Kornfel'd, M. I.

AUTHORS: Drobina, A. V. and Kornfel'd, M. I.   126-1-25/40

TITLE: Oscillation of crystalline substances near the limit of elasticity. (Kolebaniya kristallicheskikh tel vblizi predela uprugosti).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 162-164 (USSR)

ABSTRACT: Takahashi, S. (Ref.1) observed that in the case of amplitudes exceeding a certain critical value, the magnitude of oscillations assumed a non-linear character; the resonance curve becomes sharply asymmetrical and the resonance amplitude will no longer be proportional to the amplitude of the exciting force and the resonance frequency will become dependent on the oscillation amplitudes. Also, the oscillations become unstable, namely, the resonance amplitude will fluctuate about a certain average value. The authors of this paper made experiments with a view to finding out whether this phenomenon also occurs for crystalline substances other than zinc. Therefore, they made experiments with aluminium of 99.5% purity. They found that the instability of the oscillations is due to trivial causes; structural changes

Card 1/2   during plastic deformation affect the damping decrement

Physics Faculty, Moscow State Univ.

126-1-25/40

Oscillation of crystalline substances near the limit of elasticity.

and consequently also the resonance amplitude and in very pure zinc such structural changes occur even at room temperature. However, in aluminium which is not of high purity an accumulation of structural changes take place at room temperature which leads to a monotonous change of the resonance amplitude. Thus, it is concluded that the effects observed by Takahashi do not produce any new features which would assist understanding the mechanism of the plasticity of crystals.

There are five figures and 2 references, one of which is Slavic.

SUBMITTED: June 7, 1956.

AVAILABLE: Library of Congress.

Card 2/2

Kornfe I'd, M·I

AUTHOR: Kornfel'd, M. I.,   57-11-28/33

TITLE: Calculation of a Radiation Bolometer (Rasohet radiatsionnogo bo-
              lometra)

PERIODICAL: Zhurnal Tekhn Fiz., 1957, Nol. 27, Nr 11, pp. 2652-2661,(USSR)

ABSTRACT: The main characteristic of the bolometer is not the voltage sensi-
              tivity, but the so-called intensity of the radiation, that is the
              minimum intensity at which the signal can still be noticed at"noi-
              se" background. The experiment shows that this is given on the oc-
              casion of equality of the effective voltage of the signal and of
              the background noise of the bolometer-output. It is demonstrated
              that the elotrical voltage sensivity of the bolometer Z is depen-
              dent on the radiation-signal frequenoy and the effective voltage
              of the backgound noise on the frequency band where the background
              noise is measured. Therefore there is no point in the magnitude of
              the limit intensity as long as the radiation-signal frequency and
              the passage band of the bolometer operating together with the am-
              plifyeris not given. First the electrical and then the heat compu-
              tation of the bolometer is described. After that the three types
              of bolometers: vacouum-bolometer, gas-filled bolometer and the so-
              lid bolometer are singly computed. A comparing evaluation of the
              oonstruotions is given and it is shown that the results of the com-
              putations are in good accordance with the data of the experiments.
Card 1/2   There are 8 figures, 3 tables and 1 Slavic reference)

KORNFELD, M. I.

AUTHOR: KORNFELD,M. I., CHUDINOV,A.A.   56-7-5/66

TITLE: Variation of the Elasticity Coefficient of Sodium Nitrate Crystal
             in Phase Transitions of the Second Kind. (Izmenenije konstant
             uprugosti natriyevoy selitry pri fazovom perekhode vtorogo roda,
             Russian)

PERIODICAL: Zhurnal Eksperim. i Teoret.Fiziki, 1957, Vol 33, Nr 7, pp 33-36
             (U.S.S.R.)

ABSTRACT: On a $NaNO_3$ crystal the temperature dependence of its elasticity
             constant within the range of from 20-300° C was investigated. For
             the crystal constants S_{11}, S_{33}, S_{12}, S_{44} the temperature dependences
             were measured, and in no cases except in S_{33} was a salient point
             found in the course of the curve at the point of phase transition.
             At S_{33} a marked peak formation is found. The point of phase transi-
             tion (second degree) was determined at 275,5° C. (With 1 Table,
             4 Illustrations, and 3 Slavic References).

ASSOCIATION: Institute for Semiconductors of the Academy of Sciences of the
             U.S.S.R. Molotov State University (Institut poluprovodnikov
             Akademii Nauk SSSR, Molotovskiy gosudarstvennyy universitet)

PRESENTED BY:
SUBMITTED: 23.2.1957
AVAILABLE: Library of Congress
Card 1/1

24.7700

24(3)

67388

SOV/181-1-9-6/31

AUTHORS: Kornfel'd, M. I., Sochava, L. S.

TITLE: Fluctuations of Conductivity in Solid and Liquid Antimony Sulfide

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1366 - 1369 (USSR)

ABSTRACT: The present paper gives an account of the investigation of these fluctuations in a wide temperature range, which includes the liquid state of the semiconductor (Sb_2S_3). Sb_2S_3 is, according to V. A. Yurkov, a semiconductor also in the liquid state and furthermore it has a relatively low melting point $(550^{\circ}C)$. The Sb_2S_3 was prepared by melting antimony and sulfur in a stoichiometric ratio in pumped quartz ampuls. The experiments proper were made in an ampul of difficultly meltable glass with four tungsten electrodes. The fluctuation voltage was measured between the potential electrodes of the sample. According to the results of the provisional experiments there occurs a so-called excess noise of the amperage in Sb_2S_3, and it holds $\sqrt{\Delta v^2} = \eta \frac{1}{\sqrt{fm}} v^n \sqrt{\Delta f}$. Here, $\sqrt{\Delta v^2}$ denotes the measur-

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67388

Fluotuations of Conductivity in Solid and Liquid   SOV/181-1-9-6/31
Antimony Sulfide

able value of the fluctuation voltage, f is the frequency, at
which measurement was made, Δf is the band width of the
frequencies of the measuring apparatus. In most of the cases,
m and n are in the vicinity of 1. As a measure for these
fluctuations one selects the dimensionless quantity

$$\eta = \frac{\sqrt{\overline{\Delta v^2}}}{V} \sqrt{\frac{f}{\Delta f}}$$. In the antimony-sulfide samples investigated

here the fluctuation voltage linearly depends only to a certain
degree on the voltage on the sample, and then rises consider-
ably faster. Thus, for example, the proportionality between V

and $\sqrt{\overline{\Delta v^2}}$ ends at $180^{\circ}C$ at a voltage of ~ 7 v on the sample.
All current noise measurements (the dependence on frequency
and on temperature) took place in the range of the linear
dependence upon the voltage applied. The spectral density of
the fluctuations of conductivity depends in the entire
measuring range (25 to 10,000 cycles) according to 1/f on
frequency. Between 180 and $380^{\circ}C$ no deviation from this de-
pendence was found. Also in the case of measurements on
Card 2/4   samples with a purity of 99.99% the same form of the spectrum

67388

SOV/181-1-9-6/31

Fluctuations of Conductivity in Solid and Liquid
Antimony Sulfide

was found. The temperature dependence of the intensity of
fluctuations was measured in the temperature range 180 to
580°C. In this temperature range $\lg \eta$ depends (in which

connection $\eta = \dfrac{\sqrt{\Delta V^2}}{V} \sqrt{\dfrac{f}{\Delta f}}$ holds) almost linearly on temper-

ature. Control measurements made in the same temperature
range on samples having a purity degree of 99.99% yielded
very similar results with respect to the current noise and
also with respect to the temperature dependence. The fluctu-
ations of conductivity at ~ 200°C ($\eta = 4.10^{-6}$) are by 1.5 - 2
orders larger than in semiconductors. The most interesting,
however, is the exponential dependence of the amount of
fluctuations on temperature. In the temperature range
investigated here the amount of fluctuations decreases by
thousand times. There is a clear parallelism for the temper-
ature dependence of the noise level and the resistivity in one
and the same sample. Also the low level of current noise in
liquid antimony sulfide is to be pointed out. There are
5 figures and 2 Soviet references.

Card 3/4

67388

Fluctuations of Conductivity in Solid and Liquid   SOV/181-1-9-6/31
Antimony Sulfide

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of
               Semiconductors of the AS USSR Leningrad)

SUBMITTED: November 14, 1958

Card 4/4

67389
SOV/181-1-9-7/31

24.7700
24(3), 24(6)
AUTHORS: Kornfel'd, M. I., Sochava, L. S.

TITLE: Fluctuations of Conductivity in Amorphous Semiconductors

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1370 - 1371 (USSR)

ABSTRACT: As has been shown by Brophy (Ref 1), structural disturbances
               in germanium crystals caused by plastic deformation lead to
               an increase in conductivity fluctuations (current noise).One
               can therefore assume that these fluctuations will be
               especially large in greatly disturbed (e.g. amorphous) struct-
               ures. To prove this, the authors measured the amount of current
               noise in the following amorphous semiconductors: $Tl_2Te \cdot As_2Te_3$
               and $Tl_2Se \cdot As_2Te_3$ (the samples were prepared by B.T. Kolomiyets
               and T. N. Mamontov). The first-mentioned sample had the
               following characteristics: resistivity: 15 ohm.cm, width of
               the forbidden zone: 0.59 ev, concentration of majority
               carrier (holes): $4 \cdot 10^{18} cm^{-3}$ (at $20^\circ C$), its mobility:
               0.1 $cm^2/v.sec$. The current noise measurement was made by the
               four-electrode method at 1400 cps. The setup used is described
Card 1/2

KORNFEL'D, M.I.; MIRLIN, D.N.

