L 11330-65
ACCESSION NR: AP4045423

3

and the monopropargyl acetal. Acid catalysts were used. The structures were confirmed by elemental analysis, molar refraction, molecular-weight determination, and IR spectroscopy. Oxidative polydehydrocondensation of the diacetals yielded dark insoluble polymers containing copper in complex form. Orig. art. has: 1 figure and 2 formulas.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 21Sep63 ATD PRESS: 3107 ENCL: 00

SUB CODE: OC, MT NO REF SOV: 003 OTHER: 001

Card 2/2

L 12508-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP4045431 S/0190/64/006/009/1642/1645

AUTHOR: Sladkov, A. M.; Korshak, V. V.; Makhsumov, A. G.

TITLE: Formation of copper complexes from polyesters with acetylenic bonds in the backbone

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 9, 1964, 1642-1645

TOPIC TAGS: copper complex, propargyl benzoate, hexadiyndiol dibenzoate, diphenoxyhexadiyne, acetylenic polyester

ABSTRACT: A study has shown the possibility of preparing organic copper complexes containing conjugated tripole bonds and ether or ester linkages. Propargyl benzoate hexadiyndiol dibenzoate, and 1,6-diphenoxy-2,4-hexadiyne were prepared for the first time, the last two by oxidative dimerization of the propargyl ester or ether. Poly-(hexadiyndiol isophthalate), poly(hexadiyndiol terephthalate), and poly(butyndiol isophthalate) were prepared by polycondensation. To form the copper complexes, these compounds were subjected to oxidative polydehydrocondensation by treatment with a pyridine solution of cop-

Card 1/2

L 12608-65
ACCESSION NR: AP4045431

per acetate and refluxing of the mixture for 3—3.5 hr. Dark-brown insoluble products containing 1—2% Cu were formed in all cases. They were stable toammonia, dilute HCl, and heating to 120—150C. Their EPR spectra were typical of complex-(ionic)-bound copper, with no narrow signal in any case. IR spectra were also recorded. The preliminary conclusion was made that this type of complex differs from the ordinary copper complexes with oxygen-containing organic compounds in that, apparently, the pi-electrons of conjugated triple bonds participate in the formation of this complex. Orig. art. has: 1 figure.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 28Oct63 ATD PRESS: 3108 ENCL: 00

SUB CODE: OC, IC NO REF SOV: 002 OTHER: 001

Card 2/2

ACCESSION NR: AP4028153 S/0291/64/000/001/0067/0070

AUTHOR: Korshak, V. V.; Sladkov, A. M.; Makhsumov, A. G.

TITLE: Synthesis and investigation of properties of polyesters containing triple bonds in the chain. Communication 2. Production of polyesters by the oxidative dehydropolycondensation reaction

SOURCE: Uzbekskiy khimicheskiy zhurnal, no. 1, 1964, 67-70

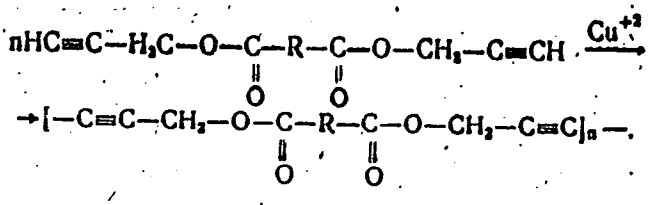
TOPIC TAGS: dipropargyl ester, dipropargyl polyester, acetylenic polyester, dipropargyl isophthalate, dipropargyl succinate, dipropargyl maleate, IR spectra, melting point, softening temperature, heat resistance, oxidative hydropolycondensation

ABSTRACT: Several new dipropargyl esters and polyesters were synthesized. Dipropargyl terephthalate, oxalate, isophthalate, succinate and maleate (the last three compounds have not been reported in the literature) were prepared by reaction of propargyl alcohol and the appropriate acid anhydride. The dipropargyl polyesters were then prepared by oxidative dehydropolycondensation in the

Card 1/3

ACCESSION NR: AP4028153

presence of copper acetate in pyridine and methanol solutions by refluxing for 20 hours, pouring the product into cold water, and filtering the black polymer, which is formed according to the reaction:



IR spectra of the polymers show C C, C-O, C=O and C-O-C groups and the absence of the ≡C-H group. The polymers have high softening temperatures and high thermal stability (fig. 1). Orig. art. has: 2 tables, 1 figure and 1 equation

ASSOCIATION: Institut khimii polymerov AN UzSSR (Institute of Polymer Chemistry, AN UzSSR)

SUBMITTED: 24May63 DATE ACQ: 29Apr64 ENCL: 01

SUB CODE: OC NO REF SOV: 003 OTHER: 005

Card 2/3 ATD PRESS: 3044

ACCESSION NR: AP4028153

ENCLOSURE: 01

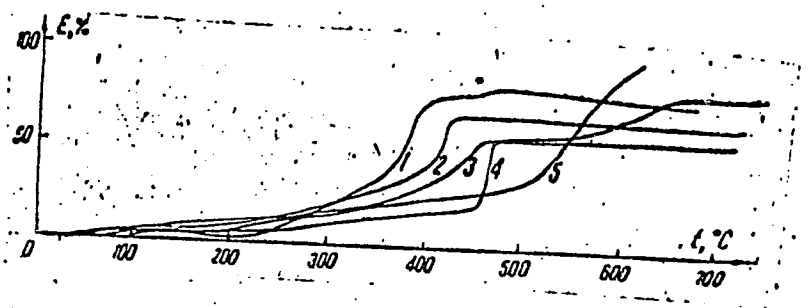


Fig. 1. Synthesis and investigation of polyester properties

1 - Dipropargyloxalate polymer; 2 - dipropargylmaleate polymer; 3 - dipropargylterephthalate polymer; 4 - dipropargylsuccinate polymer; 5 - dipropargylisophthalate polymer

Card 3/3

ACCESSION NR: AP4034542 S/0020/64/155/005/1140/1143

AUTHOR: Sladkov, A. M.; Korshak, V. V. (Corresponding member); Kudryavtsev, Yu. P.; Makhsumov, A. G.

TITLE: Synthesis of polyethers containing triple bonds in the chain.

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1140-1143

TOPIC TAGS: polyether, synthesis, triple bond polyether, monopropargyl ether copolymer, dipropargyl ether copolymer, diethynylbenzene copolymer, unsaturated ether, electrophysical property, photoelectromotive force, conjugated polyene, IR spectra, acid polydehydrocondensation, conjugated triple bond , acetylenec ether polymer

ABSTRACT: Polyethers based on the acid condensation products of mono- and dipropargyl ethers with p-diethynylbenzene (DEB) were synthesized and their properties, especially their electrophysical properties, were studied. DEB was condensed under acid conditions with the dipropargyl ethers of 4,4-dihydroxydiphenyl, of 4,4-dihydroxydiphenyl-ol-2-propane, and of hexafluoro-2,2-bis-(4-hydroxyphenyl)-propane, and the propargyl ethers of phenol, quinizarin and benzoic

Card 1/2

ACCESSION NR: AP4034542

acid. These unsaturated ethers were selected because their certain electrophysical properties, such as photoelectromotive force. The characteristic for conjugated polyenes were absent in these polymers. It was hoped that incorporating DEB in the chain of the polyether molecule would change its electrophysical properties. IR spectra of the products obtained showed the characteristic of the absorption bands for the acid polydehydrocondensation of DEB were preserved. From IR data and elementary analysis it is concluded that the generally insoluble polymers contained conjugated triple bonds alternated with the ether groups. "IR spectra were obtained in the INEOS AN SSSR laboratory by N. A. Chumayevsk, whom the authors sincerely thank." Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 29Oct63 DATE ACQ: 13May64 ENCL: 00

SUB CODE: OC NO REF SOV: 004 OTHER: 000

Card 2/2

SLADKOV, A.M.; UKHIN, L.Yu.; GORSHKOVA, G.N.; CHUBAROVA, M.A.; MAKHSUMOV, A.G.; KASATOCHKIN, V.I.

Synthesis and spectra of iodo and bromoacetylene derivatives.
Zhur.org.khim. 1 no.3:415-421 Mr '65. (MIRA 18:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

MAKHSUMOV, M.N.

Effect of new cholinolytics (methyldiazil, methyldiphacyl and their iodomethylates) on functions of the gastrointestinal canal. Uzb. biol. zhur. no.1:62-68 '61. (MIRA 14:3)

1. Institut krayevoy eksperimental'noy meditsiny AN UzSSR.
(PARASYMPATHOLYTICS) (ALIMENTARY CANAL)

MAKHSUMOV, M.N.

Effect of cholinolytics methyldiazil and methyldiphacil, on motor activities of the gastrointestinal tract. Farm. toks. 24 no.3:327-335 My-Je '61. (MIRA 15:1)

1. Institut krayevoy i eksperimental'noy meditsiny AN Uzbekskoy SSR i otdel farmakologii (zav. - deystvitel'nyy chlen AMN SSSR prof. S.V.Anichkov) Instituta eksperimental'noy meditsiny AMN SSSR.
(ANTISPASMODICS) (GASTROINTESTINAL MOTILITY)

L 36519-65

ACCESSION NR: AP5003821 S/0242/64/000/011/0006/0009

13

AUTHOR: Karimov, V. A.; Makhsumov, M. N.

B

TITLE: Effect of chlorine-beta-chlorine rinderine ethylate on the central nervous system

SOURCE: Meditsinskiy zhurnal Uzbekistana, no. 11, 1964, 6-9

TOPIC TAGS: drug effect, chlorine-beta-chlorine rinderine ethylate, central nervous system, peripheral nervous system, mouse, rabbit, brain, bioelectric activity

ABSTRACT: In an earlier study the authors found that chlorine-beta-chlorine rinderine ethylate [Abstracter's note: Rinderine is transliterated directly from the Russian.] has certain parasympathomimetic properties. The present study investigates the effect of the preparation on the CNS and peripheral nervous system of mice and rabbits in three experimental series: 1) effect on peripheral activity using the orientation reaction, 2) combined effect of the preparation with a sedative (chloral hydrate, barbamyl), and 3) effect on bioelectric activity of the brain. In the first series

Card 1/2

L 36519-65

ACCESSION NR: AP5003821

the preparation was found to produce an inhibiting effect on motor activity with the degree of inhibition dependent on dose; thus, a 25 mg/kg dose produced only slight inhibition of movement and 50-100 mg/kg doses sharply inhibited movement. In the second series 25-75 mg/kg doses of the preparation combined with chloral hydrate significantly intensified the sedative effect of the latter; 25-50 mg/kg doses of the preparation combined with 50 mg/kg barbamyl did not prolong the sedative effect of the latter, but did with increase of the barbamyl dose to 75 mg/kg. In the third series the preparation depressed the bioelectric activity of the cerebral cortex. On the basis of earlier and present findings, it appears that chlorine-beta-chlorine rinderine ethylate has a wide range of pharmacological effects which are expressed more strongly in the peripheral nervous system than the CNS. Orig. art. has: 1 figure.

ASSOCIATION: Otdel vostochnoy meditsiny Uzbekskogo instituta krayevoi meditsiny AMN SSSR (Eastern Medicine Section, Uzbek Institute of Regional Medicine, AMN SSSR)

SUBMITTED: 26Aug63 ENCL: 00 SUB CODE: LS

NR REF SOV: 000 OTHER: 000

Card 2/2

L 15815-66 EWT(1) RO

ACC NR: AP6003475 SOURCE CODE: 0242/65/000/008/0063/0066

28
B

AUTHOR: Karimov, V. A.; Makhsumov, M. N.

ORG: Uzbek Institute of Regional Medicine, AMN SSSR (Uzbekskiy institut krayevoy meditsiny AMN SSSR)

TITLE: Pharmacology of the chloro-β-chloroethylate of retronekanol

SOURCE: Meditsinskiy zhurnal Uzbekistana, no. 8, 1965, 63-66

TOPIC TAGS: pharmaceutical, pharmacology, nervous system drug, alkaloid

ABSTRACT: Findings from tests of chloro-β-chloroethylate of retronekanol on mice, rats, cats, and rabbits are presented. The chloro-β-chloroethylate of retronekanol was first synthesized in 1962 by Akramov and Kiyamutdinova. The general effects of the alkaloid on mice (55-60 mg/kg) were initial restlessness followed by prostration, increasingly labored breathing and finally death in 10-12 minutes. The same effect in rats could only be produced with doses of 150-175 mg/kg. In small doses (0.1-20 mg/kg) the compound had a pronounced hypotensive activity in cats, the duration and insensity of the effect increasing with increased dosage. Electrical

Card 1/2

L 15815-66

ACC NR: AP6003475

stimulation of the exposed vagus nerve of cats showed that the compound exerts its hypotensive effect by blocking the vagal ganglion. This conclusion was further supported by the results of electrical stimulation of the preganglionic fibers of the sympathetic bundle of the neck. This does not exclude the participation of the central nervous system in the mechanism of action. Further studies revealed that the alkaloid has a curarelike effect on the nerve-muscle junction which may explain its general toxicity for animals. The compound has an inhibitory effect on peristalsis, reduces contracture (spasm) and is capable of preventing its development in excised portions of rabbit small intestine. The authors feel that these data can serve as the basis for further study of this preparation since they indicate it has a beneficial effect on the cardiovascular system.

