

Card 4/11

Fig. 1.
See Fig. 1 caption on Card 5/12

Investigations of a Magnetic Trap

77836

SOV/57-30-3-3/15

Fig. 1. Diagram of the experimental set-up: (1) electron gun; (2) collector; (3) resonator.

The energy of the injected electrons could be varied 1-2 Kev. Magnetic field H_0 between the stoppers was between 200-300 gauss. Experiment showed it was sufficient to have $H_n/H_0 = 2-3$. Space modulation was achieved by a system of opposing coils. L was 5-7 cm, number of periods $n = 5$. The modulating magnetic field was 20-30 gauss; the vacuum chamber was 9 cm diam; the distance between the stoppers, 100 cm. The electron gun was producing a tubular electron beam 3.0 cm diam, and the electron current could reach 100 ma. Working pressure in the system was maintained at $2 \cdot 10^{-6}$ mm Hg. The authors detected accumulation of electrons by shift in resonant frequency of the measuring space resonator in Fig. 1. A 10^{10} cm³ electron density was measured at a pressure of 10^{-5} mm

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SOV/57-30-3-3/15

Hg of hydrogen in the chamber. Charges were trapped only when condition (2) was satisfied. Figure 2 shows the relation between space-charge potential and magnitude of the injection current.

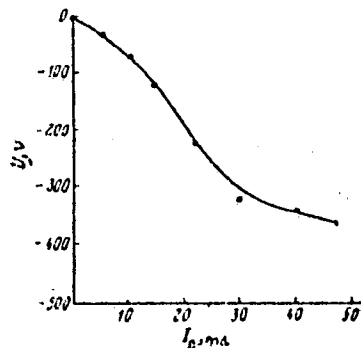


Fig. 2. Relation between potential at a distance of 2.5 cm from axis and magnitude of injected current. $P = 2 \cdot 10^{-6}$ mm Hg.

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The authors also measured potential along axis of the system by a probing electron beam modulated at 200 c/sec for easier detection, and potential was deduced from the beam energy necessary to get it through the trap to the collector. Results along the axis agree with Fig. 2. The negative space charge accumulated in the trap can be used as a potential well for ions, and Fig. 4 shows decrease of negative potential because of filling of the well by positive ions.

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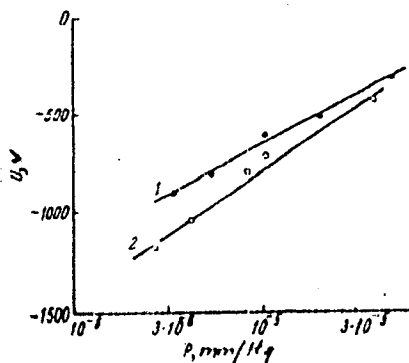


Fig. 4. Decrease of negative potential along axis of the trap with increase in the hydrogen pressure in it, $I_0 = 75$ ma. (1) $U_0 = 1,500$ v; (2) $U_0 = 2,000$ v.

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The electron beam probe was also used to measure radial component of the noncompensated space charge field because of electron plasma. The effect of beam drift in crossed E_r and H_0 field was observed by a fluorescent screen placed inside the trap. Figure 5 shows that the radial field component builds to considerable magnitude. It is, however, difficult to explain the trapping mechanism for the particles. The injected electrons should be slowed down by the space charge field and should, therefore, come out of phase with the magnetic field of the system. At the same time, experiment showed space modulation of magnetic field continues to play an important role; in absence of that field plasma disappears. The authors conclude that their notions about the trapping mechanism based on analysis of the single-particle motion are completely inadequate and additional investigations are needed before one could explain the influence of a space modulated magnetic field on a partially non-compensated plasma. The presence of crossed electric

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SOV/57-30-3-3/15

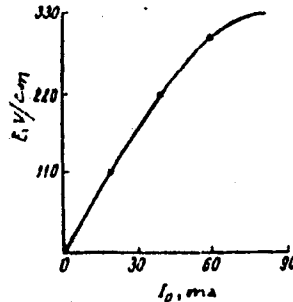


Fig. 5. Average value of radial component of space charge field of plasma in the trap at a distance of 2.5 cm from axis as function of injection current. Field was measured through asymuthal drift of probing beam. $P=3 \cdot 10^{-6}$ mm Hg.

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and magnetic fields seems to create conditions for the retention of particles resulting from the ionization of the gas by the electron beam. These particles may acquire energies in the mentioned fields comparable to those of the injected electrons. Using the system described in the present paper the authors hope it is possible to investigate properties of a partially noncompensated, fairly hot plasma. There are 5 figures, and 4 Soviet references.

ASSOCIATION: Physico-Technical Institut AS UkrSSR, Khar'kov
(Fiziko-tehnicheskij institut AN USSR, Khar'kov)

SUBMITTED: October 27, 1959

Card 11/11

39E18
S/057/62/032/008/007/015
B104/B102

24.6714
AUTHORS: Fedorchenko, V. D., Rumkevich, B. N., Muratov, V. I., and Chernyy, B. M. (Deceased)

TITLE: Low-frequency plasma oscillations in a magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 8, 1962, 958 - 966

TEXT: The experiments were made in a longitudinal magnetic field of 200 - 300 oersteds (Fig. 1). The diameter of the electron beam was 2 cm, its length 65 cm, the energy 2 kev, the pressure $5 \cdot 10^{-7}$ - $5 \cdot 10^{-5}$ mm Hg. The relation $\omega \sim \sqrt{n/M}$ exists between the circular frequency ω , the oscillations occurring in the collector circuit (100 kc/sec) of the particle density n and the ion mass M . The oscillations mainly occur at 10^{-6} mm Hg. The oscillation stability is increased by reducing the pressure to 10^{-7} mm Hg, and at $2 \cdot 10^{-5}$ mm Hg these oscillations vanish. They are due to a high-frequency noise caused by the electron beam. If the noise is suppressed at the end of the electron beam the oscillation in the collector circuit vanishes. The same oscillations are produced by a weak

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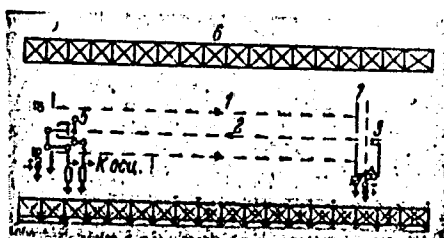
Low-frequency plasma oscillations...

S/057/62/032/008/007/015
B104/B102

external high-frequency signal of 28 - 29 Mc/sec. The plasma produced by the electron beam ionizing the gas in the chamber is very important in causing the low-frequency oscillations. They may be excited by the irregular action of the fields, produced by the noise in the beam - plasma system. Attempts to verify this supposition are discussed. There are 7 figures.

SUBMITTED: June 17, 1961

Fig. 1



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ACCESSION NR: AT4036040

S/2781/63/000/003/0036/0044

AUTHORS: Fedorchenko, V. D.; Muratov, V. I.; Rutkevich, B. N.

TITLE: High frequency plasma oscillations in a magnetic field

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problem-y* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3, Kiev, Izd-vo AN UkrSSR, 1963, 36-44

TOPIC TAGS: plasma magnetic field interaction, plasma electron oscillation, plasma ion oscillation, plasma oscillation, plasma re-search

ABSTRACT: The authors investigate oscillations in electron beams in a longitudinal magnetic field at stronger magnetic fields than in their earlier study (2.38×10^5 A/m as against $1.59--2.38 \times 10^4$ A/m;

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ACCESSION NR: AT4036040

see ZhTF v. 32, 958, 1962). The strong magnetic field suppresses the low frequency oscillations and increases the amplitude of the high-frequency oscillations. The spectrum of the high-frequency oscillations was plotted with the aid of a moving electric probe, the output of which was fed to a noise meter. The oscillations had a maximum in the frequency range 25--50 megacycles, the position and height of which depended on the beam energy (for a fixed current), on the magnetic field, and on the pressure in the chamber. It has also been found that an optimal pressure exists at which the amplitude of the oscillations is the largest, and that the optimum value of the pressure depends on the beam energy. The oscillation frequency depends also on the beam energy and the maximum of the spectrum shifts towards higher frequencies with increasing energy. An increase in the amplitude of the ion oscillations leads to the suppression of the electron oscillations, whereas ion oscillations become more intense with increasing amplitude of the electron oscillations. Plots of the following are included: characteristic spectrum

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ACCESSION NR: A#4036040

of electron oscillations, spectra of high-frequency oscillations at different pressures, spectra at different electron-beam energy, spectra at high-frequency oscillations at different magnetic fields, amplitude of high-frequency signal as a function of the probe position, role of secondary emission from the collector, amplification of external high-frequency signal applied to the modulating electrode, amplification of external signal at different pressures, amplification of external signal at different magnetic fields, dependence of the amplitude of the high-frequency ion oscillations on the frequency of the external electric field enclosing the ion beam, and dependence of the amplitude of the high-frequency electron oscillations on the frequency of the external alternating electric field for air and for krypton. "The authors are most grateful to K. D. Sinel'nikov, Ya. B. Faynberg, and B. G. Safronov for useful discussions." Orig. art. has: 12 figures.