Temperature dependence of low-frequency conductivity fluctuations in germanium. Fiz.tver.tela 1 no.12:1866-1868 D '59.
(MIRA 13:5)

1. Institut poluprovodnikov AN SSSR, Leningrad.
(Germanium--Electric properties)

AUTHOR: Kornfel'd, M. I.

TITLE: Light Dispersion in Germanium

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 48 - 49

TEXT: The author offers investigation results of light dispersion in germanium in the shortwave range 1.5 - 2.2 μ and in a wide temperature range between 80 and 460°K. The experimental results are depicted in Fig. 1, where the energy of the light quantum is plotted on the abscissa and the square of the refractive index on the ordinate. These results can be expressed by the quantum-mechanical dispersion formula (Ref. 3):

$$n^2 = A + \frac{B}{E_{\varkappa}^2 - E^2}$$

. A, B, $E_{\varkappa}$ - constants, E = hν - energy of the light quantum. The curves in Fig. 1 were calculated with the aid of this formula for A = 12.7, B = 6.0 and the $E_{\varkappa}$ values specified in the Table. The applicability of this formula is even more convincingly proven by Fig. 2. The results obtained by C. D. Salzberg and J. J. Villa (empty

Card 1/2

circles) and those obtained by the author for 291°K (full circles) are given here. The curve was calculated from the given values of the constants. Thus, the dispersion of light is described by a one-termed formula with a definite transition energy. There are 2 figures, 1 table, and 3 references: 1 Soviet.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AS USSR, Leningrad)

SUBMITTED: July 30, 1959

Card 2/2

S/181/60/002/01/35/035
B008/B014

24.7700

AUTHOR: Kornfel'd, M. I.

TITLE: Light Absorption in Germanium

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 179-180

TEXT: The absorption coefficient of germanium single crystals was measured here. The results obtained are represented in Fig. 1. Evaluation of these data leads to the following formula: $\alpha = A\exp\left(\dfrac{-(E_o-E)}{kT}\right)$ (1).
$A = 2.10^4$ cm^{-1}; $E_o = 0.89$ ev; $E = h\nu$. The experimental data given in Refs. 1-3 correspond to this formula. The relations set up according to these data are represented in Fig. 2: $E_o = E + kT(\ln 2 \cdot 10^4 - \ln\alpha)$ (2a);
$\ln A = \ln\alpha + \dfrac{0.89 - E}{kT}$ (2b). It may be seen that the stability of the constants A and E is kept with the highest degree of accuracy possible

Card 1/2

temperature light absorption may be interpreted with the aid of usual concepts. There are 2 figures and 4 non-Soviet references.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of
             Semiconductors of the AS USSR, Leningrad)

SUBMITTED: September 23, 1959

Card 2/2

KORNFEL'D, M. I.; MIRLIN, D. N.

Investigating the low-frequency fluctuations of conductivity in germanium appearing during illumination. Fiz. tver. tela 2 no.5: 1026-1029 My '60.
(MIRA 13:10)

1. Institut poluprovodnikov AN SSSR, Leningrad.
(Germanium--Electric properties)

KoRNFEl'D, m.I.

82599

S/056/60/039/01/07/029
B006/B070

24.7100
5.5310

AUTHORS: Kornfel'd, M. I., Lemanov, V. V.

TITLE: Quadrupole Effect in the Nuclear Magnetic Resonance in the NaNO$_3$-AgNO$_3$ Mixed Crystals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 1 (7), pp. 53-56

TEXT: In the introduction, the authors discuss the methods and results of investigations of the quadrupole effects in nuclear magnetic resonance in cubical crystals (Refs. 1, 2), and refer, among other things, to the inadequacy of these crystals since it is not possible with them, for example, to observe the satellites (transition $m \rightarrow m-1$ with $m \neq 1/2$) of the central line ($m = 1/2 \rightarrow m = -1/2$) separately. In crystals with lower symmetry, the electric field strength in the lattice is non-vanishing and the absorption line is split into its components, that is, into the central line and its satellites. To investigate the intensity of the satellites the authors used NaNO$_3$-AgNO$_3$ mixed crystals and NaNO$_3$ single crystals. On

Card 1/3

82599

Quadrupole Effect in the Nuclear Magnetic   S/056/60/039/01/07/029
Resonance in the NaNO$_3$-AgNO$_3$ Mixed Crystals   B006/B070

account of rhombohedral symmetry, the latter show a splitting of the Na^{23}
line into a central line and two symmetrically situated satellites. To
investigate the influence of impurities on the Na^{23} spectrum, the authors
used the above mentioned mixed crystals where Ag$^+$ replaces the Na$^+$ ion.
By the investigation of the line spectrum it was found that the breadth
of the satellite lines depended on the orientation of the crystal in the
magnetic field (4400 oe). For φ = 0 and 90° (φ - angle between the sym-
metry axis and $\vec{H}$), the satellites and the central line had a breadth of
the order of 2-2.5 kc/sec which corresponds to a dipole-dipole width.
For intermediate positions, the satellites became broader but their
intensity remained constant and independent of the position. This effect
may be explained by the mosaic structure. Fig. 1 shows the nuclear mag-
netic resonance spectra for pure NaNO$_3$, NaNO$_3$ + 0.5% AgNO$_3$ and NaNO$_3$ +
+ 2.1% AgNO$_3$ for φ - 90°. In Fig. 2 the relative satellite intensity is
shown as a function of the AgNO$_3$ content. The intensity diminished rapid-
ly with increasing Ag$^+$ concentration. For a concentration of 0.021
(21 Ag$^+$ ions per 1000 Na$^+$) the satellites completely disappeared. The

Card 2/3

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fact that the satellites show no broadening makes possible an analysis
of the experimental results by the method of the critical sphere. It may
be rightly assumed that no impurity ions (Ag$^+$) penetrate into the critical
sphere. From this it is concluded that the critical sphere contains
138 Na$^+$ ions and has a radius of about 13 A. There are 2 figures and 5
references: 2 Soviet, 1 American, and 1 Japanese.

ASSOCIATION: Institut poluprovodnikov Akademii nauk SSSR (Institute of
            Semiconductors of the Academy of Sciences of the USSR)

SUBMITTED: February 19, 1960

Card 3/3

83171

Nuclear-magnetic Resonance in Plastically   S/056/60/039/002/008/044
Deformed Rock Salt   B006/B056

occurring in plastic compression were found to be linear; they are not
described as dislocations but as distortion centers. In consideration of
this fact as well as of the lacking of a broadening of the absorption
lines, the authors, like in the case of impurity crystals, used the
model of the critical sphere for calculating the satellite intensities
in the case of randomly distributed distortion centers. Thus,
$\ln(J/J_0) \approx - cv_c/v_0$. J and J_0 are the satellite intensities in the de-
formed and undeformed crystal, respectively, c the distortion-center
concentration, v_0 the volume taken up by such a center, and v_c the
volume of the critical sphere. It may be assumed that c is proportional
to the degree of deformation, so that $\ln(J/J_0)$ would be a linear func-
tion of the degree of deformation. The diagram shows that this is ac-
tually the case. The authors finally show a possibility of estimating
the size of the critical sphere from two relations set up for the field
gradients. Thus, the value of 10^3 A is obtained for the radius of the
critical sphere in plastically deformed NaCl. There are 1 figure and
6 references: 2 Soviet, 3 Japanese, and 1 British.

Card 2/3

26700
S/056/61/041/005/015/038
B102/B108

24.7500 (1144,1462)

AUTHOR: Kornfel'd, M. I., Lemanov, V. V.

TITLE: Distortion of the NaCl lattice by Ag^+, Br^- and K^+ impurities

PERIODICAL: Zhurnal eksperimental'noy i teoretichoskoy fiziki, v. 41,
             no. 5(11), 1961, 1454 - 1460

TEXT: Nuclear magnetic resonance measurements were used to study the lattice distortions caused by impurity ions. The character and the amount of the distortions can be determined from an investigation of the quadrupole effects in this resonance. The interaction of the nuclear quadrupole moments with the electric field gradient causes a shift of the "satellite" frequencies which is proportional to the vicinity of the nucleus to the impurity ion. A "critical sphere" exists around this ion. For nuclei within it, the satellite frequency shift is greater than the half-width of the absorption line at the noise level. In order to determine the properties of this sphere and the lattice distortions at its boundaries, the authors measured the dependence of the lattice constant and of the intensity of the nuclear magnetic resonance absorption lines of

Card 1/4

26700
S/056/61/041/005/015/038
B102/B108

Distortion of the NaCl....

