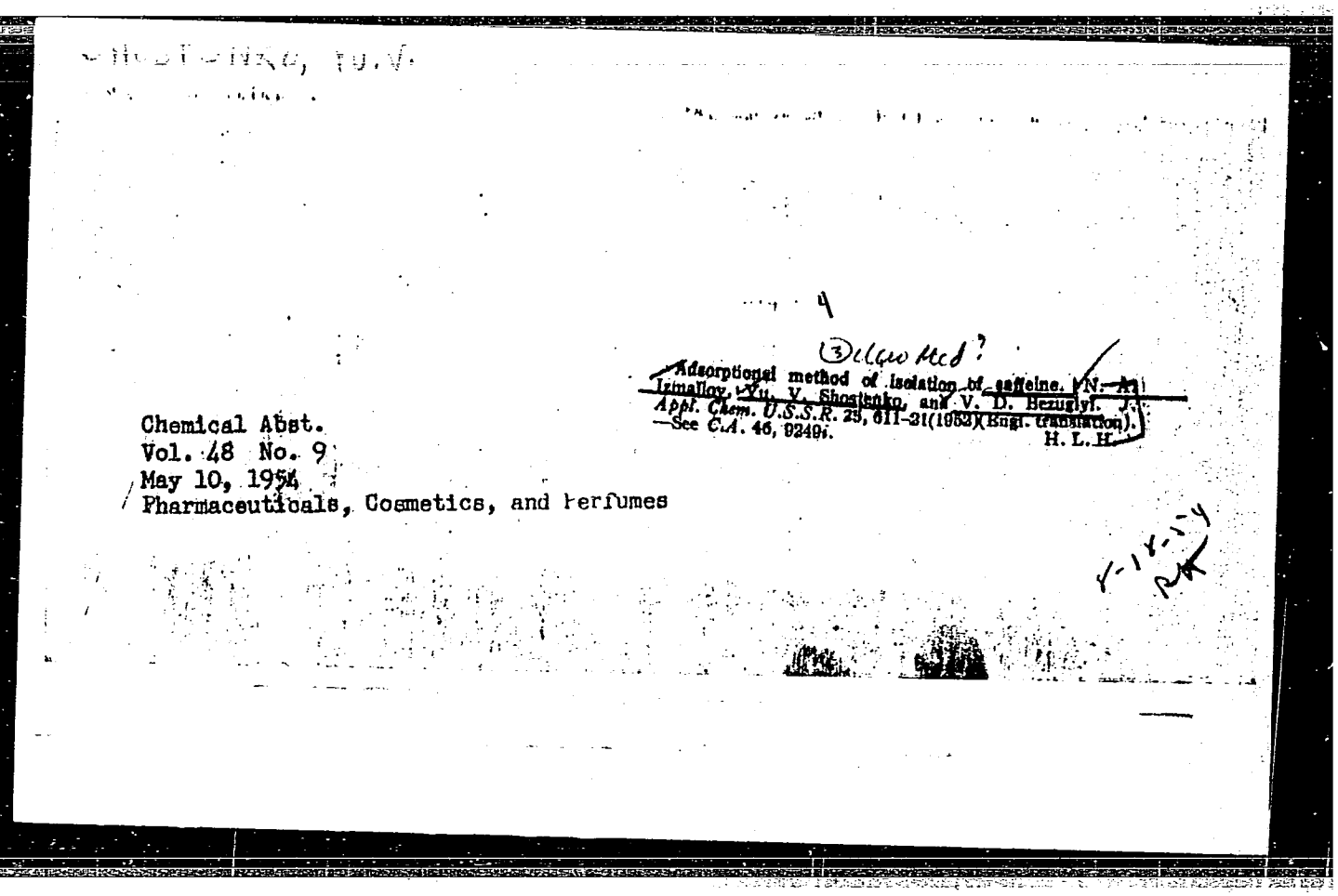


Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Pharmaceuticals, Cosmetics, and Perfumes

Adsorptional method of isolation of caffeine. N. A. Izmailov, Yu. V. Shostenko, and V. D. Bezuglyi. *Zhur. Prikl. Khim. U.S.S.R.* 25, 811-21(1952)(Engl. translation). —See *C.A.* 46, 9249i. H. L. H.

USSR/Chemistry - Alkaloids Aug 52

"A Study of the Desorption of Molecularly Adsorbed Substances by a Stream of Solvent," N. A. Izmaylov, Yu. V. Shostenko, Khar'kov Sci Res Chem-Phar Inst

"Zhur Fiz Khim" Vol 25, No 8, pp 876-883

Using chloroform and activated carbon, the dependence of the kinetic coeff of the desorption of caffeine on the rate of the flow of solvent was detd. Examn of the rates of flow of the desorbing solvent showed that 75% - 80% of the adsorbed substance was desorbed relatively rapidly, and that the amt of caffeine desorbed was directly proportional to the vol of solvent passing through the column. The remaining 20% - 25% of adsorbed substance was desorbed relatively more slowly. During this stage, the quantity of substance desorbed by that vol of solvent diminished on transition to increased rates of solvent flow. There was an essential difference between the curve of distribution of caffeine on carbon obtained under dynamic conditions of desorption by chloroform, and the curve calcd on the basis of the isotherm of adsorption from chloroform under static conditions.

228T12

SHOSTENKO, YU. V.

SHOSTENKO, Yu. V.

4

Desorption of molecularly adsorbed substances by a stream of solvent. N. A. Izmailov and Yu. V. Shostenko (Kharkov Chemico-Pharmaceutical Research Inst.). *J. Appl. Chem. U.S.S.R.* 25, 949–54(1952); *Zhur. Prikład. Khim.* 25, 870–83(1952).—A study is made of the relation between the kinetic coeffs. for caffeine desorption by $CHCl_4$ from activated C and the solvent flow velocity. The first 75–80% of the adsorbed material is desorbed comparatively quickly and the quantity of caffeine in this is directly proportional to the vol. of solvent passed through the column. The remaining 20–25% is desorbed more slowly and the quantity of material desorbed by the same vol. of solvent decreases. A difference is observed between the curve for caffeine distribution in the C obtained by desorption by $CHCl_3$ under dynamic conditions and the curve calcd. on the basis of the $CHCl_4$ adsorption isotherms obtained under static conditions. It is possible to develop a continuous desorption process in a column. Bernard Rubin

TROPP, M.Ya.; SHOSTENKO, Yu.V.; KOLESNIKOV, D.G.

Spectrographic investigation of cardiac glycosides from the hellebore. Zhur. ob.khim. 23 no.8:1421-1425 Ag '53. (MLRA 6.8)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut. (CA 47 no.22:12759 '53) (Glycosides) (Hellebore)

SHOSTENKO, YU V,

Desorption of molecularly absorbed substances with Soxhlet-type apparatus. Yu. V. Shostenko (Sci. Research Chem.-Pharm. Inst. Kharkov). *Med. Prom. S.S.S.R.* 1955, No. 2, 35-8; cf. *C.A.* 48, 9151*e*.—Desorption of caffeine by $CHCl_3$ and CH_2ClCH_2Cl from activated C in a Soxhlet app. is studied by varying the flow velocity of solvent and packing ratio of C in the Soxhlet app. No equilibrated conditions were observed. Complete desorption can be obtained; hence for laboratory purposes this continuous method is to be preferred over a column. $CHCl_3$ appears to be the better eluate. Michael Dymicky

MD

Shostenko, Yu. V.

AID P - 2758

Subject : USSR/Chemistry

Card 1/1 Pub. 119 - 6/6

Authors : Izmaylov, N. A., Yu. V. Shostenko, and S. Kh. Mushinskaya (Khar'kov)