ASSOCIATION: None

Card 3/5

ACCESSION NR: AT4036040

SUBMITTED: 00

DATE ACQ: 21May64

ENCL: 01

SUB CODE: ME

NR REF SOV: 001

OTHER: 000

Card 4/5

ACCESSION NR: AT4036040

ENCLOSURE: 01

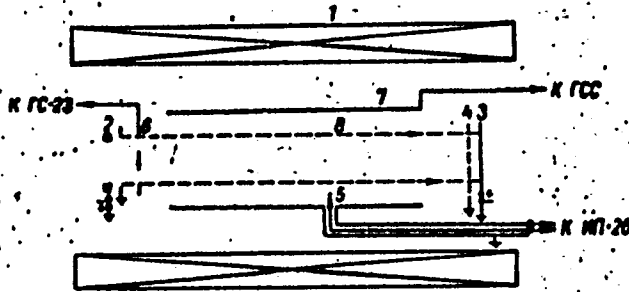


Diagram of experimental set-up

1 - solenoid, 2 - electron gun, 3 - collector, 4 - grid,
5 - moving probe, 6 - modulating electrode, 7 - capacitor
plates enclosing the beam, 8 - hollow electron beam

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ACCESSION NR: AT4036041

S/2781/63/000/003/0044/0054

AUTHORS: Fedorchenko, V. D.; Muratov, V. I.; Rutkevich, B. N.

TITLE: Investigation of high-frequency oscillations of a plasma by a probing beam

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i prob-
lemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and
problems of controlled thermonuclear synthesis); doklady* konferen-
tsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 44-54

TOPIC TAGS: plasma oscillations, plasma electron oscillation, elec-
tron beam, plasma interaction, plasma magnetic field interaction,
space charge

ABSTRACT: This is a continuation of earlier work by the authors
(High-frequency Oscillations in a Magnetic Field -- Third Khar'kov

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ACCESSION NR: AT4036041

Conference, 1962; Low-frequency Oscillations of a Plasma in a Magnetic field -- ZhTF v. 32, 958, 1962) and are aimed at measurements of the phase velocity by the method of a probing beam which passes through the main plasma beam and enters an analyzer with a retarding potential. The plasma tested constituted a hollow electron beam 50 cm long and 2 cm in diameter, with an energy that ranged from 200 to 300 volts at 25--50 milliamperes. The working pressure was 1.3×10^{-3} -- 1.3×10^{-4} n/m². The probing beam (1 mm dia, (10--15 μ A, and 0--400V) traveled on the beam axis in the injection direction. The potential was measured with the aid of an incandescent probe inserted inside the hollow beam through a break in its annular section. The experiments with the probing electron beam indicate the existence in the plasma of considerable oscillations which modify both the main beam and the plasma. The plasma electrons become accelerated by the high-frequency field of the wave produced in the beam-plasma system, and this causes electrons to escape

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ACCESSION NR: AT4036041

through the ends of the system. The escape of the electrons should be accompanied by an increase in potential in the space occupied by the plasma. However, the situation is complicated by the existence of transverse ion oscillations which cause the ions to move away to the cylindrical surface of the chamber. It is concluded that the plasma oscillations cause formation of an uncompensated charge, the polarity of which depends on which of the processes predominates, the drift of the ions due to the low-frequency transverse oscillations or the drift of the electrons due to their interaction with the longitudinal high-frequency wave. In strong magnetic fields the ion oscillations are suppressed and the longitudinal high-frequency oscillations become predominant. It is therefore to be expected that in a trap in which electrons are injected in sufficiently strong magnetic fields (on the order of $(1-2) \times 10^5$ A/m), the plasma will have a positive potential. "The authors are grateful to X. D. Sinel'nikov, Ya. B. Faynberg, and B. G. Safronov for a discussion of the results." Orig. art. has: 11 figures and 10

Card 3/5

ACCESSION NR: AT4036041

formulas.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 21May64

ENCL: 01

SUB CODE: ME

NR REF SOV: 003

OTHER: 000

Card 4/5

ACCESSION NR: AT4036041

ENCLOSURE: 01

to std.
sig. gen.

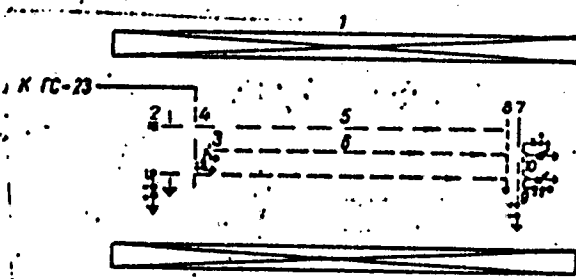


Diagram of experimental set-up

- 1 - solenoid, 2 - gun for main beam, 3 - gun for sounding beam,
- 4 - modulating electrode, 5 - main beam, 6 - sounding beam,
- 7 - collector of main beam, 8 - grid, 9 - analyzer of main beam,
- 10 - analyzer of sounding beam

Card 5/5

ACCESSION NR: AP4020573

S/0057/64/034/003/0458/0462

AUTHOR: Fedorchenko, V.D.; Muratov, V.I.; Rutkevich, B.N.

TITLE: On high frequency oscillations of a plasma in a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.3, 1964, 458-462

TOPIC TAGS: electron beam, plasma, rarefied plasma, electron beam oscillations, rarefied plasma oscillations

ABSTRACT: Oscillations of an electron beam in a longitudinal magnetic field of 200 to 300 Oe have previously been observed (V.D.Fedorchenko, V.I.Muratov, B.N.Rutkevich and V.M.Cherny*y, ZhTF, 32, 958, 1962). These oscillations occurred at two widely different frequencies: approximately 100 kc and from 25 to 50 Mc. The low frequency oscillations have been ascribed to transverse motion of residual gas ions in the space charge field of the beam, and the high frequency oscillations are thought to be longitudinal plasma oscillations. The present paper reports an investigation of these phenomena in stronger magnetic fields, up to 3000 Oe. The electron beam was 2 cm in diameter, 50 cm long, and carried 25 to 50 mA of 200 to 300 V electrons. The pressure in the chamber was varied from 10^{-5} to 10^{-6} mm Hg. The oscillations

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ACCESSION NR: AP4020573

were observed by means of a movable probe located near the beam but outside it. As anticipated, the use of the stronger magnetic field considerably decreased the intensity of the low frequency component and increased that of the high frequency component. Varying the magnetic field strength, the residual gas pressure, and the electron beam energy were found to alter the rather complex spectrum of the high frequency component. For example, increasing the electron energy from 200 to 300 V increased the peak frequency from 30 to 47 Mc and decreased the peak intensity by a factor 2.5. It was found that when secondary emission from the beam collector was suppressed by an appropriately charged grid, the intensity of the high frequency oscillations decreased greatly. It is conjectured that secondary emission is somehow involved as a feedback mechanism in maintaining the oscillations. The presence of standing waves was established, the phase velocity being 6×10^8 cm/sec. The electron beam was velocity modulated by applying a high frequency signal to an appropriate electrode. Signals at both the low and the high resonant frequencies were amplified. When the low frequency oscillations were increased in amplitude by modulating the beam at their resonant frequency (approximately 100 kc), the amplitude of the high frequency oscillations correspondingly decreased. "The authors are very grateful to K.D.Sinel'nikov, Ya.B.Faynberg and B.G.Safronov for valuable dis-

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ACCESSION NR: AP4020573

cussions." Orig.art.has: 12 figures.

ASSOCIATION: none

SUBMITTED: 15Mar63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: PI

NR REF SOV: 001

OTHER: 000

3/3

Card

S/0057/64/034/003/0463/0468

ACCESSION NR: AP4020574

AUTHOR: Fedorchenko, V.D.; Muratov, V.I.; Rutkevich, B.N.

TITLE: Investigation of the high frequency oscillations of a plasma in a magnetic field by means of an electron beam probe

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.3, 1964, 463-468

TOPIC TAGS: electron beam, plasma diagnostics, rarefied plasma, electron beam oscillation, rarefied plasma oscillation, electron beam probe, magnetic trap

ABSTRACT: The high frequency oscillations produced when an electron beam, in the presence of a longitudinal magnetic field, traverses a chamber in which the residual gas pressure is between 10^{-5} and 10^{-6} mm Hg (V.D.Fedorchenko, V.I.Muratov and B.N.Rutkevich, ZhTS, 34, 458, 1964 - see Abstract AP4020573) were investigated with a longitudinal electron beam probe. The exciting beam was 2 cm in diameter, 50 cm long, and carried 25 to 50 mA of 200 to 300 V electrons. The electron gun was located within the magnetic field (up to about 2500 Oe) and produced a hollow beam, along the axis of which the 1 mm diameter 10 to 15 microampere probe beam was directed. The energy of the electrons in the probe beam could be varied from 0 to 400 V.