SUB CODE: 06/ SUBM DATE: 03Nov63/ ORIG REF: 000/ OTH REF: 000

Card 2/2

BAGAYEV, A.M.; MAKHUKOV, N.G.

Controlling laminations in casings by means of ultrasonics. Izv. vys. ucheb. zav.; neft' i gaz 4 no.11:99-101 '61. (MIRA 17:2)

1. Groznenskiy neftyanoy institut.

MAKHUKOV, N.G.

Temper brittleness and the internal friction of K40NKhM-type alloys. Izv. vys. ucheb. zav.; chern. met. 7 no.1:142-144 '64. (MIRA 17:2)

1. Groznenskiy neftyanoy institut.

MAKHSUTOV, Dillmambet Atmambetovich, starshiy chaban; BYLINSKAYA, I.G., red.; MARAKASOVA, L.P., tekhn.red.

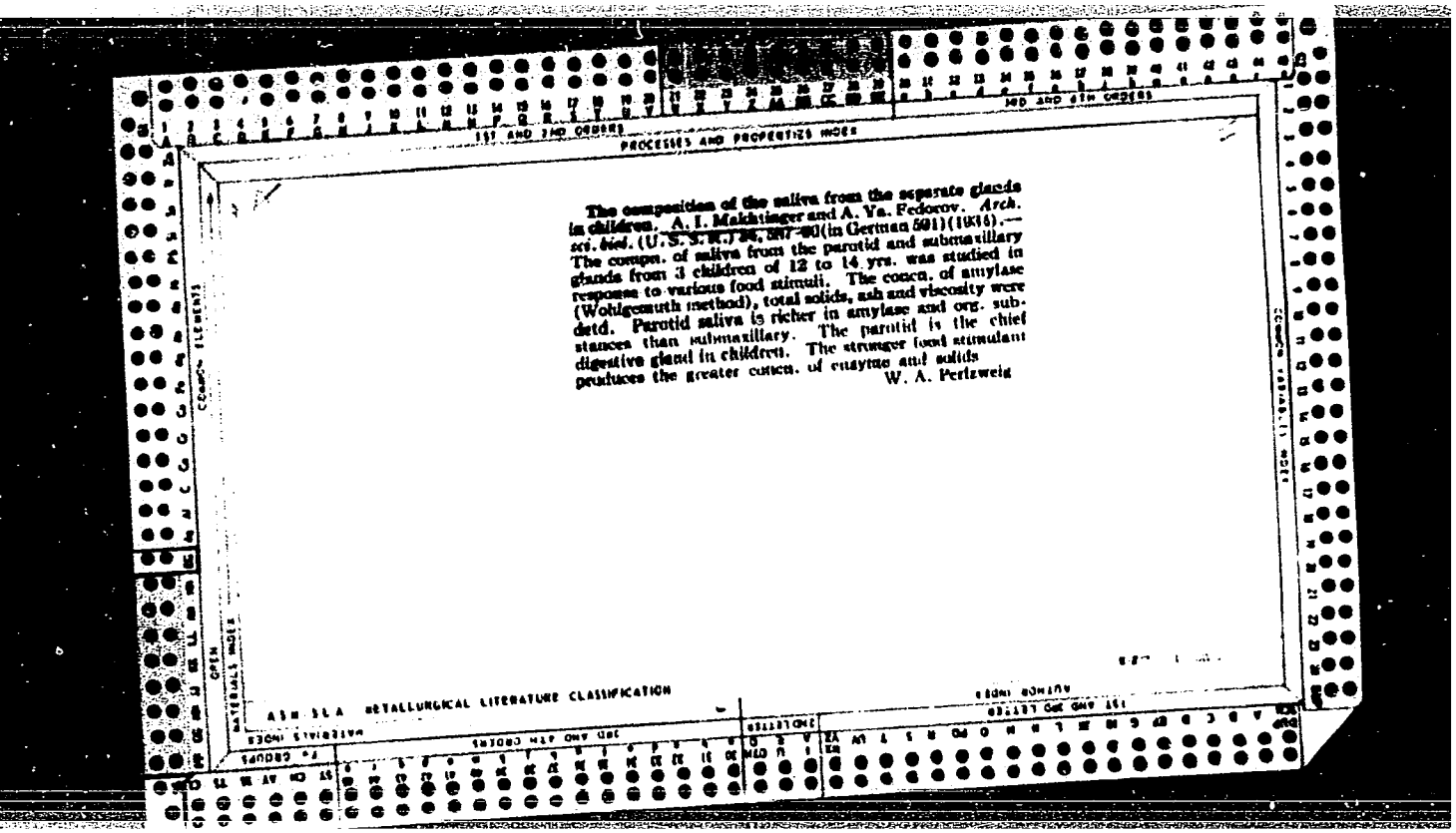
[Lighthouses in the steppe] Maiaki v stepi. Moskva, Izd-vo "Sovetskaia Rossiia," 1961. 19 p. (MIRA 15:2)

1. Plemennoy ovtsezavod "Chervlenyye buruny" Dagestanskoy ASSR (for Makhsutov).
(Daghestan--Wool)
(Daghestan--Socialist competition)

MAKHSUTOV, Dil'mambet Adzhiniyazovich; KURLYANDSKAYA, S., red.; YELAGIN, A., tekhn.red.

[Contribution of sheep breeders to the seven-year plan] Ovtsevody - semiletke. Moskva, Izd-vo "Sovetskaia Rossiia," 1961. 29 p. (MIRA 14:6)

1. Starshiy chaban plemennogo ovtsevodstva "Chervlennyye buruny" Dagestanskoy ASSR (for Makhsutov).
(Daghestan—Sheep breeding)



The composition of the saliva from the separate glands in children. A. I. Makhtinger and A. Ya. Fedorov. *Arch. sci. biol.* (U.S.S.R.) 26, 287–90 (in German 501) (1926).—The compn. of saliva from the parotid and submaxillary glands from 3 children of 12 to 14 yrs. was studied in response to various food stimuli. The concn. of amylase (Wohlgemuth method), total solids, ash and viscosity were dtd. Parotid saliva is richer in amylase and org. substances than submaxillary. The parotid is the chief digestive gland in children. The stronger food stimulant produces the greater concn. of enzyme and solids.
W. A. Perlzweig

Makhtinger, A.I.

LEVINTOVA, S.Ye.; MAKHTINGER, A.I.

Materials for the study of the higher nervous function in children in rheumatism; preliminary communication. Vopr. pediat. 20 no. 5: 14-18 Sept-Oct 1952. (CLML 23:3)

1. Of the Department of Higher Nervous Activity (Head -- Prof. N. I. Krasnogorskiy, Active Member AMS USSR) and of the Clinic for Older Children (Scientific Supervisor -- Prof. A. B. Volovik), State Scientific-Research Pediatric Institute (Director -- A. L. Libov).

MAKHTINGER, A.L., doktor meditsinskikh nauk; LEVINTOVA, S.Ye., kandidat meditsinskikh nauk; SINEVA, T.N.; MEL'NIKOVA, N.A.

Unconditioned secretion of the salivary glands in cases infectious hepatitis (Botkin's disease). Vop.okh.mat. i det. 1 no.4:44-48 Jl-Ag '56. (MLRA 9:9)

1. Iz otdela vysshey nervnoy deyatel'nosti (zav. - deystvitel'nyy chlen AMN SSSR prof. N.I.Krasnogorskiy) i kliniki starshego vozrasta (konsul'tant - prof. A.B.Volovik) Gosudarstvennogo nauchno-issledovatel'skogo pediatricheskogo instituta (dir. - prof. A.L. Libov) Leningrad.
(HEPATITIS, INFECTIOUS) (SALIVARY GLANDS)

MAKHTINGER, A.I.

Fiftieth anniversary of the scientific, medical, pedagogic and public activity and the seventy-fifth birthday of N.I. Krasnogorsk.
Pediatriia 36 no.9:31-33 D '58 (MIRA 11:11)
(KRASNOGORSK, NIKOLAI IVANOVICH, 1882-)

ALYAKRINSKIY, V.V.; MAKHTINGER, A.I.

Effect of rheumatic infection on the speech of children; preliminary report. Nauch. soob Inst. fiziol. AN SSSR no.1:9-12 '59. (MIRA 14:10)

1. Laboratoriya vysshey vervnoy deyatel'nosti rebenka, zaveduyushchiy - N.I.Krasnogorskiy i Revmaticheskaya klinika Nauchno-issledovatel'skogo pediatricheskogo instituta, zaveduyushchiy - A.B.Wolovik).
(RHEUMATIC FEVER) (SPEECH, DISORDERS OF)

MARKITNER-BIKHERTER, F. L.

"Unconditioned Secretion of Children's Salivary Glands." Dr Med Sci, Laboratory of the Study of Higher Nervous Activity in Children, State Sci Res Pediatrics Inst, Leningrad, 1953. (RZhBiol, No 3, Feb 55)

SO: Sum. No. 631, 26 Aug 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (1)

MAKHTIYEV, B.

We increase the ability of the school to pay its own way and expand self-service. Prof.-tekh. obr. 18 no.9:18 S '61.
(MIRA 14:11)

1. Pomoshchnik direktora po kul'turno-vospitatel'noy rabote buynakskogo uchilishcha mekhanizatsii sel'skogo khozyaystva No.2., Dagestanskaya ASSR.
(Daghestan--Vocational education)

MAKHUDBEKOV, B. M.

Makhudbekov, B. M.: "CErtain clinical problems and treatment of dysenteric abscesses of the liver," (Report), Trudy III Aakavkazsk. s"yezda khirurgov, Yerevan, 1948 (on cover: 1949), p. 216-226

SO: U-5240, 17 Dec. 5?, (Letopis 'zhurnal 'nykh Statey, No. 25, 1949).

ACCESSION NR: AP4009589 S/0148/64/000/001/0142/0144

AUTHOR: Makhukov, N.G.

TITLE: Temper brittleness and internal friction of K40NKhM type alloys

SOURCE: IVUZ. Chernaya metallurgiya, no. 1, 1964, 142-144

TOPIC TAGS: K40NKhM type alloy, temper brittleness, internal friction, tempering temperature, internal friction background noise, intragranular structure

ABSTRACT: The relationship between the tempering temperature and the brittleness of a sample of a K40NKhM alloy was determined by measuring the angle of bending (fig. 1). Earlier work (Yu. V. Piguzov, M.I. Bayazitov. Izvestiya vy*sshikh uchebny*kh zavedeniy, Chernaya metallurgiya, 1960, No. 3, 147-152) indicated changes in background noise caused by internal friction associated with differences in intragranular structure produced by different tempering conditions. Background noise of internal friction of samples

Card 1/2

ACCESSION NR: AP4009589

tempered at different temperatures was measured by the torsional pendulum method at 450C and 475C (fig. 2). The change in internal friction background noise-temperature relationship corresponds to the change in alloy brittleness-temperature relationship; hence the internal friction method can be used to evaluate brittleness in the alloy. Orig. art. has: 3 figures.

ASSOCIATION: Groznenskiy neftyanoy institut (Groznen Petroleum Institute)

SUBMITTED: 030ct61 DATE ACQ: 14Feb64 ENCL: 02

SUB CODE: PH, ML NO REF SOV: 005 OTHER: 000

Card 2/4 2

LIVSHITS, B. G., MAKHUKOV, N. G., and CHERNIKOVA, I. N.

"Processes of Annealing of Different Alloys."

report presented at an Inter-vuz Conference on Relaxation Phenomena in Pure Metals and Alloys, 2-4 Apr 1958, Moscow Inst. of Steel.

(Moscow Inst. of Steel and Groznyy Petroleum Inst.)

Vest. Vys. Shkoly, 1958, No. 9, p. 72-3,
(Piguzov, Yu. V.)

