KRAVCHENKO, V. M., YEREMENKO, A. P.

Solutions, Solid

Binary solid solutions of tricyclic molecules of fluorene, phenanthrene, anthracene, and carbazole, Zhur. prikl. khim., 25, No. 6, 1952.

Monthly List of Russian Accessions, Library of Congress October 1952, UNCLASSIFIED

Kravchenko, V. M.

Two-component systems of condensed two-ring molecules with the participation of indole. V. M. Kravchenko and I. S. Pastukhova (N. S. Kurnakov Physicochem. Inst., U. Zhur. Fiz. Khim. 26, 1191-7(1952); cf. C.A. 47, 8235d.—Indole (I) and indene (II) form a continuous series of solid solns. such that the m.ps. are almost linear functions of the mole fractions present. The system I-naphthalene (III) exhibits a pronounced min. at 40°, for 20 mole % III, whereas the Schroeder equation would yield a long flat min. I and isoquinoline (IV) yield a curve with 2 minima, at 6° for 33% and at −6° for 72% of IV with a max. at 23.8° for the 1:1 compn., $C_8H_7N \cdot C_9H_7N$. The system I-benzene (V) has a min. at −8° for 71% V. The system I–II is an example of two substances differing by only 1% in dimensions; I–III a case of limited solid solns., with 6% difference in cross-section area; I-IV, a mol. compd. type due to interaction of free pairs of electrons with a H bond; and I-V, a eutectic, assocn. due to H bonding.

Franz H. Rathmann

KRAVCHENKO, V. M.

The ternary systems indene-naphthalene-benzene and indene-isoquinoline-benzene. V. M. Kravchenko (N. S. Khrushchev Industrial Inst., Donets). *Zhur. Fiz. Khim.* 26, 1284-90(1953); cf. *Zhur. Prikład. Khim.* 25, 313 (1952).—The systems C_9H_8-$C_{10}H_8$-C_6H_6 (I) and C_9H_8-C_9H_7N-C_6H_6 (II) were studied. The m.p. of each system is tabulated and graphed as a function of the concn. of each component; for I values are given for the C_9H_8/C_6H_6 mol. ratios 12.41/87.59, 26.39/73.61, 54.92/45.09, and 68.15/31.85, while for II the C_9H_8/C_9H_7N mol. ratios are 32.3/67.7, 52.3/47.7, 72.35/27.65. The corresponding eutectic temps. for II are −27.5 to −28.5°, −31.8 to −32.5°, and −35.0 to −37.2°, resp. In both systems the triangular diagram has a single line of binary eutectics. This line divides the field of crystn. of the solid soln. of C_9H_8-$C_{10}H_8$ from the C_6H_6 field in I, and that of the solid soln. of C_9H_8-C_9H_7N from the C_6H_6 field in II. J. W. Loweberg, Jr.

11-6-54

USSR/Chemistry - Solid Solutions 1 Feb 52

"Ideal Type Crystallization Diagram of a Two-Component Peritectic Solid Solution," V. M. Kravchenko, Donets Industrial Inst imeni N. S. Khrushcheva

"Dok Ak Nauk SSSR" Vol LXXXII, No 4, pp 597-600

An ideal type of temp-compn (T,X) diagram is utilized in physicochem analysis as a std for 2-component and polycomponent and eutectic systems. Such a diagram in a rectilinear form has recently been proposed by the author for simple, unsatd, 2-component solid solns. Now, he proposes a similar diagram for a peritectic equil in a dual system.

213T17

Five diagrams are constructed from exptl data on the following systems: p-C_6H_4ClI - p-$C_6H_4I_2$; p-$C_6H_4ClNO_2$ - p-$C_6H_4BrNO_2$; p-C_6H_4BrI - p-$C_6H_4I_2$; p-$C_6H_4Br_2$ - p-C_6H_4BrI; l-$C_{10}H_{16}$ - d-$C_{10}H_{16}$. Cross sections of the mols in the above system have similar dimensions as shown by X-ray and electrongraphic measurements. The diagrams show that as components in the systems become more alike, the peritectic isotherm becomes shorter until it becomes a point at the limit. From this it is possible to get an ideal type peritectic diagram T,X in which the peritectic point is connected by straight lines to the melting points of the components. At the limit, these 3 points fall on a straight line.

213T17

KRAVCHENKO, V. M.

KRAVCHENKO, V.M.

Condensed phase equilibrium in binary systems of naphthalene and its homologs. Review and forecast of naphthalene systems. Ukr.khim.zhur. 19 no.1:21-35 '53. (MLRA 7:4)

1. Donetskiy industrial'nyy institut im. N.S.Khrushcheva.
(Naphthalene) (Systems (Chemistry)

KRAVCHENKO, V.M.

Equilibrium in condensed phases of four-ring hydrocarbones with one-, two-, and three-ring hydrocarbones. Pyrene systems. Ukr.khim.zhur. 19 no.5:484-490 '53. (MLRA 8:2)

1. Donetskiy industrial'nyy institut im.N.S.Khrushcheva.
(Pyrene) (Condensation products (Chemistry))

Kravchenko, V. M.

2

USSR.

Equilibrium of the condensation phases of 4-ring hydrocarbons with 1-, 2-, and 3-ring hydrocarbons. Pyrene systems. V. M. Kravchenko. *Ukrain. Khim. Zhur.* 19, 484–90(1953); *Referat. Zhur. Khim.* 1954, No. 19309.—A thermal analysis was made of binary systems of pyrene (I) with durene (II), naphthalene (III), acenaphthene (IV), phenanthrene (V), fluorene (VI), and anthracene (VII). All were of the eutectic type. The eutectic mixts. of the systems were: I and II, 24.7 mol. % of I, 66.3°; I and III, 28.1 mol. % of I, 64.0°; I and IV, 33-34 mol. % I, 68°; I and V, approx. 75 mol. % of V, 81.4°; I and VI, 37.2 mol. % of I, 82.6°; I and VII, 20.9 mol. % of VII, 130°. Crystn. of components within a system occurred at 1–3° supercooling. The equil. diagrams were in good agreement with conclusions derived on the basis of the shapes and areas of sections of mol. models of the components. From the data thus obtained, the heat of melting of I calcd. from the Shreder equation was approx. 4200 cal./mol. The system I-V had limited solid solns. and a peritectic in addn. to the eutectic.

M. Hosch

KRAVCHENKO, V.M.

Equilibrium of condensed phases in systems formed by anthracene with naphthalene homologues, di- and octahydroanthracene. Ukr. khim.zhur. 19 no.6:599-609 '53. (MLRA 8:5)

1. Donetskiy industrial'nyy institut imeni N.S.Khrushcheva.
(Anthracene) (Naphthalene) (Systems (Chemistry))

KRAVCHENKO, V.M.; PASTUKHOVA, I.S.

