34281
S/589/61/000/055/001/006
D051/D113

Calorimetric device for measuring...

J.Research. NBS, V. 52, 1954, p 177; v. 53, 1954, p 277; I. Zlotovski, Phys.Rev., v. 60, 1941, p. 483; C.S. Wu, F. Boehm, E. Nagel, Phys.Rev., v. 91, 1953, p 319.

ASSOCIATION: VNIIM

SUBMITTED: April 23, 1960.

Card 4/4

AGLINTSEV, K.K.; OSTROMUKHOVA, G.P.; KHOL'NOVA, Ye.A.

Experimental determination of self-absorption along the axis in Co[illegible] preparations of cylindrical shape. Atom. energ. 10 no.1:75-76 Ja '61. (MIRA 13:12)

(Cobalt--Isotopes) (Gamma rays)

S/048/61/025/002/009/016
B117/B212

AUTHOR: Khol'nova, Ye. A.

TITLE: A mercury gamma calorimeter

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 2, 1961, 257-260

TEXT: The present paper was read at the 11th Annual Conference on Nuclear Spectroscopy (Riga, January 25 to February 2, 1961). The author reports on a new highly sensitive gamma calorimeter to measure small intensities. The development of this mercury calorimeter had been started in VNIIM in 1956. The calorimeter is based on the same principle as a standard expansion thermometer but has an unusually large spherical mercury container. The mercury is used to measure temperatures and to absorb gamma rays. The scheme of the calorimetric unit is very simple (Figure). The calorimeter itself consists of a glass sphere filled with mercury (glass no. 23) and a glass capillary tube (thermometer glass). All other components of the unit are necessary to keep the calorimeter at a constant temperature and also to mount it inside the thermostat. The whole unit has two similar independent-

Card 1/5

ly functioning gamma calorimeters. The preparation to be investigated is introduced into one of the spheres by means of a feeding pipe that is laterally attached to the sphere. The other calorimeter serves as a temperature-control instrument. Temperature control is very important since the calorimeter is very sensitive and the testing time relatively long (2 hr). In some test series the task of the calorimeters may be interchanged. The outer sphere diameter is 61.6 mm; the inner diameter 60.0 mm. The space for the preparation measures 11 mm in diameter and is 35 mm long. The measuring capillary tube is 540 mm long, its diameter is 0.07 mm the upper part ends in a 0.2 cm^3 volume. A milk-glass scale is put on the capillary tube, it is 480 mm long and has mm divisions. The glass spheres of the calorimeters are each filled with chemically pure mercury. At 25.1°C the mercury level reaches the zero point of the scale. This temperature has been chosen to avoid a temperature rise due to the ambient. A temperature rise of 0.01°C changes the mercury level by about 51 mm. Since it is possible to get accurate temperature readings down to 0.5 mm and even lower, temperature cha[redacted]bout 0.0001°C will be noticed. The calorimeter described was calibrated against a mercury thermometer and not against an electric heater. For the capillary tube having a diameter of

0.07 mm the zero mark corresponded to a temperature of 25.16°C and the 450° mark to-25.25°C. For the capillary tube with a diameter of 0.072 mm the zero mark corresponded to-25.14°C and the 450° mark to-25.24°C. In order to stabilize the heat values, both calorimeters have been imbedded in a solid copper block, which has been coated with brass and placed into an oil thermostat; its temperature is kept at 25.16°C. Temperature fluctuations of ± 0.002°C are permitted. The gamma radiation of the preparation hits a 24-mm mercury layer. This is equivalent to 29 mm of lead (with respect to absorption). The same absorption layer has been used in the lead-calorimeter no. 2. The absorption capacity of the mercury calorimeter is the same as that of the lead calorimeter but its thermometric characteristics are much better. The heat transfer surface and the heat capacity of the mercury calorimeter are smaller but the heat sensitivity higher by even one order of magnitude. A comparison of these data shows that the mercury calorimeter can be used for measuring the activities of preparations (e.g. Co^{60}) from 2 to 5 millicuries. The Radiyevyy institut (Radium Institute) is mentioned. There are 1 figure, 1 table, and 2 Soviet-bloc references.

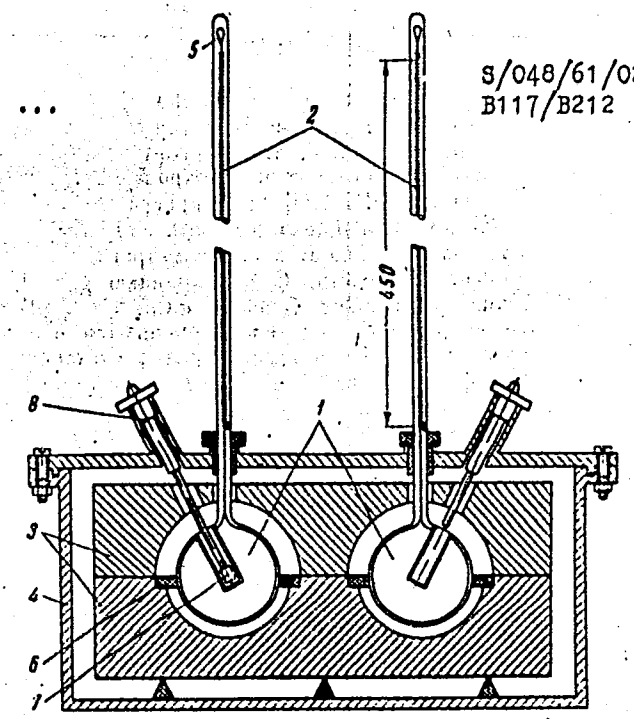
Card 3/5

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev)

Legend to Figure: 1) Mercury container; 2) capillary tubes; 3) copper block for temperature leveling; 4) brass casing; 5) ballistic volume of the capillary tube; 6) Teflouring; 7) test preparation; 8) object holder.

A mercury gamma ...

S/048/61/025/002/009/016
B117/B212



Card 5/5

S/263/62/000/006/015/015
I008/I208

AUTHORS: Timofeyeva, L.P. and Khol'nova, Ye.A.

TITLE: A calorimetric unit for measuring radium preparations

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 32. Izmeritel'naya tekhnika, no.6, 1962, 53, abstract 32.6.340. (Tr. in-tov Kom-ta standartov, mer i izmerit. priborov pri Sov. Min. SSSR, 1961, no.55(115), 5-34)

TEXT: A detailed description of an α-calorimetric unit for measuring the absolute activity of α-preparations, and in the first place of radium preparations, built in VNIIM, is given. The unit may be also used as a β-calorimeter, if the vessel containing the radioactive preparation is appropriately changed. The sensitivity of the calorimeters enables one to measure radium preparations from 0.1 mc up to 1 c, and β-preparations from 5-10 mc up to 3 c. The upper limit of measurements is determined by safety considerations. The calorimetric unit consists of two independent static α-calorimeters, designed to measure radium ampules of various

Card 1/3

S/263/62/000/006/015/015
I008/I208

A calorimetric unit for measuring...

dimensions, and of a β-calorimeter. The calorimetric unit includes the following main elements: 2 copper cylinders with calorimeters; a water thermostat, which keeps the temperature constant within $\pm$ 0.02°; an electrical device for measuring the temperature of the calorimeter; a potentiometric circuit for the calibration of the calorimeters; a circuit for measuring the sensitivity of the galvanometer; a device for regulating the level of the liquid in the thermostat. The unit is built in such a way as to enable one to use each of the two vessels of the calorimeter as a single or a differential - double calorimeter. The degree of heating of the calorimeter's vessel is measured by means of a copper-constantan thermopile. An analysis carried out in the unit showed that the error in the measurements of the absolute activity of radium preparations did not exceed $\pm$ 0.8-1%. The thermal effect of 1 mc of radium was calculated. Corrections for the accumulation of RaD, RaE and polonium for radium preparations of different ages were

Card 2/3

TIMOFEYEVA, L.P.; KHOL'NOVA, Ye.A.

Calorimetric apparatus for measuring radium preparations. Trudy inst.Kom. stand., mer i izm. prib. no.55:5-34 '61. (MIRA 16:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni Mendeleyeva.
(Calorimeters) (Radium--Standards)

AGLINTSEV, K.K.; KUL'KOVA, L.P.; KHOL'NOVA, Ye.A.

Standard calorimetric unit UKG-1. Nov. nauch.-issl. rab. po metr. VNIIM no.2:1-4 '64. (MIRA 18:4)

DRICHKO, A.F.; KARAVAYEV, F.M.; KUL'KOVA, L.P.; KHOL'NOVA, Ye.A.

Working standards and first-order standard γ-emitters from Co^{60}. Nov. nauch.-issl. rab. po metr. VNIIM no.2:11-13 '64. (MIRA 18:4)

KHOLO, A.P.

Fish Culture

Achievements of the Dnestr pisciculturists. Ryb. khoz. 28, no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, AUGUST 1952 1953. Unclassified.

DRUZHKOV, V., nauchnyy sotrudnik; STEPANOV, V., nauchnyy sotrudnik; KHOLOBAYEV, Ye., nauchnyy sotrudnik

Mining thick steeply-dipping deposits. Prom.Arm. 4 no.1:42-49 Ja '61. (MIRA 14:6)

1. TSentral'nyy nauchno-issledovatel'skiy gornonrazvedochnyy institut tsvetnykh redkikh i blagorodnykh metallov.
(Mining engineering)

36437

S/137/62/000/003/073/191
A006/A101

1.1600

AUTHORS: Konstantinov, V.I., Sklyarenko, S.I., Kholobes, Ye.A.

TITLE: The preparation of electrolytic tantalum, niobium and their alloys Information I.

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 44, abstract 3G308 ("Poroshk. metallurgiya", 1961, no. 4, 47 - 55, English summary)

TEXT: The authors studied the effect of the electrolyte composition on the preparation of Ta powder (chemical composition, size, current efficiency, etc.). The optimum composition of the electrolyte is: 15 - 20 weight % K_2TaF_7; 2.5 - 12 weight % Ta_2O_5, and KCl and KF in a 2:1 weight ratio. The possibility of preparing electrolytical Nb and Ta-Nb alloys was also studied. The Nb powder was obtained from baths composed of 20% K_2NbOF_5, 53.4% KCl, 26.6% KF, and Nb-Ta alloys from electrolytes containing $\geq$ 17% K_2TaF_7 and $\leq$ 2% Nb_2O_5.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

S/137/62/000/007/020/072
A052/A101

AUTHORS: Konstantinov, V. I., Amosov, V. M., Kholobes, Ye. A.

