5(3)

AUTHORS: Topchiyev, A. V., Academician, SOV/20-124-6-20/55
Krentsel', B. A., Pokatilo, N. A., Yerasova, Ye. L.

TITLE: On the Polymerization of α-Butene With a Complex Metallo-organic Multi-purpose Catalyst $Al(C_2H_5)_3 + TiCl_4$ (O polimerizatsii α-butena s kompleksnym metalloorganicheskim katalizatorom $Al(C_2H_5)_3 + TiCl_4$)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 6, pp 1255-1257 (USSR)

ABSTRACT: Since recently the problems of stereospecific polymerization of α-olefins with complex metallo-organic catalysts have attracted the attention of many research workers. This can be explained by the theoretical interest in polymerization reactions which yield stereoregular polymers on the one hand, and by valuable technical properties of the products formed, on the other hand. The mechanism of stereospecific polymerization of α-olefins and the properties of the polymers were frequently the subject of publications (Refs 1-8). Least attention in the discussion was paid to the synthesis of polymers with a high molecular weight on the α-butene

basis (Refs 5-8). This is what induced the authors to write the present paper. In an experimental part they deal with the production of the initial substance, course, duration, and details of the reaction as well as with the quantity of the catalyst used. The ready polymer is described with respect to its properties. Figure 1 shows the dependence of the polybutylene yield upon the duration of reaction. Figure 2 gives the radiograms of amorphous (a) and crystalline (b) polybutylene. From figure 3 the dependence of the characteristic viscosity of polybutylene (A) can be seen and that of the content of crystalline substances (B) on the molecular ratio of the catalyst $(C_2H_5)_3Al : TiCl_4$. Figure 4 reveals the dependence of the same viscosity (A) and the yield in polybutylene upon the reaction temperature. There are 4 figures and 9 references, 3 of which are Soviet.

SUBMITTED: November 13, 1958

Card 2/2

5.3831

67261

SOV/20-129-4-23/68

~~5(3)~~

AUTHORS: Ivanova, T. I., Krentsel', B. A., Pokatilo, N. A., Topchiyev, A. V., Academician

TITLE: Polymerization of 3-Methyl Butene-1

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 799-800 (USSR)

ABSTRACT: The authors investigated the polymerization of 3-methyl butene-1 with a complex organometallic catalyst. 3-methyl butene-1 was obtained by pyrolysis of isoamyl acetate in a yield of 97%. The dependences observed in the pyrolysis are graphically represented in figures 1 and 2. $Al(C_2H_5)_3$ or $Al(i\text{-}C_4H_9)_3$ and $TiCl_4$ or $TiCl_3$ were used as catalyst components. $Al(C_2H_5)_3$ and $Al(i\text{-}C_4H_9)_3$ were dissolved in benzene before they were used. The reaction mentioned in the title was made in carefully purified and dried heptane and in argon atmosphere. The obtained poly-3-methyl butene-1 is a white powder (melting point approximately at 240°). The properties and the polymer constants are determined. The content of the isotactic component was determined by successive extraction with boiling ether and heptane (similar to the investigation of

Card 1/2

ACCESSION NR: AP4028542 S/0191/64/000/004/0003/0006

AUTHORS: Nechitaylo, N.A.; Sanin, P.I.; Bevza, T.I.; Pokatilo, N.A.

TITLE: Stability of poly-3-methylbutene-1

SOURCE: Plasticheskiye massy*, no. 4, 1964, 3-6

TOPIC TAGS: polymethylbutene, stability, differential thermal analysis, methylbutene polymerization, thermogram, exothermic effect, endothermic effect, amorphous, crystalline, isotactic polymer, stabilizer, polymer oxidation

ABSTRACT: The stability to atmospheric oxidation of poly-3-methylbutene-1 was studied by differential thermal analysis. The polymer was produced by polymerization of 3-methylbutene-1 on the $Al(C_2H_5)_3$: $TiCl_4$ system (1.5:1). The thermogram of the polymer sample in air shows a series of exothermic effects above 120C and an endothermic peak at 260C. In the thermogram in argon the exothermic effects are absent but there is a series of endothermic effects, associated with changes in the structure of the polymer macromolecules.

Card 1/2

ACCESSION NR: AP4028542

Comparison of the amorphous, slightly crystalline and crystalline or isotactic fractions (structures confirmed by x-rays) of the polymer shows the highly crystalline material is oxidized most on heating. The effect of the addition of various amounts of ionol (2,6-di-tert. butyl-4-methylphenol) was studied, and it was found that the intensity of the exothermic effects was reduced with increasing amounts of stabilizer, up to 2% ionol when there is almost no oxidation of the polymer. Orig. art. has: 5 figures.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: CH

NR REF SOV: 002 OTHER: 003

Card 2/2

S/510/60/014/000/002/006
D244/D307

AUTHORS: Pokatilo, N.A., Yerasova, Ye.L., Unmut, A.M., Erentsel', B.A., and Topchiyev, A.V.

TITLE: Preparation of isotactic polybutylene

SOURCE: Akademiya nauk SSSR. Institut nefti. Trudy, v. 14, 1960, Khimiya nefti, 58 - 64

TEXT: In view of the improved mechanical properties of poly-α-butylene the polymerization of α-butylene with the application of complex organometallic catalysts was investigated. $Al(C_2H_5)_3$ - $TiCl_4$ and $Al(\underline{iso}\text{-}C_4H_9)_3$ - $TiCl_4$ systems were used as catalysts. The polymerization was carried out in a glass apparatus under atmospheric pressure and also at temperatures and pressures close to the critical values for α-butylene. In the latter apparatus α-butylene served as the solvent as well as the part of liquid α-butylene unused in the reaction. The best conditions found for the polymerization with $(C_2H_5)_3$ Al - $TiCl_4$ were as follows: 1) Molar ratio $(C_2H_5)_3Al$: $TiCl_4$ = 8:1;

Card 1/2

89614

S/020/61/136/002/019/034
B016/B060

5.3610

AUTHORS: Zhuk, D. S., Keppen, V. A., and Pokatilo, N. A.

TITLE: Interaction of Cyclohexene With Concentrated Nitric Acid

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 2, pp. 346-349

TEXT: In contrast with earlier papers (Refs. 1-6, 8-10) which have reported on the nitration of cyclohexene with diluted HNO_3 or with nitrogen oxides in the liquid phase, the authors have used 98.5 to 99.7% HNO_3 in the vapor phase. Its amount related to cylcohexene (5.2 : 1) was calculated in a way as to ensure a complete oxidation (combustion) of the latter. The reaction was performed at atmospheric pressure and 100°C in a quartz tube during a contact time of 6.5 sec. (occasionally 1.63 sec.). A complicated mixture of products found to form in this connection contained nitro-, nitroso-, nitrate-, hydroxyl-, carbonyl-, and carboxyl groups in various combinations. Also the formation of cyclohexene nitro nitrite (in accordance with Ref. 5) is said to be possible. It can be subjected to

Card 1/3

Interaction of Cyclohexene With Concentrated Nitric Acid

S/020/61/136/002/019/034
B016/B060

hydrolysis and give rise to nitro cyclohexanol. The following substances were separated and identified: cyclohexene pseudonitrosite; nitro cyclohexanone; 1-nitrocyclohexene; keto cyclohexyl nitrate; nitro cyclohexyl nitrate; dinitro cyclohexane; 1,2-cyclohexanedione; a compound with the empirical formula $C_6H_{10}O_2$; 2-nitro cyclohexanol; 1,2-cyclo hexanedione mononitrate, adipic, oxalic, and succinic acid. It was found that in those cases where a cis- trans-isomerism is possible in the compounds synthesized, a mixture of isomers with prevailing trans-form results as a rule. It was concluded that the oxidation processes play a major part in the complicated reaction mentioned. Above all, their study will contribute to understand the self-inflammation process of cyclohexene with concentrated HNO_3. A report will be made on respective studies in a separate paper.

N. A. Chumayevskiy is thanked for having performed the spectroscopic analysis of the compounds synthesized. There are 10 references: 1 Soviet, 4 US, 2 German, and 3 British.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences USSR)

89614

Interaction of Cyclohexene With Concentrated Nitric Acid

S/020/61/136/002/019/034
B016/B060

PRESENTED: July 21, 1960, by A. V. Topchiyev, Academician

SUBMITTED: July 12, 1960

Card 3/3

BEYLIN, S.I.; POKATILO, N.A.; DONSOPLOSK, B.A.

Reaction of a free methyl radical with organosilicon compounds.
Vysokom. soed. 7 no.6:1085-1091 Je '65. (MIRA 18:9)

1. Institut neftekhimicheskogo sinteza imeni A.V.Topchiyeva AN SSSR.

REVZA, T.I.; POKATILO, N.A.; TOPCHIYEV, A.V. [deceased]

Polymerization of 3-methylbutene-1 on complex organometallic catalysts.
Neftekhimiia 4 no.5:727-734 S-O '64. (MIRA 18:1)

1. Institut neftekhimicheskogo sinteza imeni A.V.Topchiyeva AN SSSR.

L 13813-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP4047684 S/0204/64/004/005/0727/0734

AUTHOR: Bevza, T. I., Pokatilo, N. A., Topchiyev, A.V. (deceased)

TITLE: Polymerization of 3-methyl-1-butene in the presence of complex or gano-metallic catalysts

SOURCE: Neftekhimiya, v. 4, no. 5, 1964, 727-734

TOPIC TAGS: methylbutene, dehydration catalyst, polymerization catalyst, isopentyl alcohol, fractionation polymerization, polymer physical property, olefin polymerization, heteroorganic catalyst

ABSTRACT: The preparation of 3-methyl-1-butene by dehydration of isopentyl alcohol (b.p. 128-132C, $n_D^{20} = 1.4080$, $d_4^{20} = 0.811$) is described and the conditions of polymerization and fractionation are given. The intrinsic viscosity, melting point and glass transition temperature were determined for 3-methyl-1-butene polymers. For crystalline polymers the glass temperature is important because the valuable complex of properties determined by the nature of the material appears only in the temperature range between the glass transition and melting points. The polymerization was influenced considerably by the molar ratio of the catalyst components. Thus, the highest yield of solid product was obtained at a $Al(C_2H_5)_3$: TiCl ratio of 2 at 110C in 10 hours and a catalyst

Card 1/2

concentration of 5% based on the monomer. The content of isotactic portion in the polymer was relatively independent of the temperature of polymerization. The resulting polymer has a M. P. of 230-240C, 80% isotactic portion, and an intrinsic viscosity of 0.7. The glass transition temperature is 60C according to the thermomechanical curve. The solubility data obtained in a stream of pure argon are tabulated (in benzene, toluene, xylene, decalin, tetralin, ditolylmethane, dicumylmethane, and kerosene). The structure assumed for the polymers was confirmed by infrared spectra. "The authors thank B. A. Krentsel' for his assistance, M. M. Kusakov and M. V. Shishkina for taking the infrared spectra and I. Tsarevskaya for the determination of the thermomechanical properties of the polymers; M. I. Leonova and M. N. Shvarts also took part in the work." Orig. art. has: 6 figures and 3 tables.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva, AN SSSR (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 20Jun63 ENCL: 00 SUB CODE: OC

NO REF SOV: 003 OTHER: 010

NECHITAYLO, N.A.; SANIN, P.I.; BEVZA, T.I.; POKATILO, N.A.

