"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZINS, R. YE.

Paper - Testing

Determining fiber length of a rapid method. Bum.prom. 28, No. 4, 1953.

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

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZIN'SH, R.E. [Reizinš, R.E.], inzh.; KALNIN'SH, L.R. [Kalniņš, L.R.], inzh.

Effect of fractional beating on the quality of woodpulp. Bum.prom. 34 no.3:16-18 Mr '59. (MIRA 12:4)
(Woodpulp)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZIN'SH, R.E.

The capillarity phenomena in writing. Bum.prom 31 no.10:9-11 O'56. (MLRA 10:1)

1. Inshener-tekhnolog bumazhnoy fabriki "Ligatne."
(Capillarity) (Paper)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

YAKOBSON,O.A.; REYZIN'SH,R.E.

The use of rulers instead of recording rolls. Bum.prom.30 no.7:22-23 Jl'55. (MLRA 8:10)

1. Bumazhnaya fabrika "Ligatne"
(Papermaking machinery)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZINSH R.E.

STRAZDIS, D.E.; REYZIN'SH, R.E.; YAKOBSON, O.Ya.

Continuous pulp beating with rollers. Bum.prom. 29 no.10:15-16 O '54. (MLRA 7:11)

1. Bumazhnaya fabrika "Ligatne"
(Papermaking machinery)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZIS, S.B., inzh.; NARODITSKIY, L.B., inzh.

Remote control of the assembly-line and transportation systems at reinforced concrete products plants. Bet. i zhel.-bet. 8 no.7:324-326 Jl '62. (MIRA 15:7)
(Remote control) (Precast concrete)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

POVOLOTSKIY, V.S., tekhnik-elektrik; REYZLIN, A.S., inzh.-elektrofizik

Relay for protecting d.c. machinery from sparking under the collector brushes. Gor.zhur. no.5:73 My '62. (MIRA 16:1)

1. Achisayskiy polimetallicheskiy kombinat.
(Electric relays)
(Electric machines—Direct current)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZLIN, A.S.

USSR.

62
1

621.385.3 : 621.385.833

3844. On electron-optical action of grid systems. A. M. STRASHKEVICH AND A. S. REIZLIN. *Radiotekhnika*, 10, *No.* 2, 66–71 (1955) In Russian.

The electron-optical action of the triode is examined. It is of special interest in the design and construction of electron beam instruments. It is shown that to start from one grid cell only is basically incorrect. The formula usually applied for potential distribution in planar triode is improved. The position of focus as a function of the electrical and geometrical parameters of the system is discussed. M. W. MAKOWSKI

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

POVOLOTSKIY, V.S.; REYZLIN, A.S.

Automatic current regulator for controlling the electrode of an arc furnace. Gor. zhur. no.6:75-76 Je '62. (MIRA 15:11)

1. Achisayskiy kombinat, g. Kentau.
(Electric furnaces) (Automatic control)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

STRASHKEVICH, A.M.; REYZLIN, A.S.

Electron optical effect of grid systems. Radiotekhnika 10 no.2:66-71 F '55. (MIRA 8:4)
(Electron tubes)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

USSR/Electronics - Vacuum Tubes

REYZLIN, A.S.

Card 1/1 Pub 90-7/9

Author : Strashkevich, A. M. and Reyzlin, A. S.

Title : Electron-optical action of grid systems

Periodical : Radiotekhnika, 10, 66-71, Feb 55

Abstract : The electron-optical action of a triode, which greatly influences the calculation and design of cathode-ray tubes, is investigated in this article. Special attention is given to the investigation of flat-electrode grid system, because of the recent tendencies toward the use of flat-electrode tubes, which have numerous advantages over the cylindrical type, particularly in the uniformity of electron field. The formula commonly used for estimating the potential gradient in the flat-electrode triode has been further refined. Relation of focus location to the electrical and geometrical parameters of the system is investigated.

Institution: - -

Submitted : April 16, 1954

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZIN', R. E. Cand Tech Sci -- (diss) "Structural and mechanical properties of fibrous masses and their importance in fractionating grinding." Riga, 1958. 16 pp with graphs (Acad Sci Latvian SSR. Inst of Forestry Problems), 200 copies (KL, 52-58, 103)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZMAN, Anna Mineyevna; BAGROV, Feliks Il'ich; VUL'FSON, I.Z., red.; PRONINA, N.D., tekhn. red.

[Exercise therapy and massage in scoliosis] Lechebnaia gimnastika i massazh pri skoliozakh. Moskva, Medgiz, 1963. 139 p. (MIRA 16:12)

(SPINE--ABNORMITIES AND DEFORMITIES)
(EXERCISE THERAPY) (MASSAGE)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

ESTONIA / Chemical Technology. Chemical Products and Their Application. Instruments and Automation. H-3

Abs Jour: Ref Zhur-Khimiya, No 1, 1959, 1595.

Author : Polozova, L. G., Reyzman, R. P.
Inst : AN Est SSR.
Title : The Determination of Moisture in Building Materials by the Method of Gammascopy.

Orig Pub: Izv. AN Est SSR Ser. tekhn. i fiz. matem. n., 1957, 6, No 2, 122-130.

Abstract: The authors worked out and verified experimentally the technique for determining moisture in building materials by irradiating them with gamma rays. The magnitude of gamma rays which were absorbed by the material is the measurement of its moisture. Co^{60}, with an activity of 7 millicurie, was used as the source of irradiation. Other iso-

Card 1/2

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10(4); 21(5); 24(8) PHASE I BOOK EXPLOITATION SOV/2457

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke. 2d, Moscow, 1957

Teplotekhnika i gidrodinamika; trudy konferentsii, tom. 4 (Heat Engineering and Hydrodynamics; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, Vol 4) Moscow, Gosenergoizdat, 1958. 88 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR, and USSR. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii.

Eds.: M. A. Styrikovich (Resp. Ed.), G. Ye. Kholodovskiy, and M. S. Pomichev; Ed. of Publ. House: L. N. Sinel'nikova; Tech. Ed.: N. I. Borunov.

PURPOSE: This collection of articles is intended for scientists and laboratory workers concerned with the use of radioactive and stable isotopes.

COVERAGE: This collection of papers deals with the application of radioactive and stable isotopes as measuring tools in various types of scientific investigation. No personalities are mentioned. References are given after some of the articles.

2. Bartolomey, G.G., Ya.G. Vinokur, V.A. Kolokol'tsev, and V.I. Petukhov. Use of Gamma Rays for Studying the Process of Diffusion 9

3. Kutateladze, S.S., and V.N. Moskvicheva. Use of Gammaradioscopy for Studying the Hydrodynamics of a Multifluid System 12

4. Poletaykin, P.G., and N.A. Shapkin. Method of "Tagged" Atoms for Investigating Water and Steam Content in Surface Boiling of a Fluid 16

5. Rudryavtsev, V.S. Determining the Specific Surface Area of Quartz and Cement Powders by the Sorption Method With the Use of "Tagged" Atoms 20

6. Moskvin, V.M., and I.I. Kurbatova. Use of Radioactive Isotope S^{35} for Studying Sulfate Corrosion of Concrete 28

7. Tsytovich, N.A., V.I. Ferronskiy, and V.A. Lukin. Methods for Determining the Density and Moisture Content of Soils With the Aid of Radioactive Emmisions 33

8. Polozova, L.G., and R.P. Reyzman. Study of the Processes of Moisture Transfer in Building Materials by Means of Gammaradioscopy 38

9. Styrikovich, M.A., I.Kh. Khaybullin, and L. K. Khokhlov. Use of Radioactive Isotopes for Investigating the Solubility of Salts in Water Vapor at High Pressures 41

10. Sterman, L.S., A.Ya. Antonov, and A.V. Surnov. Investigation of the Characteristics of Vapor at a Pressure of 185 abs. atm. With the Aid of Radioactive Isotopes 46

11. Dubrovskiy, V.A. Use of Radioactive Isotopes for Observing the Motion of the Molten Glass Mass in Glass Furnace Tanks 52

12. Rachinskiy, V.V. Use of Radioactive Isotopes in Studying the Filtration of Fluids Through Porous Media 57

13. Leypunskaya, D.I., and A.Ya. Pruslin. Radioisotope Methods for Investigating Flow Processes of Fluids in a Porous Medium 62

14. Borts, M.A., L.S. Zarubin, V.S. Kaminskiy, and L.L. Korsak. Investigation of the Hydrodynamics of a Fluid in the Conical Rotor of a Settling Centrifuge With the Aid of Radioactive Isotopes 67

15. Volarovich, M.P., N.V. Churayev, and B.Ya. Minkov. Investigations of the Motion of Water in Peat Under Laboratory and Field Conditions With the Use of Radioactive Isotopes 72

16. Arkhangel'skiy, M.M. Use of Radioactive Isotopes for Investigating Suspensions of River Silt 78

17. Veynik, A.I., and A.S. Shubin. Use of Radioactive Isotopes for Investigating the Mechanism of the Drying Process 85

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

SOV/23-58-4-2/13

AUTHORS: Reyzman, R.P., Candidate of Technical Sciences, and Lepp, A.A.

TITLE: The Calculation of Bent Reinforced Concrete Beams Made of Local Materials (O raschëte izgibayemykh zhelezobetonnykh balok, izgotovlennykh iz mestnykh materialov)

PERIODICAL: Izvestiya Akademii nauk Estonskoy SSR, 1958, Nr 4, pp 273-282 (USSR)

ABSTRACT: The Institute of Construction and Building Materials of the Academy of Sciences, Estonian SSR, and the Opytnyy zavod Upravleniya promyshlennosti stroitel'nykh materialov SNKh ESSR (Experimental Plant of the Administration of Building Material Industry, SNKh ESSR) developed a method to manufacture reinforced concrete beams from local materials, (such as heavy and porous concrete from lime-sand and shale ashes), the cross section being 15 x 25 cm and the effective span 280 cm.

