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NO REF SOV: DCI

OTHER: 000

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5"

ACCESSION NUMBER

Card 2/2

TOPIC TAGS: fatigue failure, electron microscope examination, armed iron, silicon containing iron, stress cracking

ABSTRACT: Armed iron and siliceous iron were subjected to cyclic loading,

"APPROVED FOR RELEASE: 08/10/2001

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CIA-RDP86-00513R000619230005-5"

11. effect of technological and metallurgical factors on the properties of strengthened steels and some limitations connected with the use of BT -- 69  
The report analyzes and the nature of steel strengthening in BT -- 80

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5"

TAVADZE, Ferdinand Nestorovich; KILITAUURI, Tengiz Il'ich; IVANOVA,  
V.S., otv. red.; PEVZNER, G.Ye., red.

[Normal and dislocation growth of crystals of certain non-  
ferrous metals] Normal'nyi i dislokatsionnyi rost kristal-  
lov nekotorykh tsvetrykh metallov. Moskva, Nauka, 1965.  
158 p. (MIRA 18:8)

IVANOVA, V.S.; GORODIYENKO, L.K.; GEMINOV, V.H.; ZUBARIN, P.V.;  
FRIDMAN, Z.G.; LIBEROV, Yu.P.; TERELT'YEV, V.F.; VOROB'YEV,  
N.A.; KUDRYASHOV, V.G.; BERLIN, Ye.N., red.

[Role of dislocations in the hardening and the failure of  
metals] Rol' dislokatsii v uprochnenii i razrushenii metal-  
lov. Moskva, Nauka, 1965. 179 p. (MIRA 18:10)

1. Moscow. Institut metallurgii. 2. Laboratoriya prochnosti  
Instituta metallurgii im. A.A.Baykova, Moskva (for all except  
Berlin).

IVANOVA, V.S.; ANTIKAYN, F.A.; SABLIOVA, N.S.

Gaging impairments accumulated during the cyclic overloading of steel. Metalloved. i term.obr.met. no.1:7-9 Ja '66.

UM. RA 1841,

1. Institut metallurgii im. Baykova.



1966, Vol. 1, No. 11, 1966.

Thermodynamic constants and enthalpies of pure solids.  
Dokl. Akad. Nauk SSSR, Georg. nat. ser. 10:1684-1692 (1966).

Thermodynamic calculation of specific disintegration  
energy. Ibid. 11:1699-1700 (1966) (MIR: 18:12)

Institute of Metallurgy, Acad. Sci. USSR, Moscow.  
Submitted July 5, 1966.

ACC NR: AP5028577 EWP(z)/EWP(b)/ EWP(l) MJW/JD SOURCE CODE: UR/0148/65/000/011/0132/0135

61  
60  
B

AUTHOR: Ivanova, V. S., Vorob'yev, N. A.

ORG: IMET

TITLE: Patterns of stress-rupture strength of austenitic steel in the presence of stresses above the yield point

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1965, 132-135

TOPIC TAGS: rupture strength, metal stress, electric conductivity, austenitic steel, yield stress, creep, metal property, material deformation / 1Kh18N9T austenitic steel

ABSTRACT: The results of an investigation of the patterns of rupture of 1Kh18N9T austenitic steel under conditions of temporary creep at 700°C are presented. Specimens 5 mm in diameter and 25 mm in length were tested for stress-rupture strength. Given a specific stress ( $\sigma \approx 20 \text{ kg/mm}^2$ ) the curve of the relation  $\sigma - \log t$  displays a sharp inflection point (Fig. 1). This may be attributed to the cumulative damage of the metal under conditions of prolonged exposure to stress: it may be assumed that the intensity of this cumulative damage becomes abruptly magnified at some point (the inflection point of the curve in Fig. 1). To verify this assumption the effect of prior high-temperature deformation on certain physical and mechanical properties of the steel (electric conductivity, energy of limiting deformation, etc.) was experimen-

Card 1/4

UDC: 669.15--194;669.26'24';539.434

L 13070-66

ACC NR: AP5028577

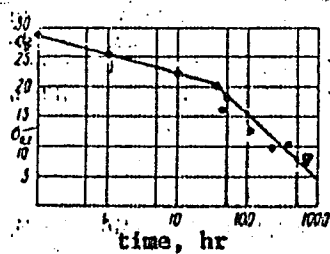


Fig. 1. Curve of the stress-rupture of 1Kh18N9T steel at 700°C

Card 2/4

L 13070-66

ACC NR: AP5028577

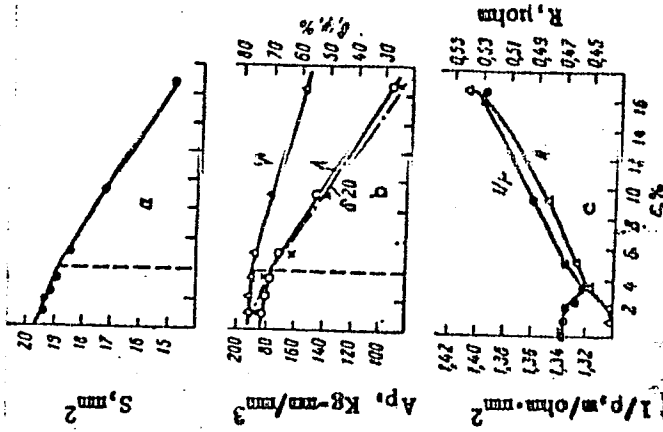


Fig. 2. Minimal cross-sectional area of specimen (a), energy  $A_p$  of limiting deformation, relative elongation at 20°C -- 520 and 19% (b), and also electric conductivity of steel at 20°C (c) as a function of prior deformation at 700°C

110

Card 3/4

L 13070- 66

ACC NR: AP5028577

tally investigated. Specimens of 1Kh18N9T steel were stretched in an IM-4R tensile testing machine to degrees of deformation equal to 1, 1.9, 2.3, 3.4, 4.9, 9.2, 16.6 and 18.3%, on first being kept at 700°C for 50 min. It was found that in the presence of a deformation of 4% at 700°C 1Kh18N9T steel undergoes a definite change in various physical and mechanical properties (Fig. 2). This degree of deformation corresponds to a stress of 20 kg/mm<sup>2</sup>, which is close to the stress at which the inflection point appears on the curve of stress-rupture strength. These findings warrant the conclusion that the sharp change in the shape of the curve of the stress-rupture strength of 1Kh18N9T steel at 700°C when tested under conditions of temporary creep in the presence of stresses above its yield point is associated with the differences in its cumulative damage in the process of loading and corresponds to the stress at which the localization of strain commences in a definite volume of the metal. Orig. art. has: 3 figures.

SUB CODE: 11/ SUBM DATE: 23Jun65/ ORIG REF: 002/ OTH REF: 002

Card

4/4 DR

12153-66 (N) EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) EFW/NE/HW  
 ACC NR: AP5028747 UR/0096/65/000/012/0043/0046

AUTHOR: Ivanova, V.S. (Doctor of Tech.Sci.); Vorob'yev, N.A. (Engineer)  
 ORG: Metallurgical Institute im. A.A. Baykov (Institut metallurgii)

TITLE: Investigation of damage to type 1Kh18N9T steel and type EI-437A alloy

SOURCE: Teploenergetika, no. 12, 1965, 43-46

TOPIC TAGS: alloy steel, nickel base alloy, elastic deformation, high temperature fatigue, yield stress/1Kh18N9T alloy steel, EI-437A nickel base alloy

ABSTRACT: The article presents the results of an investigation of deformation at high temperatures. Composition of the samples tested was as follows (%): 1Kh18N9T steel: 0.094 carbon, 0.46 silicon, 1.51 manganese, 7.6 nickel, 18.2 chromium, 0.56 titanium, and remainder iron; EI-437 alloy: 0.04 carbon, 0.29 silicon, 0.30 manganese, 0.007 sulfur, nickel base, 20.30 chromium, 2.63 titanium, 0.88 aluminum, 0.35 iron, 0.010 cerium, and 0.0005 lead. As a criterion of high temperature deformation damage, the authors adopted the relative change in the specific energy of the limiting deformation

Card 1/2 UDC: 620.17 2

L 12153-66

ACC NR: 1P5028747

$$\Pi = [(A_p)_0 - (A_p)_e] / (A_p)_0 \cdot 100\%$$

where  $(A_p)_0$  is the specific energy of linear deformation of the starting metal and  $(A_p)_e$  is the specific energy of limiting deformation after deformation of the metal by a given amount. Static deformation was effected by stretching the samples (5 mm in diameter and 25 mm long) at temperatures of 700 and 800°C. Before loading, all samples were held at the above temperatures for one hour. The specific energy of the limiting deformation was then determined at room temperature. The damage under elongation was evaluated by the change in  $A_p$  as a function of the preliminary deformation at high temperatures. The experimental results are exhibited in a series of figures. A further figure shows curves of long term strength and the beginning of intensive damage for the materials investigated. Orig. art. has: 6 figures and 1 table.

