"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

S/125/60/000/010/005/015
A161/A133

Welding Commercial Molybdenum in Inert Gas

Figure 1

Fig.1

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S/125/60/000/010/005/015
A161/A133

Welding Commercial Molybdenum in Inert Gas

Figure 6

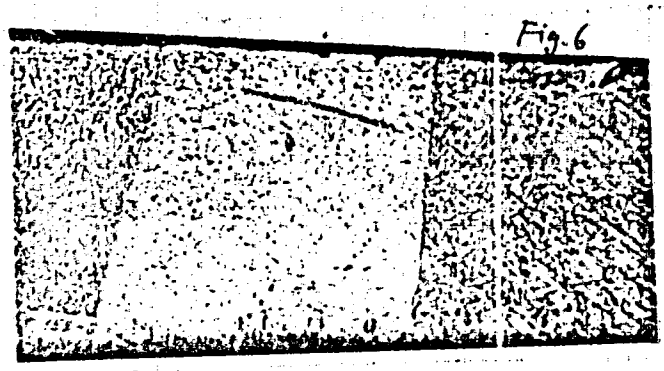

Fig. 6

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MORDVINTSEVA, Aleksandra Vladimirovna, kand.tekhn.nauk; VOLODIN, Vasiliy Sergeyevich; SOKOLOV, Yevgeniy Vladimirovich

Specialists answer questions about welding. Tekh.mol. 28 no.11: 8-11 '60. (MIRA 13:12)

1. Kafedra svarki Moskovskogo vysshego tekhnicheskogo uchilishcha im. Baumana (for Mordvintseva). 2. Glavnyy spetsialist po svarochnomu proizvodstvu Gosudarstvennogo komiteta Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (for Volodin). 3. Glavnyy inzhener Moskovskogo opytnogo svarochnogo zavoda (for Sokolov).
(Welding)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDVINTSEVA, A.V., [illegible] nauk; OL'SHANSKIY, N.A., kand. tekhn. nauk

[Modern methods of welding plastics; a review] Sovremennye metody svarki plastmass: obzor. Moskva, TSentr. in-t nauchno-tekhn. informatsii [illegible], 1961. 51 p. (MIRA 14:11)
(Plastics—Welding)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

PHASE I BOOK EXPLOITATION SOV/5656

Nikolayev, Georgiy Aleksandrovich, Natan L'vovich Kaganov, Nikolay Aleksandrovich Ol'shanskiy, Aleksandra Vladimirovna Mordvintseva, and Dmitriy Mikhaylovich Shashin

Novaya svarochnaya tekhnika v priborostroitel'noy promyshlennosti (New Welding Processes in the Instrument Industry) Moscow, Gosizdat "Vysshaya shkola", 1961. 110 p. 10,000 copies printed.

Ed. of Publishing House: D. Ya. Koptevskiy; Tech. Ed.: R. K. Voronina.

PURPOSE: This book is intended for students in schools of higher education and tekhnikums; it may also be used by technical personnel in the instrument industry.

COVERAGE: The principal modern methods of joining metals and nonmetallic materials are discussed. The book is based on scientific research work performed by the authors, and on other investigations conducted in the USSR and abroad in recent years. Much of

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the material was obtained from experimental investigations conducted in the welding laboratory of the MVTU (Moskovskoye vysshaye tekhnicheskoye uchilishche -- Moscow Higher Technical School) and at the Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute.) The introduction was written by Professor G. A. Nikolayev, Doctor of Technical Sciences; Section 3, 5, and 6 are by N. A. Ol'shanskiy; Section 2 is by D. M. Shashin; Section 4 is by N. L. Kaganov; and Section 7 is by A. V. Mordvintseva. No personalities are mentioned. References accompany some of the chapters. There are 37 references: 33 Soviet and 4 English.

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AKULOV, A.I.; YEVSEYEV, G.B.; KAGANOV, N.L.; KURKIN, S.A.; LYUBAVSKIY, K.V.; MORDVINTSEVA, A.V.; NAZAROV, S.T.; NIKOLAYEV, G.A., doktor tekhn.nauk, prof., zasluzhennyy deyatel' nauki i tekhniki; OL'SHANSKIY, N.A.; CHANGLI, I.I., red.; STEPANCHENKO, N.S., red. izd-va; EL'KIND, V.D., tekhn.red.

[Current welding practices] Sovremennoe sostoianie svarochnoi tekhniki. Sovmestnoe izdanie Mashgiz, SNTL, 1961. 318 p. (MIRA 14:6)

(Welding)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDVINTSEVA, A.V., kand.tekhn.nauk; OL'SHANSKIY, N.A., kand.tekhn.nauk; Prinimal uchastiye: SKOROKHODOV, L.N., inzh.

Welding plastics. Izv. vys. ucheb. zav.; mashinostr. no. 3:96-108 '61. (MIRA 14:5)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni Baumana.
(Plastics—Welding)

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S/549/61/000/101/002/015
D256/D304

1.2300

AUTHORS: Ol'shanskiy, N.A., Candidate of Technical Sciences, Docent, and Mordvintseva, A.V., Candidate of Technical Sciences

TITLE: Fusion welding of technical molybdenum

PERIODICAL: Vysshaye tekhnicheskoye uchilishche. Trudy. Svarka tsvetnykh splavov, redkikh metallov i plastmass, no. 101, 1961, 29 - 47

TEXT: The authors first review western literature on the gas-shielded arc and resistance welding of molybdenum, then examine work carried out at MVTU on welding sintered and cast molybdenum by various methods of shielding the metal with an inert gas, and also electron-beam welding. The metal used was very variable in quality and properties, even within the same sheet. The edges were straightened to eliminate gaps, abraded with emery cloth for a width of 25-30 mm until bright, and cleaned with acetone. Welding was carried out in a stainless steel clamping device. The di-

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Fusion welding of technical ...

mensions of the backing bar groove would give an unsupported bead. Welding was parallel with the rolling direction. For chamber welding, two grades of argon were used: High purity, with 0.003 % O_2 and 0.03 % N_2, and grade 1, with 0.05 % O_2 and 0.23 % N_2. Technical helium was also used. With specimens in place the chamber was evacuated to 10^{-4} mm Hg and refilled with argon to 1.1 atm. A 2.85 mm dia. thoriated tungsten, 75-80A current, 8 arc volts, and welding speed of 6.2 m/hr were used on 1.1 mm sheet. In all specimens irrespective of argon purity or welding conditions, longitudinal weld cracking occurred. The deoxidation product was non-volatile, did not wet the grain boundaries or form films, and was more refractory than the molybdenum. Only titanium met all these requirements, and when added as foil placed between the abutting edges it gave crack-free welds of good appearance. Some grain refinement resulted, although the grain size was still relatively large and seemed little affected by sheet gauge. Typical hardness surveys are given. Under the welding conditions given above a weld bead 4 mm wide at top and bottom was obtained on 1.1 mm sheet in (pre-

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Fusion welding of technical ...

sumably) grade 1 argon: a range of sheet thickness (0.55 - 2 mm) was used in this gas. Only 1 mm sheet was welded in high purity argon, and the limited comparison possible suggested that a higher current was here required. The effect of heat treatment was investigated by heating specimens in a furnace and in resistance welding machines. For the former the specimens were hermetically sealed in containers with Zr turnings. Heating for longer than a minute sharply reduced the ductility of weld and parent metals, giving a bend angle of 0-3° (at room temperature). With regard to electron-beam welding experiments confirmed an initial assumption that a considerable quantity of the volatile MoO_3 present in the metal would be removed on heating under vacuum. Welds were obtained in sintered molybdenum which were crack-free, but possessing low ductility. Most of the work was, however, carried out on cast molybdenum, when a stable welding process and good weld formation were obtained, with a smooth transition from weld to parent metal, bright weld and absence of temper colors alongside the weld. Hardness surveys and tensile strength properties are given. In room

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Fusion welding of technical ...

temperature bend testing the ductility was as low as in the chamber-welded specimens (10-20 bend angle). On raising the testing temperature the bend angle increased. Surface polishing also increased the bend angle to 26-41. Prolonged heating at 1000° had no effect. Short-duration heating in the electron beam improved the weld metal ductility, although here again the results varied between specimens. Since the high-temperature properties were important, practically, these were measured in short-time tests, in which the specimens were heated by electric current passage in a special machine having a mechanism for recording the force-time curve. Flat specimens with a reduction in section at the center were used. Temperature was measured by a Pt - Pt - Rh thermocouple. High purity argon shielded the heated region against oxidation. In the conclusions, note was again taken of the variable and sometimes poor sheet quality. In all welding methods there was a sharp fall in the ductility in the heat-affected zone. Sintered molybdenum could be tungsten-arc welded without cracking if titanium deoxidation was used. Cast molybdenum could be welded without

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Fusion welding of technical ...

cracking in a chamber containing high-purity argon if the parent metal was of good quality. Electron-beam welding was another successful method. The strength of welded joints in cast Mo was about half that of the parent metal at room temperature, but it approached the parent metal strength at higher temperatures. The low room temperature ductility found in all welded specimens could be improved by surface polishing or brief-duration heating in vacuum to 750-900°. There are 14 figures, 12 tables and 9 references 5 Soviet-bloc and 4 non-Soviet-bloc. The references to the English language publications read as follows: L. Northcott, Molybdenum, London, 1956; W.N. Platte, Influence of Oxyden on Soundness and Ducitility of Molybdenum Welds, Welding Journal, 1956, No. 8, p. 3695-3865; R.E. Monroe, N.E. Weare, and D.C. Martin, Fabrication and Welding of Arc - Cast Molybdenum, Welding Journal, 1956, No. 10, p. 488-498; N.E. Weare, R.E. Monroe, D.C. Martin, Inert-Gas-Shielded Consumable-Electrode Welding of Molybdenum, Welding Journal, 1958, p. 117-124, No. 3.

