EWT(m)/T/EWA(m)-2

ION NR.: AP5007709   S/0367/65/001/001/0092/0095

Baldin, A. M.; Govorkov, B. B.; Dantem   P.   Lebedev, A. I.

Near threshold photoproduction of neutral pions

SOURCE   Yadernaya fizika, v. 1, no. 1, 1965, 92-95

TAGS: neutral pion production, pion photoproduction, electrical dipole
photoproduction, near threshold pion production

ABSTRACT· The correct determination of the physical parameters of low-energy
pions acquired special importance in connection with the hypothesis concerning
the meson (A. M. Baldin, Nuovo Cim., 8, 569, 1958; A. M. Baldin, F. Kabir,
DAN SSSR, 122, 361, 1958; A. M. Baldin, A. A. Kumar, Proc. Int. Conf. on High
Energy Physics at CERN, 1962, p. 657) Experimental data on the $\gamma + p \to p + \pi^\circ$
reaction have been analyzed in the vicinity of the threshold so as to determine
the electrical dipole amplitude E for π°-meson photoproduction. Two methods of
determining E lead to different values for this quantity. The authors remark in
a note added in proof or 19 December 1964 that in view of the paper by Yu. D.
Prokoshkin submitted to the 12th International Conference on High Energy Physics

Card   1/2

L 41012-65
ACCESSION NR: AP5007709

(Dubna, August 1964), which seems to rule out the existence of the π_2^0 - meson, it is even more important to determine the correct S-wave π^0 photoproduction amplitude on protons in the future. This could then eliminate the discrepancies found in the article. Orig. art. has: 9 formulas.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute of the Academy of Sciences, SSSR)

SUBMITTED: 20Jul64   ENCL: 00   SUB CODE: NP

NO REF SOV: 006   OTHER: 002

Card 2/2

ACC NR: AP6034220   SOURCE CODE: UR/0120/66/000/005/0060/0066

AUTHOR: Gapotchenko, A. G.; Govorkov, B. B.; Denisov, S. P.; Kotel'nikov, N. G.;
Stoyanova, D. A.

ORG: Physics Institute of the Academy of Sciences, SSSR,   Moscow (Fizicheskiy
institut AN SSSR, Moskva)

TITLE: A spark chamber as a detector of high-energy electron and photo showers

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1966, 60-66

TOPIC TAGS: spark camera, spark chamber, electron energy, ELECTRON DETECTION

ABSTRACT: Characteristics of a multi-plate spark chamber used as a detector of
γ-quanta and electron showers whose energies range between 50 and 200 Mev are studied.
The total number of sparks formed in the camera while it is registering showers is
proportional to the energy of primary particles; the average number of sparks is
linearly related to the primary particle energy. Fluctuations in the total number of
sparks varies according to Poisson's law. A formula relating the thickness of the
chamber electrodes with the camera resolution is derived. Data on spark distri-
bution along the shower axis and on the effectiveness of the camera in registering
γ-quanta are given. Orig. art. has: 8 figures.

SUB CODE: 20, 14/ SUBM DATE: 09Nov65/ ORIG REF: 003/ OTH REF: 006

Card 1/1   UDC: 539.1.073

GOVORKOV, E.

Sorevnovanie za snizhenie sebestoi-
mosti (Competition for reducing costs). Moskva,
Profizdat, 1952. 87 p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 1, April 1953

ACC NR: AP7005608   SOURCE CODE: UR/0413/67/000/002/0048/0048

INVENTOR: Anfilov, Ye. A.; Govorkov, I. T.; Gurevich, R. V.; Zhuchkin, I. A.; Kuznetsov, V. D.; Olifin, L. K.

ORG: None

TITLE: A cophased antenna array with electrical scanning. Class 21, No. 190433

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1967, 48

TOPIC TAGS: dipole antenna, antenna array, antenna directivity

ABSTRACT: This Author's Certificate introduces a cophased antenna array with electrical scanning. The installation is made in the form of center-fed dipoles arranged in groups and equipped with an aperiodic or tuned reflector. In order to reduce the level of side lobes of the directional pattern in the horizontal plane, the lower group of dipoles is shifted horizontally with respect to the upper group in the plane of the array by one-half the distance between the adjacent dipoles in the group.

Card 1/2   UDC: 621.396.677.32
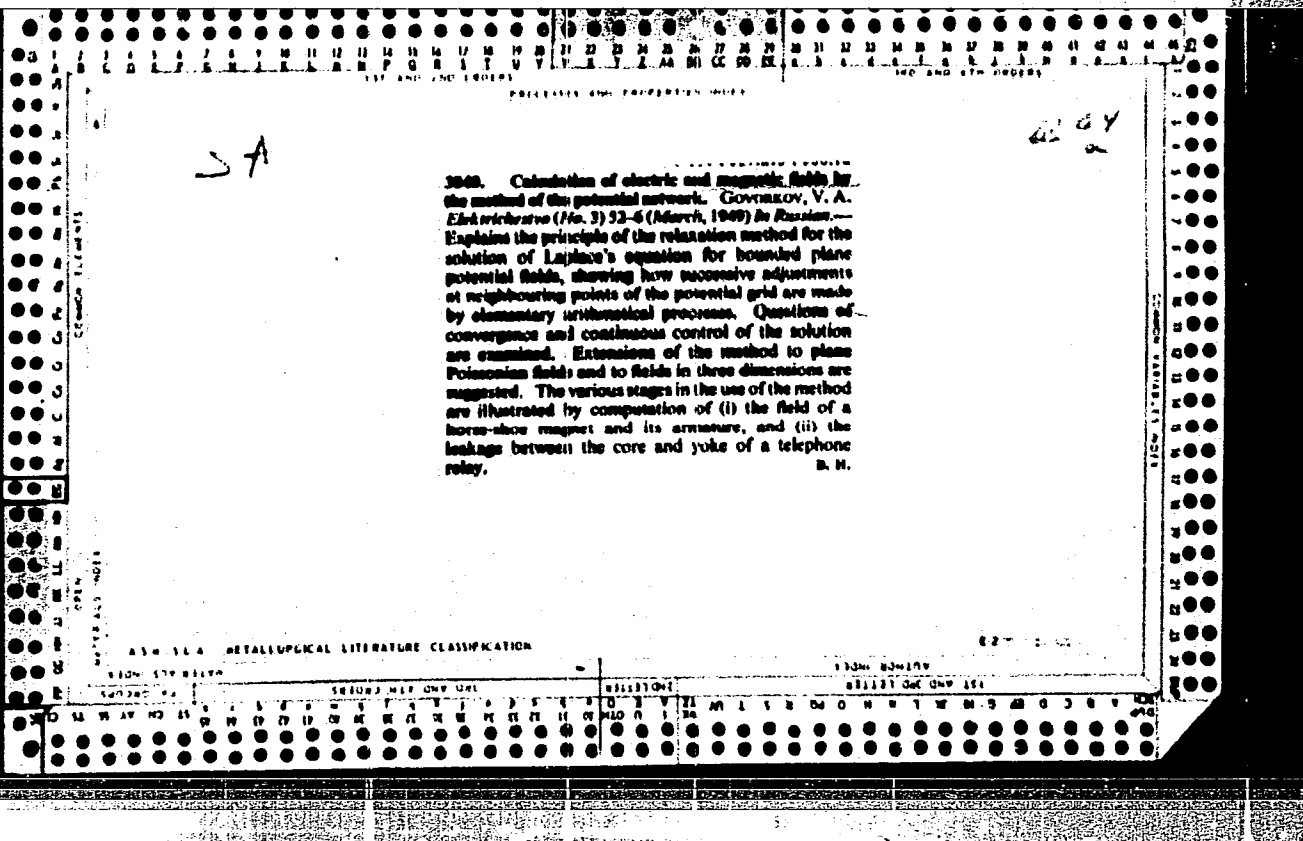
ACC NR: AP7005608
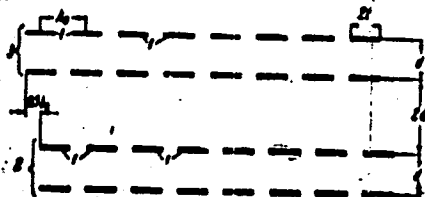
1—center-fed dipoles; 2—lower group of dipoles; 3—upper group

SUB CODE: 09/ SUBM DATE: 27Aug65

GOVORKOV, N.A.

MEKLER, A.G., kandidat tekhnicheskikh nauk; GOVORKOV, N.A., inzhener, retsenzent; YEREMENKO, N.T., inzhener, retsenzent; SMIRNOV, P.Ye., inzhener, redaktor; MODEL', B.O., tekhnicheskiy redaktor

[Electric equipment for hoisting and transporting machinery] Elektrooborudovanie pod"emno-transportnykh mashin. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroitel'noi lit-ry, 1954. 372 p.   (MLRA 8:4)
     (Electric machinery)   (Hoisting machinery)

3060.   Calculation of electric and magnetic fields by the method of the potential network. GOVTSILOV, V. A. *Elektrichestvo* (No. 3) 53–6 (March, 1949) In Russian.—Explains the principle of the relaxation method for the solution of Laplace's equation for bounded plane potential fields, showing how successive adjustments at neighbouring points of the potential grid are made by elementary arithmetical processes. Questions of convergence and continuous control of the solution are examined. Extensions of the method to plane Poissonian fields and to fields in three dimensions are suggested. The various stages in the use of the method are illustrated by computation of (i) the field of a horse-shoe magnet and its armature, and (ii) the leakage between the core and yoke of a telephone relay.   B. H.

