

Parfenov, V. A.

AID P - 4383

Subject : USSR/Power Engineering
Card 1/1 Pub. 110 a - 9/17
Author : Parfenov, V. A., Kand. Tech. Sci.
Title : Conditions of the surface of equipment parts and resistance to high temperatures.
Periodical : Teploenergetika, 5, 43-46, My 1956
Abstract : Experimental research on the behaviour of the surface of equipment parts made of two heat-resisting alloys on a nickel basis is reported. The influence of the plastic surface deformation upon the fatigue strength of the parts reportedly depends upon the test temperature and the temperature of re-crystallization. Five diagrams, 5 Russian references, 1932-1955, 1 American, 1951.
Institution : None
Submitted : No date

PARFENOV, V.A., kandidat tekhnicheskikh nauk.

~~Indium. Nauka i zhizn' 23 no.11:63 N '56.~~
(Indium)

(MLRA 9:11)

137-58-6-13334

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 312 (USSR)

AUTHOR: Parfenov, V. A.

TITLE: An Investigation of the Process of Fatigue Failure of Alloys at Elevated Temperatures (Issledovaniye protsessa ustalostnogo razrusheniya splavov pri vysokikh temperaturakh)

PERIODICAL: V sb.: Issled. po zharoprochn. splavam. Vol 2. Moscow, AN SSSR, 1957, pp 211-227

ABSTRACT: The process of fatigue failure of alloys subjected to high-temperature cyclic deformations was investigated. The kinetics of oxidation occurring during fatigue tests of refractory alloys EI-617 and EI-437 B was studied on cylindrical specimens (S) which were subjected to rotary flexure on machines of the Ya-8 type at temperatures of 750-800°. It is shown that voids formed within slip planes of surface grains accelerate the oxidation process by diffusing O₂ atoms in a direction opposite to that of the atoms of alloying elements which are diffusing toward the surface of the S. The properties of oxide films thus formed exert a definite influence on the cyclic strength (CS) of the metal. The adverse effect of

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137-58-6-13334

An Investigation of the Process of Fatigue Failure of Alloys (cont.)

oxidation of alloys involves a lowering of the recrystallization (R) temperature of the layer just underneath the film and the creation of stress concentrations whenever surface defects undergo oxidation. Structural changes in the surface layer at phase-transformation temperatures were investigated by means of electrochemical dissolution of S's made of the alloy EI-437B after they had been subjected to various processes of mechanical treatment and isothermal aging, as well as after aging processes combined with cyclic stresses. It is shown that the CS of the alloy at temperatures corresponding to the beginning of R is a function of the initial structural stability of the surface layer of the S. After investigating the effect of plastic surface deformation on the CS of the EI-437B alloy, it was established that work hardening increases the CS provided no R takes place during the tests and the compressive stresses introduced at testing temperatures have not yet been removed. X-ray analysis performed on S's of EI-602 alloy, which were subjected to fatigue tests with asymmetrical tensile-load fluctuations at temperatures of 700-850°, revealed a blurring of the doublet and a reduction in the intensity of reflection lines. The widening of lines is explained by the crumbling of grains and disorientation of blocks. The reduced intensity of interference lines with a concurrent increase in amplitude of cyclic slips is attributable to the formation of defects on the slip planes in the form of associated voids and micropores. 1. Alloys--Fatigue 2. Alloys--Temperature factors V. N. Card 2/2 3. Alloys--Test results

PARFENOV, V A

25-4-32/34

SUBJECT: USSR/Chemistry

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

TITLE: The Rare Metal of Lithium (Redkiy Metall Litiy)

PERIODICAL: Nauka i Zhizn' - April 1957, # 4, p 63 (USSR)

ABSTRACT: It is the lightest of metals and does not exist in pure form. For industrial purposes it is used in the form of chemical compounds. Caustic lithium is used to fill high power electric batteries which last without charge three times longer than ordinary ones. Lubricants, in which lithium forms a part, retain their properties in extremely low temperature and in as high as 100°C; they are successfully used to reduce friction among machine parts. Lithium compounds containing chloride and bromide decompose carbon dioxide and are employed for purifying air in submarines during extended submersions. Lithium compounds are also added to the fuel of jet and rocket engines as lithium gives off considerable heat when exposed to oxygen. The range of application of lithium is becoming wider every day.

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25-4-32 / 34

TITLE: The Rare Metal of Lithium (Redkiy Metall Litiy)

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 2/2

657

AUTHOR: Parfenov, V. A., Cand. Tech. Sc.

TITLE: Relation between the fatigue and the ultimate strength of alloys at elevated temperatures. (Sootnosheniye mezhdu vynoslivost'yu i dlitel'noy prochnost'yu splavov pri povyshennykh temperaturakh).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.6, pp.17-23 (U.S.S.R.)

ABSTRACT: On the basis of test results and evaluation of published data (1-5), the fatigue limit and the ultimate strength is compared for a number of heat resistant alloys at 600 to 850 C. In the analysis of experimental data the author attempted to elucidate certain phenomena relating to the complex process of fatigue fracture of alloys. At elevated temperatures the magnitude of the rupture stress for nickel base alloys is determined by the duration of the stress application; this is illustrated by the data of Tapsel, H.I. (2) relating to nimonic-80 for 700 and 750 C for which the 10 000 hour fatigue limit is half the value of 100 hour fatigue limit. Fig.1 shows the fatigue limit and the ultimate strength values at 800 C for the Ni-Cr-Ti alloy with tungsten and molybdenum, 3M617. The results were obtained on smooth specimens of 5 mm dia. (ultimate strength) and 8 mm dia. (fatigue). The fatigue tests consisted of

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Relation between the fatigue and the ultimate strength of alloys at elevated temperatures. (Cont.)

alternate bending in all directions of the stationary specimen with a frequency of 50 c.p.s. It can be seen from this figure that for test durations below 200 hours fatigue failures are more likely than failures due to loss of static strength. The intensity of strength reduction at phase transformation temperatures is higher for static loads than it is for cyclic loads. Figs. 2 to 4 give the fatigue limit and the ultimate strength values for 600 and 300 hours respectively for the alloys Al 395 , Al 43 and Al 617 at 600 to 850 C; the values expressed by full line curves relate to smooth specimens, whilst the dotted line curves relate to notched specimens. Usually the notch brings about a considerable reduction in the fatigue strength but no change and even an increase in the ultimate strength of the alloy. The magnitude of the relative plastic deformation amounted to fractions of percent per hour; fractures observed during this process are attributed to the diffusion of vacancies in the crystal lattice which accumulate at grain boundaries and develop into cracks owing to the diffusion flow of new vacancies to the grain boundaries. The relative deformation of the alloy in the case of constant specimen dimensions is much

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Relation between the fatigue and the ultimate strength of alloys at elevated temperatures. (Cont.)

higher in the case of fatigue stress than it is in the case of long duration static stress; alternate sliding along the sliding planes of the weak grains bring about intragranular fractures. It can be seen clearly from the included micro-photographs that the width of the areas deformed by sliding surfaces grow from cycle to cycle. Even slight discontinuities forming during cyclic shifts as a result of cyclic loads will not heal at relatively low temperatures and lead, even in the case of relatively low cyclic stresses, to a rapid loosening of the material; at higher test temperatures (above t_p) a part of the forming loosening vacancies and thus the beginning of fracture will occur later than in tests for ultimate static strength at which the plastic deformation proceeding at low speed brings about diffusion processes along the grain boundaries and the healing of sub-microscopic fractures is less effective than in cyclic stress. Investigating the intensity of the processes of disintegration of the solid solution the author found earlier (10) that cyclic stresses accelerate the process of decomposition of solid solutions. The fatigue limit and ultimate strength curves plotted in the same coordinates of stress against time to failure intersect. For test durations

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Relation between the fatigue and the ultimate strength of alloys at elevated temperatures. (Cont.)

of 200 to 500 hours fatigue fractures are more likely, whilst for longer test durations failure due to static stresses are more likely. It was established that for each alloy a temperature t_D exists under given conditions at which fatigue fracture is more likely, whilst above that temperature failure due to static loads is more likely; the temperature of equal strength of deformed nickel base alloys for smooth specimens varies between 760 and 800 C, whilst for notched specimens it varies between 800 and 850 C. The difference of the position of the fatigue limit and ultimate strength curves for a given temperature range is attributed by the author to the sharp difference in the magnitude of the relative deformation of the specimen and the difference in the speeds of plastic deformation and also in the unequal intensity of ageing of the alloy during fatigue tests and during ultimate strength tests. It is stated in an editorial comment that the quantitative relations between the ultimate and fatigue strength as a function of test duration or the temperature given by the author are valid only for the speeds applied by the author and are likely to vary as a function of the loading speed. 10 figures, 10 references, 6 of which are Slavic.