Card 1/4

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SOV/23-58-4-2/13

The Calculation of Bent Reinforced Concrete Beams Made of Local Materials

However, the problem of calculating such constructions according to limit under continuous loads, and the protection of the fittings from corrosion were not solved. The article contains a summary of the result of tests made with these beams. It is possible to calculate the bending elements according to the technical norms (N i TU - 123-55), applying for the calculation of the breaking load of concrete with a pressure strength of less than 50/sq cm, a coefficient of 0.7. For concrete with a pressure strength of 50 - 100 kg/sq cm, a coefficient of 0.85 is used. The coefficient Θ indicating the increase of bending under a continuous load is 1, for the autoclave silicate (lime-sand monoliths), 3-4 for foam silicate (the porous lime-sand monoliths), and 5 for the steamed-shale ashes concrete. Beams made of the latter concrete showed **inadmissibly**

Card 2/4

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

SOV/23-58-4-2/13

The Calculation of Bent Reinforced Concrete Beams Made of Local Materials

large plastic deformations. The authors express their gratitude to Doctor of Technical Sciences Professor Kh. Laul' for his cooperation in preparing this article. There are 6 Soviet references, 4 tables, 2 sets of diagrams and 1 graph.

ASSOCIATION: Institut stroitel'stva i stroitel'nykh materialov Akademii nauk Estonskoy SSR (Institute of Construction and Building Materials, Academy of Sciences, Estonian SSR)

Card 3/4

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

SOV/23-58-4-2/13

The Calculation of Bent Reinforced Concrete Beams Made of Local Materials

SUBMITTED: July 9, 1958

NOTE: Russian transliteration of names, titles and associations are used throughout this abstract.

Card 4/4

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

23-58-1-2/10

AUTHOR: Reyzman, R.P., Candidate of Technical Sciences

TITLE: Some Peculiarities of the Calculation of Cellular Concrete Constructions (Nekotoryye osobennosti raschëta konstruktsiy iz yacheistykh betonov)

PERIODICAL: Izvestiya Akademii nauk Estonskoy SSR, Seriya tekhnicheskikh i fiziko-matematicheskikh nauk, 1958, Nr 1, pp 7-18 (USSR)

ABSTRACT: In 1956 - 1957, the author conducted research at the Institute of Building and Building Materials of the AS ESSR on the computation of constructions from cellular concrete. In the present article deviations from normal strength and volumetric weight in foamy silicalcite, foamy shale-ash concrete, Portland cement concrete, etc., are analyzed. The homogeneity coefficient of firmness of cellular concrete is established at 0.45 and the homogeneity coefficient of its volumetric weight is suggested as 1.20. The second part of the article deals with a method of conducting thermotechnical calculations of cellular concrete constructions. This method takes into account the inevitable dispersion of the materials' heat resistance capacity, the influence of mois-

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23-58-1-2/10

Some Peculiarities of the Calculation of Cellular Concrete Constructions

ture and the actual deviations of the construction element dimensions from the projected values.
There are 2 diagrams and 4 tables, and 10 Soviet references.

ASSOCIATION: Institut stroitel'stva i stroitel'nykh materialov Akademii nauk Estonskoy SSR (Institute of Building and Building Materials of the Estonian SSR Academy of Sciences)

SUBMITTED: July 4, 1957

1. Concrete—Construction—Mathematical analysis

Card 2/2

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZMAN, R.P., kandidat tekhnicheskikh nauk.

Wear of walls in establishments with a high degree of dampness in the city of Tallinn. Eesti NSV Tead.Akad.Toim. 1 no.3:81-83 '52. (MLRA 6:12)

1. Institut stroitel'stva i arkhitektury Akademii nauk Estonskoy SSR. (Tallinn--Walls) (Walls--Tallinn)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZMAN, R.P., kand. tekhn. nauk, dotsent

Heat protecting properties of enclosing structures of cellular concrete. Uch. zap. Penz. inzh.-stroi. inst. no.2:107-112 '62. (MIRA 17:11)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

89-5-15/22

AUTHOR L.POLOZOVA, R. REYZMAN

TITLE The Determination of the Dampness of Building Material by Means of Gammascopy. (Opredeleniye vlazhnosti stroitel'nykh materialov posredstvom gammaskopii.- Russian).

PERIODICAL Atomnaia Energiia 1957, Vol 2, Nr 5, pp 476-477 (USSR).
Received: 6/1957 Reviewed: 7/1957

ABSTRACT The deficiencies of the methods used hitherto for the determination of dampness in building materials and buildings are mentioned in short. The authors developed a device for the determination of the dampness of building materials by transillumination of these materials with γ-rays of radioactive isotopes. The principle of this method widely used in metal defectoscopy is based upon the weakening of γ-rays in the occasion of their passage through matter. This weakening depends upon the density and upon the thickness of the layer of the material.
The following is assumed here: The toral weakening of the bundle of γ-quanta by the damp material is equal to the sum of the weakening caused by the dry material alone and by the moisture contained in the material alone. The correctness of this assumption was confirmed experimentally with an accuracy which is sufficient for practical purposes.

CARD 1/3

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89-5-15/22

The Determination of the Dampness of Building Material by Means of Gammascopy.

The scheme of the device used for gammascopy is shown in form of a drawing. A radioactive preparation with Co^{60}_{27} or Cs^{137}_{55} (activity 7 - 10 millicurie) is located in a lead cannon which has a narrow cylindrical channel. The γ- bundle emerging from the channel penetrates the piece of the material to be tested and then impinges onto a γ-counter fitted into a lead casing. The method for the determination of the dampness of materials is then reduced to the following: the counting velocity (number of pulses per time unit) is determined:

1.) for the natural background (withouth γ-source)
2.) for the passage of the γ-bundle:
   a) without the sample J_o to be examined, through the dry sample $-J_1$, through the damp sample $-J_2$.

The authors used the formula: $\ln(J_1/J_o) - \ln(J_2/J_o) = \mu$ (water). d(water). Here μ denotes the absorption coefficient and d - the thickness of the layer. The authors successfully applied this

CARD 2/3

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

89-5-15/22

The Determination of the Dampness of Building Material by Means of Gammascopy.

method for a year for the study of the migration processes of the dampness in building materials.

(1 Illustrations.)

ASSOCIATION: not given.
PRESENTED BY: -
SUBMITTED: -
AVAILABLE: Library of Congress.

CARD 3/3

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

ANASTASIADI, A.P.; BOROVSKIY, V.R.; VYBORNOV, G.V.; KOPELYANSKIY, G.D.; MAK, I.L.; PECHURO, S.S.; PIYEVSKIY, I.M.; RACHEVSKAYA, K.D.; REYZNER, Yu.B.; RYBAK, L.L.; TSEPELIOVICH, M.R.; SHUMAKHER, L.I.; YUSHKEVICH, M.O.[deceased]; AGEYENKO, Yu.G., nauchnyy red.; BELUGIN, A.T., nauchnyy red.; KOGAN, G.S., nauchnyy red.; KRZHEMINSKIY, S.A., nauchnyy red.; MITSKEVICH, M.I., nauchnyy red.; SILENOK, S.G., nauchnyy red.; TRILESNIK, Z.Ye., nauchnyy red.; ZUBAREV, K.A., glav. red.; TROFIMOV, I.P., red.; SKRAMTAYEV, B.G., glav. red.; BALAT'YEV, P.K., red.; KITAYEV, Ye.N., red.; KITAYGORODSKIY, I.I., red.; ROKHVARGER, Ye.L., red.; KHOLIN, I.I., red.; CHERKINSKAYA, R.L., red.; RODIONOVA, V.M., tekhn. red.

[Manual on the production of gypsum and gypsum products] Spravochnik po proizvodstvu gipsa i gipsovykh izdelii. [By] A.P. Anastasiadi i dr. Pod red. K.A.Zubareva. Moskva, Gosstroiizdat, 1963. 464 p. (MIRA 16:7)

(Gypsum) (Gypsum products)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

BONTSEV, V.M.; KAKHANOVICH, T.M.; KUBASSKIY, S.I.; LAPSHIN, P.V.; REYZNER, Yu.B., nauchnyy red.; TYUTYUNIK, M.S., red. izd-va; MOCHALINA, Z.S., tekhn. red.

[Automation of the grinding and calcination of gypsum] Opyt avtomatizatsii pomola i varki gipsa. Moskva, Gosstroiizdat, 1962. 59 p. (MIRA 15:7)

(Gypsum)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

BOMBCHINSKIY, V.P.; VTOROV, N.A.; DUNDUKOV, M.D.; YEGOROV, S.A., doktor tekhn.nauk, prof.; YERMOLOV, A.I.; ZAVORUYEV, V.P.; KALININ, V.V.; KACHEROVSKIY, N.V.; KUZNETSOVA, A.K.; KUZ'MIN, I.A., kand.tekhn. nauk; MEDVEDEV, V.M., kand.tekhn.nauk; MIKULOVICH, B.F.; MIKHAYLOV, V.V., kand.tekhn.nauk; PETRASHEN', R.N.; REYZIN, Ye.S.; SINYAVSKAYA, V.M.; KHAITURIN, A.D.; SHCHERBINA, I.N., kand.tekhn.nauk; SEVAST'YANOV, V.I., red.; KARAULOV, B.F., retsenzent; LOVETSKIY, Ye.S., retsenzent; MIKHAYLOV, A.V., doktor tekhn.nauk, retsenzent; NATANSON, A.V., retsenzent; SOKOL'SKIY, M.M., retsenzent; STANKEVICH, V.I., retsenzent; FREYGOFER, Ye.F., retsenzent; GOTMAN, T.P., red.; VORONIN, K.P., tekhn.red.

