

24.6820

S/166/62/000/002/005/008
B112/B104

AUTHORS: Borisov, V. O., Kiv, A. Ye., Niyazova, O. R.
TITLE: Some features of cadmium sulfide probe characteristics
PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya
fiziko-matematicheskikh nauk, no. 2, 1962, 55-58

TEXT: X-ray probe characteristics of CdS found empirically are confronted with the theoretical characteristic expressed in the formula √B
$$I(x)/I_0 \equiv i(x_0) = (L_d/l)(\ln 2 - \exp((2\varepsilon - 1)/2L_d)\text{ch}((2x_0 - 1)/2L_d)) \quad (1),$$
where l denotes the crystal length, ε the half-width of the X-ray probe ($\varepsilon \ll 1$), and x_0 the coordinate of X-ray probe position. L_d is the diffusion length, assumed to be the same for holes and electrons. The inequality $l < L_d < l/0.7$ follows from the shape of the characteristics as given by (1). In addition, the temperature and exposure dependences of probe characteristics are investigated. There are 3 figures.

Card 1/2

Some features of cadmium sulfide ...

S/166/62/000/002/005/008
B112/B104

ASSOCIATION: AN UzSSR (AS UzSSR)

SUBMITTED: December 18, 1961

JB

Card 2/2

BORISOV, V.O.; KIV, A.Ye.; NIYAZOVA, O.R.

Some specific probing characteristics of cadmium sulfide. Izv.
AN Uz. SSSR. Ser. fiz. mat.nauk 6 no.2:55-58 '62. (MIRA 15:9)

1. Akademiya nauk UzSSR.

(Cadmium sulfide--Electric properties)
(X-ray crystallography)

BORISOV, V.P.

TOLKACHEV, P.I., inzh.; BORISOV, V.P., inzh.

High-temperature furnace made of heat-resistant reinforced
concrete blocks. Stroi.prom. 35 no.9:32-35 no.9:32-35 S '57.
(Furnaces) (MIRA 10:10)

BORISOV, V.P.

Designing frames having uniform resistance to bending. Trudy
KAI 46:107-112 '59. (MIRA 14:2)
(Structural frames)

BORISOV, V.P.

Designing continuous beams having uniform resistance to bending.
Trudy KAI 46:95-105 '59. (MIRA 14:2)
(Girders)

BORISOV, Vladimir Petrovich; KHANYKOV, Vladimir Vladimirovich;
KUZNETSOVA, N.I., red.; SHADRINA, N.D., tekhn.red.

[Financial work of the factory, plant and local trade union
committee] Finansovaya rabota fabrichnogo, zavodskogo i
mestnogo komiteta profsoiuz. Moskva, Izd-vo VTsSPS Profiz-
dat, 1959. 125 p. (MIRA 13:2)
(Trade Unions--Finance)

BORISOV, Vladimir Petrovich; KHANYKOV, Vladimir Vladimirovich;
SEMENOV, S.M., red.; SHADRINA, N.D., tekhn. red.

[Budget of the factory and plant trade-union committee]
Budzhët fabrično-zavodskogo komiteta. Moskva, Profizdat,
1961. 78 p. (Bibliotekha profsoiuznogo aktivista, no.15)
(MIRA 16:3)

(Trade unions—Finance)

BORISOV, V.P.; SYROVAREV, A.I.; KHANYKOV, V.V.; BLOKHIN, N.N., red.; SHAD-
RINA, N.D., tekhn. red.

[Finances of trade unions of the U.S.S.R.; organization and plan-
ning] Finansy professional'nykh soiuzov SSSR; organizatsiia i pla-
nirovaniie. Izd.2., perer. i dop. Moskva, Izd-vo VTsSPS Profizdat,
1961. 199 p. (MIRA 14:8)

1. Moscow. Vysshaya zaobchmaya shkola profdvizheniya.
(Trade unions—Finance)

YURCHENKO, F.A.; BORISOV, V.P.; GORBASH, A.A.

Effect of iron on the biosynthesis of chlortetracycline.
Fern. i spirt.prom. 30 no.4:32-34 '64.

(MIRA 18:12)

1. Kiyevskiy spirtovoy trest (for Yurchenko). 2. Nemeshayev-
skiy zavod kormovykh antibiotikov (for Borisov, Gorbash).

BORISOV, V.P.; GORBASH, A.A.

Use of vegetable oils in the production of biomyxin. Spirt.prom. 29
no.1:22-23 '63. (MIRA 16:2)

1. Nemeshevskiy zavod kormovykh antibiotikov.
(Chlortetracycline) (Oils and fats)

BORISOV, V.P.; GORBASH, A.F.

Utilization of waste filtrate in the production of antibiotic feeds.
Spart.prom. 29 no.2:41 '63. . (MIRA 16:3)

1. Nemeshayevskiy zavod kormovykh antibiotikov.
(Feeds) (Waste products)

YURCHENKO, F.A.; ~~BORISOV, V.P.~~

Substituting ammonium chloride for ammonium nitrate in the
production media of antibiotics for feeds. Spirt.prom. 29 no.4:
28 '63. (MIRA 16:5)

1. Kiyevskiy spirtotrest.
(Ammonium chloride) (Feeds) (Antibiotics)

BORISOV, V.P.

Effect of rigidity requirements on the value of the minimum volume of systems with given stresses. Trudy KAI no.77:61..70 '63.

(MIRA 17:10)

BORISOV, V.P.; GALYUGA, T.N.; GORBASH, A.A.

Biosynthesis of vitamin B₁₂ and its losses in the various stages
of the production of vitaminized biomycin feeds. *Ferm. i spirt.*
prom. 30 no.1:24-27 '64. (MIRA 17:11)

1. Nemeshayevskiy zavod kormovykh antibiotikov.

BORISOV, V.P.

OSHEROV, S.Ya., kandidat tekhnicheskikh nauk; BORISOV, V.P.; KAPLUN, A.V.,
inzhener.

Superiority of turbine drives for feed pumps of electric power
stations. *Energomashinostroenie* 3 no.9:14-18 S '57. (MIRA 10:10)
(Turbines)

BORISOV, V.P., inzh.; TYRYSHKIN, V.G., kand. tekhn. nauk

Gas turbine manufacture in Italy. Energomashinostroenie 7
no.2:44-48 F '61. (MIRA 16:7)

(Italy--Gas turbines--Design and construction)

OSHEROV, S.Ya., kand.tekhn.nauk; BORISOV, V.P., inzh.; DERGACH, V.F., inzh.

GTU-15 gas turbine system manufactured by the "Ekonommaizer" factory.
Energomashinostroenie 9 no.8:8-11 Ag '63. (MIRA 16:8)
(Gas turbines)

BORISOV, V.P.

Using the method of given stresses in case of a hindered torsion of a caisson. Trudy KAI no.62:19-29 '61.

Using the focus method in designing thin-walled structures. Trudy KAI no.62:81-89 '61. (MIRA 17:2)

L 28720-65 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/I/EWP(t)/EWP(k)/EWP(b)/
EWA(h) Pp-1/Peb EM/JD

ACCESSION NR: AT5003075

1/2529/63/000/077/0061/0070

36
35
BT1

AUTHOR: Borisov, V. P.

TITLE: Effect of the stiffness requirements on the minimum volume of a system with prescribed stresses

SOURCE: Kazan. Aviatsionnyy institut. Trudy, no. 77, 1963. Stroitel'naya mekhanika, 61-70

TOPIC TAGS: shell stability, cylindrical shell, metal deformation, metal hardness, metal toughness, torsional vibration, shell rigidity

ABSTRACT: This article analyzes a method of calculating static indeterminate systems of minimum weight with respect to a prescribed stiffness. It is shown that this method can be used not only when calculating the lateral bending of beams and frames, but also for buckling, torsional buckling, etc. The requirements of stiffness as applied to structures increase their minimum weight. To solve the question of the rationality of one or another structure, it is always necessary to conduct a comparative analysis of the weight, strength and stiffness of a system of minimum volume with a system of constant cross section, other parameters

Card 1/2

L 28720-65

ACCESSION NR: AT5003075

being equal, since an increase in the volume and, hence in the weight, creates a condition in which stiffness oscillates within wide limits. The author concludes that a minimum-weight structure is longer lasting, since the calculated stresses are reduced several fold, which is particularly favorable for alternating loads. Orig. art. has: 1 figure, 1 table and 9 formulas.

ASSOCIATION: Kazanskiy aviatsionnyy institut (Kazan' aviation institute)

SUBMITTED: 15Dec59

ENCL: 00

SUB CODE: AS

NO REF BCV: 011

OTHER: 003

Cord 2/2

BORISOV, V.P.; GALYUGA, T.N.; GORBASH, A.A.

Device for the control of air sterility in factories of antibiotic feeds. Spirt. prom. 28 no.6:24-25 '62. (MIRA 16:10)

1. Nemesheyevskiy zavod kormovykh antibiotikov.

BORISOV, V. P.