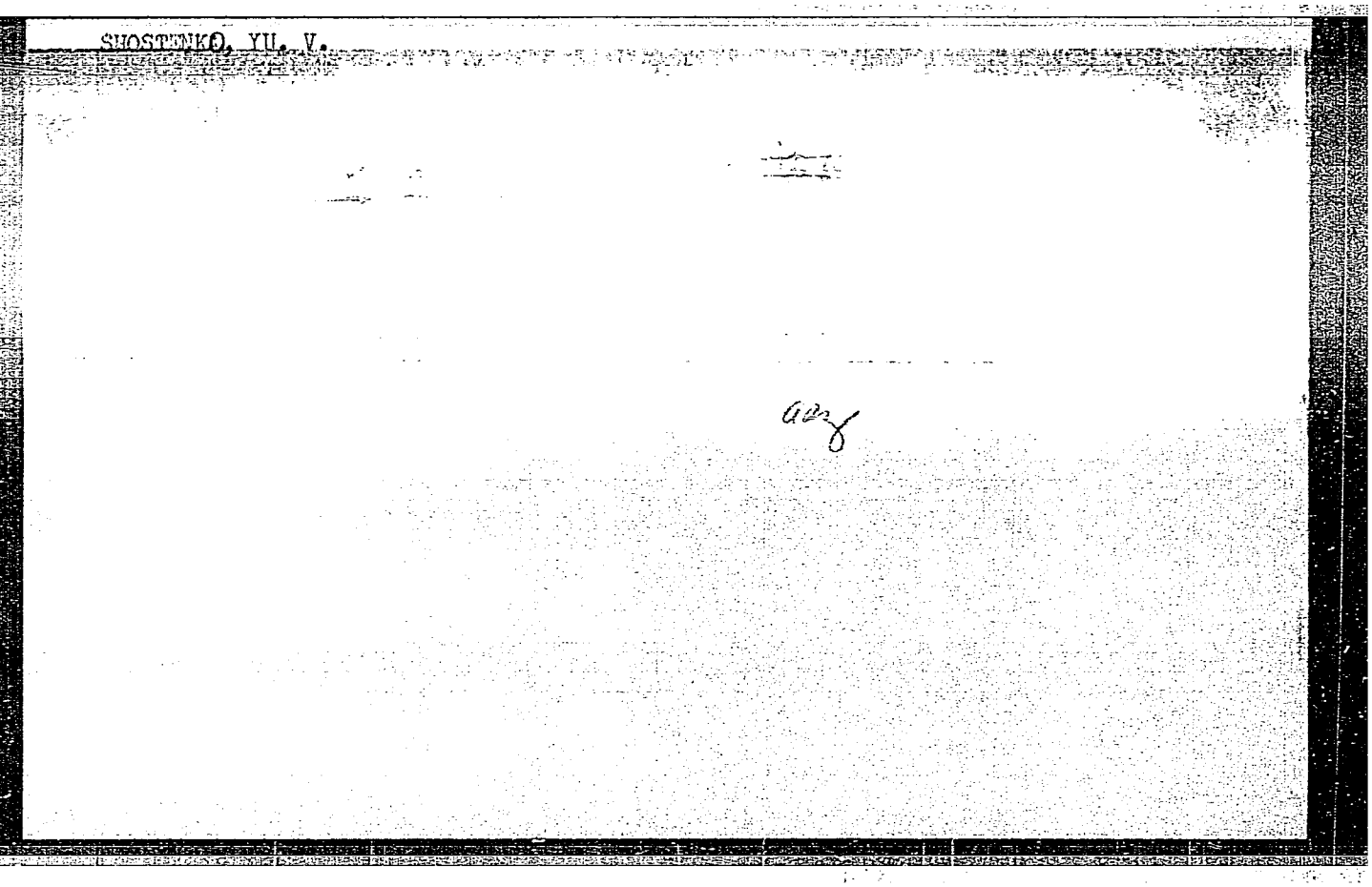
Title : Principles of adsorption techniques for isolation of substances from solutions

Periodical : Usp. khim. 24, 3, 346-376, 1955

Abstract : Literature on the adsorption from solutions used in industry and the advantages of this method over extraction from solutions is reviewed. Selection of adsorbents and solvents is discussed. One table, 12 diagrams; 71 references (59 Russian: 1929-1955)

Institution : None

Submitted : No date



SHOSTENKO, Yu. V., Candidate of Chem Sci (diss) -- "The dynamics of molecular and ion-exchange adsorption and desorption of organic substances as the basis of the technology of their adsorption isolation from solutions". Kiev, 1959. 19 pp (Acad Sci Ukr SSR, Inst of Phys Chem im L. V. Pisarzhevskiy), 220 copies (KL, No 20, 1959, 109)

SHOSTENKO, Yu.V.; SIMON, I.S.

Quantitative determination of santonin in extracts of Artemisia cina and in eluates. Apt.delo 9 no.1:59-60 Ja-F '60.
(MIRA 13:6)

1. Iz laboratorii fizicheskoy khimii Khar'kovskogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta.
(SANTONIN)

IZMAYLOV, M.Z. [deceased]; SHOSTENKO, Yu.V.; CHMIL', V.D.

Use of polymeric materials in partition chromatography with inverted phases. Dop. AN URSR no.2:201-205 '62. (MIRA 15:2)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut. 2. Chlen-korrespondent AN USSR (for Izmaylov).
(Chromatographic analysis)(Polymers)

[illegible]

Determination of lobeline in the herbage of Lobelia by quantitative paper chromatography. Farmatsev. zhur. 17 no.5:38-44 '62. (MIRA 17:9)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut.

SIMON, I.S.; SHOSTENKO, Yu.V.

Study of alkaloids extracted from lobelia (Lobelia urens).
Zhur.ob.khim. 32 no.3:1002-1004 Mr '62. (MIRA 15:3)
(Alkaloids)

ORLOV, Yu.Ye. [Orlov, IU.IE.]; DZYUBA, N.P.; SHOSTENKO, Yu.V.

Quantitative determination of khellin in combined medicinal preparations with the use of the polarographic method. Farmatsev. zhur. 18 no.5:36-39 '63. (MIRA 17:8)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut.

L 58814-65 EWT(d)/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EPF(n)-2/EWG(m)/EPR/T/EWG(c)
Pr-4/Pu-4 IJP(c) RWH/WW/JAJ/RM

ACCESSION NR: AP5015695 UR/0076/65/039/006/1536/1537
543.544

37
36
B

AUTHOR: Ignatov, Yu. I.; Shostenko, Yu. V.; Gubina, T.N.

TITLE: Effect of deep cooling on the properties of ion exchangers

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 6, 1965, 1536-1537

TOPIC TAGS: ion resin exchanger, ion exchange, morphine adsorption, resin cooling, calcium adsorption, adsorptive capacity

21

ABSTRACT: The effect of low temperatures on the properties of KU-1, KU-2, and KFU ion exchange resins was studied by immersing the latter in liquid nitrogen for 10 hr, then keeping them in air at room temperature for 24 hr. No changes in adsorptive capacity (determined by adsorption of calcium ions) or in external appearance were observed. The swelling increased by 15-20%. Because of this increase, it was expected that the ion exchangers would perferentially adsorb organic ions as compared to untreated exchangers. Static experiments with morphine hydrochloride confirmed this hypothesis. It is concluded that the thermal treatment of condensation cation-exchangers may be used to alter their selectivity, particularly in the adsorption of large organic ions. Preliminary exposure of ion exchangers to low temperatures is preferred to treatment at high

Card 1/2

L 58814-65

ACCESSION NR: AP5015695

temperatures because no ionogenic groups are destroyed. Orig. art. has: 2 figures.

ASSOCIATION: Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut (Khar'kov Scientific Research Chemico-Pharmaceutical Institute)

SUBMITTED: 07Jan65 ENCL: 00 SUB CODE: IC, OC

NO REF SOV: 002 OTHER: 000

Card 2/2

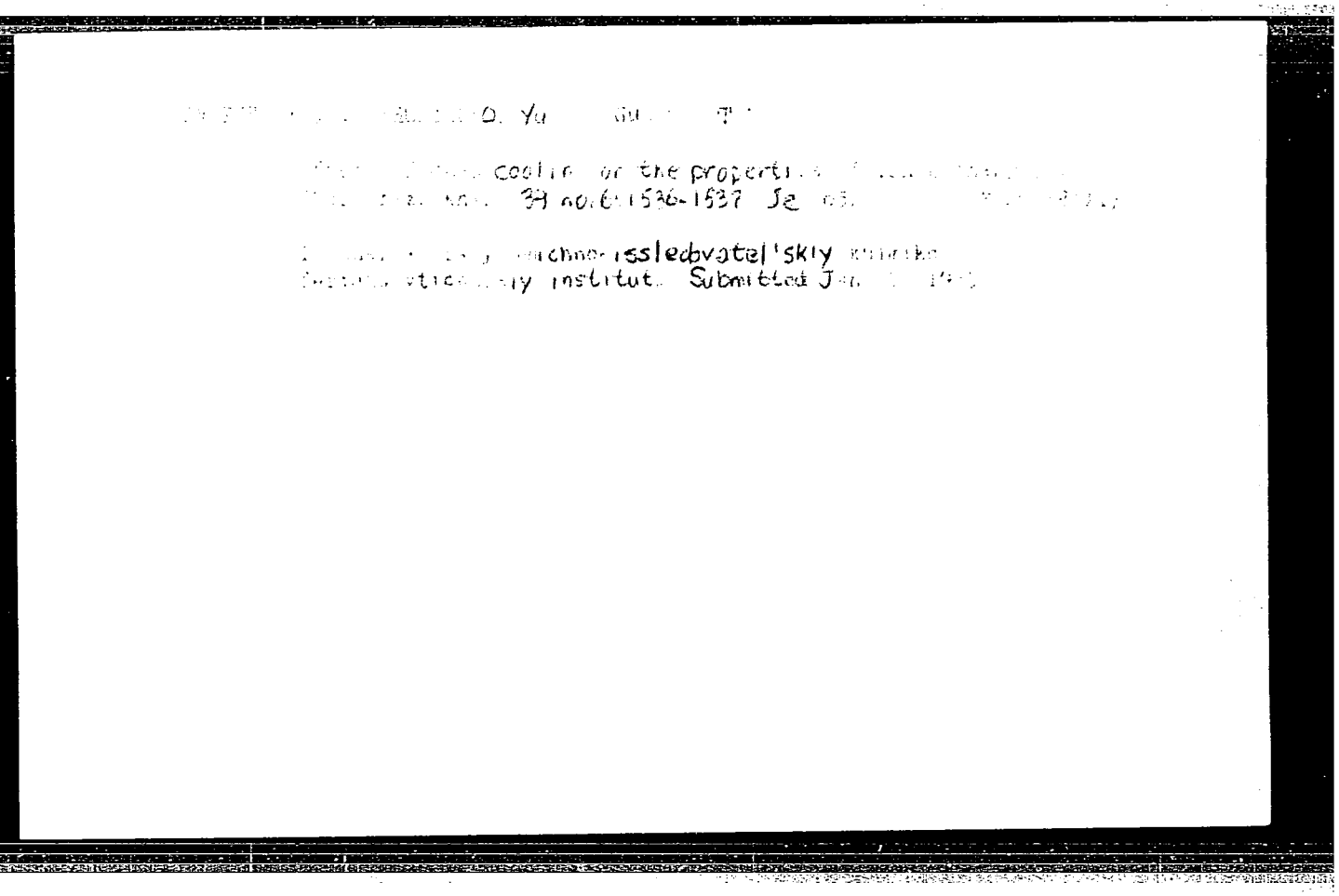
[illegible], [illegible]; [illegible], [illegible]; SHEVCHENKO, Yu.V.