SUB CODE: 11/    SUBM DATE: 00/    ORIG REF: 007/    OTH REF: 002

FW  
Card 2/2

IVANOVA, V.S. (Moskva); RAGOZIN, Yu.I. (Moskva)

Connection between deformation and number of cycles before failure under the effect of cyclic loading on metals. Izv. AN SSSR, Met. no.6:106-110 N-D '65. (MIRA 19:1)

1. Submitted June 17, 1964.



L 07824-67 EWT(l)/EWT(m)/EWP(w)/EWP(j)/EWP(t)/ETI IJP(c) JD/RM

ACC NR: AP6034197

(N)

SOURCE CODE: UR/0369/66/002/005/0556/0558

45  
B

AUTHOR: Ivanova, V. S.; Veytsman, M. G.

ORG: Institute of Metallurgy im. A. A. Baykov AN SSSR, Moscow (Institut metallurgii AN SSSR)

TITLE: Effect of synthetic coatings on the fatigue behavior of AVT1 alloy in air

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 5, 1966, 556-558

TOPIC TAGS: aluminum alloy, synthetic rubber, ~~rubber-coated aluminum alloy~~, <sup>metal coating</sup> ~~coated alloy~~ fatigue strength/AVT1 aluminum alloy, nairit synthetic rubber

ABSTRACT: Several series of specimens (1 x 10 mm cross section) of AVT1 aluminum alloy (0.37% copper, 0.65% magnesium, 1.08% silicon, 0.26% manganese, and 0.22% iron), solution-annealed and aged (tensile strength 40.5 dan/mm<sup>2</sup>, yield strength 31.8 dan/mm<sup>2</sup> elongation 16.3%), were subjected to fatigue tests at a frequency of 50 cycles per minute in air/or in a vacuum of 10<sup>-4</sup> mm Hg. Some series tested in air were coated with epoxy <sup>14</sup> lacquer; <sup>15</sup> or synthetic rubber, or anodized in sulfuric acid or chromic acid. It was found that the fatigue strength of all the specimens tested was 11.0—11.5 dan/mm<sup>2</sup> regardless of the environment (air or vacuum) or surface condition (see Fig. 1). However, specimens coated with synthetic rubber exhibited a considerably longer fatigue life than the uncoated specimens. At stresses approaching the fatigue limit, the life of the rubber-coated specimens was 10 times longer than

Card 1/3

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L 07824-67

ACC NR: AP6034197

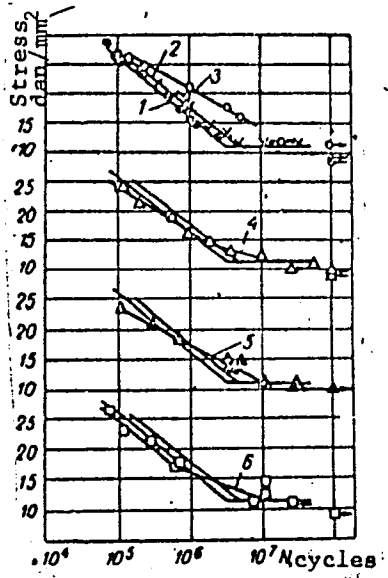


Fig. 1. Fatigue curves of AVT1 alloy uncoated, in air (1) or in vacuum (2), synthetic-rubber coated (3), anodized (4, 5), epoxy lacquer coated (6)

Card 2/3

L 07824-67

ACC NR: AP6034197

that of uncoated specimens. Synthetic rubber is applied and cured at room temperature, which does not create any additional stresses; it is highly elastic, does not crack even at high stress amplitudes, and thus prevents oxidation of the metal surface. In addition, it may have a strengthening effect by preventing the migration of dislocations to the surface. Orig. art. has: 1 figure.

SUB CODE: 11/ SUBM DATE: 28Feb66/ ORIG REF: 003/ OTH REF: 004/  
ATD PRESS: 5101

Card 3/3 bc

ACC NR: AT6034436

(A)

SOURCE CODE: UR/0000/66/000/000/0035/0039

AUTHOR: Ivanova, V. S.; Ragozin, Yu. I.

ORG: none

TITLE: The laws governing the softening of metals as a function of temperature

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 35-39

TOPIC TAGS: metal softening, heat of fusion, heat capacity

ABSTRACT: In the case under consideration, the Kirchoff equation has the form:

$$L_{T_x} = L_{T_s} - \int_x^{T_s} \Delta c_p dT, \quad (2)$$

where  $L_{T_s}$  is the latent heat of fusion;  $\Delta c_p$  is the algebraic difference between the specific heat capacities in the liquid and solid states;  $L_{T_x}$  is the latent heat of fusion at  $T_x$ . Using the above equation, the authors of the article calculate the temperature of the start of softening for aluminum, copper, nickel, tin, titanium, zirconium, magnesium, zinc, cadmium, tantalum, vanadium, and iron. These calculated

Card 1/2

ACC NR: AT6034436

values are exhibited in a table and are compared with experimental data. It is shown that, using existing data on the thermodynamic constants of a metal, it is possible to calculate the specific energy of failure, and to determine the temperature at which the metal is not capable of deformation hardening (the temperature of the start of softening of the metal). Using the examples of aluminum and copper, the article demonstrates good agreement between calculated and experimental values of the specific energy of failure. For pure metals, it is shown that the temperature of the start of softening corresponds to the point of inflection of the temperature curve of the hardness or of other strength characteristics. Orig. art. has: 7 formulas and 2 tables.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 012/ OTH REF: 022

Card 2/2

1 39959-66 EWI(m)/EWP(w)/T/EWP(t)/EWT IIP(c) ID

ACC NR: AP6019770

SOURCE CODE: UR/0370/66/000/003/0130/0133

AUTHOR: Ivanova, V. S. (Moscow); Kudryashov, V. G. (Moscow); Terent'yev, V. F. (Moscow)

43  
42  
B

ORG: none

TITLE: Use of the energy of crack propagation in determining irreversible damage to a metal under a cyclic load

SOURCE: AN SSSR. Izvestiya. Metally, no. 3, 1966, 130-133

TOPIC TAGS: cyclic load, crack propagation, low carbon steel, plastic deformation

ABSTRACT: In order to evaluate the behavior of a metal under a cyclic load, in addition to the fatigue curve, which characterizes the final failure, it is also necessary to know the curve of irreversible damage, which reflects the start of microcrack formation in the metal. An attempt was made to determine the curve of irreversible damage for steel 20 (0.24% C) by using the crack propagation energy  $G_{Ic}$ , obtained by using the method of G. R. Irwin. In studying the nature of the variation of  $G_{Ic}$  with the number of cycles of the preliminary load, it was noted that the resistance to crack propagation is affected mainly by the following three factors: (1) the degree of plastic deformation of the material in front of the crack; (2) the interaction of the moving crack with the network of dislocations; (3) the extent of damage to the material (presence of pores, cracks, etc.). The experimental results obtained show

Card 1/2

UDC: 539.43

I 37210-66 ENT(m)/ENP(j)/T WNI/JW/JWD

ACC NR: AP6014411 (A) SOURCE CODE: UR/0062/66/000/004/0743/0746

AUTHOR: Kuznetsova, Z. I.; Ivanova, V. S.; Shorygina, N. N. 4/4

ORG: Institute of Organic Chemistry im. N. D. Zelinskiy Academy of Sciences SSSR (Institut organicheskoy khimii Akademii nauk SSSR) 2

TITLE: Reaction of cellulose dialdehyde with gaseous nitrogen oxides 11

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 4, 1966, 743-746

TOPIC TAGS: cellulose, nitration, oxidation, nitrate ester

ABSTRACT: The reaction of cellulose dialdehyde with nitrogen oxides in the presence of  $P_2O_5$  was investigated. Without  $P_2O_5$ , cellulose dialdehyde is only oxidized by  $N_2O_4$ ; in the presence of  $P_2O_5$ , oxidation, oxidation-nitration, or then essentially only nitration products are obtained as the weight ratio of  $P_2O_5$ :cellulose dialdehyde is increased from 0:1 to 400:1. The trinitrate of cellulose dialdehyde was obtained and its structure proposed. Orig. art. has: 2 tables and 2 equations.

SUB CODE: 07/ SUBM DATE: 13Aug65/ ORIG REF: 006/ OTH REF: 001

Card 1/1 MLP

UDC: 547.458.81

ACC NR: AT6034437

(A)

SOURCE CODE: UR/0000/66/000/000/0040/0044

AUTHOR: Ivanova, V. S.; Vorob'yev, N. A.

