniya vrachey, Moskva.

ACCESSION NR: AP4041351 S/0248/64/000/006/0075/0081

AUTHOR: Votchal, B. Ye.; Belousov, A. S.; Zvyagina, L. N.; Brayuseva, N. M.

TITLE: Radiotelemetric study of temperatures in the human stomach and intestine in normal and pathological conditions

SOURCE: AMN SSSR. Vestnik, no. 6, 1964, 75-81

TOPIC TAGS: radiotelemetry, temperature radiotelemetry, stomach, radiocapsule, gastrointestinal tract

ABSTRACT: Data derived from investigations of the human digestive tract with the aid of a temperature-measuring radiocapsule are presented. Temperature readings were obtained in 30 healthy persons and 57 patients suffering from various disorders of the digestive tract, including inflammatory and noninflammatory conditions. The radiocapsule method permitted the authors to detect two types of digestive tract temperature curves in healthy subjects — one relatively high, on the order of 36.8 to 38.6C and the other relatively low, on the order of 36.8 to 37.8C; that is, hyperthermal and hypothermal cases,

Card 1/3

ACCESSION NR: AP4041351

Repeated attempts to associate changes in temperature in the digestive tract with the presence of acute cholecystitis or cancerous ulcers were unsuccessful. Since the temperature in different parts of the digestive tracts of healthy persons varied as much as 1.5C, the presence of acute or chronic inflammation processes was indicated by the shape of the curve rather than by absolute temperature values. The circulation of the blood in the stomachs of healthy and sick people was studied by having the subjects drink hot or cold water, then noting the change in internal temperature and its restoration to previous levels. In addition, hot or cold water was injected directly into the stomach in order to determine circulation in the stomach wall. The role of the temperature factor in the evacuant function of the stomachs of healthy and diseased subjects was found to be very important, along with the pH value of the contents of the stomach. Thus, the use of radiocapsules is a promising method for investigating the function of the digestive tract. Orig. art. has: 5 figures.

ASSOCIATION: Tsentral'ny*y institut usovershenstvovaniya vrachey, Moscow (Central Institute for Upgrading Physicians)

ACCESSION NR: AP4041351

SUBMITTED: 30Mar64 ENCL: 00

SUB CODE: LS,EC NO REF SOV: 001 OTHER: 000

Card 3/3

KIST, A.A.; ZVYAGINA, L.S.; LOBANOV, Ye.M.; SVIRIDOVA, A.I.; MOSKOVTSEVA, G.
ZVYAGIN, V.I.

Activation analysis of copper and manganese in biological objects.
Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 8 no.2:77-80 '64. (MIRA 17:9)

1. Institut yadernoy fiziki AN UzSSR.

KUKURIN, A.D.; ARTYUKHOV, I.M.; ZVYAGINA, M.P.
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2"

Continuous iron and steam method for the production of hydrogen. Trudy LTI no.51:30-38 '59. (MIRA 13:8)

(Hydrogen) (Iron ores) (Coal)

CA

14

Potability of the water of the river Northern Dvina during the melting of snow. M. V. Zvyagina. *Sbornik Nauch. Rabot. Arkhangel'sk. Otd. Sanit.-Bakteriol. Inst.* 1935-7, No. 1, 35-40(1939); *Khim. Referat. Zhur.* 1940, No. 6, 104.—Bacterial. investigations of water were made during the max. melting of snow, during the floating of ice and after the melting of all ice. A max. contamination of the water was observed during the melting and floating of ice (from April 16 to May 31) (the coli titer was 0.1-0.01 cc., the no. of microbes was 500-4000 per cc. and the no. of anaerobes was 3-10 per 10 cc.). Drinking water was unsatisfactory during this period. After the melting of ice the water had 60% satisfactory bacteriol. consts. and 40% suspicious consts. No contamination of the water was found by chem. analyses.

W. R. Henn

ZVIAGINA, O.A.

Materials on the reproduction and development of fishes in the Laptev Sea. Report No.2: The Arctic sculpin Myoxocephalus quadricornis labradoricus. Report No.3: The Asiatic smelt Osmerus eperlanus dentex. Trudy Inst. okean. 62:3-12 '63. (MIRA 17:2)

ACCESSION NO: AP4013028

particles from a polonium source with a flux of $3 \cdot 10^8/cm^2$ had no effect on the intensity. No change was noted after reducing the samples to a powder. From these results it is concluded that the fluorescence of SiC is not related to superficial lattice defects. Orig. art. has: 1 diagram.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AN UzSSR)

SUBMITTED: 02Apr63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: MA, PH NO REF SOV: 002 OTHER: 001

Card 2/2

ZYTKOV, V.I.; RUBINOVA, E.

Reflection from germanium and silicon in the visible region of the spectrum. Izv.AN Uz.SSR.Ser.fiz.-mat.nauk. no.3: 35-38 '59. (MIRA 13:2)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Germanium--Spectra) (Silicon--Spectra)

S/166/60/000/02/10/013

AUTHORS: Zvyagin, V.I., and Blinkov, D.I.,
Blinkova, G.B., and Lobanov, Ye.M.

TITLE: Negative Photodiode Effect in the Prebreakdown Region of Germanium pn-Junctions

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, No.2, pp.84-88

TEXT: The negative photodiode effect consists in the diminution of the back current for a lighting of the crystal. During the switching in of the light there appears a sudden enlargement of the current intensity, whereafter it becomes slowly weaker and reaches a value smaller than the value measured in the darkness. If now the light is switched in again, then there appears a sudden decrease and a following slow increase of the current intensity. For the first time V.I.Murygin (Ref.5) has observed this effect at selenium cells. The authors investigate the same effect at specially produced germanium diodes D - 7 where the crystal surface was not varnished and which were radiated with gamma rays of Co^{60}. Beside of the above mentioned properties of the effect the authors proved a temperature dependence. The authors try to

Card 1/2

Negative Photodiode Effect in the Prebreakdown Region of Germanium pn-Junctions

S/166/60/000/02/10/013

explain the effect, but the sudden variation of the current intensity is not explained.
There are 9 references: 4 Soviet and 5 American.

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear Physics AS Uz SSR)

SUBMITTED: January 22, 1960

Card 2/2

~~24(4),18(7)~~ 24.7700 66532

AUTHORS: Zvyagin,V.I., and Rubinova,E. SOV/166-59-3-5/11

TITLE: Reflection from Germanium and Silicon in the Visual Part of the Spectrum

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 3, pp 35-38 (USSR)

ABSTRACT: The authors compare the electrical and optical properties of the surfaces of germanium and silicon. With different methods the authors measure the reflection coefficients of germanium, silicon, and a germanium-silicon alloy. In the case of silicon the measurements are carried out for different treatments of the surface (polished, cut, etched). In general the reflection coefficient at first decreases with an increasing wave length and then it becomes constant as far as in the infrared domain. A monotone dependence of the coefficient on the conductivity could not be observed. The treatment of the surface changes the coefficient by ca. 20%. A qualitative foundation of the observed appearances is not given.
There are 4 references, 2 of which are Soviet, and 2 American.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Uz SSR (Physical-Technical Institute,AS Uz SSR)

SUBMITTED: February 23, 1959

Card 1/1

KIST, A.A.; ZVYAGINA, L.S.; LOBANOV, Ye.M.; SVIRIDOVA, A.I.; MOSKOVTSEVA, G.
ZVYAGIN, V.I.

Activation analysis of copper and manganese in biological objects.
Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 8 no.2:77-80 '64. (MIRA 17:9)

1. Institut yadernoy fiziki AN UzSSR.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

ZVYAGIN, V.I.; [illegible]; ZVYAGIN, V.I.