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ACCESSION NR: AP4020574

After traversing the chamber, the probe beam passed through an opening in the center of the collector electrode and was analyzed with a retarding field. The motion of an electron in a traveling wave field is analyzed and it is shown that both the propagation velocity and the amplitude can be obtained from an analysis of the energy changes in the longitudinal probe beam. The propagation velocity of the high frequency oscillations was found to be 5.7×10^8 cm/sec (in agreement with the earlier wavelength measurements, loc.cit.supra) and amplitudes as great as 7 v/cm were observed. The oscillations were found to give rise to considerable velocity dispersion also in the exciting beam. Electrons were found to leave the plasma through the opening in the collector electrode (in the absence of the probe beam). These electrons had energies ranging up to more than 200 V. This electron loss, presumably due to the high frequency oscillations, should result in a positively charged plasma. Loss of ions was expected, especially at low magnetic fields, as a result of the low frequency transverse ion oscillations that occur in such systems (vide loc.cit.supra). Such a loss of ions to the walls of the chamber was observed. It was concluded, therefore, that the plasma potential should be negative at low magnetic fields and positive at high fields. This behavior was verified by hot probe measurements of the plasma potential within the hollow electron beam. It is suggested that

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ACCESSION NR: AP4020574

this phenomenon may be involved in the behavior of certain types of magnetic trap.
"The authors express their gratitude to K.D.Sinel'nikov, Ya.B.Faynberg and B.G.Sa-
ironov for discussing the results." Orig.art.has: 7 formulas and 11 figures.

ASSOCIATION: none

SUBMITTED: 15Mar63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: PH

NR REF SOV: 003

OTHER: 000

Card 3/3

L 07409-67 EWT(L) LJP(c) GD/AT

ACC NR: AT6020573

(N)

SOURCE CODE: UR/0000/65/000/000/0118/0126

AUTHOR: Fedorchenko, V. D.; Muratov, V. I.; Rutkevich, B. N.

52
51

ORG: none

B+/

TITLE: Exchange of energy high and low frequency oscillations in plasma

SOURCE: AN UkrSSR. Vysokochastotnyye svoystva plazmy (High frequency properties of plasma). Kiev, Naukovo dumka, 1965, 118-126

TOPIC TAGS: plasma heating, plasma oscillation, plasma beam interaction

ABSTRACT: Interaction between high and low frequencies of plasma oscillations was investigated experimentally and theoretically. A simple model is assumed to provide the relationship between these two frequencies and the intensity of the magnetic field. The theoretical results were tested experimentally using an electron beam (20-40 ma) moving through a gas at pressures in the 10^{-6} mm Hg range. The interaction of the waves was studied under the condition where the external excitation field: 1) did not coincide with either electron plasma or electron cyclotron frequency; 2) coincided with electron plasma frequency; and 3) coincided with electron cyclotron frequency. The intensities of the excited blue- and red-shifted satellites were found to be different indicating coupling to low frequencies and their relative intensity increased with the increase of excitation signal intensity. The increase of the ex-

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L 07409-67

ACC NR: AT6020573

ternal magnetic field intensity increased the coupling of the external signal to the ion oscillations. The experiments show that electron oscillations transfer their energy into the ion component of the plasma, leading to net plasma heating. Orig. art. has: 6 figures, 20 formulas. *N*

SUB CODE: 20/

SUBM DATE: 19Nov65/

ORIG REF: 003

Card 2/2 *la*

L 10667-66 EWT(1)/ETC/EPF(n)-2/ENG(m) LJP(c) GG/AT

ACC NR: AP5028316

SOURCE CODE: UR/0057/65/035/011/2021/2027

AUTHOR: ^{44,55} Fedorchenko, V.D.; ^{44,55} Muratov, V.I.; ^{44,55} Rutkevich, B.K.

EO
62
B

ORG: none

TITLE: Interaction between high frequency oscillations in a plasma and ionic sound

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35 no. 11, 1965, 2021-2027

TOPIC TAGS: discharge plasma, plasma electromagnetic wave, plasmon, plasma oscillation, nonlinear effect, *magnetic field*

ABSTRACT: The authors have investigated the interaction in a plasma of ionic sound with modes having frequencies near the electron Larmor or electron Langmuir frequencies. The plasmas were produced at pressures of the order of 10^{-4} mm Hg in a 9 cm diameter 100 cm long metal tube in a 400 to 1000 Oe longitudinal magnetic field by oscillating discharge between an electron gun producing a 50 cm long 2 cm diameter hollow beam of 160 eV electrons and a collector held near the floating potential. The cathode current was 200-250mA. Under these conditions there were spontaneously produced low frequency oscillations with frequencies of the order of 10 kHz. Investigations with the aid of a movable probe of the frequency and intensity distribution of these oscillations as functions of the magnetic field strength, length of the plasma column, and nature of the gas, and observation of longitudinal ejection of ions from the column, indicated that these oscillations were due to standing waves

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UDC 533.9

L 10667-66

ACC NR: AP5028316

18

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of ionic sound. The plasmas were excited at frequencies near the electron Larmor or the electron Langmuir frequencies with the aid of an antenna located at one end of the discharge tube. Standing waves were formed in both frequency regions. The electromagnetic oscillations excited at frequencies somewhat below the Larmor frequency were found to be slow extraordinary waves, having a phase velocity less than that of light. The plasma oscillations excited near the Langmuir frequency were also slow. When the intensity of the high frequency oscillations was sufficiently increased, low and high frequency satellite lines appeared in their spectra/frequencies equal to the sum and difference of the excitation frequency and the frequency of ionic sound. The relative intensities of these satellites were different in different portions of the pass bands, and under some conditions one or the other satellite was very intense. When the low frequency satellite was very intense, the intensity of the ionic sound increased when the high frequency excitation was applied; when the high frequency satellite was very intense, the intensity of the ionic sound decreased when the high frequency excitation was applied. This is to be understood in terms of the interaction of elementary plasma excitations (plasmons), the satellites being formed by absorption or emission of a low frequency (ionic sound) plasmon by a high frequency plasmon. The randomization of phases with the consequent formation of wave packets necessary for the validity of the analysis in terms of plasmon interactions may result from interaction with different kinds of fluctuations. The authors thank K.D. Sinel'nikov, V.T. Tolok, Ya.B. Faynberg, and B.G. Safronov for discussing the results. Orig. art. has 4 formulas and 12 figures.

SUB CODE: 20 55

SUBM DATE: 09Mar65/

4155
ORIG. REF: 000 OTH REF: 004

Card 2/4

FEDORCHENKO, V.I.

Formation of the fold structure in the northern part of the Chekhov tectonic zone in the western Sakhalin anticlinorium. Trudy Sakh. kompl.nau. ch.-issl. inst. AN SSSR no.10:14-23 '61. (MIRA 15:6)
(Sakhalin--Folds (Geology))

FEDORCHENKO, V.I.; SHILOV, V.N.

Eruption of the Chikurachki Volcano (Paramushir Island) in 1961.
Biul. Vulk. sta. no.34:36-43 '63. (MIRA 16:10)

FEDORCHENKO, V.I.

Lake sediments in the caldera of the Golovnin Volcano in Kunashir Island and their paleogeographic significance. Trudy Lab. paleovulk. Kazakh. gos. un. no.2:85-92 '63.

(MIRA 17:11)

1. Sakhalinskiy kompleksnyy institut Sibirskogo otdeleniya AN SSSR.

S/144/61/000/011/001/001
D224/D306

Vladimir Petrovich

AUTHOR: Fedorchenko, V. P., Engineer, Laboratory Head

TITLE: Investigating the extinguishing of a dc arc in a chamber with a narrow air gap

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Elektromekhanika, no. 11, 1961, 32-34

TEXT: This is an experimental investigation of the extinguishing of arcs at 3300 V, at currents between 100 and 1500 A and air gap width 2 + 6 mm. The influence of the magnetic field, magnitude of commutation current, supply voltage, and inductance of the circuit on the process of extinguishing are studied in detail. Experimental characteristics are compared with theoretical ones. An increase of the magnetic field is found to cause a decrease of energy, dissipated by the arc in the process of disconnection; an increase of energy supplied causes an increase of the cooling intensity of the arc. The experimental dependencies obtained allow calculation of nominal breakoff currents and voltage excesses for

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Investigating the extinguishing ...

S/144/61/000/011/001/001
D224/D306

different values of circuit inductance. Every type of chamber is found to be sufficiently characterized with a) dependence of disconnection time on the magnitude of commutation current, b) dependence of the "chamber constant" on the same, c) value of the mean energy of the circuit's magnetic field. There are 12 figures and 9 references: 9 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Leningradskiy filial vsesoyuznogo nauchno-issledovatel'skogo instituta elektromekhaniki (Leningrad Branch, All-Union Scientific-Research Institute of Electromechanics)

SUBMITTED: February 28, 1961

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Card 2/2

ACC NR: AP7004406

SOURCE CODE: UR/0226/67/000/001/0099/0104

AUTHOR: Samsonov, G. V.; Paderno, Yu. B.; Murguzov, M. I.; Fedorchenko, V. P.