ORG: none

TITLE: The laws governing damage to austenitic steel at high temperatures

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 40-44

TOPIC TAGS: austenitic steel, creep, tensile stress, metal deformation

ABSTRACT: The article reports a study of the laws governing damage to austenitic steel Type 1Kh18N9T under conditions of active loading and short term creep at a temperature of 700°C. Before the tests the samples were quenched from 1100°C in water. The samples were tested for long term strength on VP-8 machines. The experimental results are plotted on a curve which shows that the dependence of the long term strength at a fixed stress  $\sigma = 20 \text{ kg/mm}^2$  exhibits a sharp point of inflection. Samples of Type 1Kh18N9T were subjected to elongation stress in a IM-4R machine up to different degrees of deformation, equal to 1; 1.9; 3.4; 4.9; 9.2; 16.6; and 18.3%. Before the stress was applied the samples were held at the experimental temperature for 50 minutes. On the basis of the experimental data, the following criterion is proposed for the energy

Card 1/2



ACG NR: AT6034437

necessary to cause damage to 1Kh18N9T steel at a temperature of 700°C:

$$\Pi = \left[ \frac{A_0 - A_1}{A_0} \right] \cdot 100\% .$$

The article proposes a method for determining the minimum stress  $\sigma_n$  under whose action there is observed a noticeable localization of the deformation in a determined volume of the metal, even in an early stage of creep. At  $\sigma > \sigma_n$ , the first and second stages are absent on the creep curve. It is shown that the sharp break in the curve of the long term strength for 1Kh18N9T steel at 700°, under conditions of short term creep at stresses above the creep limit, is connected with the appearance of irreversible deformation, which appears even during the loading period. It is also shown that the start of the accelerated creep period is connected with the localization of the deformation in a determined volume of the metal. Orig. art. has: 4 formulas and 5 figures.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 003/ OTH REF: 002

Card 2/2

ACC NR: AP6036757

(A)

SOURCE CODE: UR/0020/66/171/001/0077/0080

AUTHOR: Ageyev, N. V. (Corresponding member AN SSSR); Ivanova, V. S.; Petrova, L. A.;  
Kudryashov, V. G.; Grankova, L. P.

ORG: Institute of Metallurgy im. A. A. Baykov, AN SSSR (Institut metallurgii Akademii Nauk SSSR)

TITLE: Effect of structure on the resistance of  $\beta$ -titanium alloy crack propagation

SOURCE: AN SSSR. Doklady, v. 171, no. 1, 1966, 77-80

TOPIC TAGS: titanium, molybdenum alloy, chromium containing alloy, iron containing alloy, aluminum containing alloy, ~~alloy~~ heat treatment, ~~alloy structure, alloy mechanical property~~/IVT-1 alloy

ABSTRACT: Specimens of IVT-1  $\beta$ -titanium alloy of optimum composition (7% Mo, 5.5% Cr, 3% Fe, and 3% Al) were solution heat treated at 800C (the  $\beta$ -region), water quenched, and aged at 450C for 50 hr, at 500C for 20 hr, at 525C for 15 hr, or at 500C for 15 hr. Microscopic examination showed that decomposition of the  $\beta$ -solid solution became more uniform as the aging temperature increased. After aging at 525C for 15 hr, the alloy structure consisted of the  $\beta$ -solid solution matrix uniformly reinforced with  $\alpha$ -phase acicular fibers 2  $\mu$  or more long with a diameter about one order lower. Similar precipitated  $\alpha$ -phase fibers within  $\beta$ -grains and along their boundaries were also observed in the alloy aged at 550C for 15 hr. In each

UDC: 669.295.5:620.17

Card 1/2

ACC NR: AP6036757

$\beta$ -grain, the precipitated  $\alpha$ -fibers appeared to be oriented predominantly along the slip planes. Aging conditions had no effect on the total volume of the precipitated fibers and affected only their form and distribution. The alloy aged at 525 or 550C had a tensile strength of 161 and 170 kg/mm<sup>2</sup>, an elongation of 8.0 and 7.4%, and a reduction of area of 21.0 and 11.5%, respectively. The corresponding figures for unaged alloy were 150.7 kg/mm<sup>2</sup>, 10.0% and 17.3%. Regardless of the aging conditions, IVT-1 alloy had a relatively low notch toughness of 2 kg·m/cm<sup>2</sup>. However, the alloy aged at 525 and 550C had high resistance to crack propagation, indicating the alloy's low susceptibility to brittle failure under static loads. Therefore, IVT-1  $\beta$ -titanium alloy reinforced with precipitated  $\alpha$ -phase fibers can be recommended for structures with stress concentrators working under static loads. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 21Jul66/ ORIG REF: 001/ OTH REF: 004/  
ATD PRESS: 5106

Card 2/2

ACC NR: AT6034439

(A)

SOURCE CODE: UR/0000/66/000/000/0087/0092

AUTHOR: Ivanova, V. S.; Kop'yev, I. M.; Ustinov, L. M.

ORG: none

TITLE: Production and properties of heat resistant fibrous materials

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniya zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 87-92

TOPIC TAGS: heat resistance, metal whisker, tensile strength

ABSTRACT: The article reviews existing literature data on the production and properties of the whisker crystals of various metals and considers the main problems involved in future progress in this field. A table is given listing the strength of fibers of different materials which have been achieved in recent years. The data shows that the strength of fibers or whiskers is considerably greater than the strength of the massive materials. For example, for iron the strength of the whiskers is more than 50 times greater than that of the massive sample. The article lists the following requirements for successful production of this type of material: 1) there must be no phase transformations between the components in the operating temperature zone; 2) the fibers must be well wetted by the matrix to assure good transfer of strength from one

Card 1/2

L 29786-66 EWT(m)/EWP(w)/T/EWP(t)/ETI JD

ACC NR: AP6015080

SOURCE CODE: UR/0020/66/168/001/0051/0054

AUTHORS: Ivanova, V. S.; Ragozin, Yu. I.; Vorob'yev, N. A.

72

ORG: Institute of Metallurgy im. A. A. Baykov (Institut metallurgii)

B

TITLE: Energy analysis of metal damage in high temperature deformation

SOURCE: AN SSSR. Doklady, v. 168, no. 1, 1966, 51-54

TOPIC TAGS: ~~metal~~ <sup>metal crystal, material</sup> ~~deformation~~ <sup>material failure, high temperature research</sup>, steel, yield strength, / 1Kh18N9T steel

ABSTRACT: The structure-energy theory of failure in steel alloys was investigated experimentally. The experimental and calculated values of  $A_p$  for high purity  $Ta_1$  <sup>2</sup>  $Al$  <sup>1</sup> and  $Cu$  <sup>1</sup> are compared first, and the comparison is found to be satisfactory.  $A_p$  is the specific energy absorbed by the metallic crystals which goes into breaking the inter-atomic bonds under a limiting static deformation of the metal. The degree of damage in the material is defined by

$$\Pi = \frac{(A_p)_0 - (A_p)_1}{(A_p)_0} \cdot 100\%$$

where subscript "1" stands for the specific breaking energy under tension at 700C.

Card 1/2

UDC: 620.178.38

ACC NR: AP6009616

SOURCE CODE: UR/0369766/002/001/0119/0126

AUTHOR: Ivanova, V. S.; Gordiyenko, L. K.; Fridman, Z. G.; Zubarev, P. V.

ORG: Institute of Metallurgy im. Baykov, Moscow (Institut metallurgii)

TITLE: Mechano-thermal treatment as an effective method for increasing the heat resistance of metals and alloys

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 1, 1966, 119-126

TOPIC TAGS: metal treatment, alloy treatment, mechano-thermal treatment

ABSTRACT: Four methods of mechano-thermal treatment of metals and alloys (MTO) have been developed. The first method consists of plastic deformation with 1-10% reduction with simultaneous or subsequent polygonization annealing at a temperature below the recrystallization temperature. In the second method, deformation is performed in several steps at elevated temperature followed by polygonization annealing at the same temperature after each step. The third method is a combination of the first or second with nitriding, which brings about a more complete blocking of the dislocation walls. In the fourth method the material is subjected to repeated deformation at room temperature with aging at 100-150C after each deformation. In all four methods the total reduction should be at least 0.2-0.4% but below 10%, since in commercial metals and alloys permanent damage can occur at reductions of 10% and more. On the basis of extensive experiments the conditions of MTO for many structural materials have been

Card 1/2

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ACC NR: AP6009616

determined. For example, 1Kh18N9T steel (AlSi-321) deformed with 0.3% reduction, annealed for 24 hr, and tested under a stress of 18 dan/mm<sup>2</sup> (all three at 500C) had a creep rate of  $2.5 \cdot 10^{-4}$ %/hr compared to  $4.8 \cdot 10^{-3}$ %/hr for fully annealed steel. EI-395 steel (Timken 16-25-6) deformed with 2.5% reduction, annealed for 50 hr, and tested under a stress of 26 dan/mm<sup>2</sup> (all three at 625C) had a creep rate of  $1.5 \cdot 10^{-4}$ %/hr compared to  $4.6 \cdot 10^{-3}$ %/hr after conventional treatment. EI-437A alloy (Nimonic 80A) deformed with 0.3% reduction, annealed for 100 hr, and tested under a stress of 40 dan/mm<sup>2</sup> (all three at 600C) had a creep rate of  $9.20 \cdot 10^{-4}$ %/hr compared to  $1.77 \cdot 10^{-3}$ %/hr after conventional treatment. AT-3 titanium alloy deformed with 0.5% reduction, annealed for 50 hr, and tested under a stress of 15 dan/mm<sup>2</sup> (all three at 500C) had a creep rate of  $1 \cdot 10^{-3}$ %/hr compared to  $6.6 \cdot 10^{-3}$ %/hr after conventional treatment. MTO does not reduce ductility, and the total elongation in creep and stress-rupture tests remains the same. Orig. art. has: 5 figures and 2 tables. [AZ]