Crystallization of 2,6-dimethylnaphthalene in binary systems with benzene homologues, naphthalene, and diphenyl. Ukr.khim.zhur. 19 no.6:610-617 '53. (MLRA 8:5)

1. Donetskiy industrial'nyy institut imeni N.S.Khrushcheva.
(Naphthalene) (Systems (Chemistry))

Ideal types of equilibrium diagrams for liquid and crystalline phases. V. M. Kravchenko (N. S. Khrushchev Donets Ind. Inst., Stalino). *Zhur. Fiz. Khim.* 27, 6-25(1953).—Known ideal temp.-compn. diagrams are discussed and new ones are established for certain basic examples of equil for the liquid and cryst. phases. In setting up the ideal temp.-compn. diagram the following were considered: (a) the temp.-compn. diagrams for a group of binary org. systems that had been studied experimentally, (b) topographical peculiarities of the diagrams, (c) relation between the type of diagram and the properties of the components. The results obtained for binary systems were extended to some cases of the phase equil. in systems of 3 and 4 components. The ideal temp.-concn. diagram assumes the same role as the conception of an ideal gas in its application to actual gases.

J. Roytar Leach

KRAVCHENKO, V. M.

The ternary systems indene–isoquinoline–naphthalene and naphthalene–isoquinoline–benzene. V. M. Kravchenko and L. S. Pastukhova (N. S. Khrushchev Donets Ind. Inst., Stalino). *Zhur. Fiz. Khim.* 27, 822–9(1953); cf. *C.A.* 47, 5235*d*.—Triangular phase diagrams and solid phase models were prepd. from exptl. data obtained in the observation of the ternary systems indene (I)–isoquinoline (II)–naphthalene (III) and II–III–$C_{14}H_{14}$. The temp. of crystn. was tabulated as a joint function of the mole fractions of the components for both systems. The I–II–III system crystallized in the form of continuous solid solns. Its solid phase model contained no temp. min. except at the pure I point. In the phase model of the II–III–$C_{14}H_{14}$ system a line of double eutectics sepd. the field of crystn. of the II–III solid soln. from that of $C_{14}H_{14}$. I. W. Loweberg, Jr.

KRAYCHENKO, V.M.

The liquid-crystal equilibrium in systems containing chrysene. V. M. Kravchenko and I. S. Pastukhova. *Doklady Akad. Nauk S.S.S.R.* 111, [illegible](1956).—The equil. conditions of 10 binary chrysene systems with 1,2-dibenzanthracene, pyrene, fluoranthrene, anthracene, fluorene, acenaphthene, naphthalene, carbazole, diphenylene oxide, and phenanthrene were investigated by thermal analysis, and the eutectic points of the systems were detd. The latent heat of fusion of chrysene Q = 6600 cal./mol. was calcd. by the Shreder formula (*Gornyi. Zhur.* 12, 272 (1890)) $\ln x = (Q/R)[(1/T) - (1/T_1)]$, where T is the m.p. of chrysene in °K., T_1 the satn. temp. with x mols. of naphthalene, in °K., and R = 1.98 cal./mol. from the data obtained with the chrysene-naphthalene system.

W. M. Sternberg

5
4E4j

Donets Industrial Inst. im N.S. Khrushchev

KRAVCHENKO, V.M.

AUTHORS: Kravchenko, V.M. and Pastukhova, I.S. 73-2-7/22

TITLE: Diphenyleneoxide systems with 2- and 3-ring hydrocarbons and carbazole. (Sistemy difenilenoksida s dvukh- i trekhkol'chatymi uglevodorodami i karbazolom).

PERIODICAL: "Ukrainskiy Khimicheskiy Zhurnal" (Ukrainian Journal of Chemistry), Vol.23, No.2, March-April, 1957, pp.180-190 (USSR).

ABSTRACT: Diphenyleneoxide occurs in considerable quantities in coal tar (Ref.1: P.P.Karpukhin, Trudy Soveshchaniya Po Tsiklicheskomu Syr'yu AN SSSR, OTN, M.-L.,1937,p.63), in approximately similar percentage as anthracene, carbazole and acenaphthene. (Ref.1: P.P.Karpukhin, Trudy Soveshchaniya Po Tsiklicheskomu Syr'yu AN SSSR, OTN,M.-L.,1937,p.63; Ref.2: M.S.Litvinenko, Koksokhimicheskaya Promyshl.,USA, 1947). Phase equilibria were determined for 9 two-component systems for diphenelene oxide and the following components: naphthalene, 2-methylnaphthalene, 2,6-dimethylnaphthalene, 2,7-dimethylnaphthalene, fluorene, phenanthrene, anthracene, acenaphthene and carbazole. The obtained data characterise the conditions at the beginning and the end of crystallisation of the substances. Equilibrium data for all the above named binary systems are

Card 1/3

Diphenyleneoxide systems with 2- and 3-ring hydrocarbons and carbazole. (Cont.)

tabulated (Table 1). Lines of ideal solubility are plotted in Diagrams 1 and 2 and calculated according to I.F.Shreder's equation (Ref.5: I.F.Shreder, Gornyi Zhurnal, 1890, No.12, 272). It was shown that the systems diphenylene oxide-naphthalene, diphenylene oxide-2,6-dimethylnaphthalene, diphenylene oxide- 2,7-dimethylnaphthalene, diphenylene oxide - anthracene and diphenylene oxide - acenaphthene have a simple eutectic equilibrium. Diphenylene oxide - phenanthrene form organic solid solutions. The system diphenylene oxide -2-methylnaphthalene gave organic solid solutions which are characterised by a phase diagram with a minimum. Diphenylene oxide -fluorene and diphenylene oxide - carbazole gave a continuous series of solid solutions. The heat of fusion of diphenylene oxide was calculated from the data obtained by thermal analysis and found to be 4200 cal/mole. The type of binary systems of diphenylene oxide with various 2- and 3-ring components was considered in connection with the structure of the molecules. Diagram 5 shows sectional diagrams of the various molecules of the above named compounds.

Card 2/3

There are 5 diagrams, 1 table and 13 references, 7 of which

Diphenyleneoxide systems with 2- and 3-ring hydrocarbons and carbazole. (Cont.)

are Slavic.

ASSOCIATION: Donets Industrial Institute, imeni N.S.Khrushchev. (Donetskiy Industrial'nyy Institut im. N.S.Khrushcheva).

SUBMITTED: June 21, 1956.

AVAILABLE: Library of Congress

Card 3/3

KRAVCHENKO, V.M.; PASTUKHOVA, L.S. (Stalino)

A study of the crystallization of acenaphtene in single, two, and three ring hydrocarbon systens [with summary in English]. Zhur.fiz.khim.31 no.8:1802-1811 Ag '57. (MIRA 10:12)

1. Donetskiy industrial'nyy institut im. N.S.Khrushcheva.
(Crystallization) (Acenaphtene) (Hydrocarbons)

KRAVCHENKO, V.M.; PASTUKHOVA, I.S.

