

KALESNIK, Stanislav Vikent'yevich; DOERONRAVOVA, K.O., red.;  
LYUBIMOV, I.M., red.; KONOVALYUK, I.K., mlad. red.;  
VAS'KINA, R.S., tekhn. red.

[Outline of glaciology] Ocherki gliatsiologii. Moskva,  
Geografiz, 1963. 550 p. (MIRA 17:2)

L'VOVICH, Mark Isaakovich, prof.; ABRAMOV, I.S., red.; KONOVALYUK,  
I.K., mlad. red.; ARDANOVA, N.P., tekhn. red.; VAS'KINA,  
R.S., tekhn. red.

[Man and water; conversion of the water budget and river  
runoff] Chelovek i vody; preobrazovanie vodnogo balansa i  
rechnogo stoka. Moskva, Geografiz, 1963. 567 p.  
(MIRA 17:3)

GVOZDETSKIY, Nikolay Andreyevich; MIKHAYLOV, Nikolay Ivanovich;  
GALITSKAYA, T.M., red.; KONOVALYUK, I.K., mlad. red.;  
KOSHELEVA, S.M., tekhn. red.

[Physical geography of the U.S.S.R.: Asiatic part] Fizi-  
cheskaia geografiia SSSR: Aziatskaia chast'. Moskva,  
Geografiz, 1963. 571 p. (MIRA 17:2)

KOTEL'NIKOV, Vasiliy Leont'yevich; TUGARINOV, D.N., red.; KONOVALYUK,  
I.K., mlad. red.

[Southern belt of the European U.S.S.R.; a study of its  
nature] Iuzhnaia polosa Evropeiskoi chasti SSSR; ocherk pri -  
rody. Moskva, Geografiz, 1963. 220 p. (MIRA 17:6)

MIL'KOV, Fedor Nikolayevich; MARGOLIN, Ya.A., red.; KONOVALYUK,  
I.K., mlad. red.

[Natural zones of the U.S.S.R.] Prirodnye zony SSSR. Mo-  
skva, Izd-vo "Mysl'," 1964. 324 p. (MIRA 17:7)

L 14096-66 EWT(1)/EWP(w)/EPP(n)-2/ETC(m)-6 IJP(c) WW/EM

ACC NR: AT6002847

SOURCE CODE: UR/2754/65/000/004/0149/0165

AUTHOR: Konovalyuk, I. P.; Krasil'nikov, V. N.

ORG: none

TITLE: Effect which an edge of rigidity has on the reflection of a plane acoustic wave from a thin plate <sup>21,44,55</sup>

SOURCE: Leningrad. Universitet. Problemy difraktsii i rasprostraneniya voln, no. 4, 1965. Difraktsiya i izlucheniye voln (Wave diffraction and radiation), no. 4, 149-165

TOPIC TAGS: wave mechanics, acoustic propagation, thin plate

ABSTRACT: The author considers diffraction of acoustic waves in a liquid by elastic plates subjected to pure flexure and having so-called edges of rigidity. The uniqueness theorem for the problem is given. The simplest case is analyzed, i. e. diffraction of a plane acoustic wave by an infinite thin plate with a single edge of rigidity. It is assumed that the half-space  $y < 0$  is filled with a liquid of density  $\rho_0$  (the speed of sound is  $c_0$ ) and is separated from the half-space  $y > 0$  by a

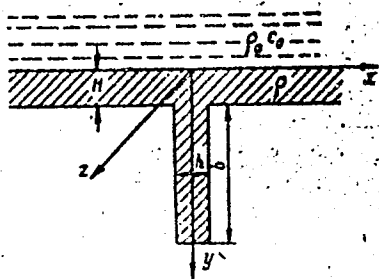
Card 1/3

2

L 14096-66

ACC NR: AT6002847

thin plate of density  $\rho$  (see figure), thickness  $H$  and constant rigidity  $D$ .



The flexural waves which may be excited in the plate have a wavelength  $\lambda$ . Another plate with a finite length in the direction  $y$  is rigidly fastened at a right angle to the first plate along the line  $x = 0, y = 0$  on the  $y > 0$  side of the half-space. This new plate is called the edge of rigidity with a height  $b$  in the direction  $y$ . The thicknesses of both plates  $h$  and  $H$  are of the same order of magnitude and the density of the material for the edge of rigidity is  $\rho_1$ . The height of the edge  $b$  may be commensurate with the length of flexural waves in the edge, and consequently with those in the plate. It

is assumed that  $h$  and  $H$  are considerably less than  $\lambda$ . The boundary conditions for the problem are formulated and the solution is given in the form of an integral equation. This solution is analyzed and numerical calculations show that the edge of rigidity has a comparatively small effect on diffraction of a plane acoustic wave

Card 2/3

L 14096-66

ACC NR: AT6002847

by a plate. The calculations were done for a steel plate with a thickness of 3 cm and an edge of rigidity with a variable thickness. The height of the edge was assumed to be constant and equal to 30 cm, i. e. commensurate with the length of a flexural wave in the edge. The frequency of the incident wave from the water was 5 kc. A curve is given showing the effective scattering diameter as a function of thickness of the edge. This curve shows resonance properties and is made up of the sum of longitudinal and flexural oscillations in the edge of rigidity. The longitudinal waves increase with  $h$  from zero to some constant value while the flexural waves pass through extrema at the points of resonance on the curve. Orig. art. has: 9 figures, 28 formulas.

SUB CODE: 20/      SUBM DATE: 00/      ORIG. REF: 006/      OTH REF: 001

*FIN*  
Card 3/3



KONOVALYUK, P.N.

Manometric electric contact thermometer of the TRS-120 type.  
Sakh.prom.30 no.11:31-33 N '56. (MLRA 10:2)

1. Kiyevskiy zavod kontrol'no-izmeritel'nykh priborov.  
(Thermometers)

USSR/Chemical Technology - Chemical Products and their Application. Food Industry.

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2940

Author : Konovalyuk, P.N. APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000824330009

Inst : (All-Union Scientific Research Institute of the Baking Industry) see below

Title : Thermoregulator-Attachment for the VNIKhPa Apparatus for Determination of the Moisture Content of Materials.

Orig Pub : Khlebopek. i konditersk. prom-st', 1957, No 7, 13-14  
Vol 1.

Abstract : Description and diagram of a thermoregulator attachment for the VNIKhPa apparatus that is extensively utilized for rapid determination of the moisture content of dough and bread. The thermoregulator attachment consists of a panel held in a casing. The panel comprises an electric-contact thermometer with fixed temperature points

Card 1/2 Tsentral'noye konstruktorskoy byuro Ukrglavprodmashtal.'

KONOVALYUK, P.N.

S.I. Sokolov automatic sirup density meter. Sakh.prom.31 no.3:38-  
40 Mr '57. (MIRA 10:4)

1. Kiyevskiy zavod kontrol'no-izmeritel'nykh priborov (KIP)  
(Sugar industry--Equipment and supplies)

8(0)

SOV/112-59-2-3353

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 2,  
pp 159-160 (USSR)

AUTHOR: Konovalyuk, P. N.

TITLE: Reversible-Motor Type Timer (Rele vremeni reversivnoye)

PERIODICAL: Khlebopek. i konditersk. prom-st', 1958, Nr 1, pp 14-17

ABSTRACT: A type RVR timer of the "KIP" factory, Kiyev, is described. The timer can be used for automatic control of various periodic industrial processes, specifically, for the stepless controlling of the conveyer in a bread-baking oven for any period within 15-300 sec. The scale factor is 1 sec. Duration of on-switching the controlling contact is 1-4.5 sec. An SRD-2 synchronous reversible motor is a fundamental component of the timer. Four-six seconds before the interval expires, a signal lamp lights up; it goes off before the conveyer is started. Two illustrations.

B.A.K.

Card 1/1

KONOV ALYUK, P.N.

Modernized MV-type vacuum manometer. Sakh. prom. 32 no. 7:17-19  
Jy '58. (MIRA 11:8)

1. Tsentral'noye konstruktorskoye byuro Kiyevskogo sovnarkhosa.  
(Vacuum gauges)

SHVAYKA, O.P.; KONOVCHEK, M.S.; PROTSENKO, Ye.G. [Protsenko, I.E.H.]

Automatic control of the nitrosation of phenylhydroxylamine  
in the production of Cupferron. Khim. prom. [Ukr.] no.1:  
67-68 Ja-Mr'63 (MIRA 17:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut monokris-  
tallov, stsintsilyatsionnykh materialov i osobenno chistykh  
khimicheskikh veshchestv.

GABDIEV, S.A.; LEMELYN, L.I.; KAMBURAYOVA, P.M.; KANDYBAI, D.S.; SHIBDI, Ye.V.

Spectrographic analysis of hearths, basic slags of open-hearth furnaces, and chromium-magnesite refractories. Zav. lab. 30 no.9:1089-1092 '64. (MIRA 18:3)

1. Kazakhskiy metallurgicheskiy zavod.

KONOVETS, V.M., PODOROZHNAJA, R.P., TRIFONOVA, V.P., PETROVICH, YU. A. (USSR)

"Investigation of some Properties of Collagenous Proteins with the  
Aid of Isotopic and Chromatographic Methods."

Report presented at the 5th Int'l. Biochemistry Congress,  
Moscow, 10-16 Aug. 1961.

KONOETS, V.M.  
KONOETS, V.M.

Protein and amino acid content of hard dental tissue in pyorrhea  
alveolaris. Stomatologia 37 no.1:26-28 Ja-F '58. (MIRA 11:3)

1. Iz biokhimicheskogo otdela (zav. Yu.A.Petrovich) Ukrainskogo  
nauchno-issledovatel'skogo instituta stomatologii (dir. M.I.  
Kukhareva)

(PROTEINS IN THE BODY) (AMINO ACIDS) (TEETH)



PODOROZHNYAYA, R.P. [Podorozhna, R.P.]; KONOVETS, V.M. [Konovets', V.M.]