[Work of the All-Union Scientific Research Institute for the Study and Design of Hydraulic Structures] Nauchno-issledovatel'skie raboty Gidroproekta. Pod obshchei red. V.I.Sevast'ianova. Moskva, Gos.energ.izd-vo, 1961. 214 p. (MIRA 15:2)

1. Moscow. Vsesoyuznyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut Gidroproyekt imeni S.Ya.Zhuk. Nauchno-issledovatel'skiy sektor.

(Hydraulic engineering--Research)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 16324-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP4049156 S/0190/64/006/011/2046/2050

AUTHOR: Nosayev, G. A.; Reyzvikh, T. V.

B

TITLE: Styrene polymerization initiated by tert.-butyl peresters

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 11, 1964, 2046-2050

TOPIC TAGS: tert-butyl perester, styrene polymerization, chlorobenzoate, halogenated perester, polymerization initiator

ABSTRACT: The mechanism of the polymerization of styrene in the presence of tert-butyl peresters as initiators was studied by investigating the kinetics of polymerization and the increase in molecular weight of the polymer during the reaction. A styrene freed of hydroquinone, distilled twice in nitrogen with $n_D^{20} = 1.5467$; $d_4^{20} = 0.9060$, was polymerized at 90C in nitrogen in the presence of 1% perester based on the weight of monomer. Halide-containing peresters were used as initiators. The kinetic curve of the suspension polymerization of styrene in the presence of tert-butyl-per-n-chlorobenzoate, which was similar to the curve obtained with any other tertiary butyl perester, shows that the rate of styrene polymerization begins to increase at a conversion of about 50%. The molecular weight of the resulting polymer increases considerably when this degree of conversion is

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L 16324-65
ACCESSION NR: AP4049156

reached. Upon the almost complete conversion of the monomer, the molecular weight is doubled compared to that at degrees of conversion lower than 50%. The variation in molecular weight was studied by determining the chlorine bound to the polymer chain as chlorobenzoate groups (as a result of perester decomposition). The plotted data show that the chlorine content of the resulting purified polymer decreases during the entire process of polymerization, but not in proportion to the increase in molecular weight. The Cl content decreases to 0.5 at 40% conversion and to 0.3 in the final stage of polymerization with respect to the initial mixture. The data show that the effectiveness of initiation (amount of combined benzoate radicals) decreases with an increasing degree of conversion. The peculiarities of styrene polymerization in the presence of tert-butyl peresters can be explained by the special nature and behavior of the forming radicals, especially at a high degree of conversion. The reaction schemes are discussed. "The authors thank V. A. Balandina, A. P. Nikolayeva and G. F. Komarova for carrying out the analysis of the polymer for chlorine, and O. P. Samarina for synthesizing the peroxides." Orig. art. has: 1 table, 3 figures and 7 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy institut polimerizatsionny*kh plastmass (Scientific Research Institute for Polymeric Plastics)

Card 2/3

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 16324-65

ACCESSION NR: AP4049156

SUBMITTED: 09Dec63 ENCL: 00 SUB CODE: OC

NO REF SOV: 004 OTHER: 004

Card 3/3

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 51522-65 EWT(m)/EPF(c)/T/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5015301 UR/0286/65/000/009/0069/0069
678.744.32.7-13

26
B

AUTHOR: Nosayev, G. A.; Romantsova, O. N.; Reyzvikh, T. V.; Kuz'mina, S. V.

TITLE: A method for producing polymeric peroxides. Class 39, No. 170673

15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 69

TOPIC TAGS: polymer, peroxide, polymerization, unsaturated compound

ABSTRACT: This Author's Certificate introduces a method for producing polymeric peroxides. Unsaturated *tert*-butyl peresters are polymerized in the presence of peroxides with a low dissociation temperature or in the presence of heavy metal salts to produce specific homopolymeric peroxides.

ASSOCIATION: none

SUBMITTED: 18Aug62 ENCL: 00 SUB CODE: GC

NO REF SOV: 000 OTHER: 000

Card 1/1

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 51521-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5015302 UR/0286/65/000/009/0069/0069

678.744.32.7-13

24

B

AUTHOR: Nosayev, G. A.; Romantsova, O. N.; Reyzvikh, T. V.; Kuz'mina, S. V.

15

TITLE: A method for producing polymers of vinyl compounds. Class 39, No. 170674

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 69

TOPIC TAGS: polymer, vinyl compound, peroxide, unsaturated compound

ABSTRACT: This Author's Certificate introduces a method for producing polymers of vinyl compounds by polymerization of a vinyl compound in the presence of a peroxide initiator. A monomeric or polymeric perester of an unsaturated acid is used as the peroxide initiator in order to provide a wider selection of radical initiators.

ASSOCIATION: none

SUBMITTED: 18Aug62 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 000 OTHER: 000

Card 1/1

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 51517-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

ACCESSION NR: AP5015303

UR/0286/65/000/009/0069/0069
678.744,32.7-13

AUTHOR: Nosayev, G. A.; Romantsev, O. N.; Reyzvikh, T. V.; Kuz'mina, S. V. 32 B

TITLE: A method for producing graft copolymers of vinyl compounds. Class 39, No. 170675

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 69

TOPIC TAGS: graft copolymer, polymerization, vinyl compound, peroxide

ABSTRACT: This Author's Certificate introduces a method for producing graft copolymers of vinyl compounds. In order to provide a wider selection of copolymer materials, a vinyl compound is copolymerized with a monomeric or polymeric perester and a second vinyl compound is then grafted to the resulting peroxide copolymer at the location of the peroxide groups.

ASSOCIATION: none

SUBMITTED: 18Aug62 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 000 OTHER: 000

Card 1/1

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REYZVIKH, V.

Water balance of the Sarez Lake. Izv.Uzb.fil.Geog.ob-va 6:158-165 '62.

(Sarez, Lake--Runoff) (MIRA 15:8)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Deceased *

REZ, F.

Influence of new standards of unedged, broad-leaved sawed wood on economical manufacturing. p. 31.

SZABVANYUGYI KOZLEMENYEK. (Magyar Szabvanyugyi Hivatal) Budapest, Hungary, Vol. 11, no. 2, Feb. 1959.

* obituary - FERENC REZ Szabvany Kozl 15 No. 3, p. 69, 1963

Monthly List of East European Accessions (EEAI), LC, Vol. 8, No. 8, August 1959.
Uncla.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, Evzen; BERAN, Pavel

Automatic submerged arc welding of chambers. Zvaranie 13 no.11:332-335 N '64.

1. Prvni brnenska strojirna, Zavody Klementa Gottwalda, Brno.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, I. S.

Nonsoftening plastics. A. A. Berlin and I. S. Rez. U.S.S.R. 60,821, Aug. 31, 1946. Plastics made by hot-pressing lignin satd. with cyanamide, dicyanodiamide, thiourea, melamine, or a combination of these are heated at around 150° for 10 min. per mm. thickness. Plastics and lignin treated thus acquire improved strength, hardness, and water-resistance. Articles molded from such products retain their shape up to 200–50°. M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

S/564/57/000/000/021/029
D258/D307

AUTHORS: Rez, I. S., and Tsinobar, L. I.

TITLE: The growing of single crystals of sorbitol hexaacetate (I)

SOURCE: Rost kristallov; doklady na Pervom soveshchanii po rostu kristallov, 1956 g. Moscow, Izd-vo AN SSSR, 1957, 287-293

TEXT: Sorbitol was acetylated with boiling acetic anhydride over 3 - 5 hrs at 135°C, excess acetic anhydride was distilled off in vacuum, the product was dissolved in hot 20% HOAc, filtered, crystallized from 40% EtOH, decolorized with 2% activated charcoal, and recrystallized. Presence of piezoelectric properties and goniometric measurements of four 0.5 - 1 mm crystals showed that the crystals below to the dihedral axial class of the monoclinic syngony, with the monoclinic angle $\beta \sim 96^{\circ}$. X-ray analysis showed lattice parameters to be:

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

a = 12.7_2 Å; b = 8.4_3 Å; c = 10.1_5 Å, with ~2 molecules in the elementary cell. The symmetry group is $P2_1$. Solubilities of I in 96% EtOH range from 17.4 g/l at 27.0°C to 502 g/l at 58.0°C; in 40% EtOH from 1.5 g/l at 23°C to 249 g/l at 61°C; in water from 1.3 g/l at 33°C to 27.0 g/l at 82°C. Yields of crystallization are sensitive to admixtures (acids or alkalis). Monocrystals were grown from solutions in 96% EtOH, saturated at 45 - 50°C in all-glass apparatus in a thermostat accurate to ± 0.10 - 0.15°C. Difficulties were experienced with losses of solvent owing to its volatility. Use of sealed wide tubes with a narrow bottom outlet for the removal of parasitic crystals allowed the authors to grow up to 7 g single crystals. The method is industrially feasible, but the crystals are highly sensitive to any disturbance of temperature or other conditions during growth. There are 1 figure and 6 tables.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, I. S., Cand Chem Sci -- (diss) "Problem of crystallochemical bases of the search for effective piezoelectrics." Moscow, 1960. 14 pp; (Inst of Crystallography of the Academy of Sciences USSR); 150 copies; price not given; list of author's work at end of text; (KL, 28-60, 158)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, I.S.

USSR/Electricity - Dielectrics G-2

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1288

Author : Rez, I.S.

Inst : Central Scienfitid Research Laboratory for Piezotechnics MRTT.

Title : Equipment for Research in the Field of Ferroelectrics Using Small Specimens (Preliminary Report).

Orig Pub : Izv. AN SSSR, ser. fiz., 1957, 21, No 3, 466-472

Abstract : On the basis of "piezochemical" considerations, the author proposes a program of preliminary investigation of the potential of ferroelectrics and piezoelectrics, using small amounts of substance, not necessarily in the form of well formed crystals. New schemes of a piezo tester PT-2 for the determination of the piezoelectric activities is described, along with a thermo-dielecograph TDG-1 for

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Rez, I.S.

48-3-26/26

SUBJECT: USSR/Luminescence

AUTHOR: Rez I.S.