Na^{23} on the concentration of the impurities AgCl, NaBr and KCl in NaCl single crystals. The maximum impurity concentrations were 4, 11 and 3 mole%, respectively. The lattice parameters were measured by A. I. Zaslavskiy and T. B. Zhukova by means of a РКУ-114 (RKU-114) camera and Cu K_α radiation, with an accuracy of $\pm 3 \cdot 10^{-4}$ Å. The relative changes of the lattice parameters $\Delta a/a_0$ were found to be linear functions of the impurity concentrations. The largest changes were observed for NaCl-KCl. The absorption lines of Na^{23} in pure and in impurified samples were measured with an apparatus described in an earlier paper (V. V. Lemanov, PTE, 1, 126, 1961). The intensities of the absorption lines decreased exponentially with increasing impurity concentrations and approached the intensity of the central line, which was 40% of the total intensity for Na^{23} with a nuclear spin of 3/2. With a further increase in concentration, also the central line was weakened, due to second-order quadrupole effects. These effects became evident at 3 mole% of KCl and 10 mole% of NaBr. For AgCl impurities, no decrease in the intensity of the central line was observed. The first parts of the curves $J/J_0 = f(c)$ can be

Card 2/4

26700
S/056/61/041/005/015/038
B102/B108

Distortion of the NaCl...

approached by straight lines. From their slope, the number n of Na^+ ions within the critical sphere (radius R) can be determined. The following was found: Ag^+: n=76, R = 8.9Å; Br^-: n = 200, R = 12.4 Å; K^+: n = 460, R = 16.7 Å. J/J_0 as a function of the total volume nc of the critical spheres obeys a hyperbolic law and, at low impurity concentrations, is independent of the nature of the impurity. $|\Delta a|/a_0 = f(nc)$ is independent of the nature of the impurity and has a linear course. The elastic lattice distortions are determined from the components of the S tensor which interrelates $\vec{E}$ and the elastic lattice deformations. The frequency shift of the satellite lines for quadrupole interaction is given by $\Delta \nu = 3eQ(2m-1)\varphi_{HH}/4I(2I-1)h$, where I is the nuclear spin, Q the nuclear quadrupole moment and φ_{HH} is the component of the field gradient in the direction of $\vec{H}$. With this formula, φ_{HH} can be determined for nuclei situated at the boundary of the sphere. φ_{HH} was found to be about 10^{12} CGSE units. From this, the deformation at the boundary of the critical sphere was determined to be of the order of 10^{-3}. The relative

Card 3/4

247500 (1144,1482,1454)

AUTHORS: Devyatkova, Ye. D., Kornfel'd, M. I., Smirnov, I. A.

TITLE: Phonon scattering from impurity ions in the NaCl crystal

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 307-308

TEXT: The principal impurities contained in the NaCl crystal are Ag^+, Br^-, and K^+. Their presence causes the lattice distortions and the formation of scattering centers for phonons. The scattering cross section is proportional to the square of the radius of the distorted domains. This means that for Ag^+, Br^-, and K^+ the ratio of their scattering cross sections will be 1 : 2.0 : 3.5 (ratio of the radii of the distorted domains $= 1 : 1.4 : 1.9$). In the following proof is furnished for this statement. For low impurity ion concentrations $\Delta R/R_0 = f(l_0/l_w)$, where $R_0 =$ thermal resistance of the pure crystal, $\Delta R =$ additional thermal resistance due to impurities, l_0, $l_w =$ mean free path of phonons. Since $l_0 \sim 1/R_0 \bar{v} C_v$ and $l_w \sim 1/SN$, $\Delta R/R_0 = f(\eta)$, where $\eta = SN/R_0 \bar{v} C_v$. ($\bar{v} =$ mean sound velocity,

Card 1/2

KORNFEL'D, M.I.

      Light dispersion in germanium. Fiz. tver. tela 2 no.1:48-49
      Jan '60.   (MIRA 14:9)

    1. Institut poluprovodnikov AN SSSR, Leningrad.
                  (Germanium—Optical properties)

KORNFEL'D, M.I.

Light absorption in germanium. Fiz. tver. tela 2 no.1:179-180
Jan '60.   (MIRA 14:9)

1. Institut poluprovodnikov AN SSSR, Leningrad.
                    (Germanium--Optical properties)

KORNFEL'D, M.I.; LEMANOV, V.V.

Distortions of the NaCl lattice by Ag^+, Br^-, and K^+ impurity
ions. Zhur. eksp. i teor. fiz. 41 no.5:1454-1460 N '61.(MIRA 14:12)

1. Institut poluprovodnikov AN SSSR.
                        (Dislocations in crystals)
                            (Salt crystals)
                                (Ions)

DEVYATKOVA, Ye.D.; KORNFEL'D, M.I.; SMIRNOV, I.A.

Phonon scattering on impurity ions in sodium chloride crystals.
Zhur.eksp.i teor.fiz. 42 no.1:307-308 Ja '62.   (MIRA 15:3)

1. Institut poluprovodnikov AN SSSR.
   (Ions) (Sodium chloride crystals) (Scattering (Physics))

AUTHORS: Devyatkova, Ye. D., Kornfel'd, M. I., and Smirnov, I. A.

TITLE: Phonon scattering from impurity ions of Ag, Br, K, Li, I, and Rb in sodium chloride crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3669-3670

TEXT: The heat conduction of NaCl-crystals was measured at room temperature with added Li^+, I^- and Rb^+. The local distortions of the NaCl-lattice near the impurity ions listed have been investigated by M. I. Kornfel'd, V. V. Lemanov (ZhETF, 43, 2021, 1962). The relative changes of the thermal resistance $\Delta R/R_o$ for the samples with impurities of Li^+, I^-, Rb^+ (present paper) and Ag^+, Br^-, and K^- as a function of the dimensionless $\eta = SN/R_o \bar{v} C_v$ fit the same curve very well. The values 0, 1.0, 2.0, 3.0, 4.0 and 5.0 of η correspond with the values ~ 0.32, ~ 0.48, ~ 0.62, ~ 0.74 and ~ 0.85 of $\Delta R/R_o$. S is the cross section of the distorted zone, N the number of impurity ions per unit volume, $\bar{v}$ the mean sound velocity, C_v the specific heat. There is 1 figure.

Card 1/2

Phonon scattering from impurity...   S/181/62/004/012/046/052
                                            B125/B102

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of
               Semiconductors AS USSR, Leningrad)

SUBMITTED: August 2, 1962

Card 2/2

S/056/62/043/006/009/067
B154/B102

AUTHORS: Kornfel'd, M. I., Lemanov, V. V.

TITLE: On local distortions of a crystal lattice by impurity ions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
               no. 6(12), 1962, 2021 - 2023

TEXT: The dimensions of the distorted zones around Ag^+, Br^-, K^+ impurities
in the NaCl lattice have already been investigated by M. I. Kornfel'd
and V. V. Lemanov (ZhETF, 41, 1454, 1961) by way of the critical sphere
with the impurity ion in the center and fixed deformation on its surface.
For I^-, Li^+, Rb^+ the distorted-zone dimensions were determined in this
paper. Basing on the theory of elasticity of continuous media, the range R
of the deformation ε from the center of the sphere is given by

$\varepsilon = \varepsilon_o r_o^3/R^3$ where $\varepsilon_o = \iota(r_n - r_o)/r_o$ is the deformation on the sphere's

surface, r_o is the radius of a hollow sphere in the medium and r_n is the

radius of a little sphere inserted in it. ι depends on the relation
between the elastic properties of the medium and the little sphere. If a
Card 1/2

On local distortions of...   S/056/62/043/006/009/067
                                          B154/B102

molecule consisting of the impurity ion and six neighboring ions with
opposite sign is assumed to form the sphere, then the elastic properties
of the crystals considered are nearly equal and $\sim \cong 1/2$ in all cases.
The values of r_n, which are the ionic distances are taken from the Index
to X Ray Powder Data File (ASTM, Philadelphia, 1959). For r_0(NaCl)
2.8201 $\overset{o}{A}$ is obtained. Thus the authors determined the following values for
$|\epsilon| \cdot 10^3$: 0.18 (Ag^+), 0.24 (Br^-), 0.24 (Li^+), 0.19 (K^+), 0.23 (I^-), 0.20 (Rb^+).
Good agreements between the calculations and experimental data are observed
when the ionic distances of the corresponding lattice are used as
characteristic dimensions. If the impurity ion is assumed to form the
sphere then the results calculated will disagree with experiment. There is
1 table.

ASSOCIATION: Institut poluprovodnikov Akademii nauk SSSR (Institute of
               Semiconductors of the Academy of Sciences USSR)

SUBMITTED: July 7, 1962

Card 2/2

DEVYATKOVA, Ye.D.; KORNFEL'D, M.I.; SMIRNOV, I.A.

Phonon scattering on impurity ions of Ag, Br, K, Li, I, Rb in
sodium chloride crystals. Fiz.tver.tela 4 no.12:3669-3670 D
'62.   (MIRA 15:12)

1. Institut poluprovodnikov AN SSSR, Leningrad.
        (Scattering (Physics)) (Sodium chloride crystals)

ACCESSION NR: AP4033137   S/0120/64/000/002/0150/0152

AUTHOR: Abayev, M. I.; Kernfel'd, M. I.