AUTHORS: Livshits, B. G., Makhukov, N. G. SOV/163-58-2-43/46

TITLE: Investigating the Hardening of the Cold-Deformed Alloy K4CNKhM. (Issledovaniye otpuska kholodnodeformirovannogo splava K4CNKhM)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 2, pp. 239-242 (USSR)

ABSTRACT: To investigate the micro structure of the cold-deformed alloys with 0,05% carbon after the hardening to 600°C the alloy K4CNKhM was used. The influence of the temperature of hardening on the extent of internal friction in the alloys of the type K4CNKhM was investigated. In the curves plotted a maximum jump may be found at 300-350°C. This maximum is dependent on the relative mixing of the carbon and the atoms of molybdenum and tungsten. The extent of the maximum increases with the increase of the carbon concentration and the extent of deformation. The separation of molybdenum and tungsten formed decreases this maximum in the hardening after cold treatment. The investigations showed that in the alloys of the type K4CNKhM in the case of a hardening after riveting processes take place which are analogous to the processes occurring in the alloys Ni-Cr, Fe-Al, Fe-Si, Fe-Ni-Mo, and which are analogous to the process of natural aging in

Card 1/2

SOV/163-58-2-43/46

Investigating the Hardening of the Cold-Deformed Alloy K4CNKhM

aluminium alloys. In the investigations of the internal friction carbon occurs as indicator in the formation of the K-state of the alloys. There are 4 figures, 1 table, and 11 references, 10 of which are Soviet.

ASSOCIATION: Moskovskiy institut stali (Moscow Institute of Steel)
Institut pretsizionnykh splavov TsNIIChM (Institute of Precision Alloys of the TsNIIChM)

SUBMITTED: November 25, 1957

Card 2/2

18(7)
AUTHORS: Livshits, B. G., Makhukov, N. G. SOV/163-58-4-28/47

TITLE: Kinetics and Mechanism of Structural Change in Annealing a Cold-Worked Alloy of the K40NKhM-Type (Kinetika i mekhanizm strukturnogo prevrashcheniya pri otpuske kholodnodeformirovannogo splava tipa K40NKhM)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Metallurgiya, 1958, Nr 4, pp 169-173 (USSR)

ABSTRACT: Examination of spring alloys of the K40NKhM type with a Co-Cr-Ni-Fe basis permitted (Ref 1) an analogy between the processes taking place during the heat treatment of these austenitic alloys and those occurring during the heat treatment of other one-phase alloys such as Ni-Cr, Fe-Al, Fe-Si, Fe-Ni-Mo. A maximum is observed at 400-500° on the hardness, elastic limit, and electric resistance curves of cold-worked alloys of the K40NKhM type as functions of the annealing temperature. The electric resistance curve of the alloys has a maximum also after hardening with annealing. The chief results of the examination of kinetics of the annealing process are given. The occurrence of maxima on the kinetic curves points to processes in the alloy that - at

Card 1/3

isothermal retardation - are opposite as to their influence on properties. In the opinion of the authors, the formation of the K-state leads to an increase of hardness. The electric resistance increases due to a reduction of mobility of the electrons (Refs 6, 7). The forming zones have dimensions in the order of magnitude of the free path of electrons, increasing their straying. A partial softening of the alloy at isothermal retardation is connected with the course of the recovery process after cold hardening. This is confirmed by the dilatometric curves at isothermal retardation, and by the curves of the actual elongation factor and relative elongation. It is shown that in a hardened (not cold hardened) alloy with the structure of a more or less homogenous solid solution only one process takes place in heating (formation of the K-state occurs up to 550°, and a gradual destruction of the same at a temperature between 550 and 650°). The second process (the recovery) is missing. It is shown that cold hardening greatly reduces the elastic modulus (in the given case by 20 %), and therefore the interatomic binding powers too. Subsequent annealing at

Kinetics and Mechanism of Structural Change in Annealing a Cold-Worked Alloy of the K4ONKhM-Type

SOV/163-58-4-28/47

different temperatures (for 4 hours) increases the elastic modulus. This is connected with the formation of the zone of Gin'ye-Preston's type (K-state). There are 5 figures and 11 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute) Institut pretsizionnykh splavov TsNIIChM (Institute of Refined Alloys of the Central Scientific Research Institute of Ferrous Metallurgy)

SUBMITTED: December 28, 1957

Card 3/3

MAKHUKOV, N. G.: Master Tech Sci (diss) -- "Investigation of the annealing of cold-deformed alloys of the K40NKhM type". Moscow, 1959. 14 pp (Central Sci Res Inst of Ferrous Metallurgy, Inst of Precision Alloys), 110 copies (KL, No 9, 1959, 115)

MAKhuKov, N. G.

PHASE I BOOK EXPLOITATION SOV/3940

Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Institut pretsizionnykh splavov

Pretsizionnyye splavy (Precision Alloys) Moscow, Metallurgizdat, 1959. 268 p. (Series: Its: Sbornik trudov, vyp. 22) 2,150 copies printed.

Additional Sponsoring Agency: USSR. Gosudarstvennyy planovyy komitet

Ed.: D. I. Gabrielyan; Ed. of Publishing House: Ye. I. Levit; Tech. Ed.: P. G. Islent'yeva.

PURPOSE: This collection of articles is intended for technical personnel and scientific workers in the metallurgical, instrument-manufacturing, and electrical-equipment-manufacturing industries. It may also be useful to students of schools of higher technical education.

COVERAGE: This collection of articles presents the results of studies of precision alloys made in recent years by the Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy). Properties of metal alloys which can be soldered (soft or hard) with glass and ceramic materials and alloys used for making springs are discussed. Anomalies of electrical resistance and thermal expansion and the effect of irradiation on properties of alloys are considered. Problems connected with the determination of magnetic susceptibility and with rolling of bimetallic stripe are reviewed. An analysis of alloys used in manufacturing high-temperature transducers and strain gages is presented. No personalities are mentioned. References follow several of the articles.

Ivanushkina, A. Z., and N. A. Solov'yeva. New Alloy for Instrument Parts 52

Bolenkh, A. S., E. P. Belova, and V. A. Sol'ts. Utilization of the K40NKhM Alloy for Making Drive Springs 57

Borodkina, M. M., A. A. Golovanenko, and V. A. Sol'ts. Structural Transformation of the K40NKhM Alloy in the Range of Hot-Deformation Temperatures 72

Borodkina, M. M., N. G. Makhukov, and V. A. Sol'ts. On the Problem of Cold Working of the K40NKhM Spring Alloy 81

Sol'ts, V. A., and L. I. Nosan'. Effect of Molybdenum on Properties of the N36KhTYu (EI702) Alloy 91

Chemova, N. G. Elinvar Alloys Used for Elastic Sensing Elements 104

Borisova, A. K. The Modified N35KhMV (A) Alloy for Spiral (Hair) Springs for Watch Mechanisms 111

Fedotov, L. N., and V. I. Sumin. Investigation of the Dependence of Saturation Magnetization on the Loading of Iron-Nickel Alloys With Invar Composition 121

Sinitsyn, V. G., and N. P. Gromov. Study of the Bending of Bimetallic Stripe in Rolling 134

Semenova, N. V., and L. L. Zhukov. Methods of Short-Time Testing of Alloys Used for Electrical Heating Elements 150

Al'tgauzen, O. N., O.V. Lyubetskaya, and V. A. Sol'ts. Determination of Magnetic Susceptibility of a Thin Wire Made of Low-Magnetic Material 160

Artsishevskiy, M. A., S. S. Vasil'yev, G. V. Kozhelyayev, and Ya. P. Selisskiy. Effect of Deuteron Irradiation on Electrical Resistance of Self-Ordering and Aging Alloys 168

Aptekar', I. L. On the Problem of the Nature of the K-state in Alloys 177

Yelyutin, O. P. High-Ohmic-Resistance Alloy Used for Strain Gages 183

Yelyutin, O. P. Alloys for High-Temperature Transducers 205

Semenova, N. V. On the Problem of the Electrical-Resistance Anomaly of the Ni_3Cr Alloy 226

Semenova, N. V., and N. A. Semenova. Electrical Properties of Nichrome and Iron-Chrome-Aluminum Alloys 248

25

18(3), 18(7)

AUTHORS: Livshits, B. G., Makhukov, N. G.

SOV/163-59-1-34/50

TITLE: Mechanism of Structural Transformations Occurring During the Drawing of Cold-worked Alloys of the Type K40NKhM (Mekhanizm strukturnogo prevrashcheniya pri otpuske kholodnodeformirovannykh splavov tipa K40NKhM)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 174-178 (USSR)

ABSTRACT: The drawing of cold-worked spring alloys of the type K40NKhM at 400-500° leads to an increase in hardness, to a rise of the proportional limit, of the electric resistance and of Young's modulus. In other papers (Refs 1, 2) the authors voiced the opinion that by drawing the temper of these alloys a K-state results. This state is characterized by the existence of segregates of homogeneous atoms of the Gin'ye-Preston zone type. By using the dilatometric method it was demonstrated that in drawing cold-worked alloys of the K40NKhM type two processes are released. They result in a reduction of the volume and of the strain coefficient. From the information gained by measurements of internal friction (Ref 1) it was assumed that the K-state in alloys of a K40NKhM type consists in the

Card 1/3

Mechanism of Structural Transformations Occurring During the Drawing of Cold-worked Alloys of the Type K40NKhM

SOV/163-59-1-34/50

formation of segregations of molybdenum and tungsten atoms. Two alloys were investigated: the Co-Cr-Ni-Fe basis of the K40NKhM alloy, and the same basis, to which molybdenum was alloyed additionally. The investigation showed that an addition of molybdenum facilitates the formation of a K-state in the alloy, and that in this process also other atoms (probably chromium) participate. A similar influence is also exerted by molybdenum upon the elastic limit of the alloys. After drawing at 500° the elastic limit of a molybdenum alloy increases from 110 to 160 kg/mm^2. If the drawing temperature is increased the elastic limit is reduced. The data collected demonstrate that the high elastic limit of such an alloy is due to the molybdenum (and tungsten) content of the solid solution. An increase of the electric resistance, which is typical of the K-state, was found in the molybdenum alloy. In the alloy containing no molybdenum no anomalous increase of the electric resistance was found. In conclusion it is said that the improvement of the elastic properties can mainly be ascribed to

Card 2/3

the presence of molybdenum in the alloy and that the carbon constituent plays only a minor part in the increase of Young's modulus and of the electric resistance due to drawing. There are 3 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: May 20, 1958

SOV/ 126-8-3-12/33

AUTHORS: Livshits, B.G. and Makhukov, N.G.

TITLE: Investigation of the Tempering Process of the Cold Deformed Alloy K40NKhM

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 3, pp 400-405 (USSR)

ABSTRACT: The alloy K40NKhM has a complex chemical composition with the system Co-Cr-Ni-Fe as its basis. Borodkina, Makhukov and Sol'ts have shown (Ref 1 and 2) that the alloy, as quenched from a temperature of 1100 to 1150°C, possesses a one-phase structure with a face-centred cubic lattice. On cold working by rolling or wire-drawing, followed by tempering at 400 to 500°C, the alloy acquires high elastic properties, strength and hardness. Fig 1 shows the change in hardness, elastic limit and electrical resistance of a K40NKhM alloy, containing 0.05% C, on tempering (soaking for 2 to 4 hours) after a 70% cold deformation. The authors of this paper undertook an investigation of this alloy with the aim of establishing the mechanism of hardening during tempering. The chemical composition of the alloys investigated is given in the table on p 401. In Fig 2, the % elongation and the true

Card 1/4

expansion coefficient of a cold worked (40% reduction in area) K40NKhM alloy containing 0.12% C is shown. Fig 3 shows the change of the modulus of normal elasticity of cold deformed specimens (40% reduction in area) of K40NKhM alloy containing 0.12% C in relation to tempering temperature. Fig 4 shows the temperature dependence of internal friction of cold deformed (70% reduction) specimen of the alloy K40NKhM, containing 0.012% C after tempering for 2 hours at 200°C. Fig 5 shows the same relationship for specimens of K40NKhM alloy containing 0.015% C after tempering for 2 hours at 200°C: - - 1 - containing 6.85% Mo, 2 - without Mo. Fig 6 shows the temperature dependence of internal friction of quenched and cold worked specimens of K40NKhM alloy containing 0.12% C. Fig 7 shows the temperature dependence of the internal friction of cold worked (70% reduction in area) specimens of K40NKhM alloy containing 0.12% C, after tempering for 2 hours at various temperatures. Fig 8 shows the influence of tempering temperature (2 hours' soaking) on the magnitude

of the peak of internal friction of K4ONKhM alloys of the following carbon contents: a - 0.12%, b - 0.05%. B - 0.015%. (State of the alloys before tempering: 1 - deformed 70%, 2 - deformed 30%, 3 - water quenched from 1100°C.) The authors arrive at the following conclusions: 1. Two independent processes take place during tempering in cold worked K4ONKhM type alloys. One of them occurs preferentially in the temperature range 300 to 350°C and probably leads to the formation of atomic segregations of the Guinier-Preston zone type (K-state). The second process occurs preferentially in the temperature range 550 to 700°C and leads to the precipitation of a second phase from the solid solution as well as to an acceleration of relaxation and recrystallization. 2. The low temperature process is accompanied by increase in hardness, elastic limit, modulus of elasticity and electric resistance and by a decrease in volume and the true coefficient of expansion of the alloy. 3. In a homogeneous solid solution (after deformation) of alloys of the K4ONKhM type, containing

atoms of metallic components of different diameter and carbon atoms, a peak appears on the curve $Q^{-1}(T)$ for internal friction at 300 to 350°C. This peak is due to the relative displacement of carbon atoms and atoms of large atomic diameter (Mo, W). 4. The magnitude of the internal friction peak increases with increase in carbon concentration and degree of deformation. 5. The segnegation of Mo and W atoms is the reason for the decrease in the magnitude of the internal friction peak on tempering after cold working. This enables the process of the K-state formation to be studied by the internal friction method. In such an investigation C serves as an indicator for the formation of segregation of the constituent metal atoms. There are 8 figures, 1 table and 12 references, 9 of which are Soviet, 2 German and 1 English.