TITLE: The production of electrolytic tantalum, niobium and their alloys. 2nd report

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 46 - 47, abstract 7G323-("Poroshk. metallurgiya", no. 5, 1961, 42 - 52; English summary)

TEXT: Three types of electrolyzer designs with different methods of heating were tested. As a result of experiments, an optimum electrolyzer design has been developed in which the electrolyzer itself (made of Ni or nichrome) serves as a cathode, without additional heating, with a hole in the conical bottom and with a mobile graphite anode. Furthermore, the effect of the following factors was studied: the method of feeding the electrolyzer, the degree of filling the bath with the cathode deposit, the composition of electrolyte, the temperature of the process, the cathode, anode and volume current density. The purification of electrolytic Ta and Nb powders from electrolyte salts was realized by heating

Card 1/2

The production of...

in argon at 630 - 650°C and a subsequent vacuum degasification at 1,000°C. The work of an industrial installation for production of Ti, Nb and their alloys is described. The process is carried out at ~700°C without heating from outside due to a high current density (D_c = 50 a/dm^2, D_a = 120 - 160 a/dm^2, volume current density ~130 a/dm^2). The electrolyte consists of 17.5% K_2TaF_7, 55% KCl and 27.5% KF; the bath is refilled periodically with Ta or Nb oxides or with their mixture. The technical and economic characteristics of the process and the purity of powders produced are high. For the 1st report see RZhMet, 1962, 3G308.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 2/2

KONSTANTINOV, V.I.; AMOSOV, V.M.; KHOLOBES, Ye.A.

Preparation of electrolytic tantalum, niobium, and their alloys. Porosh. met. 1 no.5:43-52 S-O '61. (MIRA 15:6)

1. Moskovskiy elektrolampovyy zavod.
(Tantalum--Electrometallurgy) (Niobium--Electrometallurgy)

KHOLOBUDENKO, M.D., inzh.; MITASOV, Ye.T., inzh.

Mining 330 m. of drift per month with undercutting. Shakh. stroi. no.1:24-26 Ja '59. (MIRA 12:1)

1.Trest Krasnoarmeyskshakhtostroy (for Kholobudenko).
(Mining engineering)

KHOLOD, A. PA 16/49T13

[redacted]/Aeronautics, Military Aug 48
Navigation, Aerial

"Review of A. I. Trogman, N. F. Kudryavtsev, L. P. Sergeyev and M. F. Gorshkov's Book, 'Textbook on Avigation,'" A. Kholod, 1½ pp

"Vest Vozdush Flota" No 8 (354)

Unfavorable review. Errors in first edition have been retained in second. Published by Mil Pub House of the Ministry of Armed Forces USSR, Moscow, 1947.

[redacted] 16/49T13

KHOLOD, A.I.

Large flexures in shallow three-layered shells with rigid filler. Sbor. nauch. trud. Dnepr. inzh. - stroi. inst. no.31:3-18 '63 (MIRA 18:1)

L 16375-65 EWT(d)/EWT(m)/EWP(w)/EPF(c)/EWA(d)/EWP(v)/EPR/EWP(j)/EWP(k)/EWA(h)
Pc-4/Pf-4/Pr-4/Ps-4/Peb ESD(dp)/ASD(f)-2/ASD(m)-3/AFTC(p) WW/EM/RM

ACCESSION NR: AP5000103 S/0198/64/010/006/0581/0586

AUTHORS: Prusakov, O. P. (Prusakov, A. P.) (Dnipropetrovs'k);
Kholod, A. G. (Kholod, A. I.) (Dnipropetrovs'k)

TITLE: On one form of nonlinear equations for flat triple-layer envelopes with stiff fillers

SOURCE: Pry*kladna mekhanika, v. 10, no. 6, 1964, 581-586

TOPIC TAGS: nonlinear equation, plate deflection, sandwich structure

ABSTRACT: The problem of simplifying the solution of a system of nonlinear equations for flat orthotropic triple-layer shells was analyzed. The shells possess a symmetric structure along their thickness with stiff internal layers. It is shown that, in general, the system of four nonlinear equations for the orthotropic layers can be reduced to a system of two nonlinear equations for the force function and one displacement function. In particular, if the external layer is isotropic and the internal, transversely isotropic, the solution leads to three equations, one for the force function and two for the displacement function. One of these equations is found to be linear and not connected with the two remaining nonlinear equations. It is further shown that in the work by E. I. Grigolyuk and P. P.

Card 1/2

L 16375-65
ACCESSION NR: AP5000103

Chulkov (K obshchey teorii trekhsloyny*kh obolochek bol'shogo progiba, Doklady* AN SSSR, t. 150, No. 5, 1963) the solution of the nonlinear deflection problem of a triple-layer shell, represented in the form of two nonlinear equations, is not genera.. In this same work, the part that corresponds to the function Ψ of the present paper was dropped. Orig. art. has: 14 equations.

ASSOCIATION: Dnipropetrovsky*y inzhenerno-budivelny*y insty*tut (Dnepropetrovsk Engineering-Construction Institute)

SUBMITTED: 25Nov63 ENCL: 00

SUB CODE: AS NO REF SOV: 002 OTHER: 000

Card 2/2

KHOLOD, A.I. (Dnepropetrovsk)

Nonlinear lateral vibrations of a cylindrical sandwich panel.
Prikl. mekh. 1 no.6:123-126 '65. (MIRA 18:7)

1. Dnepropetrovskiy inzhenerno-stroitel'nyy institut.

L 10791-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k)/EWA(h)/ETC(m) WW/EM/GS
ACC NR: AT6001078 SOURCE CODE: UR/0000/65/000/000/0007/0017

AUTHORS: Prusakov, A. P.; Kholod, A. I.

ORG: Dnepropetrovskiy Structural Engineering Institute (Dnepropetrovskiy inzhenerno-stroitel'nyy institut)

TITLE: Free transverse vibrations of a triple-layered curved cylindrical shell with a stiff filler

SOURCE: Soprotivleniye materialov i teoriya sooruzheniy (Strength of materials and the theory of structures), no. 1. Kiev, Izd-vo Budivel'nyk, 1965, 7-17

TOPIC TAGS: stress analysis, structural strength, structure loading, shell theory, shell vibration

ABSTRACT: Free transverse vibrations of a tri-layered curved cylindrical shell with a stiff, transversely isotropic filler are studied. It is assumed that the shell has a symmetrical construction throughout its thickness, and that the Kirchoff-Lyav hypotheses apply to the external isotropic layers while the inner layer is governed by the linear law of variation of tangential displacements along the thickness. Transverse deformations of the filler are ignored. The problem is given by the system of equations

$$\left(B' + \frac{B}{6}\right)\frac{\partial^2 u_\beta}{\partial x^2} + \left(B_k' + \frac{B_k}{6}\right)\frac{\partial^2 u_\beta}{\partial y^2} + \left(B_1' + \frac{B_1}{6}\right)\frac{\partial^2 v_\beta}{\partial x \partial y} -$$

$$-B\frac{h}{12}\frac{\partial}{\partial x}\nabla^2 w - \frac{G}{h}\left(u_\beta - H\frac{\partial w}{\partial x}\right) = 0;$$

Card 1/3

$$\left(B'+\frac{B}{6}\right)\frac{\partial^2 v_\beta}{\partial y^2}+\left(B'_x+\frac{B_x}{6}\right)\frac{\partial^2 v_\beta}{\partial x^2}+\left(B'_1+\frac{B_1}{6}\right)\frac{\partial^2 u_\beta}{\partial x\partial y}-$$
$$-B\frac{\delta}{12}\frac{\partial}{\partial y}\nabla^2 w-\frac{Q}{h}\left(v_\beta-H\frac{\partial w}{\partial y}\right)=0;$$

$$\left(B'H+\frac{Bh}{6}\right)\nabla^2\left(\frac{\partial u_\beta}{\partial x}+\frac{\partial v_\beta}{\partial y}\right)+\left(D'-\frac{D\delta}{4h}\right)\nabla^2\nabla^2 w-$$
$$-\frac{1}{2R}\frac{\partial^2 F}{\partial x^2}+\rho^*\frac{\partial^2 w}{\partial t^2}=0;$$

$$\nabla^2\nabla^2 F+\frac{c^2-d^2}{Rc}\frac{\partial^2 w}{\partial x^2}=0,$$

where

$$B'=\frac{E'\delta}{1-\nu'^2};\quad B=\frac{E2h}{1-\nu^2};\quad B'_x=B'\frac{1-\nu'}{2};\quad B_x=B\frac{1-\nu}{2};$$

$$B'_1=B'\frac{1+\nu'}{2};\quad B_1=B\frac{1+\nu}{2};\quad D'=B'\frac{\delta^2}{12};$$

$$D=B\frac{h^2}{3};\quad H=h+\frac{\delta}{2};$$

$$u_\beta=\frac{u_1-u_2}{2};\quad v_\beta=\frac{v_1-v_2}{2};\quad c=2B'+B.$$

L 10791-66

ACC NR: AT6001078

$$d = 2B'\nu' + B\nu; \quad \rho^* = (\rho'\delta + \rho h).$$

R is used to denote the shell's radius of curvature; u_1, u_2, v_1, and v_2 are the translations of points of the mean surfaces of the upper and lower layers along the x-axis and the tangential line y; w is the shell deflection, δ and 2h are the thickness of the external layers and the filler; E', E, ν', ν, ρ', ρ - Young's modulus, Poisson's coefficient, and the density of the outer layers and the filler respectively; G is the shear modulus of the filler in the xz and yz planes; F - the force function. Displacement functions are introduced such that

$$u_\beta = G\frac{H^4}{h^3}\frac{\partial}{\partial x}\left(4HG\varphi - D\frac{\delta}{h}\nabla^2\varphi\right) + \frac{\partial\psi}{\partial y};$$

$$v_\beta = G\frac{H^4}{h^3}\frac{\partial}{\partial y}\left(4HG\varphi - D\frac{\delta}{h}\nabla^2\varphi\right) - \frac{\partial\psi}{\partial x};$$

$$w = G\frac{4H^4}{h}\left[\frac{a}{h}\varphi - \left(B' + \frac{B}{6}\right)\nabla^2\varphi\right],$$

which yields a system of three equations in F, ϕ, and ψ. The system is applied to vibrations occurring in shells with various support and stiffness conditions. Results are compared with those of other authors. Orig. art. has: 25 equations.

SUB CODE: 20/ SUBM DATE: 14May65/ ORIG REF: 005

Card 3/3

KHOLOD, A.S.