GOVORKOV, V. A.

SA

B 64
q

'621.318.2.042.1

3364. Design of cores. V. A. Govorkov. Elektrichestvo (No. 4) 47-56 (April, 1950) In Russian.

If the equations of the magnetic circuit are so expressed as to contain a function of the specific energy $W(B) = \int H dB$, which may be unambiguously determined from the magnetization curve of the material, a number of problems in the practical calculation of magnetic circuits can be solved. An important example is the calculation of laminated cores with overlap of the individual sheets. The method is based on d.c. magnetization, but its results are suitable for alternating magnetization as well, provided the frequency is not too high. The approximation formulae derived are based on a broken linear curve substituted for the actual magnetization curve.

B. F. KRAUS

Cand. Tech Sci,   Moscow Elec. Eng. Communications

Great

GOVORKOV, V. A.

"Electric and Magnetic Fields," 339 p., State Publishing House Pertaining to Lit.
on Communications and Radio, Moscow 1951.

621.3.013

4005.   Calculation of electric and magnetic fields in polar coordinates by the method of potential mesh. V.—A.—Giovanov. *Elektrichestvo*, No. 7, 51 8 (July, 1951) *In Russian*.

A mesh of radii and concentric circles, whose centre is at the origin is applied to the field. When the radii of these circles are taken in a geometrical progression whose common ratio is $f(a)$, where a is the angular separation between radii, the equation $\phi_P + \phi_R + \phi_U + \phi_S - 4\phi_o = 0$ is derived from the Laplace equation for a point "0" in the mesh. ϕ_P, etc., are the potentials at each of the 4 points adjacent to "0" in the mesh. An assumed field is applied and the above equation tested at each point in turn. By successive approximation the potential at each point is adjusted to give minimum residue. The method is applied to calculate the field of a d.c. machine and also the electrostatic field in a deformed coaxial cable. An estimate of the accuracy is given in terms of a. Advantages are (a) fields of any boundary shape and with any distribution of potential on boundary surfaces. (b) any required degree of accuracy possible; (c) continuous control over the results during the calculation; (d) procedure is simple.

Moscow Elec. Eng. Inst. of Communications

GOVORKOV, V.

Solving problems in the electric and magnetic fields by using potential screen grids. Tr. from the Russian. p. 42. (Strojnoelektrotechnicky Casopis. Gratislava. Vol. 3, no. 2, 1952)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 6, June 1955, Uncl.

GOVORKOV, V.

Calculating electric and magnetic fields in polar coordinates by using
potential screen grids. Tr. from the Russian. p. 53 (Strojnoelektrotechnicky
Casopis. Bratislava. Vol. 3, no. 2, 1952)
SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 6,
June 1955, Uncl.

GOVORKOV, V.A.

Osnovy tekhniki avtomaticheskoi telefonii. /Basic principles of automatic telephony/.
Moskva, Sviaz'-izdat, 1937, v. 1-2

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress,
     Reference Department, Washington, 1952, Unclassified.

GOVORKOV, V. A.

"Works of Acad. M. V. Shuleykin on Electrical Machines," Elektrichestvo, No. 5, 1952.

1. GOVORKOV, V. A.

2. USSR (600)

4. Physics and Mathematics

7. Electrical and Magnetic Fields. V. A.Govorkov. (Moscow, Communications Press, 1951).
    Reviewed by A. A. Semenov. Sov. Kniga, No. 5, 1952.

9. FDD Report U-3081, 16 Jan. 1953, Unclassified.

GOVORKOV, V.A.

Calculating linear and nonlinear electric networks by the tabular method. Elektrosviaz' 10 no.10:63-73 O '56.   (MLRA 9:11)
(Electric networks)

PHASE I BOOK EXPLOITATION   SOV/1175

Govorkov, Vladimir Aleksandrovich and Kupalyan, Stepan Davydovich

Teoriya elektromagnitnogo polya v uprazhneniyakh i zadachakh (Elec-
tromagnetic Field Theory in Exercises and Problems) Moscow, Izd-
vo "Sovetskoye radio," 1957. 339 p. No. of copies printed not
given.

Ed.: Masharova, V.G.; Tech. Ed.: Koruzev, N.N.

PURPOSE: This book is intended for students of vuzes studying the
electromagnetic field theory and for specialists conducting calcu-
lations on electric and magnetic fields.

COVERAGE: The book comprises over 400 exercises, problems and tests
on electromagnetic field theory at the level studied in radio engi-
neering vuzes. The authors claim that some exercises are published
for the first time, namely the exercises on: approximate calculation
of fields, application of the relaxation method and the method of
constructing the field pattern for calculating stationary and al-
ternating fields. The authors have paid special attention to graphi-

Card 1/4

Electromagnetic Field Theory (Cont.)   SOV/1175

cal construction of electric and magnetic field patterns. Chap-
ters 1 through 6 were written by S.D. Kupalyan, and Chapters 7
through 9 by V.A. Govorkov. The authors thank Docent M.R. Shebes
for his help. There are 15 references, of which 9 are Soviet and
6 English.

TABLE OF CONTENTS:

Card 2/4

Electromagnetic Field Theory (Cont.)   SOV/1175

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Electromagnetic Field Theory (Cont.)   SOV/1175

AVAILABLE: Library of Congress

                                            JP/sfm
                                            2-24-59
Card 4/4

Govorkov, V.A.

16(0); 28(2)   PHASE I BOOK EXPLOITATION   SOV/3365

Akademiya nauk Azerbaydzhanskoy SSR

Tezisy dokladov Soveshchaniya po vychislitel'noy matematike i primeneniyu
sredstv vychislitel'noy tekhniki (Outlines of Reports of the Conference On
Computational Mathematics and the Use of Computer Techniques) Baku, 1958.
65 p. 400 copies printed.

Additional Sponsoring Agencies: Akademiya nauk SSSR. Vychislitel'nyy tsentr,
and Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki.

No contributors mentioned.

PURPOSE: This book is intended for pure and applied mathematicians, scientists,
engineers and scientific workers, whose work involves computation and the use
of digital and analog electronic computers.

COVERAGE: This book contains summaries of reports made at the Conference on
Computational Mathematics and the Application of Computer Techniques.
The book is divided into two main parts. The first part is devoted to
computational mathematics and contains 19 summaries of reports. The second
section is devoted to computing techniques and contains 20 summaries of
reports. No personalities are mentioned. No references are given.

SECTION OF COMPUTING TECHNIQUES

Alekserov, S.A. Designs of Electromagnetic Systems on Electrical Models   27

Govorkov, V.A. Application of Relaxation Methods to Computing the
Propagation of Directed Electromagnetic Waves   29

Khovanskiy, G.S. On the Work of the Nomogram Branch of the Computing
Center at the Academy of Sciences SSSR   30

Arin', N.I. Method of Symbolic Addresses for a Two-address Machine   31

Makhmudov, Yu.A. Results of Developing a Universal Digital Computer
With Magnetic (Ferrite) Elements With Large Central Core Storage   32

Kogan, B.Ya. On the Solution of Double-precision Problems on Electric
Models   34

Zhukovskas, K. Calculation of Parameters of a Symmetric Trigger by the
Levels of its Transfer to Zero and in the First Approximation   35

Card 5/7

Govorkov VA.

AUTHOR: Govorkov, V. A.,Docent, Candidate of Technical Sciences

TITLE: Calculating Electromagnetic Wave Propagation by the Lattice
            Method(Raschet rasprostraneniya elektromagnitnykh voln
            metodom setki)

ABSTRACT: In this paper a method of the approximated numerical solution
            of the calculation of the propagation of electromagnetic
            waves is given. It is assumed that the dielectric filling
            of the hollow space of the wave guide or of the resonator
            is ideal, i.e.exhibits no conductivity $(\gamma = 0)$ and the walls
            of the wave guide or resonator consist of an ideal conductor
            $\gamma=\infty$). At first the electric transverse waves (TE-or H-waves)
            are investigated. The distribution of the longitudinal com-
            ponent of the magnetic field strength H_x on the transverse

            plane uz(the x-axis coinciding with the direction of the
Card 1/5   wave propagation) follows the two-dimensional wave equation (1)

Calculating Electromagnetic Wave Propagation by the Lattice Method

$$\nabla^2_{yz} H_x + k^2 H_x = 0, \text{ on which occasion } \nabla^2_{yz} = \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2}$$

denotes the two-dimensional scalar Laplace operator in the transverse plane yz. k denotes the eigenvalue which in the wave guide is equal to the critical phase factor and in the resonator to the phase factor of the eigenoscillations of the lowest frequency. The derivative of equation (1) as well as of (3) was carried out for the special case of a direct travelling wave in the wave guide in reference 1. These equations can be applied also in the wave guide in which the electromagnetic standing wave is the result of a superposition of the direct and the reflected wave. Following the equations(3) and(4) by means of which the transverse components of the magnetic and electric field are determined from the longitudinal component, are written down. In the case of the wave guide the equations are reduced to(5) or (6). The longitudinal component of the field H_x can be re-garded as the fundamental characteristics of the electro-