SUBMITTED: August 12, 1958

22285
S/152/61/000/004/008/009
B126/B219

24.1900 2203

AUTHORS: Bagayev, A. M., Makhukov, N. G., Fisenko, N. I., Mkrtichan, A. A.

TITLE: Defectoscopy of tubes by means of a УЗД-7Н (UZD-7N) flaw detector

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 4, 1961, 103-107

TEXT: The authors conducted the elaboration of a method of defectoscopy in wide seamless pipes by means of the ultrasonic flaw detector УЗД-7Н (UZD-7N). This appliance permits examining with flat transducers (plain transducer) to a minimum depth of 7 mm in steel at a frequency of 2.5 Mc/sec and of 22 mm at a frequency of 0.8 Mc/sec. Pipes with 12-mm walls cannot be examined by the method with a plain transducer as the interval between the wave amplitudes would be too small; it is, however, possible to examine them by a double transducer system at 2.5 Mc/sec. In this method, the beam of ultrasonic waves is directed through a water stratum to the surface of the pipe by means of one transducer - the

Card 1/3

S/152/61/000/004/008/009
B126/B219

Defectoscopy of tubes...

optimum angle is 11-12° - whilst the second transducer receives the waves reflected from the inner surface of the pipe. The transducers are applied along the pipe, the distance between their centers must be 45 mm when the water stratum is 30 mm thick. When the ultrasonic waves strike a flaw in the pipe wall, the reflected waves either do not reach the transducer or the wave amplitude is lower. The authors also made experiments with hot-rolled steel, from 4 to 13 mm thick, and for every thickness they determined the distance between the transducers at which the wave amplitude was the highest. This ratio was used to draw up a standard probing scale. The use of a stratum of water (liquid) or of a paste with an acoustic resistance near that of steel between the transducers and the pipe is absolutely necessary if the flaw detection should be reliable. Through this measure, the transducers are also less exposed to wear. In order to establish this stratum the authors adapted a lathe which was equipped with a special trough supplied with water from the main. This method has been tested at the Tsentral'nyy remontno-mechanicheskiy zavod Upravleniya neftedobyvayushchey i gazovoy promyshlennosti Checheno-Ingushskogo ekonomicheskogo administrativnogo rayona (Central Works for Repair and Mechanics of the Administration of Petroleum Hauling

Card 2/3

Defectoscopy of tubes...

and Gas Industry of the Checheno-Ingushskiy Economic and Administrative rayon). There are 4 figures and 3 Soviet-bloc references.

ASSOCIATION: Groznenskiy neftyanoy institut (Groznyy Petroleum Institute)

SUBMITTED: January 6, 1961

Card 3/3

KOSHELEV, P.F.; MAKHUMTOV, I.M.; STEPANYCHEV, Ye.I.

Static tension testing of glass plastics of the type AG-4S. Plast.massy no.4:66-69 '63. (MIRA 16:4)
(Glass reinforced plastics—Testing)

MAKHUMUDOV, D.A.

Drilling directional wells in the Neftyanye Kamni region [in Azerbaijani with summary in Russian]. Azerb. neft. khoz. 37 11:21-24 N '58.
(MIRA 12:3)

(Neftyanye Kamni region--Oil well drilling, Submarine)

TITLE: Investigation of the alpha spectrum of terbium isotopes [Report, 14th Annual Conference on Nuclear Spectroscopy held in Tbilisi, 14-22 Feb 1964]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.29, no.2, 1965, 194-199

TOPIC TAGS: alpha spectrum, terbium

ABSTRACT: The α spectrum of the terbium fraction extracted from a tantalum target bombarded with 660 MeV protons was investigated with a spectrometer employing a semiconductor detector and a 128-channel pulse analyzer, and having a resolution of 0.3% at 6 MeV. The pulse analyzing system was calibrated after each half-hour run with a standard pulse generator which in turn was calibrated against a standard cell. The spectrometer was calibrated over the range from 3 to 6 MeV with α particles of known energies. The rare earth fraction from the target was separated chro-

cell. The spectrometer was calibrated over the range from 3.40 to 8 MeV with α particles of known energies. The rare earth fraction from the target was separated chromatographically and the terbium was electrolytically deposited on a polished platinum plate. Four α lines were observed, of which one, ascribed to Tb^{150} because of its 4.3 hour half-life, is new. This α-particle group had an energy of 3.649 MeV,

Card 1/2

and the partial half life of Tb^{150} with respect to this α decay was found to be 28 ± 15 years. Fine structure in the Tb^{151} α spectrum was sought in the energy range from 2.5 to 3.28 MeV, and none was found; if such fine structure lines exist their intensity must be less than 1.6×10^{-3} that of the principal Tb^{151} line.

"The authors express their deep gratitude to Professor A.Salai, director of the Institute of Nuclear Research of the Hungarian Academy of Sciences for his support of the work, to V.A.Khalkin, N.A.Lebedev, F.Molnar and other collaborators of the

Institute of Nuclear Research of the Hungarian Academy of Sciences and also supplied of the work, to V.A.Khalkin, N.A.Lebedev, F.Molnar and other collaborators of the Radiochemistry Section of the LYaP OIYaI for separating the Tb fraction, and to T.Kishsalai for assistance in operating the multi-channel analyzer." Orig.art. has: 4 figures and 1 table.

ASSOCIATION: Laboratoriya yadernykh problem Ob"yedinennogo instituta Yadernykh issledovaniy (Nuclear Problems Laboratory, Joint Institute for Nuclear Research)

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NR REF SOV: 005 OTHER: 012

MAKHUNKA, I. [Mahunka, I.]; FENESH, T. [Fenyes, T.]

Study of the α-spectrum of Dy isotopes. Izv. AN SSSR, Ser. fiz. 29 no.7:1121-1126 Jl '65. (MIRA 18:7)

1. Laboratoriya yadernykh problem Ob"yedinennogo instituta yadernykh issledovaniy.

L 2744-66 EWT(m)/EWP(t)/EWP(b) DIAAP/IJP(c) JD/JG

ACCESSION NR: AP5024327 UR/0367/65/002/002/0201/0203

AUTHOR: Makhunka, I.; Makhunka, M.; Fenesh, T. [illegible]

33
24
B

TITLE: Investigation of the α-spectrum of Gd^{149} 19

SOURCE: Yadernaya fizika, v. 2, no. 2, 1965, 201-203

TOPIC TAGS: gadolinium, alpha decay, alpha particle, alpha spectrum, radioisotope

ABSTRACT: The authors study the α-spectra of Gd^{149} and Gd^{148} produced by exposing a tantalum target to 660 Mev protons. A semiconductor α-spectrometer was used for the measurements. The instrument consists of a silicon detector, a low-noise charge-sensitive amplifier and a 128-channel pulse analyzer. In most cases, the detector had a sensing area of 5 mm^2 and a resolution of 25 kev (full width at half the height of the peak) for α-lines of ThC with an energy of about 6 Mev. The detector temperature was held constant during the experiment with an accuracy of ±0.15°C and variations in room temperature were less than ±1°C. A precision pulse generator was frequently used for checking the stability and linearity of the spectrometer. The principal α-lines of Gd^{148}, Po^{210} and ThC were used for calibration. The gadolinium source was electrolytically deposited on a carefully polished platinum disc

Card 1/2

L 2744-66
ACCESSION NR: AP5024327

13 mm in diameter. Thirteen α-spectra were obtained from two different Gd sources. A typical spectrum is shown for the primary Gd source taken immediately after the second isotope separation. The α-spectrum of a secondary source shows extremely weak Eu^{147} α-activity after 25 days. The ratio of α-particle energies was calculated at $E(Gd^{149})/E(Gd^{148}) = 0.9484 \pm 0.0010$; $E(Gd^{149}) = 3.016 \pm 0.010$ Mev; and the α-partial half-life $T(Gd^{149}) = (6 \pm 4)\cdot 10^3$ years. The intensity of the α-line gives a half-life of 8.3 ± 1.7 days for Gd^{149}, which agrees fairly well with data in the literature. The experimental results and data in the literature are used for calculating the energy of Tb^{149} β-decay. It is found that $Q_\beta(Tb^{149})=3.745 \pm 0.043$ Mev. "The authors are sincerely grateful to K. Ya. Gromov (OIYaI) and Professor A. Salai (Institute of Nuclear Research, Debrecen, Hungary) for sponsoring the work and for valuable consultation, and also to V. A. Khalkin, N. A. Lebedev and F. Molnar (OIYaI) for chemical separation of the isotopes." Orig. art. has: 2 figures, 1 table.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)
SUBMITTED: 04Feb65 ENCL: 00 SUB CODE: NP
NO REF SOV: 004 OTHER: 005

Card 2/2

ACCESSION NR: AP5005939

AUTHOR: Gromov, K.Ya.; Makhunka, I.; Makhunka, M.; Fenesh, T.

TITLE: Investigation of the alpha spectrum of terbium isotopes [Report, 14th Annual Conference on Nuclear Spectroscopy held in Tbilisi, 14-22 Feb 1964]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.29, no.2, 1965, 194-199

TOPIC TAGS: alpha spectrum, terbium

ABSTRACT: The α spectrum of the terbium fraction extracted from a tantalum target bombarded with 660 MeV protons was investigated with a spectrometer employing a semiconductor detector and a 128-channel pulse analyzer, and having a resolution of 0.3% at 6 MeV. The pulse analyzing system was calibrated after each half-hour run with a standard pulse generator which in turn was calibrated against a standard cell. The spectrometer was calibrated over the range from 3 to 6 MeV with α particles of known energies. The rare earth fraction from the target was separated chromatographically and the terbium was electrolytically deposited on a polished platinum plate. Four α lines were observed, of which one, ascribed to Tb^{150} because of its 4.3 hour half-life, is new. This α-particle group had an energy of 3.649 MeV,

Card 1/2

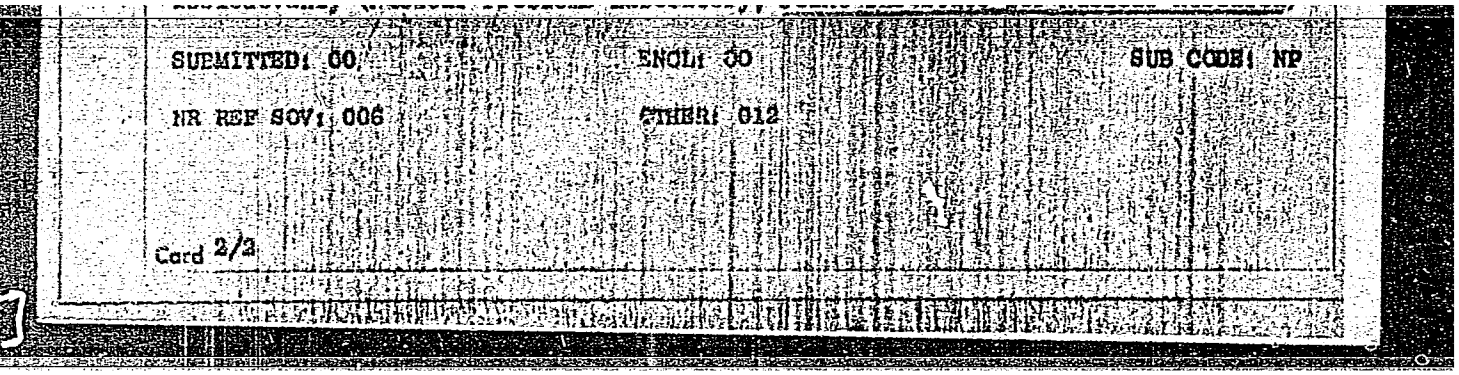
L 33615-65

ACCESSION NR: AP5005939

7

and the partial half life of Tb^{150} with respect to this α decay was found to be 26 ± 15 years. Fine structure in the Tb^{151} α spectrum was sought in the energy range from 2.5 to 3.28 MeV, and none was found; if such fine structure lines exist their intensity must be less than 1.6×10^{-3} that of the principal Tb^{151} line. "The authors express their deep gratitude to Professor A.Gaisi, director of the Institute of Nuclear Research of the Hungarian Academy of Sciences for his support of the work, to V.A.Khalkin, N.A.Lebedev, F.Molnar and other collaborators of the Radiochemistry Section of the LYaP OIYaI for separating the Tb fraction, and to T.Kishselai for assistance in operating the multi-channel analyzer." Orig.art. has: 4 figures and 1 table.