ORG: Institute for Problems in the Science of Materials, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Gallochalcogenides of rare earth metals

SOURCE: Poroshkovaya metallurgiya, no. 1, 1967, 99-104

TOPIC TAGS: rare earth metal, gallochalcogenide, chalcogenide, crystal lattice, electric resistance, thermal electromotive force, impurity level, semiconductor, electron structure, ionization potential, chemical bonding

ABSTRACT: The authors conclude that atoms of rare-earth metals are arranged in a crystal lattice. The electrical resistance and thermal electromotive force were measured at room temperature to 1100 K. It is shown that neodymium galloselinide is a semiconductor with a forbidden-zone width and impurity level ionization energy of 1.78 and 0.77 ev, respectively. The nature of the semi-

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ACC NR: AP7004406

conductivity of NdGaSe_3 is explained on the basis of the electron structure of isolated atoms and their ionization potential. An hypothesis is advanced as to the nature of the chemical bonding in chalcogenides of rare-earth metals. Orig. art. has: 1 figure and 3 tables. [Authors' abstract] [NT]

SUB CODE: 11/SUBM DATE: 10Aug66/ORIG REF: 011/OTH REF: 004/

Card 2/2

L 3357-66 EWT(1)/EMP(e)/EWT(m)/ENP(w)/EWP(i)/ETC/ENG(m)/T/EMF(t)/EAF(t)/EWA(h)

TJP(c) JD/JG/AT/WH

ACCESSION NR: AP5013473

UR/0185/65/010/005/0520/0524

AUTHOR: Lashkar'ov, H. V. (Lashkarev, G. V.); Paderno, Yu. B.; Radzikivs'ka, S. V. (Radzikovskaya, S. V.); Fedorchenko, V. P.

TITLE: Electric properties of Sm_2S_3

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 5, 1965, 520-524

TOPIC TAGS: samarium compound, lanthanide series, refractory compound, semiconducting material, electric conductivity, semiconductor band structure, sulfide

ABSTRACT: A method is described for producing compact specimens of samarium sesquisulfide and for measuring their thermoelectric power and electrical conductivity. These parameters were studied in the 300-1300°K temperature range. It is shown that Sm_2S_3 is a refractory semiconductor in which the forbidden band has a width of 2.96 eV. The lengths of the Me-Me, Me-S and S-S bonds are calculated in known sesquisulfides (Me_2S_3) of lanthanides with a Th_3P_4 structure, and in Sa_2S_3 , on the basis of ionic crystal radii. A comparison of these data shows that the covalent S-S bonds are strengthened at the expense of a reduction in the strength of the ionic Me-S bonds, which indicates that the chemical bonds in lanthanide sesqui-

1-8
64
B

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L 3357-66

ACCESSION NR: AP5013473

158
sulfides are ionic-covalent. Interatomic spacing and the physical properties of SmS and Sm₂S₃ are compared. It is found that there is no quasi-extrinsic 4f level in Sm₂S₃ and that the forbidden band in this compound is narrower than that of SmS. Orig. art. has: 4 figures, 2 tables.

ASSOCIATION: Instytut problem materialoznavstva AN URSR, Kiev (Institute of Problems in the Study of Materials, AN URSR)

SUBMITTED: 27Oct64

ENCL: 00

SUB CODE: SS, EM

NO REF SOV: 007

OTHER: 005

Card 2/2 RP

FEDORCHENKO, V.S.

Origin of "red" ores of the Krivey Reg Basin. Min.sber.no.9:216-220
'55. (MIRA 9:9)

1.Krivey Reg. Gornorudnyy institut.
(Krivey Reg Basin--Iron ores)

"APPROVED FOR RELEASE: 03/20/2001

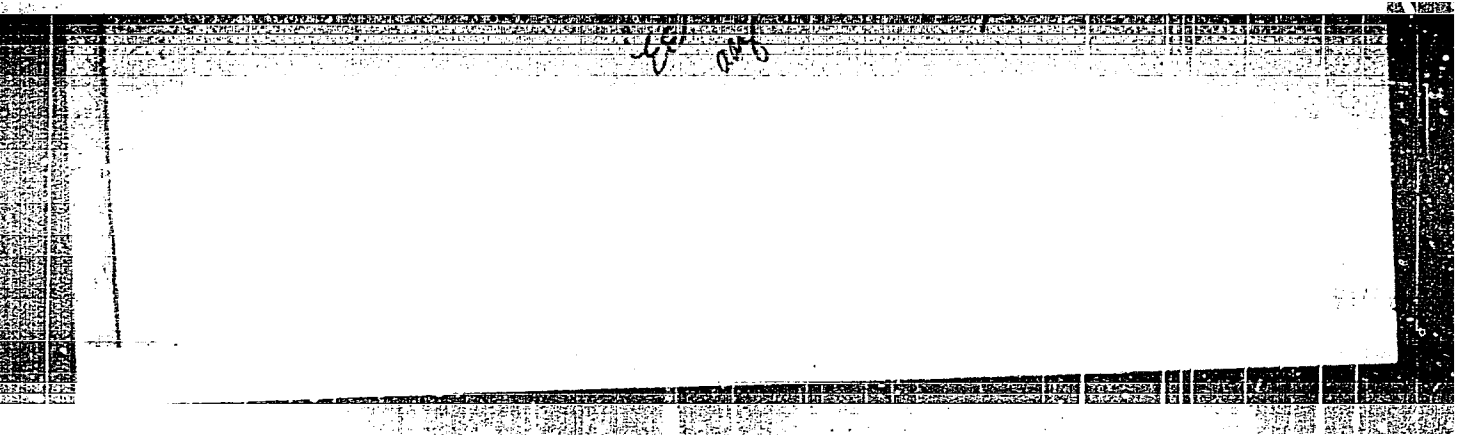
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APPROVED FOR RELEASE: 03/20/2001

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APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412610009-8"

BUSHEV, Vladimir Pavlovich, inzh.; PHELINTSEV, Vladimir Alekseyevich, kand. tekhn. nauk; FEDORENKO, Vasilii Semenovich, kand. tekhn. nauk; YAKOVLEV, Anatoliy Ivanovich, kand. tekhn.nauk; MILINSKIY, A.I., red.; KOMONOV, A.S., red.izd-va; LELYUKHIN, A.A., tekhn. red.

[Fireproofness of buildings] Ognestoikost' zdaniy. [By] V.P. Bushev i dr. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1963. 166 p.
(MIRA 16:12)

(Building, Fireproof)

MAGAK'YAN, I.G.; AKIMENKO, N.M.; BELEVTSSEV, Ya.N.; GERSHOYG, Yu.G.;
GRECHISHNIKOV, N.P.; KALYAYEV, G.I.; KARSHENBAUM, A.P.;
KRAVCHENKO, V.M.; KULISHOV, M.P.; MAKSIMOVICH, V.L.; MEL'NIK,
Yu.P.; PITADE, A.A.; SKURIDIN, S.A.; STRIGIN, A.I.; FEDORCHENKO,
V.S.; FOMENKO, V.Yu.

Reviews and bibliography. Geol. rud. mestorozh. 7 no.3:113-
117 My-Je '65. (MIRA 18:7)

FEDORCHENKO, V.V.

USSR/Diseases of Farm Animals. Diseases Caused by Protozoa.

Abs Jour: Ref Zhur-Biol., No 3, 1958, 12283.

Author : Goncharov, I. Ye., Kleymenov, K. G., Fedorchenko, V. V.,
Kobenko, S. P.

Inst : Dagestan Institute of Agriculture

Title : Experimental Uses of ASD FR-2 in Theileriosis of
Large Horned Cattle. (Preliminary Report).

Orig Pub: Tr. Dagest. s.-kh. in-ta, 1955, 6, 25-26.

Abstract: In cases of theileriosis and in cases of a mixed
invasion of theileriosis and piroplasmosis, ASD
FR-2 was intravenously administered in a 25 percent
solution of a 0.7-1.0 ml/kg dose with a simultaneous
hypodermic injection of a 10 percent caffeine solution
in the usual dose. The preparation was administered
during the clinical stage of the disease. Of the

Card : 1/2

USSR/Diseases of Farm Animals. Diseases Caused by Protozoa.

Abs Jour: Ref Zhur-Biol., No 3, 1958, 12283.

26 heads of large horned cattle in the age group of 1-5 years which were treated, 23 recovered; 3 cows were slaughtered.

Card : 2/2

FEDORCHENKO, V.Ya., inzh.; ZARUBINSKIY, M.A., inzh.

Wear resistant materials for the equipment of coal preparation plants. Ugol' Ukr. 6 no.1:33-34 Ja '62. (MIRA 15:2)

1. UkrNIIUgleobogasheniye.
(Coal preparation plants—Equipment and supplies)

L 09206-67 EWT(m)/EWT(k)/EWT(t)/ETI IJP(e) JD
ACC NR: AP7002775 SOURCE CODE: UR/0418/66/000/002/002B/0031

24
23
B

MALINOVSKIY, L. A., FEDORCHENKO, V. Ye., ZARUDINSKIY, M. A., and ANDREYEV,
V. V., Engineers

ORG: none
"Production of the Slurry Pump Rotors of Alloy IChKh28N2 by Investment Casting"

Kiev, Tekhnologiya i Organizatsiya Proizvodstva, No 2, 66, pp 28-31

TOPIC TAGS: metal casting, chromium containing alloy
ABSTRACT: The "Ukr NIiuglemashobogashcheniye" institute developed and tested
a technical process for making rotors of alloy IChKh28N2 by investment casting
to reduce as much as possible the amount of mechanical working, to increase
the fineness and accuracy of the geometric molds of rotor surfaces. This
method permits accurate casting of any difficult-to-work cast alloy.