AVAILABLE:

PARFENOV, L.I.
~~PARFENOV, Vasilij Aleksandrovich, kand.tekhn.nauk; LANINA, L.I., red.;~~
~~GUBIN, M.I., tekhn.red.~~

[Metals of progress] Metally progressa. Moskva, Izd-vo "Znanie,"
1958. 31 p. (Vsesoiuznoe obshchestvo po rasprostraneniu politi-
cheskikh i nauchnykh znani. Ser.4, no.1) (MIRA 11:2)
(Metals)

129-2-4/11

AUTHOR: Parfenov, V.A. (Cand.Tech.Sc.)

TITLE: Features of the Process of Fatigue Fracture of Alloys at Elevated Temperatures (Osobennosti protsessa ustalostnogo razrusheniya splavov pri vysokikh temperaturakh)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 2, pp.19-22 + 1 plate (USSR)

ABSTRACT: The heat resistance of alloys is being evaluated on the basis of results of long duration strength tests and creep tests without taking into consideration fatigue characteristics of the material. Very little experimental data is available on fatigue of alloys at elevated temperatures. For some steels and alloys results obtained in TsNIITMASH have been described by Aleksandrov (Ref.1) and Shishkova. The fatigue characteristics and the notch sensitivity of alloys after various heat treatments were investigated up to 800°C on the basis of 10^8 loading cycles. Analysis of data published by Aleksandrov and also by other authors (Refs.2 - 4) allows certain general conclusions on the fatigue of high temperature alloys at test temperatures up to $0.7 T_{abs}$ of the melting temperature; some of these were experimentally confirmed. Absence of a fatigue limit at elevated temperatures is attributed to the fact that due to

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Features of the Process of Fatigue Fracture of Alloys at Elevated Temperatures.

relaxation, hardening caused by plastic deformation is eliminated; disperse hardening has practically no influence owing to accelerated disruption of coherent bonds between the lattice of the separated out phases and the basic lattice and also owing to coagulation of the separated out phases. Sliding processes are accompanied by breaking up the grain into blocks and development of sub-micro cracks. Therefore, specimens subjected to fatigue tests at elevated temperatures have lower high temperature strengths than the specimens in the initial state. The softening effect of cyclic stresses is always larger than the effect of long duration static stresses at the same temperatures. Micro-plastic deformations during alternating stresses accelerate considerably the processes of structural transformations on sliding planes in grains of the alloy and make it possible to investigate, even by optical methods, certain phenomena of fatigue of austenitic alloys. Metallographic analysis is inapplicable for studying creep phenomena but can be successfully used for studying processes of fatigue. In specimens subjected to cyclic

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Features of the Process of Fatigue Fracture of Alloys at Elevated Temperatures.

bending at elevated temperatures a difference can be observed clearly between the structure of those surface grains which are most highly stressed during the tests and the grains located in the centre of the active cross-section; considerable deformation can be observed in the surface grains, as can be seen from Fig.1A(Plate); particles of the second phase of lamellar shape are formed in the sliding planes. The geometrically regular distribution of these lamellae enables detection of the planes of facilitated sliding in the grains. No process of plastic deformation is observed in the grains of the core of the active cross-section, i.e., grains which are not highly stressed during bending tests. If in the case of nickel-chromium-titanium alloys the surface grains show twinning, the plastic deformation is usually developed mainly along the twinning planes which represent loci of reduced strength of the metal; the twinning planes of the surface grains become gradually thicker during fatigue and only one of them develops into a micro-crack, Fig.2 (Plate). The effect of cyclic stresses accelerates the formation of lamellar phases from the sliding plane and particularly on the twinning planes. With increas-

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Features of the Process of Fatigue Fracture of Alloys at Elevated Temperatures.

ing test duration the lamellar separations become increasingly isolated (Fig.3), their thickness may reach 1μ and their length several tens of μ . In the case of ageing phase transformations may be observed only after test durations exceeding tens of times the duration of fatigue tests. Differing operating temperatures require differing initial heat treatment. Fatigue test data show that up to $0.5 T_{\text{abs}}$ of the melting^{point} temperature austenitic alloys are less sensitive to notches after being hardened to form a solid solution, which at these temperatures still has a high plasticity; at test temperatures (0.6 to $0.7 T_{\text{abs}}$) the sensitivity to stress concentration is lower for the same alloy after stabilisation since at this temperature range stabilised alloys have a high plasticity although their high temperature strength is lower. In evaluating the high temperature characteristics of alloys it is important to know the relations between the fatigue limit and the long duration strength for each alloy. As an example, in Fig.7 the curves are graphed of an M437 type alloy. It can be seen that for

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Features of the Process of Fatigue Fracture of Alloys at Elevated Temperatures.

250 - 300 hours the probability of fatigue fracture at 750°C is higher than of fractures caused by static loads; with increasing test durations (applying lower stresses) fatigue fracture becomes less likely. There are 7 figures (Figs. 1, 2, 3 and 6 on Plate), and 6 references, all of which are Slavic.

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Card 5/5

PARFENOV, V. A

AUTHOR: Parfenov, V.A., Candidate of Technical Sciences 25-58-4-25/41

TITLE: In the Plasmatron Jet (V struye plazmotrona)

PERIODICAL: Nauka i Zhizn', 1958, Nr 4, pp 67 - 68 (USSR)

ABSTRACT: The heating up of fast moving bodies in the Earth's atmosphere is a great problem, the investigation of which requires the artificial creation of temperatures over 4,500 - 5,000°. For this purpose, foreign scientists have devised a plasma generator, the so-called plasmatron, developed on the basis of an improved electric arc. To carry out rocket tests, the plasma jet is placed into a aerodynamic tube. Plasma temperature can exceed 100,000°. Information on some American plasmatrons is given. There are 2 sketches.

AVAILABLE: Library of Congress

Card 1/1

1. Aerodynamics 2. Thermodynamics

SOV-129-58-6-8/17

AUTHOR: Parfenov, V. A. (Cand. Tech. Sc.)