TITLE: Measuring internal friction in solid-state bodies

SOURCE: Pribory* i tekhnika eksperimenta, no. 2, 1964, 150-152

TOPIC TAGS: friction, solid body internal friction, internal friction
measurement, internal friction electrostatic measurement

ABSTRACT: A new electrostatic method for measuring internal friction is free
from two shortcomings of the techniques used heretofore: cementing the specimen
to the vibrator and electric contact with the specimen. The 16 x 5 x 1-mm
specimen rests on two 0.07-mm glass filaments whose ends are welded to a glass
disk (see Enclosure 1). Four Pt electrodes are cathode-sprayed on the disk
surface. Two inner electrodes are intended for generating cantilever vibrations
in the specimen by an electrostatic field; two outer electrodes, for measuring the

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ACCESSION NR: AP4033137

vibration amplitude by a variation of capacitance between these electrodes and the specimen. The device permits measuring the internal friction (from 10^{-6} and higher) in the kc range, within 100-600K, by attenuation of the specimen's free vibrations. "The authors wish to thank V. V. Sokolov who built the mechanical part of the device." Orig. art. has: 5 figures and 1 formula.

ASSOCIATION: Institut poluprovodnikov AN SSSR (Institute of Semiconductors, AN SSSR)

SUBMITTED: 09Apr63   DATE ACQ: 11May64   ENCL: 01

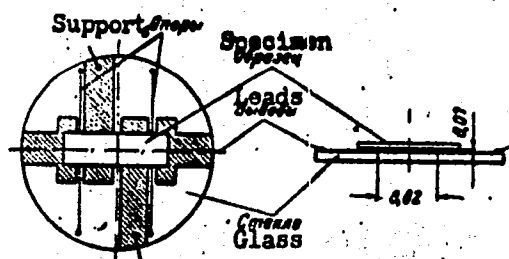SUB CODE: SS   NO REF SOV: 001   OTHER: 004

Card 2/3

ACCESSION NR: AP4033137

Device for measuring internal friction
in solid-state materials

Card 3/3

KORNFEL'D, M.I.

Errors and reliability of simple experiments. Usp. fiz. nauk 85
no.3:533-542 Mr '65.   (MIRA 18:4)

L 63347-65   EWC(b)-2/EPF(c)/EWT(1)/T   P-h IJP(c)   GG/WW

ACCESSION NR: AP5017340   UR/0181/65/007/007/2249/2252

AUTHOR: Kornfel'd, M. I.; Lemanov, V. V.

TITLE: Compensation of bivalent metal impurities in alkali halide crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2249-2252

TOPIC TAGS: nuclear magnetic resonance, crystal impurities

ABSTRACT: In studying the line width of Na^{23} nuclear resonance in NaCl as a function of temperature, a compensation effect was observed between bivalent cation impurities and bivalent anion impurities. The temperature dependence showed a very sharp reduction of line width in a certain temperature interval, which was attributed to diffusion of Na^+ ions. Theory indicates that the temperature at which line narrowing occurs depends on the concentration of cation vacancies: the higher the concentration the lower the temperature. The introduction of monovalent impurities did not change the curve of line-width vs. temperature. The bivalent impurities Ca^{2+} and CO_3^{2-}, however, moved the curve toward lower and higher temperatures respectively, by amounts which increased with concentration. Theoretical calculations are made of cation vacancy concentrations for these impurities, and are used to ac-

NO REF SOV: 001   OTHER: 004

Card 2/2

L 6454-66   EWT(1)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWP(t)/EWP(b)   IJP(c)
ACCESSION NR: AP5019855 JD/JW/GG/RM   UR/0181/65/007/008/2391/2396

AUTHOR: Kornfel'd, M. I.; Sochava, L. S.

TITLE: Complexes of Mn^{2+} and F^- impurity ions in strontium chloride crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2391-2396

TOPIC TAGS: strontium compound, magnesium, fluorine, crystal impurity, intermolecular complex, EPR spectrum, crystal symmetry

ABSTRACT: The purpose of the investigation was to check whether complex ions can be made up of two impurity ions in the case when the two ions have the same charge as the corresponding regular lattice points. To this end, the EPR method was used to observe the formation of two types of complexes in $SrCl_2$ crystals (cubic lattice of the fluorite type), $Mn^{2+}-F^-$ and $Mn^{2+}-2F^-$. The $SrCl_2$ single crystals were grown from powder by a procedure described by the authors elsewhere (FTT v. 5, 2232, 1963). The measurements were made in the 3-cm band with an RE-1301 spectrometer at 77 and 300K. Tests were made to determine the solubility of the fluorine in the $SrCl_2$ as a function of the temperature and the heat treatment of the sample. This was followed by investigations of the dependence of the axial and rhombic EPR spectra on the fluorine concentration. The results show that both spectra are due to the presence of fluorine ions in the nearest surrounding of the Mn^{2+}, the axial

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L6454-66
ACCESSION NR: AP5019855

spectrum being due to the complex with one F^- ion, and the rhombic to the complex with two F^- ions. The effect of the fluorine ions on the crystalline-field symmetry is discussed. It is also shown that alignment of the fluorine ions with the manganese ions is energetically more favored than an arrangement corresponding to the regular lattice. "The authors thank G. L. Bir for useful advice." Orig. art. has: 3 figures.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AN SSSR)

SUBMITTED: 01Mar65   ENCL: 00   SUB CODE: SS

NR REF SOV: 007   OTHER: 008

nw

Card 2/2

L 6050-66   EWT(1)/EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c)   IJP(c)   JD/GG

| ACC NR: AP5022728 | SOURCE CODE: UR/0181/65/007/009/2809/2815 |

AUTHOR: Abayev, M. I.; Kornfel'd, M. I.

ORG: Institute of Semiconductors AN SSSR, Leningrad (Institute poluprovodnikov AN SSSR)

TITLE: Pore formation during decomposition of solid solutions of bivalent ions in sodium chloride

SOURCE: Fizika tverdogo tela, v. 7, no. 9, 1965, 2809-2815

TOPIC TAGS: sodium chloride, light scattering, solid solution, crystal impurity, crystal structure, crystal defect

ABSTRACT: The process of pore formation during decomposition of solid solutions of Me^{2+} ions in NaCl is studied. Single crystal specimens with the following impurities were used: $BaCl_2$, $SrCl_2$, $CaCl_2$, $CoCl_2$, $NiCl_2$, $MnCl_2$, $CdCl_2$, $ZnCl_2$ and $PbCl_2$. A photomicrograph is given of a crystal with an admixture of $BaCl_2$. "Rods" lying along the <110> axis are clearly visible, although some of them are at a slight angle to this axis. These "rods" reach a length of 10-15 μ with thicknesses up to 1 μ. Quenching from 700°C completely eliminates these "rods" which indicates that they appear during decomposition of the solid solution. It is assumed that these objects are pores. While there were no visible pores in the other crystals studied, light scat-

Card   1/2

Z

Card 2/2

KORNFELD, V.

Histologic technique in nerve tissue staining. Biol.listy 31
Suppl:164-173 2 Jan 1951.   (CIML 20:9)

1. Of the Institute of Embryology of Charles University, Prague
(Head—Prof. Z. Frankenberger, M.D.). Author is M.D.

LAYKIN, Veniamin Yefimovich; KAMALOV, Rafael' Galiyevich; KORNFEL'D, V.N.,
redaktor; YABLONSKAYA, L.V., redakter; EVENSON, I.M., tekhniche-
skiy redakter.

[Experience in operating open-hearth furnaces with magnesite-
chromite crowns] Opyt ekspluatatsii martenovskikh pechei s magne-
zitokhromitovymi svodami. Moskva, Gos.nauchno-tekhn.izd-ve lit-ry
po chernoi i tsvetnoi metallurgii, 1956. 47 p.   (MLRA 9:4)
      (Chelyabinsk--Open-hearth furnaces)

Kornfeld, V.N.

Use of oxygen in the ore-scrap open-hearth process. I. P. Bardin, K. G. Trubin, L. M. Riznov, K. M. Trubet-skov, V. N. Kornfeld, R. I. Men'shikov, and V. P. Mazov. Stal' 15, 103–23 (26).—Experience accumulated on all-basic 200-ton open-hearth furnaces in making rimming steel with up to 33% O_2 in the flame or blowing it through the roof is presented in detail. The practice shortens the heats and saves fuel.
                                                           L. D. Gat.

TRUBETSKOV, K.M., kandidat tekhnicheskikh nauk; MEN'SHIKOV, R.I., kandidat
tekhnicheskikh nauk; KORNFEL'D, V.N., kandidat tekhnicheskikh
nauk.

Intensification of the scrap metal process by feeding oxygen into
the flame jet. Sbor.trud.TSNIICHM no.13:56-108 '56.   (MLRA 9:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metal-
lurgii, Moskovskiy institut stali, TSentroenergochermet.
        (Open-hearth process)
        (Oxygen--Industrial applications)

Kornfeld, V. N.

18(5)   PHASE I BOOK EXPLOITATION   SOV/2295

Moscow. Institut stali

Primeneniye kisloroda v staleplavil'nom proizvodstve (Use of
    Oxygen in Steelmaking) Moscow, Metallurgizdat, 1957. 418 p.
    (Series: Its: Sbornik, 37) Errata slip inserted. 3,500
    copies printed.