ASSOCIATION: Laboratoriya yadernykh problem Ob"yedinennogo instituta Yadernykh issledovaniy (Nuclear Problems Laboratory, Joint Institute for Nuclear Research)



L 2744-66 EWT(m)/EWP(t)/EWP(b) DIAAP/LJP(c) JD/JG

ACCESSION NR: AP5024327 UR/0367/65/002/002/0201/0203

AUTHOR: Makhunka, I.; Makhunka, M.; Fenesh, T. [illegible]

TITLE: Investigation of the α-spectrum of Gd^{149}

SOURCE: Yadernaya fizika, v. 2, no. 2, 1965, 201-203

TOPIC TAGS: gadolinium, alpha decay, alpha particle, alpha spectrum, radioisotope

ABSTRACT: The authors study the α-spectra of Gd^{149} and Gd^{148} produced by exposing a tantalum target to 660 Mev protons. A semiconductor α-spectrometer was used for the measurements. The instrument consists of a silicon detector, a low-noise charge-sensitive amplifier and a 128-channel pulse analyzer. In most cases, the detector had a sensing area of 5 mm^2 and a resolution of 25 kev (full width at half the height of the peak) for α-lines of ThC with an energy of about 6 Mev. The detector temperature was held constant during the experiment with an accuracy of ±0.15°C and variations in room temperature were less than ±1°C. A precision pulse generator was frequently used for checking the stability and linearity of the spectrometer. The principal α-lines of Gd^{148}, Po^{210} and ThC were used for calibration. The gadolinium source was electrolytically deposited on a carefully polished platinum disc

Card 1/2

L 2744-66
ACCESSION NR: AP5024327

13 mm in diameter. Thirteen α-spectra were obtained from two different Gd sources. A typical spectrum is shown for the primary Gd source taken immediately after the second isotope separation. The α-spectrum of a secondary source shows extremely weak Eu^{147} α-activity after 25 days. The ratio of α-particle energies was calculated at $E(Gd^{149})/E(Gd^{148}) = 0.9484 \pm 0.0010$; $E(Gd^{149}) = 3.016 \pm 0.010$ Mev; and the α-partial half-life $T(Gd^{149}) = (6 \pm 4) \cdot 10^3$ years. The intensity of the α-line gives a half-life of 8.3 ± 1.7 days for Gd^{149}, which agrees fairly well with data in the literature. The experimental results and data in the literature are used for calculating the energy of Tb^{149} β-decay. It is found that $Q_\beta(Tb^{149}) = 3.745 \pm 0.043$ Mev. "The authors are sincerely grateful to K. Ya. Gromov (OIYaI) and Professor A. Salai (Institute of Nuclear Research, Debrecen, Hungary) for sponsoring the work and for valuable consultation, and also to V. A. Khalkin, N. A. Lebedev and F. Molnar (OIYaI) for chemical separation of the isotopes." Orig. art. has: 2 figures, 1 table.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)
SUBMITTED: 04Feb65 ENCL: 00 SUB CODE: NP
NO REF SOV: 004 OTHER: 005

Card 2/2

SERENSEN, S.V.; MAKHUTOV, N.A.

Study of the correlations of strain and failure of mild steel under a small number of cycles of loading. Zav. lab. 30 no.1:72-77 '64. (MIRA 17:9)

SERENSEN, S.V.; MAKHUTOV, N.A.

Regularity in the development of cracks and of the breakdown of body steels under cyclic loading. Trudy MATi no.51:133-151 '64.
(MIRA 17:10)

AUTHOR: Serensen, S. V.; Makhutov, N. A. 27 641

TITLE: Laws of crack development and failure of frame steel during cyclic loading

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy*, no. 61, 1964. Konstruktsionnaya prochnost' legkikh splavov i staley (Structural strength of light alloys and alloy steels), 133-151

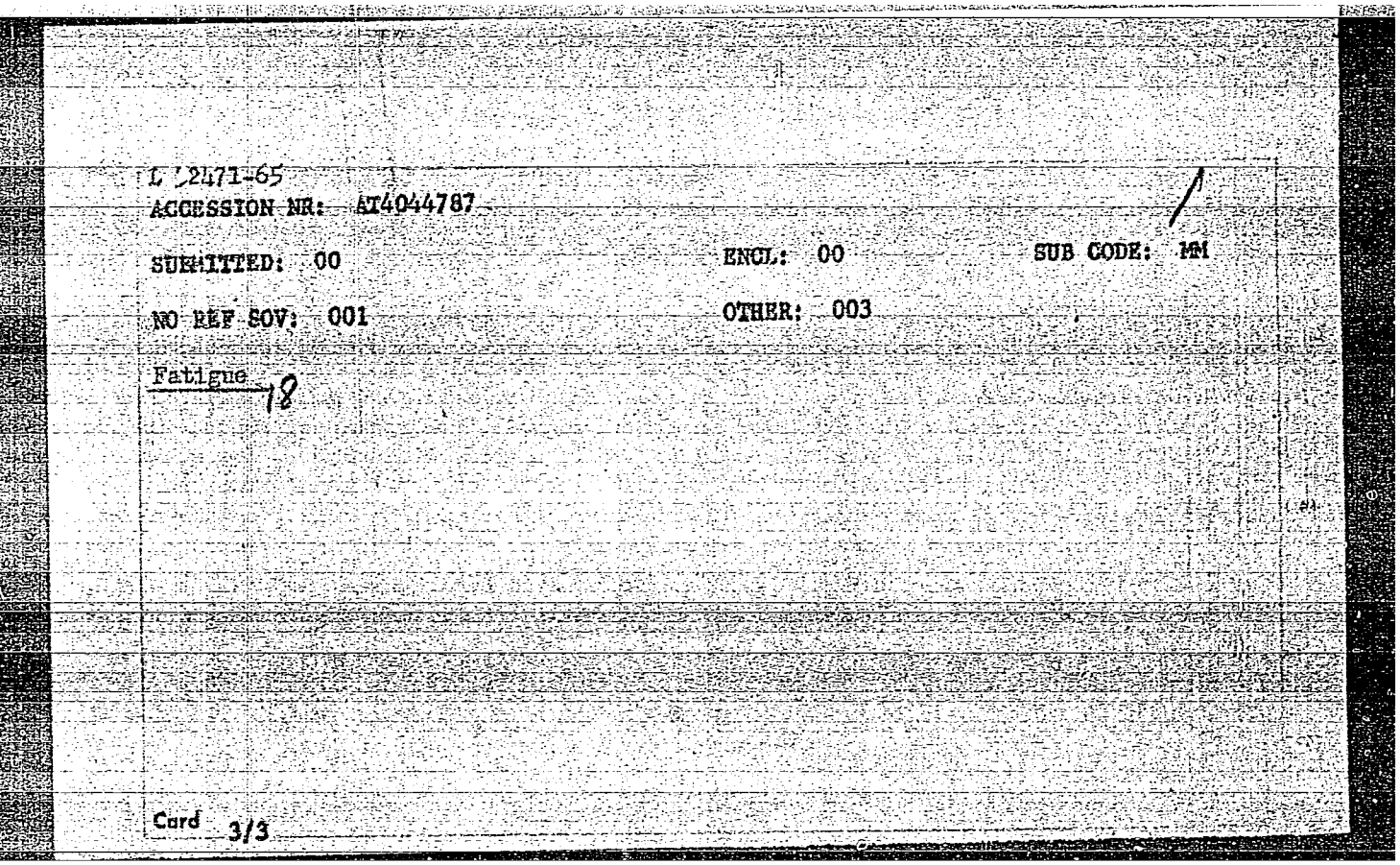
TOPIC TAGS: frame steel, steel failure, cyclic load, crack formation, steel mechanical property, low alloy steel

ABSTRACT: The results of an experimental study of the failure of low-alloy frame steel during cyclic loading are discussed. Flat specimens were notched on two sides with a disk milling cutter 2 mm thick; notches were 0.5, 1, 2, 3, and 4 mm deep. The working section of the specimens was polished. An instrument of the PMT-3 type was used to apply a grating with a 0.1-mm mesh to the peak of the notch; this was for microhardness determination. Specimens 1.5 mm thick were tested on an IM-4 machine; those 5, 8, and 14 mm thick on an UIM-50 type machine. For repeated elongation, the machines were equipped with electric contact and relay devices. The

Card 1/3

load ranged from zero to maximum values for a given amplitude. Maximum plastic deformation accumulated in the peak of the crack can serve as a criterion of failure if the notch is 2 mm wide and the number of cycles is N≤2000. The maximum deformation is approximately the same for the same specimens during failure under single or repeated loads. The magnitude of the local plastic deformation, after initial loading, increases monotonically with increasing stress, the rapidity increasing with a decrease in extent of the stressed state. The plastic deformation accumulated during N cycles at the stage of destruction depends on the plastic deformation after the first loading. The length of the crack after N cycles of loading depends on the degree of homogeneity and extent of the stressed state and on the magnitude of deformation after the first loading. Formulas are given for the determination of the plastic deformation accumulated during N cycles and the length of the crack after N cycles. The maximum length of the crack increases monotonically with increasing number of cycles up to failure and with an increasing extent of the stressed state. Orig. art. has: 19 figures, 3 tables, and 4 formulas.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow aeronautical engineering institute)



L 12471-65
ACCESSION NR: AT4044787

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 001 OTHER: 003

Fatigue 18

Card 3/3

MAKHUTOV, N.A.

Effect of loading conditions on the breakdown of [illegible]
body steel. Trudy MATI no.61, 92-107 '64.

AUTHOR: Makhutov, N. A. 64

TITLE: Influence of loading conditions on the failure of low-alloy frame steel

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy*, no. 61, 1964. Konstruktsionnaya prochnost' legkikh splavov i staley (Structural strength of light alloys and alloy steels), 152-167

TOPIC TAGS: alloy steel strength, alloy steel loading, frame steel, low alloy steel, stress concentration, brittle failure

ABSTRACT: This investigation dealt with the influence of loading conditions on the failure of low-alloy frame steel during the pre- and post-critical states. Specimens were subjected to tension - compression under cyclic loads on a special apparatus developed from the IM-2 test machine. Strain was measured by means of three

azus developed from the IM-2 test machine. Strain was measured by means of three elastic elements of V95 alloy. Diagrams of cyclic strain were automatically recorded by means of an electronic two-coordinate instrument. The accumulated plastic deformation can be used as a criterion of failure regardless of the process of prior loading, during subsequent cyclic deformation, with a given stress amplitude

Card 1/3

at 1 to 800 cycles, under conditions of a uniaxial stressed state. This deformation is about the same (28-30%) for specimens destroyed in single or cyclic loading with a given stress amplitude. Failure of specimens with a smooth cylindrical working section during cyclic elongation - compression took place in the smooth section, with the formation of a neck. Surface cracks up to 1 mm long appeared during the last cycles prior to failure, in the area of the neck. During cyclic deformation started with a compression half cycle, failure during loading with a given stress amplitude or with a given deformation took place in less than half the number of cycles required during cyclic deformation started with a tension half cycle. During cyclic uniaxial elongation - compression of specimens with a smooth cylindrical working section, the steel was stress-relieved. The criterion of failure of flat, notched specimens during repeated elongation with constant or variable maximum load, at 1 to 2×10^3 cycles, is the local plastic deformation that has accumulated in the peak of the developing crack. Preliminary repeated elongation of 1.5-mm thick, flat, notched specimens causes a 40-50% drop in the brittle strength at -196C. Local plastic deformations in the zone of brittle failure at -196C drop to 0.5-1% when specimens are subjected to preliminary repeated elongation at room temperature; when specimens are not subjected to preliminary loading, these deformations amount to 6-2.3%. The drop in brittle strength at -196C is proportional

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001031610004-5"

L 32468-65

ACCESSION NR: AT4044788

to the logarithm of the product of the crack length and the local plastic deformation that has accumulated in the peak of the crack during repeated elongation at room temperature. This drop is governed by the lower ductility of such specimens in the zone of brittle failure in comparison with specimens not subjected to preliminary cyclic loading. Orig. art. has: 13 figures, 1 table, and 5 formulas.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow aeronautical engineering institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 000

Card 3/3

L 57611-65 EWT(d)/EWT(m)/EWP(w)/EWP(c)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(z)/EWP(b)/EWP(l) Pf-4 MJW/JD

ACCESSION NR: AP5014379 UR/0380/65/000/002/0083/0089
620.17:699.15.194

AUTHOR: Makhutov, N. A. (Moscow) 33 B

TITLE: Investigation of the low-cycle failure of low carbon and low alloy steel 18