TITLE: Protective Coatings of Heat Resistant Alloys (Zashchitnyye pokrytiya zharoprochnykh splavov)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 6, pp 33-37 (USSR)

ABSTRACT: English and American work (Refs. 1 and 2) has shown that accelerated corrosion of gas turbine blades made of nickel base alloys is caused by vanadium and sodium, micro doses of which exist in certain grades of fuel. In this paper the results are described of investigations of the strength of specimens made of the alloy EI437B (20.10% Cr; 2.40% Ti; 0.71% Al; 0.04% C; 0.45% Si; 0.20% Mn; 0.005% S; 0.006% P; 0.60% Fe; 0.05% Cu; 0.05% Zr; the rest Ni) and of the alloy EI617 (composition as per standard specification); the active neck of the specimens was of 8 mm dia. On the basis of results of tests of chromated and enamelled specimens the following conclusions are arrived at: (1) A 0.1 mm thick chromium layer will bring about a 16% increase in the fatigue strength at 750°C of the alloy EI437B. A 0.1 to 0.2 mm thick chromium layer will bring about a 14% increase in the fatigue strength at 800°C of the alloy EI617 (50 x 10⁶ cycles). (2) With increasing number of test cycles,

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Protective Coatings of Heat Resistant Alloys

the effectiveness of chromating from the point of view of increasing the fatigue strength of the alloys EI 437B and EI617 increases. During the tests at 800°C the electrolytic layer recrystallises with an appreciable speed and therefore application of chromium as a protective coating of components operating at temperatures above 800°C is inadvisable. (4) Enamelling increases the fatigue strength of specimens of the alloy EI617 at 800°C (300 hrs) by 15% compared with the fatigue strength of reference specimens. Apparently, for increasing the effectiveness of enamelling, it is necessary to reduce the baking temperature of enamelled components. There are 5 figures and 5 references, of which 3 are English, 1 French and 1 Soviet.

1. Heat resistant alloys - Coatings
2. Heat resistant alloys - Corrosion prevention
3. Vanadium - Corrosive effects
4. Sodium - Corrosive effects
5. Chromium - Applications

Card 2/2

AUTHOR: Parfenov, V. A.

SOV/126-6-2-27/34

TITLE: Investigation of the Plastic Deformation of Metals
During Cyclic Loading (Issledovaniye plasticheskoy
deformatsii metallov pri tsiklicheskom nagruzhenii)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 2,
pp 359-362 (USSR)

ABSTRACT: The aim of the here described work was to study the process of formation of twin crystals of deformation. This was done by a method of investigation of the plastic deformation during cyclic loading which is described. The experiments were made on the nickel alloy EI602. The alternate bending (from two sides) of flat specimens was interrupted after each fourth cycle for the purpose of observing changes in the structure. For convenience the cyclic bending was effected at large values of residual deformations. The 50 x 6 x 2 mm specimens were deformed by impact loads in a special test rig. Individual specimens were subjected to cyclic bending by an angle equalling 2.5; 7.5; 15 and 25°. The progress of twin crystal formation in the surface grain of a specimen was investigated with an increasing number of cycles of

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Investigation of the Plastic Deformation of Metals During Cyclic Loading

alternate bending of a specimen of the nickel alloy EI602 with a face-centred lattice. It is shown that during investigation of the ultimate strength of specimens of an alloy with a face-centred lattice the plastic deformation is effected not only by sliding but also as a result of formation of twin crystals.

There are 4 figures and 4 references, 3 of which are Soviet, 1 English.

SUBMITTED: August 20, 1956

Card 2/2 1. Nickel alloys--Deformation 2. Crystals--Metallurgical effects 3. Nickel alloys--Crystal structure 4. Nickel alloys--~~Test~~ methods 5. Crystals--Lattices

PARFENOV, V.A., kand. tekhn. nauk

~~▲~~ Airplanes without rivets. Nauka i zhizn' 25 no. 6:68 Je '58.

(MIRA 11:8)

(Airplanes--Sheet-metal work)

PARFENOV, V.A., kand.tekhn.nauk

Hypersonic flight. Nauka i zhizn' 25 no.8:69-70 Ag '58.

(MIRA 11:9)

(Aerodynamics, Supersonic)

PARFENOV, V.

51(0); 1(0); 2(10) PHASE I BOOK EXPLOITATION 30V/2210
Atomnaya energiya v aviatsii i rakety tekhnika; sbornik statey
(Atomic Energy in Aviation and Rocket Engineering; Collection
of Articles) Moscow, Otdel' izd-vo M-vo obor. SSSR, 1959. 500 p.
(Series: Nauchno-populyarnaya biblioteka) No. of copies printed
not given.

Ed. - Comilari P.T. Atashenkov, Engineer, Lt.-Col; Ed.: Ye.M.
Lider, Tech. Ed.: A.M. Gavrilova.
PURPOSE: This book is intended for officers of the Soviet Armed
Forces, members of DOSAAF, and the general reader interested in
the use of atomic energy and in the development of aviation and
rocket engineering.

COVERAGE: This collection of 26 articles, compiled by 28 Soviet
scientists and based chiefly on non-Soviet materials, discusses
various aspects of the use of atomic energy in rocketry and avia-
tion. The book surveys the development of atomic and thermonuclear
weapons and weapon carriers, lays down the principles of anti-
atomic defense, and examines the application of nuclear energy
in aviation and rocketry. Fuel and construction materials, as
well as actual physical and technological processes involved, are
treated briefly. Fundamentals of atomic warfare and combat tech-
niques are discussed at some length. The book is divided into four
parts, of which the last consists chiefly of anti-aircraft de-
fense. Section I is devoted to nuclear weapons and their use in
aviation. Section II is on anti-atomic defense, especially the
defense against radiation. Section III is on the use of nuclear
energy in modern aircraft. Section IV deals with technology and flight tech-
niques, including some calculations on space travel and on the
energy of the future. There are 126 figures and 35 non-Soviet
references (some in Russian translation).

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SOV/25-59-1-38/51

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

TITLE: Reactive Wings (Reaktivnoye krylo)

PERIODICAL: Nauka i zhizn', 1959, Nr 1, p 69, (USSR)

ABSTRACT: The article is based on a publication in the journal
"Aviation Age", 1958, Nr 8. There is one drawing.

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SOV/25-59-7-32/53

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

TITLE: A Thermo-Electronic Generator

PERIODICAL: Nauka i zhizn', 1959, Nr 7, p 69 (USSR)

ABSTRACT: This is a description of a project of a thermo-electronic generator for artificial satellites for both the earth and moon published in the western press. The project features direct conversion of thermal power into electric energy. The generator consists of 2 metal plates separated by only several thousandths of a mm and built into a vacuum tube. One plate is to be heated to the temperature of about 1,200°C, the other - to 500°C. The electrons, due to the process of "boiling over", travel from the hot to the cooler plate. Connected up by a conductor, electric current can be thus produced. Thermal energy for the generator will be supplied either by an atomic reactor or by the sun.

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SOV/25-59-9-31/49

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

TITLE: Rocket Aircraft

PERIODICAL: Nauka i zhizn', 1959, Nr 9, pp 68-69 (USSR)

ABSTRACT: The article is based on the following journals:
"Aviation Age", 1958, Nr 2 and 8; "Aviation Week",
1958, Nr 17, 22 and 24 and "Missiles and Rockets",
1958, Nr 4. There are 2 French and 4 English-language
references, and 4 diagrams.

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S/025/60/000/05/027/044
D048/D006

18(5)
25(1)

18.5200
AUTHOR:

Parfenov, V.A., Candidate of Technical Sciences

TITLE:

A Plasma Burner

PERIODICAL:

Nauka i zhizn', 1960, Nr 5, p 67 (USSR)

ABSTRACT:

I.D. Kulagin, Candidate of Technical Sciences and
engineer A.V. Nikolayev both from the Institut
metallurgii Akademii nauk SSSR (Institute of Metal-
lurgy of the USSR Academy of Sciences) have deve-
loped a plasma burner which develops a temperature
of 15,000°. Since the temperature of plasma increa-
ses when subject to lateral pressure and the passage
between cathode and anode is narrowed, the electric
arc is placed in the barrel of the welding pistol.
The most powerful plasma burners require a current

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X

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S/025/60/000/05/027/044
D048/D006

A Plasma Burner

of several 100 amp and a 30-50 volt tension.