Emergency aid in poisoning with radioactive iodine. Med.
rad. 7 no. 11:27-31 N°62. (MIRA 16:9)
(IODINE ISOTOPES—TOXICOLOGY)
(RADIATION—PROTECTIVE AGENTS) (THYROID GLAND)

ACCESSION NR: AT500E106

S/0000/64/000/000/0071/0077

AUTHOR: Borisov, V. P.

TITLE: Comparison of the distribution of molybdenum-99 and phosphorus-32 in animals

SOURCE: Raspredeleniye, biologicheskoye deystviye, uskoreniye vyvedeniya radioaktivnykh izotopov (Distribution, biological effect, acceleration of the excretion of radioactive isotopes); sbornik rabot. Moscow, Izd-vo Meditsina, 1964, 71-77

TOPIC TAGS: molybdenum-99, phosphorus-32, radioisotope, gastrointestinal tract, radioactivity, urine, bone, uranium, poisoning

ABSTRACT: The absorption and subsequent deposition of Mo⁹⁹ in rats is virtually the same whether the isotope is in the form of molybdenum oxide or molybdate. Mo⁹⁹ metabolism differs considerably from P³² metabolism. Specifically, Mo⁹⁹ does not concentrate in bone as does P³². With respect to distribution (in the early phase), Mo⁹⁹ may be classified with the isotopes that are distributed uniformly. It is also absorbed at a high rate (about 90%) from the digestive tract and is rapidly excreted (usually within 24 hours); chiefly through the kidneys. If the young products of uranium fission (up to 1-2 weeks old) enter the body, Mo⁹⁹ may constitute a substantial part of the resorbed radioisotopes. The role of Mo⁹⁹ is par-

Card 1/2

ACCESSION NR: AT5006105

ticularly significant during the first few hours after intoxication in the total radioactivity of the blood, skin, liver, kidneys, and urine. Orig. art. has 5 tables.

ASSOCIATION: none

SUBMITTED: 10Apr64

ENCL: 00

SUB CODE: , LS

NO REF SOV: 000

OTHER: 000

Card 2/2

L 34916-65

ACCESSION NR: AT5006109

S/0000/64/000/000/0094/0097

AUTHOR: Borisov, V. P.

17
BT 1

TITLE: Changes in the isotope ratio in a mixture of uranian fission products after absorption from the digestive tract

SOURCE: Raspredeleniye, biologicheskoye deystviye, uskoreniye vyvedeniya radioaktivnykh izotopov (Distribution, biological effect, acceleration of the excretion of radioactive isotopes); sbornik rabot. Moscow, Izd-vo Meditsina, 1964, 94-97

TOPIC TAGS: strontium-90, radioisotope, rare earth, gastrointestinal tract, bone, muscle, liver, skin, radioactivity, yttrium, zirconium

ABSTRACT: Large doses of a solution of fission fragments containing 91% rare-earth elements (mostly cerium-144), 6.8% strontium (5.1% Sr⁸⁹, 1.7% Sr⁹⁰), 1.7% Y⁹⁰ and 0.2% Zr⁹⁵ were introduced into the stomach of rats through a gastric sound. As a result of the more rapid absorption of strontium, the amount of this isotope and daughter yttrium in the body rose to 75.5%, with 93.6% in the bones, whereas the amount of rare-earth elements dropped to 5.8% (from 9.13% in the original preparation). The amount of strontium in the liver was lower than in the original solution. The amount of zirconium in the original solution was so low that no accurate

Card 1/2

L 34916-65

ACCESSION NR: AT5006109

conclusions could be drawn regarding this isotope. The results showed that 90-96% of the strontium, yttrium, and zirconium concentrated in bone, while more than 50% of the Ce¹⁴⁴ accumulated in the skin. Orig. art. has 5 tables.

ASSOCIATION: none

SUBMITTED: 10Apr64

ENCL: 00

SUB CODE: LS

NO REF SOV: 000

OTHER: 000

Card 2/2

L 34131-65 EWG(j)/EWT(m) GS

ACCESSION NR: AT5006134

S/0000/64/000/000/0291/0298

AUTHOR: Borisov, V. P.; Krivchenkova, R. S.

TITLE: Evaluation of some drugs for emergency use in case of injury by radioactive substances

19
SOURCE: Raspredeleniye, biologicheskoye deystviye, uskoreniye vyvedeniya radioaktivnykh izotopov. (Distribution, biological effect, acceleration of the excretion of radioactive isotopes); sbornik rabot. Moscow, Izd-vo Meditsina, 1964, 291-298

TOPIC TAGS: radioisotope, uranium-238, polonium-210, cerium-144, strontium-90, gastrointestinal tract, bone, liver

ABSTRACT: When radioactive substances pass into the stomach, the effectiveness of therapeutic preparations varies with the method of use. The simultaneous entry of uranium and sodium bicarbonate, uranium and the antidote for metals, or cerium and complexing agents into the gastrointestinal tract of rats accelerated deposition of the radioactive substances in the tissues and organs. Activated charcoa. failed to prevent absorption of the isotopes. The complexing agents trisodium-calcium salt of diethylenetriaminopenta-acetic acid (Na_3CaDTPA), proved to be less effective after entry of Cs^{144} into the digestive tract than after intraperitoneal injection.

Card 1/2

L 34131-65

ACCESSION NR: AT5006134

The use of complexing agents to wash the stomach or decontaminate the buccal cavity is contraindicated because the entry of these substances into the stomach after oral poisoning by Ce^{144} was found to elevate the level of deposition of the isotope in the liver and bones. Phosphates were useful in reducing deposition of the isotope in the liver of animals poisoned by U^{235} . The antidotum metallorum and "dry hydrogen sulfide" (hydroquinoline hydrosulfide) were effective against polonium in the stomach; barium sulfate against Sr^{90} poisoning; fluorexon (N, N-di-carboxymethyl aminomethylfluorescein) was effective against Ce^{144} , reducing deposition of the isotope in the skeleton and liver at the same time. Orig. art. has: 2 figures, 5 tables.

ASSOCIATION: none

SUBMITTED: 10Apr64

NO REF SOV: 000

ENCL: 00

OTHER: 000

SUB CODE: LS

Card 2/2

1207130001.0001

Effect of Annealing on the Mechanical Properties of Chromium-Plated Articles. V. S. Borisov and F. N. Naumov (*Metallovedenie i Obrabotka Metallov*, 1956, (12), 50-56).—(In Russian). Specimens of 30KhGSA steel (C 0.30, Si 1.01, Mn 0.93, Cr 0.93, Ni 0.11, P 0.015, S 0.01%) heat-treated to hardness H_{RC} 34-38, were oil-hardened at $880 \pm 10^\circ\text{C}$., annealed at $500 \pm 10^\circ\text{C}$., and subjected to tensile, impact-bending, and bending-fatigue tests. Cr-plated specimens of this steel were similarly tested after annealing for 3 hr. at 100° , 200° , 250° , or 300°C .. Tests were also carried out on Cr-plated normalized 0.45% C steel annealed at 100° - 300°C .. The Cr-plating bath compn. was (g./l.): CrO_3 , 250, H_2SO_4 , 2.5; c.d. 50 amp./dm.²; temp. 55°C .. As the Cr thickness increased from 0 to 0.2 mm, the U.T.S. (σ_b) of the alloy steel increased linearly from 128 to 137 kg./mm.² while the elongation (δ_2) fell from 13 to 10%. With the 0.45% C steel, σ_b only increased from 69 to 71 kg./mm.² and δ_2 fell from 26 to 19% (the drop being greatest for thicknesses < 0.1 mm). The thickness of the deposit had little effect on the impact strength of the alloy steel, but the first 0.05 mm. Cr deposited on the C steel caused a 37% reduction in impact strength. A further increase in thickness had no effect. Annealing at 100° - 300°C .. improved neither the tensile nor the impact properties of the plated specimens. The fatigue strengths (10^7 cycles) of alloy-steel specimens with Cr deposits of thickness 0, 0.10, 0.15, 0.20 mm. were 34.3, 38.8, 36.0, and 34 kg./mm.², resp. After annealing at 100° , 200° , 250° , and 300°C ., specimens with 0.1-mm. Cr deposit had fatigue strengths of 29, 26, 37, and 36 kg./mm.², resp.; for deposits 0.2 mm. thick the values were 24, 25, —, and 30 kg./mm.², resp. Evidently the fatigue strength is a min. for specimens annealed at 100° - 200°C ., so that the harmful

1/2

BORISOV, V. S. & NALMOY, F. N. 4E2c

effect of Cr plating cannot be attributed to absorbed H, for 50% of this would be evolved at 200° C. For Cr deposits 0.2 mm. thick, the internal stress as determined by Babichev's method (*Trenie i Iznos v Mashinakh*, 1953, (8)) is 3.6, 3.3, 3.8, 2.1, 1.7 kg./mm.² for annealing temp. of 0°, 100°, 200°, 250°, and 300° C., resp. Thus the effects of annealing temp. on internal stress and fatigue strength do not correspond. B. and N. attribute this to differences in the adhesion of the deposit leading to variations in the transmission of the internal stress from the coating to the basis metal.