Incorporation of glycine- $C^{14}$  in the protein of teeth and bones of cats in postnatal ontogenesis. Ukr.biokhim.zhur. 34 no.1:70-80 '62. (MIRA 17:5)

1. Ukrainian Research Institute of Stomatology, Odessa.

KONOVETS, V. M., CAND BIO SCI, <sup>" Study</sup> ~~INVESTIGATION~~ OF PROTEI<sup>M</sup>  
SUBSTANCES OF THE HARD TISSUES OF TEETH AND BONES <sup>the</sup> IN THE  
ALVEOLAR PROCESS <sup>of</sup> UNDER CONDITIONS OF PHYSIOLOGY AND PA-  
THOLOGY. (AMINO-ACID COMPOSITION, INCLUSION OF GLYCINE - C<sup>14</sup>  
AND METHIONINE - S<sup>35</sup>). <sup>"</sup> ODESSA, 1960. (MIN OF HIGHER AND SEC  
SPEC ED UKSSR. ODESSA STATE UNIV IM I. I. MECHNIKOV). (KL,  
2-61, 204).

-81-

KONOVETS, V.M. [Konovets', V.M.]; PETROVICH, Yu.A. [Petrovych, IU.O.]

Incorporation of glycine- $C^{14}$  into the protein of hard tissues of the tooth and the bone of the alveolar process of the maxilla in dystrophy. Ukr. biokhim. zhur. 32 no.4:537-550 '60. (MIRA 13:9)

1. Biokhimicheskaya laboratoriya Ukrainского nauchno-issledovatel'skogo instituta stomatologii, Odessa.  
(GUMS—DISEASES) (PROTEIN METABOLISM)

PETROVICH, Yu.A. (Odessa); SAPOGOVSKAYA, T.I. (Odessa); KONOVETS, V.M.  
(Odessa); PODOROZHNYAYA, R.P. (Odessa); TRIFONOVA, V.P. (Odessa)

Entry of labeled atoms into the tissues of the tooth and the  
paradentium. Probl.stom. 6:132-137 '62. (MIRA 16:3)  
(TEETH) (ISOTOPES--PHYSIOLOGICAL EFFECT) (GUMS)

9(2)

06273

SOV/107-59-6-37/50

AUTHOR: Konovich, L, Candidate of Technical Sciences

TITLE: LF Amplifiers Without Output Transformers

PERIODICAL: Radio, 1959, Nr 6, pp 41-44 (USSR)

ABSTRACT: The author describes three LF amplifiers without output transformers. An editorial note preceding this article says that in the USSR and abroad, research is being conducted for designing amplifiers without output transformers. Such amplifiers produce very small frequency distortions. It may be expected that Soviet radio receivers of the higher classes will be built without output transformers in the future. First, the author explains three basic push-pull amplifier circuits for which tubes 6P18P may be used. In the future, a special tube will be produced for such amplifiers. A list of loudspeakers which may be used with such amplifiers is shown in a table: 4GD-5, 5GD-16, 3GD-11, 2GD-6, 1GD-17, and

Card 1/3

APPROVED FOR RELEASE: 06/19/2000

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06273

SOV/107-59-6-37/50

LF Amplifiers Without Output Transformers

VGD-2. The author explains an LF amplifier with a 6N2P tube in the preamplifier stage and two 6P18P in the push-pull output stage. The circuit diagram is shown in Figure 2, the frequency characteristics in Figure 3. Two 2GD-6 woofers and two 1GD-17 tweeters are used. The sensitivity of the amplifier is 230 millivolts. The acoustical system develops a sound pressure of 10 bar. Negative feedback of 19 db is used. A two-channel amplifier with a common preamplifier stage was developed for receivers of the highest class. Its circuit diagram is shown in Figure 4. The frequency characteristic is shown in Figure 5. A 6N2P tube is used in the pre-amplifier. Each of the two output channels consists of one 6N2P and two 6P18P tubes. The sensitivity of the amplifier is 0.2 volts. Negative feedback of 21 db is used for the higher frequency channel and 28 db for the lower frequency channel. Two

Card 2/3

06273

SOV/107-59-6-37/50

LF Amplifiers Without Output Transformers

5GD-16 woofers and three VGD-2 tweeters are used. The output of both channels is 6 watts. Finally, the author describes a third version of an amplifier without an output transformer. Its circuit diagram is shown in Figure 6 and the frequency characteristics in Figure 7. Combined feedback is used. Negative feedback is employed in the driver and the output stages. Positive feedback is used in the driver stage. This arrangement reduces the nonlinear distortions to 0.5% at an output of 7 watts. The amplifier will reproduce frequencies from 20 cps to 100 kc. The driver stage consists of a 6N2P and the push-pull output stage of two 6P18P tubes. There are 6 circuit diagrams and four graphs.

Card 3/3

POLYAKOV, S., doktor tekhn.nauk; KONOVDCHENKO, V. inzh.

Economical brick blocks. Sel'stroi. 15 no.1:20-22 Ja '61.  
(MIRA 14:3)

(Building blocks)

POLYAKOV, Svyatoslav Vasil'yevich, doktor tekhn.nauk; KONOVODCHENKO,  
Viktor Il'ich, inzh.; KHALAFYANTS, N.M., red.izd-va; RUDAKOVA, N.I.,  
tekhn.red.

[Strength and deformation of vibrated brick panels and other  
efficient types] Prochnost' i deformatsii sbornykh vibrokirpichnykh i  
effektivnykh kladok. Moskva, Gos.izd-vo lit-ry po stroit., arkhitekt.  
i stroit.materialam, 1961. 147 p. (Akademiya stroitel'stva i  
arkhitektury SSSR. Institut stroitel'nykh konstruksii. Nauchnye  
soobshcheniia, no.15). (MIRA 1584)  
(Brick walls--Testing)



KONOVODOV B. P. and GINZBURG, B. M.

"Forecast Methods of Ice Cover Breaking of Ob Yenisey".  
Tr. Tsent. in-ta, Prognozov, No 40, pp 56-61, 1955.

The causes of cracking of the ice cover of rivers flowing from the south to the north are analyzed. Observations of positive air temperatures are considered essential. (RZhFiz, No 11, 1955)

SO: Sum No 884, 9 Apr 1956

KONOVODOV, B.P.

Effect of reservoirs on the temperature and moisture of the air  
over them before the freezing and cleaning periods. Trudy TSIP  
no. 58:63-100 '57. (MLRA 10:8)  
(Reservoirs) (Meteorology)

KONOVODOV, B. P.: <sup>land</sup> Master Geogr Sci (diss) -- "Investigation under natural conditions of changes in the temperature and humidity of the air over reservoirs (during the period of autumn cooling and the spring melting of ice)". Moscow, 1958. 9 pp (Main Admin of the Hydrometeorological Service, Council of Ministers USSR, Central Inst of Weather Forecasting), 150 copies (KL, No 4, 1959, 122)

S/194/61/000/011/070/070  
D271/D302

6.7300

AUTHOR:

Konovskiy, A.G.

TITLE:

The method for translating subscriber numbers in a manner suitable for the switching operations

PERIODICAL:

Referativnyy zhurnal. Avtomatika i radioelektronika, no. 11, 1961, 8-9, abstract 11 L41 (Tr. nauchno-telkhn. konferentsii Leningr. elektrotekhn. in-ta svyazi, no. 1, L., 1961, 73-80)

TEXT:

The capacity of the electronic telephone exchange with pulse-code modulation which is in development in the Leningrad Electrotechnical Telecommunications Institute is divided in 32 line concentrators, each with 256 subscribers, i.e. the total capacity is < 10,000 lines. Four-digit numbering should be adopted for this capacity. Switching processes in the exchange require, however, 5 digits for determining the concentrator and the subscriber number in it. The need, therefore, arises to translate 4-digit numbers

Card 1/2

~~KOKOVTSYV, S. I.~~; KALMERS, R.I., redaktor; DUBOVKINA, N.A., tekhnicheskiy  
redaktor

[The equipment of bakeries] Oboorudovanie khlebopekarnykh predpriatii.  
Moskva, Pishchepromisdat, 1954. 275 p. [Microfilm] (MIRA 8:3)  
(Bakers and bakeries)

MARKHEL', Pavel Sil'vestrovich, kand. tekhn. nauk; PETROVA, Nina Nikolayevna, nauchnyy sotr.; RUSANOVA, Aleksandra Viktorovna, nauchn. sotr.; IZMAIL, Lyudmila Nikiforovna, nauchn. sotr.; BABUSHKIN, Aleksey Il'ich, master po remontu; IVANOV, Viktor Tikhonovich, pechnik; ALEKSANDROV, Vladimir Mefod'yevich, inzh.; KONOVITSEV, Svyatoslav Vsevolodovich, inzh.-mekhanik; PRITYKINA, L.A., red.; KISINA, Ye.I., tekhn. red.

[Handbook on the overhauling of bakery equipment] Spravochnik po kapital'nomu remontu khlebopekarnogo oboorudovaniya. Moskva, Pishchepromizdat, 1963. 307 p. (MIRA 16:7)

1. Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut khlebopekarnoy promyshlennosti. Leningradskoye otdeleniye.
2. ~~Zaveduyushchiy sektorom ekonomiki~~, organizatsii proizvodstva i truda Leningradskoye otdeleniya Tsentral'nogo nauchno-issledovatel'skogo instituta khlebopekarnoy promyshlennosti (for Markhel').

(Bakeries--Equipment and supplies)  
(Food machinery--Maintenance and repair)

KONOWROCKI, A.

"Universal Implements." p. 7, (ROCZNIKI NAUK ROLNICZYCH. SERIA C-MECHANIZACJI, VOL. 66,  
NO. 1, 1953, Warsaw, Poland).

