VINOKUROV, V.I., kand. tekhn. nauk, dotsent; MAKKAVEYEV, V.I.

Absolute measurement of the power of weak harmonic signals using a radiometer. Izv. LETI no.47:63-72 '62. (MIRA 16:12)

YUROV, Yu.Ya.; VINOKUROV, V.I.; MAKKAVEYEV, V.I.

Construction of a correlator based on a linear system with variable parameters. Izv.vys.ucheb.zav.; radiotekh. 5 no.6: 672-681 N-D '62. (MIRA 16:1)

1. Rekomendovana kafedroy teoreticheskikh osnov radiotekhniki Leningradskogo elektrotekhnicheskogo instituta imeni V.I. Ul'yanova-Lenina.

(Radio)

S/142/62/005/006/002/011
E140/E435

6.9210

AUTHORS: Yurov, Yu.Ya., Vinokurov, V.I., Makkaveyev, V.I.

TITLE: Design of a correlator based on a linear system with variable parameters

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiotekhnika, v.5, no.6, 1962, 672-681

TEXT: A parametric element has been used as the multiplier on which a correlator has been based. The element is applied in the commonly used balanced bridge modulator. There are 4 figures and 1 table.

VB

ASSOCIATION: Kafedra teoreticheskikh osnov radiotekhniki Leningradskogo elektrotekhnicheskogo instituta im. V.I.Ul'yanova (Lenina) (Department of Theoretical Fundamentals of Radioengineering, Leningrad Electrical Engineering Institute imeni V.I.Ul'yanov (Lenin))

SUBMITTED: April 13, 1962

Card 1/1

29623
S/142/61/004/003/004/016
E192/E382

9,2572 (1159)

AUTHORS: Vinokurov, V.I. and Makkaveyev, V.I.

TITLE: Distributed parametric amplifier with losses

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, v. 4, no. 3, 1961, pp. 270 - 279

TEXT: Analysis of distributed parametric amplifiers (Ref. 1 - P.K. Tien, J. Appl. Phys., 1958, 29, no. 9, 1347; Ref. 2 - G.M. Roe, M.R. Boyd - PIRE, 1959, 47, no. 7, 1213; Ref. 3 - K. Kurokawa, T. Hamasaki - IRE Trans., 1959, MTT-7, no. 3, 260) is usually based on the assumption that the non-linear capacitances and the line elements of the amplifier are lossless. In the following, an attempt is made, therefore, to include the losses of these elements in the analysis of the system leading to the evaluation of its gain parameters. The equivalent circuit of the system is illustrated in Fig. 1, where all the stages are identical.. The resistances R and r take into account the losses in the inductance coils and the non-linear capacitances of the diodes. C_1 is the stray capacitance of a coil, and C is the voltage-dependent capacitance of the

Card 1/1 09

diode. The individual cells of the line containing the non-linear capacitance can be regarded as a system with variable parameters which are functions of time and are independent of signal. In this case, the phenomena in the circuit can be described by linear differential equations with variable coefficients. The solution of the system of equations can be in the form of a super-position of waves which can exist in such a system. The differential equation relating the voltages at three nodes of the line of the amplifier is in the form:

$$rC_1\frac{d^2(U_{m+1}-2U_m+U_{m-1})}{dt^2}+\left(\frac{r}{R}+\frac{C_1}{C_-}\right)\cdot\frac{d(U_{m+1}-2U_m+U_{m-1})}{dt}+$$

$$+(U_{m+1}-2U_m+U_{m-1})\left(\frac{r}{L}+\frac{1}{RC_-}\right)+ \qquad (4)$$

$$+\frac{1}{LC_-}\int(U_{m+1}-2U_m+U_{m-1})dt-\frac{dU_m}{dt}=0. \qquad (4)$$

Card 2/4

The dependence of the capacitance on time is a periodic function and can be expressed in terms of a Fourier series. Only the first few harmonics of this series are of importance and these are expressed by:

$$C(m, t) = C_0 [1 + \xi \cdot \cos(\omega t - m\beta)] = C_0 + C(m) \cdot e^{j\omega t} + C^*(m) \cdot e^{-j\omega t} = C_0 \cdot \left| 1 + \frac{1}{2} \xi e^{j(\omega t - m\beta)} + \frac{1}{2} \xi e^{-j(\omega t - m\beta)} \right|, \quad (5)$$

where $C(m, t)$ is the time-dependent capacitance of the m-th cell of the line,
C_o is the average capacitance of a diode,
ξ is the modulation parameter of the capacitance,
ω is the pumping frequency, and
β is the phase-shift of the pump voltage per stage.

The other parameters of Eq. (5) are defined by:

Card 3/16 9

$$C(m) = 0.5C_0\xi e^{-j\beta m}; \quad C^*(m) = 0.5C_{02}e^{j\beta m} \qquad (6).$$

By assuming that the higher frequencies are rapidly attenuated in the transmission line of the amplifier, the solution of Eq. (4) can be represented in the form:

$$U_m = U_1(m)\cdot e^{-j\omega_1 t} + U_1^*(m)e^{-j\omega_1 t} + U_2(m)e^{j\omega_2 t} + U_2^*(m)e^{-j\omega_2 t}, \qquad (8)$$

where $\omega_2 = \omega - \omega_{-1}$; ω_1 is the signal frequency and $U_i(m)$ are the complex voltage amplitudes in the line. Eq. (8) neglects not only the combination frequencies such as $\omega + \omega_1$ but also the higher harmonics of the signal frequency. By substituting the solution of Eq. (8) into Eq. (4), it is possible to obtain two equations for determining the complex amplitude of the voltages. The gain of a stage of the amplifier is

Card 4/10 9

defined by: $K = e^{\delta}$ (15) .

The parameter δ in this equation can be expressed by:

$$\delta = \frac{a + jb}{c + jd} = p + jq \qquad (21)$$

where p represents the real component of the transfer coefficient of the system. By considering the solution given by Eq. (8), it is shown that the real component of δ is expressed by:

$$p = \frac{\frac{1}{4}\xi^2 C_0^2 [(\omega_1\omega_2 r C_0)^2 + \omega_1\omega_2] - (\omega_1 \omega_2^2 C_0^2 r)^2}{2 \cdot \sin\beta_1 \cdot \omega_2^2 C_0^2 r \cdot \left(\frac{1}{\omega_1 L} - \omega_1 C_1\right) + 2\sin\beta_2 \cdot \omega_1^2 C_0^2 \cdot r \left(\frac{1}{\omega L} - \omega_2 C_1\right)} . \qquad (22)$$

Card 5/16 9

where $\sin \beta_1$ and $\sin \beta_2$ can be determined from:

$$\cos \beta_i = 1 - \frac{\omega_i C_o}{2\left(\frac{1}{\omega_i L} - \omega_i C_1\right)} \qquad (12) .$$

Eq. (22) is valid for the case when the losses in the inductances are small compared with the losses in the non-linear capacitances. From Eq. (22), it is seen that if the capacitances are constant, the parameter p is smaller than zero and in this case the wave is attenuated. The amplification can be obtained if the numerator and denominator of Eq. (22) have the same sign. The denominator of Eq. (22) is positive if the following relationships are met:

$$\frac{1}{\omega_1 L} > \omega_1 C_1; \quad \frac{1}{\omega_2 L} > \omega_2 C_1 \qquad (23) .$$

Card 6/10

Consequently, parametric amplification is possible if the numerator of Eq. (22) is greater than 0 or:

$$\zeta^2 > \frac{(2\omega_1\omega_2 C_o^2 r)^2}{(\omega_1\omega_2 r C_o^2)^2 + \omega_1\omega_2 C_o^2} = \frac{4\omega_1\omega_2 C_o^2 r^2}{\omega_1\omega_2 r^2 C_o^2 + 1} \qquad (24).$$

The influence of the losses on the characteristics of a parametric amplifier were investigated on a specially constructed model which operated at frequencies between 10 and 150 Mc/s. The system employed 5 cells based on diodes, type Д2Г (D2G), whose parameters satisfied Eqs. (23). The cut-off frequency of the line was 170 Mc/s and the driver or pump frequency was 150 Mc/s. For this particular amplifier, the gain coefficient could be expressed by:

Card 7/10

Distributed parametric amplifier....

$$p \approx \frac{1}{8} \xi^2 \frac{1}{r} \omega_1 \omega_2 \cdot \frac{1}{\sin \beta_1 \omega_2^2 \cdot \left(\frac{1}{\omega_1 L} - \omega_1 C_1 \right) + \sin \beta_2 \cdot \omega_1^2 \cdot \left(\frac{1}{\omega_2 L} - \omega_2 C_1 \right)} \quad (28) .$$

The experimental and calculated gain characteristics are illustrated in Figs. 3; the experimental points are indicated by crosses. The graphs of Fig. 3a are taken for the following values of m : 1) m = 12; 2) m = 11; 3) m = 8 and 4) m = 5 ; the graphs of Fig. 3b were calculated for m = 11 , while the values of r varied as: 1) r = 0.36 Ω ; 2) r = 4 Ω; 3) r = 5.7 Ω and 4) r = 10 Ω . By comparing the calculated and experimental results, it is seen that the agreement between experiment and theory is satisfactory. There are 5 figures and 4 references: 1 Soviet-bloc and 3 non-Soviet-bloc. The three English-language references are quoted in the text.

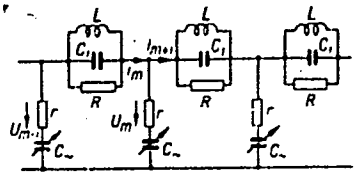
Card 8/10

29623
S/142/61/004/003/004/016
Distributed parametric amplifier E192/E382

ASSOCIATION: Kafedra teoreticheskikh osnov radiotekhniki Leningradskogo elektrotekhnicheskogo instituta im. V.I. Ul'yanova (Lenina) Department of Theoretical Principles of Radio-engineering of Leningrad Electrotechnical Insitute im. V.I. Ul'yanov (Lenin)

SUBMITTED: July 13, 1960

Fig. 1:



Card 9/10 9

VINOKUROV, V.I., kand.tekhn.nauk, dotsent

Sensitivity of a correlating radiometer. Izv. LETI no.38:175-186 '59. (MIRA 13:8)
(Radiometer)

86796

S/142/60/000/003/011/017
E192/E482

9.7800

AUTHORS: Yurov, Yu.Ya., Vinokurov, V.I. and Ustinov, V.B.