Crystallization of diphenylensulfide in one-, two-, and three-, ring compound systems. Ukr. khim. zhur. 24 no. 2:168-176 '58. (MIRA 11:6)

1. Donetskiy industrial'nyy institut, g. Stalino.
(Dibenzothiophene)
(Systems(Chemistry))

AUTHORS: Kravchenko, V. M., Pastukhova, I. S. 20-119-2-26/60

TITLE: The Equilibrium of Condensed Phases in the Naphthalene - Thionaphthene System
(Ravnovesiye kondensirovannykh faz v sisteme naftalin-tionaften)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 2, pp. 285-287 (USSR)

ABSTRACT: Naphthalene is produced from coal tar with an admixture of thionaphthene. This admixture is removed by means of repeated washing with concentrated H_2SO_4, with a following rectification and by means of other methods. The difficulties rising on this occasion are explained among others by the formation of solid solutions of both materials. A short survey of technical literature follows (ref 1-4). In order to solve the problem on the type of the phase diagram of the system mentioned in the title the author first carefully prepared the components. Thionaphthene was synthezised from styrene and H_2S at 600° over a catalyst. "Pure" naphthalene was processed by means of metallic sodium

Card 1/3

distilled and then re-crystallized. The melting and crystallization processes were investigated by means of the method of thermal analysis under the application of a convenient laboratory (ref 5). Several mixtures of components were investigated by means of the dilatometric method. The investigation results are given on table 1. The diagram based on them compound (X) - temperature of the beginning of the crystallization process (t_1) and its termination (t_2) is shown on fig. 1. It was found that the named materials form a system of solid solutions with limited eutectic. In fig. 1 the curves of an ideal solubility of the components of the system which were computed according to the solution by I. F. Shreder (ref 4) are plotted with dotted line. These curves and the diagram t,X found experimentally strongly diverge in fig. 1. Such a strong deviation can be explained by the formation of solid solutions which have a liquidus line approaching a straight line (analogy in ref 7). The structural units for naphthalene

(ref 8) indicate the equality of the intermolecular bindings C — C = 1,4 Å and the valent angles $\sphericalangle$ C-C-C = 120° which they form. By completing these quantities by the values of the intermolecular radii R_C = 1,72 Å and R_H = 1,17 Å the surface of the cross sections of the flat naphthalene molecule S ≈ 50 $Å^2$ can be found. It can be seen from the computation of the binding C - C in naphthalene (ref 9) that Δ S is smaller than 1 $Å^2$. For this reason the neutralized structural data can be used for the building up of the cross section (S and S') of the model of the naphthalene molecule (fig 2). The thionaphthene structure could not be found in technical literature. On fig. 2 the cross sections of its model (S_1 and S_1') are built up approximately. The ratio of the surfaces of the greater cross sections of the molecule models: S/S_1 ≈ 5 %. On the application S_1 has place within S. The sulfur atom in thionaphthene, however, inconsiderably projects beyond the boundaries of the corresponding section

of the outline of the molecule of naphthalene. These small divergencies in size and shape of the cross sections of the models of the naphthalene and thionaphthene molecules explain the isomorphism found in these materials. Diagram t,X (fig. 1) shows on its greatest part (40-100 % naphthalene) that the points on the liquidus line coincide with the limiting straight line which might be plotted between the melting points of the components. With 0-40 % naphthalene the liquidus curve deviates from the mentioned straight line only to a small extent (not above 5° at the minimum point). This section can be explained by the specific influence of thionaphthene; by the influence of the sulfur heteroatoms which differ in size and in the fields of force from the CH group in the molecules of the components of the solid solution.
There are 2 figures, 1 table, and 12 references, 7 of which are Soviet.

The Equilibrium of Condensed Phases in the Naphthalene-Thionaphthene System 20-119-2-26/60

ASSOCIATION: Donetskiy industrial'nyy institut im. N. S. Khrushcheva (Donetsk Industrial Institute imeni N. S. Khrushchev)

PRESENTED: October 5, 1957, by I. I. Chernyayev, Member, Academy of Sciences USSR

SUBMITTED: October 1, 1957

Card 5/5

AUTHORS: Kravchenko, V. M., Pastukhova, I. S. SOV/79-29-1-7/74

TITLE: The Equilibrium Liquid and Crystals in Systems With the Participation of Anthene Fluorine (Ravnovesiye zhidkost'-kristally v sistemakh s uchastiyem fluorantena)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 27-34 (USSR)

ABSTRACT: The authors recently published a few results on the balance conditions between fluid and crystalline phases in systems with the participation of two tetracyclic hydrocarbons, namely, pyrene and chrysene (Refs 1,2). Frank (Ref 3) mentions some data which only partly characterize some phase diagrams of anthene fluorine without giving results concerning the crystallization end in the systems. This paper concerns a system group with the participation of anthene fluorine $C_{16}H_{10}$ which prevails quantitatively among the components of pitch coal 9 double systems were investigated with such second components as: benzene, 1,2,4,5-tetramethyl benzene, (durene), naphthalene, 2-methyl naphthalene, 2,7-dimethyl naphthalene, phenanthrene, fluorene, anthracene, and acenaphthene, e.g. as representatives of the mono-, bi- and tricyclic aromatic hydrocarbons. Thus 9 systems of 2 components were investi-

Card 1/2

The Equilibrium Liquid and Crystals in Systems SOV/79-29-1-7/74
With the Participation of Anthene Fluorine

gated in which anthene fluorine is connected with mono-, bi- and tricyclic hydrocarbons which occur in the technical mixtures obtained in connection with the pyrolysis of fuel fossils. The eutectic type of the investigated systems was found. The melting heat of anthene fluorine (about 4300 cal/mol) was determined. The type of the phase diagrams is explained. The type of some systems under the participation of anthene fluorine which are not as yet investigated is predicted. There are 3 figures, 1 table, and 10 references, 8 of which are Soviet.

ASSOCIATION: Donetskiy industrial'nyy institut (Donets Industrial Institute)

SUBMITTED: July 19, 1957

Card 2/2

S/020/61/136/001/021/037
B016/B055

AUTHORS: Kravchenko, V. M. and Pastukhova, I. S.