Ed.: Ye. A. Borko; Ed. of Publishing House: Ya. D. Rozentsveyg;
    Tech. Ed.: Ye. B. Vaynshteyn; Editorial Board of the Insti-
    tute: M.A. Glinkov, Doctor, Professor; R.N. Grigorash, Can-
    didate of Technical Sciences, Docent; N.T. Gudtsov, Academician;
    V.P. Yelyutin, Doctor, Professor; A.A. Zhukhovitskiy, Doctor,
    Professor; I.N. Kidin, (Resp. Ed.) Doctor, Professor; B.G.
    Livshits, Doctor, Professor; A.P. Lyubimov, Doctor, Professor;
    I.M. Pavlov, Corresponding Member, Academy of Sciences, USSR;
    K.G. Trubin, Doctor, Professor; and A. N. Pokhvisnev, Doctor,
    Professor

PURPOSE: This collection of articles is intended for scientific,
    industrial, chemical, and metallurgical engineers, physicists

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Use of Oxygen in Steelmaking   SOV/2295

    and students.

COVERAGE: This book is a collection of scientific research papers
    on the utilizations of oxygen in steelmaking. The use of oxygen
    blast for the intensification of fuel combustion and the in-
    troduction of oxygen into liquid metal in order to oxidize ad-
    mixtures are among the topics discussed. The use of oxygen in
    scrap-ore processes for making steel from pig iron with a high
    phosphorus content is also discussed. Several articles deal
    with the heating and processing fundamentals of steelmaking in
    a recirculation steel-melting furnace. Individual articles
    deal with the economics of steelmaking with oxygen-blast and
    the optimum conditions for effective utilization of oxygen. No
    personalities are mentioned. References follow each article.

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    achieve higher efficiency when oxygen blast is introduced.

Kuznetsov, N.S. [Docent]. Intensification of the Open-hearth
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    The author discusses the relationship between the ratio of
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   The authors study the possibilities of shortening heat time
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AVAILABLE: Library of Congress   GO/ec
Card 9/9   10-12-59

PA - 2414

AUTHOR KORNFEL'D V.N. cand.tech., VOYTOV A.O., KOSHELEV V.I., eng.

TITLE Smoke Temperature at the Outlet from the Working Space of an Open-Hearth Furnace. (Temperatura dyma u vykhoda iz rabochego prostranstva martenovskoy pechi. Russian)

PERIODICAL Stal' 1957, Vol 17, Nr 3, pp 213 - 219 (U.S.S.R.)
Received: 5/1957   Reviewed: 5/1957

ABSTRACT In 1954 and 1955 the smoke temperatures in the vertical channels of the 200 t open-hearth furnaces with magnesite chromite vaults and with heads of forsterite-bricks were measured in the course of more than 60 smelting operations. They were carried out without using oxygen and with an enriched air with 25 and 30% O_2. The smoke temperatures were measured in the rear vertical air channel and in individual cases also in the front air channel and in the vertical gas channel at the height of the window sills. A sucking-off pyrometer with a tungsten-molybdenum element was used as measuring device. The smoke temperature at the outlet of the working space of an open-hearth furnace changes within a wide range corresponding to the smelting process and mainly depends on whether the heat strain corresponds to the technological processes and to the intensity of the exothermal reactions in the liquid bath. If this is the case the enrichment of the ait by oxygen does not exercise any

CARD 1/2

AUTHOR: Kornfel'd, V. N.

TITLE: Influence of the Conditions of Oxygen Use Upon the Degasifica-
              tion of the Metal During Smelting (Open-hearth Scrap Process)
              [Vliyaniye rezhima primeneniya kisloroda na degazatsiyu
              metalla v khode plavki (martenovskiy skrap-protsess)]

PERIODICAL: Sb. Mosk. in-t stali, 1957, Vol 37, pp 80-97

ABSTRACT: Changes in the gas contents of the metal (Me) were studied
              in experimental heats in a 70-t furnace operated with all-solid-
              steel charge and heated by heavy oil. O_2 was delivered into the
              jet of flame during charging and melt-down, and into the bath
              during the working period. An atmospheric zone of elevated
              oxidizing capacity developed over the surface of the charge (the
              bath). Increase in hourly O_2 consumption carried with it an in-
              crease in the (FeO)/(MnO) ratio. As the slag becomes more
              acid, there is acceleration of the burning off of the C during
              the charging and melting periods; the duration of these periods
              is reduced by the increase in the heat input possible as the in-
Card 1/2   tensity of combustion is enhanced by O_2. Because of the

Influence of the Conditions of Oxygen Use Upon the Degasification (cont.)

shorter period of contact with the furnace atmosphere, the Me absorbs less gas therefrom. With increasing hourly O_2 input, the gas content of the Me upon fusion increases owing to the improvement in deaeration of the Me at high rates of carbon removal. The rise in $(FeO)/(MnO)$ apparently diminishes the permeability of the slag to the H_2 in the furnace atmosphere. When the Me is blown with O_2 by lances through the doors with a relatively small contact interface between the O_2 and the Me, a critical rate of blow (rate of delivery of O_2 into the bath) is found to exist. When the rate of blow is higher than critical, the O_2 is delivered to the point of reaction at a rate exceeding the arrival of C thereat, and the equalization of the C contents of the Me becomes, probably, the slowest link in the carbon-removal process. The critical magnitude of rate of blow depends upon the method of introduction of the O_2, the capacity of the bath, and the range of C levels at which the blow is performed. As the rate of blow is raised to the critical, decarburization increases, and gas removal from the bath improves. Further increase in rate of blow has practically no effect upon them, whereas the oxidation of the Fe increases. Therefore, when the rate of blow is above the critical, there is a temporary accumulation of O in the Me which disappears as the composition of the Me becomes uniform; this then determines the duration of the period of pure boil (after oxygen blow) required.

Card 2/2

L.K.

1. Metals--Processing 2. Metals--Degasification
3. Oxygen--Metallurgical effects 4. Open hearth furnaces--Performance

STROGANOV, A.I.; KORNFEL'D, V.N., red.; KHORAS, L.I., red. izd-va,;
MIKHAYLOVA, V.V., tekhn. red.

[Using oxygen in converter steelmaking processes] Primenenie
kisloroda v konverternom proizvodstve stali. Moskva, Gos.
nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii,
1958. 143 p.   (MIRA 11:11)
                        (Steel--Metallurgy)
                    (Oxygen--Industrial application)

SOV/133-58-12-7/19

AUTHOR: Kornfel'd, V.N., Candidate of Technical Science

TITLE: About Efficient and Practical System of Intensifi-
            cation of the Open Hearth Process with Oxygen (Ob
            effektivnosti i ratsional'nom rezhime intensifikatsii
            martenovskoy plavki kislorodom)

PERIODICAL: Stal', 1958, Nr 12, pp 1095-1102 (USSR)

ABSTRACT: A comparative analysis of operational results obtained on
            various works using a supply of oxygen to flame for the
            intensification of open hearth process is made.   The
            dependence of the increase in productivity (I) and the
            decrease in specific fuel consumption (II) per $1m^3$ of
            oxygen consumed on the intensity of oxygen supply are
            shown in Fig 1; the dependence of mean velocity of
            oxidation of carbon during charging of hot iron and
            melting, changes in the rates of its increase and heat of
            combustion of CO evolved from the bath on the intensity
            of supply of oxygen in Fig 5; the efficiency of oxygen
            during various periods of experimental heats in Table 1;
            the dependence of the efficiency of oxygen on the distri-
Card 1/4   bution of its supply during the individual smelting

SOV/133-58-12-7/19

About   Efficient   and   Practical   System   .   of Intensification of
the Open Hearth Process with Oxygen

periods in Table 2.   It is concluded that: 1) For the
evaluation of the efficiency of application of oxygen
for the intensification of open hearth process on various
works the specific intensity of its supply to flame
(n m^3/hr : t/m^2) i.e. the amount of oxygen supplied per
unit of time (n m^3/hr) per unit of load on the furnace
bottom (t/m^2), can be taken as a determining parameter.
2) The efficiency of oxygen, i.e. the relative increase
in the furnace productivity and the relative fuel economy
obtained per 1 n m^3 of specific oxygen consumption is
directly proportional to the specific intensity of oxygen
supply (for both routine and experimental heats on all
works using oxygen).   3) A rational intensity of supply
of oxygen to flame during charging and heating up periods
is determined by the possibility of speeding up these
operations, and thus depends on the conditions prevailing
at the works. Therefore, it should be experimentally
Card 2/4   determined in each melting shop.   4) A rational specific
intensity of the supply of oxygen to flame during the

SOV/133-58-12-7/19

About . Efficient and Practical System of Intensification of
the Open Hearth Process with Oxygen

melting period is approximately 1000-1250 m^3/hr: t/m^2
for all works, operating by the scrap ore process,
providing that a rapid and complete removal of slag is
possible. 5) When the availability of oxygen is limited
its supply with an equal intensity during the whole
charging and melting periods, which is at present used
on all works, is not always rational. The consumption
of the whole available oxygen during the melting period
is apparently rational in all works where speeding up of
charging and heating up which is necessary when operating
with oxygen during these periods, is more difficult than

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SOV/133-58-12-7/19

About Efficient and Practical System of Intensification of
the Open Hearth Process with Oxygen
        speeding up changing of the slag ladles during the
        utilisation of oxygen in the melting period.
        There are 6 figures, 2 tables and 15 references (all
        Soviet).