TITLE: An Electronic Function Converter

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1960, No.3, pp.376-385

TEXT: The problem of transforming a function can be formulated as follows. For a given electrical signal ξ and a known functional relationship

$$\alpha = f(\xi) \qquad (1)$$

It is necessary to produce an electrical signal corresponding to the values $\alpha = f(\xi)$. The problem of transforming the given polar coordinates r, φ into rectangular coordinates x and y is often of great importance. Such a transformation is described by

$$x = r \cdot \cos 2\pi \frac{U_o}{U_{om}} \qquad (2)$$

$$y = r \cdot \sin 2\pi \frac{U_o}{U_{om}}$$

Card 1/7

An Electronic Function Converter

where $\varphi = 2\pi U_o/U_{om}$; here U_o is a voltage and U_{om} is the value of the voltage corresponding to $\varphi = 2\pi$. The coordinate r is given by the voltage amplitude U_m which is a sinusoidal function of time. In order to obtain the voltage proportionate to the coordinate y of Eq.(2), it is possible to employ the circuit shown in Fig.1, where the voltage at the anode changes in accordance with

$$U_1(t) = E + U_m \cdot \sin \omega t$$

where E is a constant voltage component, while U_m is the amplitude of the variable component. The load of the tube in Fig.1 is in the form of an RC network connected in the cathode. The tube is normally closed by means of a biasing voltage applied between the grid and the cathode. At the instant t, a positive pulse having a duration τ_u is applied to the grid and the tube becomes conducting during the presence of the pulse. Now, if the

An Electronic Function Converter

where $\varphi = 2\pi U_o/U_{om}$; here U_o is a voltage and U_{om} is the value of the voltage corresponding to $\varphi = 2\pi$. The coordinate r is given by the voltage amplitude U_m which is a sinusoidal function of time. In order to obtain the voltage proportionate to the coordinate y of Eq.(2), it is possible to employ the circuit shown in Fig.1, where the voltage at the anode changes in accordance with

$$U_1(t) = E + U_m \cdot \sin \omega t$$

where E is a constant voltage component, while U_m is the amplitude of the variable component. The load of the tube in Fig.1 is in the form of an RC network connected in the cathode. The tube is normally closed by means of a biasing voltage applied between the grid and the cathode. At the instant t, a positive pulse having a duration τ_u is applied to the grid and the tube becomes conducting during the presence of the pulse. Now, if the

Card 2/7

An Electronic Function Converter

time constant for charging the condenser C is much shorter than τ_u, C will be charged to the voltage almost equal to the anode potential. If $RC \gg T$ (T is the period of the anode voltage) and the positive pulse at the grid is repeated periodically, the voltage across C changes insignificantly during the discharge period. The average voltage across C is therefore given by

$$U_c(t_1) = \gamma(E + U_m \cdot \sin \omega t_1) \qquad (3)$$

where γ is a constant factor taking into account the influence of RC and T. In order to obtain the voltage proportional to the other coordinate (x), a circuit, similar to that of Fig.1, is used but its anode voltage should be shifted in a phase by 90°. The positive pulses at the grid of this circuit should be applied at the same instants as those in a circuit of Fig.1. If the system is to operate correctly, it is necessary that the instant of the appearance of the positive pulse should be determined by the coordinate φ, that is by the voltage U_o. Consequently the

Card 3/7

An Electronic Function Converter

following conditions should be met

$$t_1 = \frac{U_o}{U_{om}} \cdot T \qquad (4)$$

In practice, this condition can be realised by means of the circuit shown in Fig.3 where the voltage U_{Bx} is in the form of a sawtooch waveform having the repetition period equal to a multiple of T. The amplitude of the sawtooth voltage should be equal to U_{om} or a multiple of it. As long as the sawtooth voltage is lower than U_o, the tube in Fig.3 is open and no current flows through the rectifier. However, at the instant when the sawtooth voltage becomes equal to U_o the tube becomes closed. A positive pulse is therefore obtained at the anode of the tube. This is differentiated and the resulting short pulse is applied to the grid of the tube in the circuit of Fig.1. Such pulses thus appear at the instant t_1. Fig.4 shows a practical circuit which can be used for the purpose of coordinate

An Electronic Function Converter

transformation. Though the above case considers the transformation defined by Eq.(2), it can have very general application, since various non-linear functions which are periodical can be approximated by a Fourier series consisting of a number of harmonics. A block diagram of a device permitting the transformation of complex non-linear functions is given in Fig.5. Here the unit providing the constant component can be built in the form of an accurate divider of a highly stable voltage. The units for various harmonics are the form of the circuit shown in Fig.4. Each harmonic unit will produce a sinusoidal and co-sinusoidal voltage component. The generator of the sinusoidal oscillations for all the units can be the same, if a suitable number of frequency multipliers is employed. A converter circuit, of the type shown in Fig.4, was investigated experimentally. The circuit operated in the frequency of 15 kc/s and the duration of the positive pulse was 0.6 μ sec. The system was supplied from a stabilized force of 200 V. Curves illustrating the transformation of several functions by means of this device are shown in Fig.6.

86796
S/142/60/000/003/011/017
E192/E482

An Electronic Function Converter

The circuit of Fig.4 can be employed to perform various mathematical operations such as division, multiplication, root extraction, squaring and so on. The use of the circuit in determining the logarithm of a number is analysed in some detail. It is shown that in this case it is necessary to apply an exponentially rising voltage instead of a sawtooth voltage to the comparison circuit of Fig.3. The circuit can also be used for determining the number whose natural logarithm is known. The circuit has the following sources of errors: (1) instability of the voltage E; (2) instability of the instant t_1, which may be due to the instability of the sawtooth voltage or the instability of the comparison circuit; (3) dependence of the coefficient γ of Eq.(3) on the internal resistance of the tube in the circuit of Fig.1 and (4) the instability of the voltage amplitude U_m. These errors are analysed in some detail and it is shown that the cathode follower in the converter circuit can be stabilized by using the system shown in Fig.7. There are 7 figures and 3 Soviet references.

Card 6/7

86796

S/142/60/000/003/011/017
E192/E482

An Electronic Function Converter

ASSOCIATION: Kafedra teoreticheskikh osnov radiotekhniki Leningradskogo elektrotekhnicheskogo instituta im. V.I.Ul'yanova (Lenina)
(Department of the Radio Engineering Theory of Leningrad Electrotechnical Institute imeni V.I.Ul'yanov (Lenin))

SUBMITTED: January 25, 1960

Card 7/7

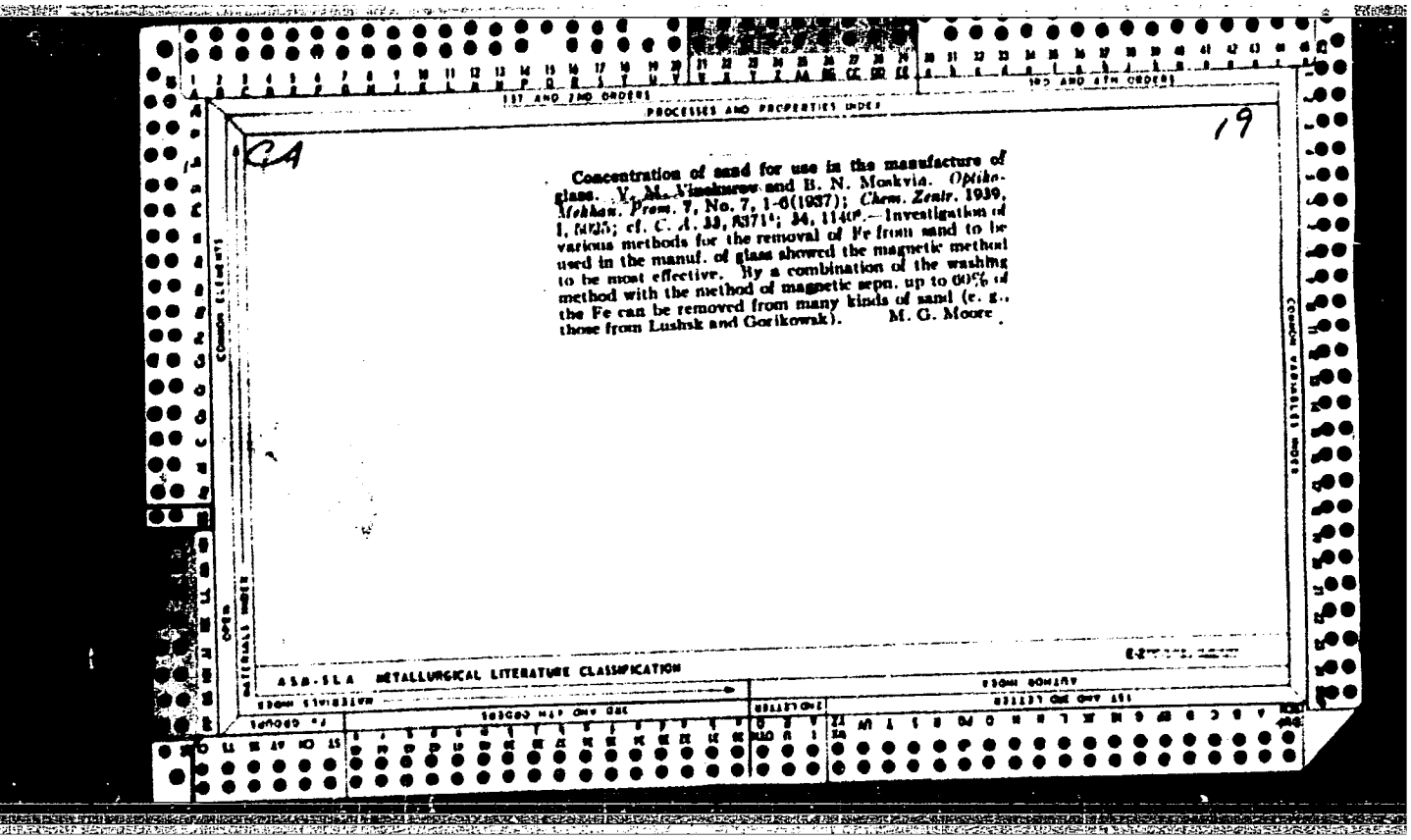
YEVDOKIMOV, V.G.; PETYGIN, V.I.; PYZHOV, V.S.; prinimali uchastiye: SMIRNOV, V.M.; KISELEV, L.M.; SHUMILOV, A.S.; VINOKUROV, V.K.; TIKHONOV, N.A.