-G. V. E. P.

fra P⁴⁴
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2/2

BORISOV, Y.S., inzh.; TREGUBENKO, G.P., inzh.

Automatic line for sheathing weld electrodes. Mashinostroitel'
no.9:22-23 S '59. (MIRA 13:2)
(Electrodes)

BORISOV, V. S., and VISHENKOV, S. A.

The Effect of Chemical Nickel Plating on the Fatigue Resistance of Parts.

Povysheniye iznosostoykosti i sroka sluzhby mashin. t. 2 (Increasing the Wear Resistance and Extending the Service Life of Machines. v. 2) Kiyev, Izd-vo AN UkrSSR, 1960. 290 p. 3,000 copies printed. (Series: Its: Trudy, t. 2)

Sponsoring Agency: Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye i Kiyevskoye oblastnoye pravleniya. Institut mekhaniki AN UkrSSR.

Editorial Board: Resp. Ed.: B.D. Grozin; Deputy Resp. Ed.: D.A. Draygor; M.P. Braun, I.D. Faynerman, I.V. Kragel'skiy; Scientific Secretary: M.L. Barabash; Ed. of v.2: Ya. A. Samokhvalov; Tech. Ed.: N.P. Rakhlina.

Coverage: The collection contains papers presented at the Third Scientific Technical Conference held in Kiyev in September 1957 on problems of increasing the wear resistance and extending the service life of machines. The conference was sponsored by the Institut stroitel'noy mekhaniki AN UkrSSR (Institute of Structural Mechanics of the Academy of Sciences Ukrainian SSR), and by the Kiyevskaya oblastnaya organizatsiya nauchno-tekhnicheskogo obshchestva mashinostroitel'noy promyshlennosti (Kiyev Regional Organization of the Scientific Technical Society of the Machine-Building Industry).

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23861
S/123/61/000/010/006/016
A004/A104

AUTHORS: Borisov, V. S. and Vishenkov, S. A.

TITLE: The effect of chemical nickel plating on the fatigue strength of parts

PERIODICAL: Referativnyy zhurnal; Mashinostroyeniye, no. 10, 1961; 86, abstract 10B607 (V sb. "Povysheniye iznosostoykosti i sroka sluzhby mashin. v. 2", Kiyev, AN UkrSSR, 1960, 214-219)

TEXT: The authors present the results of investigating the effect of chemical nickel plating on the fatigue strength of parts. It is shown that the chemical nickel plating of steel specimens without subsequent heat treatment practically does not lower the fatigue strength. In the field of limited endurance the fatigue strength of nickel-plated specimens is reduced considerably. After tempering at 400°C for one hour and a nickel coat of 0.03 mm on the sides, the fatigue strength is lowered by 45%. Chemical nickel plating increases the fatigue strength of the Al-4 aluminum alloy with a nickel layer thickness of 0.03 mm on the sides up to 38%.

N. Savina

[Abstractor's note: Complete translation]

Card 1/1.

26.2135

27650

S/024/61/000/004/008/025

E194/E155

AUTHORS: Bezmenov, V.Ya., and Borisov, V.S. (Moscow)

TITLE: A turbulent jet of air heated to 4000 °K

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1961, No.4, pp. 42-45

TEXT: Non-isothermal jets with considerable temperature gradients which are encountered in boiler furnaces and gas-turbine combustion chambers have been little studied. Previous work on the subject, which is briefly reviewed, makes various assumptions which are still not fully justified experimentally for a wide range of ρ_2/ρ_1 where ρ_2 is the air density in the initial part of the jet and ρ_1 the density of the surrounding medium. The present work describes investigations on a free submerged jet of air heated in an electric arc heater to a temperature of 4000 °K, for which the density ratio $\rho_2/\rho_1 = 14$. The air was delivered tangentially to an electric arc chamber with water-cooled electrodes and was discharged through a hollow electrode with an internal diameter of 30 mm. The temperature and total pressure were measured at various sections of the jet. The measurement
Card 1/ 6

27850

A turbulent jet of air heated to 4000°K S/024/61/000/004/008/025
E194/E155

technique is briefly described. The following notation is used:
 the relative velocity head on the axis of the jet,
 $p = \rho_m u_m^2 / \rho_{0m} u_{0m}^2$; the relative excess temperature
 $v = (t_m - t_a) / (t_{cp} - t_a)$. Figs. 2 and 3 give graphs of p and v
 as functions of x/d (the distance between the section considered
 and the discharge from the nozzle). Curves are also given for very
 moderate heating when the density ratio is approximately unity.
 It will be seen that the distribution of velocity head along the
 axis of the jet is not the same when the density ratio is 14 as
 when it is unity. Hence one of the assumptions made in previous
 work is incorrect. Fig.3 also shows a curve plotted by the
 following formula:

$$\kappa = \int_0^b \rho u du / \int_0^b \rho dy \quad (3)$$

derived by G.N. Abramovich (Ref.2: Teoriya turbulentnykh struy
 (The Theory of Turbulent Jets), Fizmatgiz, 1960). It will be
 seen that the calculated length of the initial section is shorter
 than is found experimentally, and the calculated temperature drop
 Card 2/ 6

2765A

A turbulent jet of air heated to 4000°K S/024/61/000/004/008/025
E194/E155

is more rapid than the experimental. The reasons for this are discussed. The position of the jet boundary was determined in three ways, giving the results plotted in Fig. 4, where curve (a) corresponds to formula (3), curve (b) to the assumption that the width of the zone of mixing does not depend on the degree of heating, and (c) to the assumption that the typical velocity is given by the following expression:

$$u = \frac{\int_0^b \rho u^2 dy}{\int_0^b \rho u dy} \quad (4)$$

This expression is recommended by B.F. Glikman (Ref. 6: Izv. AN SSSR, OTN, Energetika i avtomatika, 1959, No. 1) for high values of density ratio. It will be seen that the actual width of the jet lies below the value given by formula (3) and near to the other two curves. Figs. 5 and 6 give dimensionless velocity distribution $U = u/u_m$ and excess temperature $\theta = (t - t_a)/(t_m - t_a)$ at various sections. Curves are also given plotted according to the following formulas:

Card 3/ 6

A turbulent jet of air heated to 4000°K

27650

S/024/61/000/004/008/025
E194/E155

X

$$U = \frac{u}{u_m} = \left[1 - \left(\frac{y}{b} \right)^{3/2} \right]^2 \quad (5)$$

$$\frac{t - t_a}{t_m - t_a} = \sqrt{\frac{u}{u_m}} \quad (6)$$

It will be seen that expression (5) satisfactorily describes the velocity distribution, whilst the temperature distribution lies between the curves of expressions (5) and (6) but nearer to (5). There are 6 figures and 6 references: 5 Soviet and 1 English.

The English language reference reads:

Ref.4: Shih Pai. Fluid Dynamics of Jets.

D. Van Nostrand Company Inc., N.Y., 1954.

SUBMITTED: February 15, 1961

Card 4/6

S/122/62/000/001/002/005
D221/D304

AUTHOR: Borisov, V.S., Candidate of Technical Sciences

TITLE: Endurance of chromium plated crankshafts

PERIODICAL: Vestnik mashinostroyeniya, no. 1, 1962, 25-28

TEXT: Chromium plating may lead to a fall in fatigue strength in some cases. Various investigations indicate that it is necessary to limit the above process when the components are subject to cyclic loads. The author refers also to the experiments of stress concentrators made by I.V. Kudryavtsev and A.V. Ryabchenkov which demonstrated that the fatigue strength in undercut specimens decreased less than in plain components. The author carried out examinations on bending and torsion of plated and unplated parts made in heat-treated 40XHMА (40KhNMA) steel, where the cross holes were covered with lead during plating, and then removed. The fatigue strength on bending did not alter, whereas that on torsion even increased in the case of plated specimens. Detachable crankshafts in the same steel were also tested. Their journals were ground after

Card 1/3

S/122/62/000/001/002/005
D221/D304

Endurance of chromium ...

plating. One series was plated all over the fillet and oil hole, whereas the second group only on the journal itself. The fatigue curves were plotted with regard to the magnitude of torques and number of load cycles. The appearance of first cracks determined by the change in work of resonance machines was a signal for the test to stop. Only the rear parts of the crankshafts were subject to bending. An illustration is given of the test machine. The above revealed that the fatigue strength is maintained when fillets are not plated. It is important to avoid any deformation on the bending fillets to eliminate the risk of reducing the strength. The torsional tests were carried out in a special resonance machine. The plating of the webbs with oil holes did not alter the fatigue strength on torsion. Unfavorable results were obtained when crankshafts had no plated oil hole spots. Cracks were formed near these holes and at 45° to the axis of the journal. In the case of units plated over their fillets and webbs near the oil hole there are two types of damage: Along the oil cross-hole and on the fillet. This indicates that plating of the bending radius is equivalent to the covering of stress

Card 2/3

Endurance of chromium ...