TITLE: Binary Systems of Bicyclic Molecules One of Which Is Thionaphthene

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 104-107

TEXT: The authors studied the phase diagrams of systems composed of thionaphthene and one other component having either a structure strongly resembling thionaphthene (Fig. 1, S_1 and S_1' - thionaphthene, S_2 - indene, S_3 - indole) or one with a markedly different molecular cross-section (Fig. 1, S_4 - isoquinoline, S_5 - 3-methyl isoquinoline, S_6 - 2-methyl naphthalene and S_7 - 2,6-dimethyl naphthalene). Data on the corresponding binary systems composed of thionaphthene and the above-mentioned substances (1) - (6) are listed in the same order in Table 1, which reads as follows:

Binary Systems of Bicyclic Molecules One of Which Is Thionaphthene

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χ_B = weight, χ_M = mole% thionaphthene, t_1 = temperature at beginning crystallization and t_2 at completion of crystallization. The types of phase diagrams found by the authors are in good agreement with the characteristics of the components (Fig. 1). To study the dependence of T, the equilibrium temperature of the condensed phases, on X, the composition of the mixture (in %), the authors applied 4 different methods: a) Thermal analysis using an apparatus built according to the scheme given in Ref. 1, b) Visual observation applying the same apparatus, c) Several specially prepared mixtures were measured by means of a dilatometer connected to an ultrathermostat and d) The behavior of components in the liquid phase was studied by measuring the refractive index n_D^t of mixtures of composition X in the Abbé refractometer. The authors found that the systems (1) - (3) exhibit complete solid-state solubility while (4), (5) and (6) form eutectics. The formation of solid solutions in the systems (1) and (2) is explained by structural similarity of the components, the differences ΔS and ΔV of the cross-sectional areas (S A^2) and volumes (V A^3) of the molecules being small, i.e.~3 - 5 and/or~1 - 6%. The eutectic type of the

Card 2/6

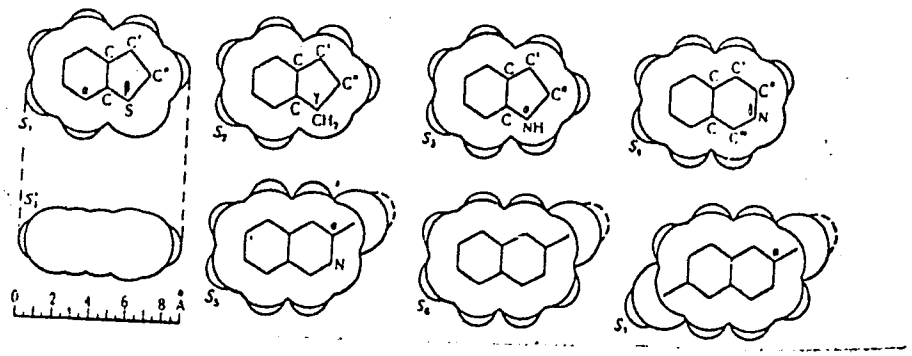
systems (4) - (6) is explained by the considerable difference in shape (Fig. 1) and size of the component molecules. The corresponding differences in this case are $\Delta S > 14\%$ and $\Delta V > 20\%$. Fig. 2 represents the t,X and t,n_D^t diagrams of all six systems. The systems (1) and (2) are of the linear type I of V. Ya. Anosov's (Ref. 8). Finally the authors compare their data with the thionaphthene - naphthalene system which they had studied earlier on (Ref. 9) and state that the latter occupies a position intermediate between the eutectic systems (4) - (6) and the solid solutions and that it is closely related to the linear type I. There are 2 figures, 1 table, and 9 references: 5 Soviet, 2 US, and 2 British.

ASSOCIATION: Donetskiy industrial'nyy institut, g. Stalino (Donets Industry Institute Stalino)

PRESENTED: July 1, 1960, by I. I. Chernyayev, Academician

SUBMITTED: June 29, 1960

S/020/61/136/001/021/037
B016/B055



Card 4/6

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$X_в$	$X_м$	t_1	t_2	$X_в$	$X_м$	t_1	t_2	$X_в$	$X_м$	t_1	t_2
			(1) Тионафтен—инден								
100,00	100,0	31,2	—	56,46	52,9	18,0	15	18,43	16,4	4,2	2
89,47	88,1	28,1	27	48,84	45,3	15,2	12	10,14	9,0	1,6	0
80,79	78,5	25,6	24	42,90	39,4	13,1	10	4,75	4,1	−0,2	−1
73,91	71,1	23,6	22	38,61	33,9	6,9	5	0,00	0,0	−1,7	—
67,22	64,0	21,6	19								
			(2) Тионафтен—индол								
100,00	100,0	31,2	—	67,33	64,3	34,1	33	22,90	20,5	42,5	40
93,25	92,3	31,6	31	59,60	56,3	35,0	34	13,42	11,0	46,5	43
87,38	85,8	31,9	31	44,14	40,8	37,0	35	6,00	5,3	49,8	47
75,60	73,0	33,3	32	34,79	31,7	39,0	37	0,00	0,0	53,0	—
			(3) Тионафтен—изохинолин								
100,00	100,0	31,2	—	46,70	45,8	27,8	26	21,53	20,9	26,6	—
91,56	91,2	30,2	29	33,56	32,6	27,2	25	15,36	14,[illegible]	26,1	24,5
78,30	77,7	29,6	28	64,90	64,0	28,8	—	4,20	4,0	25,1	24
70,16	69,4	29,2	27,5	58,21	57,3	28,6	27	0,00	0,0	24,7	—
			(4) Тионафтен—2-метилнафталин								
100,00	100,0	31,2	—	60,10	61,5	−4,2	−4,2	21,10	22,1	19,5	−4,2
88,37	88,0	23,0	−6	54,78	56,2	−1,1	−4,2	12,65	13,3	25,2	−4,2
79,43	80,4	15,8	−5	50,08	51,5	1,8	−4,2	6,24	6,6	30,0	−5
73,48	74,6	10,3	−4,2	43,21	44,6	5,9	−4,2	0,00	0,0	34,4	—
69,50	70,8	6,7	−4,2	31,55	32,8	13,0	−4,2				

Card 5/6

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(5) Гидронафтен—3-метилизохинолин

100,00	100,0	31,2	—	73,04	74,4	13,2	13,2	42,81	44,4	39,9	13,2
93,81	94,2	27,7	13	69,94	71,3	16,1	13,2	31,76	33,2	47,8	—
89,16	89,8	24,4	13	66,40	67,8	20,0	13,2	20,37	21,5	54,6	—
83,37	84,3	20,8	13,2	56,56	58,2	29,2	13,2	9,58	10,7	60,4	—
78,07	79,2	17,0	13,2	47,54	49,2	36,0	13	0,00	0,0	65,7	—
75,55	76,0	14,9	13,2								

(6) Гидронафтен—2,6-диметилнафталин

100,00	100,0	31,2	—	78,30	80,8	41,2	22,5	43,10	45,9	81,5	22
96,40	96,0	28,1	22,5	73,55	76,1	48,0	22,5	31,15	33,2	88,5	22
93,10	94,1	26,0	22,5	64,37	67,8	60,0	22,5	18,27	20,7	99,1	—
90,04	92,2	24,1	22,5	54,96	58,7	70,2	22,5	9,31	10,6	105,0	—
88,65	90,1	22,5	22,5	47,71	51,6	77,0	22	0,00	0,0	110,0	—
83,54	85,6	32,5	22,5								

Card 6/6

LITVINENKO, A.U., kand. geol.-miner. nauk, otv. red.; KNYAZEV, G.I., kand. geol.-miner. nauk, red.; KLAVCHENKO, V.M., inzh.-geol., red.; KULINENKO, O.R., inzh.-geolog, red.; KHRIPKOV, A.V., kand. geol.-miner. nauk, red.; EL'YANOV, M.D., kand. geol.-miner. nauk, red.; KOKOLEVA, T.I., ved. red.