ASSOCIATION: Tsentroenergochermet

Card 4/4

SOV/133-59-6-13/41

AUTHORS: Kornfel'd, V.N., Candidate of Technical Sciences,
Voytov, A.O., Koshelev, V.I., Shorin, A.F. and
Dymov, B.K., Engineers

TITLE: Thermal Performance of an Open Hearth Furnace when
Blowing Oxygen or Oxygen Water Mixture into the Bath
(Teplovaya rabota martenovskoy pechi pri produvke
metalla)

PERIODICAL: Stal', 1959, Nr 6, pp 513-520 (USSR)

ABSTRACT: Thirty eight experimental heats with blowing oxygen
into the metal bath were carried out on a 200 ton open
hearth furnace operating with 70% of hot iron. The
moment of the beginning of blowing was varied. In
order to decrease the formation of fumes during blowing
in some heats, water was introduced into the oxygen
stream (0.7 - 0.9 litres per 1 m^3 of oxygen). The
consumption of oxygen during blowing varied from 25 to
35 m^3/min and when using water additions from 27 to
37 m^3/min. Thermal load during the experimental heats
was manually controlled on the basis of systematic
analyses of the combustion products in vertical flues

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SOV/133-59-6-13/41

Thermal Performance of an Open Hearth Furnace when Blowing Oxygen
or Oxygen Water Mixture into the Bath

      and temperatures of the roof (magnesite chromite) and
the top of the air regenerators (upper layers -
forsterite bricks). In some moments of the heats the
thermal load was limited by draught capacity of the
furnace. The oxygen supply to flame was cut off during
blowing period in order to economise oxygen. The
experimental results obtained are shown in Figures 1 - 8.
It was found that: 1) Due to an acceleration of
decarburisation of metal and an intensification of the
evolution of CO from the bath, thermal load during
blowing is considerably decreased. Correspondingly the
mean thermal load for the whole decarburisation period
(from charging of hot iron to the end of blowing) also
decreases. 2) When the blowing is started at an
optimal moment, the course of heat in the thermo-
technological sense substantially differs from the
usual one for the open hearth process. Under
experimental conditions the mean thermal load during
Card 2/6   blowing was decreasing to 14 million cal/hr, whereupon

SOV/133-59-6-13/41

Thermal Performance of an Open Hearth Furnace when Blowing Oxygen or Oxygen Water Mixture into the Bath

during 30 - 40 minutes it actually amounted to 5 - 6 mil cal/hr and during 15 - 20 minutes of the most violent evolution of CO from the bath, the supply of fuel was completely stopped. 3) The mean thermal load for the whole decarburising period (from charging hot iron to end of blowing) was actually determined by the proportion of the period taken for blowing, the earlier the blowing was started, the lower was the mean thermal load for this period. 4) The absorption of heat by the bath (per unit of time) and the coefficient of the utilisation of the furnace working space increases during blowing. On average during blowing as well as during the decarburisation period the above factors were higher the earlier blowing was started. 5) The period of decarburisation decreases more, the earlier blowing is started, whereupon the rate of decrease of the decarburising period increases faster than the rate of increase of the rate of heat absorption by the bath. Therefore, if blowing was started too early, the metal remains

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Thermal Performance of an Open Hearth Furnace when Blowing Oxygen
or Oxygen Water Mixture' into the Bath

insufficiently heated when the blowing is finished
and it is necessary to heat it further under
inconvenient conditions of decarburised bath.
A rational relationship of the duration of the
decarburising period and intensity of heating up metal
will be obtained only if the blowing is started at an
optimal moment, as only then will the maximum thermo-
technical effect be obtained. Under experimental
conditions, the average specific consumption of
conventional fuel for heats in which the blowing was
started at the optimum moment decreased to 87 kg/t
(with specific consumption of oxygen 37 m^3/t,
including 22 m^3/ton added to flame before starting
blowing). 6) On the addition of water to the stream
of oxygen for the prevention of excessive fuming, the
abovementioned relationship remains valid. However, as
a proportion of heat is consumed for the evaporation of
water and heating up of the steam formed to a

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SOV/133-59-6-13/41

Thermal Performance of an Open Hearth Furnace when Blowing Oxygen
or Oxygen Water Mixture into the Bath

temperature of the products of combustion, the
decarburisation process proceeds less intensively and
the heat absorption by the bath and the thermal
coefficient of utilisation of the furnace working
volume are lower than on blowing oxygen alone. The
minimum average specific fuel consumption for heats
in which the blowing with the oxygen-water mixture was
commenced at the optimum moment for the experimental
condition amounted to 107 kg/ton for the whole heat
(at the same oxygen consumption as on blowing oxygen
alone). 7) In the course of heats with blowing oxygen
or oxygen water mixture, the temperature conditions of
the furnace lining do not differ materially from
ordinary heats, providing the thermal load is controlled
according to the intensity of the evolution of carbon
monoxide from the bath and normal conditions of normal
combustion in the working volume are maintained. A
high velocity of the processes taking place during
blowing requires continuous watching of the thermal
Card 5/6   conditions of the heat (an appropriate automation of

SOV/133-59-6-13/41

Thermal Performance of an Open Hearth Furnace when Blowing Oxygen or Oxygen Water Mixture into the Bath

the control of this process is necessary).   8) Under the experimental conditions the optimum moment for the beginning of blowing was found to be between 60 and 80 minutes after the beginning of charging of liquid iron.   The optimum moment can be shifted nearer to the time of charging liquid iron, by decreasing the proportion of the cold component of the charge. However, the advisability of such a measure should be determined under the actual conditions of the economy of the process as a whole.   There are 8 figures and 4 Soviet references.

ASSOCIATION: Tsentroenergochermet i Moskovskiy institut stali (Tsentroenergochermet and Moscow Institute of Steel)

Card 6/6

KOCHO, Valentin Stepanovich; GRANKOVSKIY, Vadim Ivanovich; KORNFEL'D,
V.N., red.; SIDOROV, V.N., red.izd-va; DOBUZHINSKAYA, L.V.,
tekhn.red.

[Heat processes in open-hearth furnaces] Teplovaia rabota
martenovskikh pechei. Moskva, Gos.nauchno-tekhn.izd-vo
lit-ry po chernoi i tsvetnoi metallurgii, 1960. 187 p.
(MIRA 13:2)

(Open-hearth furnaces)   (Heat—Transmission)

TRUBETSKOV, K.M., kand.tekhn.nauk; KORNFEL'D, V.N., kand.tekhn.nauk
GREKOV, Ye.A., inzh.; VOYTOV, A.O., inzh.; SHTEYNBERG, L.S., inzh.;
IOMTATIDZE, G.A., inzh.

Investigating the melting of the open-hearth furnace charge with
various methods of using oxygen [with summary in English]. Stal'
21 no.3:214-222 Mr '61.   (MIRA 14:6)
           (Open-hearth furnaces) (Oxygen--Industrial applications)

KORNFEL'D, V.N., kand.tekhn.nauk; VOYTOV, A.O., inzh.; SHTEYNBERG, L.S.,
    inzh.; GREKOV, Ye.A., inzh.

Control of open-hearth furnace smelting by the composition and
temperature of combustion products. Stal' 21 no.10:950-958 O
'61.   (MIRA 14:10)

1. TSentroenergochermet i TSentral'nyy nauchno-issledovatel'skiy
institut chernoy metallurgii.
                    (Open-hearth furnaces—Combustion)

KORNFEL'D, Vladimir Naumovich; VOYTOV, Anatoliy Olimpiyevich; SHTEYNBERG, Leonid Solomonovich

[Heat processes in open-hearth furnaces using oxygen]
Teplovaia rabota martenovskoi pechi s primeneniem kis-
loroda. Moskva, Metallurgiia, 1964. 327 p.
(MIRA 17:12)

KORNFEL'D, YA. A.

KORNFEL'D, YA. A./Chl - Korr. Akademii Arkhitektury SSSR i OSTROVSKAYA, S. Z. Arkh.

Arkhitektura Domov Pionerov   Page 75

SO: Collection of Annotations of Scientific Research Work on Construction, completed in 1950, Moscow, 1951

KORNFIELD, L.

On the preparation of concrete; concrete mixers. p. 611.

REVISTA CAILOR FERATE. (Caile Ferate Romine) Bucuresti, Rumania.
Vol. 6, no. 11, Nov. 1958.

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

Uncl.

KORNGUT, JOZEF

Zastosowanie welny zuzlowej. Warszawa, Paustwowe Wydawn. Techniczne, 1951. 18 p.
(Instytutu Techniki Budowlanej; nr. 95. Prace Komisji Zuzlowej, nr. 9)
/Application of slag wool. bibl., diagrs./

SO: Monthly List of ~~Russian~~ Accessions/ Library of Congress, March 1953, Uncl.

     East European Vol. 3, No. 3

Slag wool. J. Korngut (Hutnik, 1951, 18, 240—252; J. Iron Steel Inst., 1952, 270—342.—The technique of slag wool production is reviewed with special reference to methods used in the U.S.S.R. R. B. CLARKE.