SUB CODE: 11, 13/ SUBM DATE: 20Sep65/ ORIG REF: 017/ OTH REF: 001/ ATD PRESS: 4223

Card 2/2 BK

L 20025-00 EWP(k)/EWI(d)/EWI(m)/I/EWA(d)/ENP(w)/ENP(t) IJP(c) EN/JD/HW

ACC NR: AP6010088

SOURCE CODE: UR/0129/66/000/003/0016/0018

AUTHOR: Ivanova, V. S.; Terent'yev, V. F.ORG: Institute of Metallurgy im. A. A. Baykov (Institut metallurgii)

TITLE: Effect of repeated deformation on the cyclic strength of low-carbon steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 3, 1966, 16-18, and bottom half of insert facing p. 32

TOPIC TAGS: steel, low carbon steel, steel treatment, mechanothermal treatment, steel cyclic strength

ABSTRACT: The effect of mechanothermal treatment on the cyclic strength of St3 low-carbon (0.15% C) steel has been studied. Steel specimens were repeatedly (3-6 times) stretched up to the end of the yield-point elongation and after each stretching were aged at 100C for 20 hr. It was found that increasing the number of mechanothermal cycles improves the strength characteristics of the steel. The treatment repeated 5-6 times increased the tensile and yield strength to the same value, 42-48 kg/mm<sup>2</sup>, and lowered the elongation to 17% and the reduction of area to 36%. Annealed steel had a tensile strength of 38.3 kg/mm<sup>2</sup>, a yield strength of 21.5 kg/mm<sup>2</sup>, an elongation of 40.8%, and a reduction of area of 43.5%. The cyclic strength (in push-pull tests with 400 cycles/min) increased from 26 to 35 kg/mm<sup>2</sup> and the fatigue life increased 50-100 times. Repeated deformation creates in the

Card 1/2

UDC: 620.178.311.868:621.78



L 20625-66

ACC NR: AP6010088

ferrite a uniform dislocation structure of high density, and aging brings about the precipitation of a finely dispersed secondary-phase which blocks the dislocations. Orig. art. has: 3 figures. [ND]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001/ AID PRESS: 4225

Card 2/2

L 21745-66 EWT(d)/EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k) LSP( ) JD/NW/EM  
ACC NR: AP6008044 SOURCE CODE: UR/0020/06/166/004/0043/0846

AUTHOR: Ivanova, V. S.; Terent'yev, V. F.

ORG: Institute of Metallurgy im. A. A. Baykov (Institut metallurgii)

TITLE: On the form of the fatigue curve for low carbon steel

SOURCE: AN SSSR. Doklady, v. 166, no. 4, 1966, 843-846

TOPIC TAGS: fatigue strength, fatigue test, mechanical heat treatment, deformation rate, low carbon steel

ABSTRACT: In a previous article by one of the authors (V. S. Ivanova, Fatigue Failure of Metals, Moscow, 1963) energy criteria were proposed for fatigue-- $\sigma_c$  (reduced fracture strength) and  $N_c$  (critical number of loading cycles)--which are independent of the loading conditions and the initial structural state of the metal or alloy (due to various forms of heat treatment). Corresponding to the critical number of cycles  $N_c$  is a critical fatigue stress  $\sigma_c$  --the stress at which submicroscopic cracks appear in the first loading cycles together with the accumulation of inelas-

Card 1/3

UDC: 539.345

L 21745-66

ACC NR: AP6008044

tic distortions in the crystal lattice. Since  $\sigma_c$  is a limiting stress above which submicroscopic cracks appear during the first loading cycles, differences should be expected in the behavior of structure-sensitive properties of the metal for cyclic loads above and below  $\sigma_c$ , as well as a change in the slope of the fatigue curve beginning at the critical fatigue stress. Fatigue tests were conducted to verify this hypothesis on specimens of low carbon 20 steel (0.24% C). The specimens had the following mechanical characteristics in the annealed state (900°, 5 hours):  $\sigma_B = 50.9 \text{ kg/mm}^2$ ,  $\sigma_s = 30.6 \text{ kg/mm}^2$ ,  $\delta = 37.9\%$ ,  $\psi = 34.7\%$ . Fatigue curves are given for the metal in the annealed state and after repeated thermomechanical treatment. This treatment consisted of active loading at room temperature to a strictly limited degree of deformation equal to the value of the yield surface with intermediate aging at 180° for 20 hours between deformation cycles in the unloaded state. Repetition of this treatment for 6 cycles resulted in complete disappearance of the yield surface and the yield stress was raised to a new value equal to the ultimate tensile strength. The fatigue curves for annealed specimens show a slight increase in slope indicating greater durability at the critical fatigue stress. The behavior of specimens subjected to repeated thermomechanical treatment is just the opposite

Card 2/3

L 21745-66  
ACC NR: AP6008044

with a much more pronounced change in slope toward lower durability. Thus the theoretical hypothesis is confirmed and the values of  $\sigma_c$  and  $N_c$  may be used for an exact determination of the critical stresses at which changes in the slope of the fatigue curve should be expected. Orig. art. has: 3 figures.

SUB CODE: 20, 11/ SUBM DATE: 03Aug65/ ORIG REF: 005/ OTH REF: 000

Card 3/3 *Jul*

IVANOVA, V.S., doktor tekhn.nauk; TEREENT'YEV, V.F., inzh.

Effect of plastic deformation and following ageing on  
the cyclic strength of steel. Vest.mashinostr. 45  
no.10:59-62 0 '65. (MIRA 18:11)

L 3237-66 ENT(m)/T/EMP(t)/EMP(b)/EW(h)/EWA(c) JD

ACCESSION NR: AP5021978

UR/0286/65/000/014/0041/0041  
621.787

AUTHOR: Ivanova, V. S.; Terent'yev, V. F.; Sabitova, N. S.

TITLE: Method of increasing the service life of steels and alloys. Class 18,  
No. 172865 /6

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 41

TOPIC TAGS: steel, alloy, steel service life, alloy service life, steel training,  
alloy training, cyclic training\*

ABSTRACT: This Author Certificate introduces a method of increasing the service life of steel and alloy parts by training\*. To obtain a higher strengthening effect of training\*, the cyclic treatment by a stress higher than the yield strength is alternated with rest periods. The training\* process, which comprises a fixed number of cycles with subsequent rest periods, is repeated 5-10 times. [MS]

ASSOCIATION: none \* [Probably straining]

SUBMITTED: 18Apr63

ENCL: 00  
OTHER: 000

SUB CODE: MM  
ARD PRESS: 4/10/63

NO REF SOV: 000

Card 1/1

L 2662-66 EWT(m)/EWP(w)/EPF(c)/T/EWP(t)/EWP(b)/EWA(c) JD/WB/GS

ACCESSION NR: AT5023089

UR/0000/65/000/000/0104/0110

AUTHOR: Ivanova, V. S.; Terent'yev, V. F.

TITLE: Effect of air atmosphere on the cyclic strength of metals

SOURCE: Problemy bol'shoy metallurgii i fizicheskoy khimii novykh splavov (Problems of large-scale metallurgy and physical chemistry of new alloys); k 100-letiyu so dnya rozhdeniya akademika M. A. Pavlova, Moscow, Izd-vo Nauka, 1965, 104-110

TOPIC TAGS: air, cyclic strength, metal oxidation, fatigue strength, crack propagation

ABSTRACT: The fact that the cyclic strength of many metals in air is much lower than in a vacuum points up the role of oxidation processes in accelerating fatigue breakdown and, second, points to the possibility of exploring new ways to enhance the cyclic strength of machine parts. For example, metal surfaces can be protected against the harmful effect of air by being wetted with organic liquids of the dodecanol type or coated with an insulating film that is impervious to gases or used in an air atmosphere to which inert gases (nitrogen, argon, or

Card 1/3

L 2662-66

ACCESSION NR: AT5023089

carbon dioxide) are added in order to reduce the amount of oxygen present. The accelerated fatigue breakdown of metals in the air atmosphere is differently explained by different investigators. Schaub and Liedtke (Zts. Metallkunde, 44, 570, 1953; Proc. Coll. Fatigue, Stockholm, 1955, Berlin, 1956, p. 244) offer the theory that the commencement of fatigue breakdown requires: 1) the presence of a local slip that develops during cyclic deformation; 2) the interaction between the oxygen of the air and the atoms of the metal located in the activated slip planes. The combined effect of this reaction and the plastic deformation arising during cyclic deformation leads to the appearance of fatigue cracks. Thus, the mechanism of crack formation would be chemical in nature. This hypothesis, however, cannot be accepted, since chemical processes are rather a secondary factor in crack formation during the fatigue process. The primary factor should be regarded as the processes associated with the motion and interaction of crystal lattice defects (dislocations, vacancies) leading to disturbances in continuity. Chemical processes of the chemisorption type merely contribute, during the stage of crack propagation, to accelerating the appearance and development of fatigue cracks. On the whole, this survey of 22 literature sources shows that the mechanism of action of air on the process of fatigue breakdown is still inadequately investigated. Further basic and applied research into the effect of gaseous media on the fatigue

2/3

Card



L 2662-66

ACCESSION NR: AT5023089

strength of metals and alloys is needed. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: MI

NO REF SOV: 002

OTHER: 020

Card 3/3

ODING, I.A. [deceased]; IVANOVA, V.S.; GORDIYENKO, L.K.