Investigating granulators as controlled systems. TSvet. met. 35 no.6: 41-46 Je '62. (MIRA 15:6)
(Ore dressing) (Granular materials)

VINOKUROV, V.M.; ZARIPOV, M.M.; POL'SKIY, Yu.Ye.; STEPANOV, V.G.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Electron paramagnetic resonance of Gd^{3+} and GaF_2.
Fiz. tver. tela 4 no.8:2238-2242 Ag '62. (MIRA 15:11)

1. Kazanskiy gosudarstvennyy universitet imeni V.I. Ul'yanova-Lenina.
(Paramagnetic resonance and relaxation)
(Gadolinium)
(Calcium fluoride)



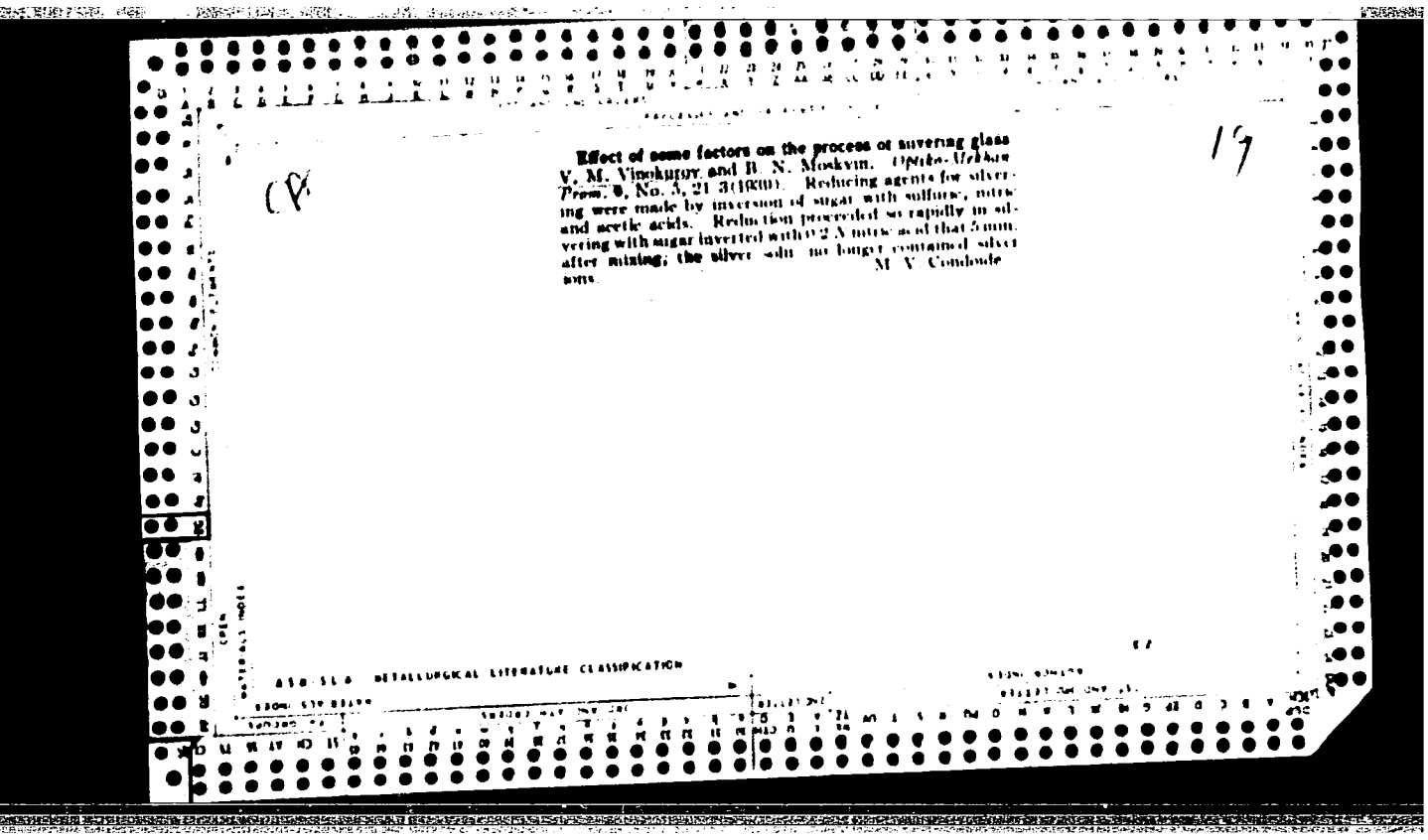
PROCESSES AND PROPERTIES INDEX

19

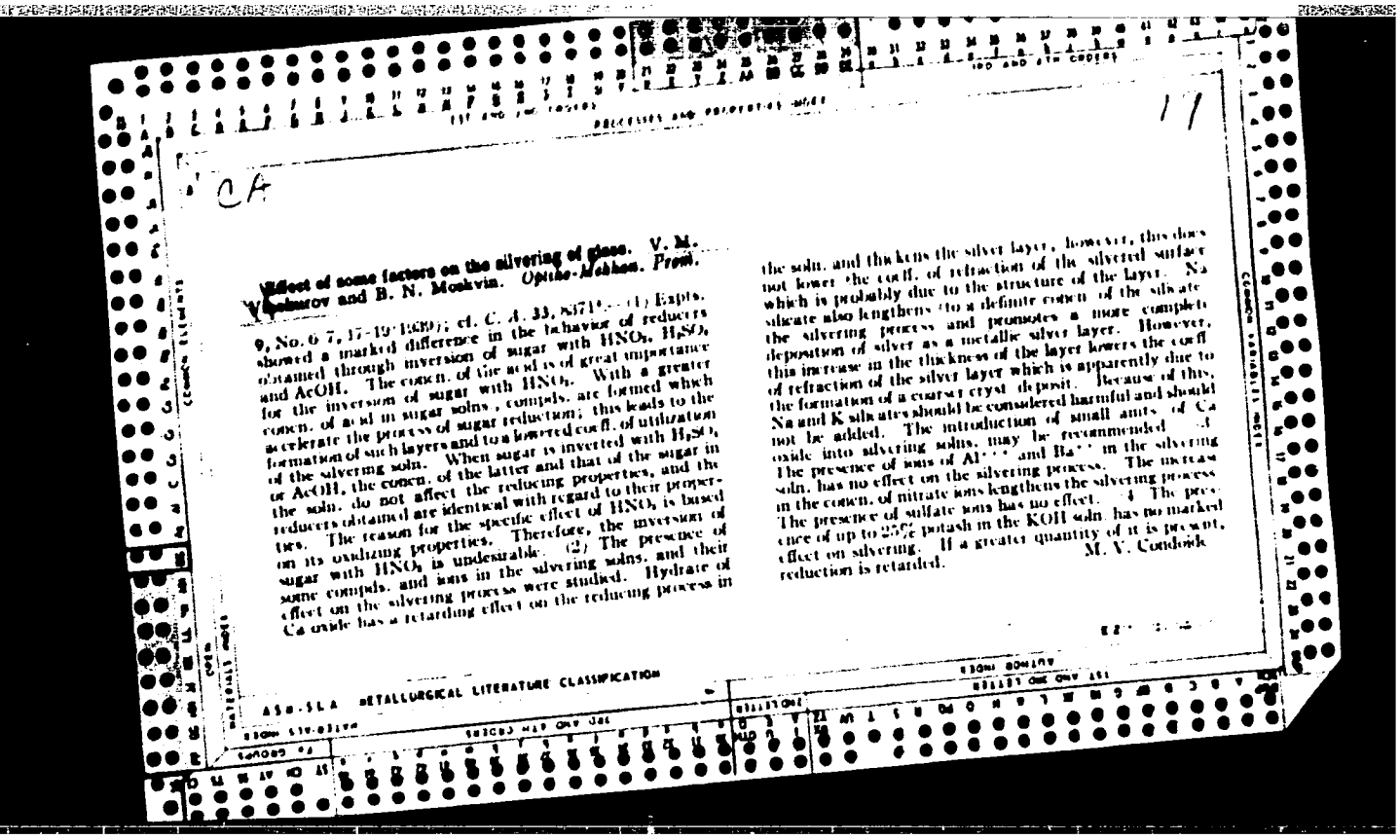
CA

Concentration of sand for use in the manufacture of glass. V. M. Vinokurov and B. N. Moskvin. *Optiko-Mekhan. Prom.* 7, No. 7, 1-6(1937); *Chem. Zentr.* 1939, I, 4025; cf. *C. A.* 33, 8371⁴; 34, 1140⁸.—Investigation of various methods for the removal of Fe from sand to be used in the manuf. of glass showed the magnetic method to be most effective. By a combination of the washing method with the method of magnetic sepn. up to 60% of the Fe can be removed from many kinds of sand (e. g., those from Lushsk and Gorikowsk). M. G. Moore

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Effect of some factors on the process of silvering glass
V. M. Vinokurov and B. N. Moskvin. *Optiko-Mekhan. Prom.* 9, No. 5, 21-3(1940). Reducing agents for silvering were made by inversion of sugar with sulfuric, nitric and acetic acids. Reduction proceeded so rapidly in silvering with sugar inverted with 0.2 N nitric acid that 5 min. after mixing, the silver soln. no longer contained silver ions.
M. V. Condoide