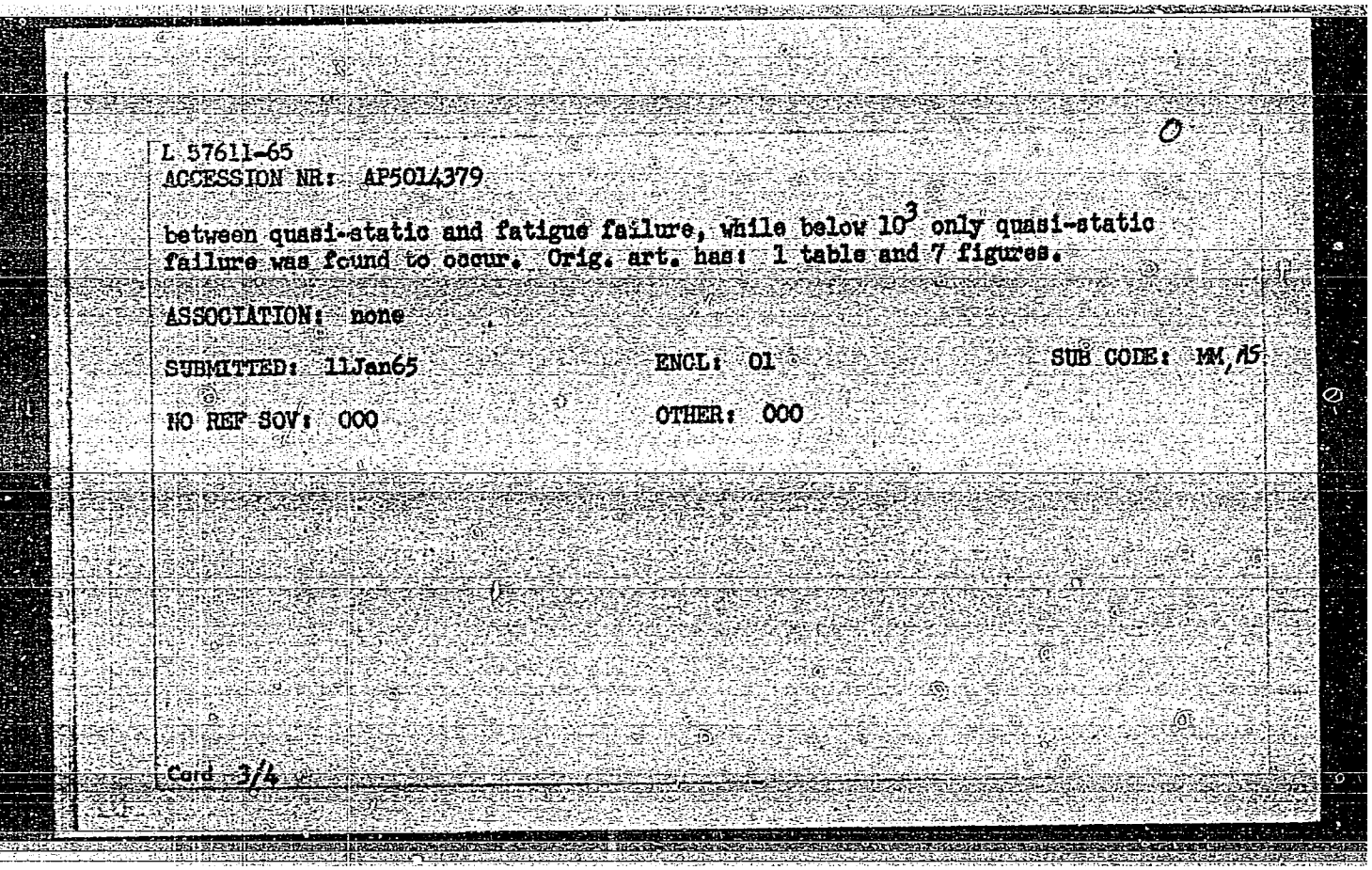
SOURCE: Mashinovedeniye, no. 2, 1965, 83-89

TOPIC TAGS: metal fatigue, fatigue limit, low cycle fatigue/ 22K steel, IM 4 testing machine, PMT 3 engraving apparatus

ABSTRACT: Low cycle failure of two types of steel (type A: 22K, 0.24% C, proportional limit 25.4 kg/mm^2, yield stress 32 kg/mm^2, tensile stress 52.5 kg/mm^2, δ = 28%, ψ = 60%; type B: low alloy with physical properties 51.6 kg/mm^2, 62, 72.6, 29 and 67% respectively) were experimentally investigated. Flat, smooth, 1.55 mm thick by 14 mm wide by ≈50 mm long specimens (Type I as is, Types II and III with a 1.4 mm hole and 0.2 mm x 2 mm wide slots respectively, corresponding to stress concentration factors of 2.7 and 7.3) were tensile loaded at 2-3 cpm in an IM-4 testing machine. The longitudinal and thickness plastic strains ϵ_x and ϵ_y were found with the help of a 100-micron square grid applied with a PMT-3 apparatus;

Card 1/4

ϵ_z and the intensity of local deformations ϵ_i were calculated. The length of cracks during cyclic loading was also measured. The plastic strain distributions as a function of distance from the point of maximum deformation and number of cycles were obtained and are shown in graphical form for stresses of 40 kg/mm^2 (N = 1, 25, 100, 1000) and 32 kg/mm^2 (N = 1, 25, 100, 1000, 10 000) for steel A and for 67 kg/mm^2 (1, 25, 100), and 62 kg/mm^2 (1, 100, 1000, 3300) for steel B. The accumulation of plastic deformations and crack lengths as a function of cycles for stresses of 32, 40, 45, 50, 67, and 70 kg/mm^2 is also presented graphically for the three types of specimens. It was found that plastic deformation continuously accumulates (at load near yield stress) until failure occurs below $5 \cdot 10^3$ cycles. At lower stresses, cracks of 10-20 micron form after $\approx 10^4$ cycles, growing to $\approx$ 200 micron (steel A) or $\approx$ 2000 micron (steel B) before failure at $\approx 5 \cdot 10^5$ cycles. Fatigue cracks form first in steel B. Quasi-static failure was found to occur after a certain deformation accumulation (independent of load and cycles) as shown on Fig. 1 on the Enclosure. Thus the $\epsilon_a N^m$ fatigue equation is applicable only for $N > 10^5 - 10^5$ cycles; $10^3 - 10^4$ can be considered as a transition region



L 57611-65
ACCESSION NR: AP5014379

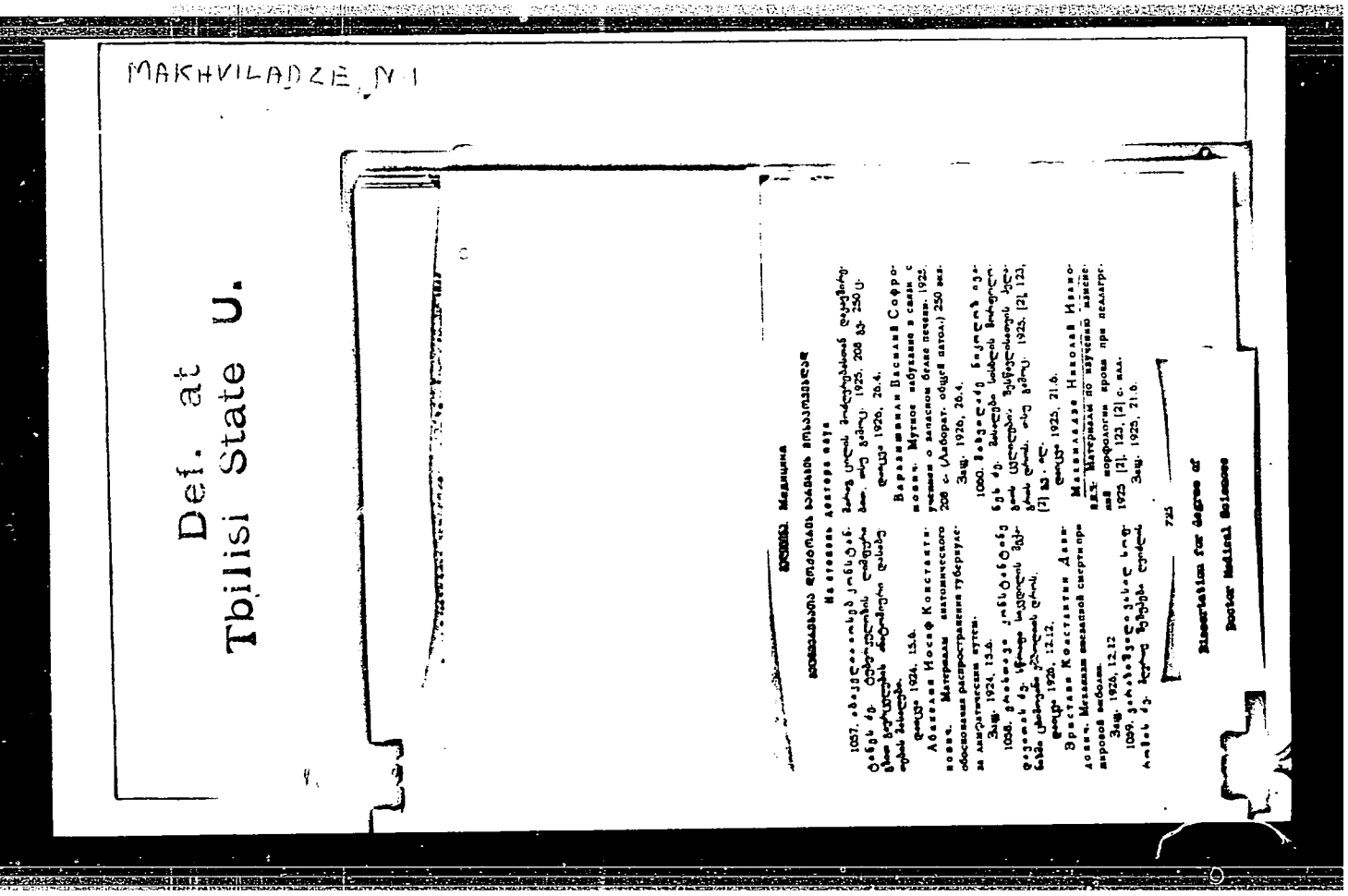
between quasi-static and fatigue failure, while below 10^3 only quasi-static failure was found to occur. Orig. art. has: 1 table and 7 figures.

ASSOCIATION: none

SUBMITTED: 11Jan65 ENCL: 01 SUB CODE: MM, AS

NO REF SOV: 000 OTHER: 000

Card 3/4



MAKHYRIN, B.A.

11913 AERE-Lib/Trans-668
MEASUREMENT OF PLASMA PARAMETERS BY THE PULSE METHOD IN A HIGH CURRENT DISCHARGE.
B. A. Makhyrin. Translated by R. D. Lowde from Zhur. Tekh. Fiz. 23, 1915-19(1953). 6p.