The chemical composition of alloy IChKh28N2 is as follows: C 2.7-2.9%,
Si 0.8-1.1%, Mn 1.5-1.8%, Cr 28-30%, Ni 1.5-2.8%, S 0.04% and P 0.09%; Brinell
hardness in the cast state was 474-502.

The microstructure of the casting consisted of fine and coarse carbides
(Cr, Fe)₇C₃.

By hardening at 1100° and subsequent tempering at 550-600°C the hardness

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UDC: 621.74.04
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L 09206-67

ACC NR: AP7002775

of the castings can be increased to 540-600 Brinell units. Thereby, the wear resistance of the alloy is increased.

The results of comparative tests of experimental specimen rotors made of the alloy IChKh28N2 and of series produced rotors made of cast iron Sch15-32 is as follows:

Alloy	Average weight kg	Average actual operating time before total	Average weight after tests, kg	Weight loss, kg	Wear for 100 hours, kg	Coefficient of relative wear resistance of the rotors
IChKh28N2	21.8	4288	15.1	6.7	0.16	-
Cast iron						
SCh 15-32	22.5	330	16.3	6.2	1.88	11.7
Orig. art. has: 3 figures and 3 tables. [JPRS: 37,428]						

SUB CODE: 13, 11 / SUBM DATE: none

Card 2/2 ^{3/10}

FEDORCHENKO, Ya.

The Party Congress was greeted by overfulfillments of the building plan. Sil'.bud. 11 no.11:5-6 N '61. (MIRA 15:3)

1. Predsedatel' ispolnitel'nogo komiteta Nedrigaylovskogo rayonnogo soveta deputatov trudyashchikhsya Sumskey oblasti.
(Nedrigaylov District--Construction industry)

POTUPIN, A.M.; FEDORCHENKO, Ye.A., inzh.

Apparatus used for loading rails. Put' i put.khoz. no.10:35 0 '58.
(MIRA 11:12)

1. Starshiy inshener sluzhby puti, L'vovskoy dorogi, g. L'vov. (for Potupin).
 2. Tekhnicheskiy otdel L'vovskoy dorogi, g. L'vov (for Fedorchenko).
- (Railroads--Equipment and supplies) (Loading and unloading)

KAPITANAKI, M.V., kand.veter. nauk; FEDORCHENKO, Ye.A., veterinarnyy vrach

Resistance of microbes to antibiotics. Veterinariia no.12:49-52 D
'63. (MIRA 17:2)

1. Krasnodarskaya nauchno-issledovatel'skaya veterinarnaya stantsiya
(for Kapitanaki). 2. Krasnodarskaya veterinarnaya laboratoriya (for
Fedorchenko).

DVORNIKOVA, P.D.; GULYY, M.F. [Hulyi, M.F.]; FEDORCHENKO, Ye.Ya. [Fedorchenko, O.Ya.]; MARTYNIENKO, F.P.

Method of isolation and some properties of crystalline muscle phosphopyruvic kinase. Ukr. biokhim. zhur. 32 no.6:783-792 '60.
(MIRA 14:1)

1. Institute of Biochemistry of the Academy of Sciences of the Ukrainian S.S.R., Kiyev.
(PHOSPHOPYRUVIC KINASE)

KOROTKORUCHKO, V.P.; DVORNIKOVA, P.D.; ISHCENKO, I.N.; Prinimal uchastnye:
FEDORCHENKO, Ya.Ya.; LEVRESHCHUK, L.N.; FEDOROVA, A.P.;
MALINOVSKIY, Yu.I.

Activity of some glycolytic enzymes in the blood of patients with
cancer. Vop. med. khim. 7 no.3:273-276 My-Je '61. (MIRA 15:3)

1. First Surgical Clinic of the "A.A. Bogomolets" Medical
Institute, and Institute of Biochemistry of the Academy of
Sciences of the Ukrainian S.S.R., Kiev.

(CANCER)

(GLYCOLYSIS)

GULYY, M.F. [Hulyi, M.F.]; DVORNIKOVA, P.D.; FEDORCHENKO, Ye.Ya
[Fedorchenko, O.IA.]; PECHENOVA, T.N. [Pechenova, T.M.]

Mechanism of enzyme activation with the interaction of purified proteins. Ukr. biokhim. zhur. 34 no.2:187-198 '62.

(MIRA 16:11)

1. Institute of Biochemistry of the Academy of Sciences
of the Ukrainian S.S.R., Kiev.

*

GULYY, M.F., akademik; FEDORCHENKO, Ye.Ya.; PECHENOVA, T.N.; MATUSEVICH, L.I.;
CHEVPILO, I.A.; PRONINA, Z.V.; ZHURAVSKIY, N.I.; MATSUKA, G.Kh.

Activation of amino acids with the formation of aminoacyl-
phosphates in animal tissues. Dokl. AN SSSR 166 no.1:227-230
Ja '66. (MIRA 19:1)

1. Institut biokhimii AN UkrSSR. 2. AN UkrSSR (for Gulyy).
Submitted July 2, 1965.

SVENSON, A.N.; FEDORCHENKO-TIKHIY, G.D.

Time-varying pulse-amplitude modulation. Vop. pered. inform.
1:94-104 '62. (MIRA 16:6)
(Information theory) (Modulation (Electronics))

SVENSON, A.N.; FEDORCHENKO-TIKHIY, G.D.

Discrete converters of continuous signals. Vop. pered. inform.
2:113-128 '63. (MIRA 16:12)

FEDORCHUK, A.I.

A way to build asphalt floors in a multiple-story industrial
building. Prom. stroi. 39 no.6:61 '61. (MIRA 14:7)
(Floors, Asphalt)

FEDORCHUK, A.M.

Effect of *Hypericum perforatum* L tincture on experimental infected wounds. Mikrobiol. zhur. 26 no.2:32-35 '64. (MIRA 18:8)

1. Ivano-Frankovskiy meditsinskiy institut kafedra obshchey khirurgii i kafedra farmakologii.

VOLOSHIN, V., inzh.; FEDORCHUK, I., inzh.

The "Estradin" electronic musical instrument. Radio no. 2:34. F '65.
(MIRA 18:4)

VOLOSHIN, V., inzh.; FEDORCHUK, L., inzh.

"Romantika," a new electronic musical instrument. Radio
no. 11:35-38 N '65. (MIRA 18:12)

FEDORCHUK, L. V.

USSR/Medicine - Virus Diseases

May 53

"Etiology of the Neurovirus Infection in Two-Stage Viral Meningoencephalitis,"
A. A. Smorodintsev, A. I. Drobyshevskaya, V. P. Gulamova, V. I. II'yenko,
L. V. Fedorchuk, Dept of Virology, Inst of Expl Med, Acad Med Sci USSR

Zhur Mikro, Epid, i Immun, No 5, pp 47-53

It has been shown that the causative factor of 25-stage meningoencephalitis is a neurotropic virus which resembles that of tick encephalitis. It is similar in its antigenic structure and reactions to the viruses of Western tick encephalitis and Scotch encephalitis, but can be distinguished from them by reason of its different action on white mice. Two-stage meningoencephalitis has nothing in common with listerellosis.

PA 253T13

FEDORCHUK, L. V.

USSR/Medicine - Virus Diseases

Mar/Apr 51

"On the Nature of Tick Encephalitis Occurring in the Belorussian SSR," Prof N. I. Grashchenkov, A. M. Gurvich, L. V. Fedorchuk

"Nevropatol i Psikhiat" Vol XX, No 2, pp 36, 37

Ticks of Byelovezhskaya Pushcha contain neurotropic virus which upon introduction into the brain of mice or sheep produces disease resembling Scotch encephalomyelitis. While humans in this area get that type disease, it does not affect sheep under natural conditions. It seems that Ixodes ricinus carries virus which produces disease of the Scotch type, (meningoencephalitis), while infection from I. persulcatus results in classical type of tick encephalitis similar to that occurring in the Far East (with a polymyelitic syndrome). Where both species of ticks occur locally, both types of disease are observed. Perhaps virus is same in both cases, but is modified by species of tick which carries it.

PA186T82

AUTHORS: Levina, R. Ya. Skvarchenko, V. R., Chervoneva, 20-118-5-28/59
L. A., Fedorchuk, L. V., Vasil'yeva, T. T.

TITLE: The Synthesis of Aromatic Hydrocarbons
(Sintez aromaticheskikh uglevodorodov)
A New Method of Synthesizing Hydrocarbons of the Fluorene
Series (Novyy metod sinteza uglevodorodov ryada fluorena)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp. 938-941
(USSR)

ABSTRACT: The effect of phosphorous pentoxide on tetrahydrophthalic
anhydrides leads to the formation of aromatic hydrocarbons
with elimination of CO and H₂O as was proved by some of the
authors (references 1-6). In the present paper the influence
of phosphorous pentoxide on phenyltetrahydrophthalic aldehyde
(I) (an addition of phenyl-butadiene with maleic anhydride)
was investigated. In this case the reaction lead to the
formation of fluorene (with a 21% yield) instead of diphenyl
as might have been expected. It seems that the reaction
passes through intermediate stages of an intramolecular
acylation of the benzene nucleus. This leads to the foramation

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The Synthesis of Aromatic Hydrocarbons.

