SYMTAVSTER, L. A.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Pesticides and Crop-Control Agents

Disinfectants and azotobacterin. Y. P. Zarembo and L. A. Sinyavs'ka. *Mikrobiol. Zhur., Akad. Nauk Ukr. R.S.R.* 15, No. 3, 35–42(1953)(Russian summary).—Dusting grain seeds with hexachloran (a mixt. of 12% $C_6H_6Cl_6$ and 88% talc), prepn. AB (a mixt. of $CuCO_3$, $CuSO_4$, and $CaCO_3$), and Granosan (2% EtHgCl and 98% talc) 30 days before treatment with azotobacterin stimulated development of the *Azotobacter* and also, possibly, the cells of the germinating seed. Adding Cu (as $CuSO_4$), 0.5 mg. per l. of the agar medium showed a count of 1084 cells of *Azotobacter* per ml. of the medium on the 5th day after inoculation; the treated barley crop increased by 20–30%. B. Gutoff

SHEKA, Z.A.; SINYAVSKAYA, E.I.

Extraction of thorium with dibutylphosphoric acid from solutions in nitric acid. Radiokhimiia 5 no.4:485-490 '63. (MIRA 16:10)

(Thorium) (Phosphoric acid)

L 16598-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG 56
S/075/63/018/004/006/015

AUTHOR: Sheka, Z. A. and Sinyavskaya, E. I.

TITLE: Complexonometric determination of rare-earth elements in the presence of dialkylphosphoric acids 27

PERIODICAL: Zhurnal analiticheskoy khimii, v. 18, no. 4, April 1963, 460-462

TEXT: The authors establish the possibility of determining lanthanum and other rare-earth elements in their compounds with dialkylorthophosphoric acids by complexonometric titration with xylenol orange. There are 2 figures and 2 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, Kiev (Institute of General and Inorganic Chemistry, Academy of Sciences Ukrainian SSR)

SUBMITTED: July 9, 1962

Card 1/1

SHEKA, Z.A.; SINYAVSKAYA, E.I.

Stability constants of lanthanum complexes with dibutylphosphoric acid. Zhur. neorg. khim. 10 no.2:394-397 F '65. (MIRA 18:11)

1. Submitted July 1, 1963.

L 15798-65 EWT(m)/EWP(j)/EWP(t)/EWP(b) IJP(c)/ASD(p)-3 JD/JG/RM
ACCESSION NR: AP4043581 S/0078/64/009/008/1974/1979

B

AUTHOR: Sheka, Z. A.; Sinyavskaya, E. I.

TITLE: The solubility of rare earth element dialkylphosphates in water

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 8, 1964, 1974-1979

TOPIC TAGS: rare earth dialkylphosphate, water solubility, rare earth dibutylphosphate, lanthanum dimethylphosphate, lanthanum dipropylphosphate, lanthanum dibutylphosphate, lanthanum diamylphosphate, thermodynamic characteristic

ABSTRACT: The solubility of the rare earth dibutylphosphates and of lanthanum dimethyl-, dipropyl-, dibutyl- and diamylphosphates in water was determined. The solution process is described in the following equations which show formation of LnA^{2+} complexes in addition to Ln^{3+} ions in aqueous solutions:

$$LnA_{3\,тв} + aq \rightleftarrows LnA_{3\,aq} \quad (1)$$

$$LnA_{3aq} + mH_2O \rightleftarrows Ln(H_2O)_x^{3+} + LnA(H_2O)_{x-3}^{2+} + 2A(H_2O)_y^{-} \quad (2)$$

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L 15798-65
ACCESSION NR: AP4043581

As the length of the hydrocarbon chain in the lanthanum dialkylphosphate increased the solubility of the compounds in water decreased: with each $-CH_2$ group the log of the solubility decreased by about 0.15, corresponding to a change in free energy of solvation of 0.2 kcal for each $-CH_2$. The solubility decreased with atomic number of the rare earth element; the noncontinuous change in the solubility of the rare earth dimethyl- and dib[illegible]ylphosphates was explained as caused by the effect of the ligand field on th[illegible]ergy levels of the unfilled f-shells. The dissolution of the rare earth di[illegible]phosphates is an exothermic reaction, hence solubility decreased with increase in temperature. The thermodynamic characteristics (free energy, heat capacity, entropy, activity of the saturated solutions) of Tb, Dy, Er, and Yb dimethylphosphates and of La, Nd, Gd and Yb dibutylphosphates were determined. The entropy of solution increased in the rare earth element series from La to Lu and also in going from dimethyl- to dibutylphosphate. Orig. art. has: 10 equations and 2 figures.

ASSOCIATION: None

ENCL: 00

SUBMITTED: 03Jun63

Card 2/3

L 15798-65
ACCESSION NR: AP4043581

SUB CODE: IC, GC NO REF SOV: 006 OTHER: 010

Card 3/3

L 16315-65 EWT(m)/EWP(t)/EWP(b) IJP(c)/AFWL JD/JG
ACCESSION NR: AP4044813 S/0078/64/009/009/2244/2250

AUTHOR: Sheka, Z. A.; Sinyavskaya, E. I. B

TITLE: Solubility of lanthanum dibutylphosphate in sulfuric and nitric acids 27

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 9, 1964, 2244-2250

TOPIC TAGS: solvent extraction, lanthanum dibutylphosphate, solubility, sulfuric acid, nitric acid, rare earth element extraction, dialkylphosphoric acid extraction, lanthanum dibutylphosphate ion

ABSTRACT: The solubility of lanthanum dibutylphosphate in H_2SO_4 and HNO_3 was determined to obtain data required for the processes of dialkylphosphoric acid extraction of the rare earth elements. As the nitric and sulfuric acid concentrations increased, the solubility of the lanthanum dibutylphosphate therein increased slowly at first, and then much more rapidly, forming a marked inflection point in the curve at concentrations slightly above 0.2N. At low hydrogen ion concentrations the following reaction occurred: $LaA_{3solid} + 2H^+ \rightleftharpoons LaA^{2+} +$

Card 1/2

L 16315-65
ACCESSION NR: AP4044813

$2HA_{solution}$, where (HA= $H(C_4H_9O)_2PO_2$). At high hydrogen ion concentrations the LaA^{2+} complex dissociated: $LaA_{3\,solid} + 3H^+ \rightleftharpoons La^{3+} + 3HA$, or , if the amount of dibutylphosphoric acid formed exceeds its solubility, it formed a separate phase: $LaA_{3solid} + 3H^+ \rightleftharpoons La^{3+} + 3HA_{sep}$. The break in the uniform increase in solubility was explained by the formation of this separated third phase, free dibutylphosphoric acid. The high solubility of the lanthanum dibutylphosphate in H_2SO_4 was explained due to the possible formation of complexes of the type $LaAHSO^+$. The stability constant of the complex ion LaA^{2+} and the solubility product of the compound LaA_3 were determined from data on solubility in nitric, sulfuric and dibutylphosphoric acids, in water and in $La(NO_3)_3$: $pk_{LaA^{2+}} = 1.78 \pm 0.06$ and $-1gSP_{LaA_3} = 9.5 \pm 0.3$. Orig. art. has: 20 equations and 1 figure.

ASSOCIATION: None

SUBMITTED: 04Jun63 ENCL: 00

SUB CODE: GC NO REF SOV: 006 OTHER: 005

Card 2/2

L 17433-63 EPF(n)-2/EWP(q)/EWT(m)/BDS AFFTC/ASD/SSD Pu-4 WW/JD/JG

ACCESSION NR: AP3004354 S/0078/63/008/008/1980/1986

AUTHORS: Sheka, Z. A.; Sinyavskaya, E. I. 65

TITLE: Extraction of rare earth elements and thorium from solutions in sulfuric acid with di-iso-butylphosphoric acid 27 27

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 8, 1963, 1980-1986

TOPIC TAGS: rare earth element, thorium, extraction butylphosphoric acid, sulfuric acid

ABSTRACT: The extraction of rare earth elements (R. E. E.) and thorium from sulfuric acid solutions with a 0.148 M solution of di-iso-butylphosphoric acid in kerosene has been studied. The R. E. E. and thorium was extracted from aqueous solutions containing the same amounts of the studied materials but with varying sulfuric acid concentration from 0.01 to 8.5 mole/liter. The volume of di-iso-butylphosphoric acid was also kept constant. Results of extraction show that R. E. E. and thorium are fully extracted with di-iso-butylphosphoric acid in kerosene only at a certain concentration of H_2SO_4. With an increase of H_2SO_4 concentration, the percent of extracted elements sharply decreases. Yttrium

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L 17433-63

ACCESSION NR: AP3004354

is extracted at lower concentration of H_2SO_4 (1.5 - 2.0 N) and thorium is extracted at the highest H_2SO_4 concentration (6 N). Holmium and erbium are extracted with 2 N H_2SO_4 solution. With an increase of the atomic number of an element, the concentration of H_2SO_4 at which this element can be extracted with di-iso-butylphosphoric acid also increases. Extractability of dibutylphosphates of R. E. E. and thorium depends on their solubility in H_2SO_4 and also their stability. The comparison of stabilities is shown by the equilibrium constants of the reaction of di-iso-butylphosphoric acid with R. E. E. and thorium. Orig. art. has: 4 tables, 2 figures and 13 equations.

ASSOCIATION: none

SUBMITTED: 03Jul62 DATE ACQ: 21Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 006

Card 2/2

SHEKA, Z.A.; SINYAVSKAYA, E.I.

Solubility of lanthanum dibutyl phosphate in solutions of sodium and lanthanum nitrates. Zhur. neorg. khim. 10 no.1:259-264 Ja '65. (MIRA 18:11)

1. Submitted May 3, 1963.

L 17374-66 EWP(j)/EWT(m)/ETC(f)/EWG(m)/T/EWP(t) IJP(c) RDW/RM/JD
ACC NR: AP6004506 SOURCE CODE: UR/0186/65/007/005/0596/0603

AUTHOR: Sheka, Z. A.; Sinyavskaya, E. I.

47
B

ORG: none

TITLE: Investigation of dialkylphosphate complexes of thorium and rare earth elements by a kinetic method

SOURCE: Radiokhimiya, v. 7, no. 5, 1965, 596-603

TOPIC TAGS: organic phosphorus compound, thorium, thorium compound, rare earth element, complex molecule, colorimetric analysis, chemical stability, oxidation kinetics

ABSTRACT: The formation and stability of dibutylphosphate complexes of thorium and rare earth elements was investigated. The structure and stability of these complexes were derived from studying the kinetics of oxidation of potassium iodide catalyzed by thorium and rare earth elements. In all experiments the total volume was 25 ml. In the experiments with thorium, 5 ml of 0.2 molar acetate buffer were added to an aqueous solution of thorium chloride. This was succeeded by a solution of dibutylphosphoric acid, potassium iodide, and starch. After the introduction of

UDC: 541.49 : 546.841+546.65 : 661.72

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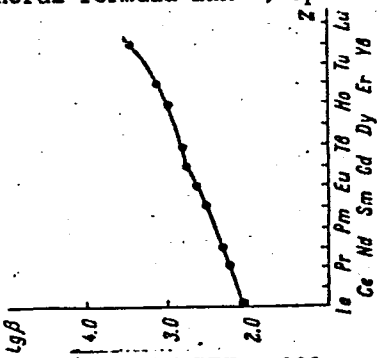
L 17374-66
ACC NR: AP6004506

hydrogen peroxide, the mixture was held at 25 ± 0.01°C and the optical density of the solution was measured using a FEK-M photoelectrocolorimeter. The final concentration of potassium iodide was $4 \cdot 10^{-4}$ molar and of hydrogen peroxide was $3.4 \cdot 10^{-4}$ molar. It was found that n-dibutylorthophosphoric acid (HA) reacts with thorium chloride to form a complex of a general formula: $ThOHA^{2+}$. This complex is inactive as a catalyst for oxidation of potassium iodide by hydrogen peroxide. The logarithm of the stability constant of this complex at a zero ionic strength is equal to 5.06± ±0.06. The dependence of the logarithm of stability constants (lgβ) of complexes of rare earth elements with dibutylphosphoric acid (general formula LnA^{2+}) upon the specicif atomic number of elements is shown in fig. 1.
Orig. art. has: 2 figures, 4 tables, 13 formulas.