Card 2/5

1o5-58-4-3/37

Calculating Electromagnetic Wave Propagation by the Lattice Method

magnetic process if all other field components can be
obtained from it according to the equations (3)-(6). The
numerical calculation of the distribution of H_x can be

carried out by means of (2) according to the lattic me-
thod at any form of the boundary lines. The boundary con-
dition is the following:Normal components of the magnetic
field and the tagential components of the electric field
at the wave guide or resonator walls equal zero. The inte-
gration of equation(1) is a typical Neumann(Neyman) prob-
lem. Following, the magnetic transverse waves (TM-or E-
waves) are investigated. The equations (9) and (10) for
the transverse components of the electric and magnetic
field are written down. In the case of a wave guide they
are reduced to(11) and(12).The limit condition is the follow-
ing:the longitudinal component of the field E_x at the
boundaries of the cross section of the wave guide or the
resonator is zero. The integration of (7) represents a
Card 3/5   Dirichlet problem. The calculation is rendered difficult

105-58-4-3/37

Calculating Electromagnetic Wave Propagation by the Lattice Method

by the fact that "k" is contained in the equation. There-
fore some provisional values of the number k_1 must be
assumed and the calculation must be carried out in all
points according to (2) and (8). A complete liquidation
of all "rests" is not possible on this occasion. All or
at least the majority of the rests should be brought to
the same sign. In order to carry out the problem more
quickly first a calculation should be carried out accor-
ding to a rough network with few nodal points. If, in the
course of the calculation none of the rests has an abso-
lute value greater than two random units, the more pre-
cise calculation on a finer network can be carried out.
An increased accuracy can be achieved 1) by multiplying
all values obtained and the rests by 10 and a subsequent
liquidation of these rests on which occasion this process
can be continued until the desired accuracy, 2) by applying
a still finer network, and 3) by passing to more precise

Card 4/5

105-58-4-3/37

Calculating Electromagnetic Wave Propagation by the Lattice Method

    calculation equations. In the supplement 3 examples are
calculated numerically and the derivatives of the formulae
are given.There are 5 figures, 1 table, and 5 **Soviet
references.**

ASSOCIATION: Moskovskiy elektrotekhnicheskiy institut svyazi(Moscow
Electrotechnical Institute for Telecommunications)

SUBMITTED: February 19,1957

AVAILABLE: Library of Congress

    1. **Electromagnetic waves-Propagation-Theory** 2. **Lattices-Applications**

Card 5/5

PHASE I BOOK EXPLOITATION

Govorkov, Vladimir Aleksandrovich   SOV/3724

Elektricheskiye i magnitnyye polya (Electric and Magnetic Fields) 2d ed.,
  completely rev. and enl. Moscow, Gosenergoizdat, 1960. 462 p. Errata
  slip inserted. 15,000 copies printed.

Ed.: D.V. Bychkov; Tech.: N.I. Borunov.

PURPOSE: This book is intended for students and aspirants of institutes and
  divisions of electrical and radio engineering, as well as for engineers deal-
  ing with problems based on the theory of electromagnetic fields.

COVERAGE: The theory of electromagnetic fields is presented with a view to its
  practical application in calculations of stationary and alternating fields en-
  countered in radio engineering, communications, electrical power engineering,
  and in automation and telemechanics equipment. Stress is therefore laid on
  simple methods of calculation, such as relaxation methods, which use very
  simple instruments and tables of calculation. Readers desiring more extensive
  information on the theory of electromagnetic fields are referred to Soviet text-
  books by L.R. Neyman and T.L. Kalantarov, A.V. Netushil, and K.M. Polivanov,

Card 1/18

Electrical and Magnetic Fields   SOV/3724

and to the works of I.Ye. Tamm, V. K. Arkad'yev, L.D. Gol'dshteyn, N.V. Zernov, and L.A. Vaynshteyn. The book " Teoriya elektromagnitnogo polya v uprazhnenyakh i zadachakh" by V. A. Govorkov and S.D. Kupalyan is repeatedly referred to in the text of the monograph. There are 53 references: 50 Soviet and 3 English.

TABLE OF CONTENTS:

Card 2/18

GOVORKOV, Vladimir Aleksandrovich; DOLENKO, L.N., red.

[A.c. networks with ferromagnetic cores] TSepi peremen-
nogo toka s ferromagnitnymi serdechnikami; uchebnoe po-
sobie. Moskva, Mosk. elektrotekhn. in-t sviazi, 1962. 78 p.
(MIRA 17:5)

GOVORKOV, Vladimir Aleksandrovich; KUPALYAN, Stepan Davidovich;
PERKOVSKAYA, G.Ye., red.; GOROKHOVA, S.S., tekhn. red.

[Electromagnetic field theory in exercises and problems]
Teoriia elektromagnitnogo polia v uprazhneniiakh i zada-
chakh. Izd.2., perer. i dop. Moskva, Vysshaia shkola,
1963. 370 p.   (MIRA 17:4)

L 17814-63   EWT(d)/FCG(w)/BDS   ASD/ESD-3/APGC/IJP(C)   Pq-4/
Po-4/PR-4/Pg-4   GG

ACCESSION NR: AP3005605   S/0106/63/000/008/0049/0058

AUTHOR: Govorkov, V. A.

TITLE: Calculating losses in a ferromagnetic core having a rectangular hysteresis
loop

SOURCE: Elektrosvyaz', no. 8, 1963, 49-58

TOPIC TAGS: ferromagnetic core, magnetic-core loss, hysteresis loop, rectangular
hysteresis loop

ABSTRACT: A method is offered for calculating losses in ferrites, "oxifers"
(ferrocarts), etc. Electromagnetic processes in a core are considered for these
cases: (a) general case; (b) strong magnetization; (c) thick sheets; and (d) thin
sheets. Hysteresis loss and eddy-current loss are evaluated separately and
corresponding formulas are developed. The method can be extended to cover ordinary
electrical (transformer) steel if its hysteresis loop can be replaced with an
equivalent rectangualr loop. The formulas covering the strong-magnetization case

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L 17814-63
ACCESSION NR: AP3005605

coincide with those found by Agarwal (Comm. and Electronics, 1959, no. 42).
Orig. art. has: 10 figures and 37 formulas.

ASSOCIATION: none

SUBMITTED: 04Jul62   DATE ACQ: 06Sep63   ENCL: 00

SUB CODE: GE, CO   NO. REF SOV: 007   OTHER: 001

Card 2/2

GOVORKOV, V.G.; PARVOV, V.F.

     Time interval indicator for cinematography. Trudy Inst.krist.
no.11:243-246 '55.   (MIRA 9:6)
          (Cinematography)

SOV/70-3-1-10/26

AUTHORS: Regel', V.R. and Govorkov, V.G.

TITLE: The Dependence of the Critical Splitting Stress of
             Single Crystals of Zinc on Temperature and Rate of
             Deformation (Zavisimost' kriticheskogo skalyvayushchego
             napryazheniya monokristallov tsinka ot temperatury
             i skorosti deformirovaniya)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 1, pp 64 - 70 (USSR)

ABSTRACT: Studies have already been reported by Schmidt and Boas
             ("Plasticity of Crystals") on the behaviour of Cd at
             different temperatures and at different rates of defor-
             mation. In view of the similarity of its structure Zn
             has now been studied. Crystals of Zn were prepared from
             99.98% Zn by the method of Obreimov and Shubnikov; they
             were withdrawn from the stove at a constant rate of
             1.8 cm/h and had a length of about 150 mm. Each rod was
             cut into 3-4 specimens. The orientation was determined
             optically to $0.5°$ by identification of the 0001 (cleavage)
             plane. The angle between the normal to this plane and
             the axis of the rod was kept between 25 and $70°$ for the
             crystals used. Extension experiments were carried out

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SOV/70-3-1-10/26

The Dependence of the Critical Splitting Stress of Single Crystals of Zinc on Temperature and Rate of Deformation

on a Polyani-type machine and the temperature was stabilised to $1\,^{\circ}C$. Experiments were made in the range $20 - 416\,^{\circ}C$ at extension speeds of $2.3 \times 10^{-1}, 7.4 \times 10^{-4}$ and 3.3×10^{-5} mm/sec. These gave the limit of flow s_t from which the critical splitting stress t_{cr} was obtained by $t_{cr} = s_t \sin X_0 \cos \lambda_0$ where X_0 is the angle between 0001 and the specimen axis and λ_0 is the angle between the specimen axis and the direction of slip. Certain connections between the form of the extension curves and the external shape of the deformed specimens could be observed. Photographs of the extended specimens are reproduced. The tabulated values of t_{cr} determined under identical conditions on specimens cut from different crystals agree moderately well considering that the crystal orientation is not under control. The curves for t_{cr} as a function of T (temperature) for Zn are

Card2/4

SOV/70-3-1-10/26

The Dependence of the Critical Splitting Stress of Single Crystals of Zinc on Temperature and Rate of Deformation

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

SUBMITTED: January 5, 1957

Card 4/4

SOV/70-3-1-10/26

The Dependence of the Critical Splitting Stress of Single Crystals of Zinc on Temperature and Rate of Deformation

significantly different to those for Cd. For Cd above $500\ ^{\circ}C$ t_{cr} is independent of T but for Zn at the higher temperatures t_{cr} decreases faster and faster.