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27807
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D256/D304

1.2310

AUTHOR: Mordvintseva, A.V., Candidate of Technical Sciences

TITLE: Work on the ultrasonic welding of plastics

PERIODICAL: Vysshcye tekhnicheskoye uchilishche. Trudy. Svarka tsvetnykh splavov, redkikh metallov i plastmass, no. 101, 1961, 108 - 123

TEXT: The process of ultrasonic welding of plastics was developed in 1958 at the MVTU, and used a frequency of 20 kcps. The principle used for metal welding -- welding tool vibrations parallel with welding surfaces and applied pressure perpendicular to them -- was found to be inapplicable, but the method of pressure and vibrations applied both perpendicular to the welding surfaces gave positive results. The welding machine consists basically of a transducer and a reed. The transducer converts the h.f. current from an ultrasonic generator into vertical mechanical vibrations which the reed both concentrates and amplifies. The work is placed between the end of the reed and a movable plug, to which a force

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Work on the ultrasonic ...

P is applied. The transducer is a stack of permendur sheets, each 0.1 mm thick, measuring 65 x 65 x 125 mm. The winding has 32 turns and is connected to the ultrasonic generator; with a conical reed amplification is 3 - 10. Vibration amplitude at the reed end is 15 - 20 microns. To fix the transducer 1 to the casing 2 (Fig. 3), through which cooling water flows, a diaphragm 3 is employed, situated at the node of vibration, where the amplitude is zero. On applying load and U.S. vibrations welding occurs of the compressed plastics with softening of only thin surface layers of the plastics in contact. In the ПУТ-2 (PUT-2) machine for spot and press welding of plastics the reed is located below and the load applied through it by means of a lever system and weights actuated by a pedal. A rigid anvil is mounted above, and the welding time is controlled by a relay. The ПУШ-3 (PUSh-3) machine is designed for seam welding plastic films which are squeezed between an upper rotating roll and the reed. A vibrator for press-welding with a knife-shaped reed and welded diaphragm is shown. A reed made from a single piece of metal gives better energy transmission to the joint, but for varying forms it is sometimes advantageous to

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Work on the ultrasonic ...

use interchangeable tips. Joints are made in material thicknesses from 0.1 to 10 mm. The majority of plastics weld well. Thermoreactive plastics can not be welded at present, but the following could: perspex, viniplast (P.V.C), polyethylene, chlor-vinyl, "Caprone 1", "Caprone 2", nylon, polyamide, wrapping film, POV-50, polystyrene, SNP, perfol (film). Dissimilar plastics can be successfully welded. With perspex, transparency is preserved at the site of welding, and with thick sheets of hard plastic no indentations are left on external surfaces by the welding tool. Specimens of lap-welded 10 mm viniplast were tested in tension. The site of welding proved to be stronger than the h.a.z. On a 10 x 10 mm section the fracture load was 150 - 240 k. Pressure during welding is determined by material thickness and properties as well as the welding time, which is very small - for spot and press welding between 0.1 and 8 sec. Typical welding conditions are shown in tabulated form. Weld site temperature cycles for 5 + 5 mm thickness P.V.C. spot-welded at 135 k for 5.7 sec. are shown. The highest temperature is observed on the surfaces being welded, where the plastic fusion temperature is reached (250°). Adjacent to the rend it is 180°, and 80° near

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Work on the ultrasonic ...

the reflector. The reflector was not absolutely necessary for high quality welding, but without it the welding conditions needed readjustment. Advantages of ultrasonic welding [redacted] 1) It is analogous to the resistance welding of metals; 2) Heating is virtually confined to the surfaces being welded; 3) On the other hand the surfaces to which the vibrations are applied are not heated, as distinct from processes using heat applicators; 4) Difficulties connected with different form sections and inaccessibility can be overcome more easily; 5) Energy is introduced at only one place, and this can be at some distance from the welding site; 6) The electrical hazards of some other processes are avoided; 7) A wider assortment of thermoplastic materials are weldable than with high-frequency welding; 8) The method is easily automated. Examples of practical applications are then given. There are 26 figures.

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MORDVINTSEVA, A.V., kand.tekhn.nauk; Prinimali uchastiye: OL'SHANSKIY, N.A., kand.tekhn.nauk; SKOROKHODOV, L.N., inzh.

Ultrasonic welding of small-size polyethylene shells. Trudy MVTU no.106:199-207 '62. (MIRA 16:6)
(Ultrasonic welding) (Plastics--Welding)

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EPF(c)/EPR/EWP(j)/EWP(k)/EWT(d)/EWT(m)/EWP(h)/T/EWA(d)/EWP(1)/ 42
/Pf-4/Pr-4/Pe-4 [illegible]

ACCESSION NR: A1[illegible]

[illegible] Mardvintsevá, A.V. (Candidate of technical sciences); Ol'shanskiy, N.A. 3+1
(Doctor of technical sciences)

TITLE: Welding of plastics 15

SOURCE: Plastmassy* v mashinostroyenii (Plastics in machinery manufacture); sbornik statey. Moscow, Izd-vo Mashinostroyeniye, 1964, 174-218

[illegible] welding, plastic welding [illegible] welding, edge configuration, [illegible] sheet welding, [illegible]

[illegible] In an extensive review [illegible] of plastics, which produces [illegible] results with [illegible] than do riveting and gluing, is only partly exploited at the present time [illegible] compounds must be riveted or worked [illegible] and thermoplastics cannot be heated repeatedly without adverse results. Welding, occurring over a limited temperature range, produces, depending on polymer composition, degree of polarity, and molecular orientation, a joint close in quality to that of the main body of plastic. In preliminary studies, sheets with square, v-shaped (∨), and x-shaped (⊃⊂) edges were welded by heated-air apparatus after cleansing with acetone. Tests showed that the x-

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ACCESSION NR: AT4049834

3

shaped joints had the highest resistance to breakage. Strip welding of vinyl plastic by electric or hot-gas elements at temperatures up to disintegration of the material at 320C showed that an increase in temperature increased the speed of welding, and that the gas [illegible] more effective than the electric [illegible]. Vinyl plastic sheets and tubes of [illegible] welded for varying [illegible] differing degrees of opening [illegible] shaped edges produced [illegible] with properties closer in quality to the main body of plastic. Open and closed-joint [illegible] of tubes to tubes and tubes to sheets by friction were also tested. Various sizes of [illegible] tubes and sheets were welded by high frequency electric current and electric [illegible] were tested for quality of the [illegible]. Several types of ultrasonic generators [illegible] vinyl plastic [illegible] instruments for evaluating the weld [illegible]

[illegible] 8 graphs, 7 photographs

ultrasonic welding machine

ACTION: none

[illegible] 28May6[illegible] [illegible]

[illegible] 019 OTHER: 006

Card [illegible]

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDVINTSEVA, A.I. [illegible]

[illegible] (MIRA [illegible])

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 47381-66 EWP(e)/EWT(m)/EWP(v)/T WW/WH

ACC NR: AP6029036 SOURCE CODE: UR/0413/66/000/014/0053/0053

INVENTOR: Ol'shanskiy, N. A.; Mordvintseva, A. V.; Shubin, F. V.

36
B

ORG: none

TITLE: Method of welding graphite with graphite. Class 21, No. 183851

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 53

TOPIC TAGS: graphite, graphite welding, filler

ABSTRACT: An Author Certificate has been issued for a method of welding graphite with graphite. To obtain a uniform weld, a graphite bar is used as the filler material. [Translation] [NT]

SUB CODE: 11/ SUBM DATE: 04Jun62/

Card 1/1 UDC: 621.791.752.042

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 09361-67 EWP(e)/EWT(m)/EWP(v)/EWP(t)/ETI/EWP(k) IJP(c) JD/WW/HW/WH
ACC NR: AP6035709 SOURCE CODE: UR/0413/66/000/019/0057/0057

INVENTOR: Ol'shanskiy, N. A.; Kordvintseva, A. V.; Zorin, Yu. N.; Grigor'yev, G. A.

ORG: none

TITLE: Method of welding copper to graphite with metal inserts. Class 21, No. 186580

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 57

TOPIC TAGS: metal welding, graphite welding, copper graphite welding, welding technology

ABSTRACT: This Author Certificate introduces a method for welding copper to graphite using metal inserts. To improve the weld quality, insert materials, such as titanium, stainless steel, zirconium or nickel, are used as filler metals.

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UDC: 621.791.7

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACC NR: AP6021594 (N) SOURCE CODE: UR/0402/66/000/003/0375/0375

AUTHOR: Morogova, V. M.; Gil'dina, S. S.; Isupov, F. A.; Aketova, E. N.

ORG: Ufimsk Vaccine and Sera Institute (Ufa nauchno-issledovatel'skiy institut vaktsin i syvorotok)

TITLE: Experimental production of antirabies vaccine purified by freon 113

SOURCE: Voprosy virusologii, no. 3, 1966, 375

TOPIC TAGS: production method, vaccine, rabies, antirabies vaccine, purified vaccine, Freon 113

ABSTRACT:
The Ufa Vaccine and Sera Institute has announced a new method of obtaining high-purity rabies vaccine from a sheep-brain suspension using freon 113 to remove unwanted proteins while preserving the immunogenicity and stability of the purified vaccine. [W.A. 50; CBE No. 10]

SUB CODE: 06/ SUBM DATE: none/

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L 09920-67 EWT(1) GD/GW

ACC NR: AT6033323 SOURCE CODE: UR/0000/66/000/000/0045/0060

AUTHOR: Morozhenko, A. V.