Card 2/2

X

80820

S/025/60/000/06/08/012

29.1000

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

TITLE: Return From Space

PERIODICAL: Nauka i zhizn', 1960, No. 6, pp 31 - 33

TEXT: This is a brief popular review of four foreign (nation not stated) design projects of space vehicles, capable of returning to the Earth without burning in dense atmosphere: 1) A "winged glider"; 2) An inflatable triangular vehicle which would descend on a spiral path with no more than 360 km/hr and for which specialists in many countries are trying to create elastic carbon-metal material with sufficient heat resistance; 3) "ballistic capsule" with braking rockets and parachutes, turning its wider end about when entering the atmosphere; 4) "Sputnik with aerodynamic brake". It is said that foreign specialists are working most intensively on the "ballistic capsules" and the "sputnik with aerodynamic brake", which both could be brought already now into an orbit by the existing rockets.

X

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84891

17.4410 2612, 2312, 2107, 2307, 2712

S/004/60/000/010/001/008
A005/A001

AUTHOR: Parfenov, V., Candidate of Technical Sciences

TITLE: Space Vehicle Returns to the Earth Penetration Into the Universe

PERIODICAL: Znanije - Sila, 1960, No. 10, pp. 1-3

TEXT: The article gives a general information on the problems connected with the penetration into the universe by a space vehicle and the temperatures arising in the vehicle's nose cone³ and carrying components. The following topics are considered: 1) the nose-cone problem; 2) behavior of metals in the cosmic space; 3) the family of high-melting metals; 4) evaporation of metals, and 5) magnetic cooling. The considerations refer specifically to the man-carrying space vehicle and the return of man to the Earth, i.e., the re-entry problem under cosmic and atmospheric conditions. The pointed stream-lined nose cone gives rise to a thin boundary layer, very high temperatures, since weak shock waves reflect into the atmosphere only about 50% of the thermal energy. The bluntbody cone³ causes a high-intense shock wave reflecting into the atmosphere more than 90% of the thermal energy, decreases sharply its speed when reentering the atmosphere, and affects intensely the man². A braking fan³

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A005/A001

Space Vehicle Returns to the Earth - Penetration Into the Universe

may decrease the deceleration forces. The known effects are described to which the engineering materials are subjected in space: meteoric showers, nuclear particle showers, sharp temperature contrasts, thermal, vibrational, acoustical effects, the plasma in the Earth's atmosphere. Degassed materials must be used. - High-melting metals beryllium, columbium, molybdenum, tantalum, and tungsten are considered in detail in respect of weight, melting point, rigidity and resistance to high temperatures, heat absorption, ductility, forgeability, oxidation stability, alloying property, acid resistance, base resistance, electrochemical corrosion resistance, heat conductance. The alloys are considered: tantalum-tungsten, and on the molybden base, which give the most expedient combination of properties for the operation under high-temperature conditions. The molybdenum oxide forms rapidly and is volatile and evaporates. Alloys are required having more expedient properties than the known alloys. Therefore, investigations on solid physics, metallurgy, and metal technology must be carried out. High alloys are required with high heat capacity and low heat conductance, and selfsublimating materials are needed for eliminating the heat when the vehicle re-enters the atmosphere; the latter problem is mostly

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Space Vehicle Returns to the Earth - Penetration Into the Universe

promising in the opinion of the non-Soviet investigators because the transition of a solid immediately into gas requires a huge amount of heat, which can be eliminated with the metal gas. Only the heat conductance must be low enough for avoiding the heating of the cabin. Scientists of the USA considered the conditions of the re-entry of a satellite from the altitude of 160 km with the speed of 6.4 km/sec, assuming for the sake of simplicity that the trajectory of landing is perpendicular to the Earth's surface and the total kinetic and potential energies are transformed into heat at the instant of attaining the Earth's surface. According to these data, about 5,500 kcal of heat will be emitted per each kg of weight of the satellite. Therefore, the metallic walls of the satellite must have an unacceptable thickness, due to the intensity of this thermal flux. Circulation cooling is also insufficient for eliminating the heat emission. Beryllium oxide is an expedient reflectory and sublimating material of low weight, which evaporated into the gaseous state at about 2,500°C, which is not harmful for the structure and equipment of the satellite because the heat exerts during a short time, and the heat conductance of beryllium oxide is low. In the same manner, tantal, molybdenum, tungsten, silver and also plastics can

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S/004/60/000/010/001/008
A005/A001

Space Vehicle Returns to the Earth - Penetration Into the Universe

be used; the latter has low heat conductance, elasticity, and resistance to heat shocks. Such sublimating materials can be used for covering the main elements of the space vehicle such as the fuselage nose and the leading edges of wings, and the empanage. The Figure 3 shows a hypothetic wing profile and cross section before and after re-entering the atmosphere. The structure components loaded are covered by a heat insulation layer of asbestos or quartz and a sublimating material layer. The sublimation of the nose cone and the wings increases the drag of the vehicle and leads to decreasing temperature. Thermal radiation can also be applied to protection against superheating. It is estimated that up to 40% of heat coming into the vehicle surface from the boundary layer can be reflected into the atmosphere. The reflecting properties can be increased by enlarging the reflecting surfaces and burnishing them. In the opinion of non-Soviet scientists, the dissociation and ionization of the gas in the shock wave and the boundary layer of the streamlined body can be utilized for heat dissipation when applying an electromagnetic field, which moves aside the charged particles and reflects the ionized gas (plasma). In the opinion of non-Soviet scientists the minimum weight of the heat-dissipa-

Card 4/5

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S/004/60/000/010/001/008
A005/A001

Space Vehicle Returns to the Earth - Penetration Into the Universe

tion equipment will result from the method of sublimation of the surface layer
which will be "sacrificed" - There are three figures.

X

Card 5/5

PARFENOV, V.A., kand.tekhn.nauk

Returning a space ship to earth. Vest.Vost.Fl. no.11:65-68 N '60.
(MIRA 13:11)

(Space ships)

PARFENOV, V., kand.tekhn.nauk

Wings. Grazhd. av. 17 no. 11:28-29 H '60.
(Airplanes--Wings)

(MIRA 13:12)

PHASE I BOOK EXPLOITATION

SOV/5653

Parfenov, Vasilii Aleksandrovich

Vozvrashcheniye iz kosmosa (Return From the Cosmos) Moscow, Voenizdat M-va obor. SSSR, 1961. 67 p. (Series: Nauchno-populyarnaya biblioteka) 75,000 copies printed.

Ed.: V. L. Stérligov, Engineer, Major; Tech. Ed.: M. P. Zudina.

PURPOSE: This booklet is intended for the general reader.

COVERAGE: The booklet describing the entry of space ships into the atmosphere is based on information from popular-type scientific open publications. Certain projects of the entry of space vehicles into the atmosphere, deceleration systems, and selection of construction materials are discussed. No personalities are mentioned. There are 33 references: 27 English, 4 Soviet, and 2 German.