Determination of atropine microquantities by titration in anhydrous solvents. Apt. delo 13 no.5:68-70 S-O '64. (MIRA 18:3)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut.

SHOSTENKO, Yu.V.; RACHINSKIY, V.V.

Nikolai Arkadievich Izmailov and Mariia Semenovna Shraiber, creators of thin-layer chromatography. Zhur.fiz.khim. 39 no.7:1802-1803 Jl '65. (MIRA 18:8)



[illegible], S.; MUSHINA, L.M.

Methodology of tomography in lesions of the middle lobe. Vest. rent. i rad. 40 no.3:10-17 My-Je '65. (MIRA 18:7)

1. 2-ya kafedra rentgenologii i radiologii (zav. - prof. Yu.N. Sokolov) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

SHOSTIN, V. I.

"The Eightieth Anniversary of the Birth of K. A. Shatelen.

Iz. Ak. Nauk, Otdel Tekh. Nauk, No. 1, 1946.

USSR/Physics May 49
Electromagnetism
Communications Equipment

"Laboratory of Electromagnetism at the Moscow State University Physics Institute," N. A. Shost'in, 3 pp

PA 51/49T58

"Uspekhi Fiz Nauk" Vol XXXVIII, No 1

"Laboratory has been directed by Prof V. K. Arkad'yev since it was established in 1919. Laboratory's accomplishments are described in Arkad'yev's works, "Electromagnetic Processes in Metals," "Problems Practical Problems of Electromagnetism," "Problems

51/49T58

USSR/Physics (Contd) May 49

of Ferromagnetism and Magnetodynamics," and innumerous articles. Problems confronting the laboratory at present are: development and practical use of the theory of magnetic spectra, working out technical conditions for obtaining better magnetic insulating materials in communications engineering, designing a massive radiator, perfecting "stictographic" methods, detailed study of the problem of arc-excitation of undamped oscillations, etc.

51/49T58

SHOST'IN, N. A.

SHOSTIN, M. A.

"Losses of Science: Aleksandra Andreyevna Glagoleva-Arkad'yeva," Priroda, No. 2, 1948:
"Laboratory of Electromagnetism at the Moscow State University Physics Institute,"
Uspekhi Fiz. Nauk, 39, No. 1, 1949.

1. SHOSTIN, N. A.

2. USSR (600)

4. Physics

7. Department of Physics of the Moscow State University. Eng. Elektrichestvo No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

SHOST'IN, Nikolay Aleksandrovich; GAPOCHKO, G.F., redaktor; SHAMAROVA, T.A., redaktor izdatel'stva; KUZ'MIN, G.M., tekhnicheskiy redaktor

[Mikhail Pavlovich Vronchenko; military geodesist and geographer] Mikhail Pavlovich Vronchenko; voennyi geodezist i geograf. Moskva, Izd-vo geodez. lit-ry, 1956. 87 p. (MLRA 9:8)
(Vronchenko, Mikhail Pavlovich, 1802-1855)

Shost'IN, N. A.

Voyennyy geodezist i geograf M. P. Vronchenko (Military Geodesist and Geographer M. P. Vronchenko)

By N. A. SHOST'IN*; Publishing House of Geodesy, Moscow, 1956; price 2 rubles, 50 kopecks. From the series "Distinguished Names in Our Native Geodesy and Cartography." (Nov Knig, No 9, 1956)

was

OSTROUMOV, B.A.; SHOSTIN, N.A., red.; MATVEYEVA, A.Ye., tekhn.red.

[Measurement of high vacuum] Izmereniia vysokogo vakuuma. Moskva, Gos.izd-vo standartov "Standartgiz," 1959. 20 p. (Seriia obzornykh monografii po izmeritel'noi tekhnike, no.8). (MIRA 13:12)

(Vacuum--Measurement)

SHOST'IN, N.A.

Mikhail Vasil'evich Lomonosov (on the occasion of the 250th anniversary of his birth). Izm.tekh. no.11:5-6 N '61.
(MIRA 14:11)
(Lomonosov, Mikhail Vasil'evich, 1711-1765)

POGODIN, S.A.; SHOST'IN, N.A.

"Studies on the history of Soviet chemical societies" by V.V. Kozlov. Reviewed by S.A. Pogodin, N.A. Shost'in. Vop.ist.est. i tekh. no.11:155-156 '61. (MIRA 14:11)
(Chemical societies)
(Kozlov, V.V.)

SHOST'IN, N.A.

Definition of the concept of mensuration. Izm.tekh. no.8:3-4 Ag '62. (MIRA 16:4)

(Mensuration)

1. SHOST'INA, A.A.

2. USSR (600)

4. Climatology - Krasnovidovo

7. Microclimatic observations in the vicinity of Krasnovidovo. Trudy Geog. st. "Krasnovidovo" no. 1. 1948

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

SHOST'INA, A.A.

Method for making large-scale maps of direct solar radiation on the earth surface. Nauch.dokl.vys.shkoly; geol.-nauki no.4:80-89 '58. (MIRA 12:6)

1. Moskovskiy universitet, geograficheskiy fakul'tet, kafedra fizicheskoy geografii SSSR.
(Solar radiation--Maps)

GVOZDETSKIY, N.A., prof.; ZHUCHKOVA, V.K., dots.; ALISOV, B.P., prof.; VASIL'YEVA, I.V., dots.; VARLAMOVA, M.N., tekhnik-kartograf; DOLGOVA, L.S., dots.; ZVORYKIN, K.V., st. nauchnyy sotr.; ZEMTSOVA, A.I., assistent; IVANOVA, T.N.; LEBEDEV, N.P., st. prepodavatel'; LYUBUSHKINA, S.G.; NESMEYANOVA, G.Ya., mlad. nauchnyy sotr.; PASHKANG, K.V., st. prepod.; POLTARAUS, B.V., dots.; RYCHAGOV, G.I., st. prepod.; SPIRIDONOV, A.I., dots.; SMIRNOVA, Ye.D., mlad. nauchnyy sotr.; SOLNTSEV, N.A., dots.; FEDOROVA, I.S., mlad. nauchnyy sotr.; TSESEL'CHUK, Yu.N., mlad. nauchnyy sotr.; SHOST'INA, A.A., mlad. nauchnyy sotr.; Prinimali uchastiye: BELOUSOVA, N.I.; GOLOVINA, N.N.; KALASHNIKOVA, V.I.; KOZLOVA, L.V.; KARTASHOVA, T.N.; PAN'KOVA, L.I.; URKIKHO, V.; PETROVA, K.A., red.; LOPATINA, L.I., red.; YERMAKOV, M.S., tekhn. red.

[Physicogeographical regionalization of the non-Chernozem center] Fiziko-geograficheskoe raionirovanie necherno♦zemnogo tsentra. Pod red. N.A.Gvozdetskogo i V.K.Zhuchkovoi. Moskva, Izd-vo Mosk. univ., 1963. 450 p. (MIRA 16:5)
(Physical geography)

SHOSTKO, K.M., inzh.