Fig. 1.



SUB CODE: 07/ SUBM DATE: 30Sep64/ ORIG REF: 007/ OTH REF: 002
Card 2/2 nst

L 06531-67 EWT(m)

ACC NR: AP7000464 SOURCE CODE: UR/0366/66/002/005/0855/0857

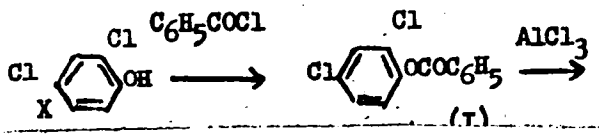
13
B

SINYAVSKAYA, L. P. and SHAMSHURIN, A. A., Institute of Chemistry of the Academy of Sciences Moldavian SSR (Institut khimii AN MoldSSR)

"I Synthesis of Allyl Esters of Chlorinated Aromatic Oxyketones"

Moscow, Zhurnal Organicheskoy Khimii, Vol 2, No 5, May 1966, pp 855-857

Abstract: Of chloro-substituted o-oxybenzophenones, and their allyl esters, compounds were acaricidal activity have been noted. The paper describes the allyl esters of 2-oxy-3,5-dichlorobenzophenone and 2-oxy-3,5,6-trichlorobenzophenone, which have been found to be fairly strong acaricides. The original chlorinated o-oxybenzophenones also showed acaricidal activity, although to a lesser extent. The chlorinated o-oxybenzophenones and their allyl esters were obtained according to the following scheme:



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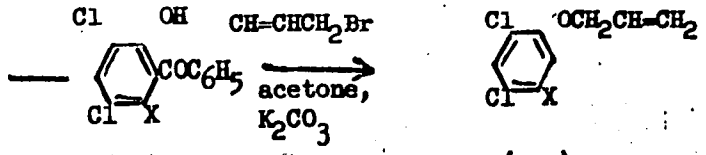
UDC: 547.34 + 547.45

L 06531-67

ACC NR: AP7000464

0

Moscow, Zhurnal Organicheskoy Khimii, Vol 2, No 5, May 1966, pp 855-857



(II) (III)

(I, II, III) a) X = H; b) X = Cl

Orig. art. has: 1 formula. [JPRS: 37,023]

TOPIC TAGS: organic synthetic process, chlorinated organic compound, ketone

SUB CODE: 07 / SUBM DATE: 24 Jun 65 / ORIG REF: 001/ OTH REF: 003

Card 2/2 egk

SINYAVSKAYA, M.D.

PHASE I BOOK EXPLOITATION SOV/5029

Grozin, Boris Dmitriyevich, David Abramovich Draygor, Vsevolod Nikolayevich Semirog-Orlik, Mikhail Apollonovich Puzanov, Matvey L'vovich Gorb, Vil'yam Pedoseyevich Yankevich, Mariya Dmitriyevna Sinyavskaya, and Georgiy Iosifovich Val'chuk

Povysheniye ekspluatatsionnoy nadezhnosti detaley mashin (Increasing the Operational Reliability of Machine Parts) Moscow, Mashgiz, 1960. 292 p. Errata slip inserted. 10,000 copies printed.

Reviewer: V. S. Kramarov, Doctor of Technical Sciences, Professor; Ed.: D. A. Draygor, Doctor of Technical Sciences; Ed.: G. D. Tynyanyy; Tech. Ed.: M. S. Gornostaypol'skaya; Chief Ed., Mashgiz (Southern Dept.): V. K. Serdyuk, Engineer.

PURPOSE: This book is intended for scientific workers and technical personnel in machine building.

COVERAGE: The authors discuss new methods of investigating the physical state of machine-part surface layers, important for determining the reliability of parts in operation. Information is

Card 1/6

presented on the influence of friction and wear conditions on fatigue limit and on the limited endurance of steel under the simultaneous action of friction forces and cyclic loads. Also discussed are: the effect of the impulse action of high-temperature compressed gases on the structure of the surface layers of metal, new machines for studying the wear resistance of metals under various friction conditions, and new processes for increasing the wear resistance of machine parts. The majority of investigations discussed were carried out by members of the Institut Mekhaniki AN UkrSSR (Institute of Mechanics, Academy of Sciences Ukrainian SSR). Ch. I and the Conclusion were written by B. D. Grozin, Corresponding Member, Academy of Sciences UkrSSR, and D. A. Draygor, Doctor of Technical Sciences; M. L. Gorb, Candidate of Technical Sciences, wrote Section 1 of Ch. II; V. N. Semirog-Orlik, Candidate of Technical Sciences, wrote Section 2 of Ch. II; S. B. Nizhnik and T. M. Golovinskaya, Engineers, wrote Section 3 of Ch. II; Section 4 of Ch. II was the work of V. P. Yankevich, Engineer. Ch. III. was written by B. D. Grozin, M. L. Gorb, V. N. Semirog-Orlik and V. P. Yankevich.

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M. A. Puzanov, Candidate of Technical Sciences, wrote Sections 1-4 and 7 of Ch. IV; Section 5 of Ch. IV was written by B. D. Grozin and M. D. Sinyavskaya, Engineer; Section 6 of Ch. IV was the work of D. A. Draygor, and G. I. Val'chuk, Engineer. Sections 1 and 2 of Ch. V were written by M. D. Sinyavskaya; Section 3 of Ch. V was written by V. P. Yankevich. No personalities are mentioned. References accompany each chapter. There are 185 references: 175 Soviet, 3 German, 3 French, and 4 English.

TABLE OF CONTENTS:

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GROZIN, B.D., otv.red.; DRAYGOR, D.A., zam.otv.red.; BARABASH, M.L., red.toma; KRAGEL'SKIY, I.V., red.; SERENSEN, S.V., red.; FAYNERMAN, I.D., red.; ZASLAVSKIY, S.S., red. Prinimali uchastiye: BRAUN, M.P., prof.; VAYNBERG, D.V., prof.; PETRENKO, I.P., kand.tekhn.nauk; SINYAVSKAYA, M.D., inzh.; SHEVCHUK, V.A., kand.tekhn.nauk; SEMIROG-ORLIK, V.N., kand.tekhn.nauk; YANKEVICH, V.F., inzh.; GORB, M.L., kand.tekhn.nauk; RAKHLINA, N.P., tekhn.red.

[Increasing the wear resistance and useful life of machinery in two volumes] Povyshenie iznosostoikosti i sroka slushby mashin v dvukh tomakh. Kiev, Izd-vo Akad.nauk USSR. Vol.1. 1960. 486 p. (MIRA 13:12)

1. Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Kiyevskoye oblastnoye pravleniye.
(Mechanical wear)
(Mechanical engineering)

SINYAVSKAYA, M. D., Cand Tech Sci -- "Increasing the wear-resisting ~~qualities~~ of the piston rings of internal combustion engines by galvanization." Kiev, 1961. (Kiev ~~Auto-Road~~ Inst) (KL, 8-61, 249)

SINYAVSKIY, M.D.

(12)

S/198/62/008/005/008/009
D234/D308

AUTHOR: Botte, O. V.

TITLE: Dissertations defended in 1961 at the Institutes of the Division of Technical Sciences, AS UkrSSR, in the field of mechanics

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Instytut mekhaniky. Prikladna mekhanika, v..8, no. 5, 1962, 571-575

TEXT: The following dissertations were presented by the collaborators of the above section and approved: For the degree of Candidate of Technical Sciences: Instytut mekhaniky (Institute of Mechanics): Vasyl' Mykolayovych Buyvol, Aspirant: 'Plane problems of the theory of elasticity for multiply-connected regions with cyclic symmetry', on March 16, 1961, at Dnipropetrovsk Universty. Yaroslav Mykhaylovich Hryhorenko, Junior Scientific Collaborator: 'Stressed state of round plates and conical shells of linearly varying thickness under asymmetric loads', on April 6, at Dnipropetrovsk University. Igor Tymofiyovych Selezov, Aspirant, 'Investigation of the propa-

Card 1/3

Dissertations defended in ... S/198/62/008/005/008/009
D234/D308

gation of elastic waves in plates and shells', on June 19, at Kyyivs'kyy politekhnichnyy instytut (Kiev Politechnic Institute). Andriy Feofanovych Ulitko, Aspirant, 'Solution of 3-dimensional problems of the theory of elasticity by the method of vector eigenfunctions', on September 26, at Kiev University. Mikhaylo Petrovych Petrenko, Junior Scientific Collaborator, 'Transverse and longitudinal vibrations in short rods of constant and variable thickness, due to impacts', on October 24, at Kiev University. Mariya Dmytrivna Synyavs'ka, Junior Scientific Collaborator, 'Increase of wear resistance of piston rings of integral combustion engines with the aid of galvanic coating', on October 24, at Kyyivs'kyy avtomobil'no dorozhnyy instytut (Kiev Institute of Automobiles and Highways). Heorkiy Ivanovych Dybenko, Engineer, 'Change of strength and deformability of ДСП (DSP) plastics in time at increased temperatures', on November 28, at Kiev Institute of Automobiles and Highways. For the degree of Doctor of Technical Sciences: Instytut elektrozvaryuvannya im. Ye. O. Patona (Institute of Electric Welding imeni Ye. O. Paton): Boris Oleksiyovych Movchan, Senior Scientific Collaborator, Candidate of Technical Sciences, 'Microscopic

Card 2/3

Dissertations defended in ...

inhomogeneities in cast alloys', on May 16, at the Siberian sections of AS USSR. For the degree of Candidate of Technical Sciences: Instytut mashynoznavstva ta avtomatyky (Institute of Machine Science and Automation): Hryhoriy Semenovyen Kit, Junior Scientific Collaborator, 'Approximate solution of the problem of free torsion', on March 16, at Dnipropetrovsk University. Hryhoriy Vasyl'ovych Plyatsko, Junior Scientific Collaborator, 'Nonstationary problems of heat conduction and thermoelasticity', on April 20, at the Institute of Mechanics of AS UkrSSR. Mykola Yuriyovych Shvayko, Aspirant, 'Some problems of elastoplastic torsion of prismatic rods', on December 25, at L'viv University. Instytut metalokeramiky i spetsial'nykh splaviv (Institute of Metal Ceramics and Special Alloys): Volodymyr Ivanovych Kovpak, Aspirant: 'Investigation of durable strength during programmed change of load and temperature', on October 23, at Kiev Polytechnic Institute.