Stability of poly-3-methyl-1-butene. Plast.massy no.4:3-6 '64. (MIRA 17:4)

YERASOVA, Ye.L.; KRENTSEL', B.A.; POKATILO, N.A.; TOPCHIYEV, A.V.

Isomerizing action of the catalytic system $Al(C_2H_5)_3 + CrCl_3$ in the polymerization of 1-butene. Vysokom. soed. 4 no.12:1796-1798 D '62. (MIRA 15:12)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Butene) (Polymerization) (Catalysts)

S/190/62/004/012/004/015
B101/B186

AUTHORS: Yerasova, Ye. L., Krentsel', B. A., Pokatilo, N. A., Topchiyev, A. V.

TITLE: Isomerizing action of the catalytic system $Al(C_2H_5)_3 + CrCl_3$ in the polymerization of but-1-ene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 12, 1962, 1796-1798

TEXT: The applicability of the catalyst $Al(C_2H_5)_3 + CrCl_3$ suggested by J. E. Gillespie, J. W. Tordman (Industr. and Engng. Chem., 51, 1365, 1959) for the polymerization of propylene was studied with respect to the polymerization of but-1-ene. The experiments were carried out in ampoules, with the ratios $Al(C_2H_5)_3 : CrCl_3$ = 1:1, 1:2, 1:6, and 1:9 at 30-80°C. The polybutene yield was only 5%. However, a considerable isomerization from 1-butene to 2-butene was observed, which did not occur in the polymerization of 1-butene with $AlR_3 + TiCl_4$. Example: The initial butene had the composition (in % by weight): 70.03 1-butene, 11.42 cis-2-butene, and

Card 1/2

L 60140-65 EWI(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RPL JAJ/RM

ACCESSION NR: AP5016512 UR/0190/65/007/006/1085/1091
678.01:54+678.84

AUTHORS: Beylin, S. I.; Pokatilo, N. A.; Dolgoplosk, B. A.

TITLE: Study of the reactions of the free methyl radical with organosilicon compounds

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 6, 1965, 1085-1091

TOPIC TAGS: organosilicon compound, organic chemistry, methyl radical, siloxane compound, polymerization

ABSTRACT: The reactions of the free methyl radical with organosilicon compounds containing different organic groups (methyl, phenyl, vinyl, allyl, and trifluoropropyl) at the silicon atom were investigated. The relative activity of these groups in the reaction of the methyl radical addition and the hydrogen atom abstraction is discussed by means of formulas. Cyclic compounds of the type $(R_1R_2SiO)_4$ were used. The source of free radical was acetyl peroxide decomposing during heating in solution according to $(CH_3COO)_2 \rightarrow 2CH_3 + 2CO_2$. The quantitative evaluation of the two reactions was carried out on the basis of methane yield

Card 1/3

determination during the decomposition of acetyl peroxide in a $[(CH_3)_2SiO]_4$ solution. The ratio of the velocity constants (k_2/k_1) for both reactions is given by an equation. Tabulated data are given for the reaction of the methyl radical with aromatic silicon compounds at 95C. It was found that in siloxane compounds the probability of the addition of methyl radical to the phenyl group at the silicon atom is 5 times as great as the probability of the hydrogen abstraction from CH_3. The acceptor capability of the phenyl group with respect to the methyl radical in siloxanes is 16 times that of benzene. Tabulated data given for the reaction of the methyl radical with vinyl siloxanes and vinyl silanes at 80C show that vinyl siloxanes are polymerized to a polymer with a molecular weight of 2500. The methane yield increased gradually with decreasing vinyl siloxane concentration. In the reaction of the methyl radical with allyl silanes and allyl siloxanes, the probability of the addition of the methyl radical to the allyl double bond is 33-43 times as great as that of the hydrogen abstraction from the methyl group of the compounds investigated, and only 4 times as great as the probability of the hydrogen removal from the corresponding compounds. α-methylene groups play an important role in the hydrogen abstraction. In vinyl silanes and vinyl siloxanes, the k_2/k_1 ratio is 86 and 140, respectively.

L 60140-65

ACCESSION NR: AP5016512

2

This shows a higher reactivity of the vinyl groups in the reaction with free radicals as compared with allyl radicals. The reactivity of the double bonds of vinyl and allyl types in siloxanes is much higher than in silanes. In the reaction of the methyl radical with vinyl siloxanes in the presence of organic fluorosilicon compounds, the methane yield is the same as by using octamethylcyclotetrasiloxane as a solvent. The experimental procedure is described, and the experimental apparatus is explained and illustrated. Orig. art. has: 3 figures, 4 tables, and 7 formulas.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva, AN SSSR (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 04Aug64 ENCL: 00 SUB CODE: OC

NO REF SOV: 001 OTHER: 004

Card 3/3

POKATILOV, A.G.

From the history of sturgeons (Acipenseridae) in western Trans-baikalia. Trudy BKN [illegible] no.[illegible]95-98 [illegible] (MIRA 18:[illegible])

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341620004-0"

POKATILOV, G.A.

Geology of the Archean complex of the left bank of the lower Anga River. Trudy Irk. un. 14:119-135 '58. (MIRA 16:7)

(Anga Valley--Geology)

TOKATILOV, K. YE.

"Alcoholization of the B ordering Trunk in Case of Vascular Disorders and Pain Syndromes." Thesis for degree of Dr. Medical Sce. Sub 28 Jun 49, Central Inst for the Advanced Training of Physicians.

[redacted] Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec 1949.

POKATILOV, K.Ye.

STANISLAVLEVA, Ye.N.; POKATILOV, K.Ye., dotsent, zaveduyushchiy; SHEBANOV, F.B., professor, direktor.

Combined therapy of osteoarticular tuberculosis complicated by amyloidosis. (MLRA 6:7)
Probl.tub.no.3:31-34 My-Je '53.

1. Kostnokhirurgicheskoye otdeleniye Moskovskogo oblastnogo tuberkuleznogo instituta. 2. Moskovskiy oblastnyy tuberkuleznyy institut (for Shebanov).
(Bones--Tuberculosis) (Joints--Tuberculosis)

POKATILOV, K.Ye., dotsent

Conservative resection in tuberculosis of the iliosacral joint. Khirurgiia no.4:15-20 Ap '54. (MLRA 7:6)

1. Iz Moskovskogo oblastnogo nauchno-issledovatel'skogo tuberkuleznogo instituta (dir. prof. F.V.Shebanov)

(TUBERCULOSIS, SPINAL, surgery,
*resection of iliosacral joint, conservative)

L 6826-65 EWT(1)/EPA(s)-2/EEC(b)-2 Pt-10 IJP(c)/AFETR/ASD(a)-5/SSD/
AFWL/ESD(gs)/ESD(t)/RAEM(t)
ACCESSION NR: AP4044956 S/0181/64/006/009/2809/2818

63
62

AUTHOR: Pokatilov, Ye. P.

TITLE: Local and polaron states of electrons in a piezocrystal 21

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2809-2818

TOPIC TAGS: piezoelectricity, polaron, polarization, piezoelectric crystal, electron polaron interaction, impurity center

ABSTRACT: Although the effect exerted on various phenomena in semiconductors by the interaction between an electron and piezopolarization have been reported in several recent papers, they did not include a discussion of the piezopolarization produced not by external sources but by the electron's own field. Inasmuch as the interaction between the electron and the polarization that it produces can greatly influence the energy spectrum of free and bound electrons, the author considers the ground state of free and local

Card 1/2

L 6826-65

ACCESSION NR: AP4044956

electrons in the adiabatic approximation, using a method developed by Pekar (Issledovaniya po elektronnoy teorii kristallov [Investigations in the Electronic Theory of Crystals] GITTL, 1951). Expressions are derived for the energy of the ground state of a local weakly bound electron (impurity center) and free electron (polaron) in crystals with cubic and hexagonal symmetry. The results are compared with various numerical data published in other papers. It is pointed out that the values obtained for the polaron ground-state level may be too high by one order of magnitude, since the adiabatic approximation does not hold for the polaron. Orig. art. has: 47 formulas.

ASSOCIATION: Kishinevskiy gosudarstvenny*y universitet (Kishinev State University)

SUBMITTED: 29Dec63 ENCL: 00

SUB CODE: SS, NP NR REF SOV: 009 OTHER: 004

Card 2/2

23350 S/058/61/000/006/037/053
A001/A101

24,7500 (1144, 1160, 1482)

AUTHOR: Pokatilov, Ye.P.

TITLE: Elastic oscillations of an anisotropic medium possessing the cubic and hexagonal symmetries

PERIODICAL: Referativnyy zhurnal. Fizika, no. 6, 1961, 256, abstract 6E89 ("Uch. zap. Tiraspol'sk. gos. ped in-t", 1958 (1960), no. 8, 185 - 192)

TEXT: The author considers accoustical oscillations of long wavelengths in cubic and hexagonal crystals, taking into account elastic anisotropy. Approximate formulae for frequencies and polarizations of cubic crystal oscillations are derived on the assumption that elastic anistropy is small and it is permissible to confine oneself to the linear term in the expansion in powers of anisotropy parameter. A comparison with results obtained for Ge and Si numerically by means of rigorous formulae shows that the error in determining frequencies is less than 0,5% for Si and 1% for Ge in the case of almost longitudinal oscillations and 1.5% for Si and 3.5% for Ge in the case of almost transverse oscillations. The error

Card 1/2

23350 S/058/61/000/006/037/063
A001/A101

Elastic oscillations ...

in determining polarizations is of the order of 20%. Approximate formulae are also derived for almost longitudinal oscillations in hexagonal crystals. To estimate their accuracy, the frequency values found are compared with rigorous values calculated for Te.