Bi shows the same type of behaviour as Cd. The influence of the superficial oxide layer and surface irregularities on the yield stress of the specimens of the low-melting-point metals studied by Schmidt and Boas, which were only 1 mm in diameter, may be considerable. Not only the limit of flow of these specimens may be influenced but also there may be some retardation on the formation of slip planes. All these effects can be reduced by using large-diameter specimens. Differences between the behaviour of the Zn and Cd may be due to oxide films and supplementary experiments are necessary to clarify the situation. The dependence of t_{cr} on velocity of deformation is substantially the same for Zn and Cd. There are 5 figures, 3 tables, and 3 references, 2 of which are Soviet and 1 English.

Card3/4

REGEL', V.R.; GOVORKOV, V.G.; DOBRZHANSKIY, G.F.

Effect of the temperature and the rate of deformation on the
parameters of tension curves for silver chloride single crystals.
Opt.-mekh. prom. 25 no.6:28-32 Je '58.   (MIRA 11:10)
                    (Crystallography) (Silver chloride)

SOV/120-59-4-32/50

AUTHORS: Regel', V. R., Govorkov, V. G.

TITLE: A Raster Recording Micrometer

ABSTRACT: The authors describe a raster recording micrometer which
can be used to measure displacements of up to 10 mm with a
precision of 0.1 μ. The action of a raster micrometer is
based on photoelectric measurement of a light beam passing
through a system of two rasters which can be moved with
respect to one another. The instrument is shown schemati-
cally in Fig 1. A light beam from a small incandescent
lamp 1 passes through a condenser lens 2 , an optical
grey wedge 3 and falls on an inclined glass plate 4 .
This glass plate acts as a beam splitter. Some of the
light passes through two rasters 5 and 6 and reaches
a measuring photo-element 7 . The rest of the light
passes through a second grey wedge 8 and reaches a compen-
sation photo-element 9 . By displacement of the wedge 3 ,
it is possible to alter the initial light intensity I_o of
the beam reaching the plate 4 . The compensation part of
the system, which consists of the wedge 8 and the photo-
element 9 is used to establish the zero position of the

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SOV/120-59-4-32/50

A Raster Recording Micrometer

galvanometer Г' when the rasters are exactly aligned. Each
of the rasters is rigidly connected to one of the two points
whose mutual displacement is to be measured. Fig 1 shows
the instrument when it is used to measure deformation of a
sample in creep tests. One of the rasters 5 is rigidly
connected to the upper part of the sample 10 , and the
second raster 6 is attached to the lower part of the sample.
Fig 2 is a photograph of the raster micrometer as used in
micro-mechanical experiments (Fig 2a shows the micrometer
as a whole and Fig 2b shows the micrometer without the opt-
ical system). The rasters should be as light as possible,
especially when they are attached directly to a sample. This
is particularly important in measurements of deformation of
comparatively weak, brittle or plastic materials. The ras-
ters were prepared by V. F. Parvov in A. V. Shubnikov's
laboratory by photographing a system of white and black
bands (the latter were painted with Indian ink). The bands
were recorded either on a photographic plate or on a photo-
graphic film; the rasters made of films are lighter and more

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SOV/120-59-4-32/50

A Raster Recording Micrometer

suitable for micro-mechanical experiments. The raster dimensions were 15 x 15 mm and the widths of the white and black bands were the same ($d = 0.1$ mm). The sensitivity, φ, of a raster micrometer is given by the number of the galvanometer scale divisions n per unit displacement of the rasters; $\varphi = dn/dx$. For ideal rasters the relationship between their mutual displacement and the photocurrent as recorded by the galvanometer should be linear for displacements smaller than the raster bandwidth d. Such a linear dependence of n on x for ideal rasters is shown in Fig 3a. In this case the micrometer sensitivity is constant and equal to $\varphi = cI_0/d$, i.e. the sensitivity is proportional to I_0, the intensity of the light beam incident on the plate 4 and it is inversely proportional to the raster bandwidth d. The coefficient of proportionality c depends on the sensitivity of the photo-elements and the galvanometer. In the micrometer constructed by the authors selenium photo-elements SF-10 of $\sim$ 500 μA/lumen sensitivity were used. The photocurrent was recorded by means of a galvanometer of 10^{-9} A/mm per metre sensitivity. To record the photocurrent the authors used the appropriate part of a microphotometer MF-4 (there

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A Raster Recording Micrometer

were 1000 divisions on the scale of the galvanometer used in MF-4). The sensitivity of the micrometer was then $\varphi = n_{max}/d = 1000$ divisions/mm, i.e. one scale division corresponded to a displacement of 0.1 μ . This figure refers to the rasters in the fully open position (exact alignment) and the conditions when a 2W lamp was used and the grey wedge 3 was only partly inserted. Higher sensitivity could be obtained by removing the grey wedge 3 altogether. Still higher sensitivity could be obtained by replacing the photo-elements by photomultipliers and using d.c. amplifiers. The above discussion of the micrometer sensitivity assumed that the rasters are ideal. For real rasters the relationship be-tween the photocurrent n and the raster displacement x is not linear. Fig 3 shows schematically the dependence of n on x for real rasters. For real rasters we have a linear portion AB , where $(dn/dx)_{AB}$ = const . The value of $(dn/dx)_{AB}$ for a real raster is higher than for an ideal

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A Raster Recording Micrometer

raster, i.e. the sensitivity of a micrometer with real ras-
ters is higher in the AB region than that of a micrometer
with ideal rasters. On the other hand, the sensitivity is
much lower in the regions from 0 to A and from B to
E where dn/dx is not constant. The interval Δ between
B and E in Fig 3b is exaggerated. Fig 4 shows the depen-
dence of the photo-current on the raster displacement for a
real micrometer shown in Fig 2; the graph was obtained by
recording the photo-current by means of the appropriate part
of a micro-photometer MF-4. Fig 4 shows that for this micro-
meter the value of Δ is $\sim$ 0.2d. The raster micrometer of
Fig 2 was tested in several experiments. Fig 4a shows the
record of motion of the upper plunger of the micrometer dis-
placed at a uniform rate with respect to the lower plunger.
When the upper plunger was stopped the instrument recorded
a straight line parallel to the abscissa axis (Fig 4б) which
indicates that temperature variations in the room where the
experiment was carried out do not produce unstable displace-
ment of the rasters during periods of, say, 15 min. Fig 5
shows the record of creep of plasticized polymethylmethacrylate.

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SOV/120-59-4-32/50

A Raster Recording Micrometer

Fig 6 shows the record of creep of the same material but under the action of a smaller force. Acknowledgments are made to A. V. Shubnikov who suggested the subject and advised on it, and to V. F. Parvov for preparation of the rasters. There are 6 figures and 4 Soviet references.

ASSOCIATION: Institut kristallografii AN SSSR (Crystallography Institute, Academy of Sciences, USSR)

SUBMITTED: July 17, 1958.

Card 6/6

REGEL', V.R.; GOVORKOV, V.G.

Plastic deformation of zinc monocrystals under conditions
forbidding basal plane slippage. Part 1: Deformation curves.
Kristallografiia 4 no.6:878-886 N-D '59.   (MIRA 14:5)

1. Institut kristallografii AN SSSR.
            (Zinc crystals)

24.7100

77112
SOV/70-4-6-13/31

AUTHORS: Regel', V. R., Govorkov, V. G.

TITLE: Concerning Plastic Deformation of Zinc Monocrystals
With Orientations Eliminating Basal Slip. I. Deforma-
tion Curves

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 6, pp 878-886 (USSR)

ABSTRACT: Variation of parameters of compression curves with the
change of temperature T and velocity of deformation
v was studied in crystals in which the axis is either
parallel to the basal plane (χ = the angle formed
by the crystal axis with the basal plane $\approx 0^{0}$) or
perpendicular to it (λ = the angle between the
crystal axis and direction of slip $\approx 90^{0}$). Shearing
stress in the basal plane τ for both orientations
equals zero (since $\tau = \sigma \sin \chi \cos \lambda$, where σ =
applied normal stress). Compression curves of the
crystals, grown by the method of Obreimov-Shubnikov (in
glass tubes, covered by a thin layer of carbon black)
and prepared from pure Zn (99.98%) or from Zn + 0.1% Cd

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Concerning Plastic Deformation of Zinc
Monocrystals With Orientations Eliminat-
ing Basal Slip. I. Deformation Curves