S/122/62/000/001/002/005
D221/D304

concentrators as far as torsional stresses are concerned. There are 8 figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: 'Chromium for crankshafts', Diesel Power, v. 33, no. 8, (1955), 40-43; H.L. Logar, National Bureau of Standards, v. 43, no. 2, (1948), 101-120; VIII.

Card 3/3

24.6730.

1:0755

S/120/62/000/004/029/047
E039/E420

AUTHORS: Vladimirskiy, V.V., Borisov, V.S., Smolyankina, T.G.,
Gorbik, V.K., Kurdyukova, Z.A., Moskvtsev, V.A.,
Smirnov, V.S.

TITLE: Calculation and construction of pole piece correction
coils in the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 153-158

TEXT: Preliminary tests with model magnets showed that the field configuration required correction at the beginning and end of the acceleration cycle. Deviations which are constant in time can be corrected by a small geometrical displacement of the magnet blocks but transient deviations have to be corrected by coils on the pole faces. In the present article calculations are made on the form of these coils. As the radius of curvature of the magnet is large by comparison with the chamber dimensions the problem can be solved for the plane case. In a region limited by two hyperbolas $xy = \pm p$ and a straight line $x = 0$ the surface distribution of the currents is determined for the general case. Suitable positions for the conductors are then selected and the Card 1/2

Calculation and construction of ...

S/120/62/000/004/029/047
E039/E420

sum of the magnetic fields produced by these conductors is calculated on a computer. The construction of the coils is described in detail. A completely rigid construction is obtained by embedding the conductors in epoxy-resin. The average gradient produced by the gradient coils in the region ± 3 cm relative to the equilibrium orbit is -8.01 Oe/cm and the nonlinear coils on the edge produce a field $H = -316$ Oe with a mean square deviation of 10.8 Oe. The calculated and experimental values of the fields produced by gradient and nonlinear coils are compared and show reasonable agreement. There are 5 figures.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE): Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute of Electrophysical Apparatus GKAE)

SUBMITTED: March 29, 1962

Card 2/2

BORISOV, V. S.

446730

S/120/62/000/004/034/047
E140/E420

AUTHORS: Talyzin, A.N., Gol'din, L.L., Trokhachev, G.V.,
Radkevich, I.A., Mozalovskiy, I.A., Sokolovskiy, V.V.,
Kukavadze, G.M., Belozerova, L.A., Borisov, V.S.,
Bysheva, G.K., Veselov, M.D., Goryachev, Yu.M.

TITLE: Investigation and correction of the magnetic
characteristics of the proton synchrotron C-blocks at
small fields

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 184-192

TEXT: Comparative measurements are made on the C-blocks in the residual field (~ 35 Oe) the injection field (87 Oe) and the field at the beginning of the acceleration cycle (117 Oe). The iron for the magnet blocks was not pre-selected. This had no substantial effect on differences in the dynamic characteristics of the C-blocks, but the differences in residual field constituted 4.25% on the average and reached up to 10%. The mean-square deviation of the magnetic induction was 4.25%, and 1.4% in the injection field, thus exceeding by far the allowable tolerances. The variations were compensated by shunt resistances
Card 1/2

Investigation and correction ...

S/120/62/000/004/034/047
E140/E420

and by changing the order of the blocks. The present article is concerned with the measurement of the magnetic field intensity and its gradient in the residual field, the compensation by resistances connected across compensation windings, compensation of C-blocks at injection, with investigation of the dynamic characteristics. The equilibrium orbit in the synchrotron has not yet been studied in detail but it is found that either as a result of these corrections or the arrangement of the blocks, the loss of particles is fairly small. There are 7 figures and 1 table.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: March 31, 1968

Card 2/2

40758

24,6730

S/120/62/000/004/039/047
E039/E420

AUTHORS: Borisov, V.S., Gol'din, L.L., Goryachev, Yu.M.,
Grekov, N.N., Ryabov, A.P., Skachkov, S.V.,
Talyzin, A.N.

TITLE: Measurement of the basic magnetic characteristics of
the proton synchrotron C-blocks

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 206-212

TEXT: The ratio of the average field to its gradient $\bar{B}/\nabla\bar{B}$ is measured to an accuracy of 0.1% by an absolute method on a number of C-blocks chosen as standard. A comparison is then made with the other blocks. The apparatus consists of three series of six coils mounted on a marble slab 2 m long and 80 x 27 mm² cross-section and is supported on the two geodetic markers on the blocks. Signals obtained from these coils are proportional to the rate of change of the magnetic field at the orbital position and the difference between the inner and outer coils is proportional to the rate of change of the field gradient. Values of $\bar{B}/\nabla\bar{B}$ measured on three separate identical coil systems gave the following results: (1) 68.19 mm; (2) 68.05 mm; (3) 68.28 mm giving a mean value of Card 1/3

Measurement of the basic magnetic ... S/120/62/000/004/039/047
E039/E420

68.17 mm. The measurement was repeated using a "point" method with two coils only, one inside and one outside the equivalent orbit. Values of $B/\nabla B$ were made at 19 points in the blocks and at 8 points between blocks for two coil systems. Comparison of results shows: average of first method 68.19 mm; first "point" method value 68.21 mm, second "point" method value 68.40 mm. The high value for the second "point" method is not accounted for and an average of the first two figures is used in calculations. The distribution of the dynamic component of the field and its gradient in the C-blocks and in the gaps between blocks is measured by a compensation method and the residual field by means of a rotating coil. For a field of 5000 gauss

$$\frac{\overline{\nabla B}_{\text{gap}}}{\overline{\nabla B}_{\text{block}}} = 0.395 \quad \text{and} \quad \frac{\overline{B}_{\text{gap}}}{\overline{B}_{\text{block}}} = 0.581$$

Measurements of the dependence of $B/\nabla B$ on the induction are also made. These measurements aid the final choice of the radial distance between the focusing and defocusing groups of blocks and Card 2/3

Measurement of the basic magnetic ...

S/120/62/000/004/039/047
E039/E420

in determining the basic parameters of the magnetic field
correction system. There are 8 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki
GKAE (Institute of Theoretical and Experimental
Physics GKAE) *f*

SUBMITTED: April 11, 1962

Card 3/3

TALYZIN, A.M.; GOL'DIN L.L.; TROKHACHEV, G.V.; RADKEVICH, I.A.;
MOZALEVSKIY, I.A.; SOKOLOVSKIY, V.V.; KUKABADZE, G.M.;
BELOZEROVA, L.A.; BORISOV, V.S.; BYSHEVA, G.K.; VESOLOV, M.D.;
GORYACHEV, Yu.M.

Study and corrective measurements of the magnetic characteristics of S-elements of a proton synchrotron with low fields.
Prib. i tekh. eksp. 7 no.4:184-192 J1-Ag '62.
(MIRA 16:4)

1. Institut teoreticheskoy i eksperimental'noy fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR i Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.

(Magnetic measurements) (Synchrotron)

L 14438-66 EWT(m)/T IJP(e)

ACC NR: AT6002500

SOURCE CODE: UR/3138/65/000/362/0001/0012

AUTHOR: Birger, N. G.; Borisov, V. S.; Bysheva, G. K.; Gol'din, L. L.; Korotkov, M. N.; Martusov, Ye. T.; Sidorenko, Z. S.; Tumanov, G. K.

ORG: none

30
BT/

19, 55
TITLE: Measurement of proton momentum as a function of acceleration time on the synchrotron at the Institute of Theoretical and Experimental Physics

19, 55
SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 362, 1965. Izmereniye zavisimosti impul'sa protonov sinkhrotrona ITEF ot vremeni uskoreniya, 1-12

TOPIC TAGS: proton beam, synchrotron, particle physics

ABSTRACT: A beam of particles emitted at an angle of 0.222 rad to the direction of incident proton was analyzed by an SP-12 magnet located 13 m from a polyethylene target. Positively charged particles deflected by this magnet at an angle of 0.262 rad reached the detector. The detector count rate was measured as a function of magnet current. The energy of elastically scattered protons was used as a basis for determining momentum. The measurements were made at four different time intervals

Card 1/2

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L 14438-66
ACC NR: AT6002500

from the beginning of the acceleration cycle. The following table gives the results of these measurements

Results of measurements of proton momentum P as a function of acceleration time

t in sec	$P(1 \pm \delta P/P)^d$ in bev/c
0.404	2.20 (1 ± 0.006)
0.408	2.25 (1 ± 0.006)
0.813	4.45 (1 ± 0.006)
0.817	4.49 (1 ± 0.006)
1.176	6.35 (1 ± 0.006)
1.420	7.64 (1 ± 0.009)

where $\frac{\delta P}{P}$ is the relative error in momentum determination. The experimental errors are analyzed and the following formula is given for proton momentum as a function of acceleration time: $P = 0.08 + 5.34 t$. Orig. art. has: 6 figures, 1 table, 1 formula.

SUB CODE: 20/

SUBM DATE: 21Jun65/

ORIG REF: 002/

OTH REF: 000

⊖ ⊙
Card 2/2

ВОД 2507, V. 1.