[Problems of the geology and mineralogy of ore deposits] Voprosy geologii i mineralogii rudnykh mestorozhdenii. Moskva, Nedra, 1964. 188 p. (MIRA 17:12)

1. Institut mineral'nykh resursov.

PASTUKHOVA, I.S.; KRAVCHENKO, V.M.

Crystallization in the ternary system p-xylene - m-xylene - carbon tetrachloride. Zhur.prikl.khim. 37 no.1:136-141 Ja '64. (MIRA 17:2)

1. Donetskiy politekhnicheskiy institut.

KRAVCHENKO, V.M.; TETERYUK, V.K.

Microsporas in the residual iron ores in the Krivoy Rog and Belozerka deposits of the Ukrainian S.S.R. Izv. AN SSSR. Ser. geol. 30 no.7:119-122 Jl '65. (MIRA 18:7)

1. Institut mineral'nykh resursov, Dnepropetrovsk.

KOZHARA, V.L.; KRAVCHENKO, V.N. [Kravchenko, V.M.]

Genetic types of ores in the northern Saksagan' deposit. Geol. zhur. 20 no. 4:35-44 '60. (MIRA 14:4)
(Saksagan' region—Ore deposits)

KRAVCHENKO, V.N., assistent

Increasing the vibration strength of lap-welded joints by creating stress deconcentrators. Trudy NIIZHT no.14:130-142 '58. (MIRA 12:1)

1. Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta. (Bridges--Welding)

KRAVCHENKO, V.N., inzh.

Using the method of photoelasticity in investigating vibration strength of welded lap joints without stress concentration. Trudy MIIT no.101:144-166 '58. (MIRA 11:6)
(Bridges--Welding--Testing) (Photoelasticity)

KRAVCHENKO, V. N.: Master Tech Sci (diss) -- "Investigation of the vibration strength of lap-welded joints with stress deconcentrators, using the method of photoelasticity". Moscow, 1959. 10 pp (Min Transportation USSR, Moscow Order of Lenin and Order of Labor Red Banner Inst of Railroad Transport Engineers im I. V. Stalin), 150 copies (KL, No 14, 1959, 120)

KLAVCHENKO, V.P. (Rostov-na-Donu)

Economic use of material resources. Zhel. dor. transp. 47 no. 11:79-80 N '65 (MIRA 19:1)

1. Starshiy revizor sluzhby material'no-tekhnicheskogo obespecheniya Severo-Kavkazskoy dorogi.

GLAZUNOV, A.I.; KAMOVNIKOV, B.P.; KRAVCHENKO, V.S.; PIVOVAROV, V.G.; STEPANOV, I.A.

Automatic control of alcohol in distilled liquors. Spirt.prom. 27 no.2:28-32 '61. (MIRA 14:4)
(Alcohol) (Automatic control)

KRAVCHENKO, V.S.; STEPANOV, I.A.; TIKHOMIROV, L.A.; KAMOVNIKOV, B.P.; GLAZUNOV, A.I.

Automatic maintenance of constant pressure in continuous rectifying columns. Spirt.prom. 27 no.3:29-33 '61. (MIRA 14:4)
(Leningrad—Liquor industry—Equipment and supplies)
(Distillation apparatus)

KOMAROV, A.V., kandidat tekhnicheskikh nauk, nauchnyy sotrudnik;
KRAVCHENKO, V.S., inzhener, nauchnyy sotrudnik.

Determining the better alternative in planning the formation of river trains. Rech. transp. 15 no.9:21-25 S '56. (MLRA 10:2)

1. IKTP AN SSSR.
(Inland navigation) (Barges) (Towing)

KRAVCHENKO V.S.

KOMAROV, A.V., doktor.tekhn.nauk, nauchnyy sotrudnik; SOLOV'YEV, I.F., kand.tekhn.nauk, nauchnyy sotrudnik; KRAVCHENKO, V.S., inzh., nauchnyy sotrudnik; KOVSHOV, G.N., inzh., nauchnyy sotrudnik.

Experimental multidestination transportation of merchandise in combined railroad-waterway communications. Rech.transp. 17 no.2: 8-13 F '58. (MIRA 11:2)

1.Institut kompleksnykh transportnykh problem AN SSSR.
(Merchant ships--Cargo)
(Railroads--Freight)

KOMAROV, A., nauchnyy sotrudnik; TSurkov, N., nauchnyy sotrudnik; KRAVCHENKO, V., nauchnyy sotrudnik.

Combined operational technology for rail and maritime transportation. Mor. flot 19 no.2:13-17 F '59. (MIRA 12:3)

1. Institut kompleksnykh transportnykh problem AN SSSR.
(Transportation)

KRAVCHENKO, V.S., doktor tekhn.nauk; OBRAZTSOV, A.P., kand.tekhn.nauk; SEMENOV, V.M., kand.tekhn.nauk; KLEYMENOV, Ye.I., inzh.; TRIFONOVA, M.G., inzh.

Use of high-frequency currents for unloading frozen ores. Zhel.dor. transp. 42 no.11:63-64 N '60. (MIRA 13:11)
(Ore handling) (Induction heating)
(Railroads--Freight--Cold weather operations)

KRAVCHENKO, V. S., CAND TECH SCI, "INVESTIGATION OF THE BASIC FORMS OF COMBINED TECHNOLOGY OF THE ~~OPERATION~~ combined operations OF RAILROAD AND WATER TRANSPORT IN ~~MIXED COMMUNICATIONS~~." MOSCOW, 1961. (STATE SCI ECON COUNCIL OF THE COUNCIL OF MINISTERS USSR, INST OF COMPLEX TRANSPORTATION PROBLEMS). (KL, 3-61, 216).

KRAVCHENKO, V.S., kand. tekhn. nauk, otv. red.

[Technical and economic problems of developing transportation; transactions of a conference of young specialists] Tekhniko-ekonomicheskie voprosy razvitiia transporta; trudy konferentsii molodykh spetsialistov. Moskva, In-t kompleksnykh transportnykh problem. No.3. [Problems of improving the organization of the transportation process] Voprosy sovershenstvovaniia organizatsii perevozochnogo protsessa. 1963. 186 p. (MIRA 17:7)

SKALOV, Konstantin Yur'yevich, kand. tekhn. nauk, red.; ZUBKOV, Mikhail Nikolayevich, inzh.; KRAVCHENKO, Vladimir Silayevich, kand. tekhn. nauk; NIKITINA, Vera Nikolayevna, inzh.; PERSIANOV, Vladimir Aleksandrovich, kand. tekhn. nauk; DLUGACH, B.A., red.