34006 KHOLOD, A.S. Primyenyeniye Infrakrasnykh Luchyey Dlya Nochnogo Vidyeniya Fizika V Shkolye, 1949, No. 5 S. 24-28

SO: Letopis' Zhurnal'nykh Statey, Vol. 42, Moskva, 1949

KHOLOD A., LT.

USSR/Aeronautics - Aerial Navigation Oct 49

"Map of the Accuracy of Air Navigation," Lt A. Kholod

"Vest Vozdush Flota" No 10, pp 36-40

Method for plotting errors in navigation on special map or overlay. Curves of equal errors in detn of calcd location of aircraft, for [illegible] flights beyond landmark-visibility represent concentric circumferences on which errors, related to distance of aircraft from initial point of of flight, are inscribed. Examples.

[redacted]

1734

KHOLOD, A. V.

33514

Opyt Primeneniya Peresadki Gipofiza Pri Nesakharnom Mocheiznurenii Trudy Kurskogo Gos. Med. In-Ta, T. 11, Vyp. 2, 1949, c. 147-52.

SO: Letopis' Zhurnal'nykh Statey, Vol. 45, Maskva, 1949

KHOLOD, A.V., prof.; ASTAF'YEV, V.I., kand. med. nauk

Transpleural approach to the spleen. Khirurgiia 39 no.10:85-87 O '63. (MIRA 17:9)

1. Iz gospital'noy khirurgicheskoy kliniki (zav.-prof. A.V. Kholod) Kurskogo meditsinskogo instituta na baze Kurskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach L.A. Chunikhin).

KHOLOD, A.V.; ASTAF'YEV, V.I.; FIRSOV, Ye.F.; SHUKLIN, B.G. (Kursk)

Diagnosis and treatment of diaphragmatic relaxation. Klin. med. 41 no.4:25-32 Ap '63. (MIRA 17:2)

1. Iz kafedry gospital'noy khirurgii (zav. - prof. A.V. Kholod) Kurskogo gosudarstvennogo meditsinskogo instituta, Oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach L.A. Chunikhin) i Oblastnogo onkologicheskogo dispansera (glavnyy vrach T.S. Kondrasheva), Kursk.

Khol'd A.Ye.

PALANT, B.L.; KHOLOD, A.Ye.; BLAGODETELNVA, V.A.

Variability of Corynebacterium pseudodiphtheriticum in organisms of experimental animals. Zhur.mikrobiol. epid. i immun. no.8:30-35 Ag '55. (MLRA 8:11)

1. Iz Khar'kovskogo instituta vaktsin i syvorotok imeni Mechnikova (dir.--kandidat biologicheskikh nauk G.P.Cherkas)

(CORYNEBACTERIUM
pseudodiphtheriticum, variability in animal organism)

25(1), 28(2) SOV/115-59-9-9/37

AUTHORS: Kholod, G.I., and Shitikov, V.M.

TITLE: A Device for Finishing the Working Surfaces of Micrometers of More Than 100 mm

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 9, p 20 (USSR)

ABSTRACT: The majority of micrometers of more than 100 mm measuring range are equipped with pressed-in anvils. For lapping the working surfaces, the anvil must be removed from its seat and is replaced after the surface finishing has been completed. However, this method does not insure parallel working surfaces. The author recommends a device with which the anvils can be lapped without removing them from their seats. This device is manufactured of a micrometer for 25-50 mm and is equipped with a clamp. The clamp is used for fixing the device to the micrometer anvil, as shown in a diagram. The lapping tool is pressed against the anvil by the micrometer screw. The author describes briefly the lapping procedure. There is 1 diagram.

Card 1/1

PODOL'NYY, S.A., dotsent; KHOLOD, K.N.

Analysis of morbidity in the rural population. Sov.zdrav. 16 no.4: 51-53 Ap '57. (MLRA 10:8)

1. Iz organizatsionno-metodicheskogo otdela (zav. - dotsent S.A. Podol'nyy) Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni M.F.Vladimirskogo (dir. - kandidat meditsinskikh nauk P.M.Leonenko)

(VITAL STATISTICS,
morbidity statist. in rural population in Russia (Rus))

KHOLOD,K.N.

State of dispensary service for the rural population in Moscow Province; according to data of the annual reports for 1955-1956. Trudy mol. mauch. sotr. MONIKI no.1:204-208 '59 (MIRA 16:11)

1. Organizatsionno-metodicheskiy otdel (zav. dotsent S.A. Podol'nyy) Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni Vladimirskogo.

KHOLOD, K.N. (Moskva)

Specialized care in rural district hospitals. Sov. zdrav. 19 no.3: 16-20 '60. (MIRA 14:6)

1. Iz Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni M.F.Vladimirskogo (dir. - kandidat meditsinskikh nauk P.M.Leonenko).
(MOSCOW PROVINCE--MEDICAL CARE)

KHOLOD, M. G.

37475. Bolezni i Otkhod Telyat V Lugovodcheskikh Khozyaystvakh Belorussii. Soobshch. Z. Uchen. Zapiski Vitebsk. Vet. In-ta, t. IX, 1949, s. 115-22.— Bioliogr: 7 Nazv.

SO: Letopis' Zhurnal'nykh Statey, Vol. 7, 1949

KHOLOD, N.

For economic efficiency of the work of the fleet. Mor. flot 24 no.9:10 S '64. (MIRA 18:5)

1. Pomoshchnik nachal'nika Severnogo parokhodstva.

AKHUNDOV, Veli Yusifovich; KHOLOD, S., red.; MUKHIN, Yu., tekhn.red.

[Azerbaijan in the seven-year plan] Azerbaidzhan v semiletke. Moskva, Gos.izd-vo polit.lit-ry, 1959. 47 p. (MIRA 13:6)
(Azerbaijan--Economic policy)

STEL'MASHCHUK, Viktor Fomich; KHOLOD, S., red.; POPOVA, T., tekhn.red.

[Utilizing commodity-monetary relations for building socialism in the U.S.S.R.] Ispol'zovanie tovarno-denezhnykh otnoshenii dlia postroeniia sotsializma v SSSR. Moskva, Gos.izd-vo polit. lit-ry, 1960. 190 p. (MIRA 13:3)
(Economics)

MATVEYEV, Boris Georgiyevich; KHOLOD, S., red.; MUKHIN, Yu., tekhn. red.

[How to increase labor productivity in an enterprise] Kak povysit' proizvoditel'nost' truda na predpriiatii. Moskva, Gos. izd-vo polit. lit-ry, 1961. 39 p. (MIRA 14:7)
(Labor productivity)

KRASAVIN, Nikolay Nikolayevich; KHOLOD, S., red.; TROYANOVSKAYA, N., tekhn. red.

[How to increase labor productivity on a farm] Kak povysit' proizvoditel'nost' truda v khoziaistve. Moskva, Gos. izd-vo polit. lit-ry, 1961. 62 p. (MIRA 15:3)

1. Predvoditel' Vysshey partiynoy shkoly pri TSentral'nom Komitete Kommunisticheskoy Partii Sovetskogo Soyuza (for Krasavin).

(Agriculture—Labor productivity)

PISKUNOV, V.; PODGORNOVA, V.; POLYAKOVA, N.; ROCHKO, V.; KHOLOD, S.

[Study the economics of your enterprise; visual aid for students of economics schools] Izuchai ekonomiku svoego predpriiatiia; nagliadnoe posobie dlia slushatelei nachal'nykh ekonomicheskikh shkol. Leningrad, Gospolitizdat, 1961. 46 p. (MIRA 14:4)

(Industrial management—Audio-visual aids)

GENDLER, Grigoriy Khaimovich; KHOLOD, S., red.; TYUNEYEVA, A., tekhn. red.

[Wages and technological progress] Zarabotnaia plata i tekhnicheskii progress. Moskva, Gos. izd-vo polit. lit-ry, 1961. 113 p. (MIRA 14:6)

(Wage payment systems) (Technological innovations)

MOROZOV, Petr Tarasovich, starshiy prepodavatel'; KHOLOD, S., red.; KLIMOVA, T., tekhn.red.

[How workers struggle to increase labor productivity] Kak rabochie boriutsia za povyshenie proizvoditel'nosti truda. Moskva, Gos.izd-vo polit.lit-ry, 1962. 63 p. (MIRA 15:4)

1. Vysshaya partiynaya shkola pri TSentral'nom komitete Kommunisticheskoy partii Sovetskogo Soyuza (for Morozov).
(Labor productivity)

MOROZOV, Pavel Aleksandrovich;KHOLOD, S., red.; KLIMOVA, T., tekhn. red.

[Economy and thrift should be practiced in each working area] Ekonomiia i berezhlivost' na kazhdom rabochem meste. Moskva, Gospolitizdat, 1961. 47 p. (MIRA 15:7)
(Industrial management)

BERENSHTEYN, F.Ya.; SAPOZHKOV, S.V.; KHOLOD, V.M.

Effect of molybdenum on the change in the sensitivity of the organism to adrenaline and insulin. Nauch. dokl. vys. shkoly; biol. nauki no.1:70-73 '66. (MIRA 19:1)

1. Rekomendovana kafedrami biokhimii i fiziologii zhivotnykh Vitebskogo veterinarnogo instituta. Submitted July 3, 1964.

LISITSA, M.P.; KHOLODAR', G.A.

Infrared absorbtion and band structure of cuprous oxide. Fiz. tver. tela 2 no.9:2117-2125 S '60. (MIRA 13:10)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Infrared rays) (Copper oxide crystals)

L 14290-63 EWT(l)/EWG(k)/EWP(q)/EWT(m)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3
Pz-4 JD/AT/IJP(C)

ACCESSION NR: AP3001276 S/0181/63/005/006/1589/1594

AUTHORS: Vorob'yev, Yu. V.; Kholodar', G.A.

TITLE: Energy structure of the spectrum of cuprous oxide with short-period photoconductivity

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1589-1594

TOPIC TAGS: cuprous oxide, photoconductivity, relaxation time, acceptor, impurity level, exciton, hole, valence band, free electron, recombination, current carrier

ABSTRACT: The authors undertook this study because in their work they obtained experimental results they could not explain by exciton mechanism of absorption but could explain by an energy scheme involving one impurity level and proper consideration of the excitons. They investigated photoconductivity of cuprous oxide in the regions of 0.63, 0.8, and 2 microns. They measured the relaxation time of conductivity at a wave length of 2 microns, determining the average lifetime of electrons at acceptors. This time increases from about 10^{-4} to 10^{2} seconds on change in temperature from room temperature to 80C. They established that the relaxation time of photoconductivity in the region of the principal maximum always corresponds with the relaxation time at a wave length of 2 microns.