USSR/Solid State Physics - Diffusion, Sintering, E-6

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34750

Author: Borisov, V. T., Lyubov, B. Ya.

Institution: None

Title: On the Theory of the Method of Determining the Diffusion Coefficient from the Boundaries of the Grains of Metals

Original Periodical: Fiz. metallov i metallovedeniye, 1955, 1, No 2, 289-302

Abstract: Mathematical foundation and a refinement are given for the method of determining the diffusion coefficient from the boundaries of grains of metals, based on the Fisher model (Fisher, I. C., Jr. Appl. Phys., 1951, 22, 74).

/ of /

- 1 -

BORISOV, V.T.

USSR/Crystals.

B-5

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18305

Author : B.M. Golikov, V.T. Borisov.

Title : Study of Autodiffusion of α - Iron.

Orig Pub : Probl. metalloved. i fiz. metallov, sb.4, 1955, 528-542

Abstract : A modification of the absorption method is proposed for the determination of small autodiffusion factors D. This modification requires no preliminary determination of the absorption factor of the β - radiation of the radioactive indicator. The processes taking place in the active layer and on the separating boundary layer-sample are taken into consideration. The form of the absorption function does not influence the value of $I(t) / I(t_0)$ much. It is shown how to take the isotope composition of the compound into consideration. It was found that within the temperature interval from 650 to 850°, the autodiffusion of α -Fe was described by the equation $D = 5.3 \times 10^2 \exp(-67100/RT) \text{ cm}^2\text{sec}^{-1}$.

Card 1/1

- 67 -

Borisov, V. T.

Metals

Determination of Diffusion Coefficients of Elements in Ferrite with Aid of Radioactive Isotopes. V. M. Golikov and V. T. Borisov. (Zavodskaya Laboratoriya, 1965, 21, 824-827). [In Russian]. The theory of diffusion coefficient determination in ferrite with the aid of radioactive isotopes is considered and ways of allowing for porosity in the deposited radioactive layer are described. The technique was used for studying the self-diffusion of iron in iron-chromium alloy. Values of the diffusion coefficient were obtained at annealing temperatures of 650-850°C and gave an activated energy higher than for pure iron. S. K.

of metal

Cent. Sci Res Inst. Ferrous Metallurgy

13071500, V. 17

Calculation of the Kinetics of Solidification of a Metallic
Drop under Different Temperature Conditions at its Surface.
V. F. Borisov, B. Ya. Lyubov, and D. E. Temkin (*Doklady
Akad. Nauk S.S.S.R.*, 1955, 104, (2), 223-226).—[In Russian].
Math. Assuming that the melt is not superheated, and con-
sidering the boundary conditions for the Fourier general
equation, equations for determining the position of the crystal
front are derived. It is shown that under certain conditions,
these reduce into relations obtained by other workers, and these
relations are compared.—G. V. E. T.

MG

of

(2)

ГОРДИСОВ, В. Т.

4
-4E2C

The Determination of the Coefficients of Volume- and Grain-Boundary Diffusion: Melnik, V. T., Borozov, V. M., Golikov, and B. Ya. Lyubov (Izvest. Akad. Nauk S.S.R., 1958, (Tekhn.), (10), 37-47) — (In Russian). The absorption method was used. The relative change of the integral activity is greater at higher temp. This is satisfactorily explained by theory and makes possible an analysis of the distribution of diffusion. The diffusion curves show three stages: (1) with a small gradient; (2) with a greater gradient; and (3) a smaller gradient again. In the first stage, there is a simultaneous transport of material both within the grain and across the grain boundary. The change in concentration (and hence the slope of the curve) is determined by the diffusion within the crystal, the magnitude of which is much greater than that by grain-boundary diffusion. Thus there is an increase in vol. at the part of the crystal adjacent to the surface layer, which results in a decrease of diffusion within the crystal. The diffusion through the boundaries is as before. At this stage the rate of change of concentration is determined by complex factors. The transition from the first to the second stage is slow for low temp. In stages (2)-(3), all the transported material is absorbed through the grain boundary, and the rate of change of concentration is again dependent on the coeff. of vol. diffusion; it is greater at higher temp. 8 ref.—N. E. R.

RS
MT

BORISOV, V.T.

Category : USSR/Solid State Physics - Diffusion. Sintering

E-6

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1246

Author : Borisov, V.T., Golikov, V.M.

Inst : Central Scientific-Research Inst. for Ferrous Metallurgy, USSR

Title : On the Theory of the Radiography Method for the Measurement of Diffusion Parameters.

Orig Pub : Zavod. laboratoriya, 1956, 22, No 2, 178-188

Abstract : A mathematical analysis is given for certain laws of diffusion near the separation boundary between two grains. The results are employed to process experimental data previously published, obtained by using radiography and metallographic etching methods in the study of diffusion through the grain boundaries of metals.

*Inst. Metal Studies & Physics of Metals.
Cent. Inst. Ferrous Metallurgy.*

Card : 1/1

BORISOV, V. T., GOLIKOV, V. M., LYUBOV, B. I. and SHCHERBEDIINSKIY

"Study of diffusion along the metal grain boundaries," a paper submitted at the International Conference on Radioisotopes in Scientific Research, Paris, 9-20 Sep 57.

16 2

STUDY OF GRAIN BOUNDARY DIFFUSION IN METALS
Presented at the International Conference on Diffusion
Types in Scientific Research, Sept. 9-20, 1957, in Dubna,
USSR. UNPUBLISHED BY Y. I. Dolozsky, Y. M. Izrael,
I. Y. Lyudskanov, and G. Y. Shishin-Vladimirov. London:
Pergamon Press, Ltd., 1957. 17p.

A method is presented which allows to determine D_{gb} from the data of just one experiment. Comparatively short diffusion annealing is sufficient for its application. Besides, the method does not require any infiltration of the specimen's entirety. Analysis of kinetic regularities of the diffusion element penetration into the polycrystal allows us to draw some conclusions concerning the theory of applying the autoradiographic method for measuring diffusion parameters. Equations are obtained describing the form of the diffusion front near grain boundaries; this allows to make quantitative evaluations of autoradiographic data. (auth)

11

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 1, p 202 (USSR) SOV/137-50-1-1517

AUTHORS: Borisov, V. T., Golikov, V. M., Shcherbedinskiy, G. V.

TITLE: Investigation of Boundary and Volumetric Diffusion Processes by the Method of Absorption of Beta-radiation (Ob izuchenii pogramichnoy i ob'yemnoy diffuzii metodom pogloshcheniya β -izlucheniya)

PERIODICAL: Sb. tr. In-t metallov. i fiz. metallov. Tsentr. nauch. issled. instituta chernoy metallurgii, 1958, Vol 5, pp 383-396

ABSTRACT: A description of experimental apparatus employing radioactive isotopes in studying grain-boundary diffusion processes by the radiation-absorption method. The specimen is maintained in an Ar atmosphere and is heated by means of an alternating current passing through it. An Al filter of a thickness of 10μ is placed between the specimen and the radiation counter. A method permitting the determination of the coefficient of absorption of β -radiation is presented. The design of an apparatus capable of depositing a radioactive layer by means of spraying is described, and a method for the determination of the thickness of the layer is given.

Card 1/1

M. G.

BORISOV V. T.

GRUZIN, P. L., FRANTSEVICH, I. N., ZHUKHOVITSKIY, A. A., BORISOV, V. T.,
and BOKSHTEYN, S. Z.

"Concerning the Diffusion and Electric Transmission of Carbon in Iron and its Alloys"

report presented at the UNESCO Conference on the Utilization of Radioactive Isotopes in Scientific Research, Paris, 9-20 Sept 1957.
Vestnik AN SSSR, 1958, v. 28, No. 1, pp. 71-78. (author, Vinogradov, A. P.)

5(4)

SOV/32-25-9-14/53

AUTHORS:

Borisov, V. T., Golikov, V. M., Shcherbedinskiy, G. V.

TITLE:

On the Determination of the Diffusion-Coefficients in Polycrystals From Concentration Curves

PERIODICAL:

Zavodskaya laboratoriya, 1959, Vol 25, Nr 9, pp 1070-1072 (USSR)

ABSTRACT:

Only qualitative evaluations of the experimental results obtained can be made since there is no theory as to the influence of the grain boundary on the form of the concentration curves which are obtained with the different variants of the layer analysis method. The present paper describes a method for the determination of the coefficients of the spatial diffusion D and boundary diffusion D_1 from the curves of the γ -radioactivity of the residue. The method may be used in such cases, where γ -radioactive isotopes are used in testing, and the concentration on the surface of the sample is constant during diffusion tempering. By using the scheme of a polycrystal described in a previous paper (Ref 1), equation (1) for the determination of the concentrate of the diffusing element is given. The solution of (1) results according to a suggestion by

Card 1/2

On the Determination of the Diffusion-Coefficients in SOV/32-25-9-14/53
Polycrystals From Concentration Curves

Whipple (Ref 2) and the integral radioactivity of the residue is determined according to equation (4). Diagrams are given which were obtained according to the method of the layer removal in the investigation of the autodiffusion of Fe in the alloy Fe-Ni-C by using the isotope Fe⁵⁹ at 900°, and a tempering duration of 37.7 hours. There are 1 figure and 2 references, 1 of which is Soviet.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy)

Card 2/2

5(4)

AUTHORS:

Borisov, V. T., Golikov, V. M.,
Shcherbedinskiy, G. V.