[Port junctions and terminals; their layout and operation] Portovye uzly i stantsii; ustroistvo i ekspluatatsiia. Moskva, Transport, 1965. 197 p. (MIRA 18:4)

L 02349-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6025737 SOURCE CODE: UR/0058/66/000/004/A069/A069

58 B

AUTHOR: Kravchenko, V. S.; Andreyeva, A. A.; Kuznetsov, F. A.

TITLE: Influence of substrate finishing conditions on the quality of epitaxial film of germanium in the chloride method

SOURCE: Ref. zh. Fizika, Abs. 4A585

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 15-16

TOPIC TAGS: germanium, epitaxial growing, semiconducting film, surface finishing

ABSTRACT: An investigation was made of the influence of the preparatory operations prior to growing on the perfection of epitaxial germanium films. The perfection of the films was investigated as a function of the conditions for finishing the substrates of Ge in hydrogen and for etching the latter in a mixture of dry hydrogen chloride with hydrogen. It is found that when the substrates are treated in hydrogen at 850C, the optimal treatment time is 40 minutes. When the substrates are polished by etching with a mixture of hydrogen chloride and hydrogen, mirror-smooth films containing no stacking faults are obtained. [Translation of abstract]

SUB CODE: 20

Card 1/1

KRAVCHENKO, V. S.

~~KARVCHENKO, V. S.~~

USSR/Mines and Mining - Equipment Jun 1947
Electrical Equipment

"Safety in the Use of Electricity for Underground Mines," L. V. Gladilin and V. S. Kravchenko, Institute of Mining, USSR Academy of Sciences, 2pp

"Gornyy Zhurnal" Vol CXXI, No 6

Usually power of 500 - 550 watts is used for electrification of ferrous and nonferrous mines in the USSR -- 350 watts is used in coal mines. Recommends various safety features to be adopted in mines.

PA 187T52

KRAVCHENKO, V.S.

"Teleregulation and Remote Control in Mines." From book, Basic Problems for the Reconstruction and Development of the Donbass. Editor, A.M. Terpigorev. Ugletekhizdat, 1948

KRAVCHENKO, V. S.

Sep 48

USSR/Engineering
Cables, Steel
Testing Equipment, Electrical

"Electromagnetic Methods of Controlling the Strength of Steel Cables," V. S. Kravchenko, Inst of Mining, Acad Sci USSR, 6 pp

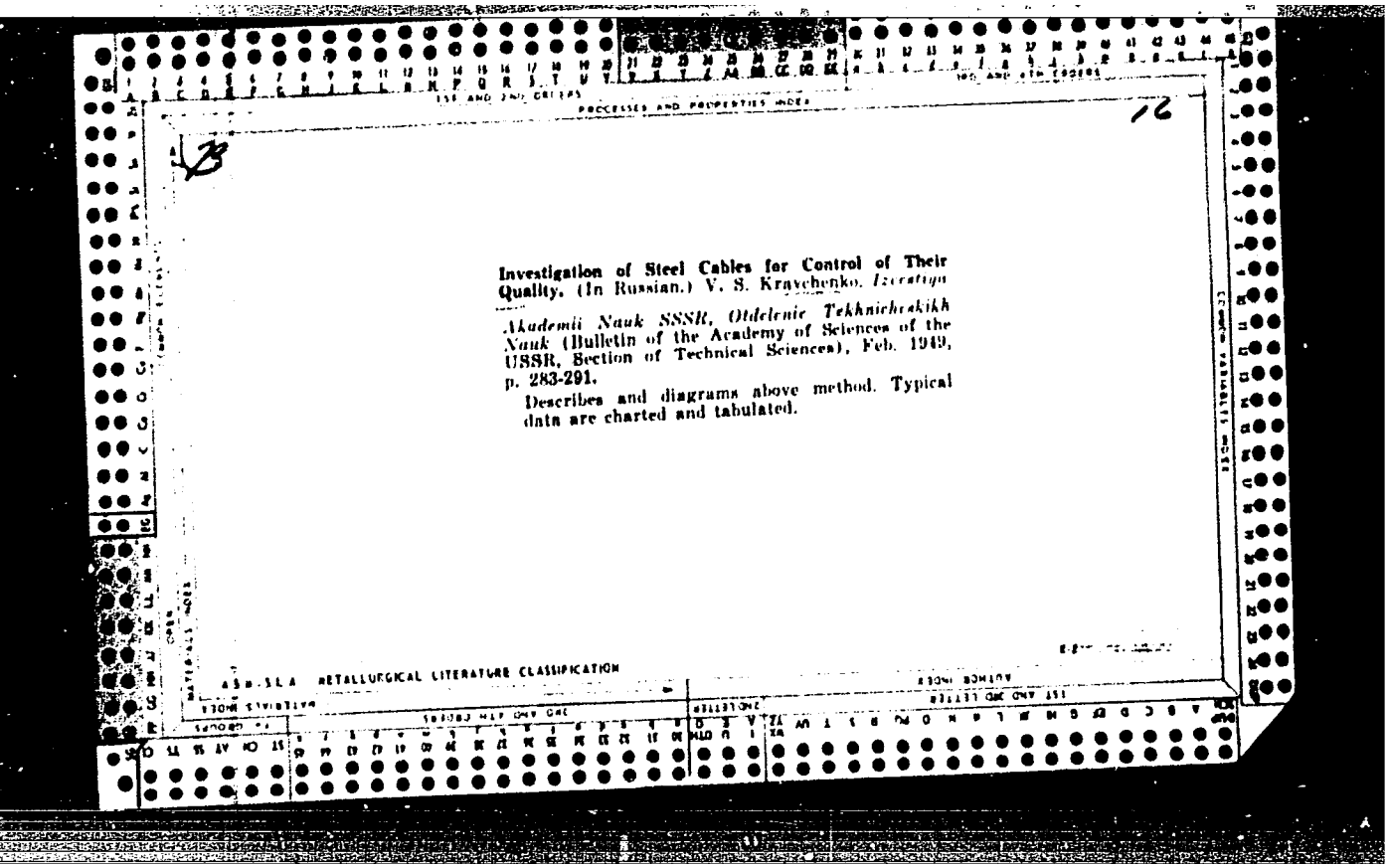
"Gor Zhur" No 9

Describes magnetic methods for checking strength of worn steel cable.

15/49165

KRAVCHENKO, V.S.

"The Probable Nature of the Ignition of Methane by Electric Sparks and Evaluation of the Spark Safety Mine Electricl Circuits." From book Mine Aerology and Labor Safety in Mines, Ugletekhizdat, 1949.