20-118-5-25/59

A New Method of Synthesizing Hydrocarbons of the Fluorene Series

of tetrahydrofluorenone-carboxylic acid (II) which is further decarboxylated to tetrahydrofluorenone (III). Under the influence of phosphorous pentoxide this is changed into fluorene. The authors simplified this reaction by starting from phenyltetrahydrobenzoic acid (an addition of divinyl with cinnamic acid (V). When it was warmed up with phosphorous pentoxide fluorene was formed with a 63% yield. From the addition of cinnamic acid with isoprene and 2,3-dimethylbutadiene 3 methylfluorene (50% yield) and 2,3-dimethylfluorene (53% yield) were produced. The production of just 3-methylfluorene (melting point $87,5^{\circ} - 88^{\circ}\text{C}$) and not of 2-methylfluorene (melting point 104°C) which is isomeric to it, from the addition of isoprene with cinnamic acid confirms the structure of this addition as 4-methyl-2-phenyl-1,2,3,6-tetrahydrobenzoic acid. From the addition of cinnamic acid with dicyclohexenyl (VIII) and dicyclopentenyl (IX), 1,2,3,4-dicyclohexane-fluorene (X) with a 83,5% yield and 1,2,3,4-dicyclopentane-fluorene (XI) with a 73% yield could be produced. Thus the reaction of the 2-aryl-1,3,6-tetrahydrobenzoic acids (addition of diene-hydrocarbons with cinnamic acid) with phosphorous pentoxide can be recommended as a new

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The Synthesis of Aromatic Hydrocarbons.
A New Method of Synthesizing Hydrocarbons of the Fluorene Series

20-118-5-25/59

preparative method of synthesis for hydrocarbons of the fluorene series. This is followed by an experimental part with the usual data. There are 23 references, 9 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)
(Moscow State University imeni M. V. Lomonosov)

PRESENTED: September 5, 1957, by A. N. Nesmeyanov, Member, Academy of Sciences, USSR

SUBMITTED: June 19, 1957

Card 3/3

5.3430
5.3630

81585

S/190/60/002/03/07/014
B020/B066

AUTHORS: Petrov, K. A., Nifant'yev, E. Ye., Fedorohuk, L. V.

TITLE: Phosphorus-containing Polymers. I. Synthesis and Polymerization of Ethylene Alkyl Phosphates

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 3, pp. 417-420

TEXT: Neutral phosphates are well-known compounds used in industry and agriculture. But so far no phosphates had been synthesized which contain in the molecule a five-membered cyclic ester grouping, nor high-molecular phosphates that had not been condensed via the vinyl ester groups. In the present paper, a simple process is suggested for the preparation of ethylene alkyl phosphates and their polymerization. These were synthesized by oxidation of ethylene alkyl phosphites with nitrogen dioxide. The cyclic phosphates synthesized were used by the authors to obtain polymers containing phosphorus. They also found that cyclic phosphates (contrary to phosphonates) form higher-molecular compounds on

Card 1/2

Phosphorus-containing Polymers. I.
Synthesis and Polymerization of Ethylene
Alkyl Phosphates

81585
S/190/60/002/03/07/01
B020/B066

polymerization under the same conditions (with a degree of polymerization of 10 - 14). The resultant polymers had about the same molecular weight and the same properties as found in experiments without or with catalysts (sodium). High-molecular phosphates are neutral substances with polyester structure. The high-molecular phosphates described in this paper may be used as plasticizers.⁹ The experimental part describes the preparation of ethylene hexyl phosphite, ethylene phenyl phosphite, and ethylene alkyl phosphates (Table 1), the conditions of polymerization of ethylene alkyl phosphates and the properties of the polymers (Table 2) as well as the reaction of polyethylene propyl phosphate with phosphorus pentachloride. It is shown that ethylene alkyl phosphates polymerize on prolonged standing or heating. It was also found that the yield of ethylene alkyl phosphates obtained by the above-described process is 55 - 83 %, and that on polymerization the latter form polyesters (molecular weight of 2,000 - 3,000) by cleavage of the cyclic phosphates. There are 2 tables and 5 references: 3 Soviet, 1 US, and 1 British.

SUBMITTED: December 14, 1959

Card 2/2

CHECHENTSEV, V.N.; FIRSANOVA, L.A.; FEDORCHUK, O.K.

Thermodynamic investigation of the reaction $Si \div SiCl_4 \rightleftharpoons 2SiCl_2$.
Izv. vys. ucheb. zav.; tsvet. met. 8 no.4:97-102 '65. (MIRA 18:9)

1. Kafedra proizvodstva chistykh metallov i poluprovodnikovyykh materialov Moskovskogo instituta stali i splavov.

L 13532-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JW

ACC NR: AP5028979

SOURCE CODE: UR/0149/65/000/004/0097/0102

AUTHOR: Chechentsev, V. N.; Firsanova, L. A.; Fedorchuk, O. K.

63
Cat
B

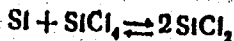
ORG: Moscow Institute of Steel and Alloys, Production of Pure Metals and Semiconducting Materials Dept (Moskovskiy institut stali i splavov, Kafedra proizvodstva chistykh metallov i poluprovodnikovyykh materialov)

TITLE: Thermodynamic study of the reaction $Si + SiCl_4 \rightleftharpoons 2 SiCl_2$

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 4, 1965, 97-102

TOPIC TAGS: silicon, chlorine compound, equilibrium constant, thermodynamic calculation, chemical kinetics

ABSTRACT: In view of discrepancies in the findings of Schaefer and Nickl (Z. anorg. und allgem. Chem., B. 274, 250, 1953) on the equilibrium of the reaction



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UDC: 669.782

L 13532-66
ACC NR: AP5028979

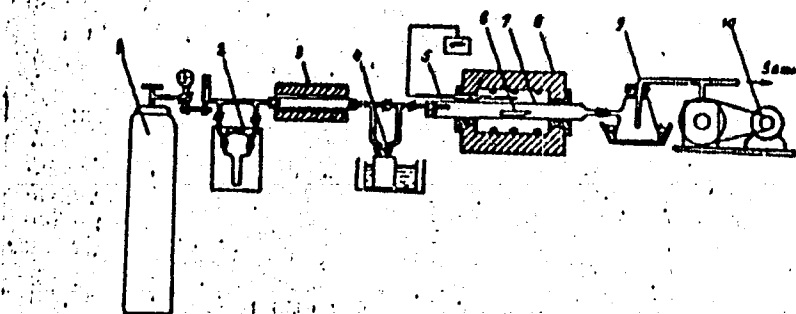


Fig. 1. Diagram of setup for determining the equilibrium constant of reaction (1) by the "current" method:

- 1 - cylinder with Ar; 2 - flow meter; 3 - furnace for purification of Ar;
- 4 - evaporator with $SiCl_4$; 5 - thermocouple; 6 - quartz boat with Si;
- 7 - reaction vessel; 8 - furnace with silit heaters; 9 - condenser;
- 10 - VN-2 pump

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L 13532-66

ACC NR: AP5028979

and considering that reliable knowledge of the values of thermodynamic functions will facilitate the selection of the optimal conditions for refining Si by the transport reaction method, the authors investigated this equilibrium in the temperature range of 1200-1300°C on employing the "current" method (Fig. 1) where a current of SiCl_4 is passed (by means of argon) over a Si-containing boat at a given temperature. Extrapolation of the obtained values of α (mole fraction of SiCl_4 converted to SiCl_2) to zero flow rate of SiCl_4 gives the equilibrium position. On this basis the temperature dependence of the equilibrium constant C_e was determined and hence also the values of the isobaric-isothermal potential ΔZ° of the reaction were calculated: ΔZ° varies linearly from +6790 cal/mole SiCl_4 at 1200°C to -1395 cal/mole SiCl_4 at 1300°C. The temperature at which the reaction components, taken in standard states, are in an equilibrium, was found to be 1283°C by graphic means for $\log C_e = 0$. The kinetics of the formation of SiCl_2 is found to be such that the rate of formation of SiCl_2 increases with increasing temperature and, to a lesser extent, with increasing flow rate of SiCl_4 . The thermal effect of the reaction is calculated at 127,000 cal/mole for the 1200-1300°C temperature range, and hence the reaction is governed by chemical kinetics, i.e. the reaction rate is determined by the rate of chemical interaction. Orig. art. has: 5 figures, 2 tables, 1 formula.

SUB CODE: 07, 11/ SUBM DATE: 10Jul64/ ORIG REF: 001/ OTH REF: 002

Card

3/3

Fedorchuk, S.N.