TITLE: On Apparatus Set for Searching Investigations in the field of Ferroelectrics on Small Samples (Ob apparaturnom komplekse dlya poiskovykh issledovaniy v oblasti segnetoelektrikov na malykh obraztsakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya fizicheskaya, 1957, Vol 21, #3, pp 466-472 (USSR)

ABSTRACT: In order to increase the number of the known materials possessing piezoelectric and ferroelectric properties, the author proposes a program for investigating the substances selected on the basis of "piezochemical" considerations and describes some devices for carrying out investigations concerning the first two points of his program, namely:

1. Detection of piezoelectric activity in the powders or grains of a tested substance, and,

2. In the case of a positive result, an investigation of temperature-dependence of dielectric permittivity and

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

48-3-26/26

TITLE: On Apparatus Set for Searching Investigations in the Field of Ferroelectrics on Small Samples (Ob apparaturnom komplekse dlya poiskovykh issledovaniy v oblasti segnetoelektrikov na malykh obraztsakh)

resistance in standard tablets pressed out of a tested substance. Special devices were constructed for these investigations.

The Central Scientific Research Laboratory of Semiconductors (TsNILP), of the Ministry of Radio-Technical Industry (MRTP), developed a piezotester of the PT-2 type, which consists of the following parts: a generator of sound frequency of the ZG-2A type, a piezotester proper, an amplifier, an electronic potentiometer of the EPP-09 type, an electronic oscillograph of the EO-6M type and a measuring amplifier of the Sh-1 type.

This device makes it possible to evaluate the magnitude of piezoactivity of the samples tested by 3 methods:

a. By examination the picture on the oscillograph,

b. By reading the data on the indicator of the measuring amplifier, and

c. By reading the data on the indicator or recording of the EPP-09 device.

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APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

48-3-26/26

TITLE: On Apparatus Set for Searching Investigations in the Field of Ferroelectrics on Small Samples (Ob apparaturnom komplekse dlya poiskovykh issledovaniy v oblasti segnetoelektrikov na malykh obraztsakh)

The automatic recording of the temperature run of dielectric permittivity was performed with a special apparatus, the so-called "Thermodielcograph" (possible meaning: a device for graphical presentation of temperature - dielectric constant dependence-translator).

The operational principle of this device is based on the single valued dependence of the capacitance resistance of a condenser, filled up with a dielectric to be tested, on dielectric permittivity ε (under a condition of constant frequency).

The thermodielcograph of the TDG-1 type yields a voltage which either corresponds to the magnitude of ε of a sample under testing or varies continuously with the change of $\varepsilon = f(t)$. The device is an electronic amplifier with resistors assembled with two tubes of the 6S5 type. Its advantage is the continuous recording of the temperature course of dielectric permittivity on the tape of a potentiometer, which can be observed by the investigator without any additional operations.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

48-3-26-26

TITLE: On Apparatus Set for Searching Investigations in the Field of Ferroelectrics on Small Samples (Ob apparaturnom komplekse dlya poiskovykh issledovaniy v oblasti segnetoelektrikov na malykh obraztsakh)

The article contains 4 figures and 1 table. The bibliography lists 11 references, of which 6 are Slavic (Russian).

INSTITUTION: Central Scientific Research Laboratory of Piezotechnics of the Ministry of Radio-Technical Industry.

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 4/4

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

24(2) SOV/48-22-12-14/33

AUTHORS: Zheludev, I. S., Gladkiy, V. V., Rusakov, L. Z., Rez, I. S.

TITLE: On Non-Linear Properties of Single Crystals of $BaTiO_3$ With Additions of Pb and Single Crystals of Triglycine Sulfate in a Strong Electric Field (O nelineynykh svoystvakh monokristallov $BaTiO_3$ s dobavkami Pb i monokristallov triglitsinsul'fata v sil'nom elektricheskom pole)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1465-1468 (USSR)

ABSTRACT: The hysteresis interrelation between electric voltage and charge is characteristic of a piezoelectric condenser. Assuming that this interrelation is determined by the idealized loop shown in figure 1, a connection between various harmonics of charge, of voltage of the alternating and the constant field and the geometrical characteristics of the loop can be found in accordance with Mezon's method (Ref 1). The triglycine sulfate and $BaTiO_3$ single crystals investigated have shown a strong non-linearity (for triglycine sulfate $N \approx 80$, for $BaTiO_3$ $N \approx 30$)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

On Non-Linear Properties of Single Crystals of $BaTiO_3$ With Additions of Pb and Single Crystals of Triglycine Sulfate in a Strong Electric Field SOV/48-22-12-14/33

in the strong electric field ($E_m > E_k$) and high values of the loss angle $tg\delta$ (for triglycine sulfate $tg\delta_{max} = 3.8$ for $BaTiO_3$ $tg\delta_{min} = 1.2$). In triglycine sulfate single crystals a considerable divergence of the curves illustrating the dependence of the dielectric constant ε on the field tension (of both, the alternating and the constant field), which were plotted at an increase and decrease of the voltage, was observed. This divergence of ε curves indicates a good electric "memory" of triglycine sulfate. There are 6 figures and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut kristallografii Akademii nauk SSSR (Institute of Crystallography, Academy of Sciences, USSR) TsNILP Komiteta po radioelektronike Soveta Ministrov SSSR (TsNILP of the Committee of Radioelectronics of the Council of Ministers, USSR)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

24(3) SOV/48-22-12-16/33

AUTHOR: Rez, I. S.

TITLE: Some Results Obtained From the Search for New Piezoelectrics (Nekotoryye rezul'taty poiska novykh p'yezoelektrikov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1472-1475 (USSR)

ABSTRACT: The discovery of new piezoelectrics, the electro-physical and physico-chemical properties of which are investigated, and an efficient criterion for the search for new piezoelectrics are the scope of the present paper. The author determinated the genetic principle of the search. It is useful to search for new piezoelectrics under those classes of substances in which at least one type has a clearly marked piezoelectric effect. In this connection, special attention is to be devoted to the investigation of the effect caused by various kinds of type structure modifications, in the first place those which strengthen asymmetry, increase the dipolar moment of the molecule, exclude the anti-parallel packing of the structural dipoles, decrease compactness and increase the tension at the expense of the deformation of the valence angles and the lengths

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APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

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of the bonds. In this connection, the X-ray structural data available will be no more the starting-point of the search, and the number of substances suitable for the investigation is thus considerably increased. On choosing the preparations to be investigated as to their piezoelectric activity, individual central symmetric structures were deliberately chosen amongst others, in order to complete the picture and for the purpose of a control. The yield of piezoelectrics from the total number of the substances investigated was thereby reduced accordingly. In the years 1955-1957 a total of 676 substances, mostly powders, were investigated as to their piezoelectric activity by the TsNILP. The investigations were carried out on the earlier described PT-2 piezo-tester. The specification of 363 compounds with piezoelectric activity, as well as some methodical indications are to be found in reference 5. Generalized investigation results are summarized in tables 1 and 2. In conclusion the completed results obtained by the TsNILP from the search for new piezoelectrics were compared with the results obtained by the Koptsik group at the Moscow State University (Ref 9), by whom the preparations were successively examined without making any selection (Table 3). The shown relation of

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Some Results Obtained From the Search for New Piezoelectrics SOV/48-22-12-16/33

the yield of piezoelectrics can be considered as a confirmation of the genetic selection principle determined by the author. The latter thanks his collaborators A. S. Sonin, Ye. Ye. Tsepelevich-Volynets, A. A. Filimonov and L. V. Samsonova as well as L. Z. Rusakov and I. S. Zheludev for having given valuable advice. There are 3 tables and 9 references, 6 of which are Soviet.

ASSOCIATION: TsNILP Komiteta po radioelektronike Soveta Ministrov SSSR (TsNILP of the Committee on Radioelectronics of the Council of Ministers, USSR)

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APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

24(3)

AUTHORS: Rez, I. S., Smazhevskaya, Ye. G., Kachkacheva, M. M. SOV/48-22-12-28/33

TITLE: On the Problem of Piezoelectric Ceramics Production for High-Temperature Operations (K voprosu o poluchenii p'yezokeramiki dlya raboty pri povyshennykh temperaturakh)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1520-1523 (USSR)

ABSTRACT: In the present paper the following compounds were obtained and their properties investigated: solid solutions of $(Ba,Ca)TiO_3$, $(Ba,Pb)TiO_3$, $(Ba,Ca,Pb)TiO_3$, $Pb(Ti,Zr)O_3$, lead niobate and solid solutions on the basis of the latter. Since in publications there are no details on $PbNb_2O_6$, a piezoelectric with the highest Curie (Kyuri) temperature (570°) and its formation conditions, this reaction was subjected to a complex thermographic investigation in the GIEKI at Kh. S. Valeyev's laboratory. G. A. Smolenskiy and V. A. Isupov offered suggestions as to the selection of compositions for producing piezoelectric ceramics on the basis of $PbNb_2O_6$. The principal experimental results are given in the

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table. The analysis of the data obtained reveals that solid solutions on the basis of $PbNb_2O_6$ are the most appropriate compositions for electromechanical high-temperature transformers. Solid $PbZrO_3$-$PbTiO_3$-solutions come next to them; however, considerable technical complications are involved in the production. Solid $(Ba,Ca)TiO_3$ and $(Ba,Ca,Pb)TiO_3$ solutions can be used in a subpolarization up to 120-130°. Solid $(Ba,Pb)TiO_3$ solutions probably will not be suitable, unless the homogeneity of the material can be increased. Furthermore the low dielectric stability of these ceramics at polarization temperatures must be increased by means of a corresponding modification of the composition, i.e., by reduction of the conductivity loss that complicates the piezoelectric excitation of electromechanical transformers of this material. The authors express their gratitude to L. Z. Rusakov for valuable advice and to the cooperators of the TsNILP L. B. Germayze, A. P. Yermakova, A. V. Konstantinov, N. A. Podol'ner, V. A. Rovitskiy and A. A. Filimonov for helpful assistance.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

On the Problem of Piezoelectric Ceramics Production for High-Temperature Operations SOV/48-22-12-28/33

There are 6 figures, 1 table, and 5 references, 2 of which are Soviet.