Card-1/3

PARFENOV, V.A., kand.tekhn.nauk

A feat worthy of the land of Lenin. Vest.Vozd.Fl. no.3:7-10 Mr
'61. (MIRA 14:6)
(Astronautics)

89627

18.8206

S/129/61/000/004/009/012
E073/E535

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

TITLE: Change of the Strength and the Structure of Metals
During Cyclic Loading

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,
1961, No. 4, pp. 40-44

TEXT: The author studied the changes in the strength and structure of some metals and alloys after cyclic loading at room and at elevated temperatures. Specimens 0.5 ± 0.01 mm thick, 10 mm^2 cross-section were subjected to alternating bending tests and to tensile tests. Specimens of the alloys АД1 (AD1) and Д16 (D16) were annealed for two hours in vacuum (10^{-4} mm Hg at 300°C) and specimens from the alloys М3, Л62 (L62) and SpO $\bar{\text{D}}$ (Br. OF) were annealed at 600°C . One batch of the bronze specimens were not annealed and were tested after plastic deformation. Various groups were subjected to a differing number of load cycles (1, 10, 100 and 1000 cycles). The service life of the specimens from AD1 and D16 materials was 1200-1500 cycles and that of copper and copper alloys was 1400-1600 cycles. Most specimens

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Change of the Strength and

were subjected to cyclic bending tests at 20°C. For obtaining comparative results, a part of the Al alloy specimens were tested at 300°C and a part of the copper specimens at 600°C. After the cyclic loading the specimens were electrically polished and subjected to tensile tests at 20°C, microhardness tests and also X-ray structural analysis. Flat specimens of the alloy ~~NI602~~ (EI602) were subjected to fatigue tests under asymmetric tension at 700, 800 and 850°C, making X-ray exposures in the zone of maximum stresses and in the clamping zone where the stresses were half the maximum stresses. Circular specimens of the alloy ~~NI437B~~ (EI437B) were subjected to fatigue tests under symmetric circular bending at 750°C. Following that, they were cut along the axis, the deformed layer was etched in the cutting plane and the exposures were made from points with differing stress conditions during the fatigue tests, i.e. at the centre of the neck and its periphery. Some of the results obtained are plotted in the graphs, Figs.1-4. On the basis of the results the following conclusions were arrived at:

1. The strength of metals and alloys as a result of cyclic

X

Card 2/6

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S/129/61/000/004/009/012

E073/E535

Change of the Strength and

deformation does not change in accordance with the same pattern. Commercial aluminium and partly copper will harden somewhat at first and then soften appreciably with increasing number of cycles. The strength of annealed duralumin and brass increases with increasing number of cycles. Cold-worked bronze softens as a result of cyclic loading.

2. The strength of alloys, which have been cyclically loaded at the relaxation temperatures, changes in the same way as they do in commercially pure metals.

3. The change in strength of metals with increasing number of cycles of alternating plastic bending is influenced by the irreversible processes of loosening in the slip planes. Slowing down of the process of loosening by preliminary work hardening can be achieved only at temperatures at which the processes of reversal, and particularly recrystallization, are braked. X

4. At a certain stage of its development defects in the crystal structure cannot be eliminated by annealing. This is the main difference between the effect of repeated plastic deformations and that of a single plastic deformation.

There are 4 figures.

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89627

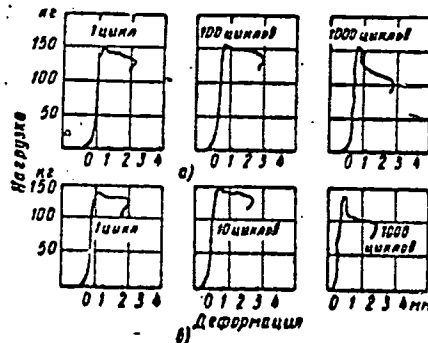
S/129/61/000/004/009/012
E073/E535

Change of the Strength and

Fig.1 Legend:

Stretching of the specimens of the alloy D16 as a result of cyclic bending, load, kg vs. deformation, mm.
Graphs a - test temperature 20°C
(from left to right 1,100,1000 cycles)
Graphs b - test temperature 300°C
(from left to right 1,10,1000 cycles)

X



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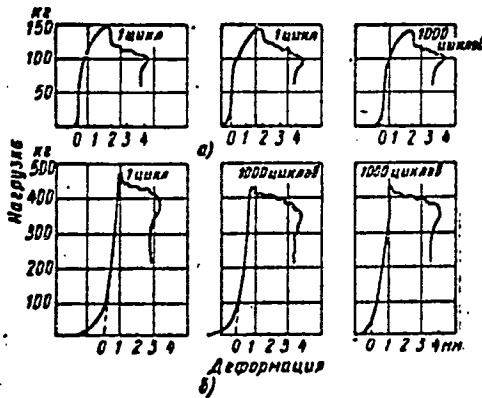
Change of the Strength and

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S/129/61/000/004/009/012
E073/E535

Fig. 2. Legend:

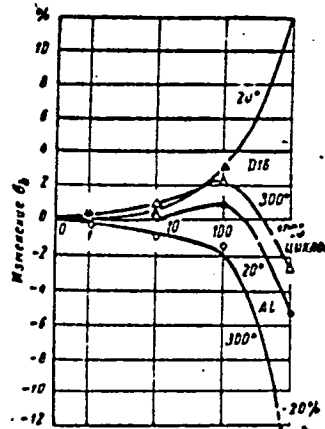
Stretching of the specimens subjected to plastic bending tests at 20°C, load, kg vs. deformation, mm.
Graphs a - copper (from left to right 1, 1, 1000 cycles)
" b - cold-worked bronze (from left to right 1, 1000, 1000 cycles)



Card 5/6

Fig. 3. Legend:

Relative change in the strength of Al and duralumin as a function of the number of bending cycles and test temperature. Change in σ_b , % vs. cycles.



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E073/E535

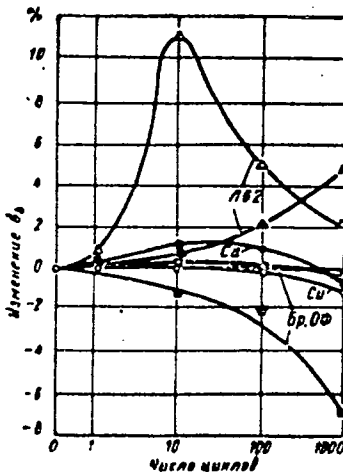
Change of the Strength and

Fig. 4.

Legend:

Relative change in the strength of copper, brass and bronze as a function of the number of bending cycles and the temperature, change in strength σ_b , % vs. number of cycles.

(black dots - tests on cyclic bending at 20°C;
white dots - tests at 600°C).



Card 6/6

PAKSHOV, V.A., (Min. nauk)

Popularized space statistics; materials from foreign publications.
Nauka i zhizn' no. 1:65-67 P. 1961. (1961:)
(space stations)

I 11048-56 EWP(e)/EWT(m)/EWP(b) WH UR/0236/65/000/002/0097/0109
 ACC NRI: AP6000671 44 44 44 37
 AUTHOR: Alevnikov, F.K.; Paulavichyus, R.B.; Parfenov, V.A.;
 Slizhis, V.A. 44 23
 ORG: Institute of Chemistry and Chemical Technology AN LitSSR (Institut
 khimii i khimicheskoy tekhnologii AN LitSSR)
 TITLE: Effect of heat treatment on some physical and mechanical proper-
 ties and on the structure of silicate glasses. Mechanical properties
 SOURCE: AN LitSSR. Trudy. Seriya B. Fiziko-matematicheskije, khimiches-
 kiye, geologicheskije i tekhnicheskije nauki, no.2, 1965, 97-109
 TOPIC TAGS: silicate glass, glass property, magnesium oxide, calcium
 oxide, zinc oxide, inorganic oxide
 ABSTRACT: A study was made of the effects of high temperature heat
 treatment of window glass and of glasses with a molar ratio of Na₂O-RO-
 5SiO₂, where RO represents beryllium oxide, magnesium oxide, calcium
 oxide, strontium oxide, cadmium oxide, or barium oxide. These effects
 were measure in terms of microhardness, micro-breaking strength, bending
 strength, and elastic state. The samples were subjected to heat treat-
 ment at 550, 650, 800, and 1200°C and were held at these temperatures for
 periods of 3, 6, 12, 50, 100, and 500 hours. Experimental results are
 Cord 1/2

L 11048-66

ACC NR: AP6000671

presented in tabular form. It was found that, while the microhardness within limits of the experimental error is practically independent of heat treatment, the micro-breaking strength and the bending strength for glasses without a tendency toward crystallization increase insignificantly as a function of the heat treatment, while for glasses with a tendency toward crystallization they decrease. It was shown that microbrittleness, as a function of the heat treatment, increases to a greater degree the greater the tendency of the glass toward crystallization. The Poisson coefficient of the glasses, within the limits of experimental error, does not vary as a function of the heat treatment, while the Young modulus and the shear modulus increase insignificantly. In general it is concluded that it is impossible to increase the strength of glasses by prolonged heat treatment. Orig. Art. has: 6 tables.