26

ORG: none

TITLE: Polarization properties of the Martian atmosphere and surface

SOURCE: AN UkrSSR. Fizika Luny i planet (Physics of the Moon and the planets) Kiev, Naukova dumka, 1966, 45-69

TOPIC TAGS: atmospheric property, atmospheric pressure, Rayleigh scattering, polarization, Mars planet

ABSTRACT: The results of polarimetric investigations of Mars in 1965 are presented, and a discussion on the material received during previous observations (1962—1963) is given. The atmospheric pressure was computed at the surface of Mars (near 19 mb) for Rayleigh scattering. The mean diameter of aerosol particles responsible for the decrease of polarization in the red region of the spectrum was equal to 1.8 μ. The light scattered by these particles was found to have low negative polarization. [Based on author's abstract]

SUB CODE: 20, 03/ SUBM DATE: 19Mar66/ ORIG REF: 024/ OTH REF: 014/

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACC NR: AT6033321 SOURCE CODE: UR/0000/66/000/000/0018/0030

AUTHOR: Bugayenko, L. A.--Bugayenko, O. I.; Koval', I. K.; Morozhenko, A. V.

ORG: none

TITLE: Electrophotometric sections of the Mars planet disk in the spectral range of the 355—600 mμ interval

SOURCE: AN UkrSSR. Fizika i planet (Physics of the Moon and the planets) Kiev, Naukova dumka, 1966, 18-30

TOPIC TAGS: Mars planet, star, Mars, brightness distribution

ABSTRACT: Electrophotometric sections of the images of Mars and of some stars situated at a small angular distance from the planet were obtained with a 70-cm reflector at the Main Astronomical Observatory of USSR in 1956. The information now being published represents the experimental part of an investigation aimed at correcting the brightness distribution curve along the disk of Mars by calculating the influence of factors in the earth atmosphere. The authors thank Z. Merkulova

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACC NR: AT6033321

and V. Pipko for their assistance in calculations. Orig. art. has: 5 figures and 3 formulas. [Based on authors' abstract]

SUB CODE: 03/SUBM DATE: 19Mar66/ORIG REF: 017/OTH REF: 003/

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

AM6020771

SOURCE CODE: UR/0269/66/000/003/0068/0068

AUTHOR: Morozhenko, A. V.; Yanovitskiy, E. G.

ORG: none

33

TITLE: Optical parameters of the Mars atmosphere and surface that account for the anisotropy of scattering

SOURCE: Ref zh. Astron, Abs. 3.51.571

REF SOURCE: Sb. Vopr. astrofiziki. Kiyev, Nauk. dumka, 1965, 127-165

TOPIC TAGS: mars planet, planetary atmosphere, light scattering

ABSTRACT: The optical parameters of the atmosphere and surface of Mars were determined using equations accounting for the anisotropy of scattering ($x_1 = 1.0$). They were compared with parameters derived for a presumably spherical indicatrix of scattering ($x_1 = 0.0$). The allowance for the anisotropy of scattering resulted in an appreciable increase of the optical density, whereas the probability of the survival of the quantum and albido of the underlying surface was changed little. The auxiliary functions $\rho(\eta)$ and $K(\eta)$ are tabulated for the computation of optical parameters.

SUB CODE: 03/ SUBM DATE: none

Card 1/1

UDC: 523.43

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDVINTSEVA, G. M.

SEE PALAMAR-MORDVINTSEVA, G. M.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

24738
S/080/60/033/007/024/024/XX
D270/D304

15.8100

AUTHOR: Davankov, A.B. and Mordvintseva, N.A.

TITLE: Intragranular chemical transformations in copolymers of vinyl toluene with divinyl benzene

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 7, 1960, 1676-1679

TEXT: The relationship between the structure of polymers and their transformation, especially for the little-studied compounds of vinylene with benzene and toluene, has much practical and theoretical significance, so the authors investigated the copolymerization of vinyl toluene with divinyl benzene and the conversion of this compound into a high-polymer amine. Copolymerization is effected in water in a glass cylinder fitted with a mechanical paddle-mixer and reflux condenser. After heating at 75 - 85° for 5 - 6 hours on a water bath small granules (diam. 0.25 - 1 mm) which assume a reddish color on washing and drying, are separated from the solutions. The relationship is shown, first noted by Ye. B. Trostyanskaya et al

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24738

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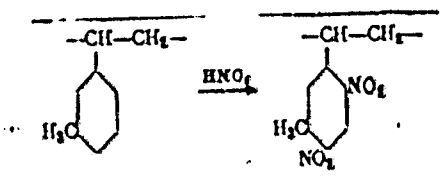
D270/D304

Intragranular chemical...

(Ref. 4: Khim. nauka i prom., 2, 5, 593, 1957) of the number of lateral bonds in the molecular lattice of the copolymers to the swelling of the granules in dioxane. Nitration is accomplished by cooling a mixture of the granules with HNO_3 and H_2SO_4 and then heating it on a water bath for 2 - 6 hours at 75 - 80°. Depending on the exact temperature and length of nitration, intermediate products with a content of 8.55 - 9.29% N_2 are obtained, possibly through the following reaction:



The nitro groups are subsequently changed into amine groups by their reduction with $SnCl_2$ in HCl at 100°. The granules thus synthesized have a dark-brown or black color, the yield being 75 - 95%. The most complete nitration and reduction results from an original mixture containing the least divinyl benzene - 2-4% of the weight of

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vinyl toluene. Unde these conditions the exchange capacity of the amino-resin is 5.5 and 5.9 mg equivs/g for 0.1N HCl and 0.5 H_2SO_4 respectively. The most stable granules, however, are prepared from copolymers containing the maximum amount of divinyl benzene - 8-10%. In conclusion the authors stress the importance of the relationship between the nitration and reduction reactions and the number of lateral bonds in the molecular lattice of the studied copolymers during during their conversion into amines. There are 1 figure, 2 tables and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Zentman, J. Chem. Soc., 982 (1950).

SUBMITTED: December 7, 1959

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDYNSKIY, G., gvardii mayor [illegible] sluzhby.

Accepting small arms from repair. Voen.vest. 33 no.16:58-62 N '53. (MIRA 10:10)

([illegible]-Maintenance and repair)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDYSH, Yuriy Zakharovich, shlifovshchik; GUROV, S., red.; KUZNETSOVA, A., tekhn. red.

[Contour grinding] Profil'noe shlifovanie. Moskva, Mosk. rabochii, 1962. 71 p. (MIRA 16:2)

1. Zavod "Kalibr", Moskva (for Mordysh).
(Grinding and polishing)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 9912-65 EWA(k)/EWT(1)/EEC(t) APHC(b)/AFWL/ESD(gs)/ESD(t)
ACCESSION NR: AR4039924 S/0058/64/000/004/E052/E053

SOURCE: Ref. zh. Fiz., Abs. 4E405

AUTHORS: Aleksandrov, L. U.; Mordyuk, V. S.; Mordyuk, G. P.

TITLE: X ray structural investigation of dislocation density in crystal phosphors

CITED SOURCE: Uch. zap. Mordovsk. un-t, no. 15, ch. 1, 1963, 20-28

TOPIC TAGS: x ray structure analysis, luminor, zinc sulfide optic[illegible]rial, dislocation density, line broadening, luminescence quench-[illegible]

TRANSLATION: The luminor $Ca_5(PO_4)_2 \cdot Ca(F, Cl)_2$, activated with Sb or [illegible] the luminor ZnS, activated with Cu, were investigated by a [illegible]ographic method using copper radiation. The dislocation densi-[illegible] were determined from the square of the line broadening (θ_1 = 16°,

Card 1/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 6910-65

ACCESSION NR: AR4039924

0

θ_2 = 23° 16') by the method of approximating the size of the mosaic blocks. After pulverization, the dislocation density increased from 5×10^8 to 7.5×10^{10} cm^{-2}, and the block dimensions increased from 8.3×10^{-5} to 0.87×10^{-5} cm. The data obtained indicate that the extraction of the luminors following pulverization is [illegible] the increase in the [illegible] dimensions of the dislocations and also to the occurrence of microcracks on the grain surface. [illegible]

SUB CODE: OP, SS ENCL: 0)

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

POLOTSKIY, I.G. [Polots'kyi, I.H.]; [illegible], F.S.

Damping of elastic vibrations in Cu - Ge and Cu - In alloys in phase transitions. Ukr. fiz. zhur. 9 no.11:1234-1240 N '64. (MIRA 17:9)

1. Institut metallofiziki AN UkrSSR, Kiyev.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 04912-67 EWP(k)/EWT(1)/EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) EM/WW/JD/JG

ACC NR: AP6028713 (A) SOURCE CODE: UR/0185/66/011/008/0913/0915

AUTHOR: Mordyuk, M. S.

ORG: Institute of Metal Physics, AN UkrSSR, Kiev (Instytut metalofizyky AN URSR)

TITLE: Effect of deformation on damping of ultrasound in single crystals of molybdenum and niobium

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 11, no. 8, 1966, 913-915

TOPIC TAGS: molybdenum crystal, niobium crystal, ~~single~~ crystal structure, crystal deformation, ultrasonic property, single crystal growth

ABSTRACT: This paper aims to explain the effect of deformation on ultrasound damping in single crystals of Mo and Nb in the form of cylinders and cubes of zone purity with planes removed and heated to 1100C for several hours to relieve polishing stress. Measurements were made at 10 and 30 Mc by the pulse method of crystals deformed by compression perpendicular to the (100) plane and recorded the ultrasonic damping as a function of deformation. In molybdenum slight deformation results in great damping with a maximum at 1% deformation and leveling off at 2%, which is attributed to shortening and widening of the dislocation loop. Ultrasonic damping in Nb rises linearly at both frequencies with no maximum at room temperatures.