Card 1/2

L 14290-63

ACCESSION NR: AP3001276

2

This contradicts the existing view concerning the mechanism of photoconductivity in cuprous oxide, a view that the latter time should be much greater. The authors propose a new variant of energy structure for cuprous oxide with short-period conductivity (involving only one impurity level of acceptors). The photoconductivity in the region of the principal maximum is associated with destruction of excitons (light-engendered) at negatively charged acceptors. As a result, holes in the valence band and free electrons appear, the latter recombining with the holes through neutral acceptors. This scheme of photoconductivity explains the results obtained by the authors (coincidence of relaxation times) and does not contradict the experimental data of other authors. The authors determined that electrons predominate among photocurrent carriers excited by light with a wave length of 0.8 microns. "The authors thank V.E. Kozhevina, candidate in the physical and mathematical sciences, for her discussions on the question of the capacitor photoelectric effect in cuprous oxide." Orig. art. has: 3 figures and 8 formulas.

ASSOCIATION: Kiyevskiy gosudarstvenny*y universitet im. T.G. Shevchenko (Kiev State University)

SUBMITTED: 11Jan63 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: PH NO REF SOV: 009 OTHER: 001

Card 2/2

L 11995-65 EWT(1)/EWG(k)/T Pz-6 IJP(c)/ASD(a)-5/AFWL/AS(mp)-2/BSD/ESD(gs) AT
ACCESSION NR: AP4048427 S/0181/64/006/011/3452/3456

AUTHORS: Vinetskiy, V. L.; Kholodar', G. A.

TITLE: "Intrinsic-defect" conduction of semiconductors

SOURCE: Fizika tverdogo tela, v. 6, no. 11, 1964, 3452-3456

TOPIC TAGS: semiconductor conductivity, crystal lattice defect, temperature dependence, crystal lattice vibration, light excitation

ABSTRACT: The "intrinsic defect" conduction is an impurity conduction in which thermal lattice defects act as donors, so that the concentration of donor centers rises exponentially with temperature. A self-consistent theoretical calculation of the intrinsic defect conduction (IDC) is carried out using the Gibbs distribution and allowing for the change in the lattice vibration frequency due to the formation of thermal defects. The influence of impurity centers on the IDC is discussed. The effect of illumination may redistribute

Card 1/2

L 11995-65
ACCESSION NR: AP4048427

2

the electrons between various impurity levels, and this leads to a change in the number of the intrinsic thermal lattice defects. This process is quite slow. As a result, a slow component of the photoconductivity appears (or changes) in the temperature region corresponding to the IDC in darkness. The existence of the IDC has been demonstrated experimentally in the literature for CdS, ZnO, ZnS, PbS, etc., at sufficiently high temperatures. The authors use published data to show that the IDC appears also in Cu_2O above 300K. "The authors thank G. Ye. Pikus for his comments." Orig. art. has: 17 formulas.

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

SUBMITTED: 31Mar64 ENCL: 00

SUB CODE: SS NR REF SOV: 001 OTHER: 007

Card 2/2

L 1921-66 EWT(m)/EPF(c)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5024135 UR/0185/65/010/009/1036/1038

AUTHOR: Kholodar, G. A.

TITLE: Infrared absorption of cupric and cuprous oxides

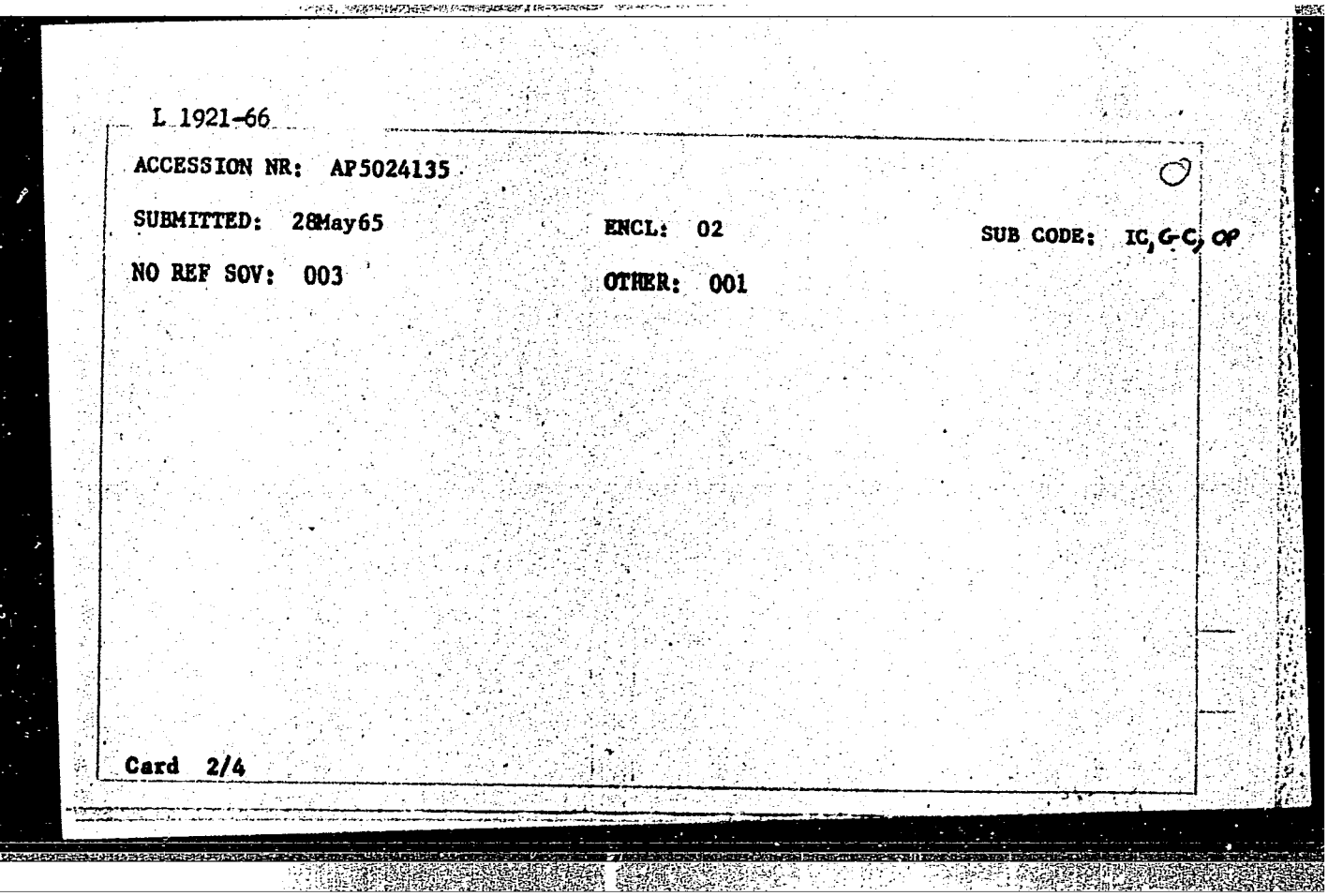
SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 9, 1965, 1036-1038

TOPIC TAGS: cuprous oxide, IR absorption, phase diagram

ABSTRACT: Considerable difficulties are encountered in the determination of phase diagrams of regions belonging to the cupric and cuprous oxides. With the purpose of obtaining a reliable criterion, the present author investigates the IR absorption of various copper oxides. The results are shown in Figs. 1 and 2 of the Enclosure. A discussion is given of the possible explanations of the changes in the shape of the absorption curves which make it possible to estimate the amount of cuprous oxide admixture within its cupric form. Orig. art. has: 2 figures.

ASSOCIATION: Kyyivs'kyy derzhuniversytet im. T. G. Shevchenka (Kiev State University)

Card 1/4



L 1921-66

ACCESSION NR: AP5024135

SUBMITTED: 28May65 ENCL: 02 SUB CODE: IC, GC, OP

NO REF SOV: 003 OTHER: 001

Card 2/4

L 1921-66

ACCESSION NR: AP5024135 ENCLOSURE: 01

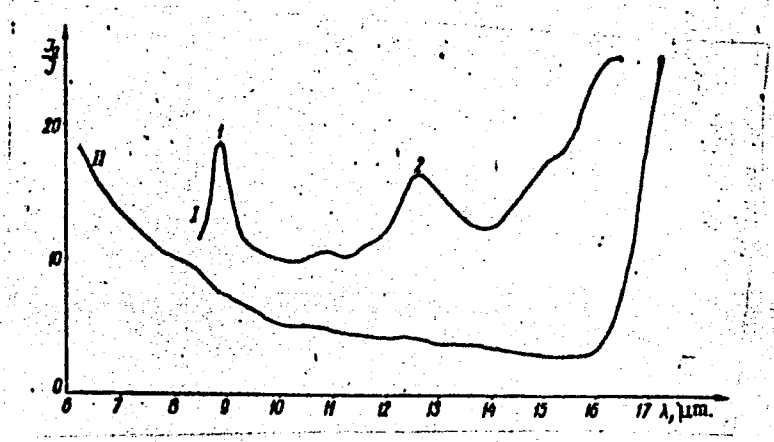


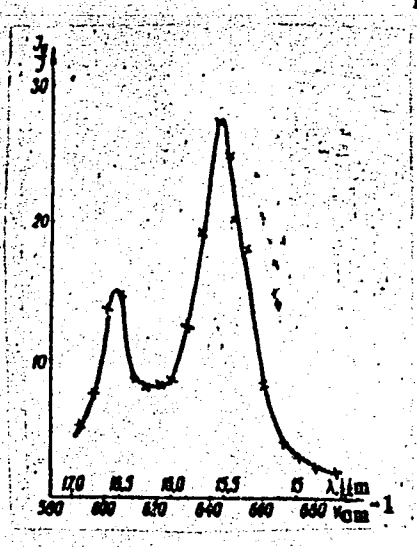
Fig. 1. Absorption of an unetched cupric oxide film (I) and one etched in HNO_3 (II).

Card 3/4

L 1921-66

ACCESSION NR: AP5024135

ENCLOSURE: 02



Card 4/4

Fig. 2. Absorption of a CuO_2 monocrystal ($d \sim 10\ \mu m$) at room-temperature.

L 25468-66 EWA(h)/EWT(l)/EWT(m)/T/EWP(t) IJP(c) AT/JD

ACC NR: AP6009672 SOURCE CODE: UR/0181/66/008/003/0846/0854

79
B

AUTHOR: Kholodar', G. A.; Vinetskiy, V. L.