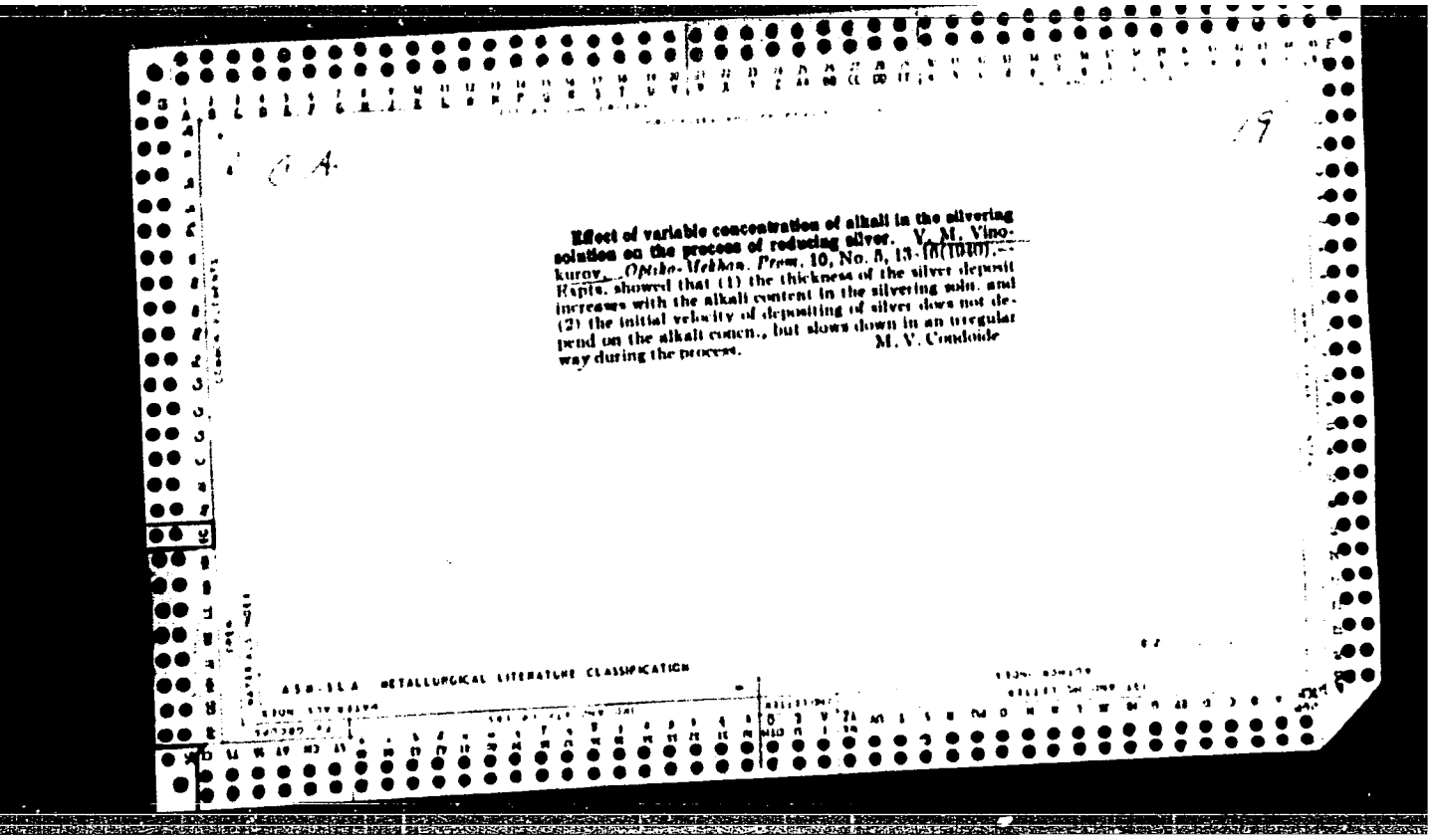


CA

Effect of some factors on the silvering of glass. V. M. Vlasenov and B. N. Moskvin. *Optiko-Mekhan. Prom.* 9, No. 6 7, 17-19 (1939); cf. C. A. 33, 8571⁴. — (1) Expts. showed a marked difference in the behavior of reducers obtained through inversion of sugar with HNO_3, H_2SO_4 and AcOH. The concn. of the acid is of great importance for the inversion of sugar with HNO_3. With a greater concn. of acid in sugar solns., complx. are formed which accelerate the process of sugar reduction; this leads to the formation of such layers and to a lowered coeff. of utilization of the silvering soln. When sugar is inverted with H_2SO_4 or AcOH, the concn. of the latter and that of the sugar in the soln. do not affect the reducing properties, and the reducers obtained are identical with regard to their properties. The reason for the specific effect of HNO_3 is based on its oxidizing properties. Therefore, the inversion of sugar with HNO_3 is undesirable. (2) The presence of some complx. and ions in the silvering solns. and their effect on the silvering process were studied. Hydrate of Ca oxide has a retarding effect on the reducing process in the soln. and thickens the silver layer, however, this does not lower the coeff. of refraction of the silvered surface which is probably due to the structure of the layer. Na silicate also lengthens to a definite concn. of the silicate the silvering process and promotes a more complete deposition of silver as a metallic silver layer. However, this increase in the thickness of the layer lowers the coeff. of refraction of the silver layer which is apparently due to the formation of a coarser cryst. deposit. Because of this, Na and K silicates should be considered harmful and should not be added. The introduction of small amts. of Ca oxide into silvering solns. may be recommended. The presence of ions of Al^{+++} and Ba^{++} in the silvering soln. has no effect on the silvering process. The increase in the concn. of nitrate ions lengthens the silvering process. The presence of sulfate ions has no effect. 4 The presence of up to 25% potash in the KOH soln. has no marked effect on silvering. If a greater quantity of it is present, reduction is retarded.

M. V. Condoide

A58-SLA METALLURGICAL LITERATURE CLASSIFICATION



Effect of variable concentration of alkali in the silvering solution on the process of reducing silver. V. M. Vinokurov. *Optiko-Mekhan. Prom.* 10, No. 5, 13-16(1943).—Rapts. showed that (1) the thickness of the silver deposit increases with the alkali content in the silvering soln. and (2) the initial velocity of depositing of silver does not depend on the alkali concn., but slows down in an irregular way during the process.

M. V. Condoide

ASB-ILA METALLURGICAL LITERATURE CLASSIFICATION

VINOKUROV, V.M.; ZARIPOV, M.M.; STEPANOV, V.G.

Electron paramagnetic resonance of Mn^{2+} in apatite. Fiz. tver. tela 6 no. 4:1125-1129 Ap '64.

Paramagnetic resonance of Mn^{2+} ions in diopside crystals. Ibid.:1130-1137 (MIRA 17:6)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.

VINOKUROV, V. M.

15-57-4-4122

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4, pp 11 (USSR)

AUTHORS: Tikhvinskaya, Ye. I., Krupin, V. I., Sokolov, M. N., Vinokurov, V. M., Veryasova, M. P., Mal'kovskiy, F. S., Grigor'yeva, T. Ye.

TITLE: Stratigraphy and Facies Relations in the Permian Deposits of the Tatarskaya ASSR (Osnovy stratigrafii i fatsial'nogo slozheniya permskikh otlozheniy Tatarskoy ASSR)

PERIODICAL: Uch. zap. Kazansk. gos. un-ta, 1955, Vol 115, Nr 10, pp 113-117

ABSTRACT: The Permian deposits of Tatariya are divided into the Lower Permian (250 m to 300 m thick), represented by the Schwagerina, Tastuba and Sterlitamak horizons of the Sakmara stage, and also by the Artinskian and Kungurian stages. The authors point out the limited distribution of the Artinskian series, completely developed (80 m) only at the extreme eastern edge of Tatariya, where it

Card 1/2

...its into
...(200 m to 250 m
...pper substage shows
...lower substage contains
...ened basin.

VINOKUROV, V.M.

Lithology of Belebey deposits in the eastern Tatar A.S.S.R.
Uch.zap.Kaz.un. 115 no.16:229-250 '56. (MLRA 10:3)

1. Kafedra mineralogii.
(Tatar A.S.S.R.--Geology, Stratigraphic)

VINOKUROV, V.M.; DYMKIN, A.M.

New type of contact metamorphosis in the Bakal ore deposit. Uch. zap. Kaz. un. 117 no.9:321-326 '57. (MIRA 13:1)

1.Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina. Kafedra mineralogii i petrografii i kafedra poleznykh iskopayemykh.
(Bakal region--Rocks)

AUTHOR: Vinokurov, V.M. SOV/70-3-5-11/24

TITLE: On the Characteristics of the Magnetic Properties of Siderite, Ankerite and Rhodochrosite (K kharakteristike magnitnykh svoystv siderita, ankerita i rodokhrozita)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 600-604 (USSR)

ABSTRACT: Measurements of the magnetic susceptibilities of certain carbonates were made by the R.F. method described in J. Chim. Phys. et Biol., 1956, Vol 54, Nr 2, pp 198-205, by Joussot-Dubien and others. The accuracy of 1-2% was estimated from trials on well-known materials. It is concluded that siderite, ankerite and rhodochrosite are paramagnetic minerals, the first two being magnetically anisotropic and the last isotropic. The easiest direction of magnetisation in siderite and ankerite coincides with the 3-fold axis of the crystals. The magnetic properties depend on the nature of the paramagnetic ions introduced and on the crystal structures. If the structures are the same, then the susceptibilities are proportional to the numbers of paramagnetic ions. The measurement of susceptibility can therefore be used as a guide to the composition of these minerals. Susceptibilities (per gram)

Card1/2

SOV/70-3-5-11/24

On the Characteristics of the Magnetic Properties of Siderite, Ankerite and Rhodochrosite

of siderite vary from 90 to 131 x 10^{-6} (parallel to the trigonal axis) and from 56 to 82 x 10^{-6} (perp.). The ratio (susc. par.) to (susc. perp.) is not less than 1.5. For ankerite, the variations are:- parallel - 18 to 30 and perp.- 12 to 20 x 10^{-6}. The ratio varies only within the limits 1.3 to 1.5. Rhodochrosite has a mean susceptibility of 107 x 10^{-6} and a mean anisotropy ratio of 1.013. There are 5 tables and 10 references, 8 of which are Soviet and 1 English, 1 French.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina (Kazan' State University imeni V.I. Ul'yanov-Lenin)

SUBMITTED: December 19, 1957

Card 2/2

VINOKUROV, V.M.