Consideration is given to the limit of application of the pulse method of probe measurement as the current density of the discharge is increased and the duration of the voltage pulse supplied to the probe reduced. As an example of measurements taken with discharge currents of the order of a hundred amperes, the electron density distribution over the transverse section of a discharge tube is reproduced. (auth)

NECHAYEV, R. (Leningrad),; ANTIMONOV, N.(Kursk),; SVISTUNOV, N.(Moskva),; SUSHKIN, V. (Tula),; BAICHKIN, N. (Murmansk),; MAKICHAN, S. (Baku)

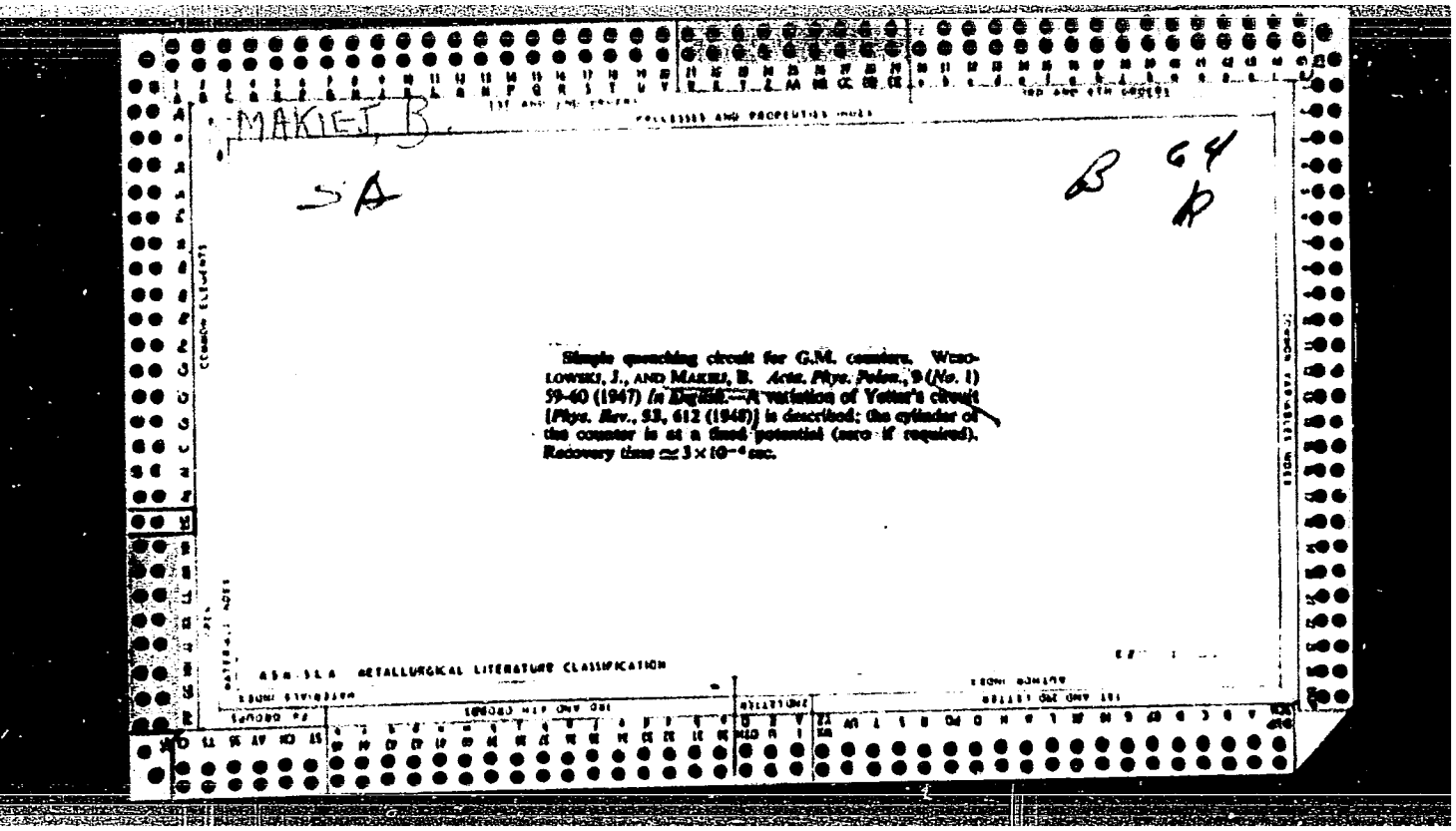
Working with initiative. Pozh. delo 4 no. 7:6-7 Jl '58. (MIRA 11:8)

(Fire prevention)

HELBING, Henryk; MAKIEDONSKI, Aleksander

Measuring noises caused by undersirable angle modulation in radio transmitters. Inst laczn prace 11 nc.2:27-75 '64.

1. Submitted June 20, 1963.



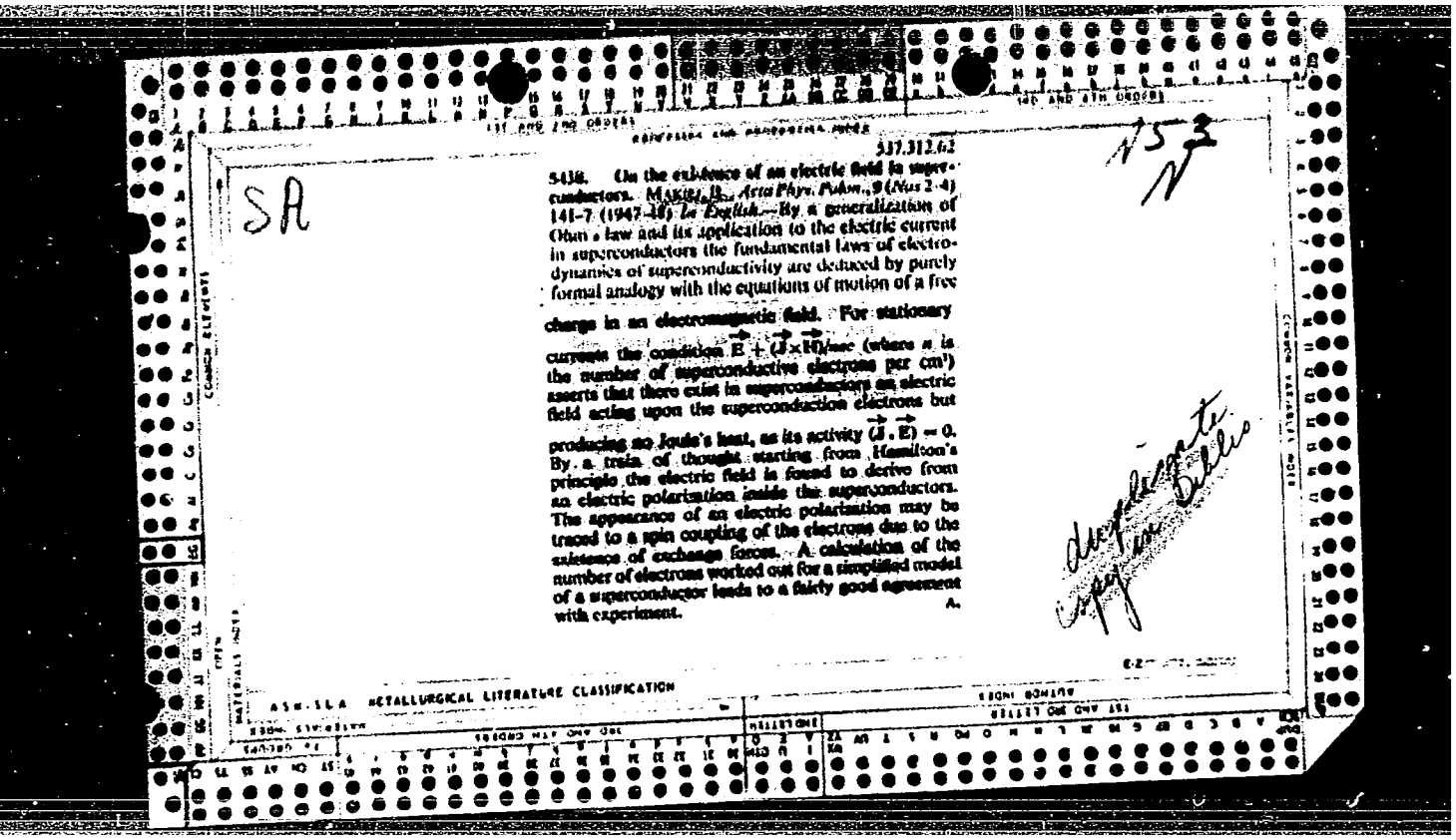
MAKIEJ, B.

5A

B 64

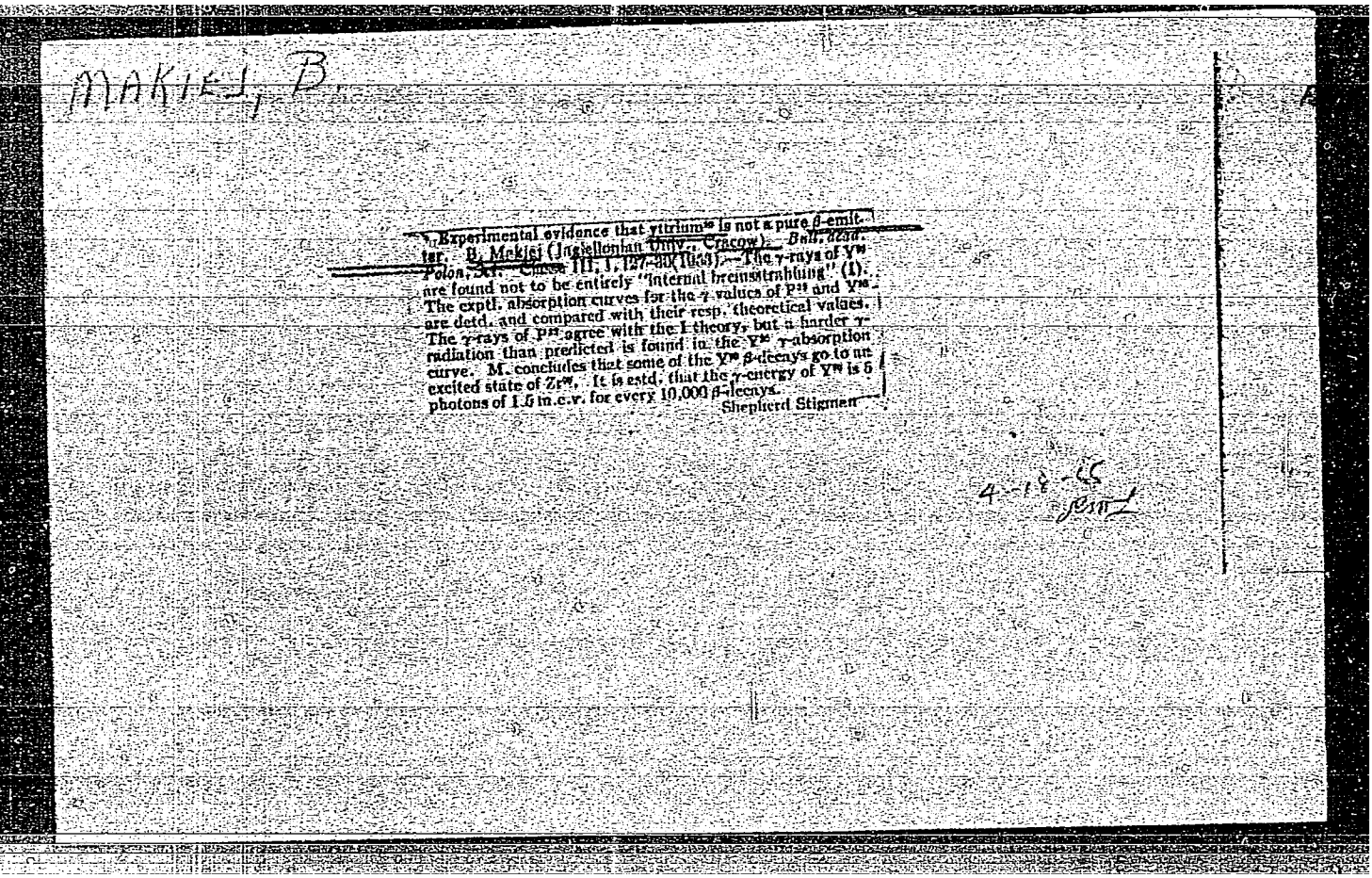
Simple quenching circuit for G.M. counters. WESOLOWSKI, J., AND MAKIEJ, B. *Acta. Phys. Polon.*, 9 (*No.* 1) 59-60 (1947) *In English.*—A variation of Yetter's circuit [*Phys. Rev.*, 53, 612 (1948)] is described; the cylinder of the counter is at a fixed potential (zero if required). Recovery time $\simeq 3 \times 10^{-4}$ sec.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



537.312.62

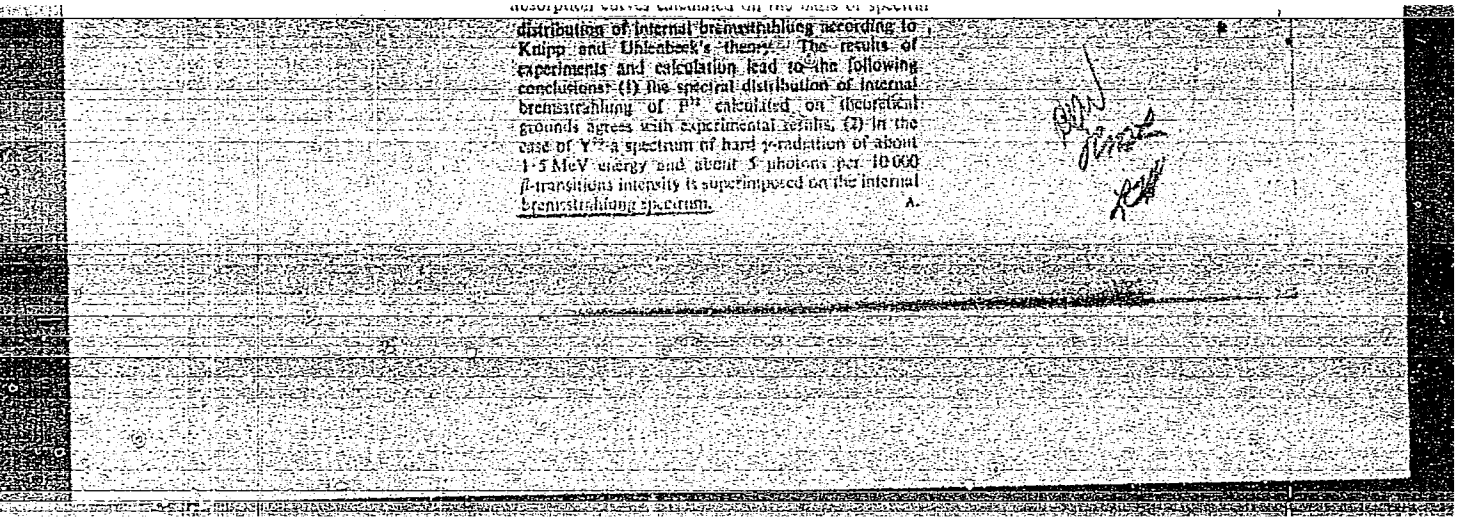
5438. On the evidence of an electric field in superconductors. MAKI, R., *Arch. Phys. Polon.*, 9 (Nos 2-4) 141-7 (1947-48) *In English.*—By a generalization of Ohm's law and its application to the electric current in superconductors the fundamental laws of electrodynamics of superconductivity are deduced by purely formal analogy with the equations of motion of a free charge in an electromagnetic field. For stationary currents the condition $\vec{E} + (\vec{J} \times \vec{H})/nec$ (where n is the number of superconductive electrons per cm³) asserts that there exist in superconductors an electric field acting upon the superconduction electrons but producing no Joule's heat, as its activity $(\vec{J} \cdot \vec{E}) = 0$. By a train of thought starting from Hamilton's principle the electric field is found to derive from an electric polarization inside the superconductors. The appearance of an electric polarization may be traced to a spin coupling of the electrons due to the existence of exchange forces. A calculation of the number of electrons worked out for a simplified model of a superconductor leads to a fairly good agreement with experiment. A.