Card 3/3

41358
S/081/62/000/017/089/102
B177/B186

15.8080

AUTHORS: Gorb, M. L., Sinyavskaya, M. D.

TITLE: Comparative tests for wear on polyamide resins subject to sliding friction against steel

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1962, 545, abstract 17P83 (In collection: Plastmassy v mashinostr. i priborostr., Kiyev, Gostekhizdat USSR, 1961, 294 - 302)

TEXT: To fix the limiting values of velocity and pressure at which polyamides can be used as construction materials in friction assemblies, research was conducted into the amount and intensity of relative wear suffered by specimens of the polyamides П68 (P68), and АК-7 (AK-7) (pure and containing fillers), and also of cord caprone at temperatures not higher than 150°, as a function of the velocity (0.4; 1.0; 2.0; 3.0; 4.0 and 5.0 m/sec) and pressure (10 - 150 kg/cm^2), under sliding friction against steel both with and without lubricants. A simultaneously increase of velocity and pressure in dry sliding friction was found to increase the

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Comparative tests for wear on ...

intensity of wear. It is of advantage to introduce up to 10% of anti-friction fillers into polyamide materials, as this reduces the coefficient of friction and the temperature to which the friction surfaces are heated. Large quantities of filler increase the wear, and at certain values of pressure and velocity they either sharply increase the intensity of wear or they lead to breakdown. Introducing lubricant onto the friction surface without cooling (drip lubrication with MC (MS) oil) reduces the quantity and intensity of wear, and also increases the limiting values of its parameters. Abundant lubrication enhances this effect. [Abstracter's note: Complete translation.]

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L 21420-66 EWP(e)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k)/ETC(m)-6 JD/WW/JG/WB/EM/
DJ/WH

ACC NR: AP6009610 (N) SOURCE CODE: UR/0369/66/002/001/0078/0083

AUTHOR: Sinyavskaya, M. D.

ORG: Institute of the Science of Materials, AN UkrSSR, Kiev (Institut problem materialovedeniya AN UkrSSR)

TITLE: Friction and wear in an aggressive medium

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 1, 1966, 78-83

TOPIC TAGS: fretting corrosion, wear resistance, corrosion resistance, sea water corrosion, corrosion resistant metal, corrosion resistant alloy, cermet, wear resistant metal, metal friction

ABSTRACT: A review was made of Soviet studies on fretting corrosion of metals and cermets in aqueous, acid and alkaline solutions, concentrated nitric acid, ultrapure water, and sea water. One purpose of the studies was selection of high wear-resistant and corrosion-resistant materials for newly developing technology of chemical machinery construction, rockets, turbine construction, atomic plants, etc. Another purpose was to develop new materials such as cermets which would meet the requirements of the new technology. A detailed and complex study of the effect of corrosion medium on friction and wear is considered necessary, especially determination of the electrode potentials which characterize corrosional behavior of a friction pair under conditions of actual service. Also, testing is very important of the

Card 1/2

L 21420-66
ACC NR: AP6009610

effects of lubricants", erosion, lubricant feed, temperature of the medium, pressure and velocity on fretting corrosion. The studies published were devoted mostly to the selection of materials for friction pairs for specific working conditions, without analysis of the processes on the friction surface. According to the literature, the friction pairs of cermets showed the most satisfactory wear-resistance in various corrosion media. Orig. art. has: 2 tables. [JK]

SUB CODE: 11/ SUBM DATE: 15Oct64/ ORIG REF: 008/ OTH REF: 001/ ATD PRESS: 4221

Card 2/2

BLOKH, S.S.; BUCHIN, A.N.; KRYUCHKOV, B.N.; REYTENBAKH, G.R.; SINYAVSKAYA, N.D.

Certain features of the technological process in the development of the Western-Tebuk oil field in the Komi A.S.S.R. Nauch-tekh. sbor. po dob. nefti. no.21: 54-58 '63. (MIRA 17:5)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut i Pechorskiy nauchno-issledovatel'skiy ugol'nyy institut.

SINYAVSKAYA, N.G. (Leningrad)

Field practice of students in public health organization. Sov. zdrav. 21 no.1:28-30 '62. (MIRA 15:2)

1. Iz kafedry organizatsii zdravookhraneniya i istorii meditsiny Leningradskogo pediatricheskogo meditsinskogo instituta.
(PUBLIC HEALTH--STUDY AND TEACHING)

SINYAVSKAYA, N. Ye. Cand Med Sci -- (diss) "The pathological anatomy and certain problems of the pathogenesis of pneumonia during dysentery of early childhood." Smolensk, 1958. 18 pp (Smolensk State Med Inst), 150 copies (KL, 36-58, 116)

SINYAVSKAYA, O.A.

Efficient supplementary feeding of infants with donor's milk.
Vop.okh.mat. i det. 1 no.3:93 My-Je '56. (MLRA 9:9)

1. Iz kafedry propedevtiki detskikh bolezney Sverdlovskogo gosudarstvennogo meditsinskogo instituta.
(INFANTS—NUTRITION)

SINYAVSKAYA, O. A., Cand Med Sci -- "Certain indices of the condition of the ~~vegetative~~ autonomic nervous system and metabolism ~~in~~ of children ~~suffering from~~ in hypotrophy. Sverdlovsk, 1961. (Kuybyshev State Med Inst) (KL, 8-61, 264)

BOGULKINA, T.E.; SINYAVSKAYA, O.A.

Rare case of congenital hematoporphyrinuria in an 8-year-old girl. Pediatriia no.1:78-79 '62. (MIRA 15:1)

1. Iz kafedry propedevtiki detskikh bolezney (zav. - dotsent T.E. Bogulkina) Sverdlovskogo meditsinskogo instituta (dir. - prof. A.F. Zverev) na baze detskoy zheleznodorozhnoy bol'nitsy Sverdlovska (glavnyy vrach A.D. Firsova).
(PORPHYRINURIA)

VOGULKINA, T.E., dotsent; SINYAVSKAYA, O.A.; FIRSOVA, A.D.

Practice in treating exudative diathesis in children; from data of the Sverdlovsk Pediatric Railway Hospital. Pediatriia 42 no.1:82-85 Ja'63 (MIRA 16:10)

1.Iz kafedry propedevtiki detskikh bolezney (zav. - dotsent T.E.Vogulkina)Sverdlovskogo meditsinskogo instituta.
(SVERDLOVSK—DIATHESIS)

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.; KHALTURIN, 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)

MIKHAYLOV, A.V., doktor tekhn.nauk; SINYAVSKAYA, V.M., inzh.

Hydraulic operation of spillway structures during construction and temporary operation of the Stalingrad hydroelectric development. Gidr. stroi. 31 no.9:17-20 S '61. (MIRA 14:12)
(Volga Hydroelectric Power Station (22d Congress of the CPSU)--Spillways)

SINYAVSKAYA, V.M., inzh.; GAVRISH, P.D., inzh.; RUBANIK, M.N., inzh.

Actual testing of the hydraulic structures of the Stalingrad hydroelectric development. Gidr. stroi. 31 no.9:21-27 S '61. (MIRA 14:12)
(Volga Hydroelectric Power Station (22d Congress of the CPSU)—Hydraulic structures)

SINYAVSKAYA, V. T.

ANDON'YEV, V.L.; BAUM, V.A.; BAUMGARTEN, N.K.; BEREZIN, V.D.; BIRYUKOV, I.K.; BIRYUKOV, S.M.; BLOKHIN, S.I.; BOROVOY, G.A.; BULEV, M.Z.; BURAKOV, N.A.; VERTSAYZER, B.A.; VOVK, G.M.; VORMAN, B.A.; VOSHCHININ, A.P.; GALAKTIONOV, V.D., kand. tekhn. nauk; GENKIN, Ye.M.; GIL'DENBLAT, Ya.D., kand. tekhn. nauk; GINZBURG, M.M.; GLEBOV, P.S.; GODES, E.G.; GORBACHEV, V.N.; GRZHIB, B.V.; GREKULOV, L.F., kand. s.-kh. nauk; GRODZENSKAYA, I.Ya.; DANILOV, A.G.; DMITRIYEV, I.G.; DMITRIYENKO, Yu.D.; DOBROKHOTOV, D.D.; DUBININ, L.G.; DUNDUKOV, M.D.; ZHOLIK, A.P.; ZENKEVICH, D.K.; ZIMAREV, Ye.V.; ZIMASKOV, S.V.; ZUBRIK, K.M.; KARANOV, I.F.; KNYAZEV, S.N.; KOLMGAYEV, N.M.; KOMAREVSKIY, V.T.; KOSENKO, V.P.; KORENISTOV, D.V.; KOSTROV, I.N.; KOTLYARSKIY, D.M.; KRIVSKIY, M.N.; KUZNETSOV, A.Ya.; LAGAR'KOV, N.I.; LGALOV, V.G.; LIKHACHEV, V.P.; LOGUNOV, P.I.; MATSKEVICH, K.F.; MEL'NICHENKO, K.I.; MENDELEVICH, I.R.; MIKHAYLOV, A.V., kand. tekhn. nauk; MUSIYEVA, R.N.; NATANSON, A.V.; NIKITIN, M.V.; OVES, I.S.; OGUL'NIK, G.R.; OSIPOV, A.D.; OSMER, N.A.; PETROV, V.I.; PEMYSHKIN, G.A., prof.; P'YANKOVA, Ye.V.; RAPOPORT, Ya.D.; REMEZOV, N.P.; ROZANOV, M.P., kand. biol. nauk; ROCHEGOV, A.G.; RUBINCHIK, A.M.; RYBCHEVSKIY, V.S.; SADCHIKOV, A.V.; SEMENTSOV, V.A.; SIDENKO, P.M.; SINYAVSKAYA, V.T.; SITAROVA, M.N.; SOSNOVIKOV, K.S.; STAVITSKIY, Ye.A.; STOLYAROV, B.P. [deceased]; SUDZILOVSKIY, A.O.; SYRTSOVA, Ye.D., kand. tekhn. nauk; FILIPPSKIY, V.P.; KHALTURIN, A.D.; TSISHEVSKIY, P.M.; CHERKASOV, M.I.; CHERNYSHEV, A.A.; CHUSOVITIN, N.A.; SHESTOPAL, A.O.; SHEKHTER, P.A.; SHISHKO, G.A.; SHCHERBINA, I.N.; ENGEL', F.F.; YAKOBSON, A.G.; YAKUBOV, P.A., ARKHANGEL'SKIY,