SO: Monthly List of East European Accession, Library of Congress, Vol 2 no 10, Oct 1953, Uncl

KONCWIROCKI, A.

"Testing Fertilizer Spreaders," P. 5: (ROCZNIKI NAUK ROLNICZYCH, Vol. 66  
No. 2, 1953. Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4,  
No. 1, Jan. 1955 Uncl.



KONOWROCKI, ALEKSANDER.

KONOWROCKI, ALEKSANDER.

Maszyry i aparaty do ochrony roslin. (Wyd. 1.) Warszawa, Panstwowe Wydawn. Rolnicze i Lesne, 1954. 313 p. (Machines and apparatus for plant protection. 1st ed.)

, DA

Not in DLC

Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

KONOWICKI, R.

"Some reasons for no achievements in cross-seeding potatoes."  
Nowe Rolnictwo, Warsaw, Vol 3, No 7, July 1954, p. 67

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

KONOWROCKI, ALEKSANDER.

Maszyny i narzędzia do uprawy lak i pastwisk. (1. wyd.) Warszawa, Panstwowe  
Wydawn. Rolnicze i Lesne, 1955. 115 p.  
(Machines and implements for the cultivation of meadows and pastures. 1st ed.)  
DA Not in DLC

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 6, June 1957, Uncl.

KONOWROCKI A.

Budowa i naprawa maszyn i narzędzi rolniczych (Building and repair of agricultural machines and tools) by A. Konowrocki. Reported in New Books (Nowe Książki.) February 15, 1956. No. 4.

KONOWROCKI, A.

AGRICULTURE

periodicals: NOWE ROLNICTWO Vol. 8, no. 1, Jan. 1959

KONOWROCKI, A. Principal problems of the planned development of the mechanization of agriculture. I. p. 12.

Monthly List of East European Accessions (EEAI) LC Vol. 8, no. 5  
May 1959, Unclass.

KONCERNOWSKI, A.

Prices of agricultural machinery and the foundations of the development of the mechanization of agriculture. p. 247.

MCNE ROLNICTWO. (Panstwowe Wydawnictwo Rolnicze i Lesne) Warszawa, Poland. Vol. 8, no. 23, Dec. 1959.

Monthly list of East European Accessions (EPAI) LC, Vol. 9, no. 2, Feb. 1960

Uncl.

Кубицкий, П. П.  
PIDOPLICHKO, A.P.; KONOYKO, M.A.

Nature of the development of contemporary lakes in peat bogs in  
the White Russian S.S.R. Trudy Inst.torf. AN BSSR no.2:200-202  
'53. (MIRA 8:11)  
(White Russia--Peat bogs) (White Russia--Lakes)

PIDOPLICHKO, A.P.; KONOYKO, M.A.

Results of the study of the raw supply resources for the  
manufacture of wax from peat. Trudy Inst. torf. AN BSSR  
6:96-109 '57.

(Peat) (Ozocerite)

(MIRA 11:7)



41  
PIDOPLICHKO, A.P.; FIGULEVSKAYA, L.V.; KONOYKO, M.A.; CHISTOVA, L.R.

Comparative estimate of the natural resources of raw bituminous  
peat. Trudy Inst. torfa AN BSSR 7:73-89 '59. (MIRA 14:1)  
(Peat)

PIDOPLICHKO, A.P.; KONOYKO, M.A.

Time of formation and features of the development of peat  
bogs and lakes in the White Russian S.S.R. during the  
Holocene. Dokl.AN BSSR 3 no.11:456-458 N '59.  
(MIRA 13:4)

1. Predstavleno akademikom AN BSSR K.I. Lukashchym.  
(White Russia--Paleogeography)

KONONKO, M.A.

Genesis and stratigraphy of ridge-"mochazhina" complexes of peat bogs  
at the upland peat deposits of the northwest parts of White Russia.  
Trudy Inst. torf. AN BSSR 9:216-221. '60. (MIRA 14:2)  
(White Russia--Peat bogs)

KONOYKO, M.A.; PIDOPLICHKO, A.P.

Origin of peat; intercalations of a higher decomposition degree  
in the highmoor deposits of White Russia. Dokl. AN BSSR 5 no.10:  
462-464 0 '61. (MIRA 15:3)

1. Institut torfa AN BSSR. Predstavleno akademikom AN BSSR  
K.I.Lukashevym.

(White Russia--Peat bogs)

KONOYKO, M.A.

Developmental characteristics of raised peat bogs in the Dina Lowland.  
Bot.; issl. Bel. otd. VBO no.6:84-95 '64. (MIRA 18:7)

KONOZ, M. D.

KonoZ, M. D. -- Investigation of the Influence of Technological Factors on the Strength of Dinas Brick at High Temperatures." Min Higher Education USSR, Khar'kov Polytechnic Inst imeni V. I. Lenin, Khar'kov, 1955 (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Knizhnaya Letopis', No 24, 11 June 1955, Moscow, Pages 91-104

*Land*  
KONOZ, P. F.: Master Agric Sci (diss) -- "The selection and types of mixtures of trees for the protective forest strips along the canals of the Inguleta irrigation system". Khar'kov, 1958. 23 pp (Min Higher Educ Ukr SSR, Khar'kov Order of Labor Red Banner Agric Inst im V. V. Dokuchayev), 200 copies (KL, No 5, 1959, 153)

3

BA

PROCESSES AND PROPERTIES INDEX

The ionic Schottky effect on complex surfaces. I. D. Konovalov. *J. Exptl. Theoret. Phys. (U. S. S. R.)* 7 1412-14 (1937).—The Schottky effect for ionized Na atoms on a Th wire surface was studied at 1475-1810° and a dependence of the ionic current on the elec. field was found. When  $\theta = 0.02$ , a Schottky effect is found but for  $\theta = 0.2$  or 0.4 deviations therefrom are observed. P. H. Rathmann

Effect of the electric field on the surface ionization of sodium atoms on the surface of thoriated tungsten. I. D. Konovalov. *J. Exptl. Theoret. Phys. (U. S. S. R.)* 9, 540-30 (1939).—K. studied the surface ionization of Na atoms on thoriated W wires for potential gradients of 0 to 32,800 v./cm.; temps. of 1445 to 1810°K. and surface coverings of  $\theta = 0$  to 0.5. The relation  $\log i^{-1}/F$  is linear. The effect of the external field, increasing the ion current on complex surfaces, is interpreted as an ionic Schottky effect. The Langmuir-Saha formula is applicable for  $V_e > V_{oc}$ ; the formula of Dobretsova for the effect of the field on the surface ionization is better than that of Morgulis. On partially covered surfaces the Th atoms are distributed as islands. Deviations from the Schottky law when  $1 > \theta > 0$  are interpreted as due to the surface field, they may also result in the region of electron emission. 15 figs. show the exptl. results. P. H. R.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION



KONOZENKO, I. D.

USSR/Electricity - Conductivity Jul 51

"Electric Properties of Thin Layers Containing Gray Tin," N. A. Goryunova, I. D. Konozenko, A. P. Obukhov, Leningrad Physicotech Inst, Acad Sci USSR

"Zhur Tekh Fiz" Vol XXI, No 7, 814-817

Method of obtaining thin layers of tin on cooled lining with priming of gray tin described. Such layers, consisting of mixt of 2 modifications, possess properties very different from layers of white tin of same thickness. Their sp resistance fluctuates within

LC 189T37

USSR/Electricity - Conductivity Jul 51 (Contd)

Limits  $10^3 - 10^4$  ohm cm. Such layers have neg thermal coeff of resistance of order 3 - 5% per 1°C. Submitted 10 Sep 50.

LC 189T37

KONOZENKO, I. D.  
USSR/Physics

Card 1/1

Authors : Konozenko, I. D.

Title : The physics of thin metallic and semi-conductive layers. The structure and electrical properties of metals and semi-conductors in thin layers.

Periodical : Usp. Fiz. Nauk. 52, Ed. 4, 561 - 602, April 1954

Abstract : The electrical properties of thin layers of metals or semi-conductors should not be considered separately from the problem concerning the structure of the layer. Not only the electrical but all physical properties of the layer depend upon the conditions of its derivation because the latter conditions determine the structure of the layer. The structure of very fine metal and semi-conductive layers depends upon many factors and above all upon: a) the nature of the pulverized metal, b) nature of the underliner, c) temperature of underliner, d) rate of condensation of the layer, e) thickness of layer. An increase in the thickness of the layer is followed by a change in the structure of the substance which forms the layer. One type of lattice may convert into another, and we have an allotropic conversion. Ninety nine references. Tables, graphs.

Institute : ....

Submitted : ....

Konozenko, I. D.

USSR

✓ Semiconducting bolometers. I. D. Konozenko. *Usp. Fiz. Nauk* 56, 283-308 (1955).—A review of the different types of semiconducting bolometers and their properties. Metallic, dielectric, and superconducting bolometers are also discussed briefly. 41 references. J. R. L.

Abstract: Electronographic investigation has shown that InSb films with thicknesses of 500-1,000 Å, obtained by sublimation, have a polycrystalline configuration and a structure of the type of sphalerite with a parameter (a) of 6,465 Å. The conductivity  $\sigma$  has been investigated over the temperature range of -80 to 300°, i.e., in the region of mixed conductivity. The starting specimen exhibited n-conductivity, whereas the InSb films exhibited p-conductivity. Upon heating, crystallization occurs in the films and after tempering at 150°, the films become stable and their electrical properties become reversible. The

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000824330009-2

USSR/Physical Chemistry - Crystals, B-5

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 256

Abstract: investigation of the absorption spectra of 1,000 Å -- thick films was carried out at 20°. In the region  $\lambda = 2-15 \mu$  it is similar to the spectrum obtained from macrosamples with a small shift of the absorption maximum in the direction of shorter wavelengths.