Blue halite from Solikamsk deposits. Zap. Vses. min. ob-va 87 no.4:504-507 '58. (MIRA 12:1)

1. Kafedra mineralogii i petrografii Kazanskogo gosudarstvennogo universiteta.
(Solikamsk region--Halite)

3(8)

AUTHORS: Korchagin, V. V., Vinokurov, V. M. SOV/20-122-6-41/49

TITLE: The "Siderite Concretions" From the Lower Cretaceous Sediments of the Ul'yanovsk Region Along the Volga (O tak nazyvayemykh sideritovykh konkretsiyakh iz nizhnemelovykh otlozheniy Ul'yanovskogo Povolzh'ya)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 6, pp 1100 - 1102 (USSR)

ABSTRACT: The occurrence of numerous concretions, which are found in Hauterivian, Barremian, and Aptian clays, are a characteristic feature of the Lower Cretaceous sediments in the Ul'yanovsk region along the Volga River. The shape, size, and type of occurrence of these concretions vary. They are chiefly dark colored - dark gray, dark brown, or black. They are frequently dense, rather firmly cemented, and contain a network of numerous contraction fissures, which are filled by coarse crystalline calcite. Most investigators (A. P. Pavlov, Ye. V. Milanovskiy, N. T. Zonov, N. G. Konovalova, K. S. Berezina, V. V. Panashchatenko, etc.) have designated these concretions by various names; they have all regarded these concretionary bodies as siderite concretions with a

Card 1/3

The "Siderite Concretions" From the Lower Cretaceous Sediments of the Ul'yanovsk Region Along the Volga

SOV/20-122-6-41/49

mixture of clay and calcite. On the contrary, according to V. I. Loginova and Ye. A. Krzhechkovskaya, they are "clay-limy", respectively "marl" or "clayey limestone". The authors have studied these concretions using the method of V. M. Vinokurov (Kazan' State University = Kazanskiy gosudarstvennyy universitet). This method consists of determining the average specific magnetic susceptibility of the sample (in powder form). The results of their experiments are listed in Table 1, along with a chemical analysis (made by E. A. Stepanova). The following were determined as a result of their investigations: 1. None of the concretionary bodies, which are disseminated within the containing rocks without any visible controlling factors, contain appreciable quantities of siderite, regardless of their stratigraphic position. Rather, they are clay-limy contractionary bodies. 2. The concretions, which are concentrated in interbeds of the Aptian Stage, consist of spherosiderite with mixtures of calcite and clay. 3. Similar concretions in the Barremian sediments are clay-limy concretions with a

Card 2/3

The "Siderite Concretions" From the Lower Cretaceous Sediments of the Ul'yanovsk Region Along the Volga

noticeable ankerite content, but no siderite. In conclusion, the authors attempt to explain the above-mentioned distribution and composition of the concretions. There are 1 table and 1 Soviet reference.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

PRESENTED: June 3, 1958, by N. M. Strakhov, Academician

SUBMITTED: June 1, 1958

VINOKUROV, V.M.

Magnetic properties of minerals of the wolframite group. Nauch. dokl.vys.shkoly; geol.-geog.nauki no.2:62-65 '59. (MIRA 12:8)

1. Kazanskiy universitet, geologicheskiy fakul'tet, kafedra mineralogii i petrografii.
(Wolframite) (Rocks--Magnetic properties)

24.2000

77111
SOV/70-4-6-12/31

AUTHORS: Vinokurov, V. M., Zaripov, M. M.

TITLE: Magnetic Properties of Tourmaline

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 6, pp 873-877 (USSR)

ABSTRACT: Magnetic properties of tourmalines depending on their chemical composition and color were studied. Previous works in this field are briefly reviewed. Measurements of the specific mass magnetic susceptibilities (χ_m) of green, black, and pink tourmalines were taken on the radio frequency unit described previously (V. M. Vinokurov, Kristallografiya, 3,5, 600, 1958). Results of the measurements of specific mass magnetic susceptibilities of black tourmalines (schorls) are given in Table 1, those of the green tourmalines in Table 2, and those of the pink tourmalines in Table 3.

Card 1/6

Magnetic Properties of Tourmaline

77111
SOV/70-4-6-12/31

Table 1

Sample Nr	$\chi_{m_\perp} \cdot 10^6$	$\chi_{m_\parallel} \cdot 10^6$	$\Delta\chi_m \cdot 10^6$	Note
1*	26,3±0,5	21,9±0,4	4,4	From deposit of village Yushakovo
2*	26,4±0,5	22,6±0,4	3,8	Borshchevochnyy kryazh deposits
3*	21,9±0,4	19,3±0,4	2,6	
4	17,305	13,810	3,495	Triangular samples
5	17,377	13,665	3,712	
6	17,337	13,746	3,591	
7	17,298	13,824	3,474	
8	26,99	25,69	1,30	hexagonal tourmalines according to M. Leela
9	26,96	25,82	1,14	
10	24,38	22,98	1,40	
11	24,95	23,75	1,20	

* Samples presented by M.M. Sivko

Card 2/6

Magnetic Properties of Tourmaline

77111
SOV/70-4-6-12/31

Table 2

Sample Nr	$\chi_{m\perp} \cdot 10^6$	$\chi_{m\parallel} \cdot 10^6$	$\Delta\chi_m \cdot 10^6$	Crystals Color Shade	Note
1	15,2±0,3	13,7±0,3	1,5	dark green	Borshchevochnyy kryazh deposits
2*	9,3±0,2	6,9±0,1	2,4	blue green	
3	12,0±0,2	10,0±0,2	2,0	green	Sarapulka deposits
4	11,7±0,2	10,1±0,2	1,6	green	
5*	3,9±0,08	3,2±0,06	0,7	grass green	Borshchevochnyy kryazh deposits
6	8,7±0,2	8,1±0,2	0,6	light greenish yellow	
7	20,8±0,4	20,4±0,4	0,4	dark green	Murzinka deposits
8	10,6±0,2	9,8±0,2	0,8	blue green	
9	21,6±0,4	21,3±0,4	0,3	dark green	Mokrusha deposits
10	12,57	10,17	2,40	dark green	M. Leela's data
11	12,50	10,31	2,19	dark green	

* Samples presented by M.M. Slivko

Card 3/6

Magnetic Properties of Tourmaline

77111
SOV/70-4-6-12/31

Table 3

Sample Nr	$\chi_{m_\perp} \cdot 10^6$	$\chi_{m_\parallel} \cdot 10^6$	$\Delta\chi_m \cdot 10^6$	Shade	Note
1*	0,4±0,008	0,3±0,006	0,1	pink	Gorshchevochnyy kryazh deposits
2	0,2±0,004	0,1±0,002	0,1	pink	of unknown deposits
3	1,1±0,02	0,7±0,01	0,4	pink	
4	0,2±0,004	0,1±0,002	0,1	light pink	
5	0,606	0,536	0,07	light pink	Lecla's data
6	0,619	0,599	0,02	dark pink	

* Samples presented by M. M. Sivko

Card 4/6

The following conclusions, from the data obtained, were made. The high susceptibility and considerable anistropy of the black tourmalines is due to the presence of Fe^{++} ion ($^5D_4$). Introduction of Fe^{+++} ions ($^6S_{5/2}$) and Mn^{++} ions ($^6S_{5/2}$) into crystal lattice of black tourmaline increases susceptibility and decreases anisotropy of the crystal. In the authors' opinion, the difference in the anisotropy of magnetic susceptibility of the green tourmalines is determined by the ratio of Fe^{++} to Fe^{+++}. This is contrary to M. Leela, who attributed the differences to the presence of Cr^{++} ions (^5D_o). According to the spectral analyses of the investigated tourmalines, made by A. L. Stolov on the author's request, and also literature data, the tourmalines in question contain no Cr. In the authors' opinion the pink color of

tourmalines is not determined by the presence of Mn^{+++} ions, as was suggested by S. V. Grum-Grzhimaylo and M. M. Slivko, since the presence of Mn^{+++} would cause a higher anisotropy, which is not the case (see Table 3). The low susceptibility and some anistropy of the pink tourmalines are determined by the presence of small quantities of Mn^{++} and Fe^{++} ions, and also by the diamagnetism. There are 3 tables; and 14 references, 2 U.K., 2 German, 2 Indian, 8 Soviet. The U.K. references are: Wilson, Proc. Roy. Soc. A., 96, 429, 1920; J. E. S. Bradley, O. Bradley. Mineral. Mag., 30, 220, 1953.

ASSOCIATION: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

SUBMITTED: March 16, 1959

24 (7)
AUTHORS: Vinokurov, V. M., Zaripov, M. M., Yafayev, N. R.

SOV/56-37-1-54/64

TITLE: The Fine Structure of the Paramagnetic Resonance Spectrum of Natural Sapphire (Tonkaya struktura spektra paramagnitnogo rezonansa yestestvennogo sapfira)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 312 - 313 (USSR)

ABSTRACT: The authors investigated the paramagnetic resonance spectrum of some natural sapphire crystals at room temperature within the frequency range of 9600 - 9200 megacycles, and tell of the results obtained in the present "Letter to the Editor". The blackish-blue color of the sapphire was caused by Fe^{3+}- and Ti^{3+}-ions, which substituted the Al^{3+} amorphously in corundum. Because of the short spin-lattice relaxation times, the Ti^{3+}-ions give no effect at room temperature, for which reason it is assumed that such an effect is due to the Fe^{3+}-ions, which was confirmed by the present investigation. Korniyenko and Prokhorov (Ref 2) already carried out an investigation of the fine struc-

Card 1/2

The Fine Structure of the Paramagnetic Resonance Spectrum of Natural Sapphire

SOV/56-37-1-54/64

ture of the paramagnetic electron resonance spectrum of Fe^{3+}-ions in the Al_2O_3-lattice, and showed that the spectrum observed is possible as a result of the here given Hamiltonian (1). By basing upon these and using other results of reference 2, the authors theoretically investigated the paramagnetic resonance spectrum of sapphire and numerically computed the constants of the Hamiltonian (1), g, |D|, |a-F| and |a|; they found it to agree within the error limits with those of the Fe^{3+}-ions (Ref 2) introduced artificially into Al_2O_3. Also the splitting up of Fe^{3}-resonance lines found in reference 3 was likewise found in the sapphire crystals. There are 2 figures and 2 Soviet references.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: March 28, 1959

Card 2/2

BIL'DYUKEVICH, A.L.; VINOKUROV, V.M.; ZARIPOV, M.M.; POL'SKIY, Yu.Ye.; STEPANOV, V.G.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Electron paramagnetic resonance in andalusite. Zhur. eksp. i teor. fiz. 39 no. 6:1548-1551 D '60. (MIRA 14:1)

1. Kazanskiy gosudarstvennyy universitet.
(Paramagentic resonance and relaxation)
(Andalusite)

VINOKUROV, V.M.; ZARIPOV, M.M.; STEPANOV, V.G.

Paramagnetic resonance of Mn^{2+} in dolomite and magnesite. Zhur. eksp. i teor. fiz. 39 no. 6:1552-1153 D '60. (MIRA 14:1)

1. Kazanskiy gosudarstvennyy universitet.
(Paramagnetic resonance and relaxation)
(Manganese) (Dolomite) (Magnesite)

VINOKUROV, V.M.

Chemical composition and magnetic properties of siderite and ankerite. Zap. Vses. min. ob-va 89 no.1:98-102 '60.
(MIRA 13:10)

(Siderite) (Ankerite)

27299

S/181/61/003/008/029/034
B111/B102

24.7900

AUTHORS: Vinokurov, V. M., Zaripov, M. M., Stepanov, V. G., Pol'skiy, Yu. Ye., Chirkin, G. K., and Shekun, L. Ya.