ASSOCIATION: TsNILP Komiteta po radioelektronike Soveta Ministrov SSSR (TsNILP of the Committee for Radioelectronics of the Council of Ministers, USSR)

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APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, I. S.; VARFOLOMEYEVA, L. A.

Guanidine sulfatoaluminate hexahydrate (synthesis, growth of single crystals and some of their properties). Rost krist. 2:126-131 '59. (MIRA 13:8)

(Guanidine crystals)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

SOV/70-4-1-11/26

AUTHORS: Rez, I.S., Sonin, A.S., Tsepelevich, Ye.Ye. and Filimonov, A.A.

TITLE: Experimental Investigations in Finding New Piezoelectric Materials (Eksperimental'nyye issledovaniya po vyyavleniyu novykh p'yezoelektrikov)

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 1, pp 65-68 (USSR)

ABSTRACT: Lists are given of materials tested for piezoelectricity (with a piezoelectric tester, PT-2). The authors found: 39 inorganic and complex compounds showing marked piezoeffects; 43 inorganic and complex compounds with inappreciable piezoeffects; 90 organic compounds showing marked piezoeffects; 184 organic compounds showing inappreciable piezoeffects. There are 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: TsNILP

SUBMITTED: December 7, 1958

Card 1/1

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

SOV/70-4-5-15/36

AUTHORS: Gurevich, V. M., Zheludev, I. S., Rez, I. S.

TITLE: Some of the Electric Conductivity Characteristics of Guanidine Aluminum Sulfate Hexahydrate

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 5, pp 718-722 (USSR)

ABSTRACT: The authors describe the method and results of the resistivity measurements conducted by the use of direct current, applied to the single-crystal plates of guanidine aluminum sulfate hexahydrate, whose ferroelectricity has been known since 1955. The plates, 1 cm^2 and 1-2 mm thick, cut off transverse to the Z axis from different pyramids of growth of an artificial single crystal of the compound, were silvered sublimating thin Ag films under vacuum, dried, some polarized by an applied field above the coercive field, and the susceptibilities of both polarized and natural (nonpolarized) plates were measured by IIV-2 in dry air (above H_2SO_4). No

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dehydration occurred. The resistivity changes in the course of polarization at 3 different fields (a-curves), and the required time for the complete polarization at various fields, E, (b-curve), are illustrated in Fig. 1. The measurements at various temperatures disclosed anomalous (higher) resistivities at the moment of polarization at about 50° C except in the case of existence of a residual polarization. In the vicinity of 50° C the spontaneous polarization also takes place, an abrupt change of the piezoelectric effect and of the $\frac{\rho_1}{\rho_3}$ ratio see (Fig. 4). ρ_1 means resistivity at the moment of complete polarization of natural plates; ρ_3, the same of plates that have been polarized previously. It is still not known whether the temperature interval of anomalies is related to the temperature of growth, which in this case was 40°-60° C. There are 6 figures; and 4 references, 2 Soviet, 2 U.S., The U.S. references are A. N. Holden, et al., Phys. Rev., 98, 546 (1955),

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Some of the Electric Conductivity Characteristics of Guanidine Aluminum Sulfate Hexahydrate 75993 SOV/70-4-5-15/36

and 102, 962 (1956).

SUBMITTED: March 10, 1959

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Some of the Electric Conductivity Characteristics of Guanidine Aluminum Sulfate Hexahydrate

75993
SOV/70-4-5-15/36

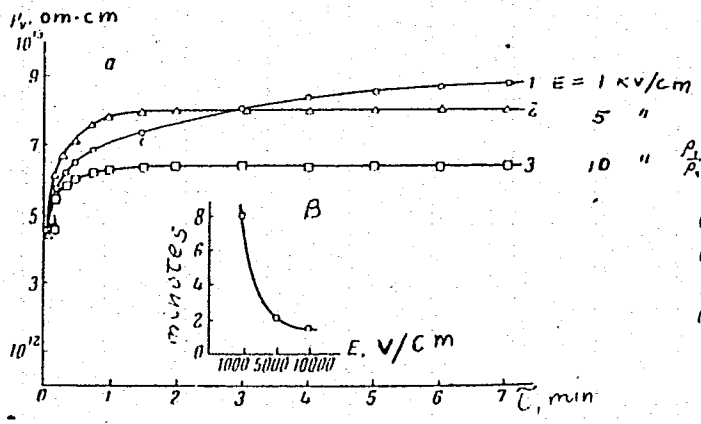

Fig. 1.

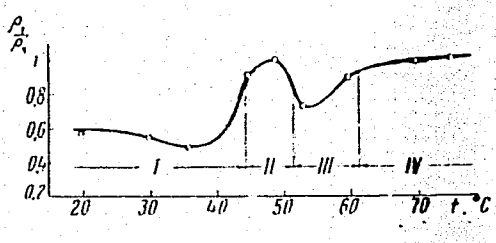

Fig. 4.

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PHASE I BOOK EXPLOITATION SOV/4379

Vsesoyuznaya konferentsiya po fizike dielektrikov. 2d, 1958

Fizika dielektrikov; trudy vtoroy vsesoyuznoy konferentsii (Physics of Dielectrics; Transactions of the 2d All-Union Conference on the Physics of Dielectrics) Moscow, Izd-vo AN SSSR, 1960. 532 p. Errata slip inserted. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Fizicheskiy institut imeni P.N. Lebedeva.

Ed. of Publishing House: Ye.L. Sterokadomskaya; Tech. Ed.: I.N. Dorokhina; Editorial Board: (Resp. Ed.) G.I. Skanavi, Doctor of Physics and Mathematics (Deceased), and K.V. Filippova, Candidate of Physics and Mathematics.

PURPOSE: This collection of reports is intended for scientists investigating the physics of dielectrics.

COVERAGE: The Second All-Union Conference on the Physics of Dielectrics held in Moscow at the Fizicheskiy institut imeni P.N. Lebedeva (Physics Institute imeni P.N. Lebedev) in November 1958 was attended by representatives of the principal scientific centers of the USSR and of several other countries. This collection contains most of the reports presented at the conference and summaries of the discussions which followed. The reports in this collection deal with dielectric properties, losses, and polarization, and with specific inductive capacitance of various crystals, chemical compounds, and ceramics. Photoelectrets, ferroelectric crystals, and various radiation and irradiation effects on dielectrics are investigated. The volume contains a list of other papers presented at the conference dealing with polarization, losses, and breakdowns of dielectrics, which were published in the journal Izvestiya AN SSSR, seriya fizicheskaya, Nos. 1 and 2, 1960. No personalities are mentioned. References accompany each report.

Smolenskiy, G.A., A.I. Agranovskaya, V.A. Isupov, and S.N. Popov. New Ferroelectric Crystals of Complex Composition [Institute of Semiconductors, AS USSR] 339

Koptsik, V.A. Geometric Model For the Description of Polymorphous Phase Transitions in Crystals [Physics Division, Moscow State University imeni M.V. Lomonosov] 347

Konstantinova, V.P., I.M. Sil'vestrova, and K.S. Aleksandrov. Domain Structure and Certain Physical Properties of Polarized Triglycine Sulfate Crystals [Institute of Crystallography, Academy of Sciences USSR, Moscow] 351

Sonin, A.S., and Zheludev, I.S. Some Crystallochemical Problems of Ferroelectric Crystals With a Hydrogen Bond [Institute of Crystallography, AS USSR, Moscow] 366

Verbitskaya, T.N., L.M. Aleksandrova, and L.S. Sinitsyna. Effect of Chromic Oxides on the Electrical Properties of Barium Titanate 372

Chernyy, B.K. Electrical Properties of the $BaTiO_3$ - "$CoZrO_3$" System [Dnepropetrovskiy Gosudarstvennyy universitet (Dnepropetrovsk State University)] 385

Zheludev, I.S., I.S. Rez, A.S. Sonin, V.V. Gladkiy, V.M. Gurevich, V.A. Meleshina, and A.A. Filimonov. Dielectric Properties of Guanidine-Aluminum-Sulfate-Hexahydrite (GASG) [Tsentr. n-i. laboratoriya p'yezotekhniki. (Central Scientific-Research Laboratory of Piezotechnology) Institute of Crystallography, AS USSR, Moscow] 393

Sinyakov, Ye.V., and O.A. Shugurov. Effect of Small Addition Agents WO_3 on the Electrical Properties of Polycrystal $BaTiO_3$ [Dnepropetrovsk State University] 404

Rez, I.S., and V.M. Gurevich. Problem of the Connection Between Electric Conductivity of Ferroelectric Crystals and Ferroelectricity [Central Scientific-Research Laboratory of Piezotechnology, Moscow] 410

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Rez, I. S.

81961
S/181/60/002/04/21/034
B002/B063

24.7700

AUTHORS: Gurevich, V. M., Rez, I. S.

TITLE: Transitional Processes of Conductivity in $BaTiO_3$ Ceramics at Constant Current

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp 673-678

TEXT: The resistivity of polycrystalline barium titanate through which a constant current passes was measured by means of an RFT tera-ohmmeter of the type 1001 and an Ф-57 (F-57) tera-ohmmeter. The authors measured the temperature dependence of σ (Fig. 1), the transitional processes occurring in volume- and surface conduction (Fig. 2), the field dependence of the transitional processes, (Fig. 3), and the transitional processes of conductivity in polarized and unpolarized barium titanate (Fig. 4). The transitional processes of conductivity have a ferroelectric nature. They may be used to study ferroelectric polarization, polarization energy, coercive fields, and to obtain new ferroelectric materials. The percentage of domains (13%) to which the occurrence of residual polarization in polarized material is ascribed, was calculated from the difference

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81961

Transitional Processes of Conductivity in $BaTiO_3$ Ceramics at Constant Current

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B002/B063

between the electrical conductivity of polarized and unpolarized barium titanate. An effect of the transverse electric field upon conductivity was observed. It has apparently a ferroelectric nature. The authors thank I. S. Zheludev and L. Z. Rusakov for their interest in this work. There are 4 figures and 4 references: 1 Soviet, 1 American, 1 German, and 1 Japanese.