SOV/20-125-4-26/74

TITLE:

The Influence of the Consequences of a Phase Transformation
Upon Diffusion (Vliyaniye posledstviy fazovogo prevrashcheniya
na diffuziyu)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 4, pp 786-789
(USSR)

ABSTRACT:

Several papers (Refs 1,2) dealt with the influence exercised by the separating surfaces upon the diffusion rate. According to the results obtained by these investigations diffusion is accelerated if the grains of the polycrystal were crushed by a preceding phase transformation. The present paper intends to carry out a detailed investigation of this phenomenon. The test object used was an iron-nickel alloy: Ni 27.9 %; Si 0.02 %; vestiges of manganese; S 0.01 %; P-vestiges; Al 0.02 %; Cu-vestiges; Fe - the remainder. This alloy was chosen because at room temperature it may be either in the state with austenite structure or in that of martensite structure. In the alloy chosen in this case it is possible to investigate diffusion in austenite with a varying number of intergranular separating

Card 1/4

The Influence of the Consequences of a Phase
Transformation Upon Diffusion

SOV/20-125-4-26/74

surfaces. The investigations were carried out by means of the absorption method (Ref 3) with the radioactive iron isotope Fe^{59} serving as diffusing element. For the purpose of determining the diffusion coefficients in the interior and on the boundaries of the grains the kinetic curve is necessary - the dependence of the integral radioactivity of the sample on the duration of diffusion-annealing. The samples of the alloy to be investigated were annealed for 3 hours at $1,200^{\circ}$ in order to homogenize them. Immediately after annealing one of the series of samples was immersed in liquid nitrogen for the purpose of producing a martensite structure in them. The other sample retained its austenite structure. After this preliminary treatment a layer of Fe^{59} was sprayed on to the samples of both series in a vacuum, and the samples were then subjected to diffusion annealing in a temperature interval of from $700-1,200^{\circ}$. A diagram shows the original kinetic curves, which had been plotted with their original martensite- and austenite-structure. The radioactivity of the sample subjected to martensite transformation decreases considerably more slowly than

Card 2/4

The Influence of the Consequences of a Phase
Transformation Upon Diffusion

SOV/20-125-4-26/74

that of a sample which had an austenite structure in the initial state. All curves plotted within the temperature interval of from 1,200-800° are of this character. However, at 700° the activity of a sample that had a martensite structure before annealing decreases more rapidly than that of an austenite sample. According to the results obtained by these investigations thereis, within a wide interval a difference in the diffusion rate of iron in the samples of an iron-nickel alloy with different pre-treatment. At high temperatures the diffusion coefficients for the samples of both series are practically in agreement. Various possibilities of explaining these phenomena are briefly discussed. According to the authors' opinion, it is most probable that diffusion is slowed down at the separating boundaries which are arranged perpendicular to the front of the diffusion. The authors thank Academician G. V. Kurdymov for suggesting that this investigation be carried out. There are 3 figures and 5 Soviet references.

ASSOCIATION:
Card 3/4

Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy)

S/126/61/011/005/068/015
E073/E535

AUTHORS: Borisov, V.T., Golikov, V.M. and Shcherbedinskiy, G.V.
TITLE: The Effect of a Separation Boundary on Diffusion in Metals

PERIODICAL: Fizika metallov i metallovedeniye, 1961, vol.11, No.5, pp.709-713

TEXT: It is well known that the diffusion properties (Ref.1: P. L. Gruzin, E.V. Kuznetsov, G.V. Kurdyumov, DAN SSSR, 1953, 93, No.6) and other properties (Ref.2: Golovchiner, Ya.M., Tyapkin, Yu.D., DAN SSSR, 1953, 93, No.1; Ref.3: Sadovskiy, V.D., Malyshev, K.A., Sazonov, B.G. "Thermally induced transformations in steel") of austenite after a $\gamma \rightarrow \alpha \rightarrow \gamma$ transformation differ from the properties of austenite which has not undergone this transformation. These differences may remain up to temperatures considerably in excess of the temperature of the reverse $\alpha \rightarrow \gamma$ transformation. As a result of these transformations, new separation boundaries appear within the austenite grains and are, in fact, the boundaries of the original martensite crystals. The present authors have investigated the effect of separation boundaries within the austenite grains on

Card 1/8

BORISOV, S.V.

AVDEYEV, B.A.; BALASHOV, B.F., kandidat tekhnicheskikh nauk, retsenzent;
KHARITONOV, I.I., inzhener, retsenzent; BORISOV, S.V., inzhener,
redaktor; MODEL', B.I., tekhnicheskiy redaktor.

[Testing machines and instruments] Ispytatel'nye mashiny i pribory.
Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 350 p.
(MIRA 10:4)

(Testing machines)

SOBOLEV, N.D., BORISOV, S.V.

Attachment to a tensile machine for tests at high
temperatures and in a vacuum. Zav.lab. 26 no.7:877-87^o
'60. (MIRA 13:7)

1. Moskovskiy inzhenerno-fizicheskiy institut.
(Testing machines)

BORISOV, S.V., inzhener; RAGULIN, G.I., inzhener.

High-pressure mercury lamps with corrected chromaticity, Svetotekhnika
3 no.2:1-4 F '57. (MLRA 10:3)

1. Moskovskiy elektrolampovyy zavod.
(Electric lighting, Mercury-vapor)

SOV/70-3-1-17/26

AUTHORS: Borisov, S.V., Pavlov, P.V. and Belov, N.V.

TITLE: A Graphical Method for Solving the Fundamental Harker-Kasper Inequalities (Graficheskiy metod resheniya osnovnykh neravenstv Kharkera-Kaspera)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 1, pp 90-92 (USSR)

ABSTRACT: The most powerful inequality relating the absolute unitary structure amplitudes is:

$$(U_H \pm U_K)^2 \leq (1 \pm U_{H+K})(1 \pm U_{H-K}) .$$

This leads to a relationship between the signs of $S_{H+K} = S_H \cdot S_K$ and $S_{H-K} = S_H \cdot S_K$. The examination of all quartets of reflections is a long process and can be facilitated by suitable graphs. If $(U_H \pm U_K)$ is denoted by Σ and $(1 \pm U_{H+K})$ and $(1 \pm U_{H-K})$ by x and y , respectively, then the inequality is $\Sigma^2 \leq xy$ which takes the form of hyperbolae for the case of equivalence. Lines of constant Σ are drawn out on two graphs (each with U_{H-K} as abscissae and U_{H+K} as ordinates) one with values of Σ greater than 1 and

Card1/3

SOV/70-3-1-17/26

A Graphical Method for Solving the Fundamental Harker-Kasper Inequalities

the other with values less than 1. The graphs are then divided into four regions: a) where $S_{H-K} = S_H \cdot S_K$ obtains; b) where $S_{H+K} = S_H \cdot S_K$ obtains; c) where neither obtains and ab) where both are true. These can be overlaid with weighted reciprocal nets. It can be seen that the most effective inequalities will be obtained when three of the amplitudes selected are large and the fourth small. For values of Σ near to 1 the inequalities will also be effective, for a pair U_{H+K} and U_{H-K} of the order of 0.15 to 0.20. There are 3 figures and 7 references, 5 of which are Soviet and 2 English.

Card 2/3

SOV/70-3-1-17/26

A Graphical Method for Solving the Fundamental Harker-Kasper
Inequalities

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography of the Ac.Sc.USSR)

SUBMITTED: November 25, 1957

Card 3/3

AUTHORS: Borisov, S.V., Golovachev, V.P. and Belov, N.V. ^{70-3-3-2/36}

TITLE: On the Arbitrary Allocation of Signs in Direct Methods of Determining Crystal Structures (O proizvol'no zadavayemykh znakakh pri pryamykh sposobakh rasshifrovki kristallicheskikh struktur)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 3, pp 269 - 276 (USSR)

ABSTRACT: The limiting conditions on the arbitrarily allocated signs of three-structure amplitudes which are connected with the use of the direct methods of analysis are worked out and tabulated for all symmetries except inversion. The equivalent groups of centres of symmetry are listed for the seven crystal systems with lattices of the P, C, I and F types and under the headings of the Bravais lattices, the equivalent centres for the tabulated forms of the structure factors, the groupings of the different classes of reflections, the number of arbitrarily assignable signs and the types of reflections for which it is not permissible to allocate signs arbitrarily are tabulated. The same types of information are also given for the plane groups. Such data is not available elsewhere in organised form. There are 6 figures, 3 tables and 8 references, Card 1/2 1 of which is Soviet and 7 English.