M. Krivoglaz

[Abstracter's note: Complete translation]

Card 2/2

S/058/61/000/005/031/050
A001/A101

24.7700 (1136, 1143, 1150)

AUTHORS: Pokatilov, Ye.P., Kechashina, A.

TITLE: The activation energy of partly shielded donor centers in silicon

PERIODICAL: Referativnyy zhurnal. Fizika, no 5, 1961, 271, abstract 5E266 ("Uch. zap. Tiraspol'sk. gos. ped. in-t", 1958 (1960), no 8, 193-197)

TEXT: The authors calculated activation energy of small-donor centers in Si in the framework of the single-electron approximation (using, however, shielded potential of interaction). This study is actually a generalization of the work of Fisher and Krylovich (RZhFiz, 1958, no 2, 3772) for the case of anisotropic effective mass. A Yukawa-type potential was adopted as interaction potential; trial wave functions contain 3 variation parameters. The authors have established the relationship between activation energy of an impurity center and the radius of shielding. It turned out that activation energy decreases with a decrease of shielding radius, and may even reach the zero-value. Thus, e.g. in the case of complete absence of degeneration and at T = 100°K the concentration

Card 1/2

The activation energy ...

S/058/61/000/005/031/050
A001/A101

of free carriers, at which activation energy turns into zero, amounts to $\sim 8 \times 10^{17}$ cm^{-3}, which is in accord with the known data of Pirson and Bardin ($\sim 10^{18}$ cm^{-3}). The authors consider also the case of non-spherical shielding of interaction potential, and pertaining relationships are derived.

Yu. Gulyayev

[Abstracter's note: Complete translation.]

POKATILOV, Ye.P.; PREPELITSA, B.V.

Effect of shielding on the electroacoustic effect in semiconductors with a single kind of current carriers. Trudy po fiz. poluprov. no.1:15-18 '62. (MIRA 16:11)

EWT(l)/EWG(k)/EEC(b)-2/BDS--AFFTC/ASD/ESD-3--Pz-4--AT/IJP(C)
L 10062-63

ACCESSION NR: AR3000372 S/0058/63/000/004/E060/E060

64

SOURCE: RZh. Fizika, Abs. 4E405

AUTHOR: Pokatilov, Ye. P.; Prepelitsa, B. V.

TITLE: Effect of screening and acoustoelectric effect in semiconductors with one type of current carrier

21

CITED SOURCE: Tr. po. fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 15-18

TOPIC TAGS: acoustoelectric effect semiconductors, screening

TRANSLATION: The acousto-electric effect in a semiconductor is considered with allowance for screening by the current carriers of the field produced by the deformation potential. It is shown that the screening greatly reduces the acousto-electric emf. V. S.

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

cs/ja
Card 1/1

POKATILOV, Ye.P.

Electroacoustic effect in high-frequency ultrasound. Uch. zap. Kish. un. 49:26-28 '61. (MIRA 15:7)
(Electroacoustics) (Ultrasonic waves)

PREPELITSA, B.V.; FOKATILOV, Ye.P.

Electroconductivity and Hall effect for semiconductors with an extremum loop. Uch. zap. Kish. un. 49:29-31 '61. (MIRA 15:7)
(Hall effect) (Semiconductors--Electric properties)

S/058/61/000/010/076/100
A001/A101

24,7500

AUTHORS: Pokatilov, Ye.P., Prepelitsa, B.V.

TITLE: Relaxation time in scattering of electrons by acoustic oscillations of lattice, ionized and neutral impurities in wurtzite-type crystals

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 251, abstract 10E167 ("Uch. zap. Kishinevsk. un-t", 1960, v. 55, 163 - 174)

TEXT: The tensor of relaxation time for wurtzite-type crystals is calculated by the Herring and Vogt method (RZhFiz, 1957, no. 1, 1581). Formulae are derived for the case of electron scattering by thermal acoustic lattice oscillations, as well as for scattering by neutral impurities and screened Coulomb centers. In the latter case the calculation is performed in Born approximation.

V. Trubitzyn

[Abstracter's note: Complete translation]

Card 1/1

S/181/60/002/009/041/047/XX
B004/B070

AUTHOR: Pokatilov, Ye. P.

TITLE: Scattering of Electrons by Acoustic Vibrations in Hexagonal Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2210-2213

TEXT: A study was made of the interaction of electrons with the lattice vibrations taking account of the tensorial character of the effective mass m^* of the electron, the elastic constants λ of the lattice, and the deformation potential a. The results obtained for hexagonal crystals are given in the present paper, whose anisotropy affects the components τ_x, τ_y, and τ_z of the relaxation time tensor. The energy surface is assumed to be an ellipsoid of revolution, with its axes in the directions of the principal axes of the crystal, and the center coinciding with the center of the Brillouin zone. The components of the effective mass tensor are then, $m_{\parallel}$ and $m_{\perp}$; and those of the deformation potential tensor are $a_{\perp} = \partial w / \partial u_{\perp} \neq a_{\parallel} = \partial w / \partial u_{\parallel}$. (w is the energy of interaction of the

electron with the lattice; $u_{\parallel}$ and $u_{\perp}$ are the stress deformations parallel and perpendicular, respectively, to the principal axis). Using the equations given by L. D. Landau and Ye. M. Lifshits in Ref. 4, equations are obtained for $1/\tau_{\parallel}$ and $I(\alpha,\beta)$ for the limiting cases $p \to 0$ ($p = m_{\perp}/m_{\parallel}$) and $p \to \infty$: $\lim_{p\to 0}(1/\tau_{\parallel}) = \lim(1/\tau_{\perp}) = (1/\tau_0)\left\{1 + \left[A(\gamma+1)\right] / \left[(\sigma-1)(\delta-1)\right]\right\}$ (6); and $\lim_{p\to\infty}(1/\tau_{\perp}) = \lim(1/\tau_{\parallel}) = (1/\tau_0)(1 + A\gamma/\sigma\delta)$ (7). Fig. 1 graphically shows $\tau_0/\tau_{\perp}$ for $a_{\parallel}/a_{\perp} = 0.5$, 1, and 2. Fig. 2 shows $\tau_{\perp}/\tau_{\parallel}$ for the same values of $a_{\parallel}/a_{\perp}$. The anisotropy was found to have a significant effect. For $p = m_{\perp}/m_{\parallel} = 1$, and $a_{\parallel}/a_{\perp} = 1$, the ratio $\tau_{\perp}/\tau_{\parallel}$ is about 1:1.8. There are 2 figures and 5 references: 3 Soviet, 2 US, and 1 French.

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinev State University)

Scattering of Electrons by Acoustic Vibrations in Hexagonal Crystals

S/181/60/002/009/041/047
B004/B070

SUBMITTED: November 16, 1959

Card 3/3

POKATILOV, Ye. P.

Cand Phys-Math Sci - (diss) "Some problems of the interaction of electrons with acoustic vibrations of the lattice and impurities in semiconductors." Kiev, 1961. 9 pp; (Joint Academic Council of Institutes of Physics, Mathematics, and Metallophysics of the Academy of Sciences Ukrainian SSR); 120 copies; price not given; bibliography at end of text (14 entries); (KL, 5-61 sup, 174)

41690

S/837/61/049/000/002/011
B102/B104

AUTHOR: Pokatilov, Ye. P.

TITLE: The electroacoustic effect with h-f ultrasonics

SOURCE: Kishinev. Universitet. Uchenyye zapiski. v. 49, 1961, 26-28

TEXT: On the basis of quantum perturbation theory the electron-phonon interaction is studied for a system having an electron collision frequency smaller than the sonic frequency. Using a method of Herring and Vogt (Phys. Rev. 101, 944, 1956), the zero-current field strength inside an isolated semiconductor is derived as

$$E_a^{(1)} = \frac{2\pi g C_{a'} p(1) W_0 kT}{\frac{1}{em_{a'}^2}} \left[\frac{2\hbar\omega}{p^3}\left(ch\frac{\hbar\omega}{KT} - 1\right) + sh\frac{\hbar\omega}{KT}\right] \times \quad (1.2)$$

$$\times m_{a'} \int f_0 \tau_{a'} d\varepsilon \Big/ \int f_0 \tau_{a'} \varepsilon^4 d\varepsilon$$

Card 1/3

from the equation of motion of electrons in the sound field.

$$C_{\alpha' p(l)} = \frac{q_{\alpha'}}{\left(\sum q_{\beta'}^2 \frac{m_{\alpha'}}{m_{\beta'}}\right)^{\frac{1}{2}}}.$$

(1.2) holds for a nondegenerate carrier gas, whereas for a degenerate gas

$$E_{\alpha'}^{(l)} = -\frac{3 C_{\alpha' p(l)} W_0^{(l)} m_{\alpha'}^{\frac{1}{2}}}{e} \cdot \frac{\hbar\omega}{\sqrt{\mu_0}} \qquad (1.4)$$

is valid. For high temperatures, $\hbar\omega/KT \ll 1$,

$$E_{\alpha'} = -\frac{3C_{\alpha' p(l)}}{2e} W_0^{(l)} kT m_{\alpha'}^{\frac{1}{2}} \left[\frac{\hbar\omega}{p^3}\left(\frac{\hbar\omega}{KT}\right)^2 + \frac{\hbar\omega}{KT}\right] \times$$
$$\times \int \exp(-\varepsilon/KT)\tau_{\alpha'} d\varepsilon / \int \exp(-\varepsilon/KT)\tau_{\alpha'}\xi^4 d\xi. \qquad (1.3).$$

Card 2/3

$E_{metal}/E_{semic.} \propto (KT/\mu_o)^{3/2}$. These relations are used to calculate eE for n-type Si and Ge for longitudinal and transverse oscillations. The electroacoustic effect can be used to determine both interaction constants, whereas other effects, as e. g. the piezoeffect, yield only one.