SUB CODE: 11,07 SUBM DATE: 06Aug64/ ORIG REF: 008/ OTH REF: 004

80
Card 2/2

1 1045-66 EWP(e)/EWT(m)/EWP(j)/EWP(b) RM/WH
 ACC NR: JP6000674 UR/0236/65/000/002/0167/0180
 44 55 44 55 44 55 44 55
 AUTHOR: Alaynikov, F.K.; Parfenov, V.A.
 ORG: Institute of Chemistry and Chemical Technology AN LitSSSR
 (Institut khimii i khimicheskoy tekhnologii AN LitSSSR)
 TITLE: Effect of catalysts in the process of crystallization of various
silicate glasses. 1. Effect of a platinum catalyst in the system
Li₂O-MgO-SiO₂
 SOURCE: AN LitSSR. Trudy. Seriya B. Fiziko-matematicheskiye, khimichesk-
 iye, geologicheskkiye i tekhnicheskkiye nauki, no.2, 1965, 167-180
 TOPIC TAGS: silicate glass, catalysis, catalyzed crystallization
 ABSTRACT: Glasses of the composition 12Li₂O-20MgO-80SiO₂-0.01Pt (parts
 by weight) and 12Li₂O-20MgO-80SiO₂ were used to investigate the role of
 platinum in the crystallization process. Ultrathin sections were sub-
 jected to heat treatment in a conventional furnace rather than in the
 column of an electron microscope. In addition to direct electron micro-
 scopic examination of the crystallization process, the glasses were also
 subjected to thermographic and x-ray tests. It was established that the
 presence of platinum in glass aids liquefaction of the particles, from
 which the corresponding crystals crystallize out during heat treatment.
 Card 1/2

L 11045-66

ACC NR: AP6000674

It was also established that when the initial phase crystallizes out, the crystallization process does not stop, but there is a further aggregation of the individual crystals and of the residual mass of the vitreous crystalline material. Orig. art. has: 7 figures. 0

SUB CODE: 11,07 SUBM DATE: 12Dec64/ ORIG REF: 005/ OTH REF: 002

PC
Card 2/2

J. 2285-64 ENT(m)/EPP(n)-2/T/ENP(t)/ENP(z)/ENP(b)/EHA(h) IJP(c) JD/HM/IM
ACCESSION NR: AP5016928 55 UR/0089/65/018/006/0593/0601
45P 621.039.538/539.125.52

AUTHORS: Bondarenko, I. I. (Deceased); Liforov, V. G.; Morozov, V. N.; Nikolayev, M. N.; Parfenov, V. A.; Semenov, V. A.

TITLE: Measurement of the neutron spectrum in nickel, iron, and stainless steel

SOURCE: Atomnaya energiya, v. 18, no. 6, 1965, 593-601

TOPIC TAGS: neutron spectrum, neutron energy distribution, nickel, iron, stainless steel, nuclear reactor shield, neutron cross section

ABSTRACT: The neutron spectra were measured by the time of flight method using a pulsed fast reactor (IBR) with a resolution of ~0.04 μsec/m, and with high neutron intensity (~10⁷ sec⁻¹). The energy region covered was that below 1 MeV. The experimental setup is shown in Fig. 1 of the Enclosure. The spectra of the neutrons passing through various thicknesses of material disclosed the presence of a

Card 1/3

L 2285-66

ACCESSION NR: AP5016928

10

fine structure due to the resonant character of the cross section of the investigated media. A preliminary analysis of these spectra was made by comparison with multigroup calculation and calculations based on simple models, with account taken of the resonant self-screening of the cross section, shows certain discrepancies between theory and experiment, the reasons of which are briefly discussed. The authors thank O. D. Kazachkovskiy, L. N. Usachev, and V. V. Orlov for valuable discussions, F. L. Shapiro and Yu. S. Yazvitskiy for advice and the opportunity of using the neutron detector and the multichannel time analyzer of the Laboratory of Neutron Physics of the Joint Institute of Nuclear Research, and the IBR reactor crew headed by S. K. Niko-
 layev for help, and V. Z. Nozik, Z. A. Aleksandrova and L. M. Sereda for participating in the experimental data reduction. Orig. art. has: 6 figures and 4 formulas

ASSOCIATION: None

SUBMITTED: 13Jul64 h

ENGL: 01

SUB CODE: NP

NR REF SOV: 017

OTHER: 005

Card 2/3

L 2285-66

ACCESSION NR: AP5016928

ENCLOSURE: 01

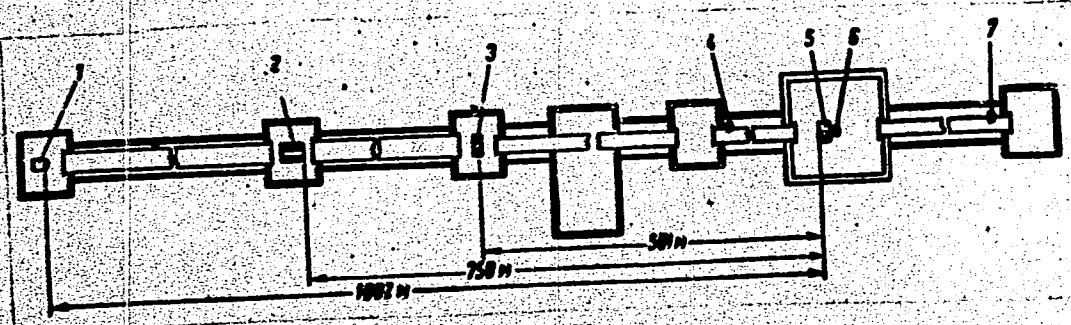


Figure 1. Setup of the experiment:

1 - scintillation detector; 2 - collimator; 3 - detector consisting of Born counters; 4 - monitor on a 50m base; 5 - prism made of the research material; 6 - active zone of the pulsed fast reactor (IFR); 7 - monitor on a 100m base.

Card 3/3

DP

L 23702-66 EWT(m)/EPF(n)-2/EWP(t)/EWA(h) IJP(c) JD/WW/JG
 ACC NR: A26006753 SOURCE CODE: UR/3158/65/000/010/0001/0008 59
 AUTHOR: Liforov, V. G.; Nikolayev, M. N.; Nozik, V. Z.; Parfenov, V. A.; Semenov, V. A.; Turchin, V. F. 81
 ORG: Physics and Power Institute, State Committee on the Use of Atomic Energy, SSSR (Fiziko-energeticheskiy institut, Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii SSSR) 27
 TITLE: Investigation of inelastic scattering of slow neutrons from zirconium hydride
 SOURCE: Obninsk. Fiziko-energeticheskiy institut. Doklady, no. 10, 1965. Issledovaniye neytrugogo rasseyaniya medlennykh neytronov na gidride tsirkoniya, 1-8
 TOPIC TAGS: neutron spectrum, neutron scattering, zirconium ^{compound} hydride, neutron spectrometry, slow neutron, scattering cross section, differential cross section
 ABSTRACT: The article describes measurement of the spectra of neutrons scattered by $ZrH_{1.46}$ at an angle of 80° to the incident beam, at temperatures 490C and 20C. The measurements were made with a slow-neutron double spectrometer described by I. I. Bondarenko et al. (Inelastic Scattering of Neutrons in Solids and Liquids, Proceedings of a Symposium, Chalk River, 1962). A mechanical interrupter phase with the IBR reactor was used to produce neutron pulses of 75 μ sec. The spectrometer resolution was 22.5 μ sec/m in the elastic-scattering region. The intensity of the monochromatic neutrons at the same measurements was 5×10^4 neut/sec at energy 25 Mev. The measurements were made for neutrons with initial energy 0.02 Mev, the total re-

Card 1/2

L 23702-66

ACC NR: A76006753

2

solution of the spectrometer in the elastic-scattering region being 45 μ sec/m. The plotted differential scattering cross sections were compared with theoretical calculations and found to agree well with the theoretical spectrum. To calculate the doubly-differential scattering cross section of zirconium hydride in the first approximation, the initial data on the spectra of the normal oscillations of the ZrH crystal were taken from the published data based on certain model assumptions. The preliminary results indicate that even rough measurements yield valuable information on the dynamics of the atoms of this substance. More accurate measurements are now under way. The authors thank A. L. Leypunskiy and F. L. Shapiro for interest in the work. Orig. art. has: 5 figures and 3 formulas.