SUBMITTED: October 7, 1958

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Z/508/60/000/000/016/018
E021/E120

AUTHORS: Rez I.S., Rusakov L.Z., and Stoykov G.N.

TITLE: Growth of piezoelectric single crystals in the USSR

SOURCE: III. Konference o monokrystalech. Prague, Výzkumný ústav pro minerály, 1960. 254-261

TEXT: Several methods of growing single crystals from solutions have been studied and used in the USSR. They are the method of decreasing the temperature of a saturated solution, the method of isometric growth with separation of a condensate, the method of isothermal growth with continuous circulation and constant temperature difference between the containers of the supersaturated solution and the growing crystals, and the method of hydrothermal synthesis with mass transfer by convection at high temperatures and pressures. Crystals of Seignette's salt are grown from a solution in KOH and NaOH in a ratio of 1:1 using seeds with a decrease in temperature from 46 to 27 °C. The cycle takes 22-23 days. Potassium tartrate is grown by a dynamic method in stainless steel apparatus. The cycle takes 43-45 days and the temperature decreases from 55 to 25 °C. Monammonium phosphate is

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also grown by a dynamic method with a cycle of 27-29 days and a decrease in temperature from 60 to 42 °C. The solution is prepared from pure $NH_4H_2PO_4$ without addition. Monammonium phosphate in blocks is grown from solutions with a pH of 5.6. The rate of growth of the crystal blocks is 2 - 2.5 mm per day. Ethylene diamine tartrate is grown under laboratory conditions from plate-shaped seeds. The rate of growth is 2.5 - 4 mm per day. Lithium sulphate is grown in the laboratory from rod-shaped seeds. Guanidine aluminium sulphate hexahydrate is grown from aqueous solutions isothermally at 40-50 °C. The solution is very sensitive to impurities. Sorbitol hexa-acetate is grown from solutions in alcohol with an addition of KOH. The solution is very sensitive to overheating. Many methods of growing piezoquartz have been studied. The method in use is a hydrothermal process with free convection in the solution obtained by a temperature gradient at high pressures. Plates are used as seeds and crystals weighing up to 2 kg have been obtained.
There are 1 figure and 1 table.
ASSOCIATION: TsNILP MRP, Moscow

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Rez, I. S.

81963
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B002/B063

24.7100

AUTHORS: Gurevich, V. M., Zheludev, I. S., Rez, I. S.

TITLE: The Problem of the Nature of Transitional Processes of Conductivity in Seignettoelectrics

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp. 691-696

TEXT: In a preceding paper (Ref. 1), the authors studied the transitional processes of conductivity in ceramic barium titanate and showed the interrelation between them and seignettoelectric polarization. In the present paper, they attempt to clarify the nature and mechanism of transitional processes of conductivity by comparing the properties of polycrystalline barium titanate, single crystals of Rochelle salt, guanidine-aluminum-sulfate hexahydrate (GAS) and triglycine sulfate. A comparison between the curves drawn and those of polarity reversal in $BaTiO_3$ and GAS (Figs. 3 and 4) shows the similarity of the two processes; the former, however, takes several minutes, and the latter only microseconds. The curves representing the transitional processes of conductivity and the motion of the domain walls in a Rochelle salt single crystal are shown in Fig. 5. The curves are identical, and the relationship between the transitional

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81963

The Problem of the Nature of Transitional Processes of Conductivity in Seignetto-electrics

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B002/B063

processes of conductivity and the orientation of the domains is thus confirmed. However, this contradicts the observation made on triglycine sulfate (Fig. 7). Mention is made of papers by A. F. Ioffe, Ye. V. Sinyakov, D. I. Prokopalo, V. N. Lozovskiy, M. D. Mashkovich, and S. I. Gorelik. The authors thank L. Z. Rusakov for interest in this work. There are 7 figures and 23 references: 15 Soviet, 3 American, 3 British, 1 Japanese, and 1 Hungarian.

SUBMITTED: February 26, 1959

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24.7100

78100
SOV/70-5-1-9/30

AUTHOR: Rez, I. S.

TITLE: Concerning Some Problems of Crystal Chemistry of Piezoelectrics

PERIODICAL: Kristallografiya, 1960, Vol 5, Nr 1, pp 63-70 (USSR)

ABSTRACT: About 10 piezoelectrics in the form of monocrystals and 5 to 6 from among ceramics became known during the last 10 to 15 years. None of them can, however, satisfy growing demands, especially in view of the increasing range of temperatures at which they are used and the severe conditions to which they are subjected while used. This makes research for new piezoelectrics urgent. Since the known crystal-structural and other criteria require a laborious preliminary research for drawing conclusions on the possible piezoelectricity of a substance, the author suggests the so-called genetic criterion for the selection of one or another compound for testing. This criterion is based on the division

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of solids into groups of closely similar compounds of which at least one should be a known piezoelectric to make the others possible suspects. Within each group, the compounds with the least symmetric and least densely packed structures, with the most distorted bond angles and interatomic distances, with the greatest dipole moments of the molecules, must be considered to have better chances for higher piezoelectricity. The piezoelectric moduli increase with decreasing density, decreasing difference in the electronegativity of constituent atoms and decreasing hardness, with increasing elasticity, increasing number of covalent bonds, and of easily deformable structure units such as octahedra, pyramids, etc., at the expense of hardly deformable triangles, linear chains, etc. The author found that 42% of organic and 17% of inorganic compounds are potential piezoelectrics; among the compounds crystallizing in favorable space groups, the respective percentages are 84% and 17%; 54% of the potential organic piezoelectrics have close-packed structures. The higher percentage of piezoelect-

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Concerning Some Problems of Crystal Chemistry of Piezoelectrics

SOV/70-5-1-4/30

among organic compounds is related to their structures. Formed of molecules which frequently are polar, asymmetric, least densely packed, kept together by van der Waals' forces, and having predominantly covalent bonds. Thus, taking availability, simplicity of growing suitable crystals, thermal stability, hardness, elasticity, chemical and radiation inertness, thermal expansion, workability, etc., into consideration, the number of possible subjects for experiments can be reduced. Using this principle, the author and his associates since 1956 tested over 1,000 different compounds and found among them over 400 new piezoelectrics (abstract 71669). On the basis of the same genetic criterion and priority considerations, 18 groups of possible piezoelectrics are now selected for electrophysical quantitative tests. These groups are: amino acids, salts and complex compounds of amino acids, salts and complex compounds of amines, peroxide type compounds, piezoelectrically active salts of heteropolyacids, piezoelectrically active complexes of platinum, piezoelectrically active binary salts similar to langbeinite, piezoelectrically active meta-substituted benzenes, ferroelectric

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Concerning Some Problems of Crystal Chemistry of Piezoelectrics

SOV/78-5-1-9/30

perovskites of simple and complex compositions, non-perovskite ferroelectrics, piezoelectrics similar to antimony tantalite and ferguscnite, ferroelectrics similar to lead metaantimonate, piezoelectrics similar to nepheline, piezoelectrics of the series melilite-akermanite-gelenite, prospective piezoelectrics selected for growth from melts, series of compounds isostructural with α-quartz, piezoelectrics obtainable by hydrothermal synthesis. There are 2 tables, and 36 references, 16 Soviet, 7 German, 6 U.S., 2 French, 2 Italian, 1 U.K., 1 Danish, 1 Swedish. The 5 most recent U.S. references are: I. M. Stanley, Amer. Mineralogist, 41, 947, 1956; E. C. Shafer, R. Roy, J. Amer. Ceram. Soc., 39, 330, 1956; J. Donnay, N. Nowacki, Crystal Data, 1954; Warren P. Mason, Piezoelectric Crystals and Ultrasonics, van Nostrand, 1950; S. Zerfoss, I. Johnston, Amer. Mineralogist, 34, 61, 1949.

SUBMITTED: August 1, 1959

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

24.2130

78114
SOV/70-5-1-23/30

AUTHORS: Gurevich, V. M., Zheludev, I. S., Rez, I. S.

TITLE: Electric Conductivity of Triglycinesulfate Single Crystals. Brief Communication.

PERIODICAL: Kristallografiya. 1960, Vol 5, Nr 1, pp 142-145 (USSR)

ABSTRACT: The electric conductivity of triglycinesulfate, whose other properties have become well known because of numerous studies since 1956, was examined at 20-78° C and the dielectric constant determined on the basis of obtained data. The method is described in the authors' earlier paper (Abstract 75998). Direct current was applied (to 10 x 10 x 0.3, 10 x 10 x 0.5, and 10 x 10 x 1 mm plates, cut off normal to X, Y, Z axes of the crystals) at different steady-state temperatures both below and above the Curie point (49° C). The plates normal to Y showed

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Electric Conductivity of Triglycinesulfate Single Crystals. Brief Communication.

78114
SOV/70-5-1-23/30

rectangular symmetric hysteresis loops, Ps was 2.4 microcoulomb per cm^2 and 240 v/cm coercive field at 24° C and 50 cycles. The plates normal to X and Z did not show hysteresis loops. The electric resistance ρ, om cm of the plates normal to Y and the temperature dependence of conductivity σ and dielectric constant ϵ are illustrated in Figs. 1 and 3, respectively. Conductivity vs temperature curves for the plates normal to X and Z show abrupt turns at 50° C (just above the Curie point). The resistance of plates does not change its value with the duration of experiments above the Curie point, and at any temperature along Z. There are 5 figures and 7 references; 6 Soviet, 1 U.S. The U. S. reference is: B. T. Matthias, C. E. Miller, J. P. Remeika, Phys. Rev., 104, 849, (1956).