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

TITLE: On self-compensation of conductivity in semiconductors

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 846-854

TOPIC TAGS: semiconductor conductivity, semiconductor band structure, carrier density, crystal defect, impurity conductivity, photoconductivity, electron capture, surface property

ABSTRACT: The semiconductors dealt with in this article are those in which the concentration of the intrinsic defects is large enough to cause their energy levels to play an appreciable role as the impurity levels that determine the equilibrium conductivity of the semiconductor. Particular attention is played to the role of self-compensation in the change in the electric conductivity and other properties of binary semiconductors when their temperature is varied. To this end, the equilibrium concentrations of the carriers and of the intrinsic defects are calculated in doped semiconductors and the results are compared with available experimental data. The results show that allowance for self-compensation must be made when calculating the donor density by means of the usual impurity-conductivity formula. This is confirmed by a check on the experimental results obtained for CdS, CdSe, and Cu_2O. Self-compensation can also play an important role in the case of capture during photocon-

Card 1/2

L 25468-66
ACC NR: AP6009672

ductivity and other phenomena. It is also pointed out that even if there is no self-compensation inside of a crystal, under certain conditions there may still be self-compensation on its surface and that usually this effect is disregarded in the analysis of the surface properties. Orig. art. has: 1 figure and 16 formulas.

SUB CODE: 20/ SUBM DATE: 31Jul65/ ORIG REF: 003/ OTH REF: 008

Card 2/2

L 24380-66 EWT(1) IJP(c) AT
ACC NR: AP6009703 SOURCE CODE: UR/0181/66/008/003/0977/0980

AUTHOR: Vinetskiy, V. L.; Kholodar', G. A.

ORG: Institute of Physics, AN SSSR, Kiev (Institut fiziki AN SSSR)

TITLE: Conductivity of semiconductors due to ionization of thermal lattice defects (intrinsic-defect conductivity)

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 977-980

TOPIC TAGS: semiconductor conductivity, crystal lattice defect, cuprous oxide, stoichiometry, temperature dependence, carrier density

ABSTRACT: The intrinsic-defect electron or hole conductivity is defined as the conductivity due to the ionization of the thermal defects of the lattice. This is a continuation of earlier work (FTT v. 6, 3452, 1964), where the carrier density occurring in intrinsic-defect conductivity, was calculated. In the present paper the results are presented of measurements of the high-temperature conductivity of cuprous oxide and they are compared with theory. The crystal is assumed to have no foreign impurity atoms, but has at zero temperature a certain number of electrically active defects due to deviation from stoichiometry. It is also assumed that one of the components of the thermal defect is electrically inactive, and that the other is identical with the defect due to the deviation from the stoichometry. The temperature dependence of the carrier density obtained in this manner is found to be approximated by several segments of straight lines, which too correspond to the intrinsic-defect conductivity. The measurements were made in the 300--1250K interval and confirm

Card 1/2

L 24330-66
ACC NR: AP6009703

the hypothesis that at high temperature a semiconductor has an intrinsic-defect conductivity. Orig. art. has: 2 figures and 3 formulas.

SUB CODE: 20/ SUBM DATE: 25Oct65/ ORIG REF: 001/ OTH REF: 003

Card 2/2 ULR

ACC NR: AP7003892 SOURCE CODE: GE/0030/67/019/001/0041/0049

AUTHOR: Vinetskii, V. L.; Kholodar, G. A.

ORG: [Vinetskii] Institute of Physics of the Ukrainian Academy of Sciences, Kiev; [Kholodar] Physics Department of the Kiev Shevchenko State University, Kiev

TITLE: Electric conductivity of semiconductors caused by the ionization of thermal lattice defects

SOURCE: Physica status solidi, v. 19, no. 1, 1967, 41-49

TOPIC TAGS: electric conductivity, semiconductor conductivity, lattice defect, stoichiometry, ionization

ABSTRACT: Theoretical calculations are made of the temperature dependences of equilibrium carrier concentrations and intrinsic lattice defects in a semiconductor with self-activated conductivity. Deviations from stoichiometry and electrical activity of both defect components as well as intrinsic conductivity are taken into account. The high-temperature equilibrium conductivity of cuprous oxide crystals is determined experimentally. Comparison between theory and experiment suggests

Card 1/2

ACC NR: AP7003892

that for cuprous oxide the conductivity is self-activated for temperatures above 300 C. For crystals with a low concentration of excess oxygen N_O, good agreement between the theory and experiment is obtained if it is assumed that only one component of the thermal defects is electrically active. The formation energy W of a nonionized intrinsic defect is found to be 2.6 ev, the ionization energy E_d of this defect being 0.64 ev, and the effective atomic concentration N_{eff} in the lattice sites 10^{24} cm^{-3}. For crystals with a high concentration N_O the mechanism of self-activated conductivity is more complex. The authors express their thanks to V. Girii for assisting with the measurements, G. Zhukov for his participation in the calculations, and V. E. Lashkarev, Academician of the Ukrainian Academy of Sciences, and Prof. V. P. Zhuze for their advice and interest in this work. Orig. art. has: 2 figures, 1 table, and 13 equations. [Authors' abstract] [SP]

SUB CODE: 20/SUBM DATE: 12Oct66/ORIG REF: 005/OTH REF: 009/

Card 2/2

KHOLODENKO, B. G.

Seeds - Morphology

Formation of seeds of Russiona pigweed (Axyris) and garden orach (Atriplex hortense L). Agrobiologiia No. 3, 1952

Kandidat biologicheskikh nauk. Leningradskiy gosudarstvennyy universitet, kafedra darvinizma

SO: Monthly List of Russian Accessions, Library of Congress, September 1952 1953, Uncl.

KHOLODENKO, Bella Grigor'yevna; LEONT'YEV, Petr Viktorovich; BRAGINA, L.F., red.; LEDVICH, M.M., tekhn. red.

[Tree species for landscaping in Moldavia and landscape composition of parks and gardens] Drevesnye porody dlia ozeleneniia Moldavii i kompozitsiia zelenykh nasazhdenii. Kishinev, Izd-vo "Shtiintsa" Akad. nauk Moldavskoi SSR, 1962. 127 p.
(MIRA 15:6)
(Moldavia—Landscape gardening)

KHOLODENKO, B.G.

Some biological characteristics of the purple-leaf form of the common barberry (Berberis vulgaris L. f. atropurpurea Rgl.). Izv. AN Mold. SSR no.10:3-12 '63. (MIRA 18:5)

KHOLODENKO, B. V.

USSR/Cultivated Plants - Ornamental. M-8

Abs Jour : Ref Zhur - Biol., No 20, 1958, 91892

Author : Kholodenko, B.V.

Inst : Moldavian Affiliate AS USSR

Title : Assortment of Trees and Shrubs to Provide Verdant Growth in the City of Kishinev and Other Populated Centers in Central Moldavia.

Orig Pub : Izv. Mold. fil. AN SSSR, 1957, No 4, 25-36.

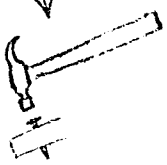
Abstract : On the basis of 6-years of experience in growing tree and shrub varieties in the dendrological nursery of the Botanical Garden of the city of Kishinev and on the basis of observation of different varieties of plantings in the city and suburban areasm an assortment of plants is recommended to provide the city of Kishinev and the populated centers of central Moldavia with green growth.

Card 1/2

KHOLODENKO, E.B.; BURSHTEYN, D.Ye.

Automatic nail driver. Avt.trakt.prom. no.11:24-27 N '53. (MLRA 6:11)

1. Gor'kovskiy avtozavod im. Molotova.
(Nails and spikes) (Woodworking machinery)



AUTHOR: Kholodenko, E.B. SOV-113-58-10-13/16

TITLE: Automatic Spray-Painting Devices for Painting Automobile Parts and Assemblies (Pul'verizatsionnyye avtomaty dlya okraski detaley i uzlov avtomobilya)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 10, p 39-42 (USSR)

ABSTRACT: At the Gor'kiy Automobile Plant several methods of painting automobile parts were developed, among them the method of electrostatic painting. However, the aforementioned method cannot be used in every case, especially not for wooden parts. The automation section of the plant therefore developed an automatic spray-painting device for painting the wooden platform parts of trucks. The details of this device are given. The wooden parts are moved into the spraying chambers by a conveyer, and moving spray nozzles which are actuated by electrical and photo relays are used. The spray-painting process is interrupted in case the conveyer stops. There are 6 diagrams.

ASSOCIATION: Gor'kovskiy avtozavod (Gor'kiy Automobile Plant)

1. Paint sprayers---Performance 2. Electricity---Applications

Card 1/1

KHOLODENKO, E.B.; RYABININ, O.P.

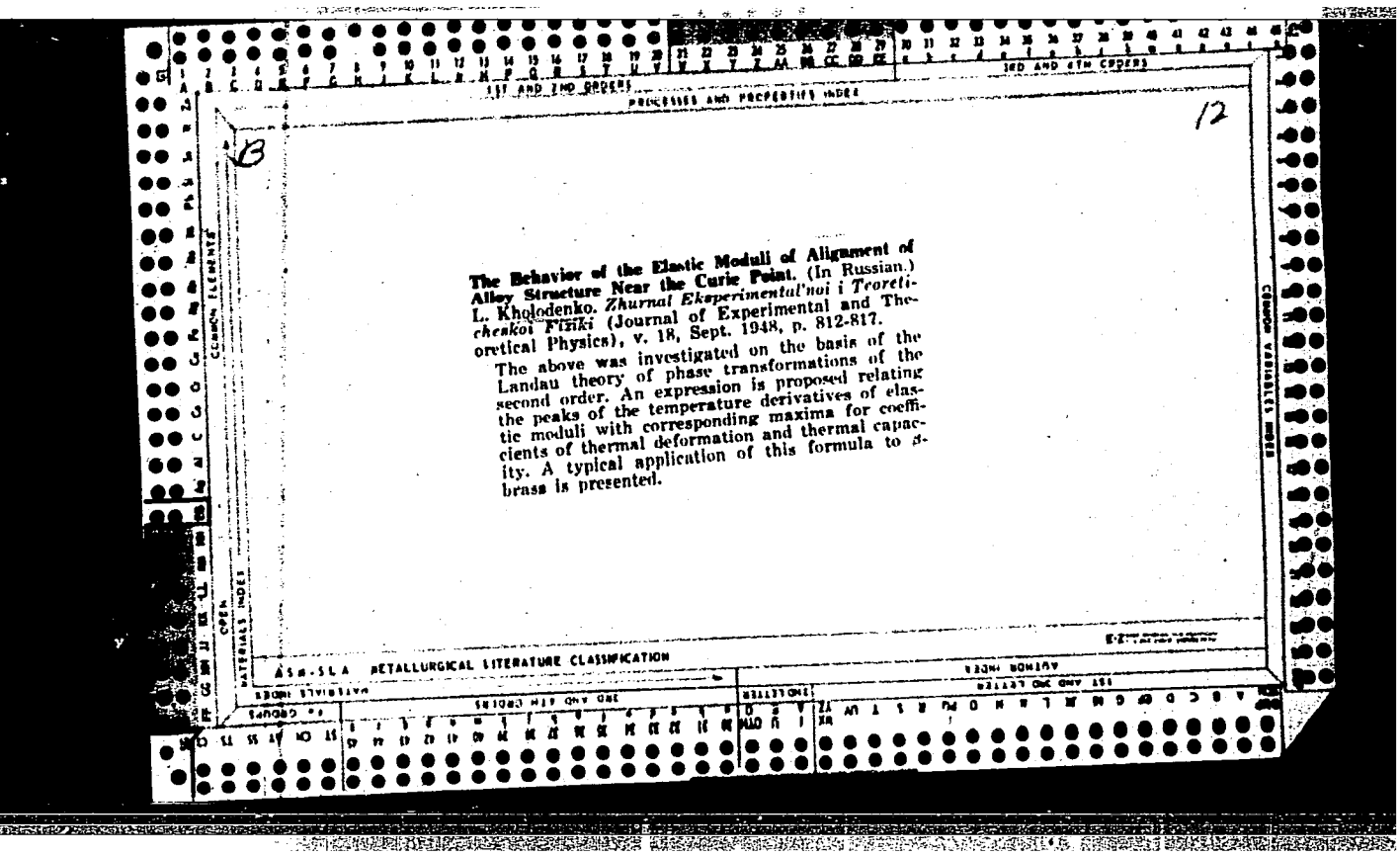
Semiautomatic machine for assembling a check ring with ball bearings. Avt. prom. 30 no.10:37 O '64. (MIRA 17:11)