70-3-3-2/36

On the Arbitrary Allocation of Signs in Direct Methods of Determining
Crystal Structures

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography, Ac.Sc. USSR)

SUBMITTED: March 14, 1958.

Card 2/2

AUTHORS: Borisov, S.V. and Golovachev, V.P. 70-3-3-31/36

TITLE: On Making More Precise Measurements of the Effective
Camera Radius in X-ray Diffraction Photographs (Ob
utochnenii radiusa kamery po rentgenogrammam)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 3, pp 384 - 385
(USSR).

ABSTRACT: Successive orders of the same reflection or the same reflection with several wavelengths are used in this method. The ratio between the sines of the true Bragg angles is then a simple fraction or the ratio of the wavelengths. If the radius of the cassette is in doubt then the constant of proportionality for Θ is not known exactly. If $c = 90/\pi R$ and $c_0 = c(1 + h)$ then $\sin(1 + h)\theta_1 = k \sin(1 + h)\theta_2$ which can be solved for c_0 . An analogous equation is given for a plane cassette. A diagram is given to show how the equations can be solved graphically. The method requires no special arrangements but its accuracy does not exceed that of any other method (asymmetric film, internal standard substance, etc.), being about 1%.
There is 1 figure.

Card 1/2

On Making More Precise Measurements of the Effective Camera Radius
in X-ray Diffraction Photographs

70-3-3-31/36

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet
(Gor'kiy State University)

SUBMITTED: February 14, 1958

Card 2/2

ILYUKHIN, V.V.; BORISOV, S.V.

Quantitative evaluations of the maximums of the three-dimensional
Paterson function. Zhur. strukt. khim. 1 no.1:80-85 My-Je '60.
(MIRA 13:8)

1. Institut kristallografii AN SSSR i Institut neorganicheskoy
khimii Sibirskogo otdeleniya AN SSSR.
(Crystallography, Mathematical)

23740

18.8200

2808, 1454, 1416

S/089/61/010/006/005/011
B136/B201

21.1300 (1138, 1425, 1504)

AUTHORS: Fridman, Ya. B., Sobolev, N. D., Borisov, S. V. Yegorov,
V. I., Konoplenko, V. P., Morozov, Ye. M. Shapovalov, L. A.
and Shorr, B. F.

TITLE: Some problems of thermal strength in reactor construction

PERIODICAL: Atomnaya energiya, v. 10, no. 6, 1961, 606 - 619

TEXT: The general idea of the failure of thermal strength includes two types of fracture: the gradual (subcritical) fracture as a consequence of an extreme deformation or of a great number of cracks or of large-sized cracks; causes and manifestations of those fractures are discussed, and the loss of elastic or plastic strength on the passage through the critical state. Either type of fracture may be brought about by four causes of stress: 1, mechanical or thermal shock stresses; 2, brief static loads for some minutes or hours; 3, static loads for some months or years; 4, periodic loads. Fig. 1 presents examples in the variation of elastic and plastic conditions in a tube, and a fictitious elastic tension is shown to arise in the plastic zone (dashed line), while the forms of mechanical

Card 1/9

23740

Some problems of thermal strength ...

S/089/61/010/006/005/011
B136/B201

and thermal stress are intercompared in Fig. 4. Creep arises in nonuniformly heated structural elements, and cracks appear as a consequence of plastic deformation, particularly with materials having a low plasticity at room temperature. For calculating the creeping process the assumption is made on the basis of the creep theory that there is a functional relationship between the rate of creep v_1 , the instantaneous stress σ_1 ,

the temperature T , the time τ , and the plastic deformation P , namely, $v_1 = v_1 \left(\frac{P}{P_*} \right)^{-\alpha}$. Here, $P_* = \int_0^{\tau} v_1 d\tau$; $v_1 = f_1(\sigma_1, T)$; $P_* = f_*(\sigma_1, T)$. The thermal

fatigue fracture has much in common with the mechanical one. It can be therefore determined from the known mechanical properties of a material.

Whereas, however, the thermal fracture appears already after $10^3 - 10^4$ cycles, the mechanical one takes $10^7 - 10^8$ cycles to appear. A characteristic feature of the thermal fracture is the local deformation in zones with a particularly large temperature difference also in homogeneous fields of stress. This is also related to the appearance of high microstresses (Table 3). For sudden thermal shocks the temperature jump giving rise to a brittle fracture may

Card 2/9

Some problems of thermal strength ...

23740
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be estimated by an equation. Of importance in the practice, however, is the creep character and the durability of the material under combined mechanical and nonsteady thermal loads. Experimental results are illustrated in Fig. 9, where the curves of variation of length-versus-time (scale 400:1) are compared with the cyclic temperature curve II and the thermal and elastic deformation III. As opposed to combined stress conditions, in which the strain-stress characteristic concerned is worsened with increased temperatures, stresses in case of a purely thermal stress are of a thermal origin and lead to bulging of structural elements in the hot zones, without, however, causing their breakdown. The micromechanical properties were checked in two ways. The principle of the second is illustrated in Fig. 13, while the results of the former - for static elongations and at 1400 - 1500°C in vacuum or in a controlled atmosphere, are presented in Fig. 12. In Fig. 13, 1 denotes the sample with a cross section of 2 X 1 or 3 X 1 mm, that is placed in a groove milled out from block 2. The pressure is yielded by stamp 3 made of tungsten briquettes 4. The resulting breakdown is indicated over contact 7. There are 13 figures, 3 tables, and 39 references: 27 Soviet-bloc and 12 non-Soviet-bloc. The three most recent references to English-language publications
Card 3/9

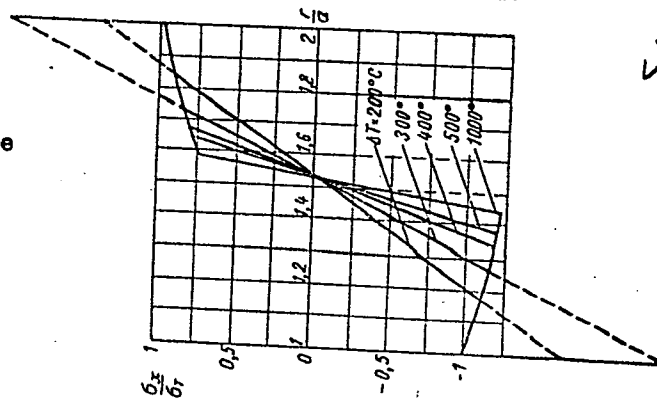
Some problems of thermal strength ...

23710
S/089/61/010/006/005/011
B136/B201

read as follows: Fracture, New York, Wiley and Sons, 1959; E. Sternbery, I. Chakravorty, Quart. Appl. Math., 17. no. 2, 205 (1959); E. Glenny et al. J. Inst. Metals, May (1959).

SUBMITTED: September 19, 1960

Legend to Fig. 1: Distribution of axial stresses and enlargement of the plastic zone in a thick-walled tube with various temperature jumps: r - radius of an arbitrary point; a - inner radius



Card 4/9

BORISOV, S.V.; BELOV, N.V., akademik

Crystalline structure of simpsonite $Al_4Ta_3O_{13}(F, OH)$. Dokl.
AN SSSR 147 no.3:683-686 N '62. (MIRA 15:12)
(Simpsonite)

ILYUKHIN, V.V.; BORISOV, S.V.

Quantitative evaluation of the maximums of the two-dimensional
Paterson function (method of integral characteristics). Zhur.
strukt.khim. 4 no.4:602-609 J1-Ag '63. (MIRA 16:9)

1. Institut kristallografii AN SSSR i Institut neorganicheskoy
khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Crystallography, Mathematical)

BORISOV, S.V.; KLEVTSOVA, R.F.

Crystal structure of TR-Sr-apatite. Zhur.strukt.khim. 4 no.4:629-631
Jl-Ag '63. (MIRA 16:9)

1. Institut neorganicheskoy khimii Sibirskego otdeleniya AN SSSR,
Novosibirsk.
(Apatite) (Strontium) (Rare earths) (Crystallography)

ACCESSION NR: APh039392

S/0070/64/009/003/0330/0334

AUTHORS: Brusentsev, F. A.; Borisov, S. V.