SUBMITTED: July 11, 1959

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APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

MELESHINA, V.A.; ZHELUDEV, I.S.; REZ, I.S.

Application of the charged powder method to the study of the domain structure and morphological growth characteristics of triglycine sulfate crystals. Kristallografiia 5 no.2:322-323 Mr-Ap '60. (MIRA 13:9)

(Glycine) (Ferroelectric substances)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

GUREVICH, V.M.; ZHELUDEV, I.S.; REZ, I.S.

Characteristics of the electrical properties of triglycine sulfate crystals in the subsonic frequency range. Kristallografiia 5 no.5:802-805 S-O'60. (MIRA 13:10)
(Glycine)

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9.4300 (1137, 1138, 1143)

85012

S/048/60/024/010/021/033
B013/B063

AUTHORS: Gurevich, V. M. and Rez, I. S.

TITLE: Investigation of the Possibility of Regulating the Electrical Conductivity of Piezoelectric Lead Metaniobate by Introducing Slight Admixtures

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 10, pp. 1259-1260

TEXT: The author studied the possibility of regulating the electrical conductivity of $PbNb_2O_6$ by doping in much the same way as in the case of semiconductor alloys. The authors used particularly pure $PbNb_2O_6$ which had a Curie point of $\sim 560 \div 580^{\circ}C$ and showed no piezoelectricity. They studied the effect of Li^+, K^+, and La^{3+} in quantities of $0.01 \div 0.4$ atom% of the ion to be substituted. A Fig. shows the effect of La^{3+} and Li^+. K^+ had no effect upon the electrical conductivity. It was found that $PbNb_2O_6$ samples synthesized from various materials exhibited a largely differing electrical conductivity. This is another proof of the fact that

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

85012
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B013/B063

Investigation of the Possibility of Regulating the Electrical Conductivity of Piezoelectric Lead Metaniobate by Introducing Slight Admixtures

the electrical conductivity can be regulated by doping. The classification of the admixtures used indicated that the above-mentioned sample of $PbNb_2O_6$ had a p-type conductivity. This was confirmed by preliminary determinations of the sign of the thermo-emf made on an undoped standard sample. The authors' recommendations were successfully used in Ref. 1 for piezoelectric substances which were synthesized on the basis of $PbNb_2O_6$ and had high Curie points. The authors thank R. M. Lerman for specifying the conditions for the thermal treating of the substances. The present paper was read at the Third Conference on Piezoelectricity, which took place in Moscow from January 25 to 30, 1960. There are 1 figure and 1 Soviet reference.

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25895
S/070/61/006/004/007/007
E021/E406

15.8540
9.2180 (1331, 1144, 1063)

AUTHOR: Rez, I.S.

TITLE: High-polymer piezoelectric compounds

PERIODICAL: Kristallografiya, 1961, Vol.6, No.4, pp.646-649

TEXT: Previous work on piezoelectric polymers is reviewed and data on the space group and the piezo-effect are summarized in a table. There are 1 table and 36 references as follows: 8 Soviet and 28 non-Soviet.

Ref.1: A.V.Shubnikov, P'ezoelektricheskiye tekstury. M., 1946.
Ref.3: V.A.Bazhenov. V.P.Konstantinova. Dokl.AN SSSR,71,283,1950.
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Ref.5: E.Fukada. J.Phys.Soc.Japan, 10, 149, 1955.
Ref.6: H.Grüner. Faserforschung u. Textiltechnik, 4, 249, 1953.
Ref.7: E.Fukada. J.Phys.Soc.Japan, 11, 1301, 1956.
Ref.8: E.Fukada, I.Yasuda, J.Phys.Soc.Japan, 12, 1158, 1957.
Ref.9: C.W.Lewis. D.H.Hogle. J.Polymer Sci., 21, 411, 1956.
Ref.10:R.Stefani, M.Chevieton, M.Garnier, C.Eyraud. C.R.,251,2174,1960.
Ref.11:G.Natta. Suppl. al Nuovo Cimento, 15, 1, 2, 1960.
Ref.12:G.Natta, P.Corradini, F.Bassi. Suppl. al Nuovo Cimento, 15, 1, 83, 1960.

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E021/E406

High-polymer piezoelectric compounds

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Ref.30: J.Duchesne, A.Monfils. J.Chem.Phys., 23,762, 1955.
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25895
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High-polymer piezoelectric compounds E021/E406

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Ref.36: W.Cochrane. Advances Phys., 9, 36, 387, 1960.

SUBMITTED: January 11, 1961

Card 3/5

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26646
S/070/61/006/005/004/011
E132/E560

15.2640
24.7200 (1144,1160)

AUTHORS: Fedulov, S.A., Venevtsev, Yu.N., Zhdanov, G.S. and Rez, I.S.

TITLE: X-ray crystallographic and electrical studies of specimens of the system $PbTiO_3 \cdot BaZrO_3$

PERIODICAL: Kristallografiya, 1961, Vol.6, No.5, pp.681-685

TEXT: Hitherto the system $PbTiO_3 - BaZrO_3$ has hardly been studied. The $PbTiO_3$ synthesized had a tetragonally-distorted perovskite structure with a = 3.899 and c = 4.155 Å, giving c/a = 1.065. The $BaZrO_3$ was cubic with a = 4.190 Å. These agree with previously published data (Ref.6: H. Megaw, Proc. Phys. Soc., 58, 133, 1946). Fig.1 shows the variation of cell dimensions with composition for intermediate compositions in the continuous series of solid solutions obtained. The volume changes without discontinuity. The two phases appeared to co-exist over the composition range 37.5 to 40% (by weight). At the high $PbTiO_3$ end of the composition range, measurements of the dielectric constant were hindered by the high conductivity. The log of the conductivity was a linear function of 1/T (the absolute temperature). The

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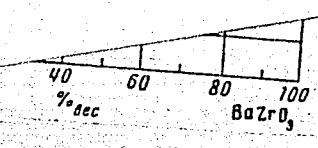
dielectric constant was measured at 500 kc for the compositions 20-25% $BaZrO_3$ and at 1 kc otherwise. Fig.4 shows the variation of d.c. with temperature for various compositions of material. The existence of a two-phase region between the ferroelectric (tetragonal) and the paraelectric (cubic) modifications is not new but has been found also in $PbTiO_3$-$BaTiO_3$. This is expressed in the spreading of the maxima in the curves of d.c. against T and corresponds to the statistical distribution of the cations in the two phases. This statistical distribution gives rise to strains in the crystal lattices and as a result the ferroelectric-paraelectric transformation takes place over a finite temperature interval. The rhombohedral phase found by T. Ikeda (Ref.1. J.Phys. Soc. Japan., 14, 2, 168, 1959) was not encountered. The absence of a piezoelectric effect in the range from 40-42.4% also confirms that there was no rhombohedral phase in this case. Work reported by others on the system $PbZrO_3$-$BaTiO_3$ is contradictory.

Acknowledgments are expressed to Ye.G. Shazhevskaya and N. A. Kabalkina for their assistance. There are 6 figures and 11 references, 6 Soviet and 5 non-Soviet. The English-language



RELEASE: 06/20/2000 CIA-RDP86-00513R0014447300

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FEDULOV, S.A.; VENEVTSEV, Yu.N.; ZHDANOV, G.S.; SMAZHEVSKAYA, Ye.G.; REZ, I.S.

X-ray diffraction and electric study of the system $PbTiO_3$ - $BiFeO_3$. Kristallografiia 7 no.1:77-83 Ja-F '62. (MIRA 15:2)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Ferroelectric substances)
(X rays--Diffraction)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

OZEROV, R.P.; RANNEV, N.V.; PAKHOMOV, V.I.; REZ, I.S.; ZHDANOV, G.S.

Structure of KIO_3 at room temperature. Kristallografiia 7 no.4:620-622 Jl-Ag '62. (MIRA 15:11)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Potassium iodide crystals)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, I. S., MELESHINA, V. A.,

"Annealing of TGS Crystals"

report presented at the Symposium on Ferroelectricity and Ferromagnetism, Leningrad, 30 May-5 June 63

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, I. S., LOBANOVA, G. M., PAKHOMOV, V. I.,

"X-ray Investigation of $N(CH_3)_4$ Hg X_3."

report presented at the Symposium on Ferroelectricity and Ferromagnetism, Leningrad, 30 May-5 June 1963.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

Z/037/63/000/001/005/008
E112/E535

AUTHOR: Rez I.S.

TITLE: A study of new piezoelectric substances from the point of view of crystallochemistry

PERIODICAL: Československý časopis pro fysiku, no.1, 1963, 31-44

TEXT: Some basic principles and results of a search for new piezoelectric substances are described. It is suggested that piezoelectricity is to be looked for amonst groups of analogous compounds of which at least one member is piezoelectric. The effects of structural modifications should then be studied with a view to increasing asymmetry and the molecular dipole moments. Other criteria are: availability, thermal stability, hardness, chemical resistance, inertness towards radiation. Guided by the above principles, the author and collaborators have detected, by means of a special device for the study of small crystals, 400 new piezoelectric substances, 351 of which are tabulated and classified according to structure or stereochemical data. Based on a study of 83 known piezoelectric substances and on the new findings, some basic principles are presented: 1) Piezoelectricity

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may be shown by substances with strong covalent bonds, with crystalline structures lacking a center of symmetry. 2) Piezoelectric substances apparently contain coordination groups which are easily distorted, e.g. pyramids, tetrahedra, octahedra or their combinations. 3) Isomorphic substitutions of atoms or molecules in structures displaying piezoelectricity will maintain the latter. It is, however, essential that, as a result of substitution, the polar structure and ease of deformation should be preserved. 4) One of the characteristic features of a number of piezoelectric substances is a spiral arrangement of elementary oxygen tetrahedra, e.g. quartz. The above findings are verified and complemented by a literature review (49 references). There are 9 tables.