Card 3/3

247700

41691
S/837/61/049/000/003/011
B102/B104

AUTHORS: Prepelitsa, B. V., Pokatilov, Ye. P.

TITLE: Electric conductivity and Hall effect in semiconductors with loops of extrema

SOURCE: Kishinev. Universitet. Uchenyye zapiski. v. 49, 1961, 29 - 31

TEXT: The occurrence of bands with extremum loops in wurtzite-type crystals when spin-orbital interaction is taken into account has been shown in group-theoretical studies by E. I. Rashba and V. I. Sheka (FTT, 1, 2, 162, 1959; FTT, 1, 3, 307, 1959). The energy of this interaction can reach several hundreds of ev, as was shown experimentally for CdS, and should exert a great effect on the kinetic coefficients. This effect was theoretically determined as regards the relaxation time, the electric conductivity, and the Hall effect. The expressions for $1/\tau$, $\sigma_{\parallel}/\sigma_{\perp}$, and the Hall coefficient ratio $R(H\parallel z)/R(H\perp z)$ obtained in crystals with circular minimum loops are compared with those for point minima. It is shown that measurements of the Hall constant offer the best way of finding out whether a semiconductor has an extremum loop or not; the

Card 1/2

POKATILOV, YE. P

USSR/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 7008

Author : Pokatilov, Yo.P., Dimant, A.I.
Title : Concerning the Problem of the Width of the Impurity Zone of Conductivity in Atomic Semiconductors.

Orig Pub : Uch. zap. Kiminovsk. un-ta, 1955, 17, 147-150

Abstract : The impurity zones are calculated for excited (2p) and unexcited (1s) state of the impurity atoms. The method of strongly-coupled electrons is used; it is proposed that the atoms of the impurity form an ideal cubic lattice. The individual atomic states are described in accordance with a hydrogen-like model. It is shown that at a certain impurity concentration (approximately 10^{17} cm^{-3}) the 2p-zone overlaps the 1s-level, to which factor the occurrence of the metallic conductivity is connected. Since (cf. Pearson G.L., Bardeen J., Physical Review, 1949, 75, 865) the metallic conductivity in silicon alloyed with boron (or phosphorus) occurs at concentrations that are one order of magnitude greater, it is concluded that the single-electron approximation is not adequate in this problem.

Card : 1/1

POKATILOV, Ye. P.

USSR/Crystals.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18349 B-5

Author : Ye.P. Pokatilov.
Inst : Kishinev University.
Title : Calculation of Transferred Charges in The Theory of Thermoelectrical Phenomena.

Orig Pub : Uch. zap. Kishinevsk. un-ta, 1956, 24, 115-126

Abstract : No abstract.

Card 1/1

24(5)

AUTHOR: Pokatilov, Ye. P.

TITLE: Resonance of Current Carriers Under the Action of Ultrasonic Waves (Rezonans nositeley toka pod deystviyem ul'trazvukovoy volny) SOV/56-36-5-24/76

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 5, pp 1461-1464 (USSR)

ABSTRACT: The progress made by experimental ultrasonics engineering caused general interest to be focused on the interaction of current carriers and sound waves. The author of the present paper theoretically investigates the influence exercised by ultrasonics upon an electron gas in a semiconductor which is located in a magnetic field. The problem is investigated in classical approximation if the de Broglie wave length of the electrons is small against that of sound. First, the power U absorbed per unit of volume is calculated for charges with scalar and tensorial effective masses and the formula obtained (10) is illustrated by means of a diagram $U(\omega/\omega_0)$ for a numerical example. Energy absorption peaks are obtained at the frequencies $\omega = n\omega_0$, where n is an integer and ω_0 denotes

Card 1/2

the cyclotron frequency of the current carriers. Ultrasonic resonance in the case of an elliptical shape of the isoenergetic surface in a hexagonal crystal with the energy minimum in the center of the Brillouin zone is investigated in the second part of this paper. As ultrasonic wave length amounts to only about the 10^5-th part of the wave length of light at the same frequency, no polarization effects can be expected that might prevent the use of cyclotron resonance in semiconductors with a high concentration of free electrons. The author thanks Yu. Ye. Perlin for discussions. There are 1 figure and 7 references, 2 of which are Soviet.

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinev State University)

SUBMITTED: November 15, 1958

S.4174

26.2532

83632

S/058/60/000/005/006/008
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 5, p. 203, # 11706

AUTHOR: Pokatilov, Ye.P.

TITLE: On the Theory of Kinetic Phenomena in Anisotropic Crystals

PERIODICAL: Uch. zap. Kishinevsk. un-t, 1959, Vol. 39, pp. 29-38

TEXT: The author studies the anisotropy of thermoelectric phenomena on the example of a crystal of tetragonal syngony. It is assumed that the conductance zone and the valence zone represent a system of 6 ellipsoids: 2 ellipsoids of revolution around the axis of fourth order (energetically deeper ones) and 4 triaxial ellipsoids (less deep than the first two) around the axes of second order. The electron (hole) transitions between the different minima are neglected. The dependence of the charge carrier concentration on the temperature is calculated for both cases the intrinsic and extrinsic conductance. When calculating the charge carrier concentration, it is assumed in case of extrinsic conductance that the local centers with various effective masses have similar values of the activation energy, and the splitting of the levels under the effect of the crystal field is neglected. The kinetic equation is solved

Card 1/2

24,1800

S/058/61/000/010/099/100
A001/A101

AUTHORS: Averbukh, D.Ya., Pokatilov, Ye.P.

TITLE: Quantum theory of ultrasonic resonance

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 336, abstract 10Zh455 ("Uch. zap. Kishinevsk. un-t", 1960, v. 55, 155 - 162)

TEXT: This is a short mathematical article. The authors discuss the motion of electrons in a magnetic field in the presence of acoustic waves, probability of transitions in discrete spectrum, and absorption of ultrasonic energy.

[Abstracter's note: Complete translation]

Card 1/1

24,7700

AUTHOR: Pokatilov, Ye.P.

S/058/61/000/010/083/100
A001/A101

TITLE: Galvanomagnetic phenomena in wurtzite-type semiconductors at low temperatures

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 266, abstract 10E309 ("Uch. zap. Kishinevsk. un-t", 1960, v. 55, 175 - 181)

TEXT: Specific features of galvanomagnetic phenomena in wurtzite-type crystals are theoretically investigated using the complex dispersion law for these crystals. The main scattering mechanism is assumed to be interaction with acoustic phonons. It is assumed moreover that anisotropy of crystal elastic properties is small; the module of all-sided compression is used instead of tensor of elastic modules, and scalar strain potential instead of tensor of strain potentials. Boltzman's kinetic equation was made use of. The author calculates scalar relaxation time, mobility of carriers in the case of absence of degeneration, Hall coefficient and galvanomagnetic effect.

[Abstracter's note: Complete translation] Yu. Gulyayev

Card 1/1

6.8000 also 1162, 1099
24.1800
24.7700

83722

S/056/60/038/004/015/048
B006/B056

AUTHOR: Pokatilov, Ye. P.

TITLE: Resonance Absorption of High-frequency Sound Energy by the Current Carriers of a Semiconductor in the Magnetic Field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1153 - 1159

TEXT: The ultrasonic absorption in semiconductors in a magnetic field has already repeatedly been investigated, as e.g. in Refs. 1-3 for sound frequencies $\omega \leq 1/\tau$ ($1/\tau$ electron collision frequency, τ - relaxation time), and in one of the earlier papers by the author of the present paper (Ref. 4) for $\omega \gg \omega_0 > 1/\tau$, where ω_0 is the cyclotron frequency of the electron. In the present paper, the absorption of high-frequency acoustic frequencies is investigated. The author proceeds from the Schrödinger equation for electrons interacting in a magnetic field with phonons and lattice impurities $i\hbar\partial\Psi/\partial t = (H_0+H_{int})\Psi$ with $H_0 = (2m^*)^{-1}\left[(p_x + \frac{e\mathcal{H}}{c}y)^2\right.$

Card 1/3

$+ p_y^2 + p_z^2\Big] + H_{phon}$ and $H_{int} = H_{1\,int} + H_{2\,int} + H_{3\,int}$; these three terms describe the interaction of electrons with ultrasonics, with the acoustic lattice vibrations, and the impurities, respectively. At the low temperatures investigated here, where resonance effects occur, the optical vibrations may be neglected. Considering the Schrödinger equation to be a superposition of wave functions, the solution Ψ is given with (8), and the individual terms are discussed. According to the modification of the quantum transition theory by Wigner and Weisskopf, relations for the transition probability amplitudes b_λ and $\gamma_n(k_z)$ are derived, and further, according to A. Ye. Zil'berman the electron part of the matrix element is calculated. With (16), a final explicit expression for $|b_\lambda|^2$ is found for the probability of the transition of an electron from the state n, k_z, k_x to the state n', k_z', k_x' as a result of ultrasonic action. Moreover, an explicit formula for U is obtained (20) by proceeding from the relation for the ultrasonic absorption coefficient $\Gamma = U/c_o E_s$ (c_o - velocity of

L 26476-65 EWT(1)/EWT(m)/EPA(s)-2/EWP(t)/EWP(b) Pt-10 IJP(c) JD
ACCESSION NR: AR5004856 S/0058/64/000/011/E042/E042

SOURCE: Ref. zh. Fizika, Abs. 11E342

AUTHORS: Pokatilov, Ye. P.; Prepelitsa, B. V.

TITLE: Ground-state energy of a piezopolaron in a crystal of cubic symmetry

CITED SOURCE: Uch. zap. Kishinevsk. un-t, v. 69, 1964, 3-5

TOPIC TAGS: piezopolarization, piezopolaron, crystal symmetry, cubic crystal, electron orbit

TRANSLATION: Continuing an earlier paper, in which it was shown that the potential produced by piezopolarization of an electron approaches asymptotically a Coulomb potential, the authors estimate the radii of the ground-state orbits and the states for cubic-symmetry crystals (ZnS and CdS).

SUB CODE: SS ENCL: 00

Card 1/1

POKATILOV, Ye.P.

Local and polaron states of electrons in a piezocrystal. Fiz. tver. tela 6 no.9:2809-2818 S '64.