TITLE: Electron paramagnetic resonance in natural chrysoberyl

PERIODICAL: Fizika tverdogo tela, v. 3, no. 8, 1961, 2475 - 2479

TEXT: The electron paramagnetic resonance spectrum of the Fe^{3+} ions which substituted isomorphically the Al^{3+} ions in Al_2BeO_4 was investigated. Measurements were made of triple, double, and single crystals at room temperature, at, $(7 - 51)\cdot10^9$ cps, and in magnetic fields of up to 20 kilogauss. Nuclear resonance of hydrogen, deuterium, and lithium was used to measure the field strength. The single crystals were placed in a cylindrical H_{111} resonator, and their natural faces (100) on its bottom. $\vec{H}$ could be changed by an angle of 360° in that plane. For studying the angular dependence of the e.p.r. spectrum between $10\cdot10^9$ and $20\cdot10^9$ cps a H_{011}

Card 1/4

Electron paramagnetic resonance...

resonator was used. The crystal in it could rotate around an axis perpendicular to the resonator's axis. The magnet rotated together with it by 360°. The measurements showed that the angular dependence of the e.p.r. spectrum was due to paramagnetic atoms substituting the Al^{3+} ions. The direction c was found to be one of the main directions of the electric field in the crystal acting on the paramagnetic ion. Whilst the existence of four magnetically nonequivalent, pairwise identical complexes was expected from X-ray diffraction studies, investigations of the e.p.r. spectra indicated the existence of only two identical complexes oriented in opposite directions. The orientations of the other two include an angle of about 70°. The authors attempt to explain this divergence by the assumption that the Al^{3+} ions are replaced by Fe^{3+} only in those complexes (II and IV in Fig. 1) in which the Al^{3+} ions are arranged symmetrically around the O^{2-} ions. If one considers only the neighborhood of the substituting Fe^{3+} ions, they seem to be subjected to an almost cubically symmetric electric field. It is, however, shown that the spectrum observed can be described by a Hamiltonian of lower (rhombical) symmetry. This fact is explained by the assumption that the atoms farther

Electron paramagnetic resonance...

from the Fe^{3+} ions which are arranged in rhombical symmetry have a significant influence upon the crystal field. Only in a few cases Al^{3+} ions in octahedral sites (I and III, Fig. 1) are substituted by Fe^{3+} ions. V. D. Kolomenskiy and V. G. Kuznetsov are thanked for having supplied specimens, D. Kh. Dinmukhametov and R. M. Mineyev for their assistance in calculations, and S. A. Al'tshuler for discussions. There are 3 figures and 4 references: 1 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: April 5, 1961

VINOKUROV, V.M.

Magnetic properties of minerals. Zap.Vses.min.ob-va 90 no.5: 500-509 '61. (MIRA 14:10)
(Minerals—Magnetic properties)

VINOKUROV, V.M.; ZARIPOV, M.M.

Blue color of apatites. Dokl.AN SSSR 136 no.1:61-62 Ja '61.
(MIRA 14:5)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
Predstavleno akademikom I.V.Belovym.
(Apatite) (Color of minerals)

ELLERN, S.S.; VINOKUROV, V.M.

Tuffite intercalations in Givetian deposits of southern Tatarstan.
Dokl.AN SSSR 137 no.5:1192-1194 Ap '61. (MIRA 14:4)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
Predstavleno akademikom N.M.Strakhovym.
(Nurlaty Region—Volcanic ash, tuff, etc.)

ACCESSION NR: AP4041727 S/0181/64/006/007/2178/2178

AUTHOR: Antipin, A. A.; Vinokurov, V. M; Zaripov, M. M.

TITLE: Electron paramagnetic resonance of Co^{2+} in calcite

SOURCE: Fizika tverdogo tela, v. 6, no. 7, 1964, 2178

TOPIC TAGS: Co sup 2 plus paramagnetic resonance, paramagnetic resonance effect, electron paramagnetic resonance

ABSTRACT: The effect of paramagnetic resonance has been detected in synthetic single crystals of calcite containing a small impurity of cobalt atoms, at a frequency of about 9×10^9 cps. One group consisting of eight absorption lines was observed. Resonance magnitudes of a constant magnetic field for all eight lines simultaneously reach extreme values when the magnetic field H is perpendicular or parallel to the third-order axis (C_3) of the crystal. At room temperature and at 77K, no effect was observed. The measurement data for H parallel and perpendicular to C_3 and for some intermediate orientations shows that the spectrum can be described by a spin Hamiltonian. It can be assumed that the spectrum is due to Co^{2+} ions (Co^{59}, $I = \frac{7}{2}$),

Card 1/2

ACCESSION NR: AP4041727

isomorphically substituted for Ca^{2+} in calcite.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet im. V. I. Ul'yanova-Lenina (Kazan State University)

SUBMITTED: 21Jan64 ATD PRESS: 3048 ENCL: 00

SUB CODE: NP NO REF SOV: 000 OTHER: 000

Card: 2/2

VINOKUROV, V.M.; ZARIPOV, M.M.; KRYAKVIN, V.S.; STEPANOV, V.G.

Electron paramagnetic resonance of Mn^{2+} ions in cordierite. Geokhimiia no. 12:1486-1487 D '65 (MIRA 19:1)

1. Kazanskiy gosudarstvennyy universitet. Submitted November 20, 1964.

VINOKUROV, V.M.; MARIHOV, M.M.; STEPANOV, V.G.

Electron paramagnetic resonance of Mn^{2+} ions in gaylussite. Geokhimiia no.12:1318-1319 D '64. (MIRA 18:3)

1. Kazanskiy gosudarstvennyy universitet.

VINOKUROV, V.M.; ZARIPOV, M.M.; KROTOV, V.S.; STEPANOV, V.G.

Studying Mn^{++} isomorphism in beryls by the method of electronic paramagnetic resonance. Geokhimiia no.1:104 Ja '65.
(MIRA 18:4)

1. Kazanskiy gosudarstvennyy universitet.

L 41398-

ACCESSION NR: AR5009691 UR/0058/65/000/002/D054/D054

SOURCE: Ref. zh. Fizika, Abs. 2D399

AUTHORS: Arkhangel'skaya, Ye. D.; Vinokurov, V. M.; Zaripov, M. M.; Pol'skiy, Yu. Ye.; Stepanov, V. G.; Chirkin, G. K.; Shekun, L. Ya.

TITLE: Investigation of paramagnetic resonance spectra in crystals 21

CITED SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1962 g. Kazan', Kazansk. un-t, 1963, 3-4

TOPIC TAGS: electron paramagnetic resonance, epr spectrum, crystal field symmetry, spin Hamiltonian, paramagnetic ion

TRANSLATION: The results of research on epr in crystals are briefly listed. The spectrum of Gd^{3+} in CaF_2 is due to three types of Gd^{3+} ions, which are in fields of cubic, tetragonal, and trigonal symmetry. The epr effect in $BaTiSi_3O_9$ is due to Fe^{3+} ions in a trigonal field. The spectrum of the Cr^{3+} ions that replace Zn^{2+} in $K_2Zn(SO_4)_2 \cdot 6H_2O$ is interpreted as [illegible] magnetic $Cr^{3+}(OH)_6$ co-

Card 1/2

L 4139d-65
ACCESSION NR: AR5009691

plexes. The constants of the corresponding spin Hamiltonians are obtained. The spectrum of Mn^{++} in NH_4 [illegible] is identified with the presence of three magnetically non-equivalent Mn^{++} ions in a field [illegible]. The results of calculations of the energy spectrum of a [illegible] in a field of axial symmetry, carried out in the approximation of [illegible] magnetic field, are used to determine the constants of the spin Hamiltonian of Mn^{++} in calcite. A. Vashman.

SUB CODE: NP ENCL: 00

Card 2/2

ANTIPIN, A.A.; VINOKUROV, V.M.; ZARIPOV, M.M.

Electron paramagnetic resonance of Co^{2+} in calcite. Fiz. tver. tela 6 no.7:2178 Jl '64. (MIRA 17:10)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.

S/0181/64/006/004/1130/1137

ACCESSION NR: AP4028441

AUTHORS: Vinokurov, V. N.; Zaripov, M. M.; Stepanov, V. G.

TITLE: [Electron] paramagnetic resonance of Mn^{2+} ions in diopside crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1130-1137

TOPIC TAGS: paramagnetic resonance, Mn^{2+}, Mn ion, diopside, diopside crystal, paramagnetic spectrum, spectral line, ionic bond, replacement, substitution

ABSTRACT: The authors made their study on Mn^{2+} ions in single pale-green crystals of diopside. The measurements were made at room temperature at frequencies of $\sim$10 000 and $\sim$ 36 000 megacycles in fields up to 20 000 gauss. Sixty lines were observed in the paramagnetic resonance spectrum of diopside. A study of the angular dependence of this spectrum showed that Mn^{2+} ions replace Mg and Ca in diopside. According to the relative intensities of the spectral lines, the number of Mn^{2+} ions replacing Ca ions is somewhat greater than the number replacing Mg ions. It is entirely probable that the higher symmetry of the immediately surrounding complex of CaO_6 and the greater degree of ionic bond Mn--O favor the replacement of Ca by Mn^{2+}. Orig. art. has: 2 figures, 2 tables, and 6 formulas.

ACCESSION NR: AP4028441

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet im. V. I. Ul'yanova-Lenina (Kazan State University)

SUBMITTED: 29Oct63 DATE ACQ: 27Apr64 ENCL: 00

SUB CODE: PH NO REF SOV: 003 OTHER: 005

Card 2/2

VINOKUROV, V.M.; STEPANOV, V.G.

Electron paramagnetic resonance of Mn^{2+} in CaF_2, SrF_2, and BaF_2 single crystals. Fiz. tver. tela 6 no.2:380-381 F '64. (MIRA 17:2)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.

ACCESSION NR: AP4028440 S/0181/64/006/004/1125/1129

AUTHORS: Vinokurov, V. M.; Zaripov, M. M.; Stepanov, V. G.

TITLE: Electron paramagnetic resonance of Mn^{2+} in apatite

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1125-1129

TOPIC TAGS: electron paramagnetic resonance, paramagnetic resonance, Mn^{2+}, apatite, spin Hamiltonian, resonance transition, spectral line, second approximation, third approximation, apatite single crystal

ABSTRACT: The authors investigated the electron paramagnetic resonance spectrum of Mn^{2+} ions isomorphously replacing Ca^{2+} ions in single crystals of apatite. The study was made at frequencies from 10 000 to 50 000 megacycles. In comparing their results with theory it was found that the spectrum may be defined by the spin Hamiltonian with the following form:

$$\mathcal{H} = g_{\parallel}\beta H_z S_z + g_{\perp}\beta(H_x S_x + H_y S_y) + \frac{1}{3}b_2^0 O_2^0 + \frac{1}{60}b_4^0 O_4^0 + \frac{1}{60}b_4^3 O_4^3 + AS_z I_z + B(S_x I_x + S_y I_y),$$

Card 1/2

ACCESSION NR: AP4028440

in which the constants are $b_2^0 = 434.2 \pm 0.5$, $b_4^0 = 1.5 \pm 0.5$, $b_4^3 = 0 \pm 5$, $A = 92.5 \pm 0.5$, $B = 94.2 \pm 0.5$, and $g_{\parallel} = g_{\perp} = 2.0011 \pm 0.0005$ (all expressed in gauss).