Card 2/2

KONOZENKO, I.D.; NIKHNOVSKIY, S.D.

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000824330009

Structure and electric properties of indium antimonide in thin layers  
Izv. AN SSSR. Ser. fiz. 20 no.12:1486-1490 D '56. (MLRA 10:3)

1. Institut fiziki Akademii nauk USSR.  
(Indium antimonide--Electric properties)

КОНЦЕНКО, И. Д.

57-8-8/36

AUTHORS  
TITLE  
PERIODICAL  
ABSTRACT

Konozenko I.D., Ust'yanov V.I.,  
On Electrical Properties of the Lead-Antimony System.  
(Ob elektricheskikh svoystvakh sistemy svints-sur'ma-Russian)  
Zhurnal Tekhn.Fiz., 1957, Vol 27, Nr 8, pp 1686-1694 (U.S.S.R.)

The authors state that alloys formed on the basis of solutions with variable compositions have electric properties which are, to their full extent, dependent on the state of primary solutions in alloys. The authors show that the electric conductivity of the alloys is a function of the component-concentration as well as of the heat conditions of the alloys. The dependence of the electric conductivity of an 1:1 alloy on the temperature shows clearly the influence of the number of dissolved atoms on the magnitude and on the character of the electric conductivity. It is assumed that antimony in the lead-antimony system plays the role of an anion former. The dissolution of lead in antimony and of antimony in lead decreases the number of charge carriers for  $\alpha$ -,  $\beta$ -solutions and for the eutectic mixture. The measurement of the hall-effect proved the assumption that the number of carriers decreases with the drop of temperature. The mobility  $\mu$  determined by means of the hall-effect measurements passes through the maximum of temperature in the interval investigated. The thermo-e.m.f. of the alloys situated close to the eutectic mixture, with  $40 \mu V$ /degrees, decreases with the rise of temperature. In the 1:1 alloy the thermo-e.m.f. increases in the case of heating; this takes place especially quickly

Card 1/2

On Electrical Properties of the Lead-Antimony System. 57-8-8/36  
starting with the 2,2 fold reverse temperature and reaches a limit value of  $160 \mu V$ /degrees. The authors show that the thermal coefficient of resistance of 1:1 alloys reaches the magnitude of 3% /degree at room temperature. Its value above 246°C proves the steadiness of the system-conditions.  
(12 illustrations and 9 Slavic references).

ASSOCIATION Kiev Institute for Physics of the Academy of Science of the Ukrainian SSR.  
(Institut fiziki AN DSSR, Kiyev)  
SUBMITTED July 24, 1956  
AVAILABLE Library of Congress.  
Card 2/2

**AUTHORS:**

Konozenko, I. D., Khaykina, R. M.

57-28-4-21/39

**TITLE:**

On P. A. Kurov's Letter (Reference 1) "On the Problem of the Structure and the Properties of Layers Obtained by Evaporation of InSb in a Vacuum" (Po povodu pis'ma P. A. Kurova (1) "K voprosu o strukture i svoystvakh sloyev, poluchayushchikhsya pri isparenii InSb v vakuume.")

**PERIODICAL:**

Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 4, pp. 789-791 (USSR)

**ABSTRACT:**

In his letter (Reference 1) P. A. Kurov maintains that in reference 2 "the authors could not have obtained thin InSb-layers, but that instead of InSb they had investigated the properties of thin antimony-layers." Such a categorical statement seems unfounded, as no computation of the electronograph is given in reference 2. During the performance of the electronographic investigation of the InSb-structure by the authors the electronograph did not operate with the maximum voltage of 40, but with a voltage of  $\sim 37,5$  kV and the constant of the instrument in this case is equal to 21,72. These data are

Card 1/2

On P. A. Kurov's Letter (Reference 1) "On the Problem of the Structure and the Properties of Layers Obtained by Evaporation of InSb in a Vacuum" 57-28-4-21/39

not given in reference 2. Kurov did not know them and should therefore not have drawn any conclusions on the electronograph. Table 1 here gives the complete computation of the electronogram to figure 1 (identical with figure 1 in reference 2). Table 2 gave the computation of the electronograph in figure 3, obtained at ~40kV. Kurov is asked to draw more correct conclusions on the basis of these tables. There are 3 figures, 2 tables, and 3 references, all of which are Soviet.

ASSOCIATION: Institut fiziki USSR, Kiyev (Kiyev, Institute for Physics, Ukrainian SSR)

SUBMITTED: November 21, 1957

Card 2/2

AUTHORS: Konozenko, I. D., Ust'yanov, V. I., SOV57-28-7-6/35  
Kedrov, V. P.

TITLE: Absorption of the Gamma-Ray Emission of Cobalt-60 in Cadmium Sulfide (Pogloshcheniye gamma-izlucheniya kopal'ta-60 v sernistom kadmii)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Vol. 28, Nr 7, pp. 1397 - 1401 (USSR)

ABSTRACT: The linear absorption factor of the pressed powdery cadmium sulfide was determined in dependence on the pressing effect. It is shown that at pressures of more than  $10^4 \text{ kg/cm}^2$  the factor remains practically constant and equal to  $0,184 \text{ cm}^{-1}$ , i. e. close to the theoretical value. The linear factor of the pressed ( $P = 11\,300 \text{ kg/cm}^2$ ) crystalline cadmium sulfide was determined as being equal to  $0,189 \text{ cm}^{-1}$ . It is shown that also this value is close to the theoretical value. The mass absorption factor of cadmium sulfide was measured immediately ( $0,042 \text{ cm}^2/\text{g}$ ) and determined as sum of the mass absorption factors

Card 1/2



Absorption of the Gamma-Ray Emission of Cobalt-60 in Cadmium Sulfide SOV/57-28-7-6/35

of the components ( $0,047 \text{ cm}^2/\text{g}$ ). The results agree well. The mean path of the gamma quanta of cobalt-60 in cadmium sulfide was determined as being equal to 5,3 cm, and the thickness of the half attenuation in the cadmium sulfide with 3,6 cm for the quanta of this energy. There are 5 figures and 8 references, 3 of which are Soviet.

ASSOCIATION: Institut fiziki AN USSR, Kiyev (Institute of Physics, AS Ukrainian SSR, Kiyev)

SUBMITTED: November 25, 1957

1. Cadmium sulfide--Absorptive properties 2. Cobalt isotopes (Radioactive)--Applications 3. Gamma radiation--Chemical effects

Card 2/2

34(4) KONOZENKO, I.D.

PHASE I BOOK ABSTRACTS NOV/3/40  
 Akademiya nauk Ukrainosoy SSR. Institut fiziki  
 Fotoelektricheskiye i opticheskiye yavleniya v poluprovodnikakh i opticheskim yavleniyah avchenaniya po fotoelektricheskim yavleniyam 1957 g (Prilozhenie k poluprovodnikam, S. Kiyev, 20-26 str.) Abstracts of the First All-Union Conference on Semiconductors and Optical Phenomena in Semiconductors... Kiyev, 1959. 403 p. 4,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR, Prezidium, Komissiya po poluprovodnikam.  
 Ed. of Publishing House: I. V. Kisina; Tech. Ed.: A. A. Matveychuk; Resp. Ed.: V. V. Kashmarev, Akademichesk, Ukrainian SSR, Academy of Sciences.

PURPOSE: This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutes of higher technical training specializing in the physics and technical application of semiconductors.

COVERAGE: The collection contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors. A wide scope of problems in semiconductor physics and technology is considered: photoconductivity, photoelectromotive forces, properties, photoconductive cells and photoresistors, the properties, photoconductive cells and photoresistors, the properties of thin films and corpuscular radiations, etc. The materials were prepared for publication by I. I. Mashboy, O. V. Shitko, K. B. Tolpygo, A. P. Libchany, Z. I. Sheynkman. References and discussion follow each article.

Photoelectric and Optical Phenomena (cont.)	507/3140	213
and Chlorine		
Kashnevskiy, A. K. Infra-red Conductivity Spectrum of Thin Lead Sulfide Films		237
Kononenko, I. D. Infra-red Conductivity Spectrum of Thin Lead Sulfide and Lead Telluride Films		240
Kol, M. Y., and O. P. Sorokin. Electrical, Optical, and Photoelectric Properties of Thin Films of the Al-Sb System		245
PHOTOELECTROMOTIVE FORCES IN SEMICONDUCTORS		
Tercin, A. M. Electron Exchange of Semiconductors With Adsorbed Molecules		251
Talavko, L. E. The Kinetics of Photoelectromotive Forces in Homogeneous Semiconductors		268
Akhmediani, I. D., P. Kononenko, and V. I. Ust'yanov. The $\gamma$ -Conductivity of $\text{PbS}$		309

38195

S/O58/62/000/004/155/160

A061/A101

26 2421

AUTHORS: Akhvlediani, Z. G., Konozenko, I. D., Ust'yanov, V. I.

TITLE: G-conductivity of CdS

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 3 - 4, abstract 4-4-6yu  
(V sb. "Fotoelektr. i optich. yavleniya v poluprovodnikakh", Kiyev,  
AN USSR, 1959, 389 - 395)

TEXT: Experiments conducted to investigate the secondary conductivity of CdS single crystals and polycrystals under the action of gamma radiation are described. Specially prepared CdS single crystals and polycrystals were transferred to a darkroom. The temperature was varied from 83 to 333°K. Co<sup>60</sup> was used as the gamma source. The volt-ampere characteristics of CdS single crystals and polycrystals at different gamma dose rates and temperatures, the dosimetric characteristics at various temperatures, the relaxation characteristics at various dose rates and temperatures, and the volt-ampere dark characteristics were taken. It was inferred from experimental results that the gamma current was due to the energy of Compton electrons capable of displacing the lattice ions. This displacement can be related to the formation of an active center which vanishes

Card 1/2

KONOZENKO, I.D.; UST'YANOV, V.I.