1. Kishinevskiy gosudarstvennyy universitet. (MIRA 17:11)

L 26767-66 EWT(1)/T IJP(c) GG

ACC NR: AT6005619 UR/2837/64/069/000/0003/0005

AUTHOR: Pokatilov, Ye.P.; Prepelitsa, B.V. 37 B+1

ORG: Kishinev State University (Kishinevskiy gosuniversitet)

TITLE: Ground state energy of a piezopolaron in a cubic symmetry crystal

SOURCE: Kishinev. Universitet. Uchenyye zapiski

TOPIC TAGS: crystal, cubic crystal, crystal symmetry, crystal structure, piezoelectric crystal, ground state

ABSTRACT: This paper is a study of ground states in crystals of cubic symmetry. The analysis was based on previous work by one of the authors, which showed that the potential created by the piezopolarization of an electron has an asymptotic Coulomb nature. The elastic constants and piezoelectric moduli of cubic crystals determined before by P. Belincourt, at al.,(Phys. Rev. 129,3, 1009, 1963) were utilized for quantitative calculations. Due to the cubic symmetry, it was possible to neglect the deviations of polarization from the longitudinal and transverse directions relative to the wave vector. The radius of the ground state of ZnS at - 195°C is estimated to be between .0000051 and .000056 cm. Orig. art. has 11 formulas.

SUB CODE: 20/ SUBM DATE: None/ ORIG REF: 003/ OTH REF: 002

Card 1/1 pla

L 6991-66 EPA(s)-2/EEC(k)-2/EWT(1) IJP(c)

ACC NR: AP5017329 SOURCE CODE: UR/0181/65/007/007/2226/2229

AUTHOR: Pokatilov, Ye. P.; Cheban, A. G.; Rusanov, M. M. 44,55

ORG: Kishinev State University (Kishinevskiy gosudarstvennyy universitet) 56 B

TITLE: Thermal ionization of miniature traps in cubic piezoelectrics

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2226-2229

TOPIC TAGS: piezoelectric crystal, piezoelectric property, thermal ionization, Hamiltonian equation, electron capture, electron transition 21,44,55

ABSTRACT: The piezoelectric behavior of semiconductors of type $A_{III}B_{V}$ (e.g. InSb, GaAs), are related to processes of ionization of minute traps and electron capture. The Hamiltonian of electron interactions with oscillations and defects in piezoelectric crystals, obtained by a canonical transformation, is shown to be

$$H=\varepsilon(\mathbf{P})+H_{e,x}+V(R),$$

Here, ε (P) is the electron energy; $H_{e,x}$ is the energy of interaction with acoustical oscillations of the lattice; and $V(R)$ is the defect interaction enrgy. Equations are given for each of the above terms, based on approximate calculations using Shroedinger equation. Wave functions are also presented for discrete spectra; and from these the overall probability for zone transitions from the $1s$-state to $2p$ and $2s$-levels is

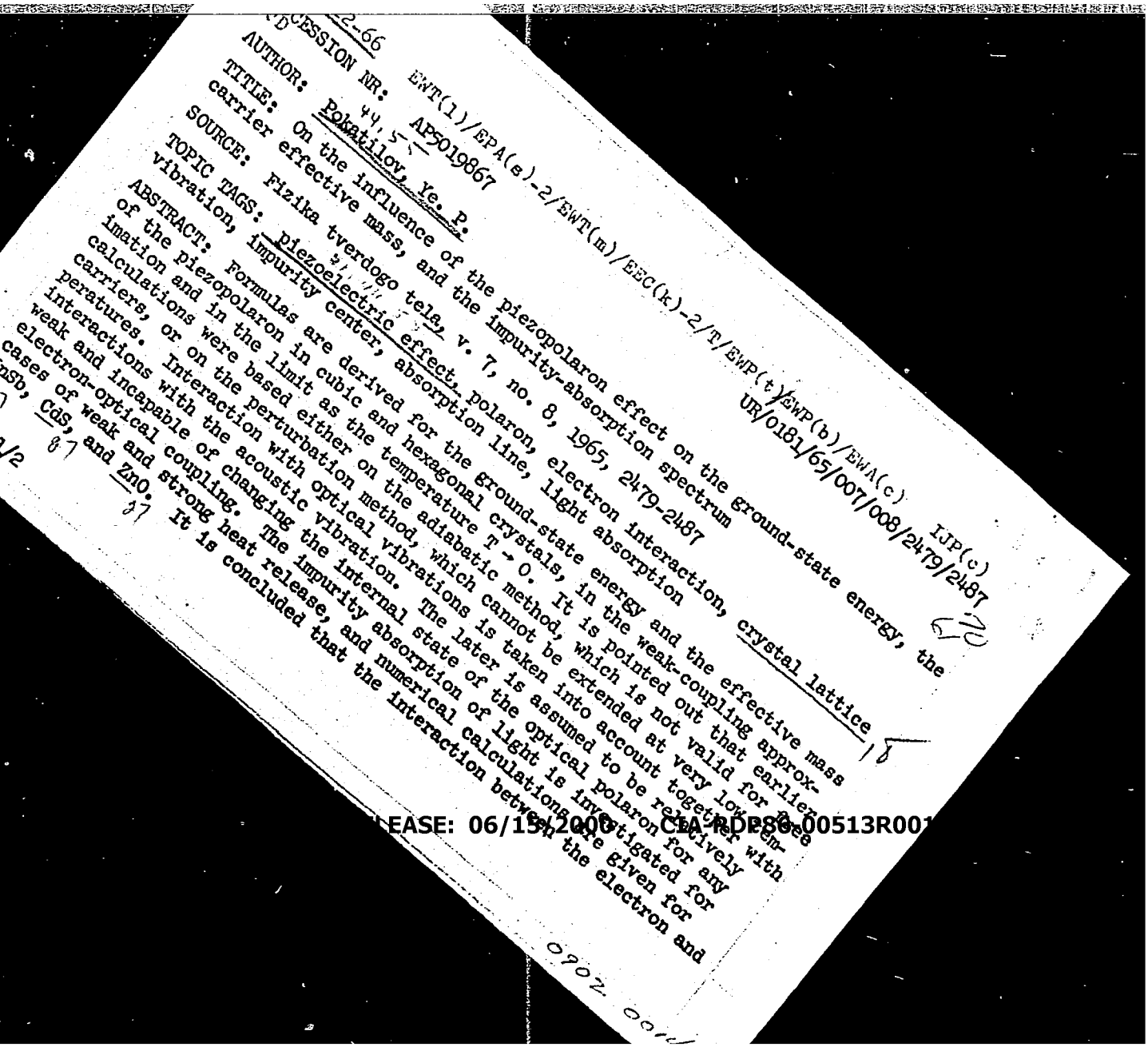
Card 1/2

L 6991-66
ACC NR: AP5017329

calculated. Based on the values for $P_{i,j}$--the probability of a non-radiating transition from i to j, and for $W_{2p,1s}$--the probability of the spontaneous optical transition $2p$ to $1s$, formulas are derived for σ_{cap}--effective capture diameter and σ_{dis}--effective dispersion diameter. Numerical data is presented for InSb for the probabilities $P_{i,j}$; P_{i0_n} (a parameter incorporating $P_{i,j}$ and $W_{2p,1s}$); σ_{cap}; σ_{dis}; and σ_0 (effective capture diameter for the degeneration of the exited levels $2p$, $2s$) as a function of deformation and piezoelectric behavior at T = 5°K and 20°K. Orig. art. has: 1 table.

SUB CODE: SS/ SUBM DATE: 17Nov64/ ORIG REF: 001/ OTH REF: 002

Card 2/2 nda



2-66 EWT(1)/EPA(s)-2/EWT(m)/EEC(k)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c)
ACCESSION NR: AP5019867 UR/0181/65/007/008/2479/2487
AUTHOR: Pokatilov, Ye. P.
TITLE: On the influence of the piezopolaron effect on the ground-state energy, the carrier effective mass, and the impurity-absorption spectrum
SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2479-2487
TOPIC TAGS: piezoelectric effect, polaron, electron interaction, crystal lattice vibration, impurity center, absorption line, light absorption
ABSTRACT: Formulas are derived for the ground-state energy and the effective mass of the piezopolaron in cubic and hexagonal crystals, in the weak-coupling approximation and in the limit as the temperature $T \to 0$. It is pointed out that earlier calculations were based either on the adiabatic method, which is not valid for the temperatures. Interaction with optical vibrations is taken into account together with carriers, or on the perturbation method, which cannot be extended at very low temweak and incapable or changing the internal state or the optical polaron for any interactions with the acoustic vibration. The later is assumed to be relatively electron-optical coupling. The impurity absorption or light is investigated for cases of weak and strong heat release, and numerical calculations are given for It is concluded that the interaction between the electron and

L 6322-66 EWT(l)/EPA(s)-2/EWT(m)/EEC(k)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c)
JD
ACCESSION NR: AP5019867 UR/0181/65/007/008/2479/2487
44,55
AUTHOR: Pokatilov, Ye. P.

TITLE: On the influence of the piezopolaron effect on the ground-state energy, the carrier effective mass, and the impurity-absorption spectrum

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2479-2487

TOPIC TAGS: piezoelectric effect, polaron, electron interaction, crystal lattice vibration, impurity center, absorption line, light absorption

ABSTRACT: Formulas are derived for the ground-state energy and the effective mass of the piezopolaron in cubic and hexagonal crystals, in the weak-coupling approximation and in the limit as the temperature $T \to 0$. It is pointed out that earlier calculations were based either on the adiabatic method, which is not valid for free carriers, or on the perturbation method, which cannot be extended at very low temperatures. Interaction with optical vibrations is taken into account together with interactions with the acoustic vibration. The later is assumed to be relatively weak and incapable of changing the internal state of the optical polaron for any electron-optical coupling. The impurity absorption of light is investigated for cases of weak and strong heat release, and numerical calculations are given for InSb, CdS, and ZnO. It is concluded that the interaction between the electron and

Card 1/2

0902 0014

L 6322-66

ACCESSION NR: AP5019867

the lattice vibrations is capable of exerting an appreciable influence on the width and contour of the impurity absorption lines. "The author thanks Yu. Ye. Perlin for numerous discussions and M. A. Polonskiy for carrying out the bulk of the calculations." Orig. art. has: 1 figure and 47 formulas.

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinev State University)

SUBMITTED: 17Nov64 ENCL: 00 SUB CODE: SS

NR REF SOV: 007 OTHER: 007

nw

Card 2/2

POKATILOV, Ye.P.