Suspension method for dyeing cotton and rayon cloth. Tekst. prom. 20 no.1:50-52 Ja '60. (MIRA 13:5)
(Dyes and dyeing--Cotton) (Dyes and dyeing--Rayon)

SHOSTKO, V. M. Cand Med Sci -- (diss) "Content of cobalt, nickel, copper and zinc in the blood and the thyroid gland in ~~cases of~~ endemic goiter and thyrotoxicosis." Minsk, 1959. 24 pp including cover (Minsk State Med Inst), 200 copies (KL, 49-59, 143)

SHOSTKO, V.M.

Cobalt, nickel, copper, and zinc concentrations in the human thyroid gland under conditions of endemic goiter and thyrotoxicosis. Vestsi AN BSSR.Ser.biial.nav. no.4:112-114 '59. (MIRA 13:4)

(THYROID GLAND--DISEASES)
(TRACE ELEMENTS)

SHOSTKO, V.M., assistent

Cobalt content of the blood in thyrotoxicosis. Zdrav. Belor. 5 no.11: 40-42 N '59. (MIRA 13:3)

1. Kafedra detskikh bolezney (zaveduyushchiy - akademik AN BSSR V.A. Leonov) Minskogo meditsinskogo instituta.
(COBALT IN THE BODY) (THYROID GLAND--DISEASES)

VOROB'YEV, A.M. [Vorobiov, A.M.], (deceased), MORGUN, Ye.G. [MORHUN, IE,H.]
SVISTUN, T.I. [Svystun, T.I.], SHOSTKOVSKAYA, I.V., [SHOSTAKIVS'KA, I.V.]

Secretory activity of the stomach and pancreas and gastric evacuation during excitation and inhibition of the cerebral cortex [with summary in English]. Fiziol.zhur. [Ukr] 4 no.4:435-441 Jl-Ag '58 (MIRA 11:10)

1. Institut fiziologii im. A.A. Bogomol'tsa AN USSR, laboratoriya fiziologii pishchevareniya.
(STOMACH)
(PANCREAS)
(CEREBRAL CORTEX)

SHOSTOK, Afanasiy Grigor'yevich; POLONSKIY, Mikhail Isakovich; DEMERDZHI, D., redaktor; KOLOMOYTSEVA, V., tekhnicheskiy redaktor

[Novye metody prokhodki stvolov shakht i vosstaiushchikh. [Denpropetrovsk] Denpropetrovskoe obl.izd-vo, 1957. 59 p. (MLRA 10:9)
(Mining engineering)

PETRUSENKO, V.G.; SHOSTYA, I.V.; OKUNEVA, Z.S.; PRIBITKOVA, Yu.V.; FILIMONOV, V.P.; POLIYEKTOVA, A.M.; CHERNISHOVA, N.P.; ISAYCHENKO, M.M., red.; LINKOV, G., tekhn.red.

[Economy of Cherkassy Province; statistical collection] Narodne hospodarstvo Cherkas'koi oblasti; statystychnyi zbirnyk. Cherkasy, 1957. 126 p. (MIRA 12:11)

1. Cherkassy (Province) Statisticheskoye upravleniye. 2. Nachal'nik Statisticheskogo Upravleniya Cherkasskoy oblasti (for Isaychenko). (Cherkassy Province--Statistics)

SHOSTYA, N.P.; STREL'NIKOV, B.Ye.

Case of one-stage repair of the large intestine following a blunt injury of the abdomen. Khirurgiia 35 no.3:121-122 Mr '59. (MIRA 12:8)

(INTESTINE, LARGE, wds. & inj.
surg., one-stage repair in blunt abdom. inj. (Rus))

STREL'NIKOV, B.Ye., kand.med.nauk; SHOSTYA, N.P.; CHALGANOV, A.I.

Operative treatment of megasigmoid (dolichosigmoid). Vest.khir. 85 no.11:42-45 N '60. (MIRA 14:2)
(COLON--SURGERY)

SHOSTYA, N.P.; STREL'NIKOV, B.Ye.

Isolated rupture of the pancreas in a blunt injury to the abdomen. Nov. khir. arkh. no.1:110-111 Ja-F '60. (MIRA 15:2)
(ABDOMEN--WOUNDS AND INJURIES) (PANCREAS--HERNIA)

SHOST'YIN, N. A. PA 34T1

USSR/Academy of Sciences May 1947

"D. I. Mendeleyev in the Central Department of Weights and Measures," N. A. Shost'yin, Engr, 3 pp

"Nauka i Zhizn" No 5

In 1892, D. I. Mendeleyev, one of the greatest of Russian chemists, was assigned to the task of reorganizing the Department of Weights and Measures. Short description of development of weights and measures service in Russia, which owes its present-day existence to the excellent foundations given it by a great Russian scientist.

FDB 34T1

SHOT, Ye.K.

Observations of children who have had pneumonia during their first three months of life. Pediatriia no.9:87 S '57. (MIRA 10:12)

1. Iz kafedry detskikh bolezney Dagestanskogo meditsinskogo instituta.
(PNEUMONIA)

SHOT, Ye.K.

Case of hypophyseal cachexia combined with diabetes insipidus in a 15-year-old boy. Pediatriia 37 no.7:87-88 Jl '59.
(MIRA 12:10)

1. Iz kafedry detskikh bolezney Dagestanskogo gosudarstvennogo meditsinskogo instituta.
(PITUITARY BODY--DISEASES) (DIABETES)

SHOTADZE, D. P.

Docent, an evacuation hosp., -c1949-. "Etiology of Erroneous Operations of the Heart," Khirurgiya, No. 3, 1949.

[illegible] D. [illegible]

[illegible] : [illegible]

[illegible] : [illegible] Problems of [illegible]. Tumors. Comparative [illegible]

[illegible] : [illegible], No. 12 1958, [illegible]

[illegible] : [illegible]

[illegible] : [illegible] Institute for Postgraduate Medicine

[illegible] : [illegible]morphology of Cancer of the Lip

[illegible] : Collection: Tr. [illegible] Uzbeksk. [illegible] Vrachey, [illegible]

[illegible] : [illegible] histologic studies were made of [illegible] cases of cancer of the lower lip. In one patient a precancerous state was detected; in 96, cancer (in [illegible] - squamous-cell keratinizing cancer, and in [illegible] - non-keratinizing cancer). The histologic [illegible] is briefly described of fibroma and myxoma of the lower lip, angioma, folliculo-epithelioma, [illegible] epithelioma, basal cell carcinoma, and various forms of squamous cell carcinoma. The author believes that in all cases of tumors of the lip the surrounding tissues are in a state of inflammation. -- [illegible]

[illegible] : 1/1

DZHORBENADZE, A.V.; SHOTADZE D.P.; KAKHIANI, Z.N.; TSINTSADZE, G.K.

Some complications in modern anesthesia. Trudy Tbil. GIDUV 6:231-238 '62. (MIRA 16:2)
(ANESTHESIA—COMPLICATIONS AND SEQUELAE)

SHOTADZE, F.V.

Data on the study of some functions of the liver in diseases of the gallbladder and biliary tract. Trudy Tbil.GIDUV 6:319-326 '62. (MIRA 16:2)

(LIVER—DISEASES) (GALLBLADDER—DISEASES)
(BILIARY TRACT—DISEASES)

KALANDADZE, V.A., kand. tekhn. nauk; CHKHETIYA, G.K., inzh.; SHOTADZE, G.Sh., inzh.

Underground passenger cableway. Ugol' 40 no.12:49-51 D '65. (MIRA 18:12)

1. Institut gornoy mekhaniki, razrabotki mestorozhdeniy i fiziki vzryva im. G.A. TSulukidze AN Gruzinskoy SSR.

SHOTADZE, V.Ye., professor, doktor farmatsevticheskikh nauk

"Medicinal plants of Georgia." Z.Shengeliia. Reviewed by V.E. Shotadze. Apt. delo 3 no.4:60-62 Jl-Ag '54. (MLRA 7:8)

1. Zav. kafedroy farmakognozii Tbilisskogo meditsinskogo instituta.
(GEORGIA--BOTANY, MEDICAL)
(BOTANY, MEDICAL--GEORGIA)
(SHENGELIIA, Z.)

SHOTEMOR, Sh.

Some possibilities of the use of tomography in X-ray diagnosis of acute pneumonia. Vest. rent. i rad. 39 no.6:43-49 N-D '64. (MIRA 18:6)

1. 2-ya kafedra rentgenologii i radiologii (zav. -- prof. Yu.N. Sokolov) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

SHOTEMOR, Sh.; MUSHINA, L.N.

Possibilities of tomography and differential diagnosis between tumors and inflammatory processes of the lungs. Sov.med. 28 no.12:33-37 D '65. (MIRA 18:12)

1. 2-ya kafedra rentgenologii i radiologii (zav.- prof. Yu.N. Sokolov) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

SHOTENBERG, S. M.: Master Tech Sci (diss) -- "Determination of certain technological properties of structural clays by the thermographic method". Novocherkassk, 1958. 20 pp (Min Higher Educ USSR, Novocherkassk Order of Labor Red Banner Polytech Inst im S. Ordzhonikidze), 160 copies (KL, No 10, 1959, 127)

SHOTENBERG, S. M.