CdS crystals as the receivers of gamma rays. Fiz.tver.tela 1  
no.1:89-94 Ja '59. (MIRA 12:4)

1. Institut fiziki AN USSR, Kiyev.  
(Cadmium sulfide) (Gamma rays)

PHASE I BOOK EXPLOITATION

SOV/5432

Konozenko, Ivan Dmitriyevich, Doctor of Technical Sciences

Deystviye yadernykh izlucheniya na fizicheskiye svoystva tverdykh tel; radiatsionnaya fizika tverdogo tela (Effect of Nuclear Radiation on the Physical Properties of Solids; Radiation Physics of Solids) Kiyev, 1960. 39 p. (Series: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy Ukrainskoy SSR. Seriya V, no. 13) 20,800 copies printed.

Responsible Ed.: V. I. Strizhak, Candidate of Physics and Mathematics; Ed.: M. V. Tuboleva.

PURPOSE: This booklet is intended for readers interested in the effect of nuclear radiation on matter.

COVERAGE: The author discusses in simple language the basic concepts of nuclear radiation, giving special attention to the changes which materials undergo under the effect of radiation. The principal nuclear particles and the physical mechanism of

Card 1/2

Card 2/2

JA/dwm/ec  
7-20-61

KONOZENKO, I. D.

82551

S/181/60/002/007/031/042  
R006/B060

24.7700

AUTHORS: Konozenko, I. D., Ust'yanov, V. I., Galushka, A. P.

TITLE: The Conditions for the Occurrence of Gamma Conductivity in CdS Single Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1584-1591

TEXT: The authors studied the effect of temperature on the electrical conductivity of CdS single crystals with the aim of exploring the nature of the conductivity stimulated by gamma radiation. The temperature dependence of the dark conduction of crystals prior to and after their irradiation with gamma rays, and the thermostimulated conductivity due to illumination or gamma irradiation of the crystal were investigated. The measurements were made with a cryostat which is schematically shown in Fig. 1 and described. Co<sup>60</sup> of 300 millicuries served as the gamma source, and the maximum intensity amounted to ~ 3000  $\mu$ r/sec. For the measurement of the temperature dependence of conductivity, the crystals were previously heated in darkness for 1 hour at 100°C, and then cooled, in darkness, down to nitrogen temperature. Depending on the duration of the growth or of the

Card 1/4

82551

S/181/60/002/007/031/042  
B006/B060The Conditions for the Occurrence of Gamma  
Conductivity in CdS Single Crystals

drop of the photocurrent, the crystals were subdivided into two groups: in the first group this period was several seconds, and in the second it was fractions of a second. Fig. 2 shows  $\tan I_{\text{dark}} = f(10^5/T)$  for specimens of the first group. In the range of 166.67 - 250°K conductivity increases only slightly with temperature. In this range,  $\Delta E_1$  of the various specimens was between 0.08 and 0.14 ev. At higher temperatures the climb becomes suddenly steeper (some curves exhibit a salient point), and  $\Delta E_2$  was between 0.6 and 0.8 ev ( $\Delta E$  denotes the depth of the impurity centers). Fig. 3 shows the same for crystals of the second group. For this,  $\sigma$  is practically independent of temperature up to 485°K, while at higher temperatures there is a steep rise; all these curves exhibit a salient point. With a view to checking the existence of local trap-like centers and to determining their depth, the authors studied the thermostimulated conductivity of the various specimens. For gamma-sensitive crystals, current maxima were found at 175 and 290 - 315°K (Fig. 4), whereas gamma-insensitive ones had a maximum only in the last-mentioned range. The levels responsible for the peak at 300°K are located (as had been calculated by means of formula (2))

Card 2/4

82551

The Conditions for the Occurrence of Gamma  
Conductivity in CdS Single Crystals

S/181/60/002/007/031/042  
B006/B060

0.45 ev below the bottom of the conduction band. The results are finally discussed in great detail. Gamma absorption is mainly due to Compton scattering (92%), but also to photoeffect and pair production. The quantum yield was found to attain  $\sim 10^5$  electrons per gamma quantum. The gamma-induced conductivity ( $\Delta I \geq 10^{-13} \text{a}$ ) is mainly due to impurity centers (shallow traps) and donor centers located near the bottom of the conduction band. Additional experiments were undertaken in order to test the role played by shallow traps in gamma conductivity. These traps can be caused by the introduction of bismuth impurities, as is shown by the appearance of peaks (Figs. 7, 8). Finally, the role played by shallow traps and donor centers in the mechanism of the formation of gamma current is discussed, and the following mechanism is assumed: the Compton electrons arising on the scattering of gamma quanta are exciting carriers from band to band, excitons as well as electrons from lower atomic shells. In the case of the existence of shallow traps, excitons can decay into negatively charged centers, and this decay is followed by a transition of electrons into the conduction band. The authors thank V. K. Lashkarev, Academician of the AS UkrSSR as well as M. K. Sheynkman for discussions. There are 8 figures and 11 references: 6 Soviet and 5 US.

Card 3/4



82551

The Conditions for the Occurrence of Gamma  
Conductivity in CdS Single Crystals

S/181/60/002/007/031/042  
B006/B060

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

✓

SUBMITTED: July 30, 1959

Card 4/4

25581

S/185/60/005/002/018/022  
D274/D304

24.7700 (1499, 1138, 1035)

AUTHORS: Konozenko, I.D., Ust'yanov, V.I. and Galushka, A.P.

TITLE: On the nature of gamma-ray conductivity in cadmium-sulfide crystals

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 2, 1960, 276-277

TEXT: The fact that  $\gamma$ -conductivity is found in certain crystals only of cadmium sulfide, makes the physical processes involved more difficult to understand. Thus, owing to non-homogeneous composition of such crystals in the vapor phase, an extraordinary spread in the values of the dark resistivity of the crystals is observed. The author obtained single crystals of cadmium sulfide by a method (Ref. 3: E. Grillot, Compt. Rend., 242, 779, 1956) which yielded more homogeneous crystals; the spread of dark resistivity did not exceed an order of magnitude of 1.5. These crystals can be divided into two groups according to the lag in their photoconductivity. To the first group belong the crystals for which an 80% rise (or drop) in

Card 1/3

25581  
S/185/60/005/002/018/022  
D274/D304

On the nature of gamma-ray...

photocurrent takes place in tens of seconds. An investigation of the temperature dependence of electrical conductivity for this group showed the presence of impurity centers with following activation energy: donor-levels with  $\Delta E$  from 0.4 to 0.12 eV, and from 0.5 to 1.2 eV; trapping-levels with  $\Delta E_3$  from 0.08 to 0.13 eV, and from 0.5 to 1.2 eV. To the second group belong crystals which have no trapping levels with activation energy from 0.08 to 0.13; for this group the rise (or drop) in photocurrent takes place in a few seconds. It is noted that first-group crystals show a decrease in electrical resistivity under the effect of  $\gamma$ -radiation; they are called  $\gamma$ -sensitive. The crystals of the second group are not  $\gamma$ -sensitive. Hence the author considers that the trapping centers with small activation energy have an important role in the generation of  $\gamma$ -conductivity. It can be assumed that the Compton electrons excite the carriers and the excitons; the latter, can increase the carrier concentration in the conductivity zone, i.e. lead to  $\gamma$ -conductivity. A. Rose (Ref. 5: Phys. Rev., 97, 1543, 1955) and (Ref. 6: Poluprovodnikovyye preobrazovateli energii izlucheniya, IIL, 1959 (Semiconductor Converters of Radiation Energy)),

Card 2/3

On the nature of gamma-ray...

25581  
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D274/D304

showed that the great inertia of the cadmium crystals (the crystals of the first group - according to this article), can be explained by virtue of the centers of two types with a different electron-capture cross-section. There are no tapping centers in the absence of  $\gamma$ -sensitivity; this should be expected with the exciton mechanism too, of  $\gamma$ -conductivity. There are 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: A. Rose, Phys. Rev., 97, 1543, 1955.

ASSOCIATION: Instytut fizyki AN USSR (Physics Institute AS UkrSSR)  
SUBMITTED: December 23, 1959

Card 3/3

KONOZENKO, I.D.; UST'YANOV, V.I.

Production of large CdS single crystals for dosimetry of gamma field.  
Ukr. fiz. zhur. 5 no. 5:606-614 S-0 '60. (MIRA 14:4)

1. Institut fiziki AN USSR.  
(Cadmium sulfide crystals) (Gamma rays)

KONOZENKO, Ivan Dmitriyevich, doktor tekhn.nauk; PASICHNIK, L.L., kand.  
fiz.-matem.nauk, otv.red.; VYADRO, Sh.Ya., red.; ZELENKOVA, Ye.F.,  
tekhn.red.

[Atomic sources of electric current] Atomni dzherela strumu.  
Kyiv, 1961. 33 p. (Tovarystvo dlia poshyrennia politychnykh i  
naukovykh znau' Ukrain's'koi RSR. Ser.6, no.18).

(Atomic power plants) (Thermoelectricity) (MIRA 15:2)

33105

S/638/61/001/000/031/056  
B116/B102

24.7100 (1153, 1160, 1454)

AUTHORS: Konozenko, I. D., Ust'yanov, V. I., Galushka, A. P.