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L 04912-67

ACC NR: AP6028713

This is attributed to intense restoration of elastic properties. Further experiments showed restoration of damping in a single crystal of Mo to be insignificant, while it is more pronounced in the deformed Nb specimens. Temperature dependence of the damping factor in single Nb crystals was also studied and found to be of the same order as deformation changes. The author is deeply grateful to O. I. Zaporozhets for assistance in this work. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 19Feb66/ ORIG REF: 009/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 6882-65 EWT(m)/EWP(q)/EWP(b) ASD(m)-3/AFWL/SSD/RAEM(t) 39/40
ACCESSION NR: AP4044623 S/0046/64/010/003/0374/0377

AUTHORS: Mordvin, N. S.; Polotskiy, I. G. 52 51

TITLE: On the mechanism of damping of elastic oscillations during phase transformations in Cu-Be and Cu-In alloys

SOURCE: Akusticheskiy zhurnal, v. 10, no. 3, 1964, 374-377

TOPIC TAGS: elastic oscillation, oscillation damping, annealing, phase transformation, internal friction, solid solution

ABSTRACT: The copper alloys tested contained 1.8% beryllium or 15% indium by weight. The effect of the annealing temperature and the soaking time on the damping of the elastic oscillations during phase transformations in the indicated alloys was investigated and the results compared with the theory. The damping was measured by recording freely-damped longitudinal and transverse vibrations during annealing, using a previously described installation

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 6882-65
ACCESSION NR: AP4044623

(N. S. Mordyuk, "Voprosy fiziki metallov i metallovedeniye" 1962, No. 16, 190--193, AN UkrSSR), in which measurements could be made over a wide range of temperatures and in the frequency range from 0.5 to 75 kcs. Plots of the damping decrement are presented. Metallographic tests have shown that isothermal annealing of the alloy at 300° leads to structural changes characteristic of heterogeneous decay. The peaks on the damping curves are due to decay of the supersaturated solid solution of the beryllium in copper, accompanied by separation of the γ phase. The decay of the supersaturated solid solution is also accompanied by an increase in the Young modulus. It is concluded that the peaks of internal friction observed are due to phase transformations and not to thermal conductivity or other factors. The results are in good agreement with the theory proposed by M. A. Krivoglaz (Fizika metallov i metallovedeniye, 1960, 4, 497--512). Orig. art. has: 4 figures and 3 formulas.

ASSOCIATION: Institut metallofiziki AN UkrSSR (Institute of Metal

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACCESSION NR: AP4044623

Physics, AN UkrSSR, Kiev)

SUBMITTED: 4Apr63 ENCL: 00

SUB CODE: MM, NR REF SOV: 005 OTHER: 005

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

POLOTSKIY, I.G.; MORDYUK, N.S.

Damping of elastic vibrations in Cu-Be and Cu-In alloys during phase transformations. Sbor. nauch. rab. Inst.metallofiz. AN URSR no.18:163-169 '64 (MIRA 17:8)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

S/601/62/000/016/026/029
E111/E451

AUTHOR: Merdyuk, N.S.

TITLE: Apparatus for determining Young's modulus and the damping decrement at kilocycles/sec frequencies

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut metalfyzyky. Sbornik nauchnykh rabot, no.16. Kiev, 1962. Voprosy fiziki metallov i metallovedeniya. 190-193

TEXT: In the improved installation described the damping decrement and Young's modulus can be measured at frequencies of 10 to 75 kc using longitudinal vibrations, and 500 to 3000 cps using transverse vibrations of the specimen. For longitudinal vibrations the cylindrical specimen (with only the end surfaces polished) is held in a molybdenum wire cradle, the end of the specimen together with an electrode forming a flat condenser. The electrode, which acts as a receiver and transmitter of the vibrations, is connected to a signal generator, the frequency-modulated output being fed into the receiver. Tests showed that the modulus of elasticity can be determined up to 1000°C and the decrement up to 850°C. For the alloy Cu-Be (1.8 wt.% Be) at 300°C the damping rises with increasing frequency while for

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

Apparatus for determining ... S/601/62/000/016/026/029
E111/E451

Cu-In (15 wt.% In) at 240°C it falls. During the measurements both alloys were decomposing and the difference is possibly due to the frequencies used being below that for maximum relaxation in the former and above in the latter. The installation can be used over a wide temperature range for studying effects in metals associated with changes in elastic and nonelastic properties. There are 4 figures.

SUBMITTED: January 4, 1962

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDYUK, N.S.

Investigating damping and Young's modulus during phase transformations in thallium and in copper-aluminum alloys. Sbor. nauch. rab. Inst. metallofiz. AN UKSR no.17:75-77 '63. (MIRA 17:3)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORDYUK, N.S. [Mordiuk, M.S.]

Studying the damping decrement and elastic modulus during phase transformations in cobalt - tungsten alloys. Ukr. fiz. zhur. 9 no.1:87-90 Ja '64. (MIRA 17:3)

1. Institut metallofiziki AN UkrSSR, Kiyev.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACCESSION NR: AT4042838 S/2601/64/000/018/0163/0169

AUTHOR: Polotskiy, I. G., Mordyuk, N. S.

TITLE: Damping of elastic oscillations in Cu-Be and Cu-In alloys during phase transformations

SOURCE: AN UkrSSR. Institut metallofiziki. Sbornik nauchny*kh rabot, no. 18, 1964. Voprosy* fiziki metallov i metallovedeniya (Problems in the physics of metals and physical metallurgy), 163-169

TOPIC TAGS: elastic oscillation, alloy phase transformation, copper beryllium alloy, copper indium alloy, elastic oscillation damping, damping decrement variation, alloy decomposition activation energy, Krivoglaz theory

ABSTRACT: Damping of elastic oscillations during phase transformations was measured by recording freely attenuating longitudinal and transverse oscillations in Cu-Be (1.8% Be by weight) at 300C (1 or 21 kc/sec) and Cu-In alloys (15% In by weight) at 240 or 420C (1.5 or 21 kc/sec) on a tester with a frequency range of 0.5 - 75 kc/sec. Other expert-

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACCESSION NR: AT4042838

ments involved interruption of heating at 300 (1 hr.) or 420C (1.5 hrs.), cooling down to 50C at 0.13 (Cu-Be) or 0.27C/sec. (Cu-In) and reheating to aging temperatures, damping decrements being recorded in all three stages. The results show that damping increases with time, attaining peak values after 100-120 min. for Be-Cu at either frequency. Interrupted aging experiments show that the pattern of the damping decrement variation in time is related only to the transformation process. Activation energies of alloy decomposition were $H = 75.4 \cdot 10^7$ joule/mol for Cu-Be and $H = 93.2 \cdot 10^7$ joule/mol for Cu-In. The experimental results were in good agreement with values calculated on the basis of the Krivoglaz theory, and it is concluded that damping of elastic oscillations in Cu-Be and Cu-In during phase conversions can be described within that theory. Orig. art. has: 5 graphs and 8 formulas.

ASSOCIATION: Institut metallofiziki AN UkrSSR (Metallophysics Institute, AN UkrSSR)

SUBMITTED: 10Mar63

SUB CODE: MM, GP NO REF SOV: 014 ENCL: 00

OTHER: 014

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 04184-67 EWT(m)/T/EWP(t)/ETI IJP(c) JD/HW/JG/GD
ACC NR: AT6026910 SOURCE CODE: UR/0000/66/000/000/0062/0069

AUTHOR: Polotskiy, I. G.; Mordyuk, N. S.

ORG: none

TITLE: Concerning the damping mechanism of elastic oscillations during phase transformations in copper and cobalt based alloys

SOURCE: AN SSSR. Institut metallurgii. Vnutrenneye treniye v metallakh i splavakh (Internal friction in metals and alloys). Moscow, Izd-vo Nauka, 1966, 62-69

TOPIC TAGS: internal friction, phase transformation, copper alloy, cobalt alloy, temperature dependence, frequency dependence, x ray analysis, metallographic examination, elastic modulus

ABSTRACT: The mechanism of elastic damping during phase transformations was studied in the following systems: Cu + 1.8 wt % Be, Cu + 15 wt % In, Cu + 11.7 wt % Al, and Co + 31.89 wt % W. A resonance technique was used to measure the free damping of longitudinal and transverse oscillations in a wide range of temperatures and frequencies. The change in damping is given as a function of time for different oscillation frequencies and temperatures. In Cu-Be, isothermal soaking at 300°C caused a rise in damping at a frequency of 1 KHz and a maximum occurred at 2 hrs; when the frequency was upped to 21 KHz, the damping maximum doubled. Metallography, hardness testing and x-

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ACC NR: AT6026910

ray analysis showed that the peak was caused by the decomposition of the Cu-Be solid solution, with simultaneous precipitation of γ-phase. The damping in Cu-In at 1.5 cps changed with temperature. At 245°C, the maximum occurred after 23-24 hrs; at 420°C it occurred after 2 hrs. The rise in damping was associated with the decomposition of the supersaturated Cu-In solid solution. For the Cu-Al eutectoid at 425° and 460°C, the damping rise was the greatest of any alloy, being 50 to 60 times higher at the maximum than at the start of heating. The modulus of elasticity always increased along with the rise in damping. In Cu-Al the damping changes were caused by eutectoidal decomposition. The activation energies were calculated to be 18 Kcal/mol for Cu-Be and 22 Kcal/mol for Cu-In. The data were analyzed according to the theory of Krivoglaz. Equations were given relating the change in damping to the speed of propagation of elastic oscillations at low and high frequencies, and to the adiabatic relaxation time. The relaxation time was in turn related to the dimensions of the precipitating particles, the volume concentration of the second phase, and the moduli of compressibility for low and high frequencies. These moduli were determined for Cu-Al and they compared favorably with data from the literature. From the calculations, the relaxation times were as follows: 10^{-4} sec for Cu-Be, $2 \cdot 10^{-3}$ sec for Cu-In, and $5.8 \cdot 10^{-3}$ sec for Cu-Al. Damping, elastic properties, electrical conductivity and structural changes were measured during aging of Co-W. After quenching from 1100°C, the samples were aged at 700°C and property changes were given as a function of time at aging temperature. A rise in damping and elastic modulus corresponded with a decrease in electrical conductivity. Aging was complete after 10 hrs at 700°C. The grain boundaries thickened

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

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ACC NR: AT6026910

after 30 min at 700°C, and eutectoidal platelets formed. The intermetallic Co_3W was identified by x-ray analysis, and during its formation the lattice parameter remained constant. Orig. art. has: 6 figures, 4 formulas.