MAKIEJ, B.

Experimental evidence that yttrium[90] is not a pure β-emitter. B. Makiej (Jagiellonian Univ., Cracow). *Bull. acad. pol. sci., Classe III*, 1, 127–30(1953).—The γ-rays of Y[90] are found not to be entirely "internal bremsstrahlung" (I). The expt. absorption curves for the γ values of P[32] and Y[90] are detd. and compared with their resp. theoretical values. The γ-rays of P[32] agree with the I theory, but a harder γ-radiation than predicted is found in the Y[90] γ-absorption curve. M. concludes that some of the Y[90] β-decays go to an excited state of Zr[90]. It is estd. that the γ-energy of Y[90] is 5 photons of 1.5 m.e.v. for every 10,000 β-decays.
Shepherd Stigman

4-14-55



absorption curves calculated on the basis of spectral distribution of internal bremsstrahlung according to Kulpp and Uhlenbeck's theory. The results of experiments and calculation lead to the following conclusions: (1) the spectral distribution of internal bremsstrahlung of P^{32} calculated on theoretical grounds agrees with experimental results, (2) in the case of Y^{90} a spectrum of hard γ-radiation of about 1·5 MeV energy and about 5 photons per 10 000 β-transitions intensity is superimposed on the internal bremsstrahlung spectrum.

A.

L 59573-65 EWT(1)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b) IJP(c) JD/GG

ACCESSION NR: AT5009438 CZ/0000/64/000/000/0066/0070

44
36
B+1

AUTHOR: Makiej, B.; Freud, R.; Sulkowski, C.

TITLE: Change in magnetic induction distribution with temperature in a cylindrical specimen at destruction of superconductivity by current

SOURCE: Conference on Low Temperature Physics and Techniques. 3d, Prague, 1963. Physics and techniques of low temperatures; proceedings of the conference. Prague, Publ. House of the Czechosl. Academy of Sciences, 1964, 66-70

TOPIC TAGS: superconductivity, magnetic induction distribution, superconductivity destruction, low temperature research, superconducting transition

ABSTRACT: This is a sequel of an investigation by one of the authors (Makiej, ZhETF v. 34 (1958) 312) and is aimed at a closer examination of the inconsistency between the earlier experimental data and the London theory of destruction of superconductivity by a current. To this end, the distribution of magnetic induction was determined in a specimen at fixed current of 25.8 A and at several specimen temperatures. The experimental set-up was the same as described in the earlier paper. The specimen was a polycrystalline tin cylinder 4 mm in diameter, of resistivity ratio $R_{4.2}/R_{293} = 1.56 \times 10^{-4}$ with a 0.2 x 3.5 mm rectangular slot cut in the central part of the cylinder, symmetrical about the diametral plane. The magnetic

Card 1/2

L 59573-65

ACCESSION NR: AT5009438

field in the slot was measured with a magnetoresistance bismuth probe. Comparison of the measurements with the calculations based on London's theory shows that an increase in temperature is accompanied by a decrease in the radius of the "core" of the intermediate state, and the experimental points in the "sheath-core" border region do not lie on the theoretical curve. This discrepancy cannot result from the difference between the temperature of the sample and that of the surrounding helium bath. It is therefore concluded that there is no sharp border between the regions of the intermediate and normal state, and any phenomenological theory ignoring the actual structure of the intermediate state does not describe well the mechanism of destruction of superconductivity by current. "The authors thank Doctor E. Rejnar and Doctor J. Szymaszek for helpful discussions, Doctor W. Giriat for supplying the zonally purified tin, and to Mr. J. Kasprzak and Mr. M. Wasilewski for technical assistance." Orig. art. has: 6 figures and 2 formulas.

ASSOCIATION: Department of Low Temperatures, Institute of Physics, Polish Academy of Sciences, Wroclaw, Poland

SUBMITTED: 0000064 ENCL: 00 SUB CODE: EM, TD

NR REF SOV: 003 OTHER: 001

Card 2/2

MAKHOV, A.V.

Some new species of mollusks from Paleogene sediments of Eastern Carpathians. Paleont.sbor. [Lvov] no.1:41-50 '61. (MIRA 15:9)

1. Ukrainskiy nauchno-issledovatel'skiy geologorazvedochnyy institut, L'vov.
(Carpathian Mountains--Mollusks, Fossil)

SHTEYNMAN, V.V.; MAKIN, A.A.

Universal feed of strips and bands by tongs with pneumatic drive. Kuz.-shtam.porizv. 5 no. 5:41-43 My '63. (MIRA 16:9)

MAKIN, A. V.

Dissertation: "Heterogenous Equilibrium in the Quarternary Systems: NaCl - Na_3NO_3 - Na_2HPO_4 - H_2O and $NaNO_3$ - Na_2SO_4 - Na_2HPO_4 - H_2O at 25° (C)." Cand Chem Sci, Inst of General and Inorganic Chemistry, Acad Sci, USSR, Moscow 1953.

W-30928

SO: Referativnyy Zhurnal, No. 5, Dec 1953, Moscow, AN USSR (M-[illegible])

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001031610004-5"

MAKIN, A.V.; KARNAUKHOV, A.S.

Solubility of the ternary system $NaNO_3$ -- Na_2HPO_4 -- H_2O at 25°.
Zhur.neorg.khim. 2 no.6:1420-1423 Je '57. (MIRA 10:10)

1.Yaroslavskiy gosudarstvennyy pedagogicheskiy institut im. K.D. Ushakova.
(Solubility) (Systems (Chemistry))

MAKIN, A.V.

Solubility isotherm of the ternary system Na_2HPO_4 — NaCl — H_2O at 25°. Zhur. neorg. khim. 2 no.12:2794-2796 D '57. (MIRA 11:2)

1. Yaroslavskiy gosudarstvennyy pedagogicheskiy institut im. K.D. Ushinskogo.
(Sodium phosphates) (Sodium chloride) (Solubility)

AUTHOR: Makin, A. V. SOV/78-3-12-25/36

TITLE: The Heterogeneous Equilibria in the System $NaNO_3$ - Na_2HPO_4 - NaCl - H_2O at 25°C (Geterogennyye ravnovesiya v sisteme $NaNO_3$ - Na_2HPO_4 - NaCl - H_2O pri 25°)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 12, pp 2764-2766 (USSR)

ABSTRACT: The solubility of the quaternary system $NaNO_3$-Na_2HPO_4-NaCl-H_2O at 25° was investigated and the heterogeneous equilibria in this system were determined by the "non-variants" method. From the results obtained the solubility curve was constructed. Isomorphic mixtures and chemical compounds do not form in this system. The regions of crystallization of the salts $NaNO_3$, NaCl, and $Na_2HPO_4 \cdot 12H_2O$ were determined. The compound $Na_2HPO_4 \cdot 12H_2O$ has the greatest area of crystallization in this system. There are 1 figure, 1 table, and 12 references, 9 of which are Soviet.

Card 1/2

SOV/78-3-12-25/36

The Heterogeneous Equilibria in the System $NaNO_3$ - Na_2HPO_4 - NaCl - H_2O at 25°C

ASSOCIATION: Yaroslavskiy pedagogicheskiy institut im. K. D. Ushinskogo (Yaroslavl' Pedagogical Institute imeni K. D. Ushinskiy)

SUBMITTED: August 6, 1957

Card 2/2

5(4)

AUTHOR: Makin, A. V.,

SOV/78-4-5-40/46

TITLE: Investigation of the System $NaNO_3$-Na_2SO_4-H_2O at 25°

(Issledovaniye sistemy $NaNO_3$-Na_2SO_4-H_2O pri 25°)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5, pp 1190 - 1197 (USSR)

ABSTRACT: In order to determine the solid phase and the character of the double compound forming in the system $NaNO_3$-Na_2SO_4-H_2O, the solubility of the system was investigated at 25°; results are shown by table 1 and figure 1. The diagram shows three branches of the solubility curve. The first branch from point 1 - 9 corresponds to the separation of the solid phase $Na_2SO_4 \cdot 10H_2O$. The second branch from point 9 - 18 corresponds to the crystallization of the double chemical compound of darapskite ($NaNO_3 \cdot Na_2SO_4 \cdot H_2O$) and the solid solution darapskite and sodium nitrate. The third branch on the solubility isothermal line from point 18 - 21 corresponds to the crystallization of sodium

nitrate. For the purpose of carrying out a thorough investigation of the solid phase of this system the specific weight, the specific molecular volume and some optical properties were determined, and radiographical and thermographical investigations were carried out. The results obtained are shown by table 2. Figure 3 shows the properties of the solid solution of darapskite. Table 4 and figures 4 and 5 show the intensity of the X-ray lines and of the refraction angles of the crystal structure. The X-ray picture shows that at 25° a compound with the chemical composition $NaNO_3 \cdot Na_2SO_4H_2O$ and a solid solution with variable composition and a molar ratio of components Na_2SO_4 : $NaNO_3$ = 1:1 to 1:1.3 is formed in the system $NaNO_3$-Na_2SO_4-H_2O. Figures 6-13 show the thermograms of sodium nitrate and darapskite as well as of the solid solution. Thermographical investigations show that at 105-110° dehydration of the darapskite and of the solid solution occurs. At 225°-275° darapskite and the solid solution decompose into

the initial compound. At 282-298° the thermo-effect shows an eutectic mixture of sodium nitrate and sodium sulphate. There are 13 figures, 4 tables, and 15 references, 4 of which are Soviet.

ASSOCIATION: Yaroslavskiy pedagogicheskiy institut im. K.D. Ushinskogo (Yaroslavl' Pedagogic Institute imeni K.D. Ushinskiy)

SUBMITTED: January 30, 1958.

DRUZHININ, I.G.; MAKIN, A.V.

Solubility isotherm of the ternary system Na_2SO_4 - Na_2HPO_4 - H_2O.
Izv.AN Kir.SSR.Ser.est.i tekh.nauk 2 no.3:19-24 '60.
(MIRA 13:9)

(Sodium sulfate) (Sodium phosphate)

MAKIN, A.V.; LEPESHKOV, I.N.

Salt equilibria in the system $NaNO_3$ - Na_2SO_4 - Na_2HPO_4 - H_2O at 25°.
Zhur. neorg. khim. 9 no.2:495-498 F'64. (MIRA 17:2)

1. Yaroslavskiy gosudarstvennyy pedagogicheskiy institut imeni K.D. Ushinskogo.

MAKIN, D.S.

Valves in sugar refineries. Sakh.prom.30 no.1:42-43 Ja '56.
(MLRA 9:6)

1.Merkenskiy sakharnyy zavod.
(Sugar machinery)

MAKIN, K.M.

Method of obtaining a one-hundred percent sulfur dioxide by oxidizing pyrites. Biul.TSIIN tsvet.met. no.18:23-24 '57. (MIRA 11:5)
(Sulfur dioxide) (Pyrites)

VAYNSHTEYN, D.M., inzh.; DVOROKOVSKIY, G.I., inzh.; MAKIN, N.P., inzh.

Using polyethylene pipes for atuomatic control systems. Mont.i spets.rab. v stroi. 24 no.12:11-12 D '62. (MIRA 15:12)
(Pipe, Plastic) (Automatic control)