TITLE: Study of the  $\gamma$ -conductivity of CdS single crystals

SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent, 1961, 200-210

TEXT: The authors describe the production of CdS single crystals and present the investigation results. They found that their  $\gamma$ -conductivity was due to local centers having the form of shallow traps ( $\Delta E = 0.08-0.14\text{ev}$ ) since the slightest disturbance of crystallization considerably influences the crystal properties, the authors developed a special production method to reduce the parameter spread. Crystallization took place at  $1200^{\circ}\text{C}$  in quartz tubes, in which prior to heating, the air replaced by nitrogen. During the heating nitrogen is continuously added with the flow rate being chosen in such a way that at  $1200^{\circ}\text{C}$  a temperature drop of  $10-15^{\circ}\text{C}$  occurs. This method guarantees a small number of crystallization centers and a high growth rate of the crystals. Crystallization where a constant

Card 1/3

33105

S/638/61/001/000/031/056  
B116/B102Study of the  $\gamma$ -conductivity ...

nitrogen flow rate and constant temperatures are of great importance, takes 1.5-2 hr. Debye-Sherrer patterns showed that the CdS single crystals grown in such a way have a hexagonal lattice with  $a = 4.08 \text{ \AA}$ ,  $c = 6.72 \text{ \AA}$ , and  $c/a = 1.65$ . The temperature dependence of the dark conductivity of the crystals before and after  $\gamma$ -irradiation and the thermostimulated conductivity caused by irradiation by light or gamma rays were studied in a thermostat.  $\text{Co}^{60}$  of a maximum intensity of 3 curies/sec served as  $\gamma$ -source. The CdS crystals obtained can be divided into two groups according to their dark conductivity and the photocurrent inertia: (1) increase and decrease of the photocurrent take several seconds, (2) only fractions of a second. From 170-250°K the conductivity of the first group slightly increases with temperature.  $\Delta E_1 = 0.08-0.14 \text{ ev}$ . Above 250°K the curves become steeper and  $\Delta E_1 = 0.6-0.9 \text{ ev}$ . The conductivity of the second group hardly increases from 170-285°K and beyond 285°K the curves has the same slope as that of the first group. Considerably  $\gamma$ -conductivity ( $\Delta I \leq 10^{-13} \text{ a}$ ) is observed where both types of the local centers exist, i.e. in crystals of the first group. The experiments showed that  $\gamma$ -irradiation increases the dark conductivity of both crystal groups. Calculations of the author showed that  $\gamma$ -radiation is mainly damped by

Card 2/3

33105

S/638/61/001/000/031/056  
B116/B102Study of the  $\gamma$ -conductivity ...

Compton scattering (by 92%). Impurity centers causing shallow traps play an important part in the occurrence of  $\gamma$ -conductivity. It was found that after introduction of an impurity (Bi, Au, Sb, Hg) into crystals nonsensitive to  $\gamma$ -radiation, their sensitivity increases (shallow traps as new centers). The increase in concentration of shallow traps leads to a strong increase in the crystal inertia, it determines  $\gamma$ -conductivity, and causes a longer rise time of the  $\gamma$ -current. The time of the decrease of  $\gamma$ -current is determined by the carrier recombination rate. There are 6 figures, 1 table, and 11 references: 7 Soviet and 4 non-Soviet. The three references to English-language publications read as follows: Frerichs, R., Phys. Rev., 72, 594, 1947; Hollander, L., Rev Sci Instr., 28, 15, 322, 1957; Rose, A., Proc. of IRE, 43 (12), 1850, 1955.

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

Card 3/3



28079

S/181/61/003/009/011/039  
B102/B138

+

26.2421

AUTHORS: Konozenko, I. D., Ust'yanov, V. I., and Galushka, A. P.

TITLE: Gamma-conductivity of cadmium selenide

PERIODICAL: Fizika tverdogo tela, v. 3, no. 9, 1961, 2629 - 2634

TEXT: The gamma-conductivity of CdSe has been examined in a wide temperature range at a constant gamma intensity of 35 curies/sec emitted from a  $\text{Co}^{60}$  source. The stationary value of the gamma-induced current was determined at various temperatures. Whenever the temperature was changed, the crystal was heated to  $\approx 400^\circ\text{K}$  without irradiation, and then cooled to the required temperature. The dark resistivity was checked carefully. The following characteristics of the CdSe crystals were measured by means of the apparatus shown in Fig. 1: dark conductivity ( $77 - 300^\circ\text{K}$ ); dark gamma-conductivity ( $77 - 380^\circ\text{K}$ ); thermally excited photo- and gamma-conductivity ( $77 - 300^\circ\text{K}$ ). Temperature was measured on a copper-constantan thermocouple with a sensitivity of  $\pm 0.25^\circ$ . The dark conductivity of the CdSe crystals varied within 2.5 orders of magnitude. Thermo-photoconductivity was measured at different

Card 1/4

28079

S/181/61/003/009/011/039  
B1C2/B138

+

Gamma-conductivity of...

heating rates. An increase in the heating rate was found to increase the current maximum and shift it to higher temperatures. Apart from the fundamental impurity levels (peaks between  $110 - 130^\circ\text{K}$ ), there seem to be other levels which are characterized by low peaks at other temperatures. The excited impurity levels ranged from 0.18 - 0.35 eV. The thermal gamma-conductivity measurements showed that the principal maxima remained at about  $115^\circ\text{K}$  independent of heating rate and gamma irradiation. This means that the nature of the adhesion centers of the principal maximum is not affected by gamma irradiation. Additional regions of increased conductivity occurred between 100 and  $200^\circ\text{K}$  for the two crystals. The gamma-induced current remained almost constant when the specimen was heated from  $77$  to  $200 - 210^\circ\text{K}$ , and rapidly dropped to zero when temperature was further increased ( $260 - 300^\circ\text{K}$ ). The gamma-sensitivity  $W = (I_\gamma - I_{th})/I_{th}$  decreased rapidly with increasing temperature. In one of the specimens it was  $\gg 10^8$  at  $77^\circ\text{K}$ , and no more than about  $10^{-1}$  at  $303^\circ\text{K}$ . Discussion of the results produced the following conclusions: 1) The upper limit of gamma-conductivity in CdSe crystals ( $\sigma = 10^{-13} - 10^{-11} \text{ ohm}^{-1} \cdot \text{cm}^{-1}$ ) was around  $\approx 300^\circ\text{K}$ , no lower

Card 2/4

Gamma-conductivity of...

-28079  
S/181/61/003/009/011/039  
B102/B138

limit has been found. 2) Gamma-conductivity is related to the existence of shallow impurity levels ( $\Delta E \approx 0.18 - 0.35$  ev). 3) Gamma-irradiation of CdSe produces new impurity centers (radiation defects). 4) The heating of CdSe produces impurity centers similar to radiation defects. 5) Gamma-sensitivity vanishes at about the same temperature at which the radiation defects begin to be annihilated. 6) CdSe has thermo-stimulated conductivity due to gamma-irradiation. The authors thank V. L. Vinetskiy for a discussion. There are 6 figures, 1 table, and 8 references: 6 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: R. Frerichs. Phys. Rev. 76, 1869, 1949, S. Ibuki. J. Phys. Soc. Japan, 14, 1196, 1959.

SUBMITTED: August 2, 1960 (initially), March 28, 1961 (after revision)

Card 3/4.

28438

S/185/61/006/002/010/020  
D210/D304

26.2421

AUTHORS: Konozenko, I.D., Svvechnykov, S.V., and Chala, V.H.

TITLE: Some features of photo and X-ray - conductivity of single crystals of cadmium sulphide

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 2, 1961,  
207 - 212

TEXT: In this article the authors describe measuring current relaxation of single crystals of cadmium sulphide induced by visible light and X-rays, giving a quantitative explanation on the similarity of these two phenomena. This work was done because despite the large amount of data on X-ray conductivity, no adequate theory exists which would allow the prediction of conductivity induced by visible light. The best comparison of the effect of X-rays and light on electrical conductivity can be made at the beginning of the curve  $I = f(t)$ , where essentially electron attachments are controlling. Assuming at the same time that within certain limits

Card 1/4

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Some features of photo and

the mean life of current carriers is independent of the mode of excitation, then the current decay curves should be of the same type for X-rays and for visible light. A suitable basis for comparison then is to work under conditions of equal absorption coefficient and equal power absorption by the lattice. The authors have, therefore, made measurements under conditions of equal absorption coefficients for the X-rays and visible light, and equal stationary currents through the crystal, as the power absorption could not be measured directly. The cadmium sulphide crystals were grown from vapor phase, by a method developed at the Institute. Aluminum electrodes were used. These gave linear characteristics from a fraction of a volt to a few volts. The X-ray machine gave a supply of steady intensity from which the copper line  $k_{\alpha}$  was separated giving an absorption coefficient of  $10^3 \text{ cm}^{-1}$  in CdS. A corresponding coefficient for visible light is obtained at  $\lambda = 5100 \text{ \AA}$ . The monochromatic light was obtained using interference filters giving transmission bands of  $\Delta\lambda = 80 \text{ \AA}$ . The experimental arrange-

Card 2/4

Some features of photo and ...

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D210/D304

ASSOCIATION: Instytut fizyki AN URSSR m. Kyyiv (Institute of Physics, AS UkrSSR, Kiyev)

SUBMITTED: June 30, 1960

X

Card 4/4

90

PHASE I BOOK EXPLOITATION

SOV/6176

Konobeyevskiy, S. T., Corresponding Member, Academy of Sciences  
USSR, Resp. Ed.

Deystviye vadernykh izlucheniy na materialy (The Effect of  
Nuclear Radiation on Materials). Moscow, Izd-vo AN SSSR,  
1962. 383 p. Errata slip inserted. 4000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk; Otdeleniye fiziko-matematicheskikh nauk.

Resp. Ed.: S. T. Konobeyevskiy; Deputy Resp. Ed.: S. A. Adasinskiy; Editorial Board: P. L. Gruzin, G. V. Kurdyumov, B. M. Levitskiy, V. S. Lyashenko (Deceased), Yu. A. Martynyuk, Yu. I. Pokrovskiy, and N. F. Pravdyuk; Ed. of Publishing House: M. G. Makarenko; Tech. Eds: T. V. Polyakova and I. N. Dorokhina.

Card 1/14

90

The Effect of Nuclear Radiation (Cont.)