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 2.
Ye.A., retsenzent, red.; AKHUTIN, A.N., retsenzent, red.; BALASHOV,
Yu.S., retsenzent, red.; BARABANOV, V.A., retsenzent, red.; BATUNER,
P.D., retsenzent, red.; BORODIN, P.V., kand. tekhn. nauk, retsenzent,
red.; VALUTSKIY, I.I., kand. tekhn. nauk, retsenzent, red.;
GRIGOR'YEV, V.M., kand. tekhn. nauk, retsenzent, red.; GUBIN, M.F.,
retsenzent, red.; GUDAYEV, I.N., retsenzent, red.; YERMOLOV, A.I.,
kand. tekhn. nauk, retsenzent, red.; KARAULOV, B.F., retsenzent,
red.; KRITSKIY, S.N., doktor tekhn. nauk, retsenzent, red.; LIKIN,
V.V., retsenzent, red.; LUKIN, V.V., retsenzent, red.; LUSKIN, Z.D.,
retsenzent, red.; MATRIOSOV, A.Kh., retsenzent, red.; MENDELEYEV,
D.M., retsenzent, red.; MENKEL', M.F., doktor tekhn. nauk, retsenzent,
red.; OBRAZKOV, S.S., retsenzent, red.; PETRASHEN', P.N., retsenzent,
red.; POLYAKOV, L.M., retsenzent, red.; RUMYANTSEV, A.M., retsenzent,
red.; RYABCHIKOV, Ye.I., retsenzent, red.; STASENKOV, N.G., retsen-
zent, red.; TAKANAYEV, P.F., retsenzent, red.; TARANOVSKIY, S.V.,
prof., doktor tekhn. nauk, retsenzent, red.; TIZDEL', R.R., retsen-
zent, red.; FEDOROV, Ye.M., retsenzent, red.; SHEVYAKOV, M.N.,
retsenzent, red.; SHMAKOV, M.I., retsenzent, red.; ZHUK, S.Ya.
[deceased], akademik, glavnyy red.; RUSSO, G.A., kand. tekhn. nauk,
red.; FILIMONOV, N.A., red.; VOLKOV, L.N., red.; GRISHIN, M.M., red.;
ZHURIN, V.D., prof., doktor tekhn. nauk, red.; KOSTROV, I.N., red.;
LIKHACHEV, V.P., red.; MEDVEDEV, V.M., kand. tekhn. nauk, red.;
MIKHAYLOV, A.V., kand. tekhn. nauk, red.; PETROV, G.D., red.; RAZIN,
N.V., red.; SOBOLEV, V.P., red.; FERINGER, B.P., red.; FREYGOFER,
(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 3.
Ye.F., red.; TSYPLAKOV, V.D. [deceased], red.; KORABLINOV, P.N., tekhn. red.; GENKIN, Ye.M., tekhn. red.; KACHKOVSKIY, N.V., tekhn. red.

[Volga-Don; technical account of the construction of the V.I. Lenin Volga-Don Navigation Canal, the TSimlyansk Hydroelectric Center, and irrigation systems] Volgo-Don; tekhnicheskii otchet o stroitel'stve Volgo-Donskogo sudokhodnogo kanala imeni V.I. Lenina, TSimlianskogo gidrouzla i orositel'nykh sooruzhenii, 1949-1952; v piati tomakh. Moskva, Gos. energ. izd-vo. Vol.1. [General structural descriptions] Obshchee opisanie sooruzhenii. Glav. red. S.IA. Zhuk. Red. toma M.M. Grishin. 1957. 319 p. Vol.2. [Organization of construction. Specialized operations in hydraulic engineering] Organizatsiia stroitel'stva. Spetsial'nye gidrotekhnicheskie raboty.

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 4.
Glav. red. S.IA. Zhuk. Red. toma I.N. Kostrov. 1958. 319 p.
(MIRA 11:9)

1. Russia (1923- U.S.S.R.) Ministerstvo elektrostantsii. Byuro tekhnicheskogo otcheta o stroitel'stve Volgo-Dona. 2. Chlen-korrespondent Akademii nauk SSSR (for Akhutin). 3. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Grishin, Razin).
(Volga Don Canal--Hydraulic engineering)

SINYAVSKIY, A.A.

Defects in conveyors. Mekh. stroi. 18 no.5:22 My '61. (MIRA 14:7)
(Conveying machinery--Maintenance and repair)

SINYAVSKIY, A.L.

24.4200 1103

28684
S/021/60/000/007/007/009
D211/D305

AUTHORS: Vaynberh, D.V., and Synyavs'kyy, O.L.

TITLE: Applying the method of potentials to the numerical analysis of the deformation of a cylindrical shell

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no.7, 1960, 907 - 912

TEXT: The aim of the paper is to give the numerical method of solving a system of integral equations of the theory of a thin cylindrical shell. The author starts with the general differential equations for statical equilibrium of the cylindrical shell by linear deformations. They are

$$\frac{\partial^2 u}{\partial \alpha^2} + \frac{1-\nu}{2}\cdot\frac{\partial^2 u}{\partial \beta^2} + \frac{1+\nu}{2}\cdot\frac{\partial^2 v}{\partial \alpha \partial \beta} + \frac{\nu}{R}\cdot\frac{\partial w}{\partial \alpha} = -\frac{1-\nu^2}{Eh}X,$$

$$\frac{1+\nu}{2}\cdot\frac{\partial^2 u}{\partial \alpha \partial \beta} + \frac{\partial^2 v}{\partial \beta^2} + \frac{1-\nu}{2}\cdot\frac{\partial^2 v}{\partial \alpha^2} + \frac{1}{R}\cdot\frac{\partial w}{\partial \beta} = -\frac{1-\nu^2}{Eh}Y, \qquad (1)$$

Card 1/6

Applying the method of potentials ...

$$\frac{\nu}{R}\cdot\frac{\partial u}{\partial \alpha}+\frac{1}{R}\cdot\frac{\partial v}{\partial \beta}+c^2\nabla^2\nabla^2 w+\frac{1}{R^2}w=\frac{1-\nu^2}{Eh}Z. \qquad (1)$$

where α, β are coordinates of the mean surface, u, v, w, displacements in the direction of axes α, β, n; X, Y, Z - components of external loading, R - radius of curvature, n - thickness of the shell; $c^2 = h^2/12$. As a fundamental state the cylindrical panel was considered, loaded at the point (α_0, β_0) with the normal force Q and with the following boundary conditions

$$\begin{aligned} &u = 0,\ w = 0,\ M_2 = 0,\ N_2 = 0 \text{ for } \alpha = 0,\ \alpha = \alpha_1,\\ &v = 0,\ w = 0,\ M_1 = 0,\ N_1 = 0 \text{ for } \beta = 0,\ \beta = \beta_1. \end{aligned} \qquad (2)$$

Three auxiliary states were considered simultaneously. State 1. means a plane rectangular plate, being the development of the shell, loaded at the point (α, β) in the direction 1. In this case, the differential equations for the displacements u_1, v_1

Applying the method of potentials ...

$$\frac{\partial^2 u_1}{\partial \xi^2} + \frac{1-\nu}{2}\cdot\frac{\partial^2 u_1}{\partial \eta^2} + \frac{1+\nu}{2}\cdot\frac{\partial^2 v_1}{\partial \xi \partial \eta} = -\frac{1-\nu^2}{Eh}\delta(\xi - \alpha_1\eta - \beta)$$

$$\frac{1+\nu}{2}\cdot\frac{\partial^2 u_1}{\partial \xi \partial \eta} + \frac{\partial^2 v_1}{\partial \eta^2} + \frac{1-\nu}{2}\cdot\frac{\partial^2 v_1}{\partial \xi^2} = 0. \qquad (3)$$

would be obtained from the first two equations (1) by putting

$$R = \infty,\ w = 0,\ u = u_1,\ v = v_1,\ Z = Y = 0.$$

To satisfy equations beside the force at point (α, β) in the direction 1. the normal load $H_1(\xi, \eta, \alpha, \beta)$ spread over the surface of the shell should be introduced: $H_1(\xi, \eta, \alpha, \beta) =$

$$= \frac{Eh}{1-\nu^2}\cdot\frac{1}{R}\left[\nu\frac{\partial u_1}{\partial \xi} + \frac{\partial v_1}{\partial \eta}\right]. \qquad (6)$$

Applying the theorem of mutual work to the fundamental and to the auxiliary state described by Eq. (6) and by displacements $u = u_1$

Card 3/7

Applying the method of potentials ...

sal loading must be introduced with components

$$H_3(\xi, \eta, \alpha, \beta) = -\frac{Eh}{1-\nu^2}\cdot\frac{\nu}{R}\cdot\frac{\partial w_3}{\partial \xi}, \text{ along the axis } \alpha \qquad (12)$$

$$H_4(\xi, \eta, \alpha, \beta) = -\frac{Eh}{1-\nu^2}\cdot\frac{1}{R}\cdot\frac{\partial w_3}{\partial \eta}, \text{ along the axis } \beta \qquad (13)$$

$$H_0(\xi, \eta, \alpha, \beta) = \frac{Eh}{1-\nu^2}\cdot\frac{1}{R^2}\, w_3, \text{ along the axis n.} \qquad (14)$$

Using the net as shown in the diagram and using the method of trapeziums, 15 algebraical equations are derived giving the values of $u_1, u_2, \ldots u_{25}$ as functions of values $w_1, w_2 \ldots w_9$. The values of $v_1, v_2, \ldots v_9, v_{11}, v_{12}, v_{13}, v_{19}, v_{20}, v_{21}$ were obtained as functions of $w_1, w_2, \ldots w_9$. Substituting these values into 9 equations a further set of 9 equations are obtained

Card 5/7

Applying the method of potentials ...

$$w_1 = -\frac{\lambda^4}{R^2h^2}\left[0{,}048\,w_1 + 0{,}024\,w_2 + 0{,}011\,w_3 + 0{,}024\,w_4 + 0{,}019\,w_5 + 0{,}009\,w_6 + 0{,}007\,w_7 + 0{,}006\,w_8 + 0{,}003\,w_9\right] + 0{,}097\,\frac{Q\lambda^2}{D};$$

A

from which w_1, w_2, ... w_9 could be calculated. Comparison of the obtained results with the solutions of V.Z. Vlasov (Ref. 1: Obshchaya teoryya obolochek (General Theory of Shells) GITTL, 1949) shows the difference not greater than 10 %. Finally, the authors show the solution of a integral equation

$$w(\alpha, \beta) + \iint F(\xi, \eta, \alpha, \beta)w(\xi, \eta)\, d\xi d\eta = f(\alpha, \beta) \quad (17)$$

by using the method of successive approximation, proposed by Yu.D. Sokolov (Ref. 4: UMZh, 9, 1, 82, 1957). There are 1 figure and 4 Soviet-bloc references.

ASSOCIATION: Instytut budivel'noyi mekhaniky (Institute of Building Mechanics)

SUBMITTED: July 14, 1959

Card 6/7

VAYNBERG, D. V.; SINYAVSKIY, A.L. [Syniavs'kyi, O.L.]

Stress concentration in disks with apertures of special shape. Dop. AN URSR no.10:1358-1362 '60. (MIRA 13:11)

1. Kiyevskiy inzhenerno-stroitel'nyy institut. Predstavleno akademikom AN USSR F.P.Belyankinym [Bieliankin, F.P.]
(Elastic plates and shells)

Sinyavskiy O.L.

PHASE I BOOK EXPLOITATION SOV/5763

Vaynberg, David Veniaminovich, and Aleksandr Leonidovich Sinyavskiy

Raschet obolochek (Calculation for Casings) Kiyev, Gosstroyizdat UkrSSR, 1961. 118 p. 5500 copies printed.

Ed.: I. Ye. Reznichenko; Tech. Ed.: V. P. Boyko.

PURPOSE : This book is intended for engineers and scientific workers. It may also be useful to aspirants and students at technical schools of higher education.