Effect of yielding alternated with aging on the strength of metals with a body-centered cubic lattice. Dokl. AN SSSR 160 no.2:321-324 Ja '65. (MIRA 18:2)

1. Institut metallurgii im. A.A. Baykova. 2. Chlen-korrespondent AN SSSR (for Oding).

APPROVED FOR RELEASE: 08/10/2001

UL/0062/65/000, 003/0487, 0540

APPROVED FOR RELEASE: 08/10/2001

Cont

*17113511, 17113512*  
AUTHORS: Ivanov, V. I.; Lenshiná N. Ya.; Ivanova, V. S. 62-1-16/21

TITLE: About the Ion Exchange in Dicarboxycellulose (K voprosu ob ionnom obmene na dikarboksitsellyuloze)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1957, No. 1, pp. 118-119 (U.S.S.R.)

ABSTRACT: A study of interchange reaction of hydroxy cellulose showed that the sorption of Ni and Fe cations by cellulose oxidized with sodium periodate and sodium chlorite is equivalent to the amount of the carboxyl groups. The carboxyl groups in the hydroxy cellulose, prepared with certain changes, were determined by two different methods. It was found that the dynamic interchangeability of hydroxycellulose, in the case of nickel acetate, is 0.5 and 0.7 of the total interchangeability. The equivalent absorption of Ni<sup>++</sup> and Fe<sup>+++</sup> by oxidized cellulose indicates that inorganic

Card 1/2

About the Ion Exchange in Dicarboxycellulose

62-1-16/21

Card 2/2

cations react preferably with the carboxyl groups in the cellulose. It was assumed that the ion absorption characteristics of the hydroxy cellulose are due to the chelate orientation of the carboxyl groups in the elementary glucose ring. Using Ni and Fe-salts as an example, the authors showed the differences in the bond stability of hydroxy cellulose - metal ion system, which makes it possible to utilize this system for the splitting of cations.

Comparative data on the carboxyl groups and the absorption characteristics of cellulose are presented in tables.

Tables. There are 4 references, of which 2 are Slavic

ASSOCIATION: Academy of Sciences of the USSR, Institute of Organic Chemistry  
imeni N. D. Zelinskiy

PRESENTED BY:

SUBMITTED October 17, 1956

AVAILABLE: Library of Congress

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5

*EVANURA, U.S.*

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5"

Ivanova, V. S.

AUTHORS: Yermolenko, I. N., Zhabankov, R. G., 62-2-27/28  
Ivanov, V. I., Lenshina, N. Ya., Ivanova, V. S.

TITLE: The Investigation of Some Oxidation Reactions of Cellulose by  
the Method of Infrared Spectroscopy (Issledovaniye nekotorykh  
okislitel'nykh reaktsiy tsellyulozy metodom infrakrasnoy  
spektroskopii)

PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958, Nr 2,  
pp. 249-251 (USSR)

ABSTRACT: In the present paper the authors use the hitherto known methods  
and investigation results in the field of adsorption spectro-  
scopy for the purpose of finding out the directions of reaction  
with subsequent formation of functional groups in the compli-  
cated structure of the respective oxidation products of cellu-  
lose. The modifications in the infrared spectra connected with  
the formation of carboxyl- and carboxyl-groups have hitherto  
been determined. The presence of carboxyl groups was judged ac-  
cording to the adsorption band at  $5,57\mu$  (oscillation C=O). This  
method is, however, not reliable. It is well-known that the ad-  
sorption band at  $7\mu$  depends exclusively on the velocity of de-

Card 1/2



The Investigation of Some Oxidation Reactions of Cellulose by the Method of Infrared Spectroscopy 62-2-27/28

formation of the  $\text{CH}_2$ -groups. Consequently the oxidation-transformation of the carbon atom can be estimated according to the modification of the intensity of adsorption (according to the wave length). Monocarboxyl cellulose contains so-called loss-carboxyls. The band at  $11\mu$  is not connected with carboxyl groups. The authors also investigated the oxidation of  $\text{C}_6$  with the action of  $\text{N}_2\text{O}_4$  in the elementary member of the macromolecule of cellulose in dependence on the general accumulation of carboxyls (see figure 4). The adsorption band at  $11\mu$  characterizes the occurrence of aldehyde-groups in dialdehyde cellulose in a bound form. There are 4 figures, and 10 references, 6 of which are Slavic.

ASSOCIATION: Institute for Organic Chemistry imeni N.D. Zelinskiy AN USSR (Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: March 7, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Cellulose-Oxidation reduction reactions 2. Infrared spectroscopy-Applications

AUTHORS: Ivanov, V. I., Lenshina, N. Ya., 62-58-6-22/37  
Ivanova, V. S.

TITLE: On the Characteristic Features of the Oxidation of Cellulose  
by Sodium Periodate and Sodium Chlorite (Ob osobennostyakh  
okisleniya tsellyulozy peryodatom natriya i khloritom natriya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,  
1958, Nr 6, pp. 775 - 777 (USSR)

ABSTRACT: On the basis of the works by Jackson (Dzhekson) and Hudson  
(Gudson)(Refs 1,2,3-9) the authors investigated the properties  
of the preparations (formulae I and II) and found that the  
said preparations separate CO<sub>2</sub> (under the conditions of decarbo-  
xylation). On the strength of results obtained already earlier  
(and of spectroscopic data) (Refs 10,11) the authors assumed  
that partial oxidation extends over the 6. carbon atom (Ref 12).  
Thus, sodium periodate oxidizes not only the α-glycol grouping  
but also the hydroxyls of cellulose in position (6) up to the  
aldehyde and carboxyl groups. There are 4 figures, 3 tables,  
and 15 references, 4 of which are Soviet.

Card 1/2

On the Characteristic Features of the Oxidation of  
Cellulose by Sodium Periodate and Sodium Chlorite

62-58-6-22/37

ASSOCIATION: Institut organicheskoy khimii imeni N.D.Zelinskogo (Institute of  
Organic Chemistry imeni N.D.Zelinskiy, AS USSR)

SUBMITTED: December 28, 1957

1. Cellulose--Oxidation 2. Sodium salts--Chemical reactions

Card 2/2

5(4), 5(3)

AUTHORS:

Yermolenko, I. N., Zhbankov, R. G., Lenshina, N. Ya., Ivanova, V. S., Ivanov, V. I. SOV/62-58-12-19/22

TITLE:

Spectroscopic Investigation of the Consumption of Hydroxyl Groups of Cellulose on the Action of Nitrogen Dioxide (Spektroskopicheskoye issledovaniye raskhoda gidroksil'nykh grupp tsellyulozy pri deystvii na neya dvoukisi azota)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 12, pp 1495-1496 (USSR)

ABSTRACT:

In this brief report the authors mention the transformations of hydroxyl groups of cellulose in their oxidation by means of nitrogen vapors. Cotton cellulose was oxidized under static conditions (Ref 5). The change of the hydroxyl groups during the course of reaction was determined according to the spectroscopic method in the infrared range. The absorption spectra were taken according to the earlier described method (Ref 6) by means of the infrared spectrograph IKS-11 with an NaCl prism. It was found that the reaction takes a quasihomogeneous course. In the first stage mainly those products are accumulated which form due to the oxidation of primary hydroxyl groups and

Card 1/2

Spectroscopic Investigation of the Consumption of Hydroxyl Groups of Cellulose  
on the Action of Nitrogen Dioxide

SOV/62-58-12-19/22

in the second stage those products that form due to the oxidation of primary and secondary hydroxyl groups. The results obtained agree with the other papers (Refs 1,4). There are 2 figures and 7 references, 6 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii imeni N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy Academy of Sciences, USSR) Institut fiziki i matematiki Akademii nauk BSSR (Institute of Physics and Mathematics, Academy of Sciences, Belorussian SSR)

SUBMITTED: June 2, 1958

Card 2/2

5(3)

AUTHORS:

Lenshina, N. Ya., Ivanova, V. S.,  
Ivanov, V. I.

SOV/62-59-3-32/37

TITLE:

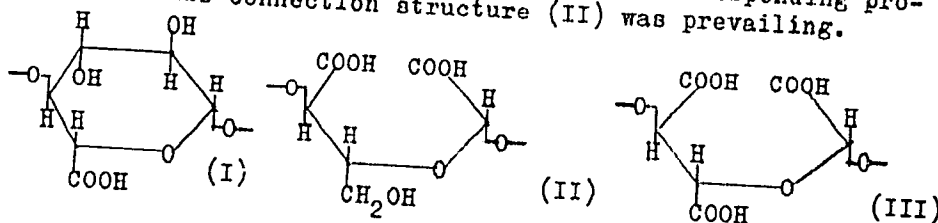
On the Production of New Carboxyl Derivatives of Cellulose  
(O poluchenii novykh karboksil'nykh proizvodnykh tsellyulozy)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1959, Nr 3, p 559 (USSR)

ABSTRACT:

In the present letter to the editor the authors write: carboxy-cellulose preparations were obtained by combined oxidation of cotton cellulose. They contained up to 50.8 % of carboxyl groups with respect to oxycellulose. In the determination of the position of the carboxyl groups in the glucose group structures (I), (II), and (III) were observed in the corresponding product. In this connection structure (II) was prevailing.