Geochemical distribution coefficient of beryllium in granite pegmatites. A. A. Beil' and S. N. Fedorchuk. Doklady Akad. Nauk SSSR, 196, 108-110, 1967, C.A. 49, 11611g. Typical Be minerals are found in the late-magmatic pegmatites, assoc. with feldspars and micas (muscovite, lepidolite). The early stages of pegmatitization are usually low in Be (0.0001 to 0.0002 %), in granitic pegmatites with microcline, e.g. in the granites of the Shitomir-K'rovograd area in Ukraine. Beryllium is in these early pegmatite formations "captured" in the feldspars, by a coupled ionic replacement of the type $(K, Na)^+ + (SiO_4)^{-}$ by rare earth elements $^{3+} + (BeO)_2^{2-}$ or $2Ca^{2+} + (SiO_4)^{-}$ by 2 rare earth elements $^{3+} + (BeO)_2^{2-}$. The increasing contents of the later pegmatites of the "pure line" in rare earths are usually accompanied by the appearance of Be in garnet, spodumene, tourmaline, silberite, apatite, muscovite, lepidolite, with 0.0016 to 0.0126 % Be. In pneumatolytic pegmatites, the contents in Be are particularly enriched, e.g. in margarite (0.43 to 0.67% Be), phlogopite (0.025 to 0.0000%), and typical Be minerals occur in such formations either of contact-metamorphic and pneumatolytic type, characterized by enrichments in Ti, Cr, Mg, which are foreign to the granitic pegmatites of the "pure line," or with high contents in F $^-$, e.g. in micas, with the coupled ionic replacements $Si^{4+} + 2(OH)^{-}$ by $Be^{2+} + 2F^-$. With such variable conditions of the enrichments in Be, it is very difficult to det. a general geochem. distribution coeff. for Be. A tolerable estm. for pegmatites may be about 0.0020% Be. But this coeff. varies in rather wide limits for pegmatites which are free from rare earth minerals (not albitized), pegmatites with minerals contg. rare earths, but no beryl, and pegmatites with beryl concns. of 0.01 to 0.1%, or even 0.2 to 2.6% beryl.

Laboratoriya mineralogii i geokhimi redkikh elementov Akademii nauk SSSR.
 Predstavleno akademikom D. I. Shcherbakovym.

FEDORCHUK, S. N.

SOV/137-58-7-16106

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 310 (USSR)

AUTHOR: Fedorchuk, S. N.

TITLE: The Fluorescent Morin Method for the Determination of Small Amounts of Beryllium in Rocks and Minerals (Fluorestsentnyy morinovy meto opredeleniya malykh kolichestv berilliya v gornykh porodakh i mineralakh)

PERIODICAL: Tr. In-t mineralogii, geokhimii i kristalokhimii redk. elementov AN SSSR, 1957, Nr 1, pp 178-181

ABSTRACT: Methods of determination of Be using morin which forms a morin lacquer with Be in an alkaline solution, fluorescing with a characteristic yellow-green color, are given. A 0.3 - 0.5 g test sample is fused in a Pt crucible with 6 - 7 times the amount of sodium. The melt is treated with 50 cc of hot water and HCl to a complete decomposition, the solution is evaporated to dryness in a water bath, the residue, for the separation of silicic acid, is taken twice to dryness with 5 - 6 cc HCl, then moistened with HCl, 50 cc of hot water is added, and the solution is filtered. The precipitate is calcined in a Pt crucible and treated with H₂SO₄ and HF, the residue is fused with K₂S₂O₇, leached out

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The Fluorescent Morin Method (cont.)

SOV/137-58-7-16106

with hot water and added to the filtrate left after the separation of the silicic acid. To the combined filtrate NH_4OH is added (to a weak odor) for the precipitation of Be and the sesquioxides. The precipitate is dissolved in 5% H_2SO_4 and the solution is electrolyzed with a Hg cathode at 4-6 amps and 5-7 volts. After the complete precipitation of iron the solution is heated to boiling and Be and Al are precipitated with NH_4OH . The precipitate is dissolved in 0.25N NaOH solution, and the solution is diluted to 100cc. To 25 cc of the solution are added: 2 cc of saturated Na_3PO_4 solution and 0.5 cc of 0.02% morin solution (20 mg in 100 cc of acetone). The mixture is read colorimetrically in ultraviolet light, comparing the intensity of the yellow-green fluorescence with a standard series. The determination of 0.0001% of Be is feasible with $\pm 0.0001\%$ precision. The method is recommended for the determination of small quantities of Be in minerals and rocks.

1. Beryllium--Determination 2. Morin--Applications

A.M.

Card 2/2

L 1805-66

ACCESSION NR: AP5017630

UR/0240/65/000/007/0060/0061
613.155-07-78

AUTHOR: Prokopenko, A. V. ; Fedorchuk, S. Ya.

TITLE: Aspirator attachment for taking air samples around the clock

23
B.

SOURCE: Gigiyena i sanitariya, no. 7, 1965, 60-61

TOPIC TAGS: atmospheric contamination, air pollution control, automatic control design, automatic control equipment

ABSTRACT: The Migunov aspirator used for measuring average daily air contamination is provided with an attachment capable of self-regulatory start-up and shut-off. The attachment is figured and described. It consists of a starter, 3 relays, 4 diodes and a clock. Sampling is started with an alarm clock which sets off the aspirator. This arrangement has been used satisfactorily to conduct air sampling in hard-to-reach places without breakdown. Orig. art. has: 2 figures

ASSOCIATION: Kafedra kommunal'noy gigieny Rostovskogo-na-Dony meditsinsko-

Card 1/2

L 1805-66

ACCESSION NR: AP5017630

go instituta (Department of Municipal Hygiene, Medical Institute, Rostov-on-the-Don).

SUBMITTED: 11Feb64

ENCL: 00

SUB CODE: LS

NR REF SOV: 000

OTHER: 000

Card 2/2

FEDORCHUK, V.

CA

12

Relation between the percentage of foliage and the raw protein content in red clover. P. Lidstern and V. Fedorchuk. *Prac. Lenin Acad. Agr. Sci. (U.S.S.R.)* 1945, No. 3, 3-11 (in Russian).—Foliage percentage is not a sure indication of the raw protein content, nor of the feed value of a given red clover crop. Five groups were encountered: mean foliage and mean protein, high foliage (45-52% of stalk) and high (19-20% of dry wt.) protein, high foliage and low (14-18%) protein, low (20-31%) foliage and low (12-14%) protein, low (21-33%) foliage and high (18-20%) protein. Protein contents in stems and in leaves vary independently of each other. The correlation coeff. between foliage and protein content does not exceed 0.3, except towards the end of the blooming period, when it reaches 0.5. Inasmuch as the protein content in a given part of the stalk does not deviate from the av. by more than 5%, chem. analysis is the sole reliable basis for evaluation.

N. Thun

ADU 11 A BOTANICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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FEDORCHUK, V. (Moskva)

High-frequency filter for interference suppression in television
reception. Radio no. 12:42 D '60. (MIRA 14:1)
(Television—Interference) (Radio filters)

FEDORCHUK, V. A., Cand Tech Sci -- (diss) "Study of ^{reduction} ~~decrease~~
of the Pressure force in the ^{intake} ~~grabbing~~ organ of loading machines."
Mos, 1957. 14 pp (Min of Communications USSR, Mos Order of Lenin
and Order of Labor Red Banner Inst of Engineers of Railroad
Transport ~~Station~~ im I. V. Stalin), 110 copies (KL, 52-57, 108)

- 76 -

FEDORCHUK, V.A., inshener.

Decreasing the resistance force of loaders. Stroi. i dor. mashinostr.
2 no.6:10-11 Je '57. (MLBA 10:6)

(Excavating machinery)

FEDORCHUK, V.A., inzh.

Selection of a type of separating device for loading and unloading
units. Trudy MIIT no.97:187-196 '58. (MIRA 11:8)
(Loading and unloading)

DRUGAL', Sergey Aleksandrovich; ZUBAREV, Viktor Vasil'yevich;
KOGAN, L.A., kand. tekhn.nauk, retsenzent; MARTYNOV, M.S.,
inzh., retsenzent; FEDORCHUK, V.A., kand. tekhn. nauk,
retsenzent; FILIPPOVA, L.S., red.; SHISHLYKOV, Ye.S., inzh.,
red.; USENKO, L.A., tekhn. red.

[Experience in the mechanization of the servicing of
refrigerator cars] Opyt mekhanizatsii ekipirovki vagonov-
lednikov. Moskva, Transzheldorizdat, 1963. 31 p.

(Refrigerator cars) (MIRA 16:5)
(Railroads--Equipment and supplies)

FEDORCHUK, V.A., kand. tekhn. nauk

Mechanization of icing stations. Zhel. dor. transp. 45 no.4:
82-83 Ap '63. (MIRA 16:4)

(Refrigerator cars)
(Railroads—Equipment and supplies)

FEDORCHUK, V.A., kand. tekhn. nauk

New fork lift truck. Mekh. i avtom. proizv. 17 no.8:43-44 Ag '63.
(MIRA 16:10)

FEDORCHUK, V.A.; MARTYNOV, M.S., inzh., retsenzent; SHISHKIN, G.S.,
inzh., red.; VOROB'YEVA, L.V., tekhn. red.