COVERAGE: The book deals with a method for computing shells which is based on the use of the solution of problems of two-dimensional stress conditions and bending of plates. Cylindrical shells with rectangular and elliptical cutouts are examined. V. Z. Zhdan, V. G. Gorchakov, and I. Z. Roytfarb, aspirants, cooperated in compiling and computing materials for tables. The author thanks O. D. Oniashvili.

Card 1/4

S/124/62/000/005/043/048
D251/D308

10.6100

AUTHORS: Vaynberg, D.V., and Sinyavskiy, A.L.

TITLE: Approximate calculation of shells with cuts by potential theory methods

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 5, 1962, 8, abstract, 5V46 (V sb. Probl. mekhaniki sploshn. sredy M., AN SSSR, 1961, 73 - 82)

TEXT: The normal displacement w is considered of a circular cylindrical shell with an elliptic cut, loaded on the contour with tensional forces. To solve the problem, the system of differential equations of a thin inclined shell is replaced by a system consisting of two equations of equilibrium and one integral equation arising from the theorem of mutual actions. The integral representation of the displacement of a shell with a cut permits the evaluation of these displacements if the values of the other displacements on the contour of the cut are known. To find the latter displacements, it is sufficient, says the author, to solve the plane problem of the theory of elasticity for an infinite strip with a series of ellip-

Card 1/2

S/124/62/000/005/043/048
D251/D308

Approximate calculation of shells ... tical holes. [Abstractor's note: Complete translation].

Card 2/2

VAYNBERG, D.V.; SINYAVSKIY, A.L. (Kiev)

"The methods of numerical analysis in the theory of elasticity"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

ACCESSION NR: AT4039429 S/2879/64/000/000/0301/0308

AUTHOR: Vaynberg, D. V. (Kiev); Sinyavskiy, A. L. (Kiev); Dekhtyaryuk, Ye. S. (Kiev)

TITLE: Iteration algorithms and digital problems in the theory of plates and shells

SOURCE: Vsesoyuznaya konferentsiya po teorii obolochek i plastin. 4th, Yerevan, 1962. Teoriya obolochek i plastin (Theory of plates and films); trudy* konferentsii, 1964, 301-308

TOPIC TAGS: shell, plate, computer, digital computer, descent method, digital problem, iteration algorithm, programming, elasticity theory, Dirichlet problem

ABSTRACT: With the development of computer engineering, the way has been opened for new solutions to problems in the theory of elasticity. The construction of an algorithm for this purpose on an automatic digital computer, however, requires more than the knowledge of a method for solving the problem, capable of being carried out by man; it is necessary for additional logical steps to be carried out in order to attain complete formalization of all stages of the problem-solving process. In this article, the authors consider the construction of an algorithm for the digital solution of a large class of discrete equation systems in elasticity theory. The algorithm is designed to make an effective use of the

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ACCESSION NR: AT4039429

capabilities of modern automatic digital computers. Methods of solution are chosen so that the equations themselves undergo no transformations during the computation process. Each individual equation is not stored in the memory of the machine, but is automatically derived each time its use is required. From this point of view, iteration methods are the most suitable and most natural mode of operation with automatic digital computers. By this iteration method, a program has been developed which permits the handling, with no essential modifications, of an extensive class of problems differing in the type of equations, the configuration of the region, the character of the boundary conditions and other fundamental or initial parameters. The program makes an economical use of the internal memory of the machine, with input and output information presented in compact form. On the basis of a detailed structural study of the algorithm, the program has been broken down into blocks, each of which performs a specific function. A set, therefore, of these standardized blocks should facilitate the construction of a program for an entire cycle of related problems. The program given in the article is based on a class of iteration algorithms called descent methods. The essence of the method is explained in the article in geometrical language and is shown to be a method of conjugate gradients which is very effective in the solution of a number of problems. In the second section of the paper, the actual

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ACCESSION NR: AT4039429

program itself is described. Its distinguishing feature is the fact that the structure of the equations, the form of the grid region and the type of boundary conditions do not form part of the program itself, but are fed into the machine in the form of basic information. The program was used to make torsion calculations for a group of shapes and for the solution of a Dirichlet problem for a 625-node grid. In addition, computations were made for a plate with a load in the form of a concentrated transverse force with a grid containing 100 nodes. Iteration calculations were carried out for a cylindrical panel and for several other related engineering problems. The algorithms and programs described in the article also apply to three-dimensional problems in elasticity theory and to nonlinear problems, where they are particularly effective. Orig. art. has: 14 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 14May64 ENCL: 00

SUB CODE: AS, DP NO REF SOV: 001 OTHER: 000

Card 3/3

L 10793-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k)/EWA(h)/ETC(m) IJP(c) WW/EM/GS

ACC NR: AT6001080 SOURCE CODE: UR/0000/65/000/000/0023/0033

AUTHORS: Vaynberg, D. V.; Gerashchenko, V. M.; Roytfarb, I. Z.; Sinyavskiy, A. L.

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

TITLE: A summary of network equations of plate deflection by the variational method

SOURCE: Soprotivleniye materialov i teoriya sooruzheniy (Strength of materials and the theory of structures), no. 1. Kiev, Izd-vo Budivel'nyk, 1965, 23-33

TOPIC TAGS: stress analysis, thin plate, structural analysis, network structural analysis, finite difference method

ABSTRACT: A method of applying network equations for plate deflection problems is developed. A thin plate, such as that shown in Fig. 1, is considered.

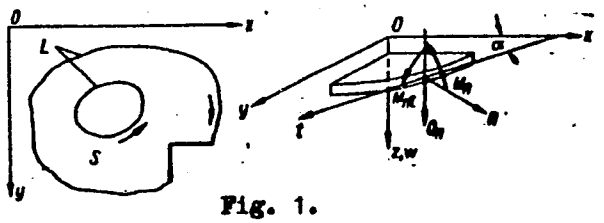

Fig. 1.

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The plate occupies the domain S bounded by the curve L consisting of

$$L_j=[l_j,\ l_{j+1}]\quad (j=1,\ 2,\ \ldots,\ m,)$$
$$l_{m+1}=l_1.$$

The potential energy of the plate is given as

$$\Pi=V-A,$$

where V is the energy of elastic deformation (elastic potential) and A is the work of external edge and surface forces. Green's formula is applied to the elastic potential to yield

$$V=\frac{D}{2}\left\{\iint_S w\,\Delta\Delta\, w\,dx\,dy+\sum_{j=1}^{m}\oint_{L_j}\left[(1-\nu)\left(\frac{\partial^2 w}{\partial x^2}\cos^2\alpha+\right.\right.\right.$$
$$\left.+2\frac{\partial^2 w}{\partial x\,\partial y}\sin\alpha\cos\alpha+\frac{\partial^2 w}{\partial y^2}\sin^2\alpha\right)+\nu\Delta w\Big]\frac{\partial w}{\partial n}\,dl+$$
$$+\sum_{j=1}^{m}\oint_{L_j}\left\{(1-\nu)\frac{\partial}{\partial l}\left[\left(\frac{\partial^2 w}{\partial x^2}-\frac{\partial^2 w}{\partial y^2}\right)\sin\alpha\cos\alpha-\right.\right.$$
$$\left.-\frac{\partial^2 w}{\partial x\,\partial y}(\cos^2\alpha-\sin^2\alpha)\right]-\left(\frac{\partial^2 w}{\partial x^2}+\frac{\partial^2 w}{\partial x\,\partial y^2}\right)\cos\alpha-\left(\frac{\partial^2 w}{\partial y^2}+$$
$$\left.+\frac{\partial^2 w}{\partial x^2\,\partial y}\right)\sin\alpha\Big\}w\,dl+(1-\nu)\sum_{j=1}^{m}\left[\left(\frac{\partial^2 w}{\partial y^2}-\frac{\partial^2 w}{\partial x^2}\right)\sin\alpha\cos\alpha+\right.$$

$$+\frac{\partial^2 w}{\partial x\,\partial y}(\cos^2\alpha-\sin^2\alpha)\Big]w\Big|_{t-t_j}^{t-t_{j+1}}\Big\}t$$

and the work of external forces is

$$A=\iint_S qw\,dx\,dy-\sum_{j=1}^{m}\oint_{L_j}M_n\frac{\partial w}{\partial n}\,dl+$$

$$+\sum_{j=1}^{m}\oint_{L_j}\left(Q_n-\frac{\partial M_{nl}}{\partial l}\right)w\,dl+\sum_{j=1}^{m}M_{nl}w\Big|_{t-t_j}^{t-t_{j+1}}.$$

The network system is applied to the plate as is indicated in Figures 2 and 3.

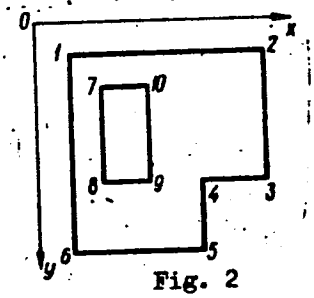


Fig. 2

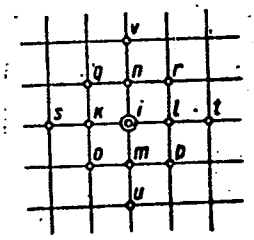


Fig. 3

L 10793-66

ACC NR: AT6001080

where straight line segments $L_j^{(1)}$ are perpendicular to the x-axis and segments $L_j^{(2)}$ are perpendicular to the y-axis. The ensuing quadratic network is used for substituting summation by the rectangular formula into the integral terms of the given energy expression. Differential substitutions are accomplished by computation of central differences. The authors develop and illustrate the mechanics of defining and evaluating the summation terms. The method presented was applied to the formulation of systems of difference equations for plates of variable stiffness, anisotropic plates, contact problems, and shells. The results of the applications are to be published in subsequent articles. Orig. art. has: 10 figures and 8 equations.

SUB CODE: 20/ SUBM DATE: 14May65/ ORIG REF: 002

Card 4/4

SINYAVSKIY, A.P.

FD-2343

USSR/Physics - Pulse counter

Card 1/1 Pub. 146 - 8/34

Author : Khartman, V. G.; Leont'yeva, I. N.; Sinyavskiy, A. P.; and Vasil'yev, L. V.

Title : Amplitude analyzer of pulses with electron-ray tube

Periodical : Zhur. eksp. i teor. fiz. 28, 699-705, Jun 1955

Abstract : The authors describe an analyzer of pulses with the use of an electron-ray tube. The device can classify into 20 channels pulses with amplitude up to 100 volts, with growth time greater than 0.1 microsecond, and with duration less than 30 microseconds. When the counting rate is 17,000 pulses/minute the omission constitutes about 1%. Stability of threshold of the channels is about 2%. They present the block schemes of the system and analyzer tube, a detailed circuit diagram forming the block, and photographs of the pulses. Four references, all non-USSR (W. Glenn, D. Watkins, E. Titterton).

Institution : -

Submitted : February 11, 1954

PA 20/49T57

SINYAVSKIY, A. V.