Influence of the piezopolaron effect on the ground state energy, the effective mass of current carriers, and the impurity absorption spectrum. Fiz. tver. tela 7 no.8: 2479-2487 Ag '65. (MIRA 18:9)

1. Kishinevskiy gosudarstvennyy universitet.

ZAYKOV, M.A.; POKATILOV, Yu.P.

Determining the parameters of roller straightening machines. Izv. vys.ucheb.zav.; chern.met. 8 no.6:194-201 '65.

(MIRA 18:8)

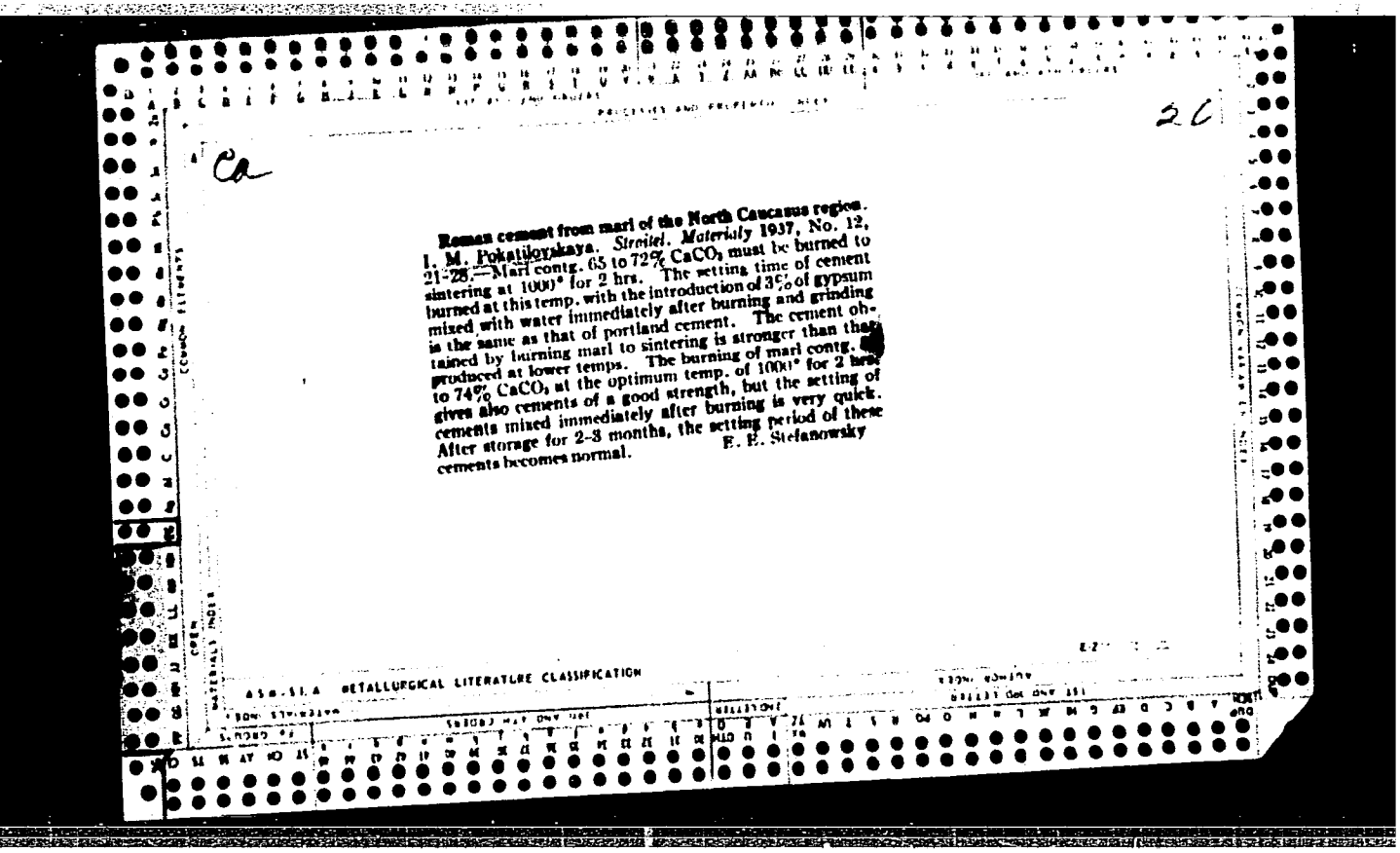
1. Sibirskiy metallurgicheskiy institut.

PAKHUMOV, [illegible].I.; POKATILOV, V.Ya., inzh.-dizelist

Cardborad lining substituting for "paronit" lining. Elek.i tepl.tiaga 6 no.4:14 Ap '62. (MIRA 15:5)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdela lokomotivnogo depo Krasnodar (for Pakhumov). 2. Lokomotivnoye depo Krasnodar (for Pokatilov).
(Diesel engines--Fuel systems)

POKATILOVA, G. A. Cand Chem Sci — (diss) "Preservation of Rams' Sperm at Minus 21° C.," Moscow, 1960, 15 pp, 180 copies (All-Union Sci-Res Institute of Animal Husbandry,) (KL, 46/60, 124)

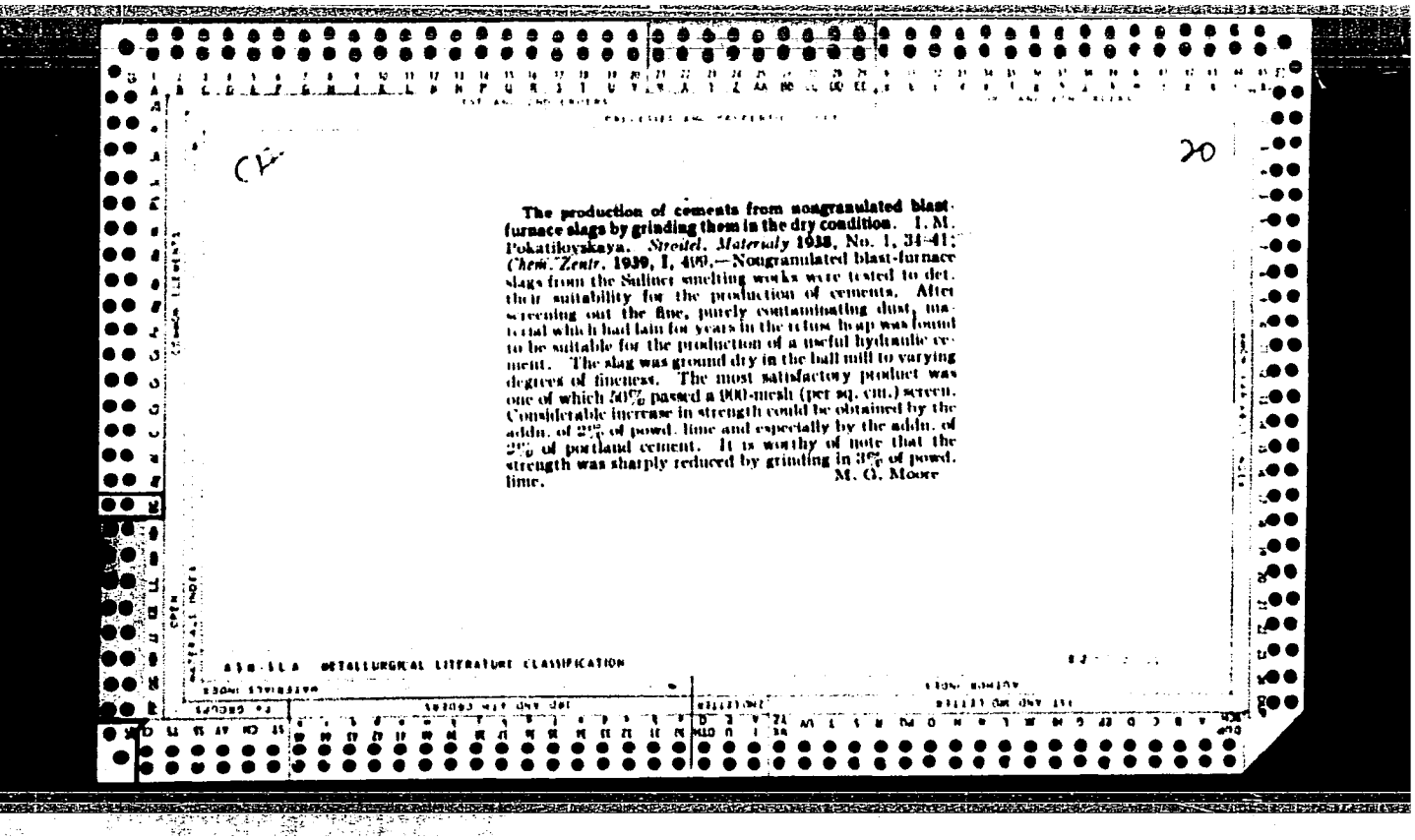


Ca

2C

Roman cement from marl of the North Caucasus region. I. M. Pokatilovskaya. *Stroitel. Materialy* 1937, No. 12, 21-28.—Marl contg. 65 to 72% $CaCO_3$ must be burned to sintering at 1000° for 2 hrs. The setting time of cement burned at this temp. with the introduction of 3% of gypsum mixed with water immediately after burning and grinding is the same as that of portland cement. The cement obtained by burning marl to sintering is stronger than that produced at lower temps. The burning of marl contg. 68 to 74% $CaCO_3$ at the optimum temp. of 1000° for 2 hrs. gives also cements of a good strength, but the setting of cements mixed immediately after burning is very quick. After storage for 2-3 months, the setting period of these cements becomes normal. E. E. Stefanowsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CF

20

The production of cements from nongranulated blast-furnace slags by grinding them in the dry condition. I. M. Pokatilovskaya. *Stroitel. Materialy* **1938**, No. 1, 34–41; *Chem. Zentr.* **1939**, I, 409.—Nongranulated blast-furnace slags from the Sulinet smelting works were tested to det. their suitability for the production of cements. After screening out the fine, purely contaminating dust, material which had lain for years in the refuse heap was found to be suitable for the production of a useful hydraulic cement. The slag was ground dry in the ball mill to varying degrees of fineness. The most satisfactory product was one of which 50% passed a 900-mesh (per sq. cm.) screen. Considerable increase in strength could be obtained by the addn. of 2% of powd. lime and especially by the addn. of 2% of portland cement. It is worthy of note that the strength was sharply reduced by grinding in 3% of powd. lime.