1. Gor'kovskiy avtomobil'nyy zavod.

KHOLODENKO, L. P.

On the domain structure of ferromagnetic bodies in the presence of magnetic field. Zhur.eksp.i teor.fiz. 17 no.8:698-707 '47. (MLRA 6:7)

1. Fiziko-tekhnicheskiy institut Gor'kiy. (Electromagnetism)



The Behavior of the Elastic Moduli of Alignment of Alloy Structure Near the Curie Point. (In Russian.) L. Kholodenko. *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki* (Journal of Experimental and Theoretical Physics), v. 18, Sept. 1948, p. 812-817.

The above was investigated on the basis of the Landau theory of phase transformations of the second order. An expression is proposed relating the peaks of the temperature derivatives of elastic moduli with corresponding maxima for coefficients of thermal deformation and thermal capacity. A typical application of this formula to α-brass is presented.

CA

Ordering phenomena in the Cu-Au alloy. L. Kleinerman (Ger'hil State Univ.). *Zhur. Eksptl. Teoret. Fiz.* 20, 1085-97(1950).—The calcns. are made on the basis of the Bragg-Williams long-range order approxn. The free energy is $F = A + B_0 + Dv^2 - S^2(a - bv - cv^2) - T\varphi + f$, where $v = (v - v_0)/v_0$ (v_0 = vol. at $T = 0$ and $S = 0$), φ = configurational entropy, f = Debye's expression for the lattice vibration energy, and the long-range order parameter S is defined by $S = |(4N_A/N) - (^1/_2)|/(^1/_2)$, where N = total no. of atoms in the crystal, N_A = no. of Au atoms in the a-sublattice points (i.e. of the sublattice which in a completely ordered alloy is all occupied by Au atoms). This gives for the vol. expansion coeff. $\beta = (2D)^{-1}|\gamma C_v(\theta/T) - 2bS(\partial S/\partial T)_p|$, where the 1st term is the normal thermal expansion, and the 2nd its configurational part; $\gamma = -d\ln\theta/d\ln v$, where θ = Debye's characteristic temp. Similarly, the configurational part of the coeff. of isothermal compressibility α is $(\partial^2F/\partial S^2)_{v,T}(\partial S/\partial v)_T$, and for the heat capacity C_p, it is $T(\partial S/\partial T)_p[(\partial^2F/\partial S^2) + (\partial^2F/\partial S\partial v)(\partial v/\partial T)_{p,S}]$. The numerical values necessary for comparison with the expt. are obtained from data of the compressibility of the completely ordered alloy at the abs. zero, the compressibility of the quenched, i.e., completely random alloy, the difference of the at. vols. of the ordered and the random alloy at room temp., and from the expt. crit. temp. This gives $D = 5.77 \times 10^{11}$, $c = 0.590 \times 10^{11}$, and $b = -\beta = 0.68 \times 10^{13}$ ergs/mole. With the aid of these values, the expression for the configurational part of $1/\alpha$ can be further simplified to $1/\alpha^\circ = 2c_0(1 - S^2)$, and the corresponding part of the internal energy to $U^\circ = -aS^2$; hence, $U^\circ = (-a/\alpha^\circ) + a$, where $a = ac_0/2c$. If U° is expressed in ergs/mole, $c = 2.16 \times 10^{-13}$, and $a = 2.12 \times 10^{13}$, as against 2.61×10^{13} from the crit. temp.; the 20% discrepancy is considered acceptable. The theoretical curves of the configurational parts C_v° and β°, related by $C_v^\circ = 2aD\beta^\circ/b$, are fairly close to the expt. curves. The temp. dependence of S is very close to that obtained by Bragg without inclusion of the vol. dependence of F, and fails to account any better for the steep rise of β and of C_p near the Curie point. Inclusion of the dependence of the vibrational spectrum of the lattice on the degree of order also fails to improve on the treatment of Bragg and Williams, except that near the Curie point the theoretical curves become somewhat steeper. N. Thon

KHOLODENKO, L. P.

USSR/Physics - Piezoelectrics Nov 51

"Thermodynamic Theory of Piezoelectric (Rochelle-Salt) Phenomena in Crystals of the Barium Titanate Type," M. Ya. Shirobokov, L. P. Kholodenko, Phys-Tech Inst, Gor'kiy State U

"Zhur Eksper i Teoret Fiz" Vol XXI, No 11, pp 1239-1249

Develops thermodynamic theory of piezoelec phenomena in crystals of cubic symmetry. Computes tensor components of dielec consts in absence of elastic tensions in weak elec fields, and also tensor components of piezoelec moduli for all possible phases. Acknowledges assistance of Prof V. L. Ginzburg. Submitted 13 Dec 50.

204T94

KHOLODENKO, L. P.

USSR/Physics - Piezoelectrics Nov 51

"Piezoelectric (Rochelle-Salt) Properties of Crystals of the $BaTiO_3$ Type Near the Curie Point in Presence of Elastic Tensions," L. P. Kholodenko, M. Ya. Shirobokov, Phys-Tech Inst, Gor'kiy State U

"Zhur Eksper i Teoret Fiz" Vol XXI, No 11, pp 1250-1261

Discusses balanced states of $BaTiO_3$-type crystals near Curie point in presence of elastic tensions for some particular cases admitting full soln. Finds ranges of parameter values corresponding to

204T95

USSR/Physics - Piezoelectrics (Contd) Nov 51

all balanced states of crystal. Discusses exptl data pertaining to electrostriction of crystal and dependence of Curie point on pressure. Computes tensor of dielec consts. Acknowledges assistance of Prof V. L. Ginzburg. Submitted 22 Dec 50.

204T95

KHOLODENKO, L. P.

USSR / Physical Chemistry. Crystals. B-5

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25964

Author : L.P. Kholodenko
Title : Theory of Hysteresis Phenomena in Barium Titanate.

Orig Pub : Kristallografiya, 1956, 1, No 4, 393 - 402

Abstract : The dependence of polarization on the field intensity and temperature in $BaTiO_3$ above and below the transition point from the paraelectric state into the ferroelectric state was discussed. An explanation of "double loops of hysteresis" is given.

Card : 1/1

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1270

presence of a field. In the case of a second-order phase transition, the dependence of on E and on the temperature is found. At fixed temperature, diminishes with increasing E. Superposition of the field shifts the point of the maximum towards the higher temperatures (in proportion to $E^{1/3}$). It is shown that in the second-order transition there should exist an "induced piezoeffect" and also an inverse effect. The "induced piezomoduli" are calculated.

Card 2/2

KHOLODENKO, L.P. KHOLODENKO, L.P.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1883
AUTHOR CHOLODENKO, L.P.

Zurn.eksp.i teor.fis,31,fasc.6,1034-1045 (1956) CARD 2 / 2 PA - 1883

ses the minimum with respect to P, and of one or two inequations for the minimum properties with respect to the angles. For a concrete investigation of the temperature hysteresis the temperature dependence of β_1 and β_2 must, above all, be determined. Possible phase transitions are discussed. The order of phases depends essentially on the coefficients, and therefore other seignette-electrica of the type $BaTiO_3$ probably have a different order of phases or else some of the phases may be found lacking. On the basis of what has been said it is not difficult to compute the width of the domains of temperature hysteresis. The formulae found here hold also if the dependence of the coefficients β_1 and β_2 on temperature is more complicated than was assumed here. If the formulae for the temperatures of phase transitions are known, and if for every phase the general expressions for the dielectricity constant are used, it is possible to explain the character of the temperature dependence of the dielectricity constant near the points of transformation. This is here carried out for the various boundaries between the individual phases. Next, it is shown how constants can be expressed by easily measurable quantities. Proceeding from the temperature dependence of the coefficients found here it is easy to find expressions for latent heat and for thermal capacity. The computation of the adiabatic electricity constant is then discussed. Relaxation time can be looked upon as infinitely great, which justifies the principal condition made in the present work.

INSTITUTION: Pedagogic Institute Smolensk

Kholodenko, L.P.

SUBJECT: USSR/Luminescence

48-3-10/26

AUTHOR: Kholodenko L.P.

TITLE: On the Theory of Hysteresis Phenomena in $BaTiO_3$ (K teorii gisterezisnykh yavleniy v $BaTiO_3$)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya fizicheskaya, 1957, Vol 21, #3, pp 368-373 (USSR)

ABSTRACT: This paper deals with hysteresis phenomena in an ideal crystal not subjected to elastic strains. The crystal is considered as a single-domain one. The conventional treatment of phase transitions consists in that a transition from the phase A into the phase B occurs at such a temperature that $\phi_A(p,T) = \phi_B(p,T)$. This is equivalent to a statement that the phases of crystals observed in practice are such states of the crystals in which their thermodynamical potential ϕ has an absolute minimum for the given values of p (pressure) and T (temperature).