Nondestructive activation analysis of biological specimens. Izv. AN Uz. SSR Ser. fiz.-mat. nauk 8 no.3:49-55 '64. (MIRA 17:10)

1. Institut yadernoy fiziki AN UzSSR.

NOSYREV, B.A., dotsent; ZVYAGIN, V.S., dotsent

Results of studying V-300-2K type compressors. Izv. vys. uch. zav.; gor. zhur. 5 no.6:174-177 '62. (MIRA 15:9)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.
(Air compressors)

ZVYAGIN, V.S., dotsent

Type of seal for sand pumps. Izv. vys. ucheb. zav.; gor. zhur. 6 no.4:101-103 '63. (MIRA 16:7)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.
(Mine pumps--Equipment and supplies)

ZVYAGINA, A. P.

Temperature dependence of actual characteristic temperatures in lattices of the CsCl type. Fiz. met. i metalloved. 14 no.4:636-637 O '62. (MIRA 15:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

(X-ray crystallography)
(Metals, Effect of temperature on)

ZVYAGINA, O.A.

Materials on the development of lizard fishes (Pisces, Synodontidae). Trudy Inst. okean. 80:146-161 '65.

Materials on the development of Therapon theraps Cuv. et Val. (Pisces, Theraponidae). Ibid.:162-166

(MIRA 18:10)

5.4700
24.7600

S/181/60/002/01/25/035
B008/B014

AUTHORS: Zvyagina, A. P., Iveronova, V. I.

TITLE: The Characteristic Temperature and the Spectrum of Thermal Lattice Vibrations

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 118-121

TEXT: As a model of a solid solution the authors took a simple cubic lattice consisting of two atoms with the masses m_1 and m_2 at a concentration of 50 at%. In an absolutely disordered state the solution was thought of as a monatomic cubic lattice with an effective atomic mass $m = \frac{m_1 + m_2}{2}$. The model of an ordered solution represents an NaCl-type lattice. The spectra indicated in Ref. 5 for lattices of this type were utilized for the purpose, and $\bar{u}^2$ (thermal lattice vibration frequency) was calculated for the disordered (Fig. 1) and ordered states (Fig. 2)

The Characteristic Temperature and the Spectrum of Thermal Lattice Vibrations

at a mass ratio of $\frac{m_1}{m_2} = 3$. A quantitative comparison between theory and experiment was impossible since the solid solution that was experimentally studied differed from the calculated model in its lattice and stoichiometric composition. It was, however, established that the characteristic temperature θ_r, which was measured by the X-ray technique via $\bar{u}^2$, cannot be regarded as an energy index of the intermolecular interaction in the solid solution. $\bar{u}^2$ depends not only on the cutoff frequency (binding energy) but also on the shape of the thermal vibration spectrum of the lattice. The latter is determined by such factors as lattice type, distribution of atoms in the lattice (degree of orientation), mass ratio of the components, and difference in binding energy between the individual atomic pairs. A close relationship between the change in θ_r and the change in the binding energy can be established only in the simplest cases if the lattices have the same spectra, i.e., if the lattice type, the degree of orientation etc. do not change with varying concentration

The Characteristic Temperature and the Spectrum of Thermal Lattice Vibrations

S/181/60/002/01/25/035
B008/B014

and thermal treatment of the solid solutions. Similar considerations hold for the characteristic temperature which was determined from the dependence of the heat capacity upon the temperature. This is why the heat capacity depends on the entire vibration spectrum, and not only on its fundamental frequency (Ref. 2). There are 2 figures and 9 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: May 4, 1959

Card 3/3

ZVYAGINA, E.S.; KIST, A.A.; [illegible]; ZVYAGIN, V.I.

Nondestructive activation analysis of biological specimens. Izv. AN Uz. SSR Ser. fiz.-mat. nauk 8 no.3:49-55 '64. (MIRA 17:10)

1. Institut yadernoy fiziki AN UzSSR.

KIST, A.A.; ZVYAGINA, L.S.; LOBANOV, Ye.M.; MOSKOVTSEVA, G.A.

Determination of halogens in biological materials by the activation method. Zhur. anal. khim. 20 no.1:112-117 '65. (MIRA 18:3)

1. Institut yadernoy fiziki AN UzSSR, Tashkent.

AUTHOR: Lyakhov, G. M., Candidate of Technical Sciences 30-58-4-23/44

TITLE: Improving the Exploitation System in Very Thick Coal Beds (Sovershenstvovaniye sistem razrabotki moshchnykh ugol'nykh plastov). Conference at Prokop'yevsk (Soveshchaniye v Prokop'yevske)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 4, pp. 105-107 (USSR)

ABSTRACT: Many scientific research and planning organizations as well as individual specialists deal with the problem of improving of existing and the invention of new effective conveying systems. The scientific-technical conference called jointly by the Mining Institute of the AS USSR and other organizations to Prokop'yevsk on January 20-22 served for the discussion of results achieved in this field. Prokop'yevsk is the center of the Prokop'yevsk-Kiselevskiy region where the mightiest deposits of rich coal layers are situated and where most of the experience in its conveying was collected. The representatives at this

Card 1/4

conference were: representatives of the academic and branch-scientific research institutes, mining institutes and the Moscow faculties, as well as those from Leningrad, Tomsk, Sverdlovsk, Kemerovo, Stalinsk, Tbilissi and others, as well as the leading managers of the coal trusts. G. A. Bystrov, director of the Kuzbassugol' Kombinat opened the conference. Reports were delivered by:

1) A. P. Sudoplatov (Mining Institute of the AS USSR) on the principal directions for the perfection of existing as well as for the invention of new conveying systems.
2) V. F. Parusimov, on problems connected with the conveying of mighty coal layers.
3) P. Z. Zwyagin (All-Union Coal Institute) on the perfection of the conveying systems.
4) A. D. Panov, on a number of variants of conveying systems suggested by the All-Union Coal Institute.
5) S. I. Dmitriyev, on the most important research works

of the Coal Institute in this field.

6) A. S. Litvinenko (Chief Engineer of the Stalin Mine) on the conveying systems used in this mine.

7) A. A. Surnachev (Chief Engineer of the Prokop'yevsk--ugol' trust) on the conveying systems used there.

8) A. A. Mogilevskiy (Chief Engineer of the State Institute for the Design of Coal Mining Machinery) on the directions of the work of this organization .

9) A. A. Borisov (Leningrad Mining Institute) on the application of conveying systems.

1o) N. V. Marevich (Mining Institute of the Siberian V. T. Dzyubenko Branch of the AS USSR) on their experience in the use of shield conveying systems.

11) K. P. Voronov (Director of the Kuznetsk Mining District) criticized the backward

conveying systems from the viewpoint of security and loss of manpower.

12) N. V. Mel'nikov on the usefulness of applying a
B. A. Simkin conveying system.

In the decision of this conference it was mentioned that the introduction of the suggested measures could bring about an increase of the capacity of coal conveying of 1,5 times.

1. Coal—Production 2. Conveyors—Applications
3. Industrial production—USSR

ZVYAGIN, P.Z., kand. tekhn. nauk; MINEVICH, A.S., kand. ekon. nauk.

Some potentialities for increasing labor productivity and reducing coal costs in mines of the Rostovugol' Combine. Ugol' 34 no.1:16-20 Ja '59. (MIRA 12:1)
(Donets Basin--Mine management) (Coal--Costs)

GAMKAVI, S.M., kand.tekhn.nauk; ZVYAGIN, P.Z., kand.tekhn.nauk

Effect of their concentration on the labor requirements of underground mining operations in the Donets Basin. Ugol' Ukr. 4 no. 11:38-39 N '60. (MIRA 13:12)

1. Institut gornogo dela AN SSSR.
(Donets Basin--Coal mines and mining)

BAGASHEV, M.K., otvetstvennyy red.; BUCHNEV, V.K., otvetstvennyy red.; ZVYAGIN, P.Z., otvetstvennyy red.; SOSNOV, V.D., otvetstvennyy red.; ASTAKHOV, A.V., red.izdatel'stva; NADEINSKAYA, A.A., tekhn.red.