77112
SOV/70-4-6-13/31

and Zn + 0.5% Cd mixtures were obtained using apparatus
and methods described earlier [Dubov, G. A., Regel',
V. R., Kristallografiya, 2, 6, 746-755, 1957; Regel',
V. R., Berezhkova, G. V., Dubov, G. A., Zavodskaya Lab.,
1, 101-105, 1959]. Results for the crystals with
orientation $\chi \approx 0°$ are illustrated in Figs. 1, 2, 3,
and 5. Figures 3 and 5 show full agreement of compres-
sion data obtained by the authors with the empirical
equation derived from the results of tensile tests by
Gilman [Gilman, J. J., Plastic Anisotropy of Zinc Mono-
crystals, J. Metals, 8, 10, 1326-1336, 1956] for crystals
with $\chi \approx 0°$ (at the temperature above 250° C). The
value for the activation energy Q (~ 45 kcal/mole for
Zn + 0.1% Cd) found by the authors compares favorably
with 46 kcal/mole found by Gilman and stays constant
for Zn-Cd mixtures up to Cd content of 0.5%. Compres-
sion of crystals of the second series ($\lambda \approx 90°$) (see
Fig. 6) does not follow Gilman's equation even in the
narrow temperature range (300-400° C) indicating

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Concerning Plastic Deformation of Zinc
Monocrystals With Orientations Eliminat-
ing Basal Slip. I. Deformation Curves

77112
SOV/70-4-6-13/31
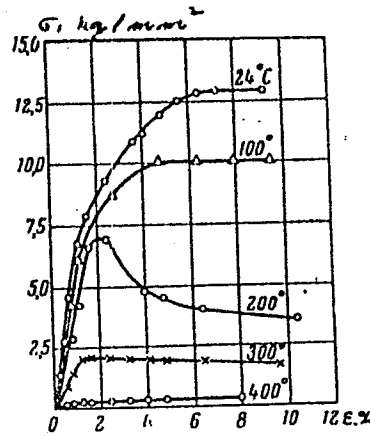
Fig. 1. Compression curves for Zn + 0.1% Cd monocrystals
at various temperatures ($\chi \approx 0°$): σ, stress, kg/mm^2;
ε, compression, %.

Card 3/9
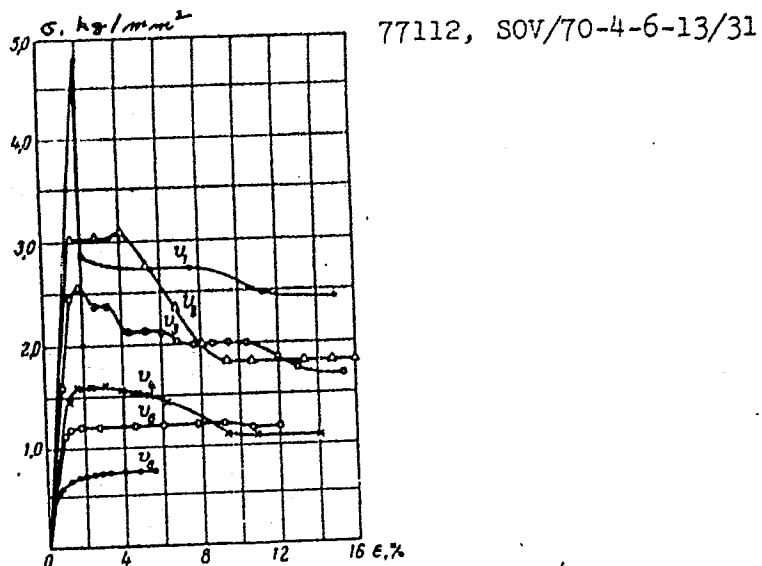
Fig. 2. Compression curves for Zn + 0.1% Cd monocrystals at various velocities of deformation ($\chi \approx 0°$): σ, stress, kg/mm^2; ε, compression, %; v_1, 4.5; v_2, 1.12; v_3, 3.65·10^{-1}; v_4, 11.25·10^{-2}; v_6, 2.2·10^{-2}; v_8, 2.2·10^{-3} mm/min.

Card 4/9

Concerning Plastic Deformation of Zinc
Monocrystals With Orientations Eliminat-
ing Basal Slip. I. Deformation Curves
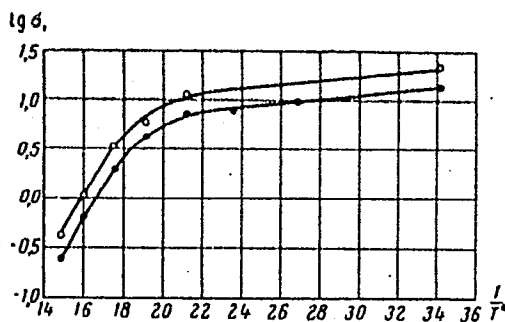
77112
SOV/70-4-6-13/31

Fig. 3. Variation of yield limit with temperature
for Zn monocrystals. ●, Zn + 0.1% Cd; O, Zn + 0.5% Cd
$(\chi \approx 0^{\circ})$.

Card 5/9
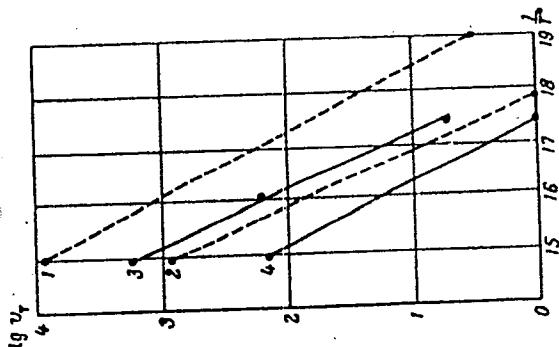
Fig. 5. Variation of log v_T with $1/T$ for Zn monocrystals ($\chi \approx 0°$) at constant σ: (1) pure Zn, from the data of Gilman (reference is given in the text below); (2) Zn + + 0.1% Cd, from the data of Gilman; (3) Zn + 0.1% Cd; (4) Zn + 0.5% Cd.

Card 6/9·
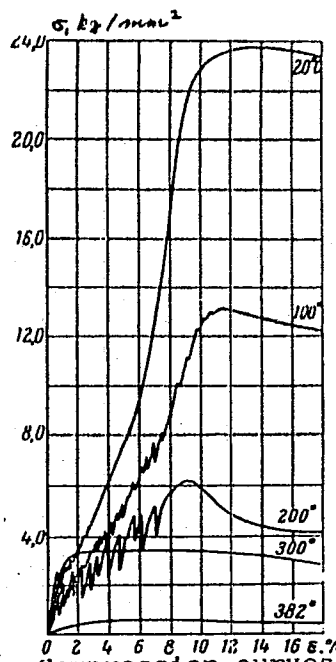
77112, SOV/70-4-6-13/31

Fig. 6. Compression curves for Zn monocrystals at various temperatures ($\lambda \approx 90°$): σ, stress, kg/mm²; ε, compression, %.

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Concerning Plastic Deformation of Zinc
Monocrystals With Orientations Eliminat-
ing Basal Slip. I. Deformation Curves

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SOV/70-4-6-13/31

nonconstancy of Q (at the same time, the value of Q
above $350°$ C for Zn crystals with $\lambda \approx 90°$ is much
higher than for the crystals with $\chi \approx 0°$). The
greater value of deformation resistance found for
crystals with $\lambda \approx 90°$ at room temperature is explained
by the fact that orientation $\lambda \approx 90°$ eliminates not
only basal slip but also slip in the prism plane, which
takes place in crystals with $\chi \approx 0°$, and that deforma-
tion in the former takes place by twinning and faulting
(slip in some other plane, e.g., pyramid plane, is also
possible). The authors point out that there exists a
a relationship between the mechanism of deformation and
the form of deformation curves (and the appearance of
deformed sample). The zigzags on the deformation
curves (below $300°$) in Fig. 6, for example, indicate
reorientation of individual regions of the crystal
during twinning or faulting. However, detailed informa-
tion of the deformation mechanism can be obtained only
by metallographic study of dislocations (already started

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Concerning Plastic Deformation of Zinc   77112
Monocrystals With Orientations Eliminat-   SOV/70-4-6-13/31
ing Basal Slip. I. Deformation Curves

for the samples investigated in this work [Urusovskaya,
A. A., Stepanova, V . M., Kristallographiya (in the
process of printing)]). M. V Klassen-Neklyudova
participated in discussions on this study. There are
8 figures; 2 tables; and 10 references, 9 Soviet, 1
U.S. The U.S. reference is: Gilman, J. J., J. Metals,
8, 10, 1326-1336, 1956.

ASSOCIATION: Institute of Crystallography of the Academy of Sciences,
              USSR (Institut Kristallografii AN SSSR)

SUBMITTED: June 6, 1959

Card 9/9

S/120/60/000/01/044/051

AUTHORS: Govorkov, V.G., Zakatov, A.F. and Regel', V.R.   E192/E382

TITLE: A Recording Equipment for the Photographic Measurement of Low Currents

PERIODICAL: Pribory i tekhbika eksperimenta, 1960, Nr 1, pp 138 - 139 (USSR)

ABSTRACT: The recording equipment, type ZU-1, for the measurement of currents in the range 10^{-9} to 10^{-6} A was developed and constructed at the Institute of Crystallography of the Ac.Sc., USSR. The operation of ZU-1 is based on the principle of photo-electric measurement of the light reflected from the mirror of a galvanometer. The optical system of the device is illustrated in Figure 3; this consists of: 1- a light source; 2 - a condenser lens; 3 - a calibrated scale; 4 - an objective lens; 5 - a galvanometer mirror; 6 - a prism; 7 - a photographic plate; 8 - a correcting lens; 9 - a mirror; 10 - a screen; 11 - a slot; 12 - a diaphragm; 13 - a cylindrical lens. The intensity of the light falling onto the photo-sensitive layer is

Card1/2

S/120/60/000/01/044/051
A Recording Equipment for the Photographic Measurement of Low Currents
E192/E382

controlled either by changing the diaphragm or by means
of an auto-transformer. The equipment is used for the
recording of the photo-currents produced by double
refraction (Ref 2), photo-electric-optical dynamometer
(Refs 1, 4) and other purposes. The authors thank
I.N. Zhokhov and I.N. Tsigler for participation in the
development of the equipment.
There are 3 figures and 4 Soviet references.