KORHUT, J.

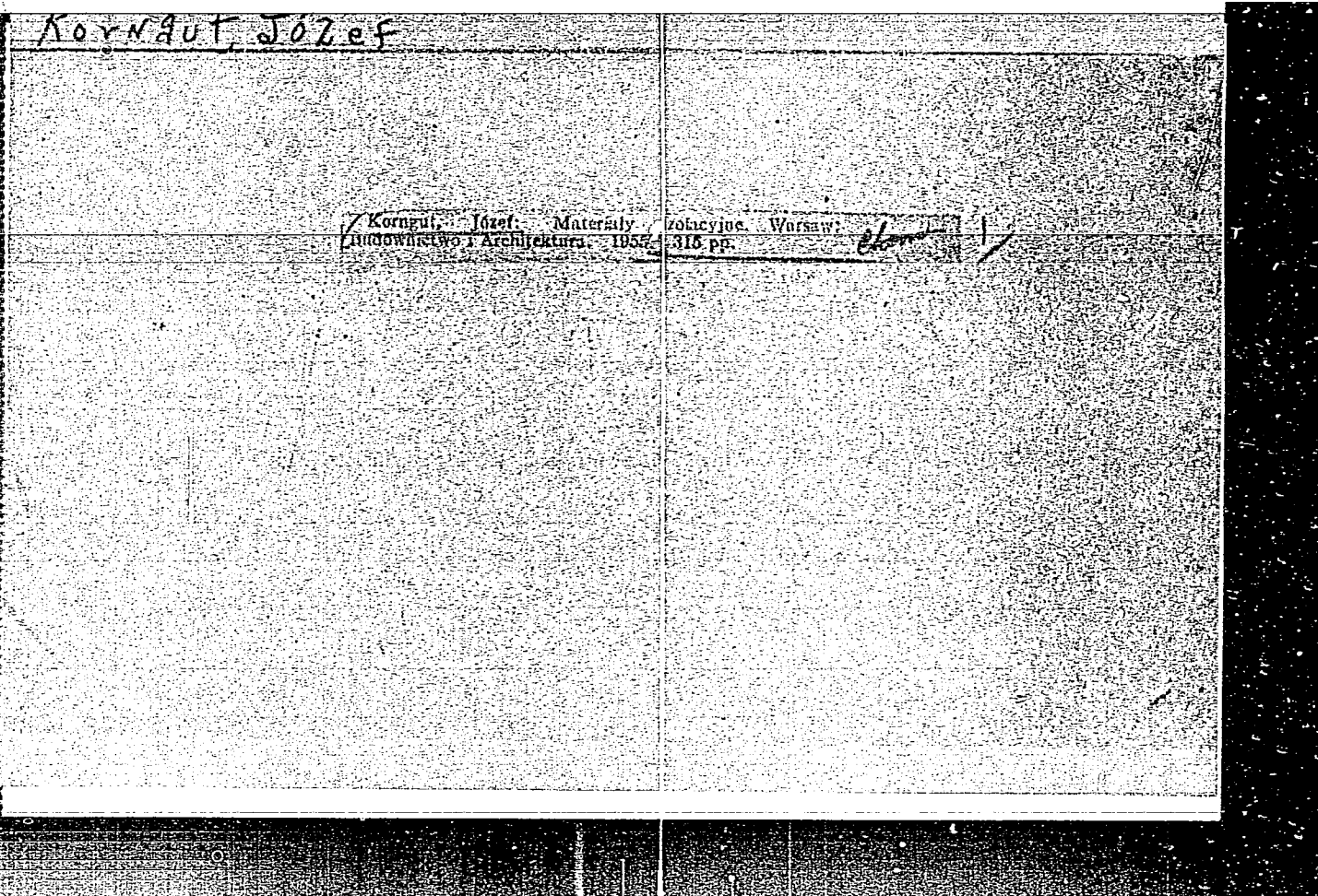Present situation in the production of waterproof materials in Poland.   p. 66.
(PRZEGLAD BUDOWLANY, Vol. 26, No. 3, Mar. 1954, Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 3, No. 12, Dec.
1954, Uncl.

KORNGUT J.

Waterproof materials. p. 68. (PRZEGLAD BUDOWLANY, Vol. 26, No. 3, Mar. 1954, Warszawa, Poland)

SO: Monthly List of European Accessions, (EEAL), LC, Vol. 3, No. 12, Dec. 1954, Uncl.

Korngut, Józef

Korngut, Józef. Materialy izolacyjne. Warsaw: Budownictwo i Architektura, 1955. 315 pp.

KORNGUT, Jozef (Mgr. Engr.)

Mgr. Eng. Boleslaw Kierski, Mgr. Eng. Jozef KORNGUT, Mgr. Eng. Michal
Zubelewicz, "Major Directions in the Production of Construction Materials
in the Current Five Year Plan," Materialy Budowlane (Construction
Materials), Vol. XXI, No. 10, Warsaw, October 1957, pp 289-298.

KORNGUT, Jozef, mgr. inz.

The plan of automation in the current five-year plan. Pt. 2.
(To be ccntd.) Przem mat budowl 21 no.21:2 My '62.

KORNGUT, Jozef, mgr. inz.

Automation in the current five year economic plan. Przem mat
budowl 9 no.20:2 My '62.

YUGOSLAVIA / Chemical Technology. Chemical Products and   H
         Their Applications. Fats and Oils. Waxes.
         Soaps and Detergents. Flotation Agents.

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 13347.

Author   : Kornhauser, Aleksandra; Perpar, Marija, Tiser, Vida.
Inst   : Not given.
Title   : Oil of Ergot.

Orig Pub: Acta pharmac. jugosl., 1956, 6, No 1, 33-38.

Abstract: Results of a study of the extraction rate of oil
         from different varieties of ergot (from Yugoslavia)
         are given. Analytical characteristics of oil of
         ergot are given. -- From the authors' resume.

Card 1/1
                         105

COUNTRY   : YUGOSLAVIA   H
CATEGORY   : Chemical Technology. Chemical Products and
                 Their Applications. Synthetic Polymers. *
ABS. JOUR.   : RZKhim., No. 19, 1959, No. 69660

AUTHOR   : Kornhauser, A.
INST.   : —
TITLE   : Possibilities of Employing Radioactive Emana-
                 tions in Certain Commercial Processes.

ORIG. PUB.   : Kemija u industriji, 1958, 7, No 5, 121-124,
                 132
ABSTRACT   : Review of the application of radioactive ema-
                 nations, particularly in the field of pro-
                 duction of the polymerization products. The
                 bibliography covers 15 titles.
                                     -- Ye. Stefanovskiy.

                 *Plastics.

CARD: 1/1

                         H - 139

KORNHAUSER, A.

"The reaction of ureido esters with acid anhydrides;" a dissertation.
Croat chem acta 34 no.3:B5 '62.

1. Tracer Laboratory, Institute "Ruder Boskovic", Zagreb, Croatia,
Yugoslavia.

KORNHAUSER, A.; KEGLEVIC, D.; HADZIJA, O.

Diacetamides. Note II. Croat chem acta 34 no.3:167-174 '62.

1. Tracer Laboratory, Institute "Ruder Boskovic", Zagreb, Croatia, Yugoslavia. 2. Clan i tajnik Redakcionog odbora, "Croatica Chemica Acta" (for Keglevic).

KORNHAUSER, PERPAR

CZECHOSLOVAKIA/Analytical Chemistry - Analysis of Organic Sub-   E-3
        stances

Abs Jour : Ref Zhur - Khimiya, No 3, 1958, No 7727

Author   : Kornhauser, Perpar
Inst   : Not Given
Title   : The Separation and Determination of Ergothionine in Ergot
           Alkaloids.

Orig Pub : Acta pharmac., jugosl., 1956, 6, No 3-4, 219-222

Abstract : The previously described method for the separation of ergoth-
           ionine (I) from ergot alkaloids (Hunter and others, Can. J.,
           Reserach, 1949, E 27, 226) has been modified: Uranyl ace-
           tate used for the precipitation of related substances was
           replaced by Pb acetate. For the photometric determination of
           I, to 2 ml of the diazoreagent (to 1.5 ml of a solution ob-
           tained by the solution of 9 g of sulfanilic acid in 90 ml of
           37.4% HCl and diluted to 1 liter, 1.5 ml of 5% solution of
           $NaNo_2$ are added, with the addition of 6 ml $NaNo_2$ solution 5
           minutes later) 1 ml of a solution of $CH_3COONa-Na_2CO_3$ (1 g
           Na_2CO_3 diluted in a solution of 10 g CH_3COONa and diluted
Card   : 1/2

Card   : 2/2   /4

KORNIAK, Adam, mgr., inz.

The planned extension of the Stettin repair yards in the years 1961-1965. Tech gosp morska 11 no.4:107-109 '61.

1. Biuro Projektow Budownictwa Morskiego, Gdansk.

KORNIAK, Adam, mgr., inz.

Cleaning of ship tanks. Tech gosp morska 11 no.10:301-303 '61.

1. Biuro Projektow Budownictwa Morskiego, Gdansk.

KORNIAK, Adam, mgr., inz.

Establishment of a shipbreaking center. Tech gosp morska 12 no.1:6-7
'62.