[Soviet coal industry; on the fortieth anniversary of the Great October Socialist Revolution] Ugol'naia promyshlennost' SSSR; k sorokaletiiu Velikoi Oktiabr'skoi sotsialisticheskoi revoliutsii. [Moskva] Gos.nauchno-tekhn.izd-vo lit-ry po ugol'noi promyshl., 1957. 635 p. (MIRA 10:12)

(Coal mines and mining)

ZVYAGIN, P.Z., kand.tekhn.nauk; LIVSHITS, I.I., kand.tekhn.nauk;
SUDOPLATOV, A.P., doktor tekhn.nauk.

Developing underground coal mining techniques in the U.S.S.R.
Ugol' 32 no.11:31-40 N '57. (MIRA 10:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut (for Zvyagin, Livshits). 2. Institut gornogo dela AN SSSR (for Sudoplatov).
(Coal mines and mining)

ZVYAGIN, P.Z., kand.tekhn.nauk.dots.

Economic grounds for yearly production norms and life of coal mines. Ugol' 32 no.12:1-9 D '57. (MIRA 11:1)
(Coal mines and mining)

ZVYAGIN, P.Z. (Moskva)

Considering the index of comparative efficiency of capital investments in determining the annual productivity and the life of coal mines. Izv. AN. SSSR. Otd. tekh. nauk. Met. i topl. no. 3:170-182 My-Je '61. (MIRA 14:7)
(Coal mines and mining--Finance)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-0051

[illegible] kandidat tekhnicheskikh nauk; [illegible], kandidat tekhnicheskikh nauk.

Economic evaluation of coal losses. Ugol' 32 no.6:8-13 Je '57. (MIRA 10:7)

(Coal mines and mining)

ZVYAGIN, P.Z.

SAPITSKIY, Konstantin Fedorovich, kandidat tekhnicheskikh nauk; ZVYAGIN, P.Z., otvetstvennyy redaktor; SHUSHKOVSKAYA, Ye.L., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhnicheskiy redaktor

[Determining the most efficient length for longwalls used in the Donets Basin mine combine] Opredelenie ratsional'noi dliny lavy pri vyemke kombainom "Donbass." Moskva, Ugletekhizdat, 1957. 75 p. (MIRA 10:7)

(Donets Basin--Coal mines and mining)

ZVYAGIN, P.Z., otvetstvennyy redaktor; FEYTEL'MAN, N.G., redaktor izdatel'stva; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Labor consuming operations in the principal coal basins of the U.S.S.R.] Trudoemkost' rabot na shakhtakh osnovnykh ugol'nykh basseinov SSSR. Moskva, Ugletekhizdat, 1956. 326 p. (MLRA 10:1)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Coal mines and mining)

SKOGOREV, Viktor Alekseyevich; ZVYAGIN, Pavel Zakharovich, retsenzent; ASTAKHOV, Aleksandr Semenovich, otv. red.; GOLUBYATNIKOVA, G.S., red.izd-va; BOLDYREVA, Z.A., tekhn. red.

[Overall labor organization in stoping and development faces in coal mines] Kompleksnaia organizatsiia truda v ochistnykh i podgotovitel'nykh zaboiakh ugol'nykh shakht. Moskva, Izd-vo "Nedra," 1964. 135 p. (MIRA 17:3)

ZVYAGIN, R.A.

Conveyer device for dyring the armatures of G-21 generators. (MLRA 9:10)
Avt. i trakt. prom. no.7:41-43 Jl '56.

1. Nauchno-issledovatel'skiy institut avtopriborov.
(Automobiles--Electric equipment)

ZVYAGIN, S. B.

120-5-3/35

AUTHORS: Mironov, Ye.S., Nemenov, L.M., Zvyagin, S.B., and Meshcherov, R.A.

TITLE: An Application of a Ribbon Lens to the Focussing of the External Beam of a Cyclotron (Primeneniye lentochnoy linzy dlya fokusirovki vypushchennogo puchka tsiklotrona)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.5, pp. 18 - 21 (USSR)

ABSTRACT: An electrostatic focussing device for the external beam of the 1.5 m cyclotron (Ref.1) is described. The system is shown in Fig.1 and consists of a system of molybdenum ribbons. The system focusses the beam in the vertical direction focussing in the perpendicular direction being carried out by a magnet (not described in this paper). Fig. 7 indicates the performance of the focussing device. The measurements obtained using 12 Mev protons. The ribbons lens increases the current density by a factor of 10. Particle losses did not exceed 10%. The current density at the target was 15 $\mu A/cm^2$. V.I. Bernashevskiy, Ye.A. Minin and Yu.M. Pustovoyt assisted in this work. There are 7 diagrams and 1 Slavic reference.

SUBMITTED: December 21, 1956.

AVAILABLE: Library of Congress

Card1/1

BOGOMOLOV, V.D. [Bohomolov, V.D.]; KAZAKOV, N.I.; LINOV, G.Ye. [Linov, H.E.]; FADEYEV, I.F. [Fadieiev, I.F.]; VOINOV, I.P.; ZVYAGIN, S.D. [Zv'iahin, S.D.]; CHUDNOVSKIY, P.I. [Chudnovs'kyi, P.I.]; ROMANCHENKO, V.M.

In the economic councils of the Ukraine. Leh.prom. no.3:84-87 Jl-S '63. (MIRA 16:11)

1. TSentral'noye byuro tekhnicheskoy informatsii Moskovskogo gorodskogo soveta narodnogo khozyaystva (for Bogomolov, Kazakov, Linov, Fadeyev).

ZVYAGIN, S. G.

ZVYAGIN, S. G. - "The Variability of Tick Encephalitis Virus During Its Cultivation in the Tissue of a Developing Malignant Tumor (Crocker's Sarcoma)." Sub 27 Nov 52, Acad Med Sci USSR. (Dissertation for the Degree of Candidate in Medical Sciences).

SO: Vechernaya Moskva January-December 1952

ZVYAGIN, Solomon Davydovich; IVANOV, B.N., inzh., red.; VASIL'YEV, Yu.A., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Electric hy hygrometer for measuring the moisture content of liquid, loose and solid materials and new capacitor pickups] Elektricheskii vlagomer dlia izmereniia vlazhnosti zhidkikh, sypuchikh i tverdykh veshchestv i emkostnye datchiki novogo tipa. Leningrad, 1962. 28 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Pribory i elementy avtomatiki, no.3) (MIRA 15:8)
(Moisture--Measurement) (Electronic instruments)

ZVYAGIN, V.

Solar and atomic current. Znan.sila 30 no.11:1-5 N '55. (MLRA 9:1)
(Solar engines) (Atomic power)

ZVYAGIN, V.

First steps. Radio no.11:13 N '58. (MIRA 11:12)

1. Nachal'nik samodeyatel'nogo radiokluba, Yalta, Krym.
(Yalta--Radio clubs)

AUTHOR: Zvyagin, V., Chief SOV/107-58-11-11/40

TITLE: First Steps (Pervyye shagi)

PERIODICAL: Radio, 1958, Nr 11, p 13 (USSR)

ABSTRACT: The article describes the formation of a radio club in Yalta.

Card 1/1

24(3)

AUTHOR: Zvyagin, V.I., and Lyutovich, A.S.

SOV/166-59-1-3/11

TITLE: On the Measurement of the Capacity of a Semiconductor on the Boundary With an Electrolyte (Ob izmerenii yemkosti poluprovodnika na granitse s elektrolitom)

PERIODICAL: Izvestiya Akademii nauk, Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 1, pp 25-30 (USSR)

ABSTRACT: The paper starts with the statement that the agreement (obtained by Bohnenkampf and Engell [Ref 1]) between the calculated differential capacity of the limit phase germanium - electrolyte and the capacity measured experimentally is only a seeming one, since it bases on an incorrect interpretation of the process. By etching of the surface of the germanium or silicon there appears a thin oxide film while in the preceding layer there is either an electron diminution or an enlargement of the holes. With regard to these phenomena the authors propose methods for the measurement of the capacity of a semiconductor-electrolyte-system. As an equivalent scheme the authors recommend a combination of paralleled RC-chains. A measuring device basing on this principle is described shortly. The measurements carried out with this device are represented graphically. There result

Card 1/2

Sensitivity of silicon photoelements to X rays. Dokl.AN Uz.SSR no.6:11-12 '59. (MIRA 12:9)

1. Fiziko-tekhnicheskiy institut AN UzSSR i Institut yadernoy fiziki AN UzSSR. Predstavleno akademikom AN UzSSR S.V.Starodubtsevym.