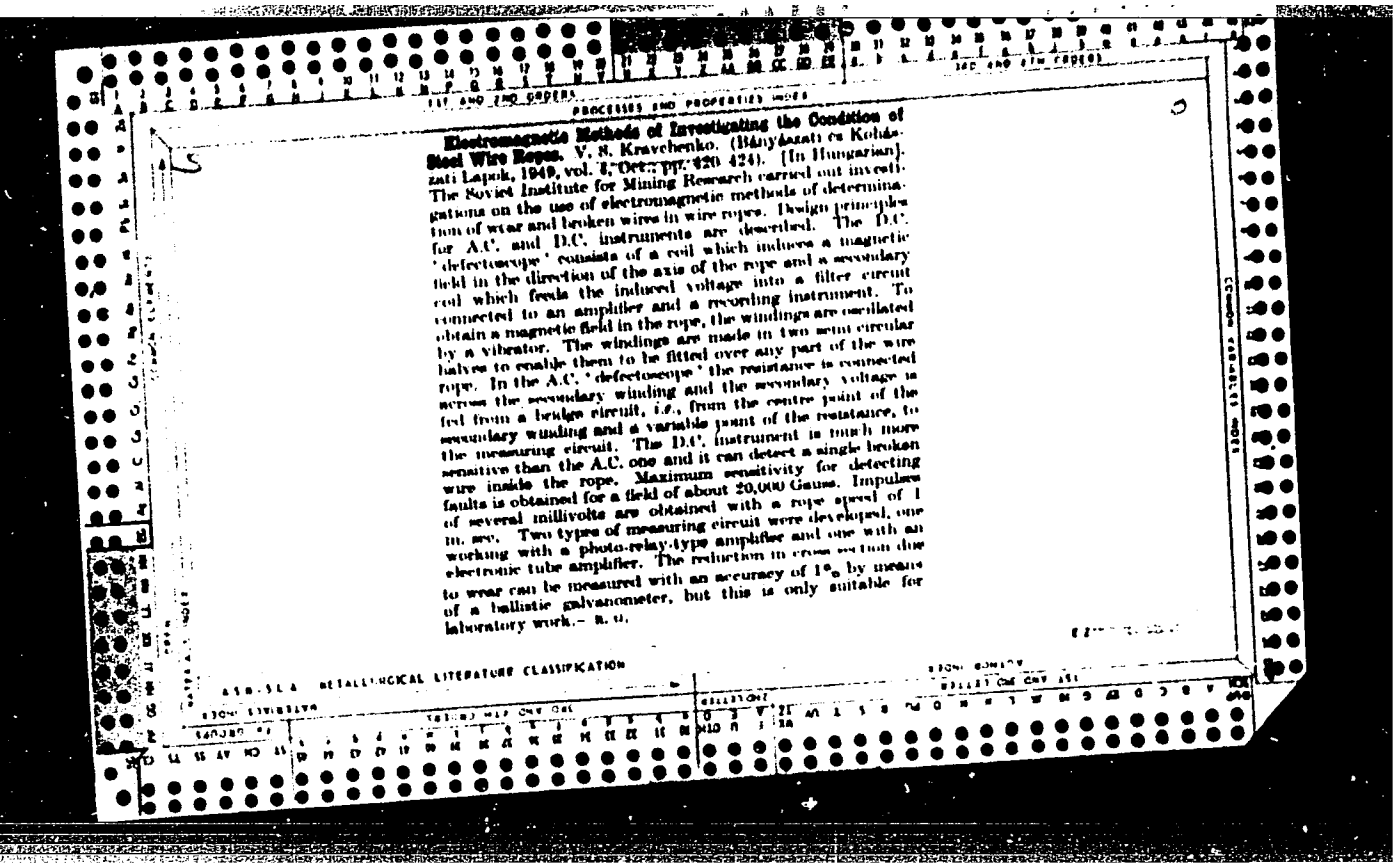
Investigation of Steel Cables for Control of Their Quality. (In Russian.) V. S. Kravchenko. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), Feb. 1949, p. 283-291.

Describes and diagrams above method. Typical data are charted and tabulated.

KRAVCHENKO, V. S.

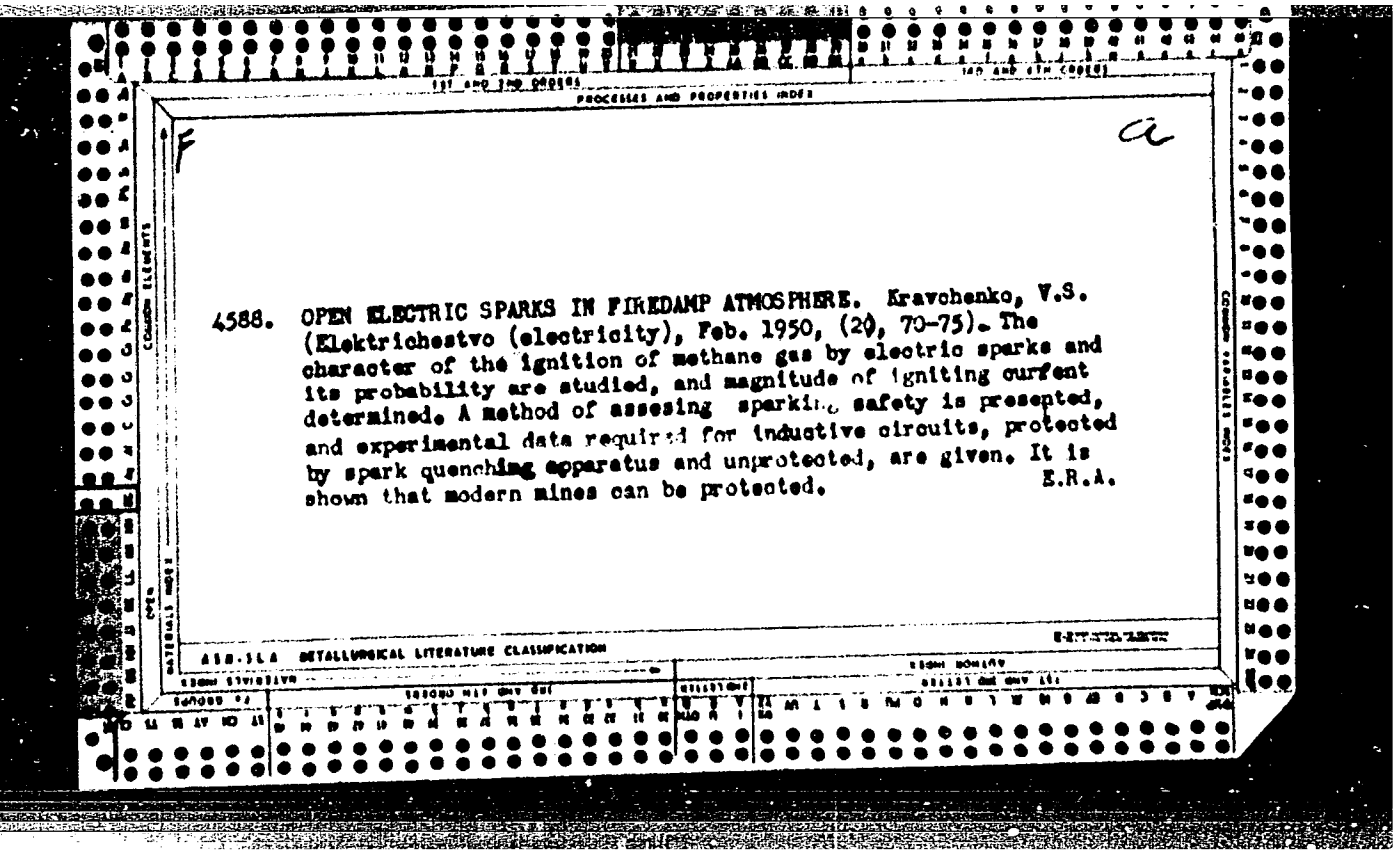
"Open Electric Sparking in an Inflammable Mine Atmosphere,", Elektrichestvo, No.2, 1949.