SUB CODE: 11,20/ SUBM DATE: 02Apr66/ ORIG REF: 009/ OTH REF: 010

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

26559

18 8200 9,4110 (1003,1138,1331) S/126/61/012/002/009/019
E202/E435

AUTHORS: Aleksandrov, L.N. and Mordyuk, V.S.

TITLE: The kinetics of the recrystallization of tungsten

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.12, No.2, pp.249-254

TEXT: The kinetics of the recrystallization of thoriated and pure tungsten wires of 50 to 200 μ diameter were studied in terms of the changes in their mechanical properties and microstructure in relation to the annealing temperature and ageing. Heating was carried out directly by passing an electric current through the wires and the temperature of annealing ranged from 800 to 2600°C with an accuracy of ± 20°C. The temperature was measured by means of a milliammeter calibrated by an optical pyrometer. Samples were subjected to various durations of annealing from 20 sec to 30 min. Since it was impossible to calculate the rate of growth of grains in the tungsten wire during the recrystallization from direct measurement, the kinetics of recrystallization were studied indirectly by finding the change in the tensile strength at ambient temperature in relation to the

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temperature and duration of annealing, and also by studying the microstructure and X-ray diffraction. Values of tensile strength were plotted vs. temperature of annealing for each duration of annealing and the resulting curves showed two characteristic regions - the first one corresponding to the primary recrystallization due to the heat treatment and the second one due to the coalescing recrystallization. It was also found that the relation between the log e of the time of completion of the primary recrystallization and the temperature of annealing was in each case linear. The latter plots were used to evaluate the activation energy of the primary recrystallization U, and the coefficient A, which in turn were used to solve the equation for the time of recrystallization t, viz:

$$t \approx A \exp\left(\frac{U}{RT}\right)$$

Evaluated in this manner, coefficients A for the 50 μ dia wires were in good agreement with the corresponding values obtained on the basis of the general theory of phase transition assuming three-dimensional growth of the recrystallization centres. On the other

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

hand, values of A for the 250 μ dia wires were in better agreement with a theoretical value based on the linear growth of the recrystallization centres, rather than the three-dimensional one. The curves of thoriated tungsten wires did not exhibit the characteristic displacement, from which it was concluded that the energy of activation of recrystallization in the region is infinitely large. Estimation of the beginning of the recrystallization according to the method of change in the mechanical properties gave lower temperature values than the customary estimation by inspection of the microstructure. In the opinion of the authors, the former method is capable of detecting the presence of grains which are not visible by inspection of the microstructure. The study of the coalescing (ultimate) recrystallization was not attempted. Acknowledgments are expressed to Yu.M.Aleksandrova and B.V.Potapov for assistance. There are 6 figures, 1 table and 7 references: 4 Soviet and 3 non-Soviet. The three references to English language publications read as follows: Burke J.E., Turnbull A.D. Progr. Metal. Phys., 1952, 3, p.220; Davis C.L. Metallurgia, 1958, 58, No.349, 228; Robinson C.S. J.Appl. Phys., 1942, 13,

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

The kinetics of the ... 26559

S/126/61/012/002/009/019
E202/E435

No.10, 627.

ASSOCIATION: Nauchno-issledovatel'skiy institut istochnikov sveta (Scientific Research Institute for Light Sources)

SUBMITTED: May 17, 1960 (initially)
January 4, 1961 (after revision)

Card 4/4

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 14355-63 AFWL/SSD/AEDC(b)/ASD(m)-3
ACCESSION NR: AR4045217 S/0277/64/000/007/0033/0033

SOURCE: Ref. zh. Mashinostr. mat., konstr. i raschet detal. mash. ... vyep., Abs. 7.48.229

AUTHOR: Aleksandrov, L. N.; Mordyuk, V. S.

TITLE: Direct heat relaxer

B

CITED SOURCE: Sb. Relaksats. yavleniya v met. i splavakh. M., Metallurgizdat, 1963, 65-71

TOPIC TAGS: relaxation, internal friction, shear modulus, high temperature metals, direct current heating, oscillation recording, ...

TRANSLATION: A relaxer has been designed for measuring internal friction and relative shear modulus in high temperature metals using the principle of direct current heating in a vacuum of 10^{-3} to 10^{-5} ... The design of the relaxer makes it possible to carry out ..., photographic, and also automatic recording of oscillations. ...uence of experimental temperatures and annealing temperatures

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L 14375-65
ACCESSION NR: AP4045217

on the nature of internal friction in W samples of various degrees of purity was investigated. Results of an investigation of the temperature dependence of internal friction showed a tendency of W-wire to creep at high temperatures. 16 literature titles.

SUB CODE: MM, TD ENCL: 00

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 5910-65 EWA(k)/EWT(1)/EEC(t) APGC(b)/AFWL/ESD(gs)/ESD(t)
ACCESSION NR: AR4039924 S/0058/64/000/004/E052/E053

SOURCE: Ref. zh. Fiz., Abs. 4E405

45

AUTHORS: Aleksandrov, L. N.; Mordyuk, V. S.; Mordyuk, G. P.

TITLE: X ray structural investigation of dislocation density in crystal phosphors

CITED SOURCE: Uch. zap. Mordovsk. un-t, no. 15, ch. 1, 1963, 20-28

TOPIC TAGS: x ray structure analysis, luminor, zinc sulfide optic material, dislocation density, line broadening, luminescence quenching

TRANSLATION: The luminor $Ca_3(PO_4)_2 \cdot Ca(F, Cl)_2$, activated with Sb or Mn, and the luminor ZnS, activated with Cu, were investigated by a photographic method using copper radiation. The dislocation densities were determined from the square of the line broadening (θ_2 = 16°,

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 6910-65
ACCESSION NR: AR4039924

$_{3}$ = 23° 16') by the method of approximating the sizes of the mosaic blocks. After pulverization, the dislocation density increased from 5×10^{8} to 7.5×10^{10} cm^{-2}, and the block dimensions increased from 8.3×10^{-5} to 3.87×10^{-5} cm. The data obtained imply that the extraction of the luminors following pulverization is due to the increase in the lattice distortions of the dislocation type, and also to the occurrence of microcracks on the grain surface. V. Landa.

SUB CODE: OP, SS ENCL: 00

Card 2/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 40[illegible] [illegible]
JD/JD/[illegible]
ACCESSION NR: [illegible] [illegible]/0000/64/000/000/0125/0131

AUTHOR: [illegible]

TITLE: Estimation of the heat resistance of refractory metals on the basis of their internal friction

18 18 27

SOURCE: AN SSSR. Nauchny*y sovet po probleme zharoprochny*kh splavov. Issledovaniya staley i splavov (Studies on steels and alloys). Moscow, Izd-vo Nauka, 1964, 125-131

TOPIC TAGS: tungsten, molybdenum, tungsten heat resistance, molybdenum heat resistance, tungsten internal friction, molybdenum internal friction, refractory metal

ABSTRACT: The use of tungsten as an incandescent light source at 2500-3000C [illegible] of the melting point) creates very high requirements for heat resistance at high temperatures. Tungsten alloys with aluminum, thorium and rhenium are commonly used for this purpose, but new tests are required to ensure stable properties in the alloys. The present article contains the results of an investigation of stress relaxation in tungsten and molybdenum wires with varying ultimate strength at high temperatures. [illegible] original relaxometer designed by the authors was used to measure the internal

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 20730-65
ACCESSION NR: AT4048830

5

friction at temperatures up to 3000C. The ultimate strength varied from 8.3 to 12.7 kg/mm^2 for tungsten at 2000C and 4.3 to 6.4 kg/mm^2 for molybdenum at 1800C. During annealing at high temperatures, the internal friction drops significantly, showing that residual stress is removed and the crystal lattice is in equilibrium. The precise determination of the nature of the relaxation maxima on the internal friction curves will [illegible] become possible after future investigations. However, the activation energy of the process causing the given maximum can now be calculated. Analysis of the test results shows that the relaxation maxima are shifted toward higher temperatures in heat resistant metals (see Fig. 1 of the Enclosure). Microstructural investigations show [illegible] is coinciding with the data on internal friction in that a sample with high heat [illegible] shows intensive grain growth at higher temperatures. In other words, the [illegible]ature of incipient recrystallization [illegible] the internal [illegible] is a reflection of the heat resistance. The well-known relationship between the [illegible] sample failure at high temperatures and its mechanical properties was first [illegible] S. N. Zhurkov, B. N. Narzulaev and I. P. Santirova and then worked out [illegible]etically by K. A. Osipov and I. Ya. Dogtyar.

$$t_p = B \exp \frac{\varepsilon_0 + mL}{\nu T} \exp\left(-\frac{\varphi V_0}{2kT}\sigma\right). \quad (1)$$

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[illegible] NR: AT4046830

[illegible] is the time before failure, $\mathcal{B}$ is a constant independent of the temperature, $\mathcal{E}_{\mathcal{B}}$ [illegible] formation energy, mL is a value close to the volume diffusion activation [illegible] Boltzmann's constant, T is the absolute temperature, Va is the atomic [illegible] coefficient and σ is the stress. This equation is corroborated experimentally [illegible] indicating that the [illegible] depends on the diffusion mobility [illegible] in the stressed field. The activation [illegible] formation of vacancies in the tungsten can thus be calculated on the basis of the temperature relationship of the internal friction background. Orig. art. has: 5 figures, 4 equations and 2 tables.