SOV/6176

**PURPOSE:** This book is intended for personnel concerned with nuclear materials.

**COVERAGE:** This is a collection of papers presented at the Moscow Conference on the Effect of Nuclear Radiation on Materials, held December 6-10, 1960. The material reflects certain trends in the work being conducted in the Soviet scientific research organization. Some of the papers are devoted to the experimental study of the effect of neutron irradiation on reactor materials (steel, ferrous alloys, molybdenum, avial, graphite, and nichromes). Others deal with the theory of neutron irradiation effects (physico-chemical transformations, relaxation of internal stresses, internal friction) and changes in the structure and properties of various crystals. Special attention is given to the effect of intense  $\gamma$ -radiation on the electrical, magnetic, and optical properties of metals, dielectrics, and semiconductors.

Card 2/14

The Effect of Nuclear Radiation (Cont.)	SOV/6176
Konozenko, I. D., and V. I. Ust'yanov. Effect of $\gamma$ -Rays on Properties of CdS Single Crystals	318
Titov, P. P., A. K. Kikoin, and A. Ye Buzynov. Stimulating Action of X- and $\gamma$ -Rays on Flotation Process	329
Byalobzheskiy, A. V., V. D. Val'kov, and V. N. Lukinskaya. Effect of Radiation on Corrosion Properties of Metals and Alloys	332
Galushka, A. P., P. G. Litovchenko, and V. I. Ust'yanov. Methods of Investigating Properties of Semiconductors Irradiated by $\gamma$ -Quanta	341
Starodubtsev, S. V., S. A. Azizov, I. A. Domsryad, Ye. V. Peshikov, and L. P. Khiznichenko. Change in Mechanical Properties of Some Solids Subjected to $\gamma$ -Radiation	347

Card 12/14

- 6 -

L 3411-66 EWT(m)/EPF(o)/ETC/EPF(n)-2/EWG(m)/EWP(t)/EWP(b) IJP(c)  
RDW/JD/GG/GS

ACCESSION NR: AT5023812

UR/0000/62/000/000/0308/0317

50  
49  
8+1

AUTHOR: Konozenko, I. D.; Ust'yanov, V. I.; Galushka, A. P.

TITLE: Gamma conductivity of cadmium selenide

SOURCE: Soveshchaniye po probleme Deystviye yadernykh izlucheniy na materialy.  
Moscow, 1960. Deystviye yadernykh izlucheniy na materialy (The effect of nuclear  
radiation on materials); doklady soveshchaniya. Moscow, Izd-vo AN SSSR, 1962,  
308-317

TOPIC TAGS: cadmium selenide, electric conductivity, gamma radiation, irradiation effect, crystal defect, impurity level

ABSTRACT: An experimental study of the  $\gamma$  conductivity of cadmium selenide crystals with a dark electrical conductivity of  $10^{-8}$  to  $10^{-11}$  ohm $^{-1}$  cm $^{-1}$  at 25C was carried out with Co $^{60}$  as the source of  $\gamma$  radiation. Both the thermostimulated conductivity and the thermostimulated gamma conductivity were measured (respectively in the 77-380K and 77-300K range). It is shown that the  $\gamma$  sensitivity is related to the presence of shallow impurity levels in the crystal ( $\Delta E = 0.18-0.35$  eV). The irradiation of CdSe crystals with Co $^{60}$   $\gamma$  radiation is found to cause the formation of new impurity centers, i.e., radiation-induced disturbances. Anneal-  
Card 1/2



87920

S/181/62/004/005/010/055  
B102/B138

9.4177  
24.2600

AUTHORS: Konozenko, I. D., Muzalevskiy, Ye. A., and Shakhovtsova, S.I.

TITLE: Investigation of the generation of electrical pulses by CdSe single crystals at liquid-nitrogen temperature

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1132-1134

TEXT: It was found that CdSe single crystals to which a constant voltage of about 200 v is applied generate current pulses at nitrogen temperature. The frequency of these pulses is between 1 and 0.001 cps and depends on the illumination intensity. The sizes of the crystals used were 2.2.4, 2.3.4, and 1.2.3 mm<sup>3</sup>. J

They were illuminated with monochromatic light with an ИКС-12 (IKS-12) infrared spectrometer. The photocurrent was recorded with ЭПМ-М (EPP-M1) and Н-3732 (N-3732) recorders. The pulses were observed with an ЭНО-1 (ENO-1) oscillograph and photographed with a loop oscillograph. Before the measurements the samples were kept in the dark for 15-30 min, then light was switched on and the applied voltage was raised slowly. The frequency of the observed current pulses was found to increase almost linearly with the intensity of the illumination. The Card (1/3)

S/181/62/004/005/010/055  
B102/B138

Investigation of the generation of ...

curve  $v(V)$  has a "shallow" minimum at  $\sim 300$  v. When the sign of the voltage was altered, the shape, the amplitude and the frequency of the current pulses changed as shown in Fig. 5. The pulse generation could be damped and even suppressed by additional infrared illumination ( $\lambda \approx 1\mu$ ). When the temperature of the sample was raised the pulse amplitudes became lower and the durations longer. The effect of pulse generation was observed whether the contacts were ohmic or not. There are 5 figures.

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

SUBMITTED: December 11, 1961

Legend to Fig. 5: (1) V direct, (2) V back.

Card 2/3

Investigation of the generation of ...

S/181/62/004/005/010/055  
B102/B138

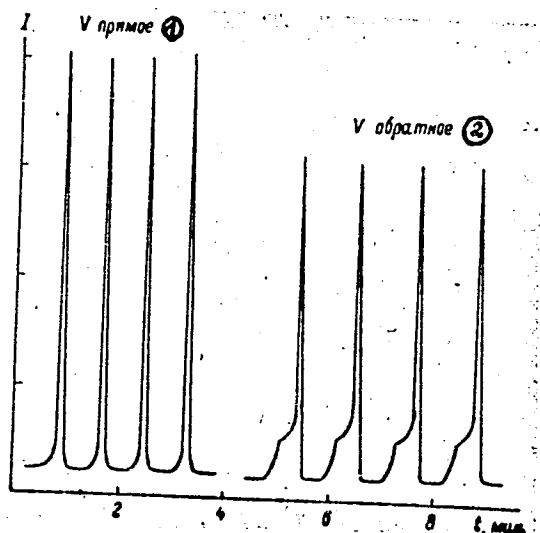


Fig. 5

Card 3/3

L 3373-66 EWT(l)/EWT(m)/EPF(c)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c)  
JD/GG/GS

ACCESSION NR: AT5023813

UR/0000/62/000/000/0318/0328

AUTHOR: <sup>44,55</sup> Konozenko, I. D.; Ust'yanov, V. I. <sup>44,55</sup>

62  
B+1

TITLE: Effect of gamma rays on the properties of Cds single crystals

<sup>44</sup><sub>55</sub> SOURCE: <sup>19</sup> Soveshchaniye po probleme Deystviye yadernykh izlucheniy na materialy. <sup>21, 44, 55</sup>  
Moscow, 1960. Deystviye yadernykh izlucheniy na materialy (The effect of nuclear radiation on materials); doklady soveshchaniya. Moscow, Izd-vo AN SSSR, 1962, 318-328

TOPIC TAGS: cadmium sulfide, electric conductivity, gamma radiation, irradiation effect, crystal defect, impurity center

ABSTRACT: The phenomena induced by gamma radiation in <sup>27</sup> CdS single crystals are investigated over a wide temperature range. The appearance of additional conductivity under bombardment with  $Co^{60}$  is due to the ionizing effect of Compton electrons and to the appearance of radiation defects. Gamma conductivity is related to the formation of certain energy levels by the impurity centers. Radiation defects should be due to the displacement of cadmium (not sulfur) nuclei from the lattice points, causing the appearance of donor-type impurity centers, which increase the conductivity. This is what happens during irradiation at the liquid nitrogen temperature. There is reason to believe that in the

Card 1/2

KONOZENKO, I.D., doktor tekhn.nauk

Peaceful uses of radiation. Znan.ta pratsia no.9:10-11 S '62.  
(MIRA 15:11)  
(Nuclear physics)

KONZENKO, I.D.; MUZALEVSKIY, Ye.A. [Muzalevs'kyi, IE.O.]; SHAKHOVTSOVA, S.I.

Crystal generator of electric pulses of ultrahigh frequency.  
Ukr.fiz,zhur. 7 no.3:338 Mr '62. (MIRA 15:7)

1. Institut fiziki AN USSR, g. Kiyev.  
(Oscillators, Crystal)

GALUSHKA, A.P.; KONOZENKO, I.D.

Effect of pile radiation on the properties of CdS single crystals.  
Atom. energ. 13 no.3:277-280 S '62. (MIRA 15:9)  
(Cadmium sulfide crystals)  
(Metals, Effect of radiation on)

KABAKCHI, Andrey Mikhaylovich; LAVRENTOVICH, Yaroslav Iosifovich;  
PEN'KOVSKIY, Vladimir Vladimirovich; KONOZENKO, I.D.,  
doktor tekhn. nauk, otv. red.; POKROVSKAYA, Z.S., red.;  
TURBANOVA, N.A., tekhn. red.

[Chemical dosimetry of ionized radiations] Khimicheskaya  
dozimetriya ioniziruyushchikh izluchenii. Kiev, Izd-vo  
USSR, 1963. 155 p. (MIRA 17:1)



VINETSKIY, V.L.; KONOZENKO, I.D.; SHAKHOVTSOVA, S.I.

Analysis of the phenomenon of photocurrent pulse generation by  
cadmium selenide crystals. Fiz. tver tela 5 no.9:2698-2702 S  
'63. (MIRA 16:10)

1. Institut fiziki AN UkrSSR, Kiyev.

KONOZENKO, I.D.; ZAIKA, Zh.A.