This treatment is justified when relaxation time is short. If relaxation time is long, the system can stay in a metastable state. Metastable states play indeed an essential role for $BaTiO_3$.

Card 1/3

TITLE: On the Theory of Hysteresis Phenomena in $BaTiO_3$ (K teorii gisterezisnykh yavleniy v $BaTiO_3$)

48-3-10/26

The author derives his conclusions starting from an extreme assumption of infinitely long relaxation time.

The temperature dependence of dielectric constant can be calculated in the vicinities of the points of phase transitions. It turns out that the conventional Curie-Weiss law holds while approaching the temperature T_{12} from above (that is from the higher temperatures). The longitudinal component of dielectric constant has a peculiarity, which occurs at an iso-thermal polarisation but disappears at the adiabatic polarization. Some components of dielectric tensor ε_{ik} have peculiarities also at other transition points.

Calculations concerning electric hysteresis were performed without taking into account the domain structure. Even with this simplification, the behavior of hysteresis loops, obtained theoretically, agrees qualitatively well with experimental results as found by Merz (2).
The article contains 7 figures. The bibliography lists 2 references, none is Slavic.

Card 2/3

48-3-10/26

TITLE: On the Theory of Hysteresis Phenomena in $BaTiO_3$ (K teorii gisterezisnykh yavleniy v $BaTiO_3$)

INSTITUTION: Smolensk State Pedagogical Institute im. K. Marx

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 3/3

KHOLODENKO, L.P.

AUTHOR: KHOLODENKO,L.P., SHIROBOKOV,M.Ya. PA - 3543

TITLE: On the Theory of the Segnetoelectric Properties of Polarized Barium Titanate Ceramic. (K teorii segnetoelektricheskikh svoystv polyarizovannoy keramiki titanata bariya, Russian)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 5, pp 929 - 935 (U.S.S.R.)

ABSTRACT: Investigation is confined to an ideal polycrystal, i.e. heterogeneity of the interior voltages, electric fields and the crystalline structure are neglected. It is assumed that the crystallographical axis of the individual crystal particles are distributed chaotically, but that the sample in its entirety was previously polarized, that the vector of spontaneous polarization of each crystal particle shows that of the possible equivalent directions which form the smallest angle with the direction of the resulting polarization of the sample. On this basis those results may be used as were obtained for a monocrystal. Computation of the dielectric and piezoelectric properties of a polycrystalline sample is reduced to simple averaging. The tensors of the dielectric constants and the piezomoduli of the polarized ceramic of $BaTiO_3$ are computed for all three seignette-electric phases. It is of advantage to compute the tensors of the piezoelectric moduli by means of a special form of the tensor of the voltages σ_{ik} in an x-, y-, z-coordinate system, which is connected with the sample as a whole. Besides,

Card 1/2

PA - 3543

On the Theory of the Segnetoelectric Properties of Polarized Barium Titanate Ceramic.

it is easier for this case to carry out computation for each individual case. (1 Slavic reference).

ASSOCIATION: GIFTI
PRESENTED BY:
SUBMITTED: 9.3.1956
AVAILABLE: Library of Congress

Card 2/2

29698
S/181/61/003/010/027/036
B125/B102

15.2630

AUTHOR: Kholodenko, L. P.

TITLE: Theory of the 90-degree interdomain layer in barium titanate

PERIODICAL: Fizika tverdogo tela, v. 3, no. 10, 1961, 3142-3156

TEXT: The 90-degree intermediate layer between the ferroelectric domains of $BaTiO_3$ has been investigated. A big formula for the free energy Φ per unit volume is derived and studied for several special cases. The boundary conditions read as follows: $dP'_x/dx' \to 0$ for $x' \to \pm\infty$, $dP'_z/dx' \to 0$ for $x' \to \pm\infty$ (7), $\sigma_{ik} \to 0$ for $x' \to \pm\infty$ (8), and $d^2P'_x/dx'^2 \to 0$, $d^2P'_z/dx'^2 \to 0$ for $x' \to \pm\infty$ (9). P_x, P_y, P_z denote the distributions (div $\vec{P} = 0$), and u_{ik} the elastic deformations. The components u'_{xx}, u'_{xz}, u'_{xy}, which have been found from the steady-state conditions of the elastic body, satisfy the conditions of Saint-Venant. The equation

Card 1/5

Theory of the 90-degree interdomain...

resulting from the minimum condition $\delta \int_{-\infty}^{+\infty} (\Phi - \Phi_0)dx' = 0$, where

$$\Phi - \Phi_0 = \frac{\varkappa}{2}\left[\left(\frac{\partial P_x'}{\partial x'}\right)^2 + \left(\frac{\partial P_z'}{\partial x'}\right)^2\right] + a_1 P_x'^2 + a_2 P_z'^2 + b_1 P_x'^4 + b_2 P_z'^4 + b_3 P_x'^2 P_z'^2 + \frac{1}{12}(\gamma_1' + 3\gamma_2'^*)(P_x'^6 + P_z'^6) + \frac{1}{4}(5\gamma_1' - \gamma_2'^*)(P_x'^2 + P_z'^2) P_x'^2 P_z'^2, \quad (14)$$

$$\Phi_0 = \Phi_0 + \frac{c_{11}}{4}(u_0^2 + u_{xx}'^2 + 2u_0 u_{xx}' + 2u_{yy}'^2) + c_{12}\left(\frac{1}{4}u_0^2 + \frac{1}{2}u_0 u_{xx}' + u_{xx}'^2 + u_0 u_{yy}' + u_0 u_{xx}'\right) + \frac{c_{44}}{2}(u_0 - u_{xx}')^2, \quad (15)$$

$$u_0 = -\frac{P_0^2}{S}\left[2\varkappa_2 c_{12} + \frac{t}{2}(\varkappa_1 + \varkappa_2)\right]; \quad (16)$$

$$a_1 = a + \Delta a, \quad a_2 = a - \Delta a; \quad (17)$$

$$b_1 = b + \Delta b, \quad b_2 = b - \Delta b; \quad (18)$$

Card 2/5

Theory of the 90-degree interdomain...

$$a = a + \varkappa_1 P_0^2 \frac{c_{44}}{S}(q_{11} + q_{12}) + \varkappa_2 P_0^2\left[\frac{q_{11}}{S}(c_{44} - c_{12}) + \frac{q_{12}}{S}(c_{11} + 3c_{44})\right]; \quad (19)$$

$$b = \frac{1}{4}(\beta_1' + \beta_2'') - \frac{p^2 + q^2}{8S}; \quad (20)$$

has been solved approximately. Not only the equation of zeroth approximation but also that of first approximation have been investigated, because their validity conditions are not convincingly fulfilled for $BaTiO_3$ even in the most favorable case. The solution of the equation of zeroth approximation is discussed in detail: $u = 2Q_1F_0^2/(Q_2 + Q_3 \operatorname{ch}(x'/\delta))$. The excessive energy $\sigma = \int_{-\infty}^{+\infty} (\Phi - \Phi_\infty)\, dx'$ per unit area of the interdomain layer amounts to

Card 3/5

$$\sigma = \frac{6\delta F_0^4}{Q_4^3}(mQ_4 + n\gamma_1' F_0^2), \tag{53}$$

$$\left.\begin{aligned} Q_4 &= \frac{Q_2 - Q_3}{Q_2 + Q_3}, \\ m &= (1 + Q_4^2)\,\mathrm{ar\,th}\,Q_4 - 1, \\ n &= \frac{1}{Q_4^3}\left[1 + Q_4^2 - \left(1 + \frac{2}{3}Q_4^2 + Q_4^4\right)\mathrm{ar\,th}\,Q_4\right]. \end{aligned}\right\} \tag{54}$$

The effective half thickness of the domain wall is given as $D \approx 2.2\,\delta$. Assuming the values of the elastic constants to be $c_{11} = 1.75 \cdot 10^{12}$, $c_{12} = 0.82 \cdot 10^{12}$, and $c_{44} = 1.08 \cdot 10^{12}$ will yield $q_{11} = -1.42$, $q_{12} = 0.15$, $q_{44} = -0.65$. Non-vanishing components are reduced to $\sigma_{xx} = \sigma_{zz} = \sigma'_{zz}/2$, $\sigma_{yy} = \sigma'_{yy}$ with $\sigma'_{yy} = (2/S)\left[q_{11}c_{12} - q_{12}(c_{11} + 2c_{44})U\right]$, $\sigma'_{zz} = -(4c_{44}/S)(q_{11} + q_{12})U$. A distribution with $P'_x = \mathrm{const} \neq 0$ is no special case of these equations. The model of V. A. Zhirnov (ZhETF, 35, 1175, 1958) will satisfy the

minimum of Φ only if the additional condition div $\vec{P} = 0$ is valid for the function in question. Equations and the recurrence formula for the first approximation are given. The distributions of first and zeroth approximations at $t = 10^{\circ}C$ differ very little. The energy of the intermediate layer is not a function of the correction of first approximation. I. I. Ivanchik is mentioned. There are 1 figure and 17 references: 7 Soviet and 10 non-Soviet. The three most recent references to English-language publications read as follows: D. Berlincourt, H. Jaffe. Phys. Rev., 111, 143, 1958; S. Triebwasser. Phys. a. Chem. Sol., 3, 33, 1957; D. Meyerhofer. Phys. Rev., 112, 413, 1958.

ASSOCIATION: Smolenskiy gosudarstvennyy pedagogicheskiy institut im. Karla Marksa (Smolensk State Pedagogical Institute imeni Karl Marks)

SUBMITTED: January 23, 1961 (initially)
June 1, 1961 (after revision)

TRUFANOVA, A. S., uchitel'nitsa; KHOLODENKO, L. P., uchitel'nitsa; OBLACHKO, V. G., uchitel'nitsa; POLOGRUDOV, V. A. (g. Kemerovo); IOCH, E. V., uchitel'

Editor's mail. Khim. v shkole 17 no.4:87-89 Jl-Ag '62. (MIRA 15:10)

1. Srednyaya shkola No. 26, Orel (for Trufanova). 2. Srednyaya shkola No. 11, Ussuriysk (for Kholodenko). 3. Srednyaya shkola No. 3 Kubanskogo zernosovkhoza Krasnodarskogo kraya (for Oblachko). 4. Kirovskaya srednyaya shkola, Primorskiy kray (for Ioch).

(Chemistry—Study and teaching)

S/058/63/000/002/041/070
A062/A101

AUTHOR: Kholodenko, L. P.