[illegible]ATION: none

[illegible]ED: 16Jun34 ENCL: 01 SUB CODE: MM

[illegible]OV: 014 OTHER: 004

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ENCLOSURE: 01

ACCESSION NR: AT4046830

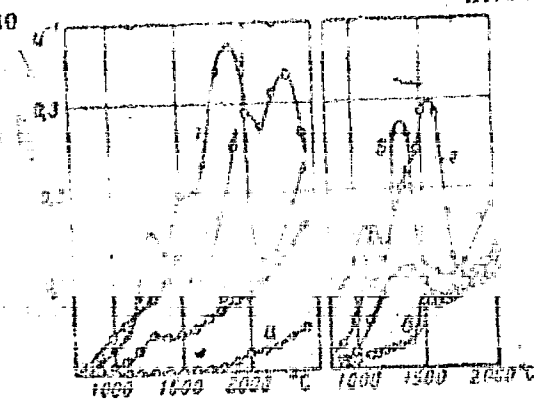

Fig. 1. Temperature displacement of internal friction curves of tungsten and molybdenum with various degrees of heat resistance: 1 - sample A, initial, 2-the same, recrystallized; 3-sample B, initial, 4-the same, recrystallized; 5-sample T, initial; 6-the same, recrystallized; 7-sample MCh, initial, 8-the same, recrystallized.

Card 4/4

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 14991-65 EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/EWP(t)/EWP(k)/EWP(b) Pu-4 ESD/AFWL/
[illegible]-2/ESD(m)-3/AFETR/ESD(c) JD/JW/[illegible]/MLK

ACCESSION NR: AT4048121 S/0000/63/000/000/0065/0071

AUTHOR: Aleksandrov, N. L., Mordyuk, V. E.

B

[illegible] A direct heating relaxation device

SOURCE: Vsesoyuznaya Konferentsiya po relaksatsionnym yavleniyam v metallakh i splavakh, 3d, Voronezh, 1962. Relaksatsionny*ye yavleniya v metallakh i splavakh (Relaxation phenomena in metals and alloys); trudy* konferentsii. Moscow, Metallurgizdat, [illegible] 65-71

TOPIC TAGS: tungsten wire, tungsten wire creep, tungsten wire relaxation, internal friction, rigidity modulus

ABSTRACT: The authors have designed a simple relaxation device (see Fig. 1 of the Enclosure) for measuring the internal friction and the relative rigidity modulus of refractory metals such as molybdenum and tungsten, using direct heating. The heating temperature is determined by the amperage. The accuracy of temperature measurement is ±20C, which may be increased to ±2-5C. The device allows one to take visual, photographic and mechanical measurements of the oscillations. Curves presented in the paper show the relationship between the internal friction and the annealing temperature as determined by this device. The first maximum is at 1800-1900C; this is connected with the grain boundaries. The first equation was then used to find the activation energy. It is shown in the paper that [illegible] maximum of the internal friction curve drops after primary recrystallization.

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L 24991-65

ACCESSION NR: AT4048121

3

Isothermic heating of the sample at 2300C for 11 seconds almost completely eliminates the internal friction. Consequently, the sharp variation in the shape of the internal friction [illegible] caused by changes in the microstructure. Tests showed that fine-grain tungsten [illegible] a higher creep and lower ultimate strength. Analysis of the tests also showed [illegible] processes created in tungsten wires have lower activation energies at lower temperatures on the activation energies of different processes in tungsten wires. (Orig. art. has: 6 figures, 2 tables and 1 formula.)

ASSOCIATION: Mordovskiy gosudarstvennyy universitet NIIIS (Mordovian State University, NIIIS)

SUBMITTED: 10Nov63 ENCL: 01 SUB CODE: MM

NO REF SOV: 010 OTHER: 006

Card 2/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 14991-65

ACCESSION NR: AT4048121

ENCLOSURE: 01

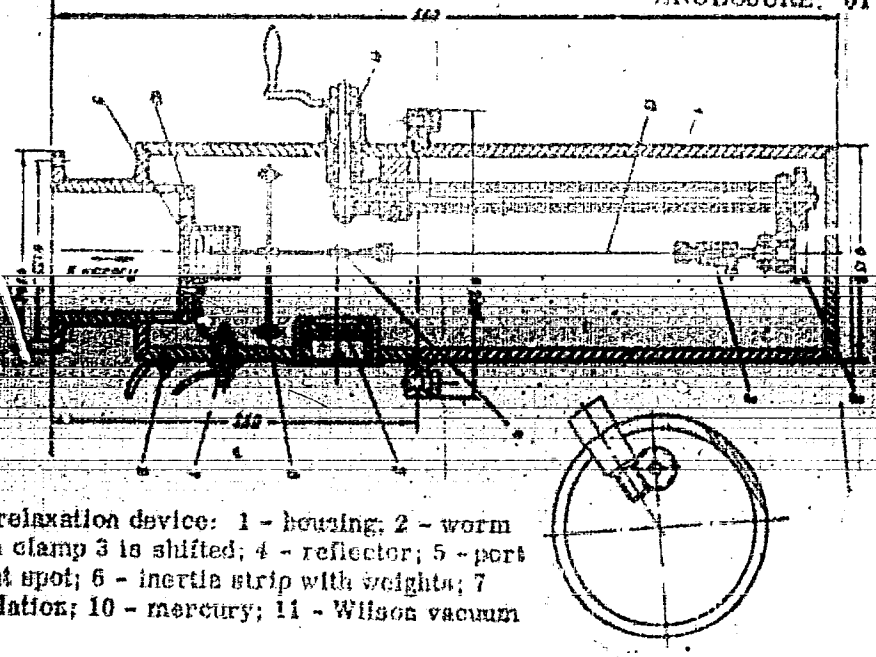

Fig. 1. Direct heating relaxation device: 1 - housing; 2 - worm gear, by means of which clamp 3 is shifted; 4 - reflector; 5 - port for entry and exit of light spot; 6 - inertia strip with weights; 7 and 8 - clamps; 9 - insulation; 10 - mercury; 11 - Wilson vacuum inlet; 12 - sample.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 5365-66 EWT(d)/EWT(m)/EWP(w)/EPF(n)-2/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c)
ACC NR: AP5027385 JD/GJ/EM SOURCE CODE: UR/0181/65/007/011/3153/3158

AUTHOR: Aleksandrov, L. N.; Mordyuk, V. S.; Savina, L. F.

ORG: All-Union Scientific Research Institute of Light Sources, Saransk (Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov sveta); Mordvinian State University (Mordovskiy gosudarstvennyy universitet)

TITLE: Low frequency internal friction of solids in a state of plastic deformation

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3153-3158

TOPIC TAGS: plastic deformation, tungsten, niobium, crystal lattice dislocation, internal friction

ABSTRACT: Internal friction is experimentally studied in polycrystalline tungsten and single crystals of tungsten and niobium. It is found that the theory of dislocation viscosity gives a satisfactory qualitative description of internal friction in deformed solids. However, the Swartz-Weertman theory requires some modification for describing internal friction in highly deformed metals to account for the change in the dislocation pinning factor during deformation, the reduction in the maximum length of the L_N loop due to interlaced dislocations, and the increase

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L 5365-66
ACC NR: AP5027385

in its length with the separation of nodes in the dislocation net. The internal friction is a non-monotonic function of deformation in the metal, leveling off in a certain interval due to dislocation pinning, and then increasing again after separation of the pinned dislocations. Deformation of prehardened metal (to a dislocation density of 10^{12} cm^{-2}) shows three stages of internal friction similar to the three stages of fatigue observed in metals in the case of cyclic or thermocyclic loading. These internal friction stages are due to the motion of dislocations and interaction between dislocations and other lattice defects. Orig. art. has: 4 figures, 5 formulas.

SUB CODE: SS/ SUBM DATE: 06Feb65/ ORIG REF: 008/ OTH REF: 002

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 40733-66 EWT(m)/T/EWP(t) TJP(c) JD

ACC NR: AP6005142 (A) SOURCE CODE: UR/0126/66/021/001/0103/0110

AUTHOR: Aleksandrov, L. N.; Mordyuk, V. S.