SUB CODE: 20/1 ORIG REF: 003/ OTH REF: 001

SUB DATE: none

Card 2/2 f/

ALEYNIKOV, F.K.; PAULAVICHYUS, R.B. [Paulavicius, R.]; PAREPENCY, V.A.;
SLIZHIS, V.A. [Slizys, V.]

Effect of heat treatment on some physicochemical properties and
structure of silicate glasses. Part 1: Mechanical properties.
Trudy AN Lit.SSR. Ser. B. no.2:97-109 '65. (MIRA 19:2)

1. Institut khimii i khimicheskoy tekhnologii AN Litovskoy SSR.
Submitted August 6, 1964.

ALEYHIROV, F.K.; PARFENOV, V.A.

Study of the effect of catalysts in the crystallization of various silicate glasses. Part 1: Action of a platinum catalyst in the system $\text{Li}_2\text{O} - \text{MgO} - \text{SiO}_2$. Trudy AN Lit.SSR. Ser. B. no.2:167-180 '65. (MIRA 19:2)

1. Institut khimii i khimicheskoy tekhnologii AN Litovskoy SSR.
Submitted December 12, 1964.

PARFENOV, V.A.; ALEYNIKOV, F.K.; SLIZHIS, V.A. [Slizys, V.]

Use of the thermographic method for the determination of vitrification temperature. Trudy AN Lit. SSR. Ser.B no.1:33-38 '65. (MIRA 18:7)

1. Institut khimii i khimicheskoy tekhnologii AN Litovskoy SSR.

BONDARENKO, I.I. [deceased]; LIFOROV, V.G.; MOROZOV, V.N.; NIKOLAYEV, M.N.;
PARFENOV, V.A.; SEMENOV, V.A.

Measurement of neutron spectra in nickel, iron, and stainless steel.
Atom. energ. 18 no.6:593-601 Je '65. (MIRA 18:7)

PARFENOV, V.A.; SLIZHIS, V.A. [Slizys, V.]

Effect of the conditions of synthesis of dicalcium silicate on its physicochemical properties and processes of hardening. Trudy AN Lit. SSR Ser. B no.3:143-166 '62.

(MIRA 18:3)

1. Institut khimii i khimicheskoy tekhnologii AN Litovskoy SSR.

PARFENOV, V.A.; SLIZHIS, V.A. [Slizys, V.]

Utilization of concretes, unusable in construction, as a binding agent in the manufacture of autoclave products. Trudy AN Lit. SSR. Ser. B no.4:197-202 '62. (MIRA 18:3)

1. Institut khimii i khimicheskoy tekhnologii AN Litovskoy SSR.

L 50543-65 EWP(e)/EWT(m)/EPF(c)/EWP(i)/EPR/EWP(j)/T/EWP(b) Pc-4/Pq-4/
 Pr-4/Ps-4 NW/EM/WH
 ACCESSION NR: AP5009168 UR/0236/65/000/001/0007/0016

40
39
B

AUTHOR: Aleknikovas, F. (Aleynikov, F. K.), Paulavicius, R. (Paulavichyus, R. B.),
 Parfionovas, V. (Parfenov, V. A.)

TITLE: Use of ultrathin sections in a direct electron-microscopic investigation
 of the fine structure of glass.

SOURCE: AN LitSSR. Trudy. Seriya B. Fiziko-matematicheskiye, khimicheskiye,
 geologicheskiye i tekhnicheskiye nauki, no. 1, 1965, 7-18

TOPIC TAGS: electron microscopy, glass microstructure, quartz glass, multiple
 component glass, fiberglass, glass heat treatment

ABSTRACT: An electron-microscopic study of ultrathin sections of glass, carried
 out by the authors for the first time, made it possible to study the fine struc-
 ture of the following glasses: (1) one-component optical quartz glass; (2) two-
 component glasses $\text{Na}_2\text{O} \cdot 5\text{SiO}_2$, $2\text{Na}_2\text{O} \cdot 5\text{SiO}_2$, and $3\text{Na}_2\text{O} \cdot 5\text{SiO}_2$; (3) three-component
 glasses $\text{Na}_2\text{O} \cdot \text{BeO} \cdot 5\text{SiO}_2$, $\text{Na}_2\text{O} \cdot \text{SrO} \cdot 5\text{SiO}_2$, $\text{Na}_2\text{O} \cdot \text{BaO} \cdot 5\text{SiO}_2$, $0.5\text{Al}_2\text{O}_3 \cdot \text{SiO}_2 \cdot \text{P}_2\text{O}_5$, and
 $\text{Na}_2\text{O} \cdot 9\text{B}_2\text{O}_3 \cdot 15\text{SiO}_2$; and various multicomponent glasses. Fiberglass was also
 studied. The results confirmed the hypothesis that the structure of glass is mic-
 roinhomogeneous. The experimental data showed that, in accordance with this

Card 1/2

L 50543-65

ACCESSION NR: AP5009168

hypothesis, the glasses contain regions of a low degree of ordering measuring 40 to 150 A which differ in composition from the glass skeleton. Sodium borosilicate glasses of the composition $\text{Na}_2\text{O} \cdot 9\text{B}_2\text{O}_3 \cdot 15\text{SiO}_2$ consist of two immiscible glass phases (one rich in silica, the other rich in sodium oxide and boron oxide). In the course of heat treatment, the silica-rich phase forms a spongy skeleton in which pores of various sizes are filled with the other phase. It was shown for the first time by electron microscopy that the structure of fiberglass is not oriented, but analogous to that of massive glass. Orig. art. has: 4 figures.

ASSOCIATION: Institut khimii i khimicheskoy tekhnologii Akademii nauk Litovskoy SSR (Institute of Chemistry and Chemical Engineering, Academy of Sciences, Lithuanian SSR)

DATE RECEIVED: 23 May 64

ENCL: 00

SUB CODE: MT, EC

NO REF SOV: 007

OTHER: 003

ml
Card 2/2

PARFENOV, V.D.; KONDRATOV, V.A.

Characteristics of the formation of shifting dislocations in
the Karamazar Mountains. Geotektonika no.1:68-79 Ja-F '66.
(MIRA 19:1)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova,
geologicheskii fakul'tet.

L 38544-6/ EWT(m)/EPP(c)/EAG(s)-2/EWP(v)/EPR/EWP(j)/T Pc-l/Pr-l/Ps-l/Pw-l
ACCESSION NR: AP5009787 WW/RM UR/0097/65/000/004/0041/0042

AUTHOR: Parfenov, V. D. (Engineer) 56
B

TITLE: Epoxy adhesives for reinforced concrete structures

SOURCE: Beton i zhelezobeton, no. 4, 1965, 41-42

TOPIC TAGS: epoxy compound, adhesive, bonding, reinforced concrete

ABSTRACT: Extensive studies of epoxy compounds conducted in Czechoslovakia by V. Gorgol and his associates have resulted in the development of an optimum adhesive epoxy compound for bonding and repairing reinforced concrete structures. The compound is composed of: E-1200 epoxy resin, 50 parts by weight; E-2200 epoxy resin, 50 parts; P-curing agent, 8 parts; fine sand, 150 parts. The compound has the following properties: bulk density, 1.45 kg/l; bending strength, 225 kg/cm²; compressive strength, 450 kg/cm². The strength of the bond between the adhesive and reinforced concrete exceeds the strength

compound is used in the form of liquid, dissolved, or thixotropic
mixture. Orig. art. has: 1 table.