USSR/Engineering
Filters, Water
Water - Purification

Sep 48

"Results of Industrial Utilization of Wofite Filters," A. V. Sinyavskiy, Engr, ½ p

"Elek Stants" No 9

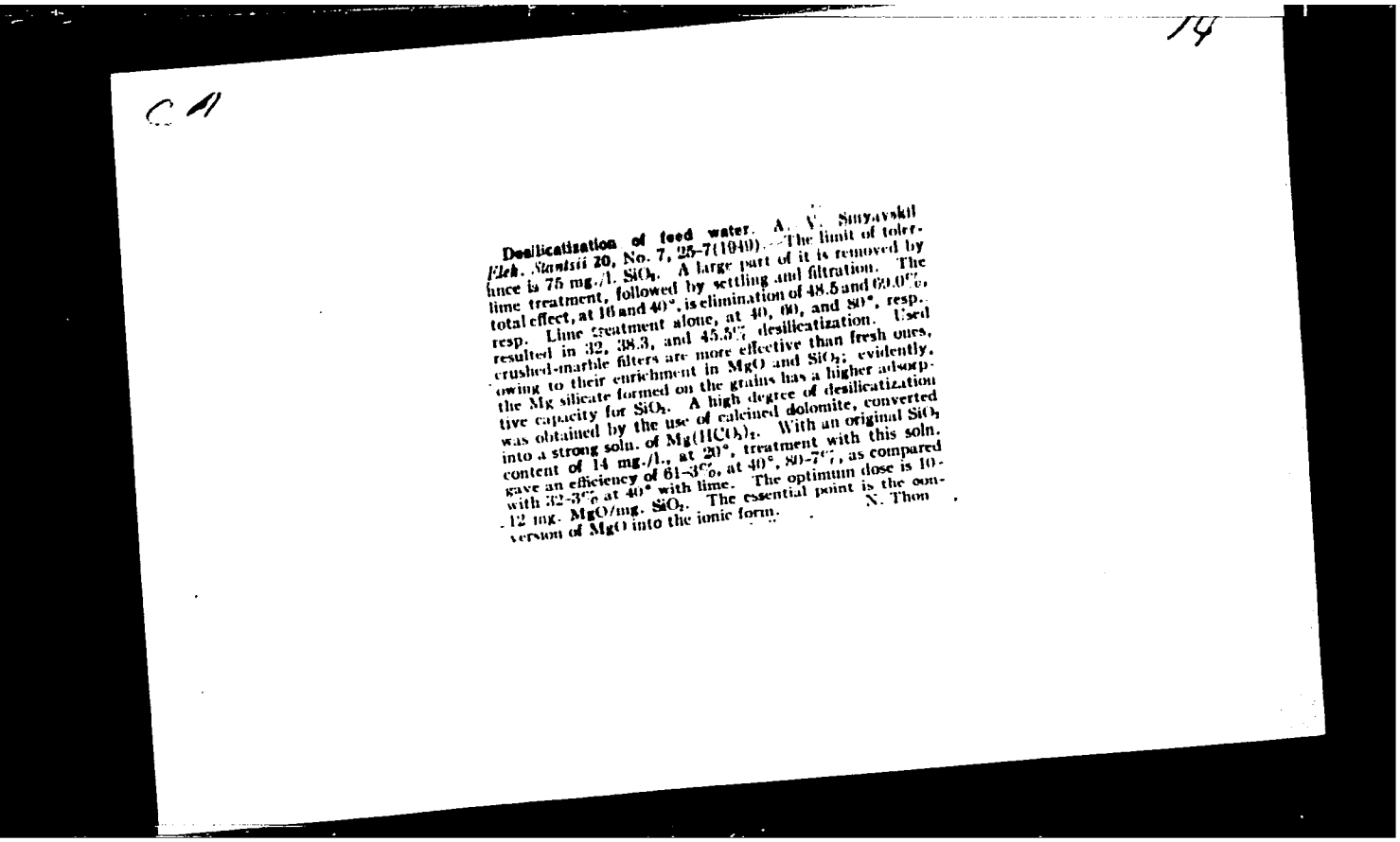
Filters are used for feed water treatment. Quotes figures for salt expenditure and describes state of filters on opening up for examination after 6-months' work.

20/49T57

SIMAVSKIY, A. V.

23168 obeskremnivaniye Pitatel'noy vody. elektr. stants 11, 1949, No. 7, s. 25-27.

SO: LETOPIS' NO. 31, 1949



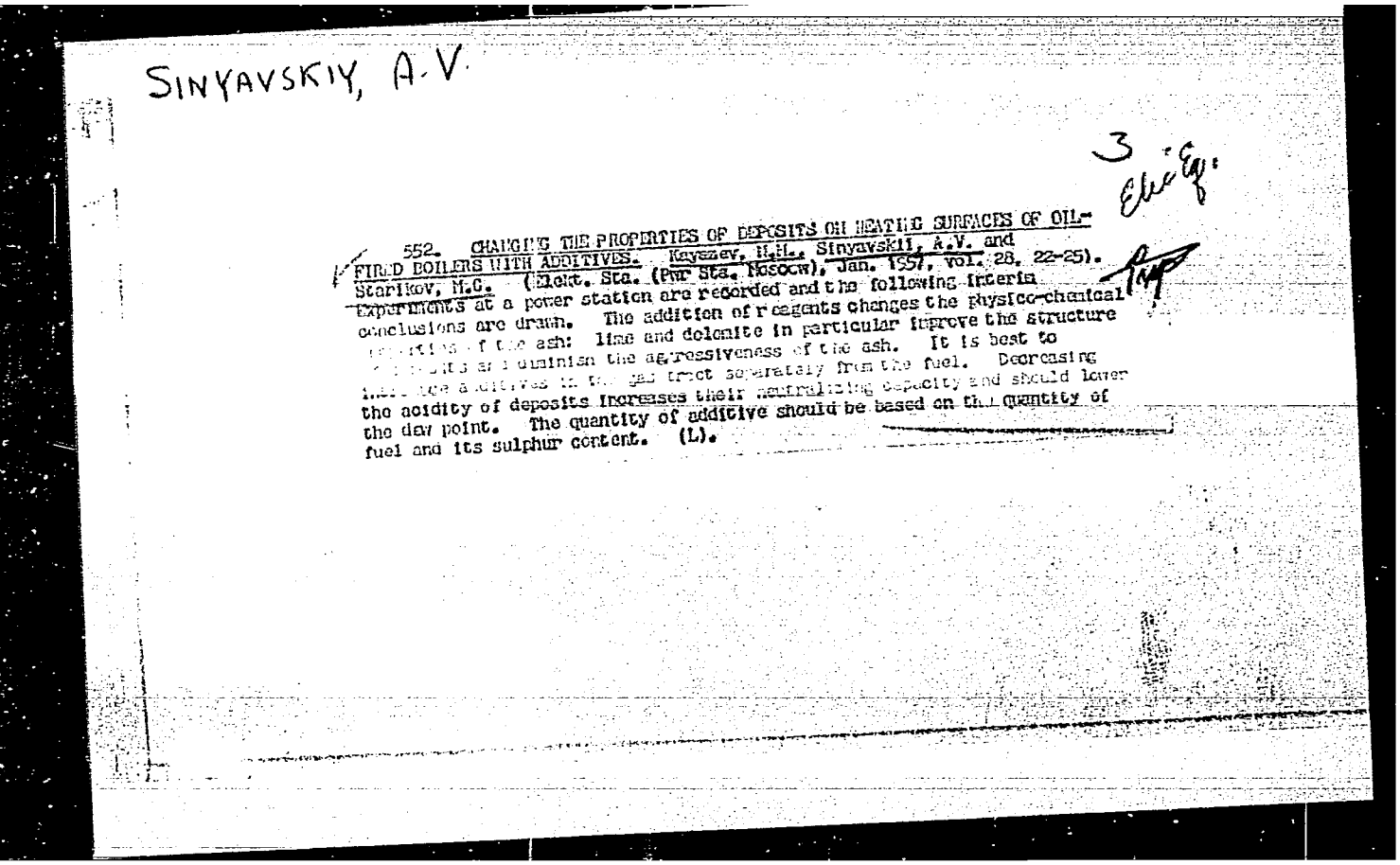
14

C-1

Desilicatization of feed water. A. V. Smyavskii *Elek. Stantsii* 20, No. 7, 25–7(1949).—The limit of tolerance is 75 mg./l. SiO_2. A large part of it is removed by lime treatment, followed by settling and filtration. The total effect, at 16 and 40°, is elimination of 48.5 and 69.0%, resp. Lime treatment alone, at 40, 60, and 80°, resp., resulted in 32, 38.3, and 45.5% desilicatization. Used crushed-marble filters are more effective than fresh ones, owing to their enrichment in MgO and SiO_2; evidently, the Mg silicate formed on the grains has a higher adsorptive capacity for SiO_2. A high degree of desilicatization was obtained by the use of calcined dolomite, converted into a strong soln. of $Mg(HCO_3)_2$. With an original SiO_2 content of 14 mg./l., at 20°, treatment with this soln. gave an efficiency of 61–3%, at 40°, 80–7%, as compared with 32–3% at 40° with lime. The optimum dose is 10–12 mg. MgO/mg. SiO_2. The essential point is the conversion of MgO into the ionic form. N. Thon

SINYAVSKIY, A.V., inzhener.

Scheme of partial, gradual ionization. Elek.sta. 25 no.2:50 F '54. (MLRA 7:2)
(Water--Purification)



SINYAVSKIY, A.V.

3 Elec Eq

552. CHANGING THE PROPERTIES OF DEPOSITS ON HEATING SURFACES OF OIL-FIRED BOILERS WITH ADDITIVES. Kayenev, N.N., Sinyavskii, A.V. and Starikov, M.G. (Elekt. Sta. (Por Sta, Moscow), Jan. 1957, Vol. 28, 22-25). Experiments at a power station are recorded and the following interim conclusions are drawn. The addition of reagents changes the physico-chemical properties of the ash: lime and dolomite in particular improve the structure and diminish the aggressiveness of the ash. It is best to [illegible] additives in the gas tract separately from the fuel. Decreasing the acidity of deposits increases their neutralizing capacity and should lower the dew point. The quantity of additive should be based on the quantity of fuel and its sulphur content. (L).

SINYAVSKIY, A.V., inzh.

Supervising the dosage of the mixture of calcium and magnesium hydroxides. Elek.sta. 29 no.11:72 N '58. (MIRA 11:12)
(Feed-water purification)

ACC NR: AP6029027 SOURCE CODE: UR/0413/66/000/014/0030/0030

INVENTOR: Kanevskiy, L. S.; Sinyavskiy, B. S.

ORG: None

TITLE: Jacketed sectional tubular heat exchanger made from graphitized carbon. Class 17, No. 183774 [announced by the Novocherkassk Electrode Plant (Novocherkasskiy elektrodnyy zavod)]

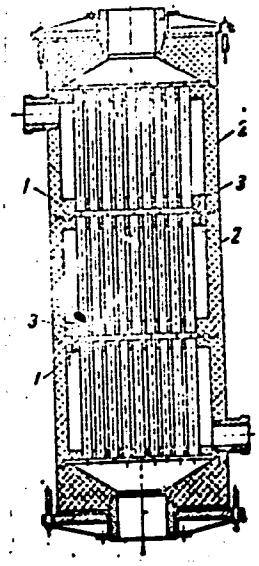
SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 30

TOPIC TAGS: heat exchanger, corrosion resistance, carbon

ABSTRACT: This Author's Certificate introduces: 1. A jacketed sectional tubular heat exchanger for aggressive media made from graphitized carbon. This unit is designed for multiple passage of the heat exchanging agent in the area between the tubes. The tube plates of each section have holes which permit the flow of the heat exchanging agent from one section to another, thus simplifying the construction. 2. A modification of this heat exchanger in which the holes in the tube plates are located along the periphery of the plates in diametrically opposite directions to increase exposure to the heat exchanging agent.