Card 1/2

'On the Production of New Carboxyl Derivatives of  
Cellulose

SOV/62-59-3-32/37

The products obtained retain their fibrous structure after washing and drying. In comparison to dicarboxycellulose they are less hygroscopic. They have a high exchangeability up to 11.4 mg equivalents/g. The ion-exchange units of oxycelluloses which have been known up to now have an exchangeability of ~5 mg equivalents/g. The carboxy celluloses obtained are easily soluble in aqueous solutions of alkali.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk  
SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of  
the Academy of Sciences, USSR)

SUBMITTED: December 13, 1958

Card 2/2

PHASE I BOOK EXPLOITATION

SOV/993\*

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii SSSR, Moskva, 14-18 iyunya 1960 g.; doklady i referaty. Sektora III. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18, 1960. Abstracts and Summaries) Section III. [Moscow, Izd-vo AN SSSR, 1960] Tech. Ed.: P. S. Kaahina.

Sponsoring Agency: The International Union of Pure and Applied Chemistry. Commission on Macromolecular Chemistry.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high molecular compounds.

COVERAGE: This is Section III of a multivolume work containing papers on macromolecular chemistry. The articles in general deal with the kinetics of polymerization reactions, the synthesis of special-purpose polymerization reactions, change resins, semiconductor materials, e.g., ion exchange polymers, polymerization reactions, methods of esterification of high molecular materials, and the effects of various factors on polymerization and the degradation of high molecular compounds. No personalities are mentioned. References given follow the articles.

- Uranov, Kh. U., U. N. Misayev, and R. S. Tilyavskiy (USSR). The Radiation Method of Copolymerizing Acrylonitrile with Polystyrene and Pereklorovinil. 184
- Rafikov, S. R., G. N. Shelinkova, I. V. Zhuravleva, and P. N. Gribova (USSR). Oxethylation of Carbochohan and Ester-Chain Polyamides. 170
- Santo, Y., and K. Gal (Hungary). Grafting Methyl Methacrylate Onto Polyvinyl Alcohol Under the Action of I-Rays. 207
- Lasar, M., R. Rado, and Yu. Pavlinak (Czechoslovakia). Grafting Methyl Methacrylate Onto Polypropylene and Polyethylene. 214
- Autorskiy, I. A., Z. I. Smalov, and V. M. Ryabov (USSR). The Interaction of Carboxyl-Containing Butadiene-Styrene Rubbers With Polyamides and E-caprolactam. 224
- Kolenskikh, A. S., and Ts'eng Han-wang (USSR). Synthesis of Free Radicals (Czechoslovakia). The Role of the Source of Free Radicals on Crosslinking in Polyethylene. 230
- Mikheyev, I. A., A. Turovskiy, and B. A. Demchenko (USSR). Styrene Rubbers and Their Mixtures with E-caprolactam. Under the Action of Gamma Radiation. 230
- Mozovin, Z. S., V. A. Derevitskiy, Sun T'ung, Chang Wei-xiang, and G. S. Gribova (USSR). Synthesis of New Cellulose Derivatives and Other Polysaccharides. 293
- Yermolenko, I. M., and P. M. Kaputskiy (USSR). Initiation of the Controlled Synthesis of Modified Celluloses With Oxides of Nitrogen. 302
- Ivanov, V. I., N. Ya. Leshchina, V. S. Izrael (USSR). Cationical Transformations in Chains of Cellulose Molecules. 310
- Berlin, A. A., Ye. A. Penskaya, and G. I. Volkova (USSR). Mechanicochemical Transformations of Starch Copolymerization During the Freezing of Starch Solutions. 311
- Uranov, Kh. U., B. I. Akhmedzhanov, and U. Azizov (USSR). Modification of the Properties of Cellulose by Grafting. 334

343



IVANOV, V.I.; LENSINA, N.Ya.; IVANOVA, V.S.

Effect of the pyran ring on the acid hydrolysis of cellulose.  
Izv.AN SSSR.Otd.khim.nauk no.6:1136-1138 J1 '60.  
(MIRA 13:7)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo Akademii  
nauk SSSR.  
(Pyran) (Cellulose) (Hydrolysis)

LENSHINA, N.Y.; IVANOVA, V.S.; IVANOV, V.I.

Oxidation of dicarboxycellulose with nitrogen oxides. Izv. AN SSSR  
Otd. khim. nauk no.10:1894-1896 O '60. (MIRA 13:10)

1. Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk  
SSSR. (Nitrogen oxide) (Cellulose)

IVANOV, V.I.; YERMOLENKO, I.N.; GUSEV, S.S.; LENSINA, N.Ya.; IVANOVA, V.S.

Study of dialdehyde celluloses by means of infrared spectra. Izv.  
AN SSSR.Otd. khim. nauk no.12:2249-2252 D '60. (MIRA 13:12)

1. Institut organicheskoy khimii im.N.D.Zelinskogo AN SSSR.  
(Cellulose--Spectra)

IVANOV, V.I.; KUZNETSOVA, Z.I.; LENSINA, N.Ya.; IVANOVA, V.S.

Structure of cellulose chain molecules. Trudy LTA  
no.91:33-37 '60. (MIRA 15:12)

1. Institut organicheskoy khimii AN SSSR.  
(Cellulose) (Molecules)

LENSHINA, N.Ya.; IVANOVA, V.S.; IVANOV, V.I.

Oxidation of dihydroxycellulose by nitrogen oxides. Izv. AN SSSR Otd.  
khim.nauk no.3:519-521 Mr '61  
(MIRA 14:4)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.  
(Cellulose) (Nitrogen oxide)

S/129/62/000/002/004/011  
E073/E335

AUTHORS: Ivanova, V.S., Doctor of Technical Sciences and  
Kosyakina, B.S., Engineer

TITLE Electron-microscopic investigation of the fatigue  
phenomena in the steels G-10 (St.10) and  
ЭЯ17 (EYaIT)

PERIODICAL Metallovedeniye i termicheskaya obrabotka metallov  
no. 2, 1962, 32 - 34 + 2 plates

TEXT: There are various hypotheses on the mechanism of  
formation of fatigue cracks. A.H. Cottrell and D. Hull  
(Ref. 5 - Proc. Roy. Soc., A 242, no. 1229, 1957) consider that  
the mechanism of extrusion and intrusion is due to alternate  
effects of intersecting systems of slip; extrusion and  
intrusion should be observed only during cyclic alternating  
stresses in specific metals in which cyclic loading activates  
mutually intersecting slip planes in the grains. The authors  
chose two different metals to verify this hypothesis: an  
austenitic steel which had a tendency to develop mutually  
intersecting slip planes, and a carbon steel in which within  
Card 1/4

Electron-microscopic

S/129/62/000/002/004/014  
E073/E335

the boundaries of the grain, there is only one slip system. Prior to the fatigue tests the austenitic steel was water quenched from 1 200 °C and then stabilized at 650 °C, whilst the carbon steel was subjected to annealing at 900 °C. Symmetrical bending was applied electromechanically to specimens of 1 x 10 mm cross-section during the fatigue tests. The structure of the slip bands was studied by means of metallography and electron microscopes (using chromium-shaded replicas). Extrusion phenomena were observed in the austenitic steel but not in the carbon steel. Spherical sub-micropores were observed at the boundaries of the deformed layer in a number of cases and the high-resolution electron microscopes revealed that the submicroscopic cracks in the deformed metal volumes frequently consisted of pores which were stretched into chains. The formation of these pores was attributed to the coagulation of vacancies. Such loosening of the metal volume by the deformation was not observed in the austenitic steel. The obtained information leads to the conclusion that extrusion is

Card 2/4

Electron-microscopic

S/129/62/000/002/004/014  
E073/E335

characteristic for metals in which the process of fatigue is activated by intersecting sliding systems. However, this condition is necessary but insufficient since the process of extrusion will develop only if alternating stresses are applied. In the steel [13] (G13L) (1% C, 12% Mn, 0.1-0.3% Cr, 0.08% P, 0.01% S), tested for fatigue with a repeated loading (120 000 cycles) of a single polarity, intersecting slip systems were observed but not extrusion. The formation of fatigue cracks under such conditions is caused by the coagulation of vacancies and interaction of dislocations which move in the intersecting slip systems. Thus, fatigue cracks occur during the process of extrusion and intrusion only if alternating cyclic stresses are used and only in metals in which intersecting slip systems are activated under such conditions. There are 3 figures and 7 references. 1 Soviet-bloc and 6 non-Soviet-bloc. The four latest English-language references mentioned are: Ref. 2: P.J.E. Forsyth - Proc. Roy. Soc. A 242 no. 1229, 1957; Ref. 4: P.J.E. Forsyth - Journal Institute of

Card 3/4



Electron-microscopic

S/129/62/000/002/004/014  
E073/E335

Metals, v.85, no. 7, 1957; Ref. 5; A.H. Cottrell, D. Hull;  
Proc. Roy.Soc., A 242, no. 1229, 1957; Ref. 6; D. Hull;  
Philos. Mag., v.3, no. 29, 1958.

ASSOCIATION: Institut metallurgii imeni A.A. Baykova  
(Institute of Metallurgy imeni A.A. Baykov)

Card 4/4

GLUSHAKOVA, N.Ye. [Hlushakova, N.E.]; LAGUTO, F.M. [Lahuta, F.M.];  
IVANOVA, V.S.; MEREZHINSKIY, M.F. [Merazhynski, M.F.]; TARANOVICH,  
G.L. [Taranovich, H.L.]; SHIFMAN, A.S. [Shyfman, A.S.]