101-58-2-3/8

AUTHOR: Budnikov, P.P.; Shotenberg, S.M.; Azelitskaya, R.D.

TITLE: A Thermographic Method of Determining the Hydration Heat of Cement (Termograficheskiy metod opredeleniya teploty gidratatsii tsementa)

PERIODICAL: Tsement, 1958, Nr 2, pp 15-18 (USSR)

ABSTRACT: To measure the heat originating from the hydration of cement, the authors describe a thermographic method which they developed by using a Kurnakov pyrometer with two test tubes. One of the tubes contains a standard cement mixture, the other is filled with a cement sample to be hydrated. The test tubes are linked together by a differential thermocouple in a Dewar flask (Figure 1) and connected with a mirror galvanometer. When water is added to the sample, the ensuing increase of temperature is indicated by the galvanometer and then entered on a differential thermogram. When, through heat exchange, the temperature difference between the two cement samples is evened off, the thermogram gives a true picture of the development of hydration heat (Figure 2). This method was successfully used with clinkers of different mineralogical composition (Figure 3).

Card 1/2

SHOTIN, I.V.

Coal burner for drying ladles. Lit. proizv. no. 8:46 Ag '60.
(MIRA 14:2)

(Foundries—Equipment and supplies)

SHOTIN, V.P.

Sclerosing method for the treatment of varicose veins in secondary dermatoses. Vest.derm.i ven. 35 no.3:30-33 Mr '61. (MIRA 14:4)

1. Iz kozhnogo otdeleniya 21-y gorodskoy bol'nitsy Baumanskogo rayona Moskvy (glavnyy vrach Ya.L. Lyubin).
(VARIX)

KHOROSHAVIN, L.B.; PEREPELITSYN, V.A.; ZHUKOV, A.V.; MOROKOV, P.K.; MAKRUSHIN, V.V.; BARTOLISH, D.M.; BRYUKHETKIN, M.G.; VAYNSHTEYN, O.Ya.; GISS, A.N.; SHUL'KIN, M.A.; SHOTIN, V.S.

Use of metallurgical magnesite powder burned at low temperature. Stal' 25 no.12:1086-1088 D '65. (MIRA 18:12)

VINTAYKIN, Ye.Z.; GRUZIN, P.L.,kand.fiz.-mat.nauk; KLYACHKO, Yu.A.,prof., doktor khim.nauk; SHOTOV, A.P.

Alloy phase analysis by the method of radioactive tracers. Probl. metalloved. i fiz. met. no.4:269-276 '55. (MIRA 11:4)
(Alloys--Metallography) (Radioisotopes--Industrial applications)

Shotov, A.P.

3
1-4E1d
1-4E2c

Photo

Breakdown in plane germanium diodes. B. N. Vul and A. P. Shotov. *Radiotekh. i Elektron.* 1, 1089-5(1956).—The application of potential in short pulses produced impact ionization which caused elec. breakdown. Elec., thermal, and thermoelec. breakdown, depending on the structure of electron-hole transitions and heat-removal conditions, occurred with const. potential. The relation between the potential (E) and the coeff. of breakdown ionization (α) is given by $\alpha = 0.49\ E \exp(-4.8 \times 10^{-6}/E)$. A. P. K.

for KSH

BT

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1262
AUTHOR SCHOTOW, A.P.
TITLE The Disruptive Discharge of Electron-Hole Transitions in Germanium as a Result of Impulse Voltage.
PERIODICAL Zurn. techn. fis. 26, fasc. 8, 1634-1645 (1956)
Publ. 8 / 1956 reviewed 9 / 1956

The electric disruptive discharge of electron-hole-transitions is connected with a sharp rise of the return current on the occasion of an increase of voltage. As, however, the increase of electric conductivity in a strong field is due first of all to an increase of concentration of the charge carrier, the causes of the increase of concentration are investigated. The increase of the return current might be caused either by the electrostatic tearing out of the electrons or by an impulse ionization of the electrons. Two types of electron-hole-transitions were investigated: 1.) those which were obtained by the melting of indium into n-germanium, and 2.) those which were obtained by diffusion of antimony of 875° C into p-germanium. The duration and the frequency of the impulses was chosen in such a manner that the temperature of the sample remained constant while measuring the voltage was being carried out. For the measuring of shock impulses, squared impulses were obtained from the generator, and, in addition, also impulse voltages of up to 1300 V were obtained by means of a special amplifier. Accuracy amounted to about 5%. In connection with the experiment, disruptive voltage was defined as a quantity in which an increase of the impulse amplitude causes no modifications of

VUL, B.M.; SHOTOV, A.P.

Surface discharges near the n-p-junction. Zhur.tekh.fiz. 27 no.1:211-212 Ja '57. (MLRA 10:2)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR, Moskva.
(Semiconductors)

Shotov, A.P.

AUTHORS: Vul, B. M., and Shotov, A. P. 57-10-1/33

TITLE: On the Edge Breakdown of p-n Junctions in Germanium (O krayevom proboye p-n-perekhodov v germanii).

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 10, pp. 2189-2194 (USSR).

ABSTRACT: The breakdown potentials of diffusion junctions (transition) and melted-in p^+n^- and n^+p^- junctions were measured in air and in media with an increased dielectric constant. It is shown, that the dielectric constant has a marked influence on the breakdown potentials of the p^+n^- junctions and that it plays an important rôle in the breakdown of the p^+n^- and of the diffusion junctions. The observed phenomena can be explained with the assumption, that the surface of the germanium carries a positive charge and that the medium determines the effectiveness of the surface charge.
There are 5 figures, 1 table and 3 Slavic references.

ASSOCIATION: Physical Institute imeni P. N. Lebedev AN of the USSR, Moscow (Fizicheskiy institut imeni P. N. Lebedeva AN SSSR, Moskva).

Card 1/2

SHOTOV, A. P. AND VUL, B. M.

"Multiplication of Electrons and Holes in P-N Junctions".

paper presented at the Intl. Conference on Solid State Physics in Electronics and Telecommunications, Brussels, 2-7 June 1958.

Physics Inst. , Acad. Sci. USSR

Eval. A-3,110,874, 15 Aug 58

SHOTOV, A. P. and B. M. VUL

"Method of Preparing the Lead from the Middle Part of a Germanium Triode."

Author's Certificates
Elektrosvyaz', 1958, Nr 9, p 78

57-28-3-1/33

AUTHOR: Shotov, A. P.

TITLE: On the Ionization by Collision in p-n-Transitions of Germanium (Ob udarnoy ionizatsii v germaniyevykh p-n--perekhodakh)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 3, pp. 437-446 (USSR)

ABSTRACT: The author here investigates the avalanche-like increase in amperage and the break-down at the transitions in germanium, starting from the condition on the proportionality of the ionization coefficients of the electrons and holes $\beta(E)=k\alpha(E)$ $\alpha(E)$ denotes the ionization coefficient of the electrons and $\beta(E)$ that of the holes. On the basis of this conception on the proportionality of the ionization coefficients in heterogeneous fields $\beta(E) = k\alpha(E)$, which was used by B. M. Vul (reference 5) for p-n-transitions, equations for the ionization coefficients and for their mutual relation in any field distribution are obtained here. These quantities are experimentally determined. A p-n-transition with any distribution of the electric field and a width h at a certain

Card 1/3

On the Ionization by Collision in p-n-Transitions of Germanium

countervoltage is investigated. From the equations written down is to be seen that the value of the multiplication coefficient and the breakdown voltage (at $M = \infty$) must in the general case be dependent on the type of charge-carrier, beginning from which potential the avalanche-like increase takes place. It is assumed that the condition $\beta(E)=k\alpha(E)$ is satisfied in the p-n-transition. It is shown that in the case of $\beta = k\alpha$ the breakdown voltage is not dependent on the type of charge-carrier (at which voltage the avalanche-like increase begins). The important relation $k=\frac{M_p - 1}{M_n - 1}$ is derived, where M_p denotes the coefficient of hole multiplication and M_n - the coefficient of electron multiplication. M_p and M_n are experimentally measured and then k is determined. Equations for the ionization coefficients for the two usually occurring p-n-transitions are derived: the stepwise (sudden) transition and the gradual one with a constant gradient of the admixtures. - In the second chapter the experimental part is treated. An important fact which has to be taken into account in the measurement of M_p, M_n, and the breakdown voltage is the possibility of a breakdown at the edge. In

SHOTOV, A.P.

21(0),24(0) PHASE I BOOK EXPLOITATION SOV/

Akademiya nauk SSSR. Fizicheskiy institut

Issledovaniya po eksperimental'noy i teoreticheskoy fizike; [sbornik] (Studies on Experimental and Theoretical Physics; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 304 p. Errata slip inserted. 2,300 copies printed.