1. Biuro Projektow Budownictwa Morskieg, Gdansk.

(Poland—Ships)

Card 1/2

ACC NR: AP7004960

conductivity increased with time and reached saturation in about 2 min; the radical-luminescence also increased with time and approached saturation, but it did not begin to rise rapidly until the conductivity was nearly saturated. The radical-luminescence was found not to add to photoluminescence, the photoluminescence intensity being practically the same whether radical-luminescence was also present or not. This behavior is ascribed to photodesorption of atoms and radicals. After a brief discussion it is concluded that the present experimental results confirm the radical-luminescence excitation mechanism proposed in the references cited above. Orig. art. has: 1 formula and 3 figures.

SUB CODE: 20   SUBM DATE: none   ORIG. REF: 004   OTH REF: 003

Card   2/2

GORBAN', A.N.; KORNICH, V.G.; MAZHARA, V.F.

    Effect of hydrogen adsorption and desorption on the afterglow
    kinetics of the crystal phosphor ZnS-CdS, Cu. Opt. i spektr.
    15 no.1:130 Jl '63.   (MIRA 16:8)

              (Phosphors)

L 13109-63   EWT(1)/EWT(m)/EWP(q)/BDS   AFFTC/ASD   JD

ACCESSION NR: AP3003424

S/0051/63/015/001/0130/0130

AUTHOR: Gorban',A.N.; Kornich,V.G.; Mazhara,V.P.

56

TITLE: Influence of adsorption and desorption on the afterglow of ZnS-CdS:Cu phosphor

SOURCE: Optika i spektroskopiya, v.15, no.1, 1963, 130

TOPIC TAGS: adsorption, desorption, phosphorescence, ZnS-CdS-Cu phosphor, ZnS-CdS, Cu phosphor

ABSTRACT: Hydrogen molecules are readily adsorbed in atomic form on many surfaces including those of phosphors; upon desorption, the H atoms recombine to molecules. According to the electronic theory of chemisorption, in the case of "strengthening" of the bond of the gas atom with the adsorbent lattice (for example, adsorption of hydrogen on ZnS-CdS:Cu phosphor) a free electron appears; desorption is accompanied by the appearance of a free hole. Accordingly, from the standpoint of the electronic radical-luminescence mechanism adsorption and desorption should affect the afterglow (phosphorescence) of an excited phosphor. The authors carried out experiments with ZnS-CdS"Cu phosphor in a vacuum vessel. Upon admission of hydrogen the decaying phosphorescence picked up abruptly (small

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L 13109-63

ACCESSION NR: AP3003424

peak in the decay curve); upon rapid evacuation the phosphorescence intensity
dropped. Repeat admission of hydrogen resulted in a second brief rise. Thus,
the experimental results substantiate the predictions of theory. Orig.art.has:
1 figure.

ASSOCIATION: none

SUBMITTED: 20Dec62   DATE ACQ: 30Jul63
                                                            ENCL: 00

SUB CODE: PH   NO REF SOV: 002
                                                            OTHER: 00

Card 2/2

L 15520-63
ID/TIP(C)/DE   ENP(q)/EWT(m)/ES(w)-2/EDL   AFFTC/ASD/AFWL/SSD   Pab-4
ACCESSION NR: AP3005239   s/0056/63/045/002/0038/0042

AUTHORS: Ishkhanov, B. S.; Kornienko, E. N.; Sorokin, Yu. I.; Shevchenko, V. G.;
Yur'yev, B. A.

TITLE: Cross section of the reaction Rh sup 103 (gamma, p)

SOURCE: Zhur, eksper. i teoret. fiz., v. 45, no. 2, 1963, 38-42

TOPIC TAGS: photoproton, rhenium, quadrupole absorption, neutron emission

ABSTRACT: The yield curve of the reaction $Rh^{103}(\gamma, p)$ was measured for maximum photon energies ranging from 14.5 to 32.5 MeV by recording the photoprotons with scintillation spectrometers. The measurement was aimed at checking the presence of appreciable quadrupole absorption. The cross section calculated by the Penfold and Leiss matrix method reaches 8 ± 1.5 mb at the maximum, at $19. \pm 0.5$ MeV. The half-width at the peak is approximately 5.5 MeV. The cross section increases following a drop in the vicinity of 21--23 MeV, apparently owing to electric quadrupole absorption in the 25--30 MeV region. The integral cross section for the (γ, p) reaction is found to be 85 ± 15 MeV-mb. It is concluded that an appreciable part of the quadrupole transitions lead, owing to the mixing

Card 1/# Note: ignore Topic Tag "Rhenium"; should be rhodium

L 15520-63

ACCESSION NR: AP3005239

of the configurations, to the emission of neutrons, in agreement with the pre-
sence of asymmetry in the angular distributions of fast photoneutrons, observed
on many nuclei, and confirms in addition the important role of the residual
interactions in quadrupole absorption. "We are grateful to V. G. Neudachin and
N. P. Yudin for a discussion of the results, and also to N. N. Balamtov and the
Betatron crew for help." Orig. art. has 3 figures.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta
(Institute of Nuclear Physics, Moscow State University)

SUBMITTED: 13Feb 63   DATE ACQ: 06Sep63   ENCL: 02

SUB CODE: PH   NO REF SOV: 011   OTHER: 008

Card   2/4 a

16.6500

43185
S/021/62/000/007/001/008
I027/I227

AUTHOR: Kornienko, Yu. V.

TITLE: Construction of asymptotic solutions of a wave
equation with small nonlinearity for waveguide

PERIODICAL: Akademiya nauk Ukrayns'koy RSR. Dopovidi,
no.7, 1962, 845-849

TEXT: An asymptotic solution is constructed for the
equation

$$\Delta u - \frac{1}{c^2}\frac{\partial^2 u}{\partial t^2} = \gamma u + \epsilon f\left(u, \nabla u, \frac{\partial u}{\partial t}\right) \qquad (1)$$

(ϵ – a small parameter, f – analytic function), with zero
boundary condition on a cylindrical surface $F(y,z) = 0$ and some
initial conditions for $G(x,t) = 0$. By taking a sufficient number

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S/021/62/000/007/001/008
I027/I227

Construction of asymptotic solutions...

of terms, the error of the solution is of order ε^N (N is a given natural number) in the region $0 \leq x, t \leq \frac{1}{\varepsilon}$. The construction employs methods of Krylov and Bogolyubov-Mitropolskiy [Ref. 2: Asimptoticheskie metody v teorii nelineynykh kolebaniy (Asymptotic methods in the theory of non-linear oscillations) Fizmatgiz, 1958] for weakly-run linear oscillatory systems with a finite number of degrees of freedom. The extension given here for cases of infinite numbers of degrees of freedom can be continued further to other boundary conditions and for cases where slowly changing parameters enter the coefficients of the boundary and initial conditions.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radio Physics and Electronics, AS UkrSSR).

PRESENTED: by Y.A. Mitropolskyy, Academician, UkrSSR

Card 2/3

S/021/62/000/007/001/008
I027/I227

Construction of asymptotic solutions...

SUBMITTED: August 15, 1961

Card 3/3

KOVNATSKIY,M.A.;GORN, L.Ye.;GRODZENCHIK, N.A.;YERMAKOVA,P.M.;KONIKOVA, G.S.;
    KORNIGS, A.I.;KUZNETSOVA, M.V.;MEL'NIKOVA, L.M.

Silicosis, etiology, pathogenesis, and clinical aspects. Gig. sanit.,
Moskva no.8:28-32 Aug 1952.   (CLML 23:2)

1. Of the Clinical Department of Leningrad Scientific-Research Institute
of Labor Hygiene and Occupational Diseases.

KORNIKOV, I.I.; MATVEYEVA, M.N.

Continuous solid solutions of metallic compounds FeCr and FeV.
Dokl. AN SSSR 98 no.5:787-790 O '54.   (MLRA 8:2)

1. Institut metallurgii im. A.A.Baykova Akademii nauk SSSR.
Predstavleno akademikom G.G.Urazovym.
          (Iron--Chromium alloys)   (Iron--Vanadium alloys)

KORNIKOV, I.I.

Category : USSR/Solid State Physics - Phase Transformation in   E-5
           Solid Bodies

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6614

Author   : Kornikov, I.I.
Title   : Significance of Physico-Chemical Analysis to Metal Chemistry

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 6, 1368-1382

Abstract : No abstract

Card   : 1/1

KORNIKOV, I.I.; MATVEYEVA, N.M.

Chemistry of the vanadium metal. Trudy Inst. met. no.8:82-106
'61.   (MIRA 14:10)
                    (Vanadium--Metallography)
                    (Phase rule and equilibrium)

KORNIKOV, N.A.

Colloform nonmetallic minerals in the Pechenga sulfide copper-nickel
deposits and their association with the process of ore crystallization.
Mat.po min.Kol'.poluost. 1:30-38 '59.   (MIRA 15:2)
    (Pechenga District--Mines and mineral resources)
                        (Crystallization)

KORNIKOV, N.A.

Chlorites from the copper-nickel deposit in Pechenga District.
Mat.po min.Kol'.poluost. 1:39-48 '59.   (MIRA 15:2)
            (Pechenga District--Chlorites)