Card 1/2 UDC: 621.565.946:541.427.7

ACC NR: AP6029027



1--tube plates; 2--heat exchanger sections; 3--holes in the tube plates

SUB CODE: 13/ SUBM DATE: 11Jun65

Card 2/2

L 35565-65 EPF(c)/EPF(n)-2/EPR/EWG(j)/EWT(d)/EWT(l)/EWT(m)/EWP(b)/EWP(e) Pt-4/ Ps-4/Pu-4 WH/WW/JW/ MJW/JD S/0286/65/000/005/0031/0031

ACCESSION NR: AP5008153

AUTHORS: Zinchenko, A. T.; Zarechanskiy, Ye. T.; Noshchenko, K. Ye.; Kanevskiy, L. S.; Sinyavskiy, B. S.; Novlyanskiy, V. P.; Kaklyugin, B. S.; Fal'ko, V. I.; Kosmynin, Ye. Ya.; Genin, L. Sh.; Kralin, L. A.

TITLE: A graphite heat exchanger. Class 17, No. 168734

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 5, 1965, 31

TOPIC TAGS: heat exchanger, graphite

ABSTRACT: This Author Certificate presents a graphite heat exchanger made of blocks with channels for heat-exchanging media. It is equipped on the ends with caps and fittings for introducing and removing the indicated media. To improve the thermal efficiency and to reduce weight, the caps are equipped with adapter plates and horizontal baffles for multipass parallel countercurrents of the media.

ASSOCIATION: none

SUBMITTED: 20Feb63 ENCL: 00 SUB CODE: TD

NO REF SOV: 000 OTHER: 000

Card 1/1

SINYAVSKIY, B.S.

Manufacturing chemical equipment from materials based on graphite at the Novocherkassk Electrode Plant. Bul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no.7:14-15 Jl '65. (MIRA 18:9)

SINYAVSKIY, E.P.; KOVARSKIY, V.A.

Theory of recombinations in semiconductors at low temperatures in non-Condon approximation. Izv. AN Mold. SSR no.5:109-112 '62. (MIRA 18:3)

43121
S/181/62/004/011/021/049
B104/B102

AUTHORS: Kovarskiy, V. A., and Sinyavskiy, E. P.

TITLE: The theory of nonradiative transitions in crystals in "non-Condon" approximation. High temperatures

PERIODICAL: Fizika tverdogo tela, v. 4, no. 11, 1962, 3202 - 3207

TEXT: The object here is to extend to high temperatures the theory of nonradiative transitions in localized centers of crystals at low temperatures developed in a previous paper (V. A. Kovarskiy, FTT, 4, 6, 1962). For high temperatures it is important to consider resonance effects that can arise through the possible intersection of the adiabatic potentials. From the electron wavefunction

$$\Psi_s(\mathbf{r}, q) \simeq \left\{1 + \sum_n{}' \left(\frac{\langle n | v | s \rangle}{E_{s(1)}(q) - E_n(q)} \right)^2 \right\}^{-1/2} \left\{ \Psi_s^0 + \sum_n{}' \frac{\langle n | v | s \rangle \Psi_n^0(\mathbf{r}, q_s)}{E_{s(1)}(q) - E_n(q)} \right\}, \quad (1)$$

obtained by perturbation-theoretical methods taken from the previous paper leads to

$$E_{s(1,2)} = \frac{E_p(q) + E_s(q) + \eta\hbar\omega_D}{2} \mp \sqrt{\left(\frac{E_p(q) - E_s(q) - \eta\hbar\omega_D}{2} \right)^2 + |\langle p | v | s \rangle|^2}. \quad (6)$$

Card 1/3

The theory of nonradiative transitions...

for the corrected levels $E_{s(1)}(q)$ and $E_{s(2)}(q)$ between which the nonradiative transition occurs, wherein s and p are the quantum numbers of the initial and final states of the electron. The matrix element of the nonradiative transition between s and p is given by

$$\langle p|L_{\text{неадиаб.}}|s\rangle = -i\sum_x \frac{\omega_x}{\omega_D}\langle p|v_x|s\rangle \hat{P}_x\xi(Q) + \\ + \sum_f \langle p|v_f|s\rangle Q_f \sum_x \frac{\omega_x}{2\omega_D}[\hat{P}_x^2;\ \xi(Q)];\quad Q_x = q_x - q_{xs};$$

where

$$\xi(Q) = \sqrt{2}\,\frac{1}{\sqrt{f(1+f)}\left(\varepsilon^\circ_{sp} + \sum_x \Delta_{xsp}Q_x\right)};\quad \varepsilon^\circ_{sp} = \frac{E^\circ_s(q_s) - E^0_p(q_s)}{\hbar\omega_D} + \eta = \varepsilon_{sp} + \eta;$$

$$f = \sqrt{1 + \frac{4}{(\hbar\omega_D)^2}\left(\frac{\sum_x v_{xsp}Q_x}{\varepsilon^\circ_{sp} + \sum_x \Delta_{xsp}Q_x}\right)^2} = \sqrt{1 + 4\left(\frac{\sum_x v_{xsp}Q_x}{\bar{E}_s(q) - \bar{E}_p(q) + \eta\hbar\omega_D}\right)^2};$$

$$\bar{E}_s(q) - \bar{E}_p(q) = \hbar\omega_D\left[\varepsilon_{sp} + \sum_x \Delta_{xsp}(q_x - q_{xs})\right].$$

Card 2/3

As first briefly established earlier (K. Kuang, A. Phys. Proc. Roy. Soc., A 204, 406, 1950), the nonradiative transitions take place close to the point where the adiabatic potentials intersect. Since now $E_s(q) - E_p(q) \simeq 0$ and $\eta \ll \left| \frac{\langle n | v | s \rangle}{\hbar\omega_D} \right|$ it can be assumed that

$$\left| 4 \left(\frac{\sum_i v_{isp} Q_i}{\tilde{E}_s(q) - \tilde{E}_p(q) + \gamma_i \hbar\omega_D} \right) \right|^2 \gg 1. \quad (8).$$

From this $\xi(Q)$ can be expanded in negative powers of the parameter (8). The probability of a nonradiative transition is investigated by a method developed in the previous paper but not described here. For the asymptotic case ($T \to \infty$) the transition probability depends only on the optical parameters of the centers.

ASSOCIATION: Institut fiziki i matematiki AN Mold.SSR, Kishinev. (Institute of Physics and Mathematics AS MolSSR, Kishinev)

SUBMITTED: June 21, 1962

Card 3/3

S/058/63/000/003/072/104
A059/A101

AUTHORS: Sinyavskiy, E. P., Kovarskiy, V. A.

TITLE: Theory of recombination in semiconductors at low temperatures in the "non-Condon approximation"

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 68, abstract 3E472 ("Bul. Akad. Shtiintse RSSMold., Izv. AN MoldSSR", 1962, no. 5, 109 - 112)

TEXT: In order to explain the capture cross sections observed and their temperature dependences, the effective cross section of the electron capture by a charged Coulomb center is evaluated. The calculation is performed within the frame of the non-radiative transition theory previously put forward by one of the authors (RZhFiz, 1962, 10E32) in the "non-Condon approximation". The interaction of the electron with longitudinal optical phonons only is considered. When the matrix elements of velocity entering the general formula for the mean "thermal" effective cross section of carrier capture by the local center are calculated, exact Coulomb functions are used.
[Abstracter's note: Complete translation]

P. Zil'berman

Card 1/1

ACCESSION NR: AP4013535 S/0181/64/006/002/0636/0637

AUTHORS: Kovarskiy, V. A.; Sinyavskiy, E. P.

TITLE: The theory of nonradiative transitions in a "non Condon" approximation

SOURCE: Fizika tverdogo tela, v. 6, no. 2, 1964, 636-637

TOPIC TAGS: nonradiative transition, Condon approximation, non Condon approximation, thermal transition

ABSTRACT: Beginning with a relationship between the Condon approximation and the non-Condon approximation,

$$W_{\text{non-Cond.}}(1s \to 2p) = W_{\text{Cond.}}(1s - 2p)\, l^2 F_{la}(\Theta),$$

the authors consider the function $F_{la}(\Theta)$ and the problem of determining the expanded functions of Θ. Until recently it had not been possible to evaluate this, but computers can now be used. The authors have determined values for this function for different types of crystals. Deviations of the function $F_{la}(\Theta)$ from unity (on the lower side) are related to the fact that nonradiative transitions take place at low temperatures at points somewhat below the intersection of

Card 1/2

ACCESSION NR: AP4013535

adiabatic potentials. Departure from the Condon approximation leads to deep traps of the second and third order. Regardless of the choice of model for a local center, the probability of nonradiative transitions in a non-Condon approximation will be about $(\omega_{ps}/\omega)^2$ times greater than the probability evaluated by the Condon approximation. Orig. art. has: 1 table and 8 formulas.

ASSOCIATION: Institut fiziki i matematiki AN Mold. SSR, Kishinev (Institute of Physics and Mathematics, AN Mold. SSR)

SUBMITTED: 09Aug63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: EC, SS NO REF SOV: 003 OTHER: 002

Card 2/2

ACCESSION NR: AP4041720 S/0181/64/006/007/2131/2145

AUTHORS: Kovarskiy, V. A.; Chaykovskiy, I. A.; Sinyavskiy, E. P.

TITLE: Quantum-kinetic equations for processes with nonradiative recombination

SOURCE: Fizika tverdogo tela, v. 6, no. 7, 1964, 2131-2145

TOPIC TAGS: recombination coefficient, quantum statistics, kinetic theory, phonon, polaron, nonradiative recombination

ABSTRACT: Several reasons for the inadequacy of the standard kinetic-equation formalism to non-optical transitions between discrete spectrum states are pointed out. The authors then propose to describe the processes accompanying multi-phonon nonradiative combination by means of a system of integral quantum-kinetic equations based on the formalism of the quantum density matrix, a formalism in which the quantum-mechanical and statistical calculation stages

Card 1/3

ACCESSION NR: AP4041720

are combined. The method used is essentially that of Kubo (J. Phys. Soc. Japan, v. 12, 570, 1957). A graph representation is obtained for the recombination coefficients with the aid of the technique of Konstantinov and Perel' (ZhETF v. 39, 197, 1960), modified by Lang and Firsov (ZhETF v. 43, 1843, 1962) to cover multi-phonon jumps in the case of low polaron mobility. The free relaxation of the band carriers, which are in quasi-equilibrium with the crystal lattice at the initial instant of time, is considered. A criterion is considered for the applicability of perturbation theory to the theory of multiphonon nonradiative transitions. "The authors thank Yu. A. Firsov and I. G. Lang for valuable information in connection with the computation procedure, and also A. I. Ansel'm and Yu. Ye. Perlin for a discussion of the calculation of the recombination coefficients." Orig. art. has: 5 figures and 76 formulas.