(Photoelectric cells) (X rays)

LOBANOV, Yu.M.; SVIAGIN, V.I.; KIST, A.A.; ZVEREV, B.P.; SVIRIDOVA, A.I.; MOSKOVTSEVA, G.A.

Determination of manganese in silicon by the radioactivation method. Zhur. anal. khim. 18 no.11:1349-1355 N '63. (MIRA 17:1)

1. Institut yadernoy fiziki AN UzSSR, Tashkent.

ZVYAGIN, V.I.; LYUTOVICH, A.S.

Measuring the capacitance of semiconductors on the boundary with the electrolyte. Izv.AN Uz.SSR.Ser.fiz.-mat.nauk no.1: 25-30 '59. (MIRA 12:5)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Semiconductors--Measurement)

ZVYAGIN, V. I., CAND PHYS-MATH SCI, "EXCESS CURRENT AND PHOTOCURRENT OF GERMANIUM DIODES subjected TO GAMMA-RAY RADIATION." TASHKENT, 1960. (ACAD SCI UZSSR. INST NUCLEAR PHYS). (KL, 2-61, 199).

ZVIAGIN, V.I.; BLINKOV, D.I.; BLINKOVA, G.B.; LOBANOV, Ye.M.

Negative phtodiode effect in the prebreakdown region of germanium electron-hole transitions. Izv.AN Uz.SSR. Ser.fiz.-mat.nauk no.2: 84-88 '60. (MIRA 13:10)

1. Institut yadernoy fiziki AN UzSSR.
(Germanium diodes)

30148
S/608/61/000/000/003/007
B143/B102

9.4160

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M., Rubinova, E., Blinkov, D. I.

TITLE: Reflection coefficient of visible light reflected from germanium

SOURCE: Nekotoriye voprosy prikladnoy fiziki, 1961, 51 - 54

TEXT: The light reflection coefficient R is more dependent on the state of the surface than is the rest of physical parameters. Since R and the absorption coefficient depend on the energy structure of the crystal surface, measuring these coefficients permits to infer the energy structure of the germanium surface. Chemical polish of germanium results in the formation of an oxide coating on the crystal surface. R is not changed by etching crystals with different crystallographic directions. However, the same etching agent lays bare quite definite faces, independent of the orientation of the crystal. This means that either the ratio of the area of faces remains unaltered, or R is not dependent on the type of crystallographic faces. To decide for one or the other possibility, R_o was measured for germanium treated with etching agents of this type.

Card 1/3

30148
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B143/B102

Reflection coefficient of...

Measurements showed that differently worked crystals furnished values for R differing by 20 - 30%. This implies that R is not dependent on the type of crystallographic faces but on the composition and structure of the 10 - 50 Å thick oxide coating. Some etching agents cause R to be changed when the crystal is rotated around an axis perpendicular to the surface investigated, passing through a number of maxima and minima. If the crystals are worked with other etching agents, R is independent of the orientation of the crystal. In this case, the correct value of R is obtained. Differences in the values of R, occurring as a result of treating the crystal with the same etching agent, are related to the structure of the monoxide film which is gradually converted into dioxide in the atmosphere. Irradiated with shortwave light, this film generates an anomalously high negative photocurrent in the diodes due to the shortwave light being absorbed by the film. Gamma irradiation of germanium in moist atmosphere reduces the value of R. Apparently, irradiation of the germanium surface causes the formation of a film resembling the monoxide film. Indicative of this is the existence of the anomalously high negative photocurrent. Gamma irradiation of germanium, protected from moisture, has no effect on R. There are 1 figure and 5 references: 2

Card 2/3

30148
S/608/61/000/000/003/007
B143/B102

Reflection coefficient of...

Soviet and 3 non-Soviet. The three references to English-language publications read as follows: Hancock R., Edelman S. Rev. Scient. Instr., 27, 1082, 1956; Mc. Kelvey I., Longini R. J. Appl. Phys., 25, 5, 634, 1954; Ellis S. G. Journ. Appl. Phys., 28, No 11, 1262, 1957.

Card 3/3

24.3420

S/058/62/000/003/050/092
A061/A101

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M., Rubinova, E., Blinkov, D. I.

TITLE: Coefficient of visible light reflection from germanium

PERIODICAL: Referativnyy zhurnal, Fizika, no.3, 1962, 1, abstract 3G4 (Sb. "Nekotoryye vopr. prikl. fiz.", Tashkent, AN UzSSR, 1961, 51-54)

TEXT: Reproducibility and divergence of the reflection coefficient R of silicon and germanium crystals treated with standard pickling agents were examined on an СФ-2М(SF-2M) spectrophotometer. It was established that "grinding" and "polishing" pickling agents modify R in individual intervals of the visible spectrum region by more than 20 - 30%. These changes are explained by the composition and structure of the oxide layer. For some pickling agents and for crystal rotation about the axis perpendicular to the surface considered, the curve $R = f(\lambda)$ was found to have a series of maxima and minima, the number of which depends on crystal orientation. Curves $R = f(\lambda)$ were measured for germanium surfaces that were ground and pickled by agents used in the production of H_2O_2 and NaOH semiconductor instruments, following irradiation by Co^{60} γ-rays. An attempt is made to explain the results obtained.

[Abstracter's note: Complete translation]

G. Gorodinskiy

Card 1/1

S/194/62/000/002/048/096
D201/D301

9,4340

AUTHORS: Lobanov, Ye. M., Zvyagin, V. I., Blinkov, D. I. and Blinkova, G. B.

TITLE: The effect of gamma-rays on germanium diodes

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 2, 1962, abstract 2-4-12ts (V sb. Nekotoryye vopr. prikl. fiz., Tashkent, AN UzSSR, 1961, 55-57)

TEXT: An investigation is made into the mechanism of a negative photo-current generation in germanium type D semiconductor diodes under the effect of γ-rays. It is shown that the generation of this photo-current is related to the absorption of quanta in the oxide layer not in the surface layer of germanium. The experimentally determined dependence of the reverse photo-current on the wavelength is given. The empirical formula for the photo-current, which describes the transient process after the suppression of light, has the form

The effect of gamma-rays ...

$$I(t) = I_{\infty} + A_1 \ln (1 - c_1 e^{-\alpha_1 t})$$

where I_{∞} - the steady state value of dark current; A_1, c_1, α_1 - constants, depending on voltage and temperature. 3 references. [Abstracter's note: Complete translation.]

36722
S/194/62/000/002/047/096
D201/D301

9,4340

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M. and Rzhanov, A. V.