Ed.: I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; Eds. of Publishing House: A. L. Chernyak and Ye. G. Berkgaut; Tech. Ed.: Yu. V. Rylina; Commission for Publishing the Collection in Memory of Grigoriya Samuilovich Landsberg: I. Ye. Tamm (Chairman), Academician; M. A. Leontovich, Academician; P. A. Bazhulin, Doctor of Physical and Mathematical Sciences; S. L. Mandel'shtam, Doctor of Physical and Mathematical Sciences; I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; P. S. Landsberg-Baryshanskaya, Candidate of Physical and Mathematical Sciences; and G. P. Motulevich (Secretary), Candidate of Physical and Mathematical Sciences.

PURPOSE: This book is intended for physicists and researchers engaged in the study of electromagnetic radiations and their role in investigating the structure and composition of materials.

COVERAGE: The collection contains 30 articles which review investigations in spectroscopy, acoustics, molecular optics, semiconductor physics, nuclear physics, and other branches of physics. The introductory chapter gives a biographical profile of G. S. Landsberg, Professor and Head of the Department of Optics of the Division of Physical Technology at Moscow University, and reviews his work in Rayleigh scattering, combat gases, spectral analysis of metals etc. No personalities are mentioned. References accompany each article.

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S/181/61/003/002/050/050
B102/B201

9.4300 (and 1035, 1138, 1143)

AUTHORS: Vul, B. M., Shotov, A. P., and Grishechkina, S. P.

TITLE: Temperature dependence of the tunnel current in p-n junctions

PERIODICAL: Fizika tverdogo tela, v. 3, no 2, 1961, 667-670

TEXT: In their studies of the tunnel current, the authors also examined the temperature dependence of the volt-ampere characteristics of p-n junctions in highly doped germanium, and report on the results obtained. The p-n junctions were prepared by fusing indium with gallium addition and n-type germanium, as well as indium with phosphorus addition and p-type germanium. The current flowing in the straight direction displayed in all cases a maximum and there always appeared a region of negative resistance. Figs. 1 and 2 show the volt-ampere characteristics of two p-n junctions of arsenic-doped germanium; the two specimens had different electron concentrations: $n = 4 \cdot 10^{19}$ cm^{-3} and $n = 1 \cdot 10^{19}$ cm^{-3}. As may be seen from the characteristics, the temperature-dependent change of the tunnel current is precisely the opposite in the two cases: in the former case, the current decreases with

Card 1/3

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B102/B201

Temperature dependence of ...

rising temperature, while in the other case it increases. This is particularly evident in the maximum. The amount of the tunnel current is determined by the number of electrons reaching the potential barrier per unit time and by the probability of barrier penetrability. The temperature thus has an effect upon these two factors. With a rise of temperature the degeneracy is reduced and the Fermi level drops; (cf. Fig. 1). The voltage corresponding to the maximum of curve I(U) decreases with rising temperature, which fact is indicative of a shift of the Fermi level into a part of the p-n junction with lower impurity concentration. In this connection, the thermal excitation of electrons leads to a blurredness of the Fermi surface and to a reduction of the number of electrons passing through the potential barrier. Thus, the current is reduced with rising temperature in this case. On specimens with smaller n this effect cannot be of major importance. Other effects arise which at large concentrations are concealed by the former. The probability for the tunnel effect on a temperature change is implicitly dependent upon the crystal parameters (on the forbidden-band width and the effective mass). Since the forbidden-band width decreases with a rise of temperature, the tunnel current is bound to grow. The p-n junctions prepared from p-type germanium with gallium impurities

Card 2/4

L 12829-63 EWT(1)/EWG(k)/EWP(q)/EWT(m)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3
Pz-4 JD/AT/IJP(C)
ACCESSION NR: AT3003025 S/2927/62/000/000/0310/0315 75

AUTHOR: Shotov, A. P.; Grishechkina, S. P. 71

TITLE: Effect of temperature on the tunnel current in thin p-n junctions [Report at the All-Union Conference on Semiconductor Devices, Tashkent, 2-7 Oct., 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v poluprovodnikakh. Tashkent, Izd-vo AN UzSSR, 1962, 310-315

TOPIC TAGS: tunnel current

ABSTRACT: Experimental studies are reported of various methods of preparing p-n junctions that meet specified tunnel current-temperature relations. It was found that the above relations can be readily controlled by varying the temperature and duration of the alloying process or the impurity concentration in the source Ge. Single crystals of Ge containing As or Sb (n-type) or containing Ga (p-type) were used as source material. The impurity concentration was over 5×10^{18} cm^{-3} ensuring the electron-gas degeneration. The p-n junctions were prepared by alloying In + Ga (into n-Ge) and In + As (into p-Ge). In all p-n junctions the forward tunnel current exhibited a maximum; a negative-resistance region was observed. Current-

Card 1/2

L 12829-63

ACCESSION NR: AT3003025

4

voltage characteristics and peak current vs. temperature curves are presented. "The authors are thankful to B. M. Vul and L. V. Keldy*sh for discussing the problem, to G. P. Proshko for lending his Ge crystals, and to T. S. Kamenskaya for her assistance in preparing p-n junctions." Orig. art. has: 3 figures and 8 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 15May63 ENCL: 00

SUB CODE: PH NO REF SOV: 003 OTHER: 002

Card 2/2

38908
S/181/62/004/006/014/051
B125/B104

247700

AUTHORS: Shotov, A. P., and Grishechkina, S. P.

TITLE: Temperature dependence of the tunnel current in thin p-n junctions

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1474-1481

TEXT: The temperature dependence of the tunnel current strength in p-n junctions with impurity concentrations of more than $5 \cdot 10^{18}$ cm^{-3} has been examined in the range from 77 to 370°K (conditions corresponding to electron gas degeneracy). To fabricate the p-n junctions, indium with gallium addition was fused into n-type germanium single crystals containing arsenic impurities at 300° and 450°C, or indium with arsenic addition was fused into p-type germanium single crystals containing gallium impurities at 400°, 450°, and 500°C. The temperature dependence $dI/dT = dz/zdT + dy/ydT$ is composed of the temperature dependence $dz/zdT \simeq C\Theta((1/N)+(1/P))^{1/2}$ (5), of the tunnel effect probability, and the temperature-dependent blurredness

Card 1/3

Temperature dependence of the tunnel ...

$$\frac{dy}{ydT} \simeq -\frac{1}{\frac{2}{3}T\left[\frac{\sqrt{\pi}}{2}\left(\frac{h^2}{2\pi mkT}\right)^{3/2} N_{min} - 1\right]}. \qquad (12)$$

of electron distribution near the Fermi energy. I denotes the tunnel current strength, z the tunnel effect probability, y the electron energy, N and P the concentrations of ionized donor and acceptor impurities, K the dielectric constant of the semiconductor. Moreover,

$$C = \left(\frac{K}{2\pi e}\right)^{1/2} \frac{\pi m^{*1/2} e^{1/2}}{4eh}, \qquad (6).$$

The increase of the tunnel effect probability with a rise of temperature causes a higher current strength, while the temperature-dependent blurredness of electron distribution weakens it. These two opposite effects are of the same order of magnitude, and may compensate each other in a certain temperature range. The temperature-dependent blurredness is prevalent on a decrease of impurity concentration in the p-n junction. The temperature coefficient of the tunnel current can be controlled by the

VUL, B.M.; SHOTOV, A.P.; BAGAYEV, V.S.

Recombination radiation in degenerate indium antimonide. Fiz. tver.tela 4 no.12:3676-3677 D '62. (MIRA 15:12)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.
(Indium antimonide--Electric properties)

SHOKLI, U. [Shockley, W.]; VAVILOV, V.S. [translator]; SHOTOV, A.P. [translator]

Problems related to p-n-junctions in silicon [translated from the English]. Usp. fiz. nauk 77 no.1:161-196 My '62. (MIRA 15:6)
(Junction transistors) (Silicon)

SAKOVA, A.A.; SHOTOV, A.P., kand.fiziko-matem.nauk

Bibliographic index of papers by workers of the Semiconductor Physics Laboratory (FIAN), 1932-1961. Trudy Fiz. inst. 20:172-190 '63. (MIRA 16:9)

1. Starshiy bibliograf biblioteki Fizicheskogo instituta imeni Lebedeva AN SSSR (for Sakova).

BAGAYEV, V.S.; BASOV, N.G.; VUL, B.M.; KOPYLOVSKIY, B.D.; KROKHIN, O.N.; MARKIN, Ye.P.; POPOV, Yu.M.; KHVOSHCHEV, A.N.; SHOTOV, A.P.