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

SUBMITTED: January 8, 1959

Card 2/2

REGEL', V.R.; GOVORKOV, V.G.; ZAKATOV, A.F.

Apparatus for mechanical tests of refractory materials. Zav.lab.
26 no.2:243-245 '60.   (MIRA 13:5)

1. Institut kristallografii Akademii nauk SSSR.
        (Refractory materials--Testing)

23098

S/181/61/003/005/003/042
B101/B214

24. 7500 (1160, 1482, 1136)

AUTHORS: Govorkov, V. G. and Regel', V. R.

TITLE: Dependence of the parameters of the compression curves of single crystals of germanium on temperature and rate of deformation

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1324-1330

TEXT: Up to now the plasticity of germanium has been tested predominantly for shearing and stress. The object of the present work was to supplement these data by testing for compression at different temperatures and rates of deformation v. Samples of the form of parallelepiped $5 \times 2 \times 2$ mm are cut out from single crystals of germanium with principal axes along <111>, <110>, and <100>. The experimental apparatus is described in Ref. 15: V. R. Regel', V. G. Govorkov, A. F. Zakatov, Zav. lab., 26, no. 2, 243-245, 1960. Before the experiment the samples were heated for 1 hr at the temperature of the experiment. The tests were made in oxygen-free dry argon at 20-900°C. The rate v of relative deformation was varied between 10^{-2}-$2.4 \cdot 10^{-6}$ sec^{-1}. Fig. 2 gives the results for v ≈ $6.3 \cdot 10^{-4}$ sec^{-1}. Below 400°C brittle

Card 1/7

Dependence of the parameters ...

destruction set in without prior deformation. Between 400-700°C the curves show a "peak of fluidity". The results depend only slightly on the orientation of the samples. The following experiments were, therefore, carried out only with samples oriented towards <111> and at temperatures 500, 600, and 700°C (Fig. 4). Results are found which differ considerably from those of V. R. Patel, B. H. Alexander (Acta Metallurg., 4, no. 4, 385-395, 1956). These authors found no "peak of fluidity". Graphical determination of the functions $\ln v = f(\sigma)$; $\ln v = \varphi(\ln\sigma)$; $\ln v = F(1/T)$ showed that the following equation holds for the experimental data: $v = B\sigma^n \exp(-Q/T)$ (2). The activation energy ($Q = 47$ kcal/mole) calculated by this formula agrees with the values found from the shearing. As is shown by Fig. 6, the peak of fluidity is not reproducible if the compression is repeated after release, or if new loading is done at lower temperature. The peak is explained as due to the aggravation of the deformation whose origin remains still obscure. The irreversibility of the effect could be caused by small diffusion coefficients and low concentration of the impurities. M. V. Klassen-Neklyudov is thanked for advice and discussion. There are 6 figures, 1 table, and 16 references: 2 Soviet-bloc and 14 non-Soviet-bloc. The 2 most important references to English-language publications read as follows: J. Hornstra,

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23098

S/181/61/003/005/003/042
B101/B214

Dependence of the parameters ...

J. Phys. a. Chem. Sol., 5, no. 1/2; 128-141, 1958; D. Dew-Hughes, G. E. Brock, J. Appl. Phys., 30, no. 12; 2020-2021, 1959.

ASSOCIATION: Institut kristallografii AN SSSR, Moskva (Institute of Crystallography AS USSR, Moscow)

SUBMITTED: November 25, 1960

Fig. 2: Compression curve of single crystals of germanium at different temperatures with relative rate of deformation v = $6.3 \cdot 10^{-4}$ cm^{-1}. Legend: a) orientation $\langle 111 \rangle$; б) $\langle 110 \rangle$; в) $\langle 100 \rangle$.

Card 3/7

GOVORKOV, V.G.

Temperature effect on the shape of compression curves for
silicon single crystals. Kristallografiia 6 no.5:789-791
S-O '61.   (MIRA 14:10)

1. Institut kristallografii AN SSSR.
      (Deformations (Mechanics))   (Silicon crystals)

TSINZERLING, Ye.V.; URUSOVSKAYA, A.A.; GOVORKOV, V.G.

    Is it possible to obtain artificial Japanese twins of quartz?
Zap.Vses.min.ob-va 90 no.5:567-571 '61.   (MIRA 14:10)

1. Institut kristallografii AN SSSR, Moskva.
                   (Quartz)

38942

S/181/62/004/007/016/037
B102/B104

AUTHORS: Govorkov, V. G., and Papkov, V. S.

TITLE: The influence of annealing on the dislocation density and the compression curves of germanium single crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 7, 1962, 1846-1852

TEXT: Ground and polished Ge specimens measuring $3 \cdot 3 \cdot 6$ mm, electrically heated up to 540°C for 15 min, 30 min and 4 hrs or to 890°C for 6, 25, 65 and 165 hr, were subjected to deformations (rate $6.3 \cdot 10^{-4}$ sec^{-1}) under various conditions. The compression curves $\sigma(\varepsilon)$ were taken at different temperatures and after different heat treatments and the dislocation pictures were studied microscopically. In all cases deformation took place at 650°C up to the yield point. Results: (1) 4-hr annealing at 540°C and compression of the Ge single crystal up to the yield point at 650°C reduces the yield point at this temperature by more than two times. (2) 165-hr annealing at 890°C and deformation at 650°C until the "yield tooth" appears (cf. Fig. 1) reduces the yield point in a second deformation at this temperature by 8 to 10 times. (3) 68-hr annealing of undeformed

Card 1/3 2

The influence of annealing...

S/181/62/004/007/016/037
B102/B104

specimens at 890°C followed by cooling to 20°C during 2 min. has no
influence on the shape of the "tooth". (4) 100-hr annealing at 980°C
halves the dislocation density, but it is then still 100-1000 times greater
than initially. (5) Contrary to the reports of Pearson et al. (Acta met.
5, 4, 181, 1957) and of Bell and Bonfield (Acta cryst. 13, 12, 1113, 1960)
no regeneration of the "tooth" was observed. (6) 2.5-hr annealing at
890°C of 2 % deformed specimens caused a rearrangement of the dislocations
and the appearance of blocks appeared. When the annealing period was
lengthened the dislocation became more uniformly distributed along the
slide lines. (7) The "yield tooth" has no connection with the beginning of
plastic deformation and is not caused by impurities adhering to the initial
dislocation. There are 6 figures and 1 table.

ASSOCIATION: Institut kristallografii AN SSSR Moskva (Institute of
Crystallography AS USSR, Moscow)

SUBMITTED: February 12, 1962

Card 2/2

GOVORKOV, V.G.; REGEL', V.R.; GLAZUNOV, V.N.

Apparatus for creep testing at high temperatures in a vacuum
or in an inert medium. Zav.lab. 29 no.3:376-378 '63.

(MIRA 16:2)

1. Institut kristallografii AN SSSR.
(Testing machines)
(Deformations (Mechanics))

ACCESSION NR: AP4028427   S/0181/64/006/004/1039/1047

AUTHORS: Govorkov, V. G.; Indenbom, V. L.; Papkov, V. S.; Regel', V. R.

TITLE: The dislocation theory of the initial stages of deformation in single crystals of germanium

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1039-1047

TOPIC TAGS: germanium, dislocation theory, creep, kinetic equation, crystal deformation, temperature dependence, time dependence

ABSTRACT: Beginning with the simple kinetic equation for deformed crystals as used by Gilman and Johnston, ε = Nbv, where ε is the rate of plastic flow, N the density of mobile dislocations, b Burgers vector, and v the velocity of deformation, the authors have studied the theory of dislocations in direct application to slightly deformed crystals of germanium. They have compared the results with experimental data on the relations of deformation and creep to conditions under which the properties are measured. A comparison of measured and computed values is shown graphically in Fig. 1 on the Enclosure. Good agreement was obtained between experimental data and theoretical considerations both for rate of deformation and

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ACCESSION NR: AP4028427

for creep. The authors consider this further confirmation of the validity of the
view that the deformational properties of single crystals of germanium may be
described by the kinetic theory of dislocations; and they consider their results
contrary to the concept that such deformation is due to dislocation rupture at
atmospheric impurities. The authors think great promise is to be found in the joint
application of phenomenological consideration of dislocation theory, macroscopic
study of temperature and time dependence of deformational properties in a crystal,
and microscopic study of the deformational mechanism. Orig. art. has: 8 figures
and 23 formulas.