TITLE: Note relative to the problem of free energy computation of a single domain monocrystal of $BaTiO_3$ from the model of an anharmonic oscillator

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, abstract 2E413 ("Uch. zap. Smolenskogo gos. ped. in-ta", 1962, no. 10, 111 - 125)

TEXT: As a development of the main points of the work of Tribvasser (RZh Fiz, 1958, no. 5, 10925), the article considers the problem of expressing the free energy for $BaTiO_3$ through coefficients that determine the pattern of an anharmonically vibrating Ti ion in the form of a polynomial of 6-th degree in displacement components of Ti ions from their equilibrium position. Using the values, known from experiment, for the parameter of the crystal lattice, the spontaneous polarization, the constants of strong interaction, the polarizabilities and effective ion charges for Ti, the values of the coefficients for the free energy of a squeezed crystal have been calculated. The calculated values strongly

Card 1/2

Note relative to the problem of...

S/058/63/000/002/041/070
A062/A101

differ (up to the change of sign) from those, known from experience, of the corresponding coefficients for a free crystal, even when establishing a correlation between the values of the coefficients for a free and a squeezed crystal. In the author's opinion, the unsatisfactory agreement of the calculated and measured quantities may be a result of unsatisfactory values of the enumerated parameters or of an incorrect form of the ion interaction law proper. It may also be a result of the roughness of the initial model and the inapplicability of the method of effective charges. There are 22 references.

S. Solov'yev

[Abstracter's note: Complete translation]

Card 2/2

EWT(l)/EWP(q)/EWT(m)/BDS/ES(s)-2--AFFTC/ASD/SSD--Pt-4--GG/JD

L 10047-63

ACCESSION NR: AR3000362 S/0058/63/000/004/E053/E054

64

SOURCE: RZh. Fizika, Abs. 4E364

AUTHOR: Kholodenko, L. P.; Naydenov, V. A.

TITLE: On the molecular theory of barium titanate

CITED SOURCE: Uch. zap. Smolenskogo gos. ped. in-ta, vyp. 10, 1962, 126-144

TOPIC TAGS: ferroelectrics, barium titanate, molecular theory, effective ion charge

TRANSLATION: Using experimental data on the value of the spontaneous polarization and on the Curie temperature, an attempt is made to calculate the effective charges of the ions Ba, Ti, and O. The reduction of the data is based on the theory of Speter and Triebwasser. A system of equations is set up and solved for the effective charges of the ions. The effective values of q' sub Ti were found to be equal to 1,2 e and 1.5 e. The charges of the other ions, in view of the exceeding sensitivity of the formulas to the values of the

Card 1/2

L 10047-63

ACCESSION NR: AR3000362

polarizability, could not be determined. A theoretical calculation of the constant in the Curie-Weiss law has yielded a value close to that obtained from the experimental data.

DATE ACQ: 14May63 ENCL: 00 SUB CODE: PH

cs/ja

Card 2/2

S/181/63/005/003/030/046
B102/B180

AUTHOR: Kholodenko, L. P.

TITLE: Theory of domain-free nonuniform spontaneous polarization of ferroelectric plates near the Curie point

PERIODICAL: Fizika tverdogo tela, v. 5, no. 3, 1963, 897-908

TEXT: The author presents a theory of the domain-free structure of flat ferroelectric single crystals of $BaTiO_3$-type symmetry (FTT 3, 3731, 1961) based on Ginzburg's considerations (UFN, 38, 490, 1949). The law $\varphi = -\lambda\psi$, λ=const>0, is assumed for the free charge distribution, ψ being the potential distribution. The problem is as follows: An infinite plate of thickness 2L, of a $BaTiO_3$-type ferroelectric single crystal, which shows a phase transition of the second kind on para-ferroelectrical transformation, undergoes spontaneous induction ($\mathcal{D}$) along z, without metal electrodes, in vacuo and in thermodynamic equilibrium; $\mathcal{D}_z$=0 at z=±L. With $d\psi/dz = 4\pi\mathcal{D}$ one obtains $E = \frac{1}{4\pi\lambda}\frac{d^2\psi}{dz^2}$ and $\alpha\frac{d^2\psi}{dz^2} = a\mathcal{D} + c\mathcal{D}^3 + f\mathcal{D}^5$ where

Card 1/5

$\delta' = \kappa + (16\pi^2\lambda)^{-1}$, $\mathcal{D} \equiv \mathcal{D}_z$. For $c - 4g/3 > 0$, $\alpha < 0$, $a < 0$

$$\mathcal{D} = \mathcal{D}_0 \operatorname{sn}\left(p\sqrt{\frac{c}{2b}}\,x + K\right), \tag{17}$$

$$K(k) = \int_0^{\pi/2} \frac{d\psi}{\sqrt{1 - k^2 \sin^2\psi}}.$$

is obtained where

$$K(k)\sqrt{1 + k^2\left(1 - 2\frac{g}{c}\right)} = \sqrt{-\frac{2a}{b}}\,L. \tag{23}$$

If $k \ll 1$,

$$K(k)\sqrt{1 + k^2\left(1 - 2\frac{g}{c}\right)} = \frac{\pi}{2}\left[1 + k^2\left(\frac{3}{4} - \frac{g}{c}\right)\right]. \tag{24}$$

Eq. (23) is graphically solved for $4/3 - c/g \gtrless 0$. The value of α

at k = 0 is obtained as $\alpha_L = -\pi^2/8L^2$. This relation defines the temperature T_L at which induction arises gently. $T_L - T_c = -\pi^2 c/8\alpha' L^2$, $\alpha = \alpha'(T-T_c)$, T_c - Curie temperature. The corresponding value of the potential reads

$$\varphi_L = \frac{\mathfrak{D}_0 p \sqrt{\frac{c}{2\delta}}}{4\pi\lambda}. \qquad (32),$$

the field is given bv

$$E = -\frac{\mathfrak{D}_0^3 c}{8\pi\lambda\delta}\frac{k'^2}{k^2}\frac{\operatorname{cn}\omega z}{\operatorname{dn}^3\omega z}(1 + k^2\operatorname{sn}^2\omega z). \qquad (33)$$

and the free energy per unit surface area by

$$\mathcal{F} = \int_{-L}^{+L}\left[F_0 + \frac{\beta}{4}\mathfrak{D}_0^4 + \frac{\alpha}{4}\mathfrak{D}_0^4 + \frac{a}{2}\mathfrak{D}_0^2\right]dz + \frac{\varkappa + \delta}{2}\int_{-L}^{+L}\left(\frac{d\mathfrak{D}}{dz}\right)^2 dz. \qquad (37).$$

Card 3/5

The first term of (37) is the exchange energy of a uniform infinite crystal and can be represented by

$$\mathcal{F}_1 = 8L \frac{k^2 (gk^2 - c) a^2}{[c + k^2 (c - 2g)]^2}. \quad (38)$$

and the second term by

$$\mathcal{F}_2 = (\varkappa + \delta) \mathcal{D}_0^2 k^4 \omega \int_0^1 \frac{t^2 dt}{(1 - k^2 t^2) \sqrt{(1 - t^2)(1 - k^2 t^2)}}. \quad (41)$$

with sn ωz = t; ω = p $\sqrt{c/2}$. With

$$\mathcal{D}_0^2 = -\frac{a}{c} \frac{4k^2}{1 + k^2 \left(1 - 2\frac{g}{c}\right)}, \quad (21)$$

$$p^2 = -\frac{a}{c} \frac{1}{1 + k^2 \left(1 - 2\frac{g}{c}\right)}. \quad (22)$$

Card 4/5

from (37) the total free energy can be calculated:

$$\mathcal{F} = \left[F_0 - \frac{4a^2k^2}{c}\right]2L + \frac{\pi}{4}\sqrt{\frac{c}{2\delta}}(x+\delta)\left(-\frac{4a}{c}\right)^{3/2}k^2. \qquad (42)$$

The α value at which spontaneous induction arises is obtained from $\mathcal{F}-2F_0L = 0$. The results are applied, first generally to an n-type semiconductor, and finally numerical results are given for $BaTiO_3$. There is 1 figure.

ASSOCIATION: Smolenskiy pedagogicheskiy institut im. Karla Marksa (Smolensk Pedagogical Institute imeni Karl Marx)

SUBMITTED: August 9, 1962 (initially)
November 3, 1962 (after revision)

L 19012-63 BDS/EWT(1)/EWP(q)/EWT(m)/ES(s)-2 ESD-3/ASD/SSD/IJP(C)
PT-4 GG/JD/JG
ACCESSION NR: AP3005314 S/0181/63/005/008/2090/2101

71
70

AUTHOR: Kholodenko, L. P.

TITLE: Macroscopic theory of ferroelectric crystals of the type $BaTiO_3$ in the form of thick plates

SOURCE: Fizika tverdogo tela, v. 5, no. 8, 1963, 2090-2101

TOPIC TAGS: ferroelectric, Ba, Ti, O, spontaneous induction, potential, domain structure, phase transition, phase plane, space charge, thermodynamic potential

ABSTRACT: A mathematical study has been made of nondomain and nonhomogeneous structure in thick plates of ferroelectric crystals belonging to the family $BaTiO_3$, characterized by first-order ferroelectric phase transitions. The "phase plane" method has been used to make a qualitative study of the differential equation describing one-dimentional distribution of induction found in the paper by I. I. Ivanchik (FTT, 3, 3731, 1961). For the particular case of linear dependence between planes of space charge and potential, the distribution has been found for induction of field intensity and potential. Various conditions for applying the theory are investigated. The thermodynamic potential of the crystal is found,

Card 1/2

L 19012-63
ACCESSION NR: AP3005314

and it is shown that for a thick crystal the part of that potential due to inhomogeneity reduces to surface energy. Orig. art. has: 3 figures and 70 formulas.

ASSOCIATION: Smolenskiy pedagogicheskiy institut im. K. Marksa (Smolensk Pedagogical Institute)

SUBMITTED: 06Dec62 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: PH NO REF SOV: 006 OTHER: 002

Card 2/2

NOVIKOV, Anatoliy Konstantinovich; KHOLODENKO, Mikhail Izrailevich; NAUMOV, I.I., nauchn. red.; TABUNINA, M.A., red.izd-va; SHERSTNEVA, N.V., tekhn. red.; PAVLOVA, V.D., tekhn. red.

[Organization of assembly-line high-speed construction at the 37th section of the Southwest District in Moscow; practices of the Apartment House Combine of the Main Division for Housing and Civilian Construction in the City of Moscow] Organizatsiia potochno-skorostnoi zastroiki 37-go kvartala IUgo-Zapadnogo raiona Moskvy; iz opyta raboty domostroitel'nogo kombinata Glavmosstroia. Moskva, Stroiizdat, 1964. 47 p. (MIRA 17:3)