Semiconductor quantum generator with a p-n junction in GaAs. Dokl. AN SSSR 150 no.2:275-278 My '63. (MIRA 16:5)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR. 2. Chleny-korrespondenty AN SSSR (for Basov, Vul).
(Masers) (Gallium arsenide crystals) (Junction transistors)

L 13746-65 EWT(1)/EWG(k)/T Pz-6 IJP(c)/AFMD(t)/AFETR/AEDC(a)/ASD(a)-5/AFWL/ESD(t) AT

ACCESSION NR: AP4044689 S/0120/64/000/004/0167/0171

AUTHOR: Kopy*lovskiy, B. D.; Bagayev, V. S.; Berozashvili, Yu. N.; Ivanov, V. S.; Shotov, A. P.; Khvoshchev, A. N.

TITLE: Electronic equipment for the investigation of recombination emission in semiconductors

SOURCE: Pribory* i tekhnika eksperimenta, no. 4, 1964, 167-171

TOPIC TAGS: emission, recombination emission, semiconductor recombination emission, p n junction, carrier injection, pulsed carrier injection

ABSTRACT: The equipment described in this article for the generation and investigation of recombination emission in semiconductors is based on the generation of coherent recombination emission by pulsed carrier injections through p-n junctions. This method ensures negative temperature conditions in degenerated semiconductors, while obtaining high current density and avoiding heating of the junction. The injections were accomplished by means of a high-power pulse oscillator which generated pulses of a duration of 1—5 μsec with a smooth current

Card 1/2

L 13746-65
ACCESSION NR: AP4044689

regulation of 0.5 to 400 amp. The recombination radiation light pulses were registered by a photoelectric multiplier, amplified by a wideband amplifier, and applied to the output of a synchronous pulse detector which (in those cases when the reference and the emission pulses coincided in time) converted the radiation signal into d-c voltage. An infrared spectrometer was used to investigate the recombination emission spectra which were registered by a system which took into account the pulsed nature of the signals. Orig. art. has: 9 figures and 2 formulas.

ASSOCIATION: Fizicheskiy institut AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 17Aug63 ATD PRESS: 3131 ENCL: 00

SUB CODE: EC, SS NO REF SOV: 005 OTHER: 003

Card 2/2

ACCESSION NR: AP4028461 S/0181/64/006/004/1235/1238

AUTHOR: Bagayev, V. S.; Berozashvili, Yu. N.; Vul, B. M.; Zavaritskaya, E. I.; Shotov, A. P.

TITLE: Recombination radiation mechanism in gallium arsenide

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1235-1238

TOPIC TAGS: laser, semiconductor laser, recombination radiation, injection laser, gallium arsenide laser, radiative recombination, radiative transition, interband transition, p n junction

ABSTRACT: The mechanism responsible for recombination radiation of GaAs injection lasers has been experimentally investigated by analyzing its spontaneous and stimulated emission spectra. The p-n junctions were prepared by diffusing zinc into GaAs with a Te concentration of 10^{17} to 2×10^{18} cm^{-3}. The carrier concentration in the n-region corresponded to a state of degeneracy. Visual observation of emission through an infrared microscope showed that radiation is emitted from the p-region, which extends for several microns. It was found

Card 1/3

ACCESSION NR: AP4028461

that line width and the maximum $h\nu_{max}$ in the spontaneous emission spectrum vary with impurity concentration and temperature. As the impurity content was increased, $h\nu_{max}$ was displaced toward greater energies. However, even for $N \simeq 10^{17}$ cm^{-3}, $h\nu_{max}$ was 0.03 ev smaller than the width of the forbidden band of pure GaAs. At this value the difference between $h\nu_{max}$ and the energy of the forbidden band cannot be explained by a change in its width as a result of doping. Experimental data indicate that at 4.2 to 77 K the temperature dependence of recombination radiation intensity is weak, while at 300 K the intensity decreases sharply. This may be associated with filling of acceptor levels by electrons from the valence band. No broadening of the spontaneous line was observed when the injection current was increased. This shows that the spectral width is determined by the final states of the electrons due to radiative transitions. The results obtained can be best explained by radiative transitions of electrons from the conduction band, which merges with the donor levels, into the impurity acceptor band of zinc atoms.

ASSOCIATION: Fizicheskiy institut P. N. Lebedeva AN SSSR, Moscow (Physics Institute, AN SSSR)

Card 2/3

BAGAYEV, V.S.; BEROZASHVILI, Yu.N.; VUL, B.M.; ZAVARITSKAYA, E.I.; KELDYSH, L.V.; SHOTOV, A.P.

Energy spectrum of heavily alloyed gallium arsenide. Fiz. tver. tela 6 no.5:139?-1405 My '64. (MIRA 17:9)

1. Fizicheskiy institut imeni Lebedeva AN SSSR, Moskva.

ACCESSION NR: AP4034931 S/0181/64/006/005/1465/1471

AUTHOR: Vul, B. M.; Zavaritskaya, E. I.; Shotov, A. P.

TITLE: Current-voltage characteristics of p-n junctions in strongly doped gallium arsenide

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1465-1471

TOPIC TAGS: gallium arsenide, p-n junction, semiconductor, GaAs, band structure

ABSTRACT: The current-voltage characteristics of a GaAs p-n junction were investigated at 4.2, 77, and 290K. The samples with a transition region area of about 10^{-3} cm^2 were prepared by diffusing zinc into GaAs with a Te concentration on the order of 10^{17} and 10^{18} cm^{-3}. The current-voltage characteristics of different samples varied very slightly when the current exceeded 10^{-4} amp. A reverse bias breakdown was observed in all samples. The reverse voltage-current characteristics showed a smooth change of current with

Card 1/3

ACCESSION NR: AP4034931

voltage and were reversible without sudden changes of current. The direct voltage-current characteristics show that at sufficiently high currents the current varies linearly with the voltage. The data observed were explained by the complex structure of samples, that is, in the specimens used the degenerate n-type region apparently was in contact with the p-n junction while the degenerate p-side was several microns distant from the junction. In this intermediate area, Zn concentration was insufficiently high for merging of the impurity and valence bands to take place. It was determined that at a Te concentration of approximately 10^{18} cm^{-3} and at a temperature of 77K, the variation of current with voltage, directly at the junction region, coincides with the variation of the maximum in the recombination radiation spectrum with current. At T = 4.2K, this dependence is shifted by 0.03 ev. When the voltage at the p-n junction is less than the width of the forbidden band, the passage of current is determined by distortions in the energy structure of the bands caused

Card 2/3

ACCESSION NR: AP4034931

by fluctuations in the distribution of charged impurities. Orig. art. has: 10 figures, 1 table, and 5 formulas.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moscow (Physics Institute, AN SSSR)

SUBMITTED: 06Dec63 DATE ACQ: 20May64 ENCL: 00

SUB CODE: SS NO REF SOV: 005 OTHER: 008

Card 3/3

KOPYLOVSKIY, B.D.; BAGAYEV, V.S.; BEROZASHVILI, Yu.N.; IVANOV, V.S.; SHOTOV, A.P.; KHVOSHCHEV, A.N.

Electronic apparatus for analyzing recombination radiation in semiconductors. Prib. i tekh. eksp. 9 no.4:167-171 Jl-Ag '64. (MIRA 17:12)

1. Fizicheskiy institut AN SSSR.

L 27549-66 EWT(1)/EWT(m)/ETC(f)/EPF(n)-2/EWG(m)/EWP(t)/ETI IJP(c) JD/AT

ACC NR: AP6012465 SOURCE CODE: UR/0181/66/008/004/1083/1087

AUTHOR: Shotov, A. P.; Grishechkina, S. P. Kopylovskiy, B. D.; Muminov, R. A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institute AN SSSR)

TITLE: Spontaneous and coherent emission of electron-hole plasma of indium antimonide

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1083-1087

TOPIC TAGS: indium antimonide, semiconductor laser, recombination radiation, forbidden band, electron recombination

ABSTRACT: The authors investigate the spontaneous and stimulated recombination radiation from an electron-hole plasma in InSb in magnetic fields up to 15,000 G. Coherent radiation was achieved in a field of 14,000 G and at injection currents ~2 x 10^4 a/cm^2 at 0.4 μsec pulse duration effected at two levels corresponding to the two different values of the electron spin of the first Landau level when split by the magnetic field. The plasma was produced in relatively pure p-type InSb by injection through rectifying contacts. The volt-ampere characteristics in the forward direction disclose a negative-resistance section due to modulation of the conductivity within the crystal by double injection of electrons and holes from the two contacts. The spontaneous-emission spectrum taken at 10K and at a current of 5a, obtained in response to 0.4 μsec pulses at a repetition rate of 85 pps, exhibited a maximum at 235.5 Mev, which is in good agreement with the width of the forbidden band at this temperature. This relates the

Card 1/2

L 27549-66

ACC NR: AP6012465

4

spectrum to direct radiative interband recombination of the electron-hole pairs. The authors have also observed other spectra with maxima corresponding to lower energy (234 Mev) and to a larger spectral width. These probably pertain to compensated p-type samples in which the edge of the energy band is distorted by impurity states. Such crystals are now under study. The authors thank B. M. Vul for a discussion of the results, and A. V. Babushkin, Yu. N. Korolev, and L. M. Novak for help with the work. Orig. art. has: 7 figures and 2 formulas. [02]