ASSOCIATION: Institut kristallografii AN SSSR, Moscow (Institute of Crystallogra-
phy, AN SSSR)

SUBMITTED: 07Oct63   DATE ACQ: 27Apr64   ENCL: 01

SUB CODE: SS, EC   NO REF SOV: 005   OTHER: 011

Card 2/3

Fig. 1. Curves showing creep in single crystals of Ge, plotted on relative time-displacement axes. Temperature = 520C; stress, in kg/mm^2: 1 - 10.8; 2 - 9.3; 3 - 7.5; 4 - 5.9; 5 - 5.1; 6 - 4.0; 7 - 3.4; 8 - theoretical curve.
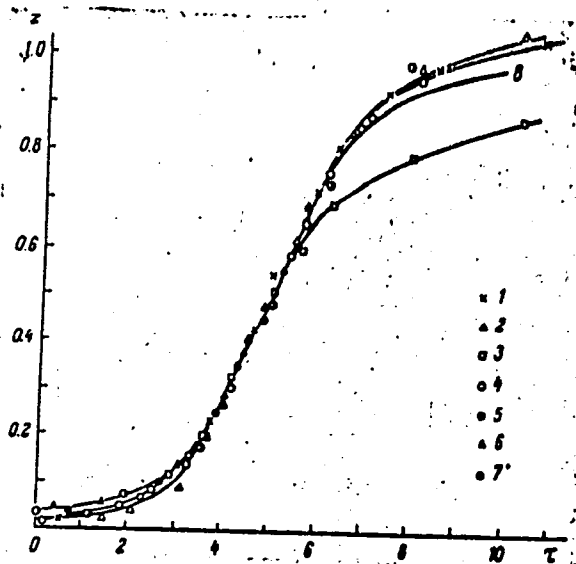
Card 3/3

KLASSEN-NEKLYUDOVA, M.V.; GOVORKOV, V.G.; PAPKOV, V.S.; URUSOVSKAYA, A.A.;
TIMOFEYEVA, V.A.

Plastic deformation of a nickel single crystal. Part 2: The effect
of temperature and rate of deformation on the compression curves
and microstructure of nickel. Fiz. met. i metalloved. 18 no.2:263-
269 Ag '64.   (MIRA 18:8)

1. Institut kristallografii AN SSSR.

L 11895-66   EWT(1)/EWT(m)/EPF(c)-2/T/EWP(t)/EWP(b)   IJP(c)
ACC NR: AT6002244   JD/WW/JG/GG   SOURCE CODE: UR/2564/65/006/000/0129/0132

AUTHOR: Belyayev, L. M.; Govorkov, V. G.; Dobrzhanskiy, G. F.; Martyshev, Yu. N.; Shaskol'skaya, M. P.

ORG: none

TITLE: Growing of LiF crystals strengthened by adding uranium and study of their properties

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 6, 1965, 129-132

TOPIC TAGS: single crystal growing, lithium fluoride, uranyl nitrate, crystal dislocation, triboluminescence, hardness, solid mechanical property

ABSTRACT: LiF single crystals activated with $UO_2(NO_3)_2$ were grown from the melt by the Kyropoulos method. The infrared absorption spectra of LiF + U crystals obtained were almost identical to those of pure LiF. Three methods were used to study the mechanical properties of the crystals: (1) measurement of microhardness with a PMT-3 instrument; (2) compression tests with an instrument for micromechanical testing of materials; (3) study of the "star" of dislocations formed around the mark of the diamond indenter. It was found that the introduction of uranium increases the strength of LiF crystals by one order of magnitude and the microhardness by 20% without changing their transparency in the infrared. A shortening of the prongs of the "star" showed a decrease in the mobility of dislocations arising during plastic deformation. This decrease is thought to be caused chiefly by the

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ACC NR: AT6002244

formation of a charge on the dislocations by the uranium ions. An analogy was observed between the mechanical and triboluminescent properties of LiF + U crystals. It is concluded that the principal part in the phenomenon of triboluminescence is not played by the cloud of excess charges, but by the mobility of dislocations. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20   / SUBM DATE: none / ORIG REF: 006 / OTH REF: 001

Card 2/2

ACC NR: AP6021774   SOURCE CODE: UR/0413/66/000/012/0033/0034

INVENTOR: Papkov, V. S.; Klassen-Neklyudova, M. V.; Govorkov, V. G.

ORG: · None

TITLE: A method for finishing blanks made from corundum. · Class 12, No. 182705

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 12, 1966, 33-34

TOPIC TAGS: corundum, finishing machine, mechanical heat treatment

ABSTRACT: This Author's Certificate introduces a method for finishing blanks made
from corundum. The proper shape (e. g. conical) is produced by first shielding the
section of the blank to remain unfinished and then placing the blank in the working
zone of a graphite furnace for heat treatment at approximately 1900°C under a vacuum
of about $5 \cdot 10^{-1}$ with continuous evacuation of gases.

SUB CODE: 13, 11/ SUBM DATE: 07Dec62

UDC; 661.232.2.002.6

Card 1/1

"The Influence of Vibration on the Crystallisation of Metals
. M. ... and R. ... Shabalin ...

... plastic methods and by compression tests. The effect ... frequency of amplitude of vibration ... grain structure e.g. with ... grain size of temp ... vibration grain size ... down. At higher ... vibration the rate of decrease of grain size with vibration is greater. There is no significant difference between the effects of horizontal and vertical vibration. Experiments produced in this way show the expected increase ... effect with fall in grain size. Feeding more ... shows that both Sb and Sn vibration does not significantly change the temp at which the arrest occurs, but that the time during which the temp is steady is less in the vibrating specimens. Since vibration cannot alter the thermal conductivity of solids nor (so long as the amplitude is small) that of liquids, the effect must be due to improved conductivity in the mixed solid/liq. phase i.e. to the ability of the newly formed crystal nuclei to move more freely in the surrounding liquid. In this way they are enabled to collect fresh material more readily and to grow to stable size. This explains the increase in the number of grains with vibration. It is suggested that this vibration technique may be of general use in the study of heterogeneous phases.—A. F. B.

GOVORKOV, V.M.

Calculation of the processes of filtration and the production
capacity of filters. Trudy Ural. politekh. inst. no.94:53-64
'60.   (MIRA 15:6)
                    (Filters and filtration)

5(1)   SOV/80-32-4-16/47

AUTHORS: Govorkov, V.M., Averbukh, Ya. D.

TITLE: On the Methods of Calculating Mass Transfer in Apparatuses
                With Continuous Change of the Driving Force and in Appara-
                tuses of the Step Type   (O metodakh rascheta massoperedachi
                v apparatakh s neprerynym izmeneniyem dvizhushchey sily i
                v apparatakh stupenchatogo tipa)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 4, pp 800-807
                (USSR)

ABSTRACT: The authors stress a principal difference in the run of
                absorption processes between the apparatuses of packed or
                spray type on one hand and the apparatuses of bubble plate
                or sectional type on the other. An essential characteristic
                of the former is the continuous and monotonous change in
                the driving force of absorption, i.e., the difference of
                concentrations of an absorbed substance in a gas and in a
                liquid. Due to this condition, apparatus dimensions are
                calculated by integrating the fundamental equation for the
                rate of mass transfer:

Card 1/3 $$-Gdy = Ldx = K_F DF \, (y - y^*)$$

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from the limit y_{in}. to y_{fin}.

Where Gdy is the quantity of substance absorbed by the liquid
from the gas in a unit of time over the surface dF; K_F is
absorption rate coefficient referred to a unit of surface;
($y - y^*$) is the driving force of the process in which y is
the working concentration of the absorbed substance in the
gas, and $y^* = f(x)$ is the concentration of this substance
over the surface of the liquid, equiponderant with the
concentration of the latter. The surface area of a packing
is determined either by analytical integration of the above
equation or by graphical integration when the relationship
between y^* and x is non-linear. This method is not applicable
to apparatuses of the step type, because concentration of a
substance in them proceeds not continuously throughout the
whole height of the apparatus. Therefore the authors criti-
cize the viewpoints of Planovskiy and Kasatkin [Ref. 1] and
the recent method of the so-called "units of transfer", and
adhere to the opinion of Stabnikov [Ref. 2] who questioned

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the concepts of "theoretical plate" and "efficiency factor
of the plate", etc. The authors conclude that apparatuses
of the step type should be designed by means of graphical
methods, making use of the concept of the local efficiency
factor of the contact, which was introduced by Merfri
(Russian spelling) in 1925.
There are 1 diagram, 2 graphs and 5 references, 4 of which
are Soviet and 1 English.

SUBMITTED: November 10, 1957.

Card 3/3

BOGDANOV, Aleksandr Ivanovich [deceased]; BEREZIN, B.V., red.; VOLGIN,
B.P., red.; GOVORKOV, V.M., red.; DOLGANOV, Ye.A., red.; LEVCHEN-
KO, P.V., red.; RONZHIN, S.N., red.; SOMOVA, T.M., red.; DUGINA,
N.A., tekhn. red.

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Akademii pedagogicheskikh nauk RSFSR (for Markosyan).
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BOZHEVICH, L.I., red.; BLAGONADEZHINA, L.V., red.; GOVORKOVA, A.F.,
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mering pupils; the primary grades of the public school]Osoben-
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USSR / General and Specialized Zoology.   Insects.   P
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Abs Jour   : Ref Zhur - Biol., No 10, 1958, No 44780

Author   : Govorkova, O. I.
Inst   : Not given
Title   : Results of Testing Soil Insecticides in the
              Control of the Alfalfa Weevil Phytonomus Varia-
              bilis Hrbst. in the Murhab Valley.