M. G. Moore

A36-11A METALLURGICAL LITERATURE CLASSIFICATION

FOKATILOVSKAYA, T. P.; DERRIVNYI, V. A. Engs.

Concrete

Experience in the application of finely ground hydraulic admixtures. Biul. stroi. tekh., 9, no. 13, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

1. POKATILOVSKAYA, IM (Eng.)

2. USSR (600)

4. Slag cement; Concrete Bloks

7. Dependance of the frost-resistance property of slag-concrete blocks upon the size of hard coal particles of the slag. Stroi. prom. 30 No. 4, 1952. SevkavNIS

9. Monthly List of Russian Accessions, Library of Congress, August, 1952. UNCLASSIFIED.

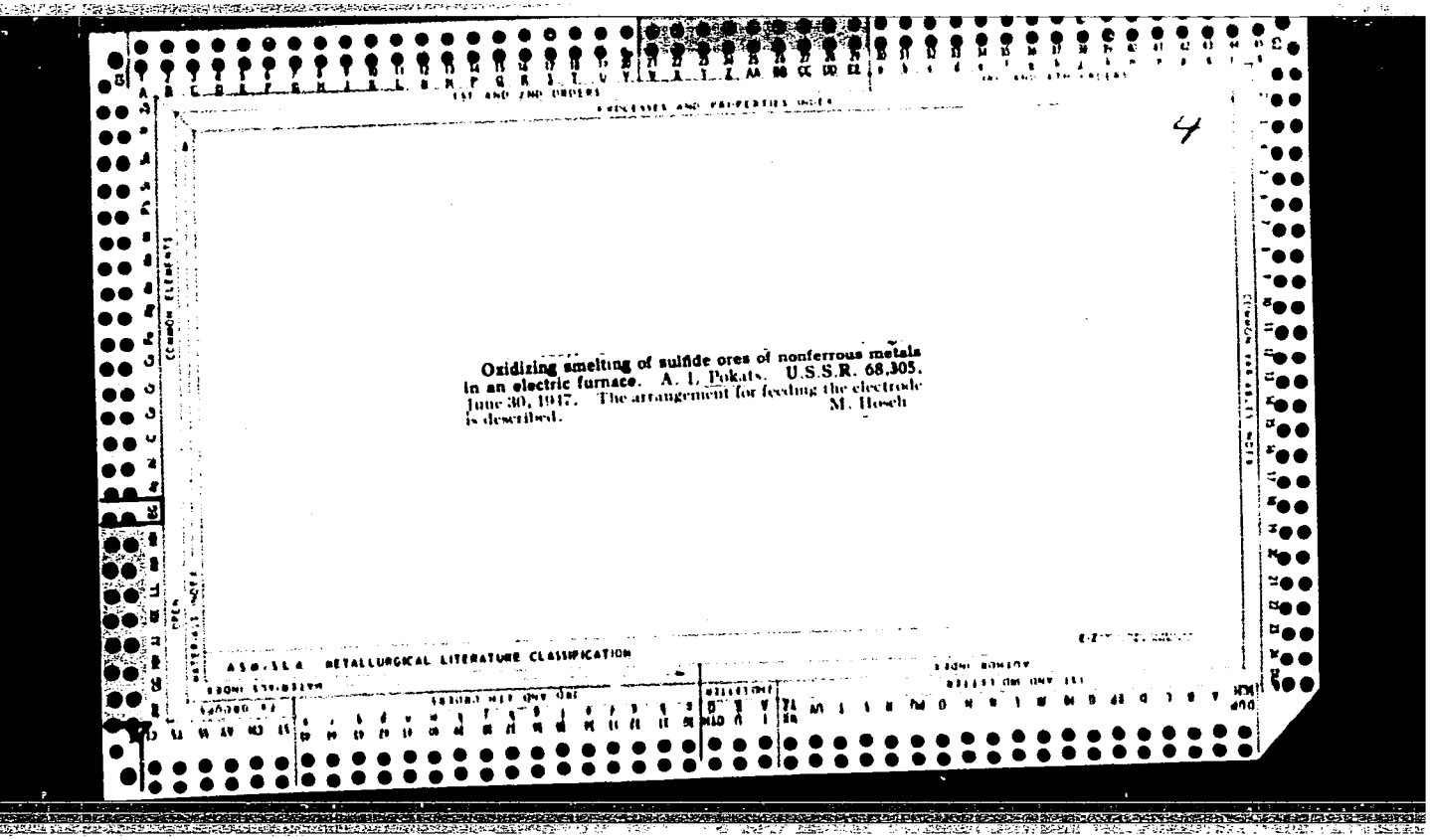
1. POKATILOVSKAYA, I. M., Eng.

2. USSR (600)

4. Slag Cement

7. Effect of coal content in slags on the frost resistance of slag-concrete. Stroi. prom. 31, No. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.



Oxidizing smelting of sulfide ores of nonferrous metals in an electric furnace. A. I. Pokats. U.S.S.R. 68,305, June 30, 1947. The arrangement for feeding the electrode is described. M. Hosch

FUKATSHAIA, Dr.

"Non-Roentgenological Methods of Treating Fungus Infections of the Hair-Bearing Skin of the Scalp."

Vestnik venerologii i dermatologii (Bulletin of Venerology Dermatology), No 1 January-February 1954 (biomper), Moscow.

POKAVKIN, V.A., kand.tekhn.nauk

Efficiency of technical group routing of freight. Trudy RIIZHT no.30:93-123 '61. (MIRA 15:12)
(Railroads—Freight)

POKAVKIN, V.A., kand.tekhn.nauk (Rostov-na-Donu)

Scientific generalization of the theory and practice in the organization of car flows. Zhel.dor.transp. 45 no.9:93-95 S '63. (MIRA 16:9)

(Railroads—Management)

POKAVKIN, V.A., kand.tekhn.nauk

Investigating the idle time of locomotives in train reclassifications stations. Vest.TSNIIMPS 21 no.7:21-24 '62. (MIRA 15:12)
(Railroads—Management)

VOLCHEK, Ya. L. (Rostov-na-Donu); POKAVKIN, V. A., kand. tekhn. nauk (Rostov-na-Donu)

New developments in the organization of car flows. Zhel. dor. transp. 45 no.1:25-29 Ja '63. (MIRA 16:4)

1. Nachal'nik sluzhby dvizheniya Severo-Kavkazskoy dorogi (for Volchek).

(Railroads—Making up trains)

POKAVKIN,V.A., kandidat tekhnicheskikh nauk, dotsent

Investigation of the interaction of train movements and the technical operation of control stations. Trudy Khab. IIT no.8: 4-14 '55. (MLRA 9:1)

(Railroads--Management)

POKAVKIN, Vladimir Alekseyevich; POPSUYEV, Anatoliy Vasil'yevich; KHAIT, Etel' Isaakovna; TSARENKO, A.P., redaktor; BOBROVA, Ye.N., tekhnicheskiy redaktor.

[Putting through local and destrict freight by through trains] Prodvizhenie mestnogo i uchastkovogo gruza transitnymi poezdami. Moskva, Gos.transp.zhel-dor.izd-vo, 1957. 41 p. (MLRA 10:6)

(Railroads--Freight)

BIDAROV, Gavriil Vladimirovich; POKAVKIN, Vladimir Alekseyevich; REZNIKOV, Konstantin Ignat'yevich; PREDE, V.Yu., red.; BOBROVA, Ye.N., tekhn.red.

[Advanced practices in train routing; practices of the Shakhty Section of the Northern Caucasus] Peredovoi opyt marshrutizatsii perevozok; iz opyta Shakhtinskogo otdeleniia Severo-Kavkazskoi dorogi. Moskva, Gos.transp.zhel-dor.izd-vo, 1959. 33 p. (MIRA 13:1)
(Caucasus, Northern--Railroads--Management)

POKAVKIN, V.A., kand.tekhn.nauk (g.Rostov-na-Donu)

Advantages of routings in groups. Zhel. dor. transp. 43 no.7:41-43 Jl '61. (MIRA 14:7)

(Railroads—Making up trains)

DODONOV, Ya.Ya.; BORZOVA, L.D.; KOLOSOVA, V.S.; POKAYEVSKAYA, V.S.

Using manganese dioxide for the removal of hydrogen sulfide with a consecutive recovery of sulfur. Uch.zap. SGU 75:22-25 '62. (MIRA 17:3)

DODONOV, Ya. Ya.; BORZOVA, L.D.; KOLOSOVA, V.S.; POKAYEVSKAYA, V.S.

Pyrolysis of oil shale tar under pressure in the gasification of the Volga Region oil shales. Ispol'. tverd. topl., ser. maz. i gaza no. 5:238-246 '64 (MIRA 19:2)

DODONOV, Ya.Ya.; BORZOVA, L.D.; POKAYEVSKAYA, V.S.

Synthesis of a creolin-type preparation from Volga shale oils and its use in veterinary medicine. Uch.zap. SGU 75:20-22 '62. (MIRA 17:3)

POKAZANOV, A.Kh., inzhener.

Problems of organizing rhythmic work in locomotive repair shops.
Sbor.trud.Akad.zhel.transp.no.4:177-194 '56. (MLRA 10:2)
(Locomotives--Repairs)

POKAZANOV, A.Kh., inzhener (g. Sverdlovsk).

Shortcomings in the water heater mixer on FD locomotives. (MLRA 10:7)
Zhel.dor.transp. 39 no.6:76 Je '57.
(Locomotives)

POKAZANOV, A.Kh., dotsent (Sverdlovsk)

Introduce continuous operation planning in repair plants.
Zhel. dor. transp. 47 no.5:73-75 My '65. (MIRA 18:6)

POKAZAN'YEV, Aleksandr Arkad'yevich, zhurnalist; BOROZDIN, Ye.A., retsenzent; KHLEBNIKOV, P.I., retsenzent; BAKHMUTOVA, V., red.