Computations of the positions of resonance transitions with these constants show that at a frequency of $\sim$ 40 000 megacycles and with $H \parallel z$ the agreement with experimental values is within $\pm$ 2 gauss, and with $H \perp z$ the agreement is within $\pm$ 3 gauss. Computations were made with an accuracy up to the second approximation. Determination of the third-approximation correction gave a value less than 1 gauss. No effect of the member with b_4^3 on the position of the spectral lines with $H \parallel z$ or $H \perp z$ could be detected. This determination of the value of b_4^3 was made at orientations $\theta = 15$ and 30°. Orig. art. has: 1 figure and 3 formulas.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University)

SUBMITTED: 24Jun63 DATE ACQ: 27Apr64 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 005

Card 2/2

VINOKUROV, V.M.; ZARIPOV, M.M.; STEPANOV, V.G.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Electron paramagnetic resonance of Eu^{2+} ions in BaF_2 and SrF_2 single crystals. Fiz. tver. tela 5 no.7:1936-1939 Jl '63.
(MIRA 16:9)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.
(Paramagnetic resonance and relaxation--Spectra)
(Barium fluoride) (Strontium fluoride)

ACCESSION NO: AP4013491 S/0181/64/006/002/0380/0381

AUTHORS: Vinokurov, V. M.; Stepanov, V. G.

TITLE: Electron paramagnetic resonance of Mn^{2+} in single crystals of CaF_2, SrF_2, and BaF_2

SOURCE: Fizikia tverdogo tela, v. 6, no. 2, 1964, 380-381

TOPIC TAGS: electron paramagnetic resonance, spin Hamiltonian, Mn sup 2+, fluorite, CaF sub 2, SrF sub 2, BaF sub 2, magnetic dipole interaction, covalent bond, cubic lattice

ABSTRACT: In studying single crystals of SrF_2 with Mn, the authors observed a spectrum quite similar to the spectrum of Mn^{2+} with fluorite obtained by J. M. Baker, B. Bleaney, and W. Hayes (Proc. Roy. Soc., 247, 141, 1958). They determined the Hamiltonian constants for Mn^{2+} in SrF_2, BaF_2, and CaF_2 and compared them with the results of several other authors. However, they did not have samples with Mn concentrations lower than 0.05%, and the width of the line ($\sim$ 4 gauss) was such that it was not possible to determine reliably the constants a and A_p (describing the direct magnetic dipole interaction due to overlapping of electron clouds of Mn^{2+} and F^- ions). The authors conclude, nevertheless, that the apparent consistent

Card 1/2

ACCESSION NO: AP4013491

increase of A_p in the series BaF_2-SrF_2-CaF_2 undoubtedly indicates increase in degree of covalency. There is considerable disagreement among the compared values for the g factors, but the authors think their values more reliable because they were measured at ~ 36 kilomegacycles, where the correction for the second approximation has a value less than 1 gauss. "In conclusion, the authors express their thanks to P. P. Feofilov for submitting the samples and to L. Ya. Shekun for valuable suggestions during the work." Orig. art. has: 1 table and 2 formulas.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet im. V. I. Ul'yanova-Lenina (Kazan' State University)

SUBMITTED: 08Jul63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 005

Card 2/2

VINOKUROV, V.M.; ZARIPOV, M.M.; POL'SKIY, Yu.Ye.; STEPANOV, V.G.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Electron paramagnetic resonance of Gd^{3+} in CaF_2. Fiz. tver. tela 5 no.10:2902-2907 O '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina.

L 13808-63 EWT(l)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pi-4 GG/IJP(C)/JD/JG

ACCESSION NR: AP3003916 S/0181/63/005/007/2034/2035

AUTHOR: Vinokurov, V. M.; Zaripov, M. M.; Stepanov, V. G.; Chirkin, G. K.; Shekun, L. Ya.

TITLE: Paramagnetic resonance of Nb^{4+} ions in zircon monocrystals

SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 2034-2035

TOPIC TAGS: zircon, zirconium, niobium ion, niobium zircon spectrum, impurity spectrum, Nb EPR spectrum, niobium zircon EPR

ABSTRACT: A characteristic spectrum of ten lines, equal in intensity and practically equidistant, has been observed in a $ZrSiO_4$ monocrystal at 77K. Measurements showed that the positions of all ten lines can be described by a spin Hamiltonian with S = 1/2 and I = 9/2. The parallel g-factor is 1.862 ± 0.001, and the perpendicular g-factor is 1.908 ± 0.001. The authors conclude that these lines are due to the Nb^{4+} ion replacing the Zr ion in the lattice, since the spin of the Nb^{93} nucleus is 9/2, niobium is present in natural zircon, and the parameters of the spin Hamiltonian described above are close to those describing the Nb^{4+} spectrum in glass. Furthermore, Nb^{4+} resembles Ti^{3+} and V^{4+} in its magnetic properties, and the specific spectral features of the Nb ion in

Card 1/2

L 13808-63

ACCESSION NR: AP3003916

2

zircon are charecteristic of the patterns displayed in the case of Ti and V ions situated in low-symmetry electric fields. "We express our sincere gratitude to N. S. Garif'yanov for evaluating the results of our work." Orig. art. has: 1 formula and 1 figure.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet im. V. I. Ul'yanova-Lenina (Kazan State University)

SUBMITTED: 18Mar63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 005 OTHER: 004

Card 2/2

L 13679-63 EWT(l)/EWP(q)/EWT(m)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3 GG/JD/IJP(C)

ACCESSION NR: AP3003893 S/0181/63/005/007/1936/1939

AUTHOR: Vinokurov, V. M.; Zaripov, M. M.; Stepanov, V. G.; Chirkin, G. K.; Shekun, L. Ya.

TITLE: Electron paramagnetic resonance of Eu^{2+} ions in BaF_2 and SrF_2 monocrystals

SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 1936-1939

TOPIC TAGS: electron paramagnetic resonance, europium-doped fluoride, europium hyperfine structure, EPR measurement, barium fluoride, strontium fluoride, calcium fluoride

ABSTRACT: Experiments have been carried out with 0.05% Eu ions in the cubic symmetry field of BaF_2 and SrF_2 crystals at a frequency of approximately 40 kmc. In the case of a parallel field, the EPR spectral groups represent the superposition of two equidistant hyperfine structure sextets. The width of the individual hyperfine components is a few oersteds, and the sextet centers coincide within 1 oe. The Hamiltonian constants determined from the measurements are tabulated and compared with analogous constants found in the literature for CaF_2. The variation in the hyperfine-structure constants is found to be within the limits of experimental error. In the case of nonparallel magnetic fields, additional lines

Card 1/2

L 13679-63

ACCESSION NR: AP3003893

2

appeared between the usual hyperfine components, due to the transition $\Delta M = \pm 1$, $\Delta m = \pm 1$. The appearance of additional lines is remarkable, since the fine structure is small in comparison to Zeeman energy. Computation of the intensity of the additional lines shows that even with $H = 1.4 \times 10^4$ oe and a field angle of $\pi/8$ the intensities of the additional and fundamental lines are comparable. "We express our thanks to P. P. Feofilov who directed our attention to these materials and kindly provided specimens for investigation." Orig. art. has: 5 formulas and 1 table.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet im. V. I. Ul'yanova-Lenina (Kazan State University)

SUBMITTED: 06Mar63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 003

Card 2/2

VINOKUROV, V.M.; ZARIPOV, M.M.; [illegible], Iu.Ye.; STEPANOV, V.G.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Electron paramagnetic resonance of Gd^{+3} in CaF_2. Fiz. tver. tela 5 no.2:599-604 F '63. (MIRA 16:5)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.
(Paramagnetic resonance and relaxation) (Gadolinium)
(Calcium fluoride)

ZUBAREV, Aleksey Afanas'yevich; VINOKUROV, V.M., inzh., retsenzent; GRINBERG, P.I., red.; GALAKTIONOVA, Ye.N., tekhn. red.

[Adjustment of the ZIL-130 motortruck] Regulirovka avtomobilia ZIL-130. Moskva, Avtotransizdat, 1962. 87 p. (MIRA 15:9)
(Motortrucks)

VINOKUROV, V.M.; ZARIPOV, M.M.; STEPANOV, V.G.; FOL'SKIY, Yu.Ye.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Paramagnetic resonance of trivalent chromium in andalusite. Fiz. tver. tela 4 no.3:646-649 '62. (MIRA 15:4)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina. (Paramagnetic resonance and relaxation) (Chromium) (Andalusite)

VINOKUROV, V.M.; ZARIPOV, M.M.; POL'SKIY, Yu.Ye.; STEPANOV, V.G.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Studying the ismorphous features of Fe^{3+} ions in andalusite by the paramagnetic resonance method. Kristallografiia 7 no.2: 318-320 Mr-Ap '62. (MIRA 15:4)

1. Kazanskiy gosudarstvennyy universitet imeni Ul'yanova-Lenina. (Andalusite) (Paramagnetic resonance and relaxation)

24.7900

S/181/62/004/003/012/045
B102/B104

AUTHORS: Vinokurov, V. M., Zaripov, M. M., Stepanov, V. G., Pol'skiy, Yu. Ye., Chirkin, G. K., and Shekun, L. Ya.