ORG: All-Union Scientific Research Institute of Light Sources, Saransk (Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov sveta); Mordovskaya ASSR State University (Mordovskiy gosuniversitet)

TITLE: Interaction between the relaxation spectrum and high-temperature internal-friction background of refractory metals

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 1, 1966, 103-110

TOPIC TAGS: stress relaxation, relaxation process, internal friction, refractory metal, lattice defect

ABSTRACT: The mobility of various defects conditioning internal friction in metals is limited by the energy of their interaction with the surrounding lattice which, in its turn, depends on the general level of the bonding forces. The migration of defects is triggered by heat, and hence in the presence of changes in the bonding forces in the lattice (e.g. owing to alloying), the relaxation effects also are affected. Thus a definite relationship must exist between the relaxation spectrum and the background: if the background decreases, the relaxation maxima shift in the

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 28733-66

ACC NR: AP6005142

direction of high temperatures, and vice versa. In this connection the authors investigated internal friction in recrystallized specimens of W and Mo wires treated with various combinations of Fe, Al, Si and Ni in order to clarify the effect of treatment with alloy elements on relaxation characteristics. It was found that in the alloyed specimens, with their greater high-temperature strength and hence also greater interatomic bonding forces the activation energy of the displacement of structural defects responsible for relaxation effects is higher. The defects creating the internal-friction background in the high-temperature region may lead to the appearance of a relaxation peak in the low-temperature region. E.g. for W the relaxation maximum is found to exist at 150°K; this maximum as well as the attendant background are both caused by the same relaxation mechanism -- the diffusion of bivacancies in the field of the stresses applied (the activation energy of the relaxation process causing this maximum is estimated at 10 kcal/g.atom which is close to the activation energy of the movement of bivacancies, determined from the background at temperatures of 800-1600°C). Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11, 13, 20/ SUBM DATE: 09Feb65/ ORIG REF: 014/ OTH REF: 007

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

L 04185-67 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/JC/GD
ACC NR: AT6026911 SOURCE CODE: UR/0000/66/000/000/0069/0076

AUTHOR: Aleksandrov, L. N.; Mordyuk, V. S.

ORG: none

80
B+1

TITLE: A study of high temperature strength and thermal fatigue resistance of refractory metals by internal friction methods

SOURCE: AN SSSR. Institut metallurgii. Vnutrennyye treniye v metallakh i splavakh (Internal friction in metals and alloys). Moscow, Izd-vo Nauka, 1966, 69-76

TOPIC TAGS: internal friction, high temperature metal, high temperature strength, tungsten, thermal fatigue, recrystallization range, grain size, metallographic examination, plastic deformation

ABSTRACT: The temperature dependence of internal friction in the 600-2500°C range was studied in zone refined polycrystalline and monocrystalline tungsten. Three peaks are normally observed in deformed industrial-grade tungsten: a 1250°C peak caused by polygonization, a 1700°C recrystallization peak, and a 2000°C grain boundary relaxation peak. In zone refined tungsten only a 1500°C grain boundary peak which decreased after recrystallization was observed. A slight bump occured in the zone refined single crystals at 1500°C. This bump increased in height after thermal cycling and it was concluded that the single crystal bump was caused by cooling after zone melting. The re-

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L 04185-67

ACC NR: AT6026911

laxation spectrum was also obtained under stress rupture conditions: a temperature of 1500°C and a stress of 6.45 kg/mm^2. The background and peak height intensified as the holding time increased. These changes were caused by the increase in point defects and their agglomeration. The effect of thermal cycling on the relaxation spectrum and high temperature background on both polycrystalline and monocrystalline samples was presented. Internal friction was given as a function of thermal cycles at 1000, 1500, 2000, 2200, and 2600°C. In single crystals, the background increased at all temperatures, while the polycrystal parts of the background lying near the grain boundary peak did not change with thermal cycling. The absorption of vacancies and bivacancies by sinks was compensated for by the continuous generation of these defects during thermal cycling. This explained the low change in internal friction during thermal cycling in polycrystals where the grain boundaries act as sinks. Microstructures of thermally cycled specimens showed widening of grain boundaries and substructural networks. Orig. art. has: 4 figures.

SUB CODE: 11/ SUBM DATE: 02Apr66/ ORIG REF: 011/ OTH REF: 005

Card 2/2 LC

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

ACC NR: AT6034444 (A) SOURCE CODE: UR/0000/66/000/000/0112/0118

AUTHOR: Aleksandrov, L. N.; Mordyuk, V. S.

ORG: none

TITLE: The parameters of recrystallization of refractory metals according to data on internal friction

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 112-118

TOPIC TAGS: metal recrystallization, refractory metal, internal friction, relaxation process

ABSTRACT: If it is assumed that the time required for the attainment of a given degree of recrystallization is described by the relationship

$$t = A(\eta, T)\exp(U_{eff}/RT),$$

then a study of the kinetics of isothermal internal friction makes it possible to evaluate U_{eff}. Following the overall laws governing relaxation processes, the level of the internal friction Q^{-1} varies according to the law

$$Q^{-1}(t) = Q_{\infty}^{-1} + (Q_{0}^{-1} - Q_{\infty}^{-1})\exp\left(-\frac{t}{\tau}\right), \qquad (2)$$

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ACC NR: AT6034444

where τ is the relaxation time; Q_0^{-1} and Q_∞^{-1} are the initial internal friction of a deformed sample and the internal friction after recrystallization. The article presents a series of curves illustrating the temperature dependence of the internal friction of deformed and recrystallized tungsten, and the temperature dependence of the heat resistance. Orig. art. has: 6 formulas and 5 figures.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 012/ OTH REF: 002

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

NORE, J.

NORE, J. Increased tasks for machine and tractor stations. p. 135.

Vol. 8, no. 3, Mar. 1956
AGRARTUDOMANY
AGRICULTURE
Budapest, Hungary

So: East European Accession, Vol. 6, No. 5, May 1957

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

LAZANYI, Andrei, prof.; MARKI, Alpar; HATHAZI, Carol; MOREA, Maria

Research on the mutagenic action of some sulfamides, colchicine, and X-rays upon the sunflower (Helianthus annuus L.). Studii biol. Cluj 12 no.2:343-354 '61.

1. Academia R.P.R., Filiala Cluj, Centrul de cercetari biologice, Laboratorul de genetica vegetala. 2. Membru al Comitetului de redactie, "Studii si cercetari de biologie" - Filiala Cluj - (for Lazanyi).

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

LAZANYI, Andrei; MARKI, Alpar; MOREA, Maria

Mutagenic action of some sulfonamides, antibiotics and autolysis products in the broad bean (Vicia faba L.). Studii biol Cluj 14 no.1:129-133 '63.

1. Center of Biological Research, Rumanian Academy, Cluj Branch.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

Q-6

RUMANIA/Farm Animals. Honeybee.

Abs Jour: Ref Zhur - Biol., No. 22, 1958, 101284

Author : Moreanu, M., Nicolaide, N.

Inst : -

Title : Observing the Behavior of Bee Colonies with Several Queens Isolated in Individual Cells During the Active Season.

Orig Pub: Apicultura, 1957, No. 11, 25-27

Abstract: An experiment was performed on a bee colony which included 6 fertile queens isolated in individual cells with walls of mesh partitions. On 2 June, a single frame nucleus of about 200-300 young bees was formed which was left "orphaned" for 7-8 hours. Then, next to it a second frame was placed. In it, 9 cells were

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

Q-6

RUMANIA/Farm Animals. Honeybee.

Abs Jour: Ref Zhur - Biol., No. 22, 1959, 101284

fastened in the upper third part of the honeycomb, 6 of which contained one fertile queen each (4 one-year, and 2 two-year-old queens), Maturing brood was contained in the lower part of the frame, at both sides of the honeycomb. After 24 hours, the young bees grew in their numbers to 500-600. A retinue of 4-12 bees was observed around each queen; the rest of the bees were occupied with gathering nectar and pollen. After 30 days, the bees built a queen chamber 6 cm lower than the last cell. The queen chamber remained empty. Three days following the destruction of the queen's chamber by the author, the bees built another queen chamber at the foot of the last cell, and simultaneously immured the grille of 4 cells with small honeycombs. In 5 cells of these honeycombs, larvae of worker bees were discovered which were 3-4 days old;

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

RUMANIA/Farm Animals. Honeybee. Q-6

Abs Jour: Ref Zhur - Biol., No. 22, 1958, 101284

one of the queens found in the cell was capable of laying eggs. Towards 5 August, the number of bees in the nucleus diminished to 250-300. One month after forming the nucleus, the author attempted to place a 7th queen into one of the unoccupied cells, but the bees did not accept her, and the author took her away. On 8 August one of the 6 queens was freed from the cell. She tried to penetrate through the grille to the other queens which remained in their cells. After approximately 12 days, she began to lay eggs. On 9 August, an artificial empty honeycomb frame was placed into the beehive which the bees began to rebuild. However, the queen did not lay eggs into this new honeycomb and the bees did not store beebread and honey. The brood hatched from eggs laid by the queens

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORECKI, A.

5613

Morecki A. Foundations of Structural Classification of Mechanisms

„Podstawy klasyfikacji strukturalnej mechanizmów". Archiwum Budowy Maszyn (PAN), No. 2, Warszawa, 1956, pp. 213–225. 9 fig.

Mechanisms are divided into families according to the number of general connections binding the movement of every member of the mechanism. By contrast with the classification of I. Artobolevskii, the accepted principle of forming new mechanisms consists in adding to the driving member (or members) groups with mobility equal to 1, 2, 3... Within every family of mechanisms there is a subdivision into classes, forms and varieties. Mobility is regarded as the factor characterizing a given class. A closed polygon characterizes the form of the group. The adoption of these principles has permitted generalization of the structural classifications hitherto used, and a more strict observance of the criteria of scientific classification.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

[illegible]GECKI, A.