[The city where I live] Gorod, v kotorom ia zhivu. Sverdlovsk, Sverdlovskoe knizhnoe izd-vo, 1963. 71 p. (MIRA 17:6)

1. Plavil'shchik Sredne-Ural'skogo medeplavil'nogo zavoda, gorod Revda (for Pokazan'yev). 2. Sekretar' partiynogo komiteta Sredne-Ural'skogo medeplavil'nogo zavoda, gorod Revda (for Khlebnikov).

GORLANOV, M.G., prepodavat.; POKAZAN'YEV, Aleksandr; ADAMOV, V.V., kand. ist. nauk, retsenzent; KULAGINA, G.A., kand. ist.nauk, retsenzent; BOROZDIN, Ye.A., red.; ZAVAROV, S.I., red.; POPOV, N.Ye., red.; ROGOZHKIN, V.N., red.; SILENSKIKH, T.N., red.; TARIKO, A.N., red.; KOLOSNITSYN, V., redaktor; MAKSIMOVA, E., tekhn. red.

[Revda stories; from the history of the Revda Hardware Manufacturing and Metallurgical Plant]Revdinskie vyli; iz istorii Revdinskogo metiznometallurgicheskogo zavoda. Sverdlovsk, Sverdlovskoe knizhnoe izd-vo, 1960. 154 p. (MIRA 15:8)

1. Sekretar' Revdinskogo gorodskogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza (for Silenskikh).
(Revda--Metallurgical plants)

POKAZAN'YEV, Aleksandr Arkad'yevich; POPOV, A.D., red.; PRIMAKOV, Ye.M., red.; NOVGORODOV, A.T., st. inzh., red.; SHAN'SHUROV, M.I., red.; GETLING, Yu., red.

['Law of the sea"; a documentary tale] "Morskoi zakon"; dokumental'naia povest'. Sverdlovsk, Sredne-Ural'skoe knizhnoe izd-vo, 1964. 56 p. (MIRA 18:3)

1. Sekretar' partiynogo komiteta Sredne-Ural'skogo medeplavil'nogo zavoda, Revda (for Popov). 2. Nachal'nik otdela truda i zarabotnoy platy Sredne-Ural'skogo medeplavil'nogo zavoda, Revda (for Shan'shurov).

L 40695-65 EPF(c)/EWT(l)/EWT(m)/EWP(b)/EWP(t) Pr-4 IJP(c) JD
ACCESSION NR: AP5006022 S/0141/64/007/006/1106/1110

19
18
B

AUTHOR: Skrotskiy, G. V; Pokazan'yev, V. G.

TITLE: Energy spectrum of the 2^3S_1 state of He^3 in an arbitrary magnetic field 21

SOURCE: IVUZ. Radiofizika, v. 7, no. 6, 1964, 1106-1110

TOPIC TAGS: helium, energy spectrum, metastable state, transition frequency, Zeeman splitting

ABSTRACT: To facilitate the study of the atomic structure and spectrum of He^3 and He^4 atoms by the method of optical orientation, the authors investigate the energy spectrum of the metastable ground state of He^3. The energy of the magnetic sublevels of the 2^3S_1 state of the He^3 atom in an arbitrary magnetic field are first calculated by determining the roots of the secular equation of the corresponding Hamiltonian. The results are shown to agree with the expressions obtained by N. F. Ramsey (Molecular Beams, [Russ. Transl.] IL, M. 1960). The frequencies of the allowed transitions between neighboring Zeeman sublevels are determined and it is shown that the frequencies of the transitions between the sublevels of the

Card 1/2

L 40695-65

ACCESSION NR: AP5006022

2^3S_1 ground state with magnetic moment F = 3/2 and 1/2 in a magnetic field on the order of 1 Oe lie approximately in the regions 1.9 and 3.8 Mcs, respectively. The same equations can be used to determine the intensity of a weak magnetic field from the measured transition frequency. It is shown that four resonant lines should be observed in a weak magnetic field, and the expressions for their frequencies are given. A simple expression convenient for an experimental determination of the hyperfine splitting constant, is also derived. Orig. art. has: 24 formulas.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: 03Feb64 ENCL: 00 SUB CODE: NP, OP

NR REF SOV: 001 OTHER: 002

Card 2/2 mfb

ACC NR: AP7000534 SOURCE CODE: UR/0386/66/004/010/0393/0396

36

AUTHOR: Novikov, L. N.; Pokazan'yev, V. G.

ORG: Ural Polytechnic Institute im. S. M. Kirov (Ural'skiy politekhnicheskiy institut)

TITLE: Parametric resonance in an effective field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 10, 1966, 393-396

TOPIC TAGS: parametric resonance, magnetic resonance, spin resonance, magnetization, dipole interaction

ABSTRACT: The authors report observation of parametric resonance in a spin system acted upon by an effective magnetic field $H_e = [(H_0 - \omega/\gamma)^2 + H_1^2]^{1/2}$ (H_0 = constant field, H_1 = rf field, ω = frequency, γ = gyromagnetic ratio). The measurements were aimed at checking on the theoretical conclusions that can be drawn from the Bloch equations regarding the transverse and longitudinal magnetization components. The experiment was performed on optically oriented Cs^{133} vapor at room temperature, using an experimental setup similar to that described earlier (B. Cagnac, Theses, l'Universite de Paris, 1960). The condition $\omega - \gamma H_0 = 0$ was satisfied. The field amplitude $H_1(t)$ was modulated by an audio-generator with continuously variable frequency. The resonance signal was obtained from the change in the depth of modulation of the intensity of light passing parallel to H_0 through the cell. Resonances were observed

Card 1/2

L 10946-67

ACC NR: AP7000534 O

at 960, 480, and 320 Hz, corresponding to $\omega_e/2\pi$, $\omega_e/4\pi$, and $\omega_e/6\pi$ at the given amplitude of the rf field. It is shown that the observed resonances are characterized by a very small line width, approximately 60 Hz, which typical of parametric resonance in which there is no saturation. Orig. art. has: 2 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 04Aug66/ ORIG REF: 001/ OTH REF: 002

Card 2/2 bjp

L 38116-65 EWT(l)/EWT(m)/EPF(c)/T/EWP(t)/EEC(b)-2/EWP(b) Pq-4/Pr-4/Pi-4
IJP(c) JD

ACCESSION NR: AP5006023 S/0141/64/007/006/1111/1121

AUTHOR: Skrotskiy, G. V.; Pokazan'yev, V. G.

TITLE: Contribution to the theory of optical orientation in He^3

SOURCE: IVUZ. Radiofizika, v. 7, no. 6, 1964, 1111-1121

TOPIC TAGS: helium, optical orientation, level transition, resonant frequency, magnetization intensity, oriented atom

ABSTRACT: This is a companion to a paper by the same authors in the same source (Izv. vyssh. uch. zav. - Radiofizika v. 7, 1106, 1964; Accession AP5006022), and is devoted to a discussion of some features of optical orientation of metastable atoms of He^3 in the 2^3S_1 state. The helium is situated in an arbitrary magnetic field. The relative probabilities of transitions induced by light of resonant frequency between the 2^3S_1 and $2^3P_{0,1,2}$ levels of orthohelium are determined by calculating the signal and magnetization of the optically oriented helium atoms for both polarized and unpolarized light propagating along the direction of the magnetizing field. It is shown that in the case of the $2^3S_1 - 2^3P_0$

Card 1/2

transitions the magnetization and the signal are larger than the values obtained for the other two transitions. Although the analysis is limited to light propagating along the field, the effect of light perpendicular to the field can be analyzed similarly and in some cases such light can produce more effective orientation of the atoms than the longitudinal light. The feasibility of a sensitive helium magnetometer based on the results of the article is briefly discussed. Orig. art. has: 28 formulas and 4 tables.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: 03Feb64 ENCL: 00 SUB CODE: GP

NR REF SOV: 002 OTHER: 005

L 63104-65 EWT(1) IJP(c)

ACCESSION NR: AP5019229 UR/0056/65/049/001/0163/0169

AUTHOR: Pokazan'yev, V. G.; Skrotskiy, G. V.

TITLE: Radiooptic resonance of atoms in strong magnetic fields

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 163-169

TOPIC TAGS: radiooptic resonance, fluorescence intensity, double resonance, cadmium atom, hyperfine structure, magnetic field, rf field

ABSTRACT: An expression is derived for the intensity of the fluorescence produced when microwave and radio-frequency fields are applied to a system of excited atoms in a state of radiooptic resonance in a strong magnetic field. The time evolution of the system is analyzed with the interaction between the atom and the radiation field taken into account in the Hamiltonian of the system with first-order perturbation-theory accuracy. The analysis shows that the fluorescence intensity changes appreciably when the nuclear resonance frequency is approached. The results are compared with experimental data on gaseous cadmium and it is shown that radiooptic resonance can be used to investigate experimentally the hyperfine structure of atoms. Orig. art. has: 1 figure and 32 formulas. [02]

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

Card 1/2

L 63104-65

ACCESSION NR: AP5019229 O

[illegible] Technical Institute)

SUBMITTED: 11Nov64 ENCL: 00 SUB CODE: OP

NO REF SOV: 000 OTHER: 008 ATD PRESS: 4074

Card 2/2

POKAZEYEV, V.I.

Riemann-Carleman's problem for a class of generalized analytic functions. Izv. AN Kazakh. SSR. Ser. fiz.-mat. nauk 3 no.1:72-81 Ja-Ap '65. (MIRA 18:5)

POKAZEYEV, V.I.

A representation of generalized analytic automorphic functions. Dokl. AN SSSR 155 no. 3:528-531 Mr '64. (MIRA 17:5)

1. Predstavleno akademikom I.N.Vekua.

POKAZEYEV, V.I.

Carleman's boundary value problem for a fundamental polygon. Uch. zap. Kaz. un. 123 no.9:40-57 '63.

Reimann problem for a class of analytic functions defined on a fundamental polygon. Ibid.:58-70

Hilbert's boundary value problem on a cut Riemann surface with an edge. Ibid.:71-85

(MIRA 17:11)

POKAZEYEV, Yu., starshiy konstruktor

Guard rails of new design. Rech.transp. 20 no.6:35 Je '61.
(MIRA 14:6)

1. Vladimirskiy sudoremontnyy zavod.
(Freighters)

ALEKSEYEV, N.I.; [illegible], L.I.

Determination of the water content of tributyl phosphate, kerosine, and kerosine solutions of tributyl phosphates. Zav. lab. 30 no.5:533-536 '64. (MIRA 17:5)