ASSOCIATION: Institut fiziki i matematiki AN MolSSR, Kishinev (Insti-

Card 2/3

ACCESSION NR: AP4041720

tute of Physics and Mathematics, AN MolSSR)

SUBMITTED: 27Dec63 ENCL: 00

SUB CODE: GP NR REF SOV: 009 OTHER: 002

Card 3/3

L 32302-65 EWT(1) IJP(c) GS

ACCESSION NR: AT5005423 S/0000/64/000/001/0043/0045

18 17 B+1 21

AUTHOR: Sinyavskiy, E. P.; Kabisov, K. S.

TITLE: The theory of nonradiative transitions in the "non-Condon" approximation"

SOURCE: Nauchnaya konferentsiya molodykh uchenykh Moldavii, 3d. Trudy, no. 1: Yestestvenno-tekhnicheskiye nauki (Natural and technical sciences). Kishinev, Gosizdat Kartya Moldovenyaske, 1964, 43-45

TOPIC TAGS: nonradiative transition, thermal transition, electron phonon interaction, "non-Condon" model

ABSTRACT: Starting from an expression for the total probability of thermal transitions at low values of the electron-phonon interaction constant, in the limiting case of low temperatures and the absence of frequency dispersion of normal oscillations, derived earlier by one of the authors (E. P. Sinyavskiy, Teoriya termicheskoy ionizatsii i rekombinatsii v kristallakh v "nekondonovskom priblizhenii" (Thesis), Kishinev, gos. un-t, 1962), the authors carried out quantum mechanical calculations of the probability for nonradiative transitions in the "non-Condon" model (V. A. Kovarskiy, FTT, 4, 1636, 1962) and compared the results with the Condon model calculations:

Card 1/2

L 32202-65

ACCESSION NR: AT5005423 $W_{(s \to k)} \cong \Psi_{(s \to k)} \Gamma_s A^2$.

In the case of ionic crystals, the increase in nonradiative transition probabilities may reach 10^2 for certain values of the material constants of the crystal. "The authors deeply appreciate the constant guidance provided by V. A. Kovarskiy."
Orig. art. has: 10 formulas.

ASSOCIATION: None

SUBMITTED: 07Feb64 ENCL: 00 SUB CODE: SS

NO REF SOV: 004 OTHER: 000

Card 2/2

KOVARSKIY, V.A.; SINYAVSKIY, E.P.

Theory of radiationless multiphonon transitions in the electronic shells of molecules. Teoret. i eksper. khim. 1 no. 5:633-641 S-O '65 (MIRA 19:1)

1. Institut prikladnoy fiziki AN Moldavskoy SSR, Kishinev.
Submitted July 8, 1965.

L 45957-66 EWT(1)/T IJP(c)
ACC NR: AP6015474 SOURCE CODE: UR/0181/66/008/005/1528/1532

AUTHOR: Sinyavskiy, E. P.

ORG: Institute of Applied Physics, AN MSSR, Kishinev (Institut prikladnoy fiziki, AN MSSR)

TITLE: Evaluation of diameters of multiphonon capture in the "non-Condon" approximation

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1528-1532

TOPIC TAGS: phonon capture, capture cross section, temperature dependence, optic transition

ABSTRACT: V. A. Kovarskiy (FTT, 4, 1636, 1962) developed the theory of emissionless transitions which takes into account the effect of the resonance of adiabatic potentials. Formulas for the probability of multiphonon transition obtained by Kovarskiy indicate a general tendency toward increasing the capture diameters of the current carrier by a local center. The present author considers it interesting to evaluate, in the framework of Kovarskiy's theory, the corresponding capture diameters. As an example, the author studies the recombination of the "conductivity hole" on the vacancy of copper in Cu_2O with the formation of an F-center. It is shown that consideration of the resonance of adiabatic potentials assures increasing the capture diameter by an order of 200 compared to the "Condon" approximation. The temperature dependence of the diameter of thermal capture in the "non-Condon" approximation differs (in the region of medium temperatures) from the temperature dependence in the "Condon" approximation. In conclusion, the author expresses his sincere appreciation to V. A. Kovarskiy for

Card 1/2

L 45957-66
ACC NR: AP6015474

valuable discussions. Orig. art. has: 1 figure and 16 formulas.

SUB CODE: 20/ SUBM DATE: 21Oct65/ ORIG REF: 008/ OTH REF: 001

Card 2/2 blg

ACC NR: AT6024011 SOURCE CODE: UR/0000/65/000/000/0041/0056

AUTHOR: Vitiu, Ye. V.; Kovarskiy, V. A.; Singavskiy, E. P.

ORG: none

TITLE: Quantum kinetic equations for processes with multiphonon transitions. The Green's function method

SOURCE: AN MoldSSR. Institut prikladnoy fiziki. Teoreticheskiye i eksperimental'nyye issledovaniya fizicheskikh svoystv poluprovodnikovykh materialov i drugikh kristallov (Theoretical and experimental studies on physical properties of semiconductor materials and other crystals). Kishinev, Izd-vo Kartya Moldovenyaske, 1965, 41-56

TOPIC TAGS: quantum statistics, Green function, kinetic equation, recombination coefficient, carrier scattering

ABSTRACT: The purpose of the investigation was to develop the formalism of quantum kinetic equations in the variant using retarded and advanced Green's functions and thereby combine the statistical and quantum mechanical aspects of the calculations. The analysis is limited to static fields. The tensor of the electric conductivity in a static electric field is determined by the method of R. Kubo (Journ. Phys. Soc. Japan v. 12, 6, 570, 1957) in a variant in which the current correlation is expressed in terms of the retarded and advanced Green's functions. A system of integral quantum kinetic equations is derived, describing the scattering processes with account of the recombination mechanism of collision between the carriers and the impurities. One of

Card 1/2

ACC NR: AT6024011

the equations is the quantum analog of the Boltzmann equation, and the other describes processes of capture and emission of electrons by the local levels. By way of an example, the authors consider the recombination mechanism of impurity scattering, when the carrier lifetimes are comparable with the relaxation lifetimes determined by the ordinary scattering mechanisms. The recombination coefficient obtained as a result of the quantum-statistical calculation corresponds exactly to the estimates of the "non-Condon" approximation for the probability of nonradiative transition. The calculation shows that for experimental observation of the recombination scattering mechanism it is necessary to have a high concentration of ionized donors, and the donor degeneracy multiplicity should be high. At low temperatures the mobility determined by the recombination scattering mechanism should not depend on the temperature. The authors thank V. L. Bonch-Bruyevich, D. N. Zubarev, A. I. Ansiyan, and N. M. Plakida for valuable remarks made during various stages of this work. Orig. art. has: 65 formulas.

SUB CODE: 20/ SUBM DATE: 25Jul65/ ORIG REF: 011/ OTH REF: 006

Card 2/2

SINYAVSKIY, G.

"Contagious diseases of the young of agricultural animals and the measures of the fight against them," Gorno-Altai Oblast National Publications, 1951, 30 pp.

SO: Vet., May 1952, Unclassified.

SINYAVSKIY, G.F., inzh.

Use of over-all mechanization and automation as a means of progress. Tekst.prom. 22 no.10:16-19 O '62. (MIRA 15:11)

1. Instruktor promyshlennogo otdela Oshskogo oblastnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza.
(Textile industry) (Automatic control)

ACC NR: AR6023343 SOURCE CODE: UR/0271/66/000/004/A040/A040

AUTHOR: Brichkin, A. V.; Sinyavskiy, G. K.

TITLE: Information processing from group sensors

SOURCE: Ref. zh. Avtomat telemekh i vychisl tekhn, Abs. 4A302

REF SOURCE: Sb. statey aspirantov i soiskateley. M-vo vyssh. i sredn. spets. obrazovaniya KazSSR. Tekhn. n., v. 1, 1965, 97-109

TOPIC TAGS: information processing, automatic control parameter, random function, pulse signal, signal analyzer

ABSTRACT: A method is recommended for automatic analysis of individual random elementary parameters of an automatic control system which permits establishing the mathematical relations between them. Technical methods of analyzing the recordings of random functions, methods of converting signals from primary sensors, and time packing of the channels transmitting signals from many points of measurement are examined. The instrument set for analyzing pulsed signals is described: 1)spectrum analyzer of audio frequencies for analyzing stationary noise and vibration processes in the 50--12,000 cps range; 20 third-octave recording spectrum analyzer which operates in the 40--15,000 cps range and serves to obtain the autocorrelation function, the analyzer is constructed with the use of a system of switchable third-octave filters; 3) a correlation analyzer of audio frequencies which is intended for measuring a mutually standardized correlation coefficient of two quantities and for obtaining

UDC: 658.562.012.7

Card 1/2

ACC NR: AR6023343

the autocorrelation functions. The frequency range is 30--1500 cps. The instrument is equipped with a 0--2 sec variable delay line. In it is provided the possibility of simultaneous measurement of the mean squares of the investigated quantities and also the possibility of automatic recording of the correlation coefficient and mean squares both as a function of time and as a function of delay time. [Translation of abstract] 14 illustrations and bibliography of 13 titles. B. U.

SUB CODE: 09

SINYAVSKIY, G.K.

Investigating the form of the cross section of a river bed.
Izv.AN Kazakh.SSR Ser.energ. no.2:36-46 '60.
(MIRA 13:7)

(Hydrographic surveying) (Rivers)

SINYAVSKIY, G.K.

Evaluating the dimensions and form of grains of grandular materials. Izv.AN Kazakh.SSR Ser.energ. no.2:47-60 '60. (MIRA 13:7)
(Granular materials) (Particle size determination)

SINYAVSKIY, G. K. Doc Tech Sci -- "Synthetic methods in experimental hydraulics." Tashkent, 1961 (Acad Sci UzSSR. Joint Academic Council of the Department of Tech Sci). (KL, 4-61, 194)

SINYAVSKIY, G.K.

Using the Monte Carlo method for studying the flow rate diagram of the cross section of a channel. Izv. AN Kazakh.SSR. Ser.energ. no.1:101-103 '60. (MIRA 15:5)
(Hydraulics)

BRICHKIN, A.V.; SINYAVSKIY, G.K.

Vibrational perturbations in mud torrents. Trudy Kaz.NIGMI no.16:114-124 '61. (MIRA 15:5)
(Erosion)

BRICHKIN, A.V.; SINYAVSKIY, G.K., kand.fiziko-matematicheskikh nauk

Mechanization of mudflow protection work. Vest. AN Kazakh. SSR 19 no.7:12-20 Jl '63. (MIRA 17:2)

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Zadachi termopruzhnosti v energomashynobuduvanni (Problems of Thermoelasticity in Power-Machinery Construction) Kyyiv, 1960. 176 p. 1,000 copies printed.

Ed. of Publishing House: T.K. Remeznik; Resp. Ed.: H.M. Savin, Academician, Academy of Sciences UkrSSR; Tech. Ed.: O.M. Lysovets'.

PURPOSE: This book is intended for turbine designers.

COVERAGE: This book is a collection of 8 Ukrainian articles based on work under the general supervision of A.D. Kovalenko. Each article has a short summary in Russian. The object of the study is to test turbine elements for stress conditions, especially those due to nonuniform heating. References accompany each article.

AVAILABLE: Library of Congress

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(MEDICAL INSTRUMENTS AND APPARATUS) (MLRA 9:9)

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