TITLE: Differential resistance of germanium diodes

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 2, 1962, abstract 2-4-12zh (V sb. Nekotoryye vopr. prikl. fiz. Tashkent, AN UzSSR, 1961, 58-63)

TEXT: A study of the differential resistance R_d of germanium diodes. The diodes were prepared by the method of fusing indium into an electron conducting germanium. The resistivity of germanium was varied from 3.5 to 35 ohm/cm. R_d was evaluated from the measurements by a valve millivoltmeter with small a.c. voltage ($V < \frac{kT}{e}$) superimposed on the reverse d.c. bias and from the voltage drop across a calibrated resistor connected in series with the diode. The results of investigations, at a frequency of 70 c/s, were obtained by statistical processing of a large quantity of experimental material. Ty-

Card 1/ 3

Differential resistance of, ...

pical graphs of the dependence of R_d on $\sqrt{V}$ at different temperatures are given, together with $\log_e R_d$ on the reciprocal of temperature $(\frac{1000}{T^oK})$ for various voltages and a table of values of activation energy calculated from graphs of semiconductor diodes made of material with different specific resistances. Graphs of dependence of $\log_e \tau_p$ (τ_p - lifetime of holes) on reciprocal of temperature are also given for typical diodes and diodes made of germanium with a lower specific resistivity. The graphs show the values of activation energy ΔE's at low temperatures and those for temperatures higher than 40^oC ($\Delta E''$). It is shown that the whole set of experimental data may be successfully described by the formula of K. V. Tolpygo and E. I. Rashba (see ZhT Fiz. 1956, XXVI, 7), if one assumes in it $\tau_p = \tau_o e^{\frac{\Delta E}{kT}}$, provided $\Delta E = -\Delta E'$ at low and $\Delta E = \Delta E'$ at high temperatures. It follows from this formula that R_d increases with de-

Differential resistance of ...

creasing specific resistivity. As an example R_d is given in the form of graphs for diodes with different specific resistivities at V = 30 V. 1 reference. [Abstracter's note: Complete translation.]

Card 3/3

ILYUKHOV, Ye.N.; ZVYAGIN, V.I.; BARTNITSKIY, I.N.

Effect of gamma radiation on a germanium oxide film. Izv.AN Uz. SSR.Ser.fiz.-mat.nauk 6 no.1:88-90 '62. (MIRA 15:4)

1. Akademiya nauk UzSSR.
(Semiconductors--Effect of radiation on) (Gamma rays)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

a) the density of [illegible] based on the effect of the α-particle [illegible] section in silicon. The sensitivity of this method is [illegible] rule.

[illegible] Nuclear Physics Institute, AN

[illegible] HP [illegible]

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

ACCESSION NR: AT4046914

9.4340 (also 1143,1150)

30149
S/608/61/000/000/004/007
B143/B102

AUTHORS: Lobanov, Ye. M., Zvyagin, V. I., Blinkov, D. I., Blinkova, G. B.

TITLE: Effect of gamma rays on germanium diodes

SOURCE: Nekotoriye voprosy prikladnoy fiziki, 1961, 55 - 57

TEXT: Gamma irradiation causes a negative photoeffect in germanium diodes. The authors discovered this effect in Д-7 (D-7) diodes, and reported on it earlier (Izv. AN UzSSR, ser. fiz. mat. nauk, 1960, no. 2). They assumed that this effect is due to inhomogeneities in the volume (Frenkel' defects). The negative photocurrent depends on the temperature and the spectral distribution of light. It increases with increasing frequency of the illuminating light. In the photocells examined, the increase in photocurrent was particularly striking at $\lambda \approx 0.6\mu$. For waves longer than 0.8μ, the negative photocurrent is practically vanishing. This means that it is due to the light being absorbed by the oxide coating and not by the surface-near layer. This was confirmed by a series of experiments. Gamma irradiation of germanium in moist atmosphere causes

Card 1/3

30149
S/608/61/000/000/004/007
B143/B102

Effect of gamma rays on...

the formation of a film on the surface whose reflection coefficient is similar to that of monoxide-coated (etched) germanium. This results in the occurrence of the characteristic negative photocurrent. Thus, the strong change of the diode characteristics is not only due to inhomogeneities of the crystal lattice but also to the conversion of the dioxide coating into monoxide. Since surface electrons are transferred to the monoxide coating, it is assumed that it is negatively charged by applying a voltage in the blocked direction. This results in the formation of holes in the surface-near layer that provide a channel for excess conductivity. Light absorption transmits the electrons from the acceptor levels to the conduction band of the coating, and from there, overcoming a potential barrier, to the volume of the germanium. The oxide coating is positively charged due to accumulation of bound holes, which reduces their concentration in the channel and, subsequently, the reverse current. This model permitted to find empirical formulas for the excess reverse current and for the photocurrent in a germanium diode. The transient characteristics of the diode were computed, experimentally verified, and graphically compared. They were found to agree fairly well. After applying a voltage, the reverse current increases, whereas it decreases

Card 2/3

Effect of gamma rays on...

when the light is turned on. There are 2 figures, 3 tables, and 3 references: 1 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: Ellis S. Journ. Appl. Phys., 28, No. 11, 1262, 1957; Brattain W., Bardeen J. Bell. Syst., Techn. J., 32, 1, pp. 1 - 41, 1953.

Card 3/3

22972

9,4300

S/166/61/000/002/003/006
B112/B202

AUTHORS: Zvyagin, V. I., Lobanov, Ye. M., Leushkina, G., Bartnitskiy, I. N.

TITLE: Anomalously negative current and anomalously positive photocurrent

PERIODICAL: Izvestiya Akademii nauk UzSSR. Seriya fiziko-matematicheskikh nauk, no. 2, 1961, 29 - 32

TEXT: The authors observed the following behavior of germanium: If a voltage is applied, the inverse current increases to a certain maximum value after which it slowly decreases to a value near the saturation value of the current. Irradiation with visible light causes an increase of the inverse current up to a certain value which is much higher than the value of the ordinary positive photocurrent. Due to this behavior, the authors use the term "anomalously negative" current and "anomalously-positive" photocurrent in contrast to the ordinary current and photocurrent. An "anomalously positive" current and an "anomalously negative" photocurrent correspond to the "pre-anomalous" behavior. The analysis of experimental

Anomalously negative...

data yielded more exact data on the energy scheme of the germanium surface. This scheme is reproduced in Fig. 3.

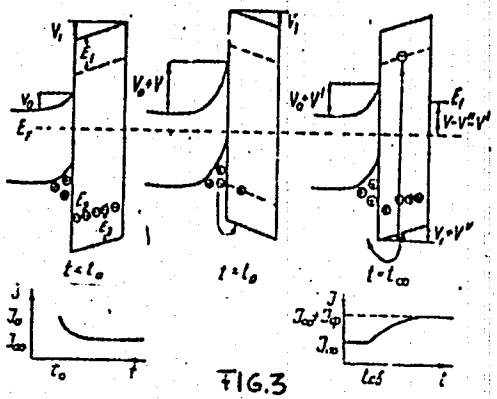

FIG.3

Anomalously negative...

In equilibrium state, the potential difference between inversion layer with a potential $V_o + V'$ and the oxidation layer with a potential $V_1 + V''$ corresponds to the external voltage. The authors give empirical formulas for the transition characteristics of the anomalously negative current and the anomalously positive photocurrent:

$$I(t) = I_\infty - A_1 \ln(1 - C_1 e^{-\alpha_1 t})$$

characterizes the transition state of the anomalously negative current. I_∞ is the value of the dark current, A_1, C_1, α_1 are constants depending on voltage and temperature. The transition characteristics of the anomalously positive photocurrent is given by the formula:

$$I(t) = I_\infty + \left[I_{ph} + A_2 \ln(1 - C_2 e^{-\alpha_2 t})\right]$$

where I_{ph} is the value of the stationary photocurrent, A_2, C_2, α_2 are constants depending on voltage, temperature, and illumination. The inverse current which appears after the illumination is switched off, has the following transition characteristics:

S/166/61/000/002/003/006
B112/B202

Anomalously negative...

$$I(t) = I_{\infty} + I_{ph} - \left[I'_{ph} + A_3 \ln(1 - C_3 e^{-\alpha_3 t}) \right].$$

There are 3 figures and 2 Soviet-bloc references.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics, Academy of Sciences, UzSSR)

SUBMITTED: November 10, 1960

ACCESSION NR: AT3007254 S/2952/63/000/000/0056/0067

AUTHORS: Zvyagin, V.I.; Lobanov, Ye.M.; Zverev, B.P.; Lenchenko, V.M.