TITLE: Discrimination of crystal structure from a set of Patterson peaks by means of a computer

SOURCE: Kristallografiya, v. 9, no. 3, 1964, 330-334

TOPIC TAGS: computer programming, crystal structure, Patterson function, simpsonite

ABSTRACT: One of the principal tasks in deciphering the Patterson function is a solution of the problem concerning the distribution of N atoms for M possible sites (M^N) by peaks of the Patterson function or by maxima when minimizing the function. The authors propose a program that offers a very simple approach to the solution of this problem, permitting a check on unnecessary peaks by means of comparing the divergence factors. This simplification, which greatly facilitates and accelerates programming, does not permit determination of some other structural properties, such as symmetry. The procedure involves: computation of the divergence factor R successively for M structural variants with n known atoms, choosing one of these with a minimal value of divergence. The coordinates of the peak corresponding to
Card 1/2

ACCESSION NR: APL039392

this variant apply to the (n+1)st atom. Considering that the structure now consists of (n+1) atoms, one seeks the (n+2)nd atom. In this procedure, R may be computed either from all M peaks or only from the remaining (M-1) peaks. The procedure is continued till the positions of all (N-n) atoms of the given structure are defined. It is noted that (in setting up the program) a definite number of unknown kinds of atoms and a definite number of unknown atoms of each kind are assumed. The kind of atom is determined by its atomic number. The divergence factor may be written for only selected atoms, for only those atoms having a value of R that differs by no more than some predetermined value needed for the solution, or for all atoms. The latter two are useful when the R factors for different peaks are nearly the same and when the computer, because of experimental errors, may select the wrong peaks. A program was set up to test this procedure for the structure of simpsonite and gave good results. Orig. art. has: 1 table and 2 formulas.

ASSOCIATION: Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR
(Institute of Inorganic Chemistry, Siberian Department, AN SSSR)

SUBMITTED: 21Jun63

ENCL: 00

SUB CODE: SS, DP

NO REF SOV: 008

OTHER: 005

Card 2/2

BORISOV, S.V.; BRUSENTSEV, P.A.; KLEVTSOVA, R.F.; BELOV, N.V., akademik

Crystal structure of creedite $\text{Ca}_3\text{Al}_2(\text{F,OH})_{10}\text{SO}_4 \cdot 2\text{H}_2\text{O}$. Dokl.
AN SSSR 155 no. 5:1082-1084 Ap '64. (MIRA 17:5)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN
SSSR.

BRUSEN'TSEV, F.A.; BORISOV, S.V.

Determining the crystalline structure from a set of Patterson's peaks by means of a computer. Kristallografiia 9 no.3:330-334 My-Je '64. (MIRA 17:6)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.

BORISOV, S.V.; KLEVTSOVA, R.F.; BELOV, N.V., akademik

Crystalline texture of "uklonskovite" $\text{NaMg}[\text{SO}_4](\text{OH}) \cdot 2\text{H}_2\text{O}$.
Dokl. AN SSSR 158 no.1:116-118 S-O '64 (MIRA 17:8)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

L 53637-65 EWT(d)/EWI(m)/EWP(w)/EFF(c)/EWA(d)/T/EWP(t)/EWP(k)/EWP(h)/EWP(z)/EWP(b)/
EWP(l)/EWA(c) Pf-4/Pz-4 MJW/JD/HW/EM/GS

ACCESSION NR: AT5010251

UR/0000/65/000/000/0012/0014

AUTHOR: Borisov, S. V.

39
B+1

TITLE: Apparatus for creep testing at variable temperature

SOURCE: Mashiny i pribory dlya ispytaniya metallov i plastmass (Machines and instruments for testing metals and plastics); sbornik statey. Moscow, Izd-vo Mashinostroyeniye, 1965, 12-14

TOPIC TAGS: creep characteristic, creep mechanism, material testing, temperature, temperature test/ RD 09 electromotor, E1852 steel

ABSTRACT: A special device was created for performing reliable experiments in plastic deformation under static loading with variable temperature. The device (see Fig. 1 on the Enclosure) allows tensile strain loading of the specimen while the specimen simultaneously undergoes cyclic variation of temperature. The amount of plastic deformation is noted at the end of each temperature cycle. Specimens are in the form of thin-walled tubes with head nodes. The working part of the specimen wall is 0.5 mm in thickness. Heating and cooling of the specimens are done by means of an electric current and air respectively. An RD-09 electromotor, capable of producing two strain speeds (2 and 100 mm/min), is used with the device.

Card 1/3

L 55637-65

ACCESSION NR: AT5010251

Also featured is a recording device which plots changes in specimen length with temperature and cycle number. The results of creep testing E1852 steel are given. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 15Dec64

ENCL: 01

SUB CODE: A5,1E

NO REF SOV: 000

OTHER: 000

Card 2/3

L 53637-65

ACCESSION NR: AT5010251

ENCLOSURE: 01

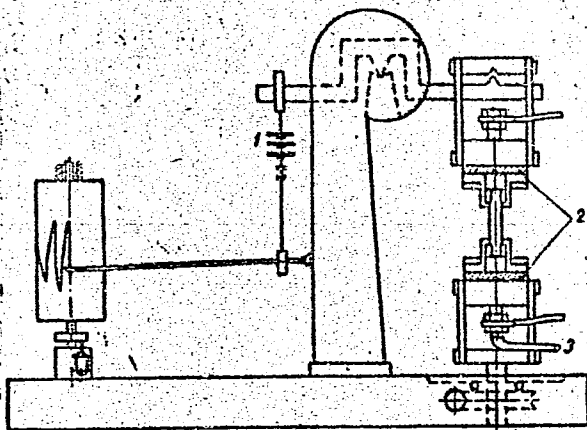


Fig. 1. Principal diagram of the device

1- weights; 2- electric insulation; 3- air

llc

Card 3/3

BRUSENTSEV, F.A.; BORISOV, S.V.; KLEVTSOVA, R.F.

Defining more accurately the crystalline structure of oreodite
 $\text{Ca}_3\text{Al}_2(\text{F},\text{OH})_{10}\text{SO}_4 \cdot 2\text{H}_2\text{O}$. Zhur. strukt. khim. 6 no. 4:567-570
Jl-Ag '65 (MIRA 19:1)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR,
g. Novosibirsk. Submitted June 22, 1964.

BAKAKIN, V.V.; GAGARINSKIY, Yu.V.; BORISOV, S.V.; ZAIMENOVSKIY, G.M.;
DURASOVA, S.A.

Certain crystal chemical features of hydrated uranium tetrafluoride
of cubical form. Zhur. strukt. khim. 6 no. 4:562-566 J1-Ag '65
(MIRA 19:1)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR,
g. Novosibirsk. Submitted August 24, 1964.

BORISOV, S.V.; BRUCEVSEV, F.A.

More accurate definition of the structure of "uklonskovit".
Zhur.strukt.khim. 6 no.5:788-790 S-U '65.

(MIRA 18:12)

L. Institut neorganicheskoy khimii Sibirskogo otdeleniya
AN SSSR, g. Novosibirsk. Submitted April 24, 1965.

606074-67

... (W) / (W) (L) / (L) ... (L) (L) ... (L) (L)

ACC NR: AP6019023

(N)

SOURCE CODE: UR/0032/66/032/001/0089/0091

AUTHORS: Borisov, S. V.; Yakovlev, V. V.

65

ORG: Moscow Engineering Physics Institute (Moskovskiy inzhenerno-fizicheskiy institut)

B

TITLE: A method for estimating the plasticity and strength of low-plasticity materials

18

SOURCE: Zavodskaya laboratoriya, v. 32, no. 1, 1966, 89-91

TOPIC TAGS: plasticity, compressive strength, alloy, cast iron, beryllium, graphite, plastic, hydraulic device, hydrostatic pressure / V96 alloy

ABSTRACT: A method of estimating the plasticity and strength of low-plasticity materials is proposed. The method was developed because, as a rule, the estimates of mechanical properties from tensile tests cannot be applied to low-plasticity materials. The method is based on indentation of a flat specimen with a spherical punch. The specimen is placed on a support with a depression. Specimens of plastic, graphite, V96 alloy, cast iron, and beryllium were tested. The breaking loads of these materials were 3000, 700, 20 000, 9000--10 000, 8100, and 9200 kg, respectively. The testing creates stressed-state zones: soft (hydrostatic stress) in the upper part, and hard (plane deformation) in the lower part. Analysis of the test results

Cord 1/2

UDC: 620.17

L 06074-67

ACC NR: AP6019023 D

should take into account that, for materials similar in strength, breakings with a larger hole correspond to higher plasticity. Orig. art. has: 1 formula, 1 table, 2 diagrams, and 1 photograph.

SUB CODE: 1120/ SUBM DATE: none/ ORIG REF: 001

Card 2/2 *egh*

ACC NR: AP6037035

SOURCE CODE: UR/0085/66/000/012/0026/0027

AUTHOR: Borisov, T.

ORG: none

TITLE: Space probes of life on Mars

SOURCE: Kryl'ya rodiny, no. 12, 1966, 26-27

TOPIC TAGS: Mars planet, soft landing spacecraft, space probe, space biology, spacecraft, space research facility/Mars 1, Mariner 4 spaceship, Voyager spaceship

ABSTRACT: Based on past and current scientific research, the possibility is discussed of the existence of various forms of life on Mars, and of the probable future discoveries by space probes now planned. Achievements are discussed of "Mars-1", "Mariner-4", and present work being carried out in connection with an automatic biological laboratory for finding life on Mars, which is to be installed on the "Voyager" spaceship to effect a soft landing on Mars in the seventies. The utility of the research planned and the various means of ascertaining the presence of microbiology are analyzed. Orig. art. has: 1 figure. [GC]

Card 1/1 SUB CODE: 03,06,22/SUBM DATE: none/