Type SIT-2K device for drawing the temperature chart of a locality.  
Izv. AN SSSR. Ser. geofiz. no.11:1758-1761 N '63. (MIRA 16:12)

KONOZENKO, Ivan Dmitriyevich; USI'YANOV, Vasily Ivanovich;  
MARTINENKO, L.I., red.

[Physics in agriculture] Fizika v sil's'komu hospodarstvi.  
Kyiv, Naukova dumka, 1964. 134 p. (MIRA 17:10)

SVECHNIKOV, Sergey Vasil'yevich, kand. tekhn. nauk; KONOZENKO,  
I.D., doktor tekhn. nauk, retrenzent

[Photoelectric two-terminal networks] Fotodvukhpoliusniki.  
Kiev, Tekhnika, 1965. 279 p. (MIRA 18:5)

L 29969-65 EWP(e)/EWT(m)/EPT(c)/EPT(n)-2/EPR/EWP(t)/EWP(b) Pr-U/Ps-U/Pu-U  
IJP(c) JD/JG/CG/AT/WH

ACCESSION NR: AP5004440

S/0226/65/000/001/0060/0070.2

AUTHOR: Konozenko, I. D.; Neshpor, V. S.

TITLE: Effect of nuclear radiation<sup>19</sup> on the properties of refractory compounds<sup>27</sup>

SOURCE: Poroshkovaya metallurgiya, no. 1, 1965, 60-70

TOPIC TAGS: refractory compound, gadolinium hexaboride<sup>27</sup>, silicon carbide<sup>27</sup>, titanium carbide, molybdenum carbide, compound irradiation, nuclear radiation, irradiation effect, irradiated refractory compound, irradiated compound property

ABSTRACT: The effect of nuclear radiation on the properties of gadolinium hexaboride ( $GdB_6$ ), silicon carbide (SiC), titanium carbide (TiC), and molybdenum carbide ( $Mo_2C$ ) has been investigated. The compound samples were irradiated with a neutron flux of  $10^{13}$  n/cm<sup>2</sup>·sec at approximately 50C. The specimens were also exposed to  $\gamma$ -irradiation. Total doses up to  $10^{16}$  n/cm<sup>2</sup> had no noticeable effect on the compound microstructure. A dose of  $10^{19}$  n/cm<sup>2</sup> produced grain refining. The lattice parameters "a" of  $GdB_6$  and "c" of  $Mo_2C$  increased with increasing

Card 1/2

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ACCESSION NR: AP5004440

2

dose. The TiC lattice parameter was not affected. The microhardness increased under the effect of  $10^{16}$ — $10^{18}$  n/cm<sup>2</sup> by 31.3—37.5% in TiC, 44.6—50.5% in Mo<sub>2</sub>C, and 40—70% in GdB<sub>2</sub>, but remained unchanged in SiC. The annealing of irradiated specimens at 1000C lowered the microhardness to original values. At doses of  $10^{18}$ — $10^{19}$  n/cm<sup>2</sup> the resistivity of SiC increased 4—6 times (considerably more than that of other carbides), 41% for TiC, and 12% for Mo<sub>2</sub>C. In all compounds tested, irradiation increased the temperature coefficient of resistivity. The coefficient of thermal expansion was increased by 25% only for GdB<sub>2</sub>. Orig. art. has: 5 figures and 5 tables. [WW]

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii, Leningrad  
(State Institute of Applied Chemistry); Institut fiziki AN UkrSSR  
(Institute of Physics, AN UkrSSR)

SUBMITTED: 23Jul63

ENCL: 00

SUB CODE: MT, NP

NO REF SOV: 028

OTHER: 016

ATD PRESS: 3195

Card 2/2

L 23940-65 EWP(m)/EWP(b)/T/EWP(t) IJP(c) JD

ACCESSION NR: AP5003449

S/0181/65/007/001/0278/0279

AUTHOR: Shakhovtsova, S. I.; Konozenko, I. D.; Muzalevskiy, Ye. A.

TITLE: On the generation of current pulses by CdS single crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 1, 1965, 278-279

TOPIC TAGS: cadmium sulfide, photoelectric effect, photoelectricity, electric pulse

ABSTRACT: Samples of cadmium sulfide single crystals were shown to generate current pulses if exposed briefly to monochromatic or white light or to gamma radiation. The phenomenon was observed at temperatures of 330—270K (for some samples down to 77.3K), and the range of frequencies generated was from 0.2 to 0.05 cycles per second. The voltages measured on the samples corresponded to certain intervals of the illumination intensity. A sufficiently strong complementary illumination caused the phenomenon to disappear. The experiments were a followup to earlier experiments (I. D. Konozenko, Ye. A. Muzalevskiy, S. I. Shakhovtsova, FTT, 4, 1133, 1962; V. L. Vinetskiy, I. D. Konozenko, S. I. Shakhovtsova, FTT, 5, 2698, 1962), in which

Card 1/2

L 23940-65

ACCESSION NR: AP5003449

the generation of similar pulses was observed in cadmium selenide.  
Orig. att. has: 2 figures. [2L]

ASSOCIATION: Institut fiziki AN UkrSSR, Kiev (Institute of Physics,  
AN UkrSSR)

SUBMITTED: 23Jul64

ENCL: 00

SUB CODE: SS

NO REF SOV: 003

OTHER: 000

ATD PRESS: 3176

Card 2/2



L 1561-66 ENT(1./ENT(m)/T/ENT(t)/ENT(b)/ENA(c) IJP(c) GG/JD

ACCESSION NR: AP5018642

UR/0185/65/010/007/0808/0809

AUTHORS: Halushka, O. P.; Yermolovych, I. B.; Korsuns'ka, N. Ye;  
Konozenko, I. D.; Sheynkman, M. K.

TITLE: Some properties of CdS single crystals grown by zone sublimation

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 7, 1965, 808-809

TOPIC TAGS: cadmium sulfide, optic activity, activated crystal, single crystal growing, electron trapping, recombination luminescence, luminescence quenching

ABSTRACT: The mobility measurements of majority carriers and activation energies of trapping levels, the infrared quenching of the photocurrent, the concentration of slow recombination r-centers and their electron capture cross section were investigated in single crystals of CdS obtained by zone sublimation. The crystals were cut from a large single crystal parallel to the (1010) and (1120) planes in the

Card 1/3

L 1561-66

ACCESSION NR: AP5018642

form of parallelepipeds and polished with an etching solution. The mobility of the majority carriers was measured with the aid of the Hall effect in light and darkness from 100 to 350 K. At room temperature the mobility varied between 70--320  $\text{cm}^2/\text{v}\cdot\text{sec}$  for different samples, there being as a rule no difference between measurements under illumination and in darkness. With decreasing temperature the mobility increased initially. After that the mobility changed little with temperature. At about 220--250K the curves of the temperature dependence of the mobility under illumination and in darkness coalesce. At low temperatures the mobility is lower under illumination. This is apparently connected with the appreciable scattering by ionized impurities and microinhomogeneities. The occupancy of the centers changes upon illumination. The thermally stimulated conductivity was also measured. In thick single crystals trapping levels were found with activation energies 0.13--0.16 and 0.42--0.46 eV and concentrations of  $8 \times 10^{13}$  and  $3 \times 10^{15} \text{ cm}^{-3}$ . The filling of these centers with electrons on lowering the temperature affected the mobility. The concentration of deep recombination levels and their electron capture cross section was measured by the method of light 'shock.' The

Card 2/3

L 1561-66

ACCESSION NR: AP5018642

6  
concentrations were found to be  $4 \times 10^{14}$  --  $8 \times 10^{14}$   $\text{cm}^{-3}$ . The electron capture cross sections of these recombination centers, determined from the infrared photocurrent quenching spectra exhibited two maxima (at 1.5 and 0.9 eV). The spectra were shifted somewhat towards shorter wavelengths. The slow recombination r-centers are apparently the same in thick as in thin CdS crystals. Orig. article has: 2 figures.

ASSOCIATION: Instytut fizyky AN URSR [Institut fiziki AN UkrSSR] (Institute of Physics, AN UkrSSR); ~~Instytut napivoprovodnykiv AN URSR, Kiev [Institut poluprovodnikov AN UkrSSR] (Institute of Semiconductors, AN UkrSSR)~~ 44:55

SUBMITTED: 24Mar65

ENCL: 00

SUB CODE: SS, OP

NR REF SOV: 003

OTHER: 002

Card 3/3 CD

L 42132-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6029003 SOURCE CODE: UR/0431/66/001/002/0125/0127

AUTHOR: Konosenko, I. D.; Yeritsyan, G. N.; Khivrich, V. I.

43  
42  
B

ORG: Institute of Physics, AN UkrSSR (Institut fiziki AN UkrSSR)

TITLE: Concerning the energy levels of defects caused by fast neutrons  
in p-type silicon <sup>21</sup>

SOURCE: AN ArmSSR. Izvestiya. Fizika, v. 1, no. 2, 1966, 125-127

TOPIC TAGS: electron energy level, neutron irradiation, irradiation damage, irradiation effect

ABSTRACT: An investigation was made to determine the nature of the energy levels in the forbidden zone of p-type silicon produced by radiative defects appearing due to irradiation with fast neutrons. Specimens 1.5 x 3 x 10 mm with a resistivity of 80 ohm-cm (alloyed with boron) and a dislocation density of  $10^4 \text{ cm}^{-2}$  with oxygen concentrations of  $10^{18} \text{ cm}^{-3}$  and  $10^{16} \text{ cm}^{-3}$  were polished and etched. The specimens were irradiated with fast neutrons in a reactor at 60C. The thermal neutrons were screened with a cadmium filter. Gamma-rays accounted for four percent of the radiation. All specimens were irradiated with a dose of  $6.6 \times 10^{18} \text{ n/cm}^2$  under similar conditions. The specific resistance of the first type of specimens (oxygen concentration,  $10^{18} \text{ cm}^{-3}$ ) increased

Card 1/2