TITLE: Employment of the reaction B-super-10 (n, alpha) Li-super-7 for the determination of boron and silicon

SOURCE: Radiatsion. effekty* v tverd. telakh. Tashkent, Izd-vo AN UzbSSR, 1963, 56-67

TOPIC TAGS: silicon, Si, boron, B, impurity, acceptor element, isotope, B-super-10 (n, alpha) Li-super-7 reaction, pulse, pulse amplitude, diode

ABSTRACT: The paper describes an experimental investigation and sets forth theoretical relationships governing the presence of the extremely active acceptor element B in Si. The reaction $B^{10}(n, \alpha)Li^{7}$ for neutrons with an energy of 0.03 ev has a large cross section (4,000 barn). This reaction yields an α particle with an energy of 1.47 Mev, which has a short path in Si (appx. 5 micron) and a Li^{7} nucleus with 0.88 Mev energy. This particle and this nucleus are distinguished by their great total energy (2.35 Mev) and their great ionization density which affords a highly effective registration if the carrier medium exhibits counting properties. In this respect Si is a very convenient material. The block scheme of the measuring

Card 1/2

ACCESSION NR: AT3007254

equipment employed is described. It comprises a Si diode, a power-supply battery, a load resistance, and a preamplifier, all of which are placed in an aluminum shield and are placed at the output of the horizontal channel of the reactor. The pulses arising in a Si n-p junction irradiated with reactor neutrons are rendered visible in an oscillogram. It is shown that the irradiation of Si junctions with reactor neutrons provides a fundamentally sound means for the determination of some impurities in the material, especially H and B. It is also shown how a junction can be employed as a fast-neutron counter, even though only for assessment purposes. The theory of the formation of the pulses in the surface-barrier n-p junction is traced, using an equivalent circuit to represent the surface-hole and -p junction. Expressions are developed for I(t) by the solution of the diffusion equation for various particular cases, depending on whether the point source of the charge lies within the n region or the region of body charge, or whether the track of the particle lies entirely within the n region. The formulas obtained will be employed for the calculation of the effective volume for prescribed bounds of the changes of the amplitude of the pulses excited by the neutrons in a diode and also for the calculation of the pulse-amplitude spectra. Orig. art. has: 6 figures and 17 numbered equations.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 14Oct63 ENCL: 00

SUB CODE: PH, EL NO REF SOV: 003 OTHER: 004

Card 2/2

ZVYAGIN, V.S., dotsent

Some problems in increasing the efficiency and longevity of sand pumps. Izv. vys. ucheb. zav.; gor. zhur. 6 no.3:138-145 '63. (MIRA 16:10)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.

BYAGIN, V.S., kandidat tekhnicheskikh nauk.

Investigating losses through suction pipelines of mine pumps. Gor. zhur. no.12:44-46 D '56. (MLRA 10:1)

1. Sverdlovskiy gornyy institut.
(Mine pumps)

ZVIRGIN, V.S., dotsent

Use of pumps with a high number of revolutions per minute for pumping water out of mines and shafts. Izv. vys. ucheb. zav.; gor. zhur. no.11:124-130 '61. (MIRA 15:1)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy gornoy mekhaniki.

(Mine pumps)

ZVYAGIN, V.S., kand. tekhn. nauk.

Investigating the performance of a sinking pump station. Izv. vys. ucheb. zav.; gor. zhur. no.1:169-179 '58. (MIRA 11:5)

1. Sverdlovskiy gornyy institut.
(Mine pumps)

ZVYAGIN, V.S., kand.tekhn.nauk

Analyzing the performance of drainage equipment in certain Ural mines. Izv.vys.ucheb.zav.; gor.zhur. no.5:106-111 '58. (MIRA 12:1)

1. Sverdlovskiy gornyy institut.
(Ural Mountains--Mine drainage)
(Mine pumps)

FROLOV, Petr Prokhorovich, dotsent. Prinimali uchastiye: KVYAGIN, V.S., dotsent; PETROV, I.P., dotsent. VESELOV, A.I., prof., doktor tekhn.nauk, retsenzent; BORODKOVICH, A.I., dotsent, retsenzent; KHOMITSEVICH, K.I., otv.red.; D'YAKOVA, G.B., red.izd-va; SABITOV, A., tekhn.red.; LOMILINA, L.N., tekhn.red.

[Mine compressor equipment] Rudnichnoe kompressornoe khoziaistvo. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1961. 227 p. (MIRA 14:4)

(Air compressors)

USSR/Physical Chemistry - Crystals. B-5

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 188

Author : V.I. Iveronova, A.P. Zvyagina, A.A. Katsnel'son.
Inst : -
Title : Distortions of Crystal Lattices in Solid Solutions.

Orig Pub : Kristallografiya, 1957, 2, No 3, 414-418

Abstract : Mean quadratic shifts of atoms from the equilibrium position $\sqrt{\bar{u}^2_{st}}$ in lattices of solid solutions of FeCo, NiCr, NiTi, FeC and NiFe obtained experimentally are compared with those computed using data obtained with an elastic model as a function ΔR of the concentration and difference of atom radii of the components. The coincidence of experimental and computed magnitudes of u_{st}, as far as their magnitude order is concerned, and the absence of parallelism between $\sqrt{\bar{u}^2_{st}}$ and ΔR are shown. It is assumed that the latter is caused by the weakness of the elastic model, the present short range order and systema-

Card 1/2 tic

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 188

errors in the determination of $\sqrt{\bar{u}^2_{st}}$ that have not been taken into consideration. A drop of the characteristic temperature after ordering was found to be 20° in Cu_3Au and 70° in Ni_3Fe. It is shown that it is necessary to analyse the conditions of the preparation of alloys, when the results of the study of solid solutions are appraised.

AUTHOR: Zvyagina A.P. and Iveronova, V.I. 70-5-7/31

TITLE: A Method of Determining the Amplitudes of the Thermal Vibrations of Atoms of Various Kinds in a Solid Solution (Metod opredeleniya amplitud teplovykh kolebaniy atomov raznogo sorta v tverdom rastvore)

PERIODICAL: Kristallografiya, 1957, Vol.2, No.5, pp. 613 - 617 (USSR)

ABSTRACT: An X-ray method for calculating the temperature factors B_1 and B_2 (mean square displacements) for each of two kinds of atoms has been developed and applied to an ordered solid solution, Cu_3Au, and a 1.9% solution of W in Fe. The r.m.s. amplitudes were found to be 0.18 and 0.12 A for Cu and Au, respectively at 240 °K and 0.11 and 0.05 A for Fe and W, respectively, at 425 °K.
If $n = \sin^2\theta / \lambda^2$ the atomic scattering factor for a solid solution can be expressed as:

$$f = (1 - c)f_1 \exp(-B_1 n) + cf_2 \exp(-B_2 n).$$

c is the concentration of the second component. Any pair of experimentally measured intensities I(n) can be solved for B_1 and B_2 if the structure factors are calculable. The

A Method of Determining the Amplitudes of the Thermal Vibrations of Atoms of Various Kinds in a Solid Solution.

equations can be expressed in terms of one variable B_1 :

$$f'' = (1-c)f_1'' \exp(-B_1 n'') + cf_2'' \left[\left\{ f' - (1-c)f_1'' \exp(-B_1 n') \right\} / cf_2' \right]^{n''/n}$$

This expression is plotted out for Cu_3Au for different pairs of n' and n'' . The Cu_3Au was only partly ordered so that the static distortion ($\alpha_{st.} = 0.66$) was eliminated by taking photographs at two different temperatures which gave $B = 0.60$. Introducing the parameter α , correction can be made for the different types of bonds to the solute atoms. The dependence of α on B_x , (r.m.s. amplitude of the solute atom) can be found by constructing the family of curves of f against B_x for different values of α . The observed dependence of f on $\sin\theta / \lambda$ enables the curve $\alpha(B_x)$ to be found.

There are 2 figures, 3 tables and 3 non-Slavic references.

ASSOCIATION: Moscow State University im. M. V. Lomonosov (Moskovskiy Gosudarstvennyy Universitet im. M. V. Lomonosova)

70-5-7/31

A Method of Determining the Amplitudes of the Thermal Vibrations of Atoms of Various Kinds in a Solid Solution.