Biosynthesis and metabolism of ascorbic acid in white rats during  
fractional ionizing irradiation in small doses. Vestsi AN BSSR.  
Ser.bial.nav. no.2:96-101 '62. (MIRA 15:8)  
(RADIATION—PHYSIOLOGICAL EFFECT) (ASCORBIC ACID)

S/062/62/000/011/018/021  
B101/B144

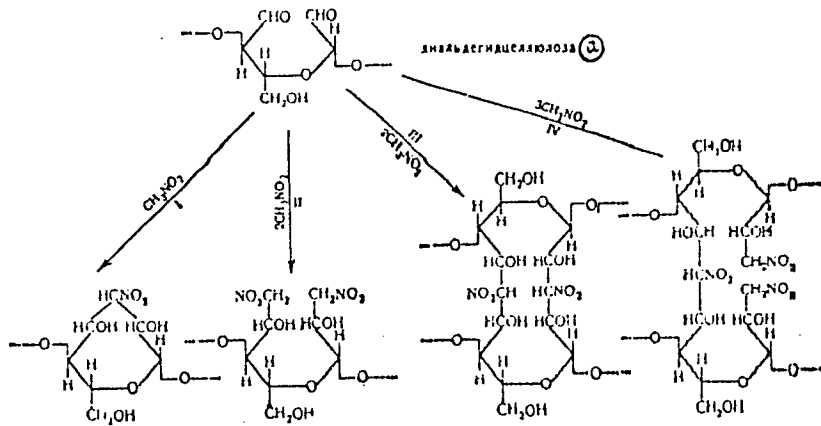
AUTHORS: Kuznetsova, Z. I., Ivanova, V. S., and Shorygina, N. N.  
TITLE: New nitrogenous cellulose derivatives  
PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh  
nauk, no. 11, 1962, 2087 - 2089

TEXT: The possibilities of modifying the properties of cellulose by introducing new functional groups in the macromolecule were studied. For this purpose, the condensation of dialdehyde cellulose (19.2% aldehyde groups) with nitro-methane in alkaline solution at 50C was carried out for the first time. The following general reaction course is assumed:

Card 1/3

New nitrogenous cellulose derivatives

S/062/62/000/011/018/021  
B101/B144



(a) = dialdehyde cellulose.

Card 2/3

New nitrogenous cellulose derivatives

S/062/62/000/011/018/021  
B101/B144

The nitrogen content of the resulting preparations reached 3.4 - 4.96%, the increase in weight was 17 - 20% of the initial weight. These data imply that the reaction proceeds mainly in the direction of I and II; one of the two directions can be selected by choosing the reaction conditions. The resulting nitro derivatives are yellow, keep their fibrous structure, and are stronger and more elastic than the initial dialdehyde cellulose. Further new cellulose derivatives, e.g. those with  $\text{NH}_2$  groups, are to be synthesized by reaction of the  $\text{NO}_2$  groups. There is 1 table. The most important English-language reference is: H. Baer, H. Fischer, J. Amer. Chem. Soc., 82, 3709 (1960).

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: June 18, 1962

Card 3/3

KUZNETSOVA, Z.I.; IVANOVA, V.S.; SHORYGINA, N.N.

Nitrocarboxy derivatives of cellulose. Izv. AN SSSR. Ser.khim.  
no.9:1686-1688 S '63. (MIRA 16:9)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.  
(Nitrocellulose)

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5"

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619230005-5"



KUZNETSOVA, Z.I.; IVANOVA, V.S.; SHCRYGINA, N.N.

Some new data on the interaction between cellulose and gaseous  
nitrogen oxides. Izv. AN SSSR. Ser. khim. no.3:557-559 '65.

(MIRA 18:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

KUZENTSOVA, Z.I.; IVANOVA, V.S.; SHORYGINA, N.N.

Reaction of dialcohol cellulose with nitrogen oxides. Izv. AN  
SSSR. Ser. khim. no.9:1682-1684 '65. (MIRA 18:9)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

VISHNYAKOV, S.V.; DUKEL'SKAYA, N.M.; IVANOVA, V.V.

Relative calculation of the rodent population in urban habitats.  
Zool.zhur. 34 no.4:902-914 J1-Ag '55. (MLRA 8:9)

1. Moskovskaya nablyudatel'naya stantsiya, Tsentral'nyy nauchno-  
issledovatel'skiy dezinfektsionnyy institut Ministerstva zdравo-  
okhraneniya SSSR i Opytno-prakticheskaya laboratoriya Glavkholoda  
(Rodent control)

Cand Med Sci

IVANOVA, V. V.

Dissertation: "Data on the Clinical Characteristic of Encephalitis."  
25/5/50

Acad Med Sci USSR

SO Vecheryaya Moskva  
**Sum 71**

IVANOVA, V.V.; LUNEV, D.K.; BUKHSHTAB, Ye.A.

Certain problems of the clinical aspect of acute poliomyelitis. Zhur.  
nerv.i psikh. 53 no.6:441-445 Je '53. (MIRA 6:6)

1. Institut neurologii akademii meditsinskikh nauk SSSR. (Poliomyelitis)

*IVANOVA, V.V.*

BIRYUKOVA, T.Ye.; YEVSEYEVA, I.V.; IVANOVA, V.V.; LEVANDO, Ye.P.  
NEKRASOVA, O.I.

Using L.G. Berg's method for determining phase composition of  
carbonate rock; preliminary report. Mat. VSEGEI Litol. no.1:144-158  
'56. (MIRA 11:2)

(Carbonates (Mineralogy--Analysis)

VULAKH, V.L.; IVANOVA, V.V.; KOS'YANOV, G.I.; PANASTUK, V.V., kandidat  
fiziko-matematicheskikh nauk, redaktor

[Scientific works of Lvov scientists; engineering and applied  
mechanics. A bibliobibliography] Naukovi pratsi uchorykh L'vova;  
tehnika i prykladna mekhanika. Bio-bibliografichni materialy.  
L'viv, 1956. 132 p. (MLRA 10:3)

1. Akademiya nauk URSR, Kiyev. L'viva'ka biblioteka.  
(Bibliography--Lvov--Engineers)  
(Lvov--Engineers--Bibliography)

KRESTOV, M.A.; DOBRYAKOVA, L.I.; KOSHKIN, V.G.; YEVDOKIMOV, A.A.;  
IVANOVA, V.V.; KHMELEVSKIY, V.A.; KOSTOCHKINA, T.V.; PFLAUMER,  
O.E., kand.tekhn.nauk, nauchnyy red.; SKVORTSOVA, I.P., red.  
izd-va; TEMKINA, Ye.L., tekhn.red.

[Finishing large panels and blocks using colored concretes]  
Otdelka krupnykh panelei i blokov s primeneniem tsvetnykh beto-  
nov. Moskva, Gos.izd-vo lit-ry po stroit., arkhitekt. i stroit.  
materialam, 1959. 87 p. (MIRA 13:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroi-  
tel'nykh materialov. 2. Institut novykh stroitel'nykh materialov  
(for Krestov, Dobryakova, Koshkin, Yevdokimov, Ivanova, Khmelevskiy).
3. Institut betona i zhelezobetona (for Kostochkina).  
(Building blocks)



IVANOVA, V.V.

Antiemetic activity of aminazine and propazine. Farm.1 toks. 22  
no.5:397-400 S-0 '59. (MIRA 13:3)

1. Akushersko-ginekologicheskaya klinika lechebnogo fakul'teta (za-  
veduyushchiy - prof. A.M. Foy) i kafedra farmakologii (zaveduyushchiy -  
detsent B.G. Volynskiy) Saratovskogo meditsinskogo instituta.

(CHLORPROMAZINE pharmacol.)

(AUTONOMIC DRUGS pharmacol.)

(PHENOTHIAZINE pharmacol.)

(VOMITING exper.)

IVANOVA, V.V.

Further observations on the use of antibiotics in treating an abundance of waters. Ped., akush. i gin. 23 no.1:56-58 '61.  
(MIRA 14:6)

1. Viddileanya patologii vagitnosti (zav. - prof. S.M.Bekker) institutu akusherstva i ginekologii AMN SSSR (direktor' - chlen-korrespondent AMN SSSR, prof. P.A.Bieloshapko [deceased]).  
(ANTIBIOTICS) (PREGNANCY, COMPLICATIONS OF)

FOY, A.M.; VOLYNSKIY, B.G.; IVANOVA, V.V.; FREYDMAN, S.L.

Antiemetic action of some derivatives of the phenothiazine series. Trudy Sar. gos. med. inst. 26:167-174 '59.

(MIRA 14:2)

1. Saratovskiy meditsinskiy institut, akushersko-ginekologicheskaya klinika lechfaka (zav.prof.A.M. Foy) i kafedra farmakologii (zav. dost. B.G. Volynskiy).

(PHENOTHIAZINE) (VOMITING)

GRUZIN, P.L.; RYKOVA, G.G. Prinimala uchastiye: IVANOVA, V.V.