[Mechanization of the servicing of ice-cooled refrigerator
cars] Mekhanizatsiia ekipirovki vagonov-lednikov. Moskva,
"Transport," 1964. 65 p. (MIRA 17:3)

FEDORCHUK, V.N.

Put into practice the decisions taken at the November Plenum
of the Central Committee of the CPSU. Razved. i okh. nedr
29 no.5:12-21 My '63. (MIRA 16:7)

1. Gosudarstvennyy geologicheskii komitet SSSR.
(Prospecting) (Mines and mineral resources)

SINYASHIN, N.I.; FEDORCHUK, V.P.; YAKUBOVA, A.N.

Obtaining dry easily soluble therapeutic sera ~~by the~~
"Diaferm-III" method; report No. 1. Trudy TashNIIVS 6:71-74 '61.
(MIRA 15:11)

(SERUM)

Fedorchuk, V.P.

USSR/Cosmochemistry - Geochemistry. Hydrochemistry.

D.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30397

Author : Fedorchuk, V.P.

Inst : ~~Academy of Sciences-Uzbek-SSR~~ *Instit "Aredastavetmetrazvedka"*

Title : Rutile from Some Carbonate Veins of the Alay Mountain Range

Orig Pub : Dokl. AN UzSSR, 1956, No 9, 13-15

Abst : Description of rutile encountered in the form of large (4-5 x 1-1.5 cm) crystals in dolomite veins, which are genetically associated with nephelinic syenite intrusion. Associated minerals: dolomite, dark-violet fluorite and light-green muscovite; temperature of fluorite formation 260-300°. Chemical composition of rutile of specific gravity 3.85 (in %): TiO₂ 96.50, Fe₂O₃ 0.11, V₂O₅ 1.07, MgO 0.79, remainder 1.75, total 100.22; spectral analysis revealed in addition Si, Al, Ca n . 10⁻², Cu n . 10⁻³. The presence of n . 1% Ti and n . 10^{-1%} V in hematite

Card 1/2

USSR/Cosmochemistry - Geochemistry. Hydrochemistry.

D.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30397

from quartz-carbonate veins of the same area, indicates, in the opinion of the author, the genetic affinity and may serve as typomorphic characteristic of alkaline intrusions.

Card 2/2

15-57-12-17374

Translation from: Referativnyy zhurnal, Geologiya, 1967, Nr 12,
p 103 (USSR)

AUTHOR: Fedorchuk, V. P.

TITLE: Mineralogy of Low-Temperature Deposits of South Fergana
(K mineralogii nizkotemperaturnnykh mestorozhdeniy
Yuzhnoy Fergany)

PERIODICAL: Zap. Uzbekist. otd. Vses. mineralog. o-va, 1966, Nr 10,
pp 111-120

ABSTRACT: Several mineralogical problems associated with a number
of low-temperature deposits of South Fergana are
examined in this article. Special experiments were
conducted to explain the cause of blackening of the
cinnabar samples (K). Investigation showed that only
the selenide of K turns black due to its photochemical
decomposition under the ultraviolet rays in the presence
of water vapor. The blackening type of K differs from
the ordinary type by a slightly higher specific gravity.

Card 1/2

Mineralogy of Low-Temperature Deposits (Cont.)

15-57-12-17374

The author presents actual data which show that under special conditions some varieties of K can undergo an intensive oxidation. This fact should be taken into consideration when prospecting for mercury deposits. It was established from the study of changes in limestones in some mercury deposits that blocks which undergo a hydrothermal alteration may far exceed in volume the ore bodies contained in them. These changes consist of lightening of rock color, the appearance of stains, the increase of jointing and porosity of limestone, and by the metasomatic replacement of limestone by other carbonates. Pyrite (P) is seldom found in monometallic mercury deposits, whereas P appears to be a common mineral in overlaying slates, especially if the latter are of a coal-bearing type. The author notes an increase in the content of P in the zone located above rich ore deposits, and a sharp decrease of P above the barren sections. A close genetic bond of P with the hydrothermal process is obvious. As, Sb, Hg, and, to a lesser extent, Cu, Zn, Ag and Au appear to be the characteristic inclusions of this P. It is possible to isolate the prospective blind ore deposits for further exploration by studying the elements which are present in the form of inclusions in P.

Card 2/2

L. P. Tsareva

7-58-3-13/15

AUTHOR: Fedorchuk, V. P.

TITLE: On the Genesis of Elementary Mercury (K voprosu o genezise samorodnoy rtuti)

PERIODICAL: Geokhimiya, 1958, Nr 3, pp. 273 - 279 (USSR)

ABSTRACT: This paper deals with the Khaydarkan deposit in the southern Fergana valley. Elementary mercury occurs in several districts of this deposit: Mednaya gora, Glavnoye pole, Promezhutochnoye pole, Kara-Archa. The geological conditions of the deposit are discussed by the aid of diagrams. Analyses of the surrounding slates and of mercury are given in a table. The analyses were carried out by T. T. Mukhova, spectral analyses by Z. M. Lopott at the Laboratory of the "Sredaztsetmetrazvedka" Trust.

For such important accumulations of elementary mercury a hypogenetic formation must be assumed. This appears to be confirmed by the following facts: 1) The complete lack of traces of leaching-out in the cinnabar in the adjoining ore bodies.

Card 1/3

On the Genesis of Elementary Mercury

7-58-3-13/15

- 2) Geological structure and position. The mercury containing ore is immediately located upon the richest cinnabar deposits in the central part of the vault-like folded structure in the overlapping slates.
- 3) The surrounding slates are, to a considerable extent, uniformly soaked with mercury.
- 4) The chemical composition of mercury; hypogenetic formation can be proved by the composition of the impurities.

The author draws the following conclusions: The results prove the correctness of the opinion expressed by A. A. Saukov that mercury can be transported not only by hydrothermal solutions but also in a gaseous state. The distribution of mercury in the surrounding rocks may originate either from cinnabar deposited from the hydrothermal residual solution, which can serve as microindicator (V. E. Poyarkov, Ref 4), or else the mercury is finely distributed in the rock; it can not serve as an indicator. There are 5 figures, 1 table, and 7 references, which are Soviet.

Card 2/3

7-58-3-13/15

On the Genesis of Elementary Mercury

ASSOCIATION: Sredneaziatskiy trust razvedki tvetnykh metallov
(Central Asiatic Trust for the Prospecting of Non-Ferrous
Metals)

SUBMITTED: September 30, 1957

1. Mercury—USSR
2. Mercury—Geophysical factors
3. Mercury—Sources
4. Mercury ores—Analysis

Card 3/3

AUTHOR: Fedorchuk, V.P.; Nikiforov, N.A. 132-58-5-1/14

TITLE: On the Utilization of Ore-covering Pyrite as an Indicator in Prospecting Low-temperature Deposits of the Closed Type (Ob ispol'zovanii prirodnoogo pirita v kachestve indikatora pri poiskakh nizkotemperaturnykh mestorozhdeniy zakrytogo tipa)

PERIODICAL: Razvedka i Okhrana Nedr, 1958, ²⁴Nr 5, pp 1-10 (USSR)

ABSTRACT: Geochemical investigations include the study of ore indicators which tell of the presence of deeply-hidden ore bodies. The results of investigations carried out on some low-temperature antimony-mercury deposits of the plastic-formation type are presented. The ore-covering pyrite contains admixtures of several elements which are typomorphic of the underlying ore strata, mainly mercury, antimony, arsenic and zinc. The best results with ore covering pyrite are obtained with blind ore strata at ore sites already under investigation, where the usual methods of metallometric investigations are of no avail. The method does not require any large labor force or equipment. The method of element admixtures can also be applied to prospecting on the sites of polymetallic deposits. By no means

Card 1/2

132-58-5-1/14

On the Utilization of Ore-bearing Pyrite as an Indicator in Prospecting
Low-temperature Deposits of the Closed Type

is this method independent; it yields practical results only
in connection with geophysical, geological, stratigraphical
and structural methods. There is 1 graph, 1 table and 13
references, 12 of which are Soviet and 1 German.

ASSOCIATION: Trest Sredazsvetmetrazvedka

AVAILABLE: Library of Congress

Card 2/2 1. Geology 2. Geochemical prospecting

FEDORCHUK, V.P.

Depth of the formation of low temperature mercury and antimony
deposits and vertical mineralization. Zap Kir. otd. Vses. min.
ob-va no.1:37-47 '59. (MIRA 14:3)
(Ore deposits)

18(5)

SOV/26-59-5-29/47

AUTHORS: Poshka, A.I. and Fedorchuk, V.P., Candidate of Geomineralogical Sciences

TITLE: Ancient Mercury Mines in South Fergana

PERIODICAL: Priroda, 1959, ⁴⁹Nr 5, pp 108 - 109 (USSR)

ABSTRACT: The authors refer to the Tadzhik-Pamir 1926-37 expedition of the Academy of Sciences of the USSR, when D.I. Shcherbakov defined the mercury antimonous belt in that area, known from ancient times. The remains of the old mining sites (subterranean passages and halls) were found and proofs obtained that considerable quantities of cinnabar and mercury were exported from this province to India and China.

Card 1/2