SUB CODE: 20/ SUBM DATE: 16Aug65/ ORIG REF: 003/ OTH REF: 011/ ATD PRESS: 4260

Card 2/2 BLG

L 32722-66 EWT(1)/ETC(f) IJP(c) AT

ACC NR: AP6020207 SOURCE CODE: UR0056/66/050/006/1525/1528

AUTHOR: Shotov, A. P.; Grishechkina, S. P.; Muminov, R. A.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Pinch effect in a degenerate plasma of indium antimonide

SOURCE: Zh eksper i teor fiz, v. 50, no. 6, 1966, 1525-1528

TOPIC TAGS: indium compound, antimonide, semiconductor plasma, plasma pinch, magnetic pinch, recombination radiation, volt ampere characteristic

ABSTRACT: Unlike in earlier experiments, where the pinch effect was produced in a nondegenerate semiconductor plasma, the authors were able, by injecting carriers into indium antimonide through contacts, to obtain at large current densities (~10^4 a/cm^2) and helium temperatures (4.2K) a high degree of degeneracy in an electron-hole plasma and a pronounced pinch effect. The degeneracy of the plasma was confirmed by the coherent emission of the crystal and by its recombination spectrum. The pinch effect was observed and investigated by two independent methods - measurement of the electric conductivity of the plasma (volt-ampere characteristic) and by measurement of the spectra of recombination radiation of the electron-hole pairs, using a method described by the authors earlier (FTT v. 8, 1083, 1966). The investigations were made on relatively pure p-type InSb single crystals. Carrier injection was in short pulses (~1 μsec) repeated at ~100 cps. The presence of the pinch effect was manifested

Card 1/2

L 32722-66

ACC NR: AP6020207

4

by a reduction in the slope of the volt-ampere characteristic and by a shift of the peak of the emission spectrum with increasing current density and decreasing magnetic field (at a current of ~10 amp or ~5 x 10^3 amp/cm^2). The spectrometric method is apparently more sensitive to the pinch effect than the electric conductivity method. The emission spectra also make it possible to determine the degree of degeneracy of the plasma and the diameter of the pinch (~10^{-2} cm and decreasing with increasing current). The authors thank B. M. Vul and V. A. Chuyenkov for a discussion of the results and A. V. Babushkin and L. M. Novak for help with the work. Orig. art. has: 3 figures and 8 formulas. [02]

SUB CODE: 20/ SUBM DATE: 28Jan66/ ORIG REF: 003/ OTH REF: 004/ ATD PRESS: 5125

Card 2/2 JS

L 45568-66 EWT(1)/EWT(m)/EEC(k)-2/EWP(k)/T/EWP(t)/ETI IJP(c) AT/WG/JD
ACC NR: AP6026720 SOURCE CODE:: UR/0181/66/008/008/2496/2497

10299B

AUTHOR: Shotov, A. P.; Grishechkina, S. P.; Muminov, R.A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: Generation of coherent radiation in an indium antimonide electron-hole plasma

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2496-2497

TOPIC TAGS: solid state laser, electron ~~hole~~ plasma, indium antimonide, semiconductor laser

ABSTRACT: The authors present new data on an InSb semiconductor laser operating at 4.2K, which with respect to some parameters (generation at relatively weak magnetic fields of ~4 kœ, relatively large pulse durations up to 10 μsec, low threshold currents, and operations which are close to the single mode) is superior to InSb lasers described in the literature. The laser was prepared from p-type, high-purity InSb (concentration $p \simeq 2 \cdot 10^{13}$ cm^{-3}, $\simeq$ 6000 cm^2/v. sec at 77K). It is shown (Fig. 1) that the threshold generation current (I_{thr}) with an increase in the magnetic field (H_z) first decreases sharply, then rises slightly. The laser operated satisfactorily when the pulse duration was increased to 10 μsec with a repetition frequency of ~ 10^3 cps.

Card 1/3

L 45568-66
ACC NR: AP6026720

Beam directivity was $\simeq 4^\circ$ in both the vertical and horizontal planes, which indicates that the width of the generation region is at least 70 μ. The authors thank A. V. Babushkina, Yu. N. Korolev, and L. M. Novak for assistance in the work. Orig. art. has: 2 figures. [26]

SUB CODE: 20/ SUBM DATE: 18Feb66/ ORIG REF: 001/ OTH REF: 002 / ATD PRESS: 5083

Card 3/3

L 45568-66
ACC NR: AP6026720

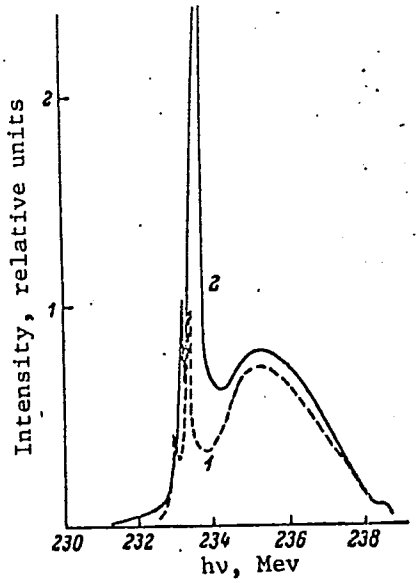

Figure 1. Radiation spectrum of an InSb laser at H_z = 4.5 koe, and T = 4.2K
I, a: 1 — 15, 2 — 18

Card 2/3

ACC NR: AP7006128 SOURCE CODE: UR/0056/67/052/001/0071/0078

AUTHOR: Shotov, A. P.; Grishechkina, S. P.; Muminov, R. A.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Pinch effect in a degenerate plasma in longitudinal and transverse magnetic fields

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 52, no. 1, 1967, 71-78

TOPIC TAGS: plasma pinch, semiconductor plasma, semiconductor carrier, carrier density, electron recombination, plasma magnetic field, recombination radiation, volt ampere characteristic, indium compound, antimonide, ELECTRON HOLE

ABSTRACT: This is a continuation of earlier work (ZhETF v. 50, 1525, 1966) dealing with the pinch effect in indium antimonide. In the present study the authors used the procedures of the earlier investigation (recombination-radiation spectrometry and conductivity measurements), and also measurements of the recombination rate, to investigate the pinch effect of a degenerate electron-hole plasma of InSb in the presence of a transverse and a longitudinal magnetic field. The degenerate plasma was produced by injection of carriers with rectangular current pulses of duration 10^{-6} sec at a repetition rate of ~100 cps. The measurements were made at 4.2K and at currents ranging from 7 to 12 amp, in fields up to 400 Oe. From an analysis of the obtained spectra of recombination radiation at various currents and fields, the

UDC: none

KHONGAUZ, A.N.; SHOTOV, D.A.; PARSHIN, I.M.

Condenser dosimeter for X-ray and gamma-ray irradiation. Vest.rent.i rad. no.6:82-87 '53. (MLRA 7:1)

(X rays--Apparatus and supplies)

KRONGAUZ, A.N.; SHOTOV, D.A.; PARSHIN, I.M.

[Condensation dosimeter for X-ray and Gamma-radiation] Kondensatornyi dozimetr dlia rentgenovskogo i gamma-izlucheniia. Moskva, Medgiz, 1955. 6 p. [Microfilm] (MLRA 8:10)
(X-rays--Apparatus and supplies) (Gamma rays)

ACCESSION NR: AR4039332 S/0282/64/000/004/0002/0002

SOURCE: Ref. zh. Khimich. i kholod. mashinostr. Otd. vy*p., Abs. 4.47.13

AUTHOR: Votlokhin, B. Z.; Shots, G. B.

TITLE: New instruments for controlling technological parameters in petroleum refining and petroleum chemistry

CITED SOURCE: Tr. Groznensk. neft. n.-i., vy*p. 15, 1963, 353-365

TOPIC TAGS: petroleum refining equipment, alcoholometer, viscometer, petrochemical equipment

TRANSLATION: The laboratory of control and measuring instruments of the Groznyy Petroleum Scientific Research Institute has developed and tested under industrial conditions the following instruments designed for the remote control of certain operational parameters of petroleum-refining and petrochemical units: a remote alcoholometer with automatic temperature compensation; an automatic flow viscometer; radiometric apparatus for the control and

Card 1/2

ACCESSION NR: AR4039332

circulation of loose substances; an instrument for recording the height of ejection of loose substances in pneumatic conveyers; an instrument for the automatic determination of the solidification temperature of crystalline substances. The design of the indicated devices is described.

DATE ACQ: 13May64 SUB CODE: FP ENCL: 00

Card 2/2

SHOTS, M.B.

Development of a diagram for the remote automatic control of conveyer lines. Nauch. trudy Perm NIUI no.3:147-154 '63.

Brief classification of conveyer controlling devices. Speed relay designed by the Perm Coal Research Institute. Ibid.:154-165 (MIRA 17:3)