ASSOCIATION: Komitét pro elektroniku při Radě ministrů SSSR, Moskva (Commitee for Electronics at the Council of Ministers of the USSR, Moscow)

SUBMITTED: November 14, 1961

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

ACCESSION NR: AP4030654 S/0048/64/028/004/0735/0740

AUTHOR: Meleshina, V.A.; Rez, I.S.

TITLE: Concerning the nature of the unipolarity of ferroelectric triglycine sulfate [Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963]

SOURCE: AN SSSR. Izv. Ser.fiz., v.28, no.4, 1964, 735-740

TOPIC TAGS: ferroelectricity, unipolarity, unipolar anisotropy, ferroelectric unipolar anisotropy, triglycine sulfate, triglycine sulfate unipolar anisotropy

ABSTRACT: The effect of annealing in dry air at 8- to 140°C on the dielectric hysteresis and domain structure of naturally "unipolar" triglycine sulfate single crystals was investigated, and the electrical conductivity of the crystals was measured over the same temperature range. The crystals were grown from seeds, some under laboratory conditions and some under "semi-industrial" conditions. The "unipolarity" of the crystals consists of an asymmetric location of the dielectric hysteresis loop with respect to the field and polarization axes (unipolar anisotropy). It was found that a sufficiently protracted anneal at a temperature of 110°C or higher would com-

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

ACCESSION NR: AP4030654

pletely destroy the unipolar anisotropy. The time required for this effect was a matter of hours; it depended on the initial degree of unipolar anisotropy and decreased by a factor two when the anneal temperature was increased from 112 to 140°C. Application of an electric field of the order of 10 kV/cm during the annealing reduced the time required to remove the anisotropy by an order of magnitude. Anneal at 105°C (or at lower temperatures), with or without an electric field, had no effect on the unipolar anisotropy. The resistivity of the crystals showed an anomalous temperature dependence within a narrow range (about 8°) in the vicinity of 110°C. At temperatures above and below this region the relation was logarithmic, the activation energy being 0.9 eV at the lower temperatures and 1.2 eV at the higher. Rows of etch pits (etching technique described elsewhere) outlining twin dislocations were observed on the (010) plane of the unipolar crystals. Anneal above 110°C did not affect these dislocations, but it did result in a reorganization of the domain structure and the appearance of domains of both signs. The domain structure resulting from anneal in an electric field differed from that obtained without the field. In the former case, the domains on the (010) plane were lenticular and large. The domains obtained by annealing without the electric field were small, elongated, and had sinuous boundaries. It is suggested that the effect of annealing on the uni-

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ACCESSION NR: AP4030654

polar crystals may be due to a redistribution of point defects. Orig.art.has: 2 formulas and 5 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 30Apr64 ENCL: 00

SUB CODE: EM NR REF SOV: 006 OTHER: 003

Card 3/3

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 49784-65 EPF(c)/EPR/EWG(j)/EWT(m)/EWP(b)/EWP(t) Pr-4/Ps-4 IJP(c) ID
ACCESSION NR: AP5009374 UR/0363/65/001/002/0232/0235

AUTHOR: Speranskaya, Ye. I.; Rez, I. S.; Kozlova, L. V.; Skorikov, V. M.; Slavov, V. I.

27
26
B

TITLE: Bismuth oxide-titanium dioxide system

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 2, 1965, 232-235

TOPIC TAGS: bismuth oxide, titanium dioxide, phase diagram, phase equilibrium

ABSTRACT: The bismuth oxide-titanium oxide system was studied using thermal analysis and x-ray diffraction. The work was done in platinum or platinum-rhodium crucibles. The phase diagram is shown in fig. 1 of the Enclosure. Three compounds are formed in this system: $4Bi_2O_3 \cdot TiO_2 (Bi_8TiO_{14})$, $2Bi_2O_3 \cdot 3TiO_2 (Bi_4Ti_3O_{12})$ and $Bi_2O_3 \cdot 4TiO_2 (Bi_2Ti_4O_{11})$. All of these compounds melt in an incongruent manner: Bi_8TiO_{14} at 865°C, $Bi_4Ti_3O_{12}$ at 1210°C and $Bi_2Ti_4O_{11}$ at 1275°C. At 670°C $Bi_4Ti_3O_{12}$ undergoes a reversible phase transition. According to thermal analysis data the other two compounds undergo no conversions in the investigated temperature region.

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ACCESSION NR: AP5009374

Bi_3TiO_{14} is produced as a result of an exothermic reaction at 830°C. At 835°C a Bi_8TiO_{14} and Bi_2O_3 eutectic mixture is crystallized, it contains 97% Bi_2O_3 and 3% TiO_2. Orig. art. has: 1 table and 3 figures.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 23Oct64 ENCL: 01 SUB CODE: MT

NO REF SOV: 006 OTHER: 004

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L 49784-65

ACCESSION NR: AP5009374

ENCLOSURE: 01

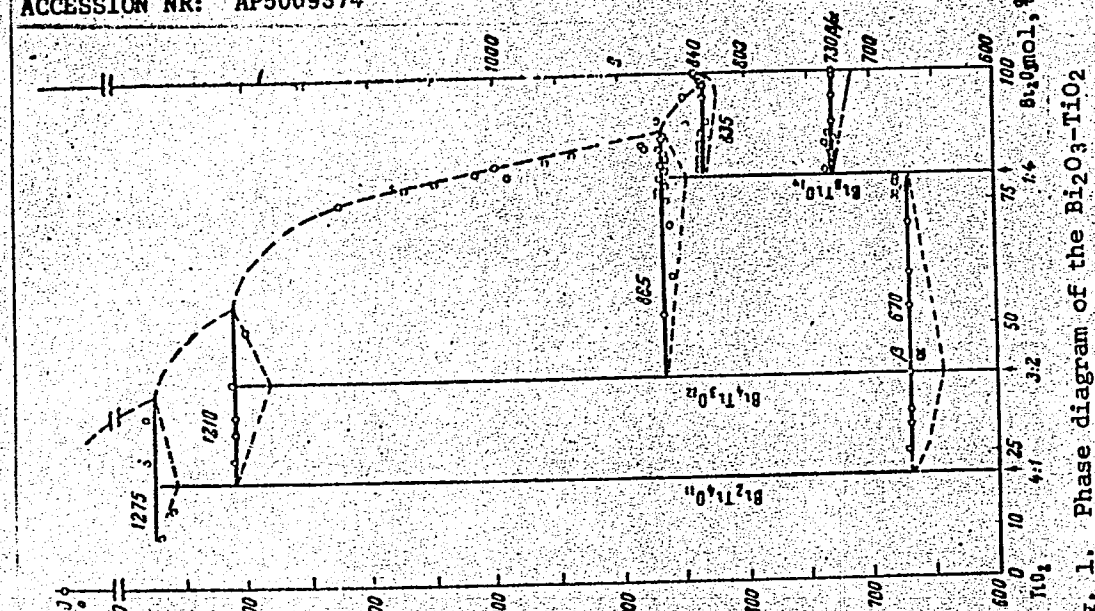

Fig. 1. Phase diagram of the Bi_2O_3-TiO_2 system.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

SPERANSKAYA, Ye.I.; REZ, I.S.; KOZLOVA, L.V.; SKORIKOV, V.M.; SLAVOV, V.I.

Bismuth oxide - titanium dioxide system. Izv. AN SSSR. Neorg. mat. 1 no.2:232-235 F '65. (MIRA 18:7)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

L 24870-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(1)

ACC NR: AP6006373 SOURCE CODE: UR/0413/66/000/002/0107/0107

AUTHORS: Kuznetsov, V. S.; Vikhman, V. S.; Leont'yev, K. L.; Zharov, N. A.; Rez, I. S.

46
B

ORG: none

TITLE: An automatic pyrometer of the spectral ratio. Class 42, No. 178146

10

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 107

TOPIC TAGS: automatic control technology, pyrometer, spectrum analyzer, precision instrument machinery

ABSTRACT: This Author Certificate presents an automatic spectral ratio pyrometer. The pyrometer contains a radiation receiver, an amplifier, an output signal commutator, and an indicator or a slave mechanism. The design shortens the pyrometer response time, increases the instrumental precision, and simplifies the scaling circuit of the pyrometer. The unit has an electro-optical system in the form of a rapid response dispersion light filter with an electro-optical crystal (see Fig. 1). This crystal is switched by an electronic commutator. The output of the circuit controlling the sensitivity of the radiation receiver (to normalize the

14

2

Card 1/2 UDC: 536.521:621.383

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L 24870-66

ACC NR: AP6006373

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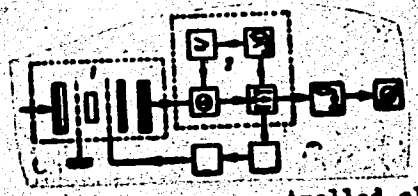

Fig. 1. 1 - rapid response controlled electro-optical light filter; 2 - circuit for controlling the sensitivity of the radiation receiver.

output signal) is connected to one of the outputs of the electronic commutator. The output of the sensitivity control circuit is connected to the outputs of the radiation receiver. Orig. art. has: 1 figure.

SUB CODE: 20,09,14/SUBM DATE: 06Jun64

Card 2/2 dda

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, J.

TECHNOLOGY

Periodical: SVET MOTORU. Vol. 12, no. 17, Aug. 1958.

REZ, J. One of many. p. 517.

Monthly List of East European Accession (EEAI) LC, Vol. 8, no. 3
March 1959 Unclass.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6

REZ, R.

Improve the working processes in the fleet. Mor.flot 25 no.6:3-4 Jl '65. (MIRA 19:1)

1. Nachal'nik sektora truda i zarabotnoy platy TSentral'nogo nauchno-issledovatel'skogo instituta Morskogo flota.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001444730011-6"