SUBMITTED: February 22, 1957.

AVAILABLE: Library of Congress

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2

S/185/63/008/002/009/012
D234/D308

AUTHORS: Iveronova, V. I. and Zvyagina, A. P.

TITLE: Phonon spectrum and some thermodynamical characteristics of CsCl type lattices

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 2, 1963, 238-242

TEXT: The authors refer to a previous paper of theirs (FMM, v. 14, 141, 1962) and conclude that v/a_o and other elastic constants can be used as direct characteristics of interactions of atoms, while C_v and Δ_u^{-2} cannot generally be so used within the limits of Debye's theory. An example connected with the computation of characteristic temperatures is given. The authors also indicate a graphical method for estimating the interaction parameters from the above quantities. There are 5 figures.

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State University im. M. V. Lomonosov)

Card 1/1

IVERONOVA, V.I.; ZVYAGINA, A.P.; AYNBINDER, B.Yu.

Effect of the spectral line shape of thermal vibrations in a CaCl-type lattice on heat capacity, mean square shift of atoms from the state of equilibrium, and the speed of sound. Fiz. met. i metalloved. 14 no.1:141-144 Jl '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Crystal lattices) (Spectrum, Atomic)

S/139/60/000/006/015/032
E032/E414

AUTHORS: Iveronova, V.I. and Zvyagina, A.P.

TITLE: Determination of the Characteristic (Debye) Temperature by X-Ray Methods

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No.6, pp.105-108

TEXT: The X-ray method of determination of the Debye temperature of alloys is based on an application of the theory of X-ray scattering due to Debye. This theory incorporates the following two assumptions: 1) the solid behaves as an isotropic continuous medium as far as thermal vibrations are concerned and (2) all the deductions from the theory obtained for a monatomic substance automatically hold for a diatomic lattice. The present authors point out that both these assumptions are not strictly correct. In the majority of papers concerned with the X-ray measurement of Θ as a function of temperature, attempts are made to obtain information on the corresponding change in the interatomic forces. However, analysis of experimental data has led the present authors to the conclusion that the characteristic temperature Θ, as measured

Determination of the Characteristic (Debye) Temperature by X-Ray Methods

by the X-ray method, cannot be a simple characteristic of the interatomic forces in the lattice of a solid solution. Among the points quoted in support of this conclusion are: 1) small changes (of the order of 1 or 2% at.) in the concentration of the second component give rise to large changes in Θ (20 to 30%) (V.A.Il'ina, V.K.Kritskaya, Ref.5); such a change in Θ cannot be due only to a change in the interatomic forces; 2) the characteristic temperature Θ is irreversibly dependent on the heat treatment to which the alloys have been subjected and is not uniquely determined by the short-range order parameter on the first coordination sphere; 3) V.A.Il'ina et al (Ref.7) pointed out an analogy between Θ and Young's modulus E in their dependence on heat treatment. Analysis of numerical data for $\Delta\Theta/\Theta$ and $\Delta E/E$ shows that the observed correspondence is only apparent. The debye theory predicts that $\Theta \sim \sqrt{E}$ so that $\Delta\Theta/\Theta = 1/2(\Delta E/E)$. Experimental data, on the other hand, show that Θ changes by

Determination of the Characteristic (Debye) Temperature by X-Ray Methods

20 to 30% while the corresponding change in E is less than 3 or 4%; 4) finally, V.I.Iveronova et al (Ref.8) and S.A.Nemnonov and Finkel'shteyn, L.D. (Ref.9) have shown that the measured values of Θ are smaller in the ordered than in the unordered state (in the case of Cu_3Au, Ni_3Fe, Fe_3Al). The present authors argue that the characteristic temperature Θ, as measured by X-ray methods, depends not only on the interatomic forces but also on other factors such as the spectrum of thermal lattice vibrations, the relation between the dynamic and static displacements, variation of the mean square static displacement u^2_{st} with temperature etc. It is concluded that no definite conclusions can be made about changes in the interatomic forces in the lattice on the basis of the X-ray measurements of Θ alone. There are 1 figure and 15 references: 9 Soviet and 6 non-Soviet.

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E032/E414

Determination of the Characteristic (Debye) Temperature by X-Ray Methods

ASSOCIATION: Moskovskiy gosuniversitet imeni M.V.Lomonosov
(Moscow State University imeni M.V.Lomonosov)

SUBMITTED: July 11, 1960

Card 4/4

ZVYAGINA, A.P.; IVERONOVA, V.I.

Characteristic temperature and spectrum of thermal lattice vibrations. Fiz. tver. tela 2 no.1:118-121 Jan '60. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy universitet.
(Crystal lattices)

ZVYAGINA, A.P.; IVERONOVA, V.I.

Thermal oscillation spectrum and characteristic temperature of a CsCl type crystal lattice. Izv. AN SSSR. Ser. fiz. 26 no.3:340-344 Mr '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Crystal lattices)

S/048/62/026/003/002/015
B107/B102

AUTHORS: Zvyagina, A. P., and Iveronova, V. I.

TITLE: Spectrum of thermal vibrations and the characteristic temperature of a CsCl-type lattice

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 3, 1962, 340-344

TEXT: The mean square displacement of the atoms from equilibrium, is given by

$$\overline{u^2} = \frac{1}{6N^3}\int_0^{\nu_m} u^2(\nu)\,g(\nu)\,d\nu = \frac{A}{6N^3}\int_0^{\nu_m}\frac{1}{\nu}\left(\frac{1}{e^{h\nu/kT}-1}+\frac{1}{2}\right)g(\nu)\,d\nu,$$

where $g(\nu)d\nu$ is the number of frequencies in the interval between ν and $\nu+d\nu$, $g(\nu)$ is the distribution function of the frequencies, i.e. the spectrum of thermal vibrations, $2N^3$ is the number of atoms in the crystal, ν_m is the maximum frequency. According to Debye, $g(\nu) = c\nu^2$, but the real spectrum shows considerable deviations from Debye's parabolic law,

Card 1/4

especially for diatomic crystals. The spectrum of thermal vibrations was calculated for a CsCl-type body-centered cubic lattice by Montroll's method (Refs. 2, 3, see below). Central forces were assumed and interaction of atoms with the nearest and next nearest neighbors was taken into consideration. The spectrum is represented by expansion into Legendre polynomials:

$$g(\nu_m x) = a_0 + a_2 P_2(x) + a_4 P_4(x) + \ldots + a_{14} P_{14}(x),$$

where $x = \nu/\nu_m$, $0 \leqslant x \leqslant 1$. The coefficients a_{2k} are expressed in terms of the even moments of the distribution function

$\mu_{2k} = \frac{1}{6N^3} \int_0^{\nu_m} \nu^{2k} g(\nu) d\nu$. The moment μ_{2k} is calculated as the trace of the characteristic matrix raised to the k-th power. The matrix elements depend on the ratio of the four parameters

$$a = \frac{2\alpha_{11}}{3\pi^2 m_1 \nu_m^2}, \quad b = \frac{2\alpha_{12}}{3\pi^2 m_2 \nu_m^2}, \quad c = \frac{\beta_{11}}{\pi^2 m_1 \nu_m^2}, \quad d = \frac{\beta_{22}}{\pi^2 m_2 \nu_m^2},$$

where m_1 and m_2 are the masses of the two types of atoms; α_{ij} and β_{ij} are

Spectrum of thermal vibrations ...

the coefficients of quasielastic interaction of the i-th and j-th types of atoms in the first and second sphere of coordination, respectively. The even moments of the distribution function are given explicitely. For equal atomic masses (a = b), but different coefficients of quasielastic interaction, the shape of the spectrum is given by the parameters

$$\gamma = \frac{c}{a} = \frac{3\beta_{11}}{2\alpha_{12}} \quad \text{и} \quad \delta = \frac{d}{a} = \frac{3\beta_{22}}{2\alpha_{12}},$$

which are within -0.2 and +0.2. Fig. 1 shows the spectra for $\gamma = -0.2$ and various δ values. Breaking off the series had a great effect and did not permit the spectra to be calculated for different atomic masses. The quantity $\overline{\Delta u^2} = \overline{u_R^2} - \overline{u_N^2}$ which can be determined experimentally was calculated from the spectra; $\overline{u_R^2}$ and $\overline{u_N^2}$ are the mean square displacement of the atoms at room temperature and at liquid-nitrogen temperature, respectively. Fig. 2 shows the dependence of $\overline{\Delta u^2}$ on δ at various γ values. The lower families of curves hold for

equal ratios of the binding parameters, but for an absolute value increased to 4/3 and 2, respectively. The authors thank B. Yu. Aynbinder for assistance. There are 2 figures. The two most important English-language references are: Ref. 2: E. W. Montroll, J. Chem. Phys., 11, 481 (1943); Ref. 3: E. W. Montroll, D. C. Peaslee, J. Chem. Phys., 12, 98 (1944).