[B0]

Card 1/1

PARFENOV, V.I. [Parfionau, V.I.]

Intraspecific variability of the Norway spruce at the southern
range of its massive distribution (in Polesye). Vestsi AN BSSR.
Ser. bial. nav. no.4:16-22 '64. (MIRA 18:12)

PARENNOV, V.I.

Forest-forming role of spruce and the characteristics of spruce phyto-
cenoses in Polesye. Bot.; issl. Bel. otd. VBO no.6:119-131 '64.

(MIRA 18:7)

PARFENOV, V.I.

New biological forms of the Norway spruce in White Russia.
Dokl. AN BSSR 8 no. 3:188-191 Mr '64. (MIRA 17:5)

1. Institut eksperimental'noy botaniki i mikrobiologii
AN BSSR. Predstavleno akademikom AN BSSF I.D. Yurkevichem.

YURKEVICH, Ivan Danilovich; GEBUTSKAN, Viktor Stepanovich;
PARTENOV, Viktor Ivanovich; NESTEROVICH, I.D., akademik,
red.

[Speckled alder forests and their economic use] Serool'ko-
vye lesa i ikh khoziaistvennoe ispol'zovanie. Minsk, Izd-
vo AN BSSR, 1963. 142 p. (MIRA 17:10)

1. Akademiya nauk Bel. SSR (for Nesterovich).

L 8156-66 EWT(1)

ACC NR AP5025726

SOURCE CODE: UR/0286/65/000/018/0080/0030

AUTHORS: ^{44, 55} Parfenov, V. I.; ^{44, 55} Karabegov, M. A.; ^{44, 55} Alkhasishvili, R. I.; ^{44, 55} Ayollo, E. S.

ORG: none

TITLE: ^{21, 44, 55} Automatic photometer. Class 42, No. 174808

42
B

SOURCE: ¹⁰ Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 80

TOPIC TERMS: photometer, photography, optical instrument

ABSTRACT: This Author Certificate presents an automatic photometer containing measuring and calibrating optical channels with an optical compensator in the measuring channel (see Fig. 1).

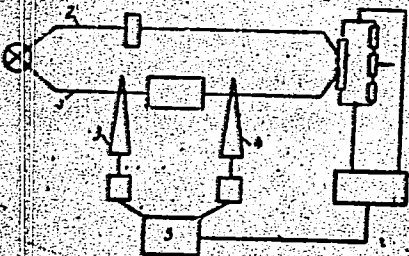


Fig. 1. 1- measuring optical channel;
2- calibration channel;
3- optical compensator;
4- vernier compensator;
5- compensating needle

Card 1/2

UDC: 535.241.6

L 8158-66

ACC NR: AP5025726

0

To improve measuring accuracy in cases of compensating errors and light losses due to dirt on the measuring window, a vernier compensator is placed in the measuring channel and is connected to the automatic compensating system. Orig. art. has: 1 figure.

SUB CODE: OP/ SUBM DATE: 05Oct62

JW

Card 2/2

PARFENOV, V.I. [Parfionau, V.I.]

Typological and geobotanical characteristics of spruce forests
at the southern range of spruce (in Polesye). Vestsi AN BSSR.
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PARFENOV, V.P., kand.tekhn.nauk

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main line. Sbor. trud.LIIZHT no.221:120-150 '64.

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S/128/60/000/010/008/016/XX
A033/A133

AUTHORS: Gel'perin, N. V.; Zvolinskaya, V. V.; Parfenov, V. S., and Sherman, A. D.

TITLE: Technological process of casting crankshafts for the ДВ-30 (DV-30) engine at the Vladimirovskiy traktorny zavod (Vladimirov Tractor Plant)

PERIODICAL: Liteynoye proizvodstvo, no. 10, 1960, 16 - 17

TEXT: Based on the experience of the Khar'kov "Serp i molot" Plant, the Vladimirov Tractor Plant started the casting of crankshafts for the DV-30 engine. The authors enumerate the deficiencies occurring during the casting of the crankshaft for the СМА-7 (SMD-7) engine at the "Serp i molot" Plant and point out that the elimination of black spots by increasing the machining tolerances is not expedient; therefore, it is necessary to prevent the origination of black spots which can be attained by the desulfurization of the cast iron, bringing the S-content down to 0.008 - 0.005%. This is possible if the cast iron is smelted in a basic electric furnace. Attempts were made to eliminate the technical difficulties connected with the

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Technological process of casting crankshafts... A033/A133

shell molds. Besides, specimens were cast to determine the macro- and microstructure and the mechanical properties. Table 1 shows the results obtained. The sand-resin mixture was prepared in a mixer of NIILITMASH design, model 821, the shell mold was made on a model 830 machine of NIILITMASH design. The cast crankshaft structure contained ledeburite cementite. The crankshafts were annealed as to the following conditions: holding at 950°C for 2 - 5 hours, cooling in the furnace to 630°C, holding at 630°C for 1 hour, cooling in the furnace to 450°C, further cooling in the air. In comparison to die-forged crankshafts 22 kg metal were saved with each cast crankshaft. The economic effect amounts to 15% of the crankshaft cost price. There are 4 figures, 2 tables and 4 Soviet-bloc references.

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I Seria: Istoriia, no.6) (MIRA 17:3)

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(MIRA 14:12)

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32(0)

PHASE I BOOK EXPLOITATION

SOV/1525

Bartenev, Prokofiy Vasil'yevich, and Viktor Prokhorovich Parfenov

Vodnyy, avtodorozhnyy, vozdushnyy i promyshlennyy transport (Water, Highway, Air, and Industrial Transport) Moscow, Transzheldorizdat, 1958. 303 p. 4,000 copies printed.

Ed.: A.P. Tsarenko; Tech. Ed.: P.A. Khitrov.

PURPOSE: This book is approved by the Ministry of Higher Education of the USSR as a textbook for students of transportation vuzes specializing in construction and operation. It is also intended for use by engineering personnel engaged in the planning, design, and use of the various types of transportation.

COVERAGE: This book contains basic information on the design, construction, installation and exploitation of all means of transport. It provides data on technical and economic problems connected with the applicability of each type of transportation. Docent V.P. Parfenov, Candidate of Technical Sciences wrote Chapters: IV, V, VII, VIII, XIV, XV, XVIII, XXVI, and parts of Chapters: I, II, X, XVI, XX, XXII, XXVII; Docent S.N. Podkaliner, Candidate of Technical Sciences,

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wrote Chapter XI; Docent P.S. Labazin wrote Chapters XII and XIII; Professor P.V. Bartenev Doctor of Technical Sciences wrote Chapters: VI, IX, XVI, XIX, XXI, XXII, XXIV, XXV, and parts of Chapters XI and XII. The book is divided into four parts. Part One was edited by Professor V.Ye. Lyakhnitskiy, Doctor of Technical Sciences; Part Two by Engineers: A.F. Solov'yev and N.A. Tyumenev; Part Three by Chief Marshal of Aviation A.A. Novikov; Part Four by the Chief Engineer of the Leningrad Department of the Institute of Industrial-Transportation Planning, A.V. Teplitskiy. Professor P.V. Bartenev was the general editor. There are 31 Soviet references.

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