Orig Pub   : S. kh. Turkmenistana, 1957, No. 1, 53-57.

Abstract   : According to field tests made in 1955-1956 the
              spring soil application of HCCH (hexachlorocy-
              clohexane) by tractor sprayers (40 kg/hect.)
              prior to the sprouting of alfalfa and immedia-
              tely fixing the poison by harrowing two to three
              times prevented losses from the alfalfa weevil,
              aided in the growth of the plants and somewhat

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NALIVKIN, D.V., akademik, glav. red.; BELYAYEVSKIY, N.A., zam. glav. red.;
TIKHOMIROV, V.V., zam. glav. red.; ASSOVSKIY, A.N., red.; MEL'NIKOV,
O.D.,red.; SHATSKIY, N.S., akademik, red.[deceased]; YANSHIN, A.I.,
akad., red.; AKOPYAN, A.O., red.; ASLANYAN, A.T., red.; GOGINYAN,
V.Ye., red.; GULYAN, E.Kh., red.; KAZARYAN, S.V., red.; MALKHASYAN,
E.G., red.; KHACHATURYAN, E.A., red.; GOVORKYAN, L.M., red.vypuska;
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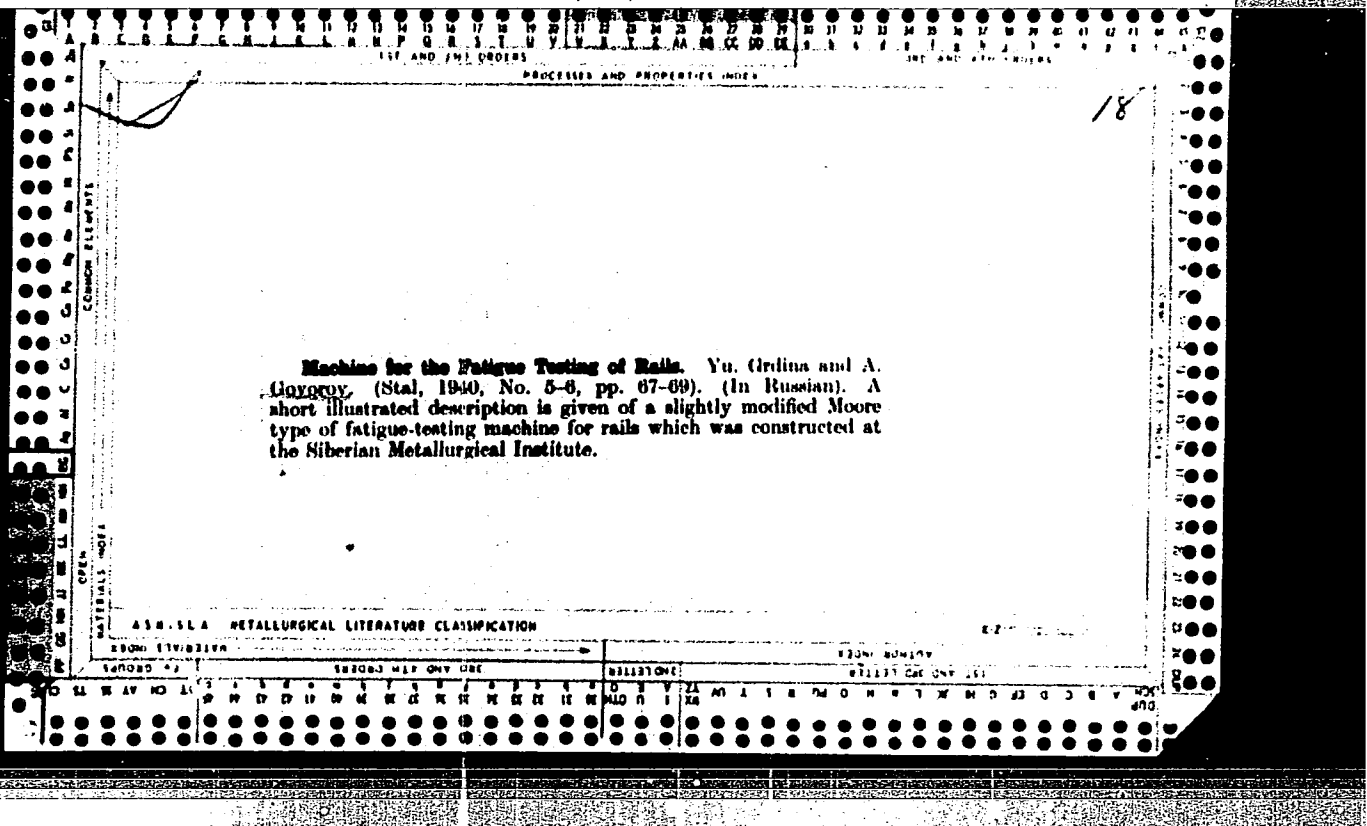
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VOSKRESENSKAYA, G.S., kandidat sel'skokhozyaystvennykh nauk; GOVORKYANTS, S.A., kandidat sel'skokhozyaystvennykh nauk.

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Academy of Science, Loscow 1950, The following articles
appeared; Heavy profile rails and their heat treatment...
(50 kr/m)

SO: E86103

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A. A. GOVOROV, T. F. ZAJKOVA:
In a Russian Symposium of Papers entitled "Heat Treatment of
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appeared; Investigation of 50 kg rails removed from a ex-
perimental section of the track.

SO: 886103

GOVOROV, A. A.

YU. V. GRDIAN, L. L. PINKHUSOVICH, A. A. GOVOROV, V. D. SMIRNOV,
P. A. SOKOBOLOV, V. F. ZUBAREV:
In a Russian Symposium of Papers entitled "Heat Treatment
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Soviet Academy of Science, Moscow 1950, The following
articles appeared; Investigation of slow cooling of rails in
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SO: 886103

GOVOROV, A. A.

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SO: 886103

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L. L. FINKHUSOVICH, A. A. GOVOROV, L. I. KORESHKOVA:
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Rails", edited by I. P. Bardin and published by the Soviet
Academy of Science, Moscow 1950, The following articles
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SO: 886103

GRDINA, Yu.V., doktor tekhnicheskikh nauk; GOVOROV, A.A., dotsent;
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Improve the quality of rimming steel. Strei.prom.34 no.7:23-26
Jl '56.   (Steel--Testing)   (MIRA 9:9)

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"Automation of the Desiccating and Absorbing Departments of Plants Using the Contact Method of Producing Sulphuric Acid." $p. 97$

Automation of Production Processes, No 2, Moscow, Izd-vo AN SSSR, 1958 177 p.

The volume contains articles summarizing the results of investigations carried out in laboratories for the automation of production processes of the Institut avtomatiki i telemekhaniki, AN SSSR (Institute for Automatics and Telemechanics of the USSR Academy of Sciences). The articles discuss the following topics: 1) basic objectives of automation 2) classification of inudustrial processes and formulation of typical automation solutions 3) experimental methods employed in studying industrial processes subject to regulation 8 4) considerations in determining the rational sequence and the extent of automation, and 5) results of studies on the automation of some industrial processes and establishements.

SOV/137-58-9-19406

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 180 (USSR)

AUTHOR: Govorov, A.A.

TITLE: On the Problem of Cyanidation of High-speed Steel With Gas
            (K voprosu gazovogo tsianirovaniya bystrorezhushchey stali)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya,
            1958, Nr 1, pp 144-152

ABSTRACT: An investigation was conducted with the purpose of estab-
            lishing the directions of the fundamental reactions in the gas-
            eous phase and establishing the possibility of substituting solid
            carbon-containing substances, capable of delivering to the
            same extent the C needed for the reaction of the formation of
            cyanic compounds, for the carburizing gases. Specimens of
            R18 and R9 grade steel after quenching and tempering were
            subjected to cyanidation at 540°C for two hours in the presence
            of solid carburizers of varying composition, for example, 20%
            $KNaCO_3$ + 80% carbon black + dextrin; the degree of dissocia-
            tion of NH_3 was kept at 20-25%. The specimens were cooled to
            180° with the furnace in a weak current of NH_3. The thickness
Card 1/2   of the cyanized layer was equal to 0.1-0.12 mm. The

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- On the Problem of Cyanidation of High-speed Steel With Gas

carbonitriding (C), i.e., the cyanidation of high-speed steel in an NH_3 medium in the presence within the retort of a solid carburizer in the form of charcoal or carbon black was conducted at $525^0 + 5^0$ for three hours in the presence of a solid carburizer of varying composition, for example, charcoal 100% + dextrin glue. It is established that during C, along with the nitriding of the surface, there goes on a process of its moderate carburization. Instead of carburizing gases it is sufficient to have in the retort solid C (charcoal). Cyaniding in an NH_3 medium in the presence of solid C in the retort proceeds only through the formation of cyanic compounds. Bibliography: 18 references.

1. Steel--Processing   2. Steel--Phase studies   3. Cyanides--Metallurgical effects
4. Steel--Carbonization

A.B.

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