ASSOCIATION: Moskovskiy gos. universitet.im. M. V.Lomonosova(Moscow State University imeni M. V. Lomonosov)

Fig. 1: Spectra of thermal vibrations for CsCl-type lattices with the binding parameter $\gamma = -0.2$.

Fig. 2: Dependence of $\Delta \overline{u^2}$ on γ and δ.

ACC NR: AT6003427 SOURCE CODE: UR/0181/66/008/012/3459/3462

AUTHOR: Iveronova, V. I.; Tikhonov, A. N.; Zaikin, P. N.; Zvyagina, A. P.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Determination of the phonon spectrum of crystals from the specific heat

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3459-3462

TOPIC TAGS: phonon spectrum, distribution function, specific heat, crystal property, thermodynamic function, aluminum

ABSTRACT: By using an approximate relation between the frequency distribution function and the specific heat, the authors demonstrate that in the harmonic approximation it is possible to calculate the phonon spectrum of crystals from the specific heat and from other thermodynamic functions. The approximate frequency distribution function is obtained directly from the experimental data on the specific heat. The determination of the approximate distribution function is facilitated by the fact that, in the approximation considered, the phonon spectrum is a continuous and piecewise smooth function with a derivative haveing a finite number of discontinuities. The resultant approximation is a smooth function which carries a minimum of characteristic information (line structure) and satisfies the equation with a specified accuracy. By way of an example, the frequency distribution function of aluminum, obtained from the integral equation using experimental information on the specific heat of aluminum,

Card 1/2

is presented. It is noted in the conclusion that the method can be used without modification to determine the energy spectrum of any Bose system from its thermodynamic functions. Orig. art. has: 2 figures and 9 formulas.

SUB CODE: 20/ SUBM DATE: 03Jan66/ ORIG REF: 005/ OTH REF: 003

ZVYAGINA, F.E.; LESHKEVICH, L.G.; CHECHIK, F.L.; YAKOVLEV, N.N.

Mechanism of the activation of lipolysis by phosphates. Vop.med.khim. 3:73-81 '51. (MIRA 11:4)

1. Otdeleniye obmena veshchestv Leningradskogo nauchno-issledovatel'skogo instituta fizicheskoy kul'tury.
(LIPOLYSIS) (PHOSPHATES)

ZVYAGINA, G. A.

Varioliform dermatitis following synthomycin treatment. Vest. ven. i. derm. no.5:53-54 S-O '55. (MIRA 9:1)

(CHLOROMYCETIN)
(SKIN-DISEASES)

VOTCHAL, B.Ye.; BELOUSOV, A.S.; ZVYAGINA, L.N.; BRAYTSEVA, N.N.

Radiotelemetric determination of gastric and duodenal temperature under normal and pathological conditions. Vest. AMN SSSR 19 no.6: 75-81 '64. (MIRA 18:4)

1. TSentral'nyy institut usovershenstvovaniya vrachey, Moskva.

ACCESSION NR: AP4041351 S/0248/64/000/006/0075/0081

AUTHOR: Votchal, B. Ye.; Belousov, A. S.; Zvyagina, L. N.; Brayuseva, N. M.

TITLE: Radiotelemetric study of temperatures in the human stomach and intestine in normal and pathological conditions

SOURCE: AMN SSSR. Vestnik, no. 6, 1964, 75-81

TOPIC TAGS: radiotelemetry, temperature radiotelemetry, stomach, radiocapsule, gastrointestinal tract

ABSTRACT: Data derived from investigations of the human digestive tract with the aid of a temperature-measuring radiocapsule are presented. Temperature readings were obtained in 30 healthy persons and 57 patients suffering from various disorders of the digestive tract, including inflammatory and noninflammatory conditions. The radiocapsule method permitted the authors to detect two types of digestive tract temperature curves in healthy subjects — one relatively high, on the order of 36.8 to 38.6C and the other relatively low, on the order of 36.8 to 37.8C; that is, hyperthermal and hypothermal cases,

Card 1/3

ACCESSION NR: AP4041351

Repeated attempts to associate changes in temperature in the digestive tract with the presence of acute cholecystitis or cancerous ulcers were unsuccessful. Since the temperature in different parts of the digestive tracts of healthy persons varied as much as 1.5C, the presence of acute or chronic inflammation processes was indicated by the shape of the curve rather than by absolute temperature values. The circulation of the blood in the stomachs of healthy and sick people was studied by having the subjects drink hot or cold water, then noting the change in internal temperature and its restoration to previous levels. In addition, hot or cold water was injected directly into the stomach in order to determine circulation in the stomach wall. The role of the temperature factor in the evacuant function of the stomachs of healthy and diseased subjects was found to be very important, along with the pH value of the contents of the stomach. Thus, the use of radiocapsules is a promising method for investigating the function of the digestive tract. Orig. art. has: 5 figures.

ASSOCIATION: Tsentral'ny*y institut usovershenstvovaniya vrachey, Moscow (Central Institute for Upgrading Physicians)

ACCESSION NR: AP4041351

SUBMITTED: 30Mar64 ENCL: 00

SUB CODE: LS,EC NO REF SOV: 001 OTHER: 000

Card 3/3

KIST, A.A.; ZVYAGINA, L.S.; LOBANOV, Ye.M.; SVIRIDOVA, A.I.; MOSKOVTSEVA, G.
ZVYAGIN, V.I.

Activation analysis of copper and manganese in biological objects.
Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 8 no.2:77-80 '64. (MIRA 17:9)

1. Institut yadernoy fiziki AN UzSSR.

KUKURIN, A.D.; ARTYUKHOV, I.M.; ZVYAGINA, M.F.
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720007-2"

Continuous iron and steam method for the production of hydrogen. Trudy LTI no.51:30-38 '59. (MIRA 13:8)
(Hydrogen) (Iron ores) (Coal)

CA

14

Potability of the water of the river Northern Dvina during the melting of snow. M. V. Zvyagina. *Sbornik Nauch. Rabot. Arkhangel'sk. Otd. Sanit.-Bakteriol. Inst.* 1935-7, No. 1, 35-40(1939); *Khim. Referat. Zhur.* 1940, No. 6, 104.—Bacterial. investigations of water were made during the max. melting of snow, during the floating of ice and after the melting of all ice. A max. contamination of the water was observed during the melting and floating of ice (from April 16 to May 31) (the coli titer was 0.1-0.01 cc., the no. of microbes was 500-4000 per cc. and the no. of anaerobes was 3-10 per 10 cc.). Drinking water was unsatisfactory during this period. After the melting of ice the water had 60% satisfactory bacteriol. consts. and 40% suspicious consts. No contamination of the water was found by chem. analyses.

W. R. Henn

ZVIAGINA, O.A.

Materials on the reproduction and development of fishes in the Laptev Sea. Report No.2: The Arctic sculpin Myoxocephalus quadricornis labradoricus. Report No.3: The Asiatic smelt Osmerus eperlanus dentex. Trudy Inst. okean. 62:3-12 '63. (MIRA 17:2)