Studying the effect of the structural factor on diffusion in  
zirconium and its alloys. Met. i metalloved. chist. met.  
no. 2:134-140 '60. (MIRA 13:12)  
(Zirconium--Metallography) (Diffusion)

S/262/62/000/010/009/024  
1007/1207

AUTHOR: Ivanova, V. V.

TITLE: Method of computing exhaust-gas fluctuations in the exhaust system of an internal combustion engine

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 42. Silovyye ustanovki, no. 10, 1962, 64, abstract 42.10.348. In collection "Gasoturbin. nadduv dvigateley vnutr. sgoraniya", Moscow, Mashgiz, 1961, 131-143

TEXT: A method is suggested for computing exhaust-gas fluctuations in the exhaust system of an engine in cases when the gas pressure cannot be disregarded. Resorting to the geometric sum of amplitudes as a criterion of fluctuation intensity, one can determine those dimensional changes in the exhaust system which permit the fluctuations to be intensified or minimized over the working range of rotational speed. The method suggested permits a qualitative estimation only since it does not take into account the axial component of the gas velocity. There are 9 figures and 9 references

[Abstracter's note: Complete translation.]



Card 1/1

ZHDAROV, G. S.; SOLOV'YEV, Sergey Pavlovich; VINOVTSEV, Taty Nikolayevna;  
IVANOVA, V. V.

"Internal Fields in the Orthorhombic Modification of  
Barium Titanate"

a report presented at Symposium of the International Union of  
Crystallography Leningrad, 21-27 May 1979

AUTHORS: Venevtsev, Yu.N., Zhdanov, G.S., Solov'yev, S.P. and Iyanova, V.V. <sup>SOV/70-4-2-26/36</sup>

TITLE: On Internal Fields in Ferroelectric  $PbTiO_3$  (O vnutrennikh polyakh v segnotoelektrike  $PbTiO_3$ )

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 2, pp 255-257 (USSR)

ABSTRACT: Calculations of the internal fields in  $PbTiO_3$  crystals have been made by the Madelung-Hagedorn method (R. Hagedorn - Ref 3) which is more accurate than Kozlovskiy's method used before, according to the work of Yu.N. Venevtsev et al (Ref 1). These fields  $E_i$  are Pb 1.4, Ti 6.9,  $O_I$  6.1 and  $O_{II}$ ,  $O_{III}$   $1.8 \times 10^8$  V/cm . The contributions of the separate ions to the spontaneous polarisation of  $81 \times 10^{-6}$  coulomb/cm<sup>2</sup> are tabulated. The internal fields for model crystals of the  $PbTiO_3$  type but with ions of different polarisability are similarly calculated. For  $BaTiO_3$  the calculations by both methods

Card1/2

On Internal Fields in Ferroelectric  $PbTiO_3$

SOV/70-4-2-26/36

are in good quantitative agreement. Graphical examination of the parameters affecting the internal fields show their relative importance. In order they are: 1) lattice period; 2) charge on the ferroelectric cation; 3) polarisability of the ions of the oxygen octahedra; 4) polarisability of the ferroelectric cation; 5) polarisability of the non-ferroelectric cation. There are 1 figure, 2 tables and 5 references, 4 of which are Soviet and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova  
(Physical-Chemical Institute im. L. Ya. Karpov)

SUBMITTED: November 14, 1958

Card 2/2



21(8) 21(7)

SOV/89-7-2-14/24

AUTHORS: Ivanova, V. V., Nazarov, A. I., Polunskaya, Ye. V., Khabakhpashev, A. G. Tsenter, E. M.

TITLE: Use of the  $O^{18}(\alpha, n)Ne^{21}$  Reaction to Determine the Concentration of  $\alpha$ -active Substances in Aqueous Solutions (Ispol'zovaniye reaktsii  $O^{18}(\alpha, n)Ne^{21}$  dlya opredeleniya kontsentratsii  $\alpha$ -aktivnykh veshchestv v vodnykh rastvorakh)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 166 - 168 (USSR)

ABSTRACT: The method mentioned in the title was first proposed by Ye. V. Polunskiy and A. I. Nazarov. A neutron detector is installed in a cylindric pipe closed at the bottom and located in a cylinder-shaped tank of 84 l contents (height 43 cm, diameter 50 cm). The tank is then filled with a radioactive solution. The pipe can be moved in such a way that the cylindric tank can be divided in equally sized zones by the different positions of the neutron detector; each of these zones can be measured. This possibility is needed for example for testing the sensitivity of the method (the measuring procedure is described). The method can be applied already with concentrations of 1-2 mc/l.

Card 1/3

Use of the  $O^{18}(\alpha, n)Ne^{21}$  Reaction to Determine the  
Concentration of  $\alpha$ -active Substances in Aqueous Solutions

SOV/89-7-2-14/24

When the detector (SNM-9) is used with a lead filter, the concentration can still be measured with a  $\gamma$ -background of  $\sim 150$  gramm equivalent/l. The condition of the solution has practically no influence on the neutron yield. If the concentration of nitric acid is changed from a 1 n solution to an 8 n solution, the neutron yield is only 2% less. The presence of  $U^{235}$  and  $Pu^{239}$  in the solution has the following effect: if the uranium concentration is 100 g/l (natural isotope composition) the neutron yield increases 2.6% due to the fission neutrons, but it decreases simultaneously by 3% due to the moderation. Therefore the uranium concentration has no influence if the  $\alpha$ -radiation of the uranium has not to be considered. A plutonium concentration of 1 g/l increases the neutron yield by  $\sim 10\%$ . This fact has to be taken into consideration. The presence of light elements in the solution to be examined can cause errors in the results. The presence of following concentrations increases the neutron yield by only 1%: Be - 8 mg/l, Al - 1.4 g/l, Na - 0.42 g/l. Special advantage of the developed method is that the measurement can be carried out in any desired distance from

Card 2/3

Use of the  $O^{18} (\alpha, n) Ne^{21}$  Reaction to Determine the Concentration of  $\alpha$ -active Substances in Aqueous Solutions SOV/89-7-2-14/24

the measured object and that the airtightness is not injured.  
There are 3 figures and 2 Soviet references.

SUBMITTED: January 24, 1959

Card 3/3

IVAROVA, V. V.

8599  
8/07/60/005/009/009/012  
S. P. P. P.  
AUTHORS: V. V. Ivarova, M. N. Zhuravskaya, S. I. Solov'yev, S. P. Belykh, V. V. Ivanova, M. M. Fominov, S. A. and S. P. P. P.

TITLE: Crystal Chemical Investigations of Substances with the Perovskite Type of Structure which has Special Dielectric Properties

PHYSICAL: Kristallografiya, 1960, Vol. 5, No. 4, pp. 620-626

TEXT: In the dielectrically-active ion is the Ti but in PbTiO<sub>3</sub> it is the Pb ion. The (Pb, Ba)TiO<sub>3</sub> system may, therefore, be expected to show peculiarities where these two effects interact. The variation in structure, dielectric and piezoelectric properties of continuous from one end-member to the other. PbTiO<sub>3</sub> showed anomalies not explainable as due to ions of PbO. BaSO<sub>3</sub> undergo several phase transitions in a short temperature interval. Dielectric and optical observations at 360, 470, 520 and 640 C. X-ray data contrast all but the first of these. Polycrystalline material was used 1/4

studied by X-ray methods up to 700 C and transitions at 300, 430, 470, 520 and 640 C were found. Below 360 C KTiPO<sub>3</sub> is monoclinic with a, c / b and β > 90 C. Above 360 C it is orthorhombic with a, c / b and β > 90 C (true symmetry is not at 360 but at 430 C. The X-ray method is less sensitive than the optical and dielectric methods. From an examination of solid solutions BaTiO<sub>3</sub>-(Ca, Sr)(Zr, Sn)O<sub>3</sub> it is concluded that, other things being equal, the Curie temperature of perovskite type ferroelectrics in higher the smaller is the period of the lattice and the higher is the polarizability of the active cation. Bi<sub>2</sub>O<sub>3</sub>·Al<sub>2</sub>O<sub>3</sub> has been synthesized and specimens showed properties like those found in BiTiO<sub>3</sub> containing Bi<sub>2</sub>O<sub>3</sub>.  
Card 2/4

BiPO<sub>3</sub> and specimens in the system PbTiO<sub>3</sub>-BiFeO<sub>3</sub> have been synthesized. The former has a rhombohedral distortion (a = 3.863 Å, c = 6.924 Å) and a susceptibility about 80. At 200 C the susceptibility has a maximum of about 1200. In the solid solution up to 70% by wt. of BiFeO<sub>3</sub> there is also a tetragonal modification. The Curie point of BiFeO<sub>3</sub> appears to be higher than that of PbTiO<sub>3</sub>.  
General methods for calculating the internal field have been developed for structures of any dipole configurations. These have been applied to the orthorhombic structure of CaTiO<sub>3</sub>. Here, the internal electric field is zero at the Ti sites. There are 29 references: 2 Japanese (in English), 6 English, 2 International, 1 Swiss, 1 German and 15 Soviet.  
Card 3/4

ASSOCIATION: Fiziko-Khimicheskiy Institut  
in L. Ya. Karpova  
(Physic-Chemical Institute Imeni  
L. Ya. Karpov)  
SUBMITTED February 23, 1960