The basis of a structural classification of plane mechanisms. p. 2[illegible].
(ARCHIWUM [illegible]. Vol. 4, no. 3, 1957. Warszawa, Poland)

SO: Monthly List of East European Accessions (EEAL) LC. Vol. 6, no. [illegible], Dec. 1957.
Uncl.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

MORECKI, A.

An analysis of the effect of braking on the load capacity of ropes of hoisting machines while using a spring brake with a pneumatic piston. P 153

ARCHIWUM BUDOWY MASZYN. (Polska Akademia Nauk. Komitet Budowy Maszyn) Warszawa, Vol. 6, no. 1, 1959

POLAND

Monthly List of East European Accessions (EEAI) LC. Vol. 8, no. 7, July 1959

Uncl.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135120018-9

84455
P/034/60/000/007/001/003
A225/A026

26.2194
9.6180

AUTHORS: Morecki, A., Doctor, Docent, Stahl, J., Master of Engineering and Tomaszczyk, T. Master of Engineering

TITLE: Measurement of Linear and Angular Accelerations in Mechanical Works and Machines by Means of Tensiometric Acceleration Meters

PERIODICAL: Pomiary-Automatyka-Kontrola, 1960, No. 7, pp. 252-254

TEXT: The authors describe two gauges which measure the rate of acceleration in machines by means of a flexure-sensitive resistor mounted on a flexible-weight support. One of them serves for the measuring of linear accelerations (Fig. 1), the other for angular accelerations (Fig. 4). They are connected to Kelvin & Hughes graphic recorders. The linear acceleration gauge (Fig. 1) consists of a mounting made of duralumin (1), of a bakelite support (2) with flexure-sensitive resistors (3) cemented on, which holds a lead weight (4) on top. The entire device is protected by a plexiglass cylinder (5) screwed onto the mounting base and tightly closed by the cap (6). The inside of the cylinder may be filled with oil used as oscillation damper. The other gauge for the measuring of angular acce-

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Measurement of Linear and Angular Accelerations in Mechanical Works and Machines by Means of Tensiometric Acceleration Meters

lerations is based on the same principle, but here two gauges like the ones described above are mounted on a revolving axle (Fig. 4, 2) which may be connected with the shaft of the measured motor. Electrical connections run through the mercury commutator (3). The measured accelerations may amount to 0.1 - 5 g. The ratio between the inherent oscillations of the instrument and the measuring oscillations should amount to 8:10 (without damping), 2:3 (with damping). The gauge's own oscillation may not be smaller than 150 cycles, the range of temperature: -20 to +30°C. The formula for the computation is:

$$C_{st} = 2\varepsilon = 12 \frac{G \cdot L}{E \cdot b \cdot h_o^2} \qquad (1)$$

The symbols represent: C_{st} - static sensitivity of the gauge in cm/cm at 1 g acceleration; ε - surface distortion at the support base at 1 g acceleration; G - weight of the lead ballast; L - distance from the weight center to the point of attachment in cm; E - modulus of elasticity of

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Measurement of Linear and Angular Accelerations in Mechanical Works and Machines by Means of Tensiometric Acceleration Meters

support; b - width of support in cm; h_o - thickness of support in cm. Table 1 shows various parameters of the constructional elements. There are 11 figures, 1 table and 3 references: 1 Polish, 2 Soviet.

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MORECKI, A., doc., dr., inż.; STAHL, J., mgr., inż.; TOMASZCZYK, T., mgr., inż.

Thermometric measurements of angu. . velocity. Foundary 7 no.10:403-404 O '61.

(Physical measurements)

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ODERFELD, Jan, prof.,dr. (Warszawa); Bogumil, T., mgr.,inz.; GOLINSKI, J., mgr.,inz.; MORECKI, A., doc.,dr.

Empirical determination of the kinetic coefficient of friction. Archiw bud masz 8 no.4:469-472 '61.

1. Zespol Katedry Teorii Maszyn i Mechanizmow Politechniki Warszawskiej

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MORECKI, Adam, doc. dr inz.

Testing the mechanical efficiency and axial force in double Cardana universal joints. Przegl mech 21 no.21:654-658 N '62.

1. Politechnika, Warszawa.

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MONECKI, Adam, doc. dr., DEKERT, Jan, mgr inz.; KUROWSKI, Waldemar, mgr inz.

Testing kinematic accuracy of a unilaterally working couple of toothed wheels by the electrotensiometric method. Przegl mech 22 no. 19, 10:595-599 '63.

1. Zaklad Teorii Konstrukcji Maszyn, Instytut Podstawowych Problemow Techniki, Polska Akademia Nauk, Warszawa.

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MORECKI, Adam, doc. dr inz.; EKIEL, Juliusz, dr inz.; FIDELUS, Kazimierz, dr biol

Control of machines and living organisms by myoelectric potentials. Archiw bud masz 11 no. 1:109-12[illegible] '64.

1. Department of Design of Electromedical Apparatus, Technical University, Warsaw (for Ekiel). 2. College of Physical Education, Department of Theory of Sport, Warsaw (for Fidelus).

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ACCESSION NR: AP5002843 U/0032/64/011/004/0727/0754

AUTHOR: Marecki, A. (Doctor, Engineer, Docent) (Warsaw); Fidelus, K. (Doctor of biology) (Warsaw); Ekiel, J. (Doctor, Engineer) (Warsaw)

TITLE: Mechanoelectrical and biomechanical principles of control of the human upper limb muscles

SOURCE: Archiwum budowy maszyn, v. 11, no. 4, 1964, 727-754

TOPIC TAGS: myoelectric control, muscular control, biomechanical system, upper limb muscle, muscle stimulation, artificial limb movement, multistate stimulation, myopotential analysis

ABSTRACT: In continuation of a previous paper (Archiwum Budowy Maszyn, PAN, Warszawa 1964; zesz. 1) in which the general principles of single muscles and muscle groups were discussed and the possibility of controlling one upper limb by another upper limb or by a simulating device was suggested, the authors point out that control of the human upper limb muscles, which represent a complex biomechanical system having at least 27 degrees of freedom, requires a better understanding of biomechanical and bioelectric phenomena. The interdependance of the parameters of position, velocity, force and electrical stimulation in a single muscle and also in a muscle system must be known to make possible a rational design of a

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programming and stimulating device for the control of human upper limb movements and activity when the CNS is eliminated. In the present paper, the principles of muscular control are discussed on the basis of a generalized structural scheme of the upper limb, with special attention to the cases having 2 and 17 degrees of freedom, and the basic assumptions underlying control of one limb by another are outlined. In an analysis of the principal bioelectromechanical relationships in the limb, the authors describe a circuit for measuring the relation between EMG and muscular force, a mechanical device for recording the flexion and relaxation of the forearm, a stimulation measurement circuit and a circuit for recording two mechanograms simultaneously, as well as circuits for recording four parameters of both the controlling and controlled limbs, adjusting the threshold value of the stimulating impulse, multistate stimulation, telecontrol of muscles, etc. A large number of mechanograms and oscillograms are shown and discussed. Finally, the problems of position in the control process and telecontrol of muscles are discussed. On the basis of their investigations, the authors advance a number of observations concerning the possibility of simultaneous control of the set of upper limb muscles, which was confirmed in their work, the solving of problems in two-state and multistate (up to 5) control systems and the problem of feed-back in the control of position, velocity and force. Decoded myopotentials were concluded to be the control system stimuli which can most closely approximate physiological impulses. "K. Hanarczuk

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ACCESSION NR: AP5002143

(Engineer) and K. Redzior (Engineer) of the Warsaw Polytechnic Institute are also members of the team." Orig. art. has: 41 figures and 5 formulas.

ASSOCIATION: (Moreski, Ekiel) Warsaw Polytechnic Institute; (Widelus) Academy of Physical Culture, Warsaw

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MOREGA, I., ing.

Production and export of Rumanian installations and complete equipment in continuous development. Petrol si gaze 14 no.8: 412-415 Ag '63.

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VUKSIC, L.J.; MOREIJ, M.; ZDRAVKOVIC, A.; MIIOJCIC, B.

A plan for the prevention of communicable diseases in Serbia.
Higijena 15 no.1/2:16-34 '63.

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MOREKHIN, M.

Life beyond the borders of the earth. Nauka i zhyttia 12 no.2:48-49 F '63. (MIRA 16:4)

(Photosynthesis) (Space biology)

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MOREKHIN, M. G.; YAKOVLEV, V. S.; SIDOROVICH, A. G.

Production of nitrogen from air by catalytic oxidation of ammonia with the aid of a vanadium catalyst. Ukr. khim. zhur. 28 no.5: 645-648 '62. (MIRA 15:10)

(Nitrogen) (Ammonia) (Vanadium catalysts)

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AUTHORS: Morokhin, M. G., Ageyev, S. I., Matyash, O. Ye., and Chechina, T. G.

TITLE: A colorimetric method of determining the water content in kerosene

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 6, 1962, 670

TEXT: White, anhydrous $CuSO_4$ added to hydrocarbons for the purpose of determining their water content formed a blue crystal hydrate with the water. The standards were prepared from 1 liter fuel filtered off with calcined copper sulfate was mixed with 0.2, 0.4, 0.6, 0.8, or 1.0 g of water and filtered off with glass filters containing freshly calcined $CuSO_4$. The color filtrates stored under exclusion of air remained usable for one month. The fuel to be analyzed was treated similarly, and the resulting color shade was compared with the standards. In this way, an amount of 0.30 g/liter was ascertained as compared with calculated water cotent of 0.28 g/liter, and 0.20 g/liter as compared with 0.175 g/liter.

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