TITLE: Paramagnetic resonance of trivalent chromium in andalusite

PERIODICAL: Fizika tverdogo tela, v. 4, no. 3, 1962, 646 - 649

TEXT: In Al_2SiO_5 there are two magnetically non-equivalent types of Cr^{3+} ions: the z-axes of both lie in the ab plane but diverge by an angle of 77°, the y-axes lie in the same plane, the x-axes coincide with the direction of the c-axis of the crystal. The z-axes of the Fe^{3+} ions diverge by 57.8°, the angle between the z-axes of the first types of Fe^{3+} and Cr^{3+} ions is 22.6°. The Cr^{3+} electron paramagnetic resonance in Al_2SiO_5 was measured at 9431 Mcps. The angular dependence of the resonance field was determined for the transition $M = -3/2 \rightarrow -1/2$ (M - magnetic quantum number). For $\vec{H} \parallel z$, $g_{eff} \approx 2$, for $\vec{H} \parallel x$ and $\vec{H} \parallel y$, $g_{eff} \approx 4$, i. e. the initial splitting

Card 1/2

δ of the spin quadruplet of $Cr^{3+} > 10^{10}$ cps. The resonance values of H do not coincide for $\vec{H} \| x$ and $\vec{H} \| y$. The spin Hamiltonian is

$$\mathcal{H} = D\left[S_z^2 - \frac{1}{3}S(S+1)\right] + E(S_x^2 - S_y^2) + \beta(g_x H_x S_x + g_y H_y S_y + g_z H_z S_z) \quad (1);$$

its constants are: S=3/2, $g_{\parallel} = 1.976$, $g_{\perp} = 1.985$, $D = 15.95 \cdot 10^9$ cps, $E = 0.60 \cdot 10^9$ cps. The initial splitting δ is $(32.0 \pm 0.1) \cdot 10^9$ cps, which agrees well with the theoretical value ($\delta = 2\sqrt{D^2+3E^2} = 31.97 \cdot 10^9$ cps).

O. I. Mar'yakhina is thanked for help and S. A. Al'tshuler for interest.

There are 3 figures and 3 references: 1 Soviet and 2 non-Soviet. The English-language references are: R. W. G. Wyckoff. Crystal Structure, II, 1951; A. Abragam M. H. L. Pryce. Proc. Roy. Soc. A205, 135, 1951.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet imeni V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: October 16, 1961

Card 2/2

VINOKUROV, V.M.; ZARIPOV, M.M.; STEPANOV, V.G.; POL'SKIY, Yu.Ye.; CHIRKIN, G.K.; SHEKUN, L.Ya.

Electronic paramagnetic resonance in natural chrysoberyl. Fiz. tver. tela 3 no.8:2475-2479 Ag '61. (MIRA 14:8)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
(Paramagnetic resonance and relaxation)
(Chrysoberyl)

RABINOVICH, A.Sh., kand. tekhn. nauk; SAL'NIKOV, V.Ya., inzh.; VINOKUROV, V.N., inzh.; ZAGORSKIY, G., red.; POKHLEBKINA, M., tekhn. red.

[Self-sharpening working parts of machines]Samozatachivaiushchiesia rabochie organy mashin. Moskva, Mosk. rabochii, 1962. 18 p. (MIRA 16:2)

(Agricultural machinery)

RABINOVICH, A.Sh., inzh.; VINOKUROV, V.N., inzh.

Self-sharpening plowshares and cultivator sweeps. Zemledelie 25 no.8:90-92 Ag '63. (MIRA 16:10)

(Plows) (Cultivators)

VINOSLAVSKIY, V.N., kand.tekhn.nauk; TATARCHUK, V.Ye., inzh.

Characteristics of the remote control of coal mine sections.
Ugol' Ukr. 7 no.11:32-35 N '63. (MIRA 17:4)

1. Kiyevskiy politekhnicheskiy institut.

RABINOVICH, A.Sh., kand.tekhn.nauk; VINOKUROV, V.N., inzh.

Developing and testing self-sharpening cultivator shares. Trakt. i sel'khozmash. 30 no.11:19-21 N '60. (MIRA 13:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mekhanizatsii sel'skogo khozyaystva.
(Cultivators)

VINOKUROV, V.P.

Device for measuring melting points of refractory metals and alloys. Zav.lab. 24 no.10:1292 '58. (MIRA 11:11)

1. Institut metallurgii imeni A.A.Baykova AN SSSR.
(Melting points)

D'YACHENKO, V.V., kand.tekhn.nauk; MOROZOV, B.P., inzh.; TYLKINA, M.A., kand.tekhn.nauk; SAVITSKIY, Ye.M., doktor khim.nauk; Prinimali uchastiye: VINOKUROV, V.P.; BIRYUKOVA, L.V.

Welding molybdenum with an addition alloying of the weld metal by rhenium. Svar.proizv. no.7:1-4 Jl '62. (MIRA 15:12)

1. Moskovskiy aviatsionnyy tekhnologicheskiy institut (for D'yachenko, Morozov). 2. Institut metallurgii im. A.A.Baykova (for Tylkina, Savitskiy).
(Molybdenum--Welding) (Rhenium)

VINOKUROV, V.P.

Casting rupture test pieces in an arc furnace. Zav.lab. 25 no.2:240-241 '59. (MIRA 12:3)

1. Institut metallurgii imeni A.A. Baykova AN SSSR.
(Electric furnaces) (Alloys)

8(4),18(0)
AUTHOR: Vinokurov, V. P. SOV/32-2

TITLE: The Casting of Tensile Strength Samples in an Electric Furnace (Otlivka razryvnykh obraztsov v dugovoy pechi)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 2, pp 240-241 (USSR)

ABSTRACT: A new design for the base plate of electric arc furnaces for the production of samples of refractory alloys was worked out. The base plate (Fig) has seven recesses, three of which are used for pouring the alloy into the mold, three for fusing the alloy, and one for smelting the getter. As soon as the molten samples are placed into the fusion recesses, the electric arc is switched on, the samples are fused and brought into the sub-base with the mold. Tensile strength samples of titanium, zirconium, vanadium, and other metals can be produced in this manner. Cylindrical forms can be cast from chrome, niobium, molybdenum, tantalum, rhenium, and other metals and alloys. The fusion is carried out in an argon or helium atmosphere at 10^{-3} torr. With the casting base described 3 alloys may be produced in one operation. The alloy portions are determined from the melting temperature of the components and their

Card 1/2

The Casting of Tensile Strength Samples in an Electric Arc Furnace

SOV/32-25-2-62/78

specific weight. Recently a universal base plate for laboratory electric arc furnaces has been designed. Its advantage lies in the fact that the recesses described above need no longer be differentiated in the working process. Different kinds of melting may be carried out: the production of unfused alloys, fused alloys, and alloys that are poured into molds. Moreover, it is possible to pour the alloys and fuse them with a melting electrode. The base plate also permits working under pressure. There is 1 figure.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences, USSR)

Card 2/2

SAVITSKIY, Ye.M.; VINOKUROV, V.P.

Apparatus for tensile testing of refractory metals at high temperatures in a vacuum. Zav.lab. 29 no.3:378-379 '63. (MIRA 16:2)

1. Institut metallurgii imeni A.A. Baykova.
(Metals at high temperatures)
(Testing machines)

SOV/32-24-10-64/70

AUTHOR: Vinokurov, V. P.

TITLE: A Device for Measuring the Melting Temperature of High-Melting Metals and Alloys (Prisposobleniye dlya izmereniya temperatury plavleniya tugoplavkikh metallov i splavov)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 10, pp 1292-1292 (USSR)

ABSTRACT: With the apparatus constructed earlier by N. A. Kiselev (Ref 1) samples of larger dimensions were used for the determination of the melting temperature of high-melting metals (diameter 5-6 mm, length 60-80 mm). The production of those samples is complicated and a larger quantity of the metals is needed. This restricts the use of this method to metals that are not rare and not very valuable. In the present paper a device was constructed which makes possible determinations of the melting temperature with considerably smaller samples (diameter 6-7 mm, length 7-8 mm). A diagram of this apparatus is given as well as a description of it and of the technique employed. The melting temperature is determined by means of an optical pyrometer, with the investigations being carried out in vacuum. The apparatus described makes it possible to carry out the determinations mentioned above using small amounts of the metals (5-6 g), and determinations

Card 1/2

SOV/32-24-10-64/70

A Device for Measuring the Melting Temperature of High-Melting Metals and Alloys

with samples of tungsten, molybdenum, rhenium, niobium and other metals are reported. There are 1 figure and 1 reference, 1 which is Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov, AS USSR)

Card 2/2

VINOGRAD, I.E. (Moskva)

Method of studying the asymptotic properties of the resolvent of a system of Volterra integral equations. Izv. vys. ucheb. zav.; mat. no.6:24-31 '64. (MIRA 18:3)

16(1) SOV/140-59-1-4/25

AUTHOR: Vinokurov, V.R.

TITLE: On the Stability of the Solution of a System of Integral Equations of the Type of Volterra of Second Kind. I (Ob ustoychivosti resheniya sistemy integral'nykh uravneniy Vol'terra 2 roda. I)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 1, pp 23-34 (USSR)

ABSTRACT: On a finite interval for the system

$$(1)\quad y^{(i)}(x) = f^{(i)}(x) + \int_a^x K^{(i)}\left[x,s,y^{(1)}(s),y^{(2)}(s),\ldots,y^{(n)}(s)\right]ds$$

there hold the usual theorems of existence and uniqueness as well as the theorem on the continuous dependence of the solution on the function $f(x)$. The author investigates the conditions under which this continuous dependence remains true also on the half-line $(0,\infty)$.

Theorem: If the solution of $y^{(i)} = \int_b^x K^{(i)}\,ds$, $b \geqslant a$, is stable and

Card 1/2

On the Stability of the Solution of a System of Integral Equations of the Type of Volterra of Second Kind. I

SOV/140-59-1-4/25

if $\int_a^b K\,ds$ with $y^{(i)}(i=1,2,..,n)$ in x uniformly tends to zero, then also the solution of $y^{(i)} = \int_a^x K^{(i)}\,ds$ is stable.

Theorem: It is necessary and sufficient for the stability of the solution of $y(x) = \int_a^x K(x,s)y(s)ds$ that the resolvent $R(x,s)$ for all x of $[a,\infty)$ satisfies the condition $\int_a^x |R(x,s)|\,ds \leq B$, B=const.

Some further results relate to the stability of the kernel. The theme of the present paper was given by Ye.A.Barbashin.
There are 4 Soviet references.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Ural State University imeni A.M.Gor'kiy)

SUBMITTED: March 17, 1958

Card 2/2

VINOKUROV, V.R. (Orsk)

Order of the exponential growth of the solution to a system of linear Volterra type integral equations. Izv. vys. ucheb. zav.; mat. no.2:24-29 '65. (MIRA 18:5)

VINOKUROV, V.R.

Stability of the solution of an infinite system of algebraic equations obtained in the approximation of linear integral Volterra equations. Izv. vys. ucheb. zav.; mat. no.1:100 '62. (MIRA 15:1)

(Equations—Numerical solutions)
(Integral equations)