Inst. of Mining, AS USSR



Electromagnetic Methods of Investigating the Condition of Steel Wire Ropes. V. S. Kravchenko. (Bányászati és Kohászati Lapok, 1949, vol. 8, Oct., pp. 420 424). [In Hungarian].

The Soviet Institute for Mining Research carried out investigations on the use of electromagnetic methods of determination of wear and broken wires in wire ropes. Design principles for A.C. and D.C. instruments are described. The D.C. 'defectoscope' consists of a coil which induces a magnetic field in the direction of the axis of the rope and a secondary coil which feeds the induced voltage into a filter circuit connected to an amplifier and a recording instrument. To obtain a magnetic field in the rope, the windings are oscillated by a vibrator. The windings are made in two semi-circular halves to enable them to be fitted over any part of the wire rope. In the A.C. 'defectoscope' the resistance is connected across the secondary winding and the secondary voltage is fed from a bridge circuit, i.e., from the centre joint of the secondary winding and a variable joint of the resistance, to the measuring circuit. The D.C. instrument is much more sensitive than the A.C. one and it can detect a single broken wire inside the rope. Maximum sensitivity for detecting faults is obtained for a field of about 20,000 Gauss. Impulses of several millivolts are obtained with a rope speed of 1 m. sec. Two types of measuring circuit were developed, one working with a photo-relay-type amplifier and one with an electronic tube amplifier. The reduction in cross section due to wear can be measured with an accuracy of 1% by means of a ballistic galvanometer, but this is only suitable for laboratory work.– R. U.



4588. OPEN ELECTRIC SPARKS IN FIREDAMP ATMOSPHERE. Kravchenko, V.S. (Elektrichestvo (electricity), Feb. 1950, (2), 70-75). The character of the ignition of methane gas by electric sparks and its probability are studied, and magnitude of igniting current determined. A method of assessing sparking safety is presented, and experimental data required for inductive circuits, protected by spark quenching apparatus and unprotected, are given. It is shown that modern mines can be protected. E.R.A.

KRAVCHENKO, V. S.

232T50

USSR/Electricity - Spark Protection Sep 52

"Flammability of the Electric Spark," V. S. Kravchenko, Inst of Mining, Acad Sci USSR

"Elektrichestvo" No 9, pp 21-28

Establishes that the single criterion detg the flammability of mine gas to elec sparks in mixed (inductive and resistive) circuits is the energy dissipated in the arc. Submitted 18 Jul 51.

232T50

KRAVCHENKO, V. S.

62

2407. THEORETICAL PRINCIPLES OF SPARK-PROOF SYSTEMS FOR MINES. Kravchenko, V.S. (Doctoral thesis, Inst. Min. Acad. Sci. U.S.S.R., 1953; abstr. in Vestn. Akad. Nauk SSSR (J. Acad. Sci. U.S.S.R.), Mar. 1954, 109, 110). A theoretical and experimental investigation of the physical nature of spark ignition of fire-damp is presented. It is established that the sole factor determining the igniting capacity of sparks due to breaks is the energy dispersed in the arc phase of the discharge. Formulae are given for determining this energy and its composition. Igniting capacity in a firedamp atmosphere, the role of the spark and glow stages of a discharge, of spark energy and duration of discharge, and of characteristics of the circuit and of the break, are examined. Modern theory of the propagation of combustion in explosive gas mixtures is used to explain the ignition of firedamp by capacitive discharges and the extinction of fires by vapour.

82. INCENDIVITY OF ELECTRIC SPARKS. Kravchenko, W.S. (Dtsch. Elektrotech., 1953, vol. 7, (4), 153-158). The ignition of mine gas is dependent on so many variables that no attempt to find a theoretical solution has in the past been successful. The author endeavours to formulate theoretical equations to determine ignition by sparks in a considerable number of actual cases. S.M.R. 6-15-54

KRAVCHENKO, V. S.

Electrical Engineering Abstracts
May 1954
Switchgear

1951. Incendivity of electric discharges on breaking of circuits at the commercial, acoustic and supersonic frequencies. V. S. KRAVCHENKO. *Elektrichestvo*, 1954, *No.* 1, 59–61. *In Russian.*

In development work on electric mining equipment designed for operation at acoustic and ultrasonic frequencies it was found that, contrary to widely held opinions, the incendive capacity of sparks is less at these frequencies than at mains frequency. The explanation lies only in considering the dangerous phase of the discharge which is its arcing stage, and in particular, the possible maximum of energy liberated in such a discharge. The author presents an empirical formula for this energy which was derived originally for d.c. conditions. It is found that, e.g. at 100 kc/s the incendive current must be 5–11 times greater than on d.c. Comparative experiments in various inflammable gas mixtures at various frequencies fully confirm the theory. See also Abstr. 1854 (1954). B. F. KRAUS

KRAVCHENKO, V.S.

New concepts of the process of mine gas ignition due to electric sparks stemming from poor connections. Trudy Inst. gor.dela 1:203-209 '54. (MLRA 7:12)
(Mine explosions) (Electricity in mining)

KRAVCHENKO, V.

KRAVCHENKO, V., inzhener.

Cutter-loader "Gorniak" used in anthracite mines. Mast.ugl. 3 no.7:14-15 Jl '54. (MLRA 7:7)
(Coal-mining machinery)

USSR/Mining - Coal

FD-2929

Card 1/1 Pub. 41-10/17

Author : Kravchenko, V. S., Moscow

Title : On the question of the nature and mechanics of sudden ejection of coal and gas

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 6, 101-108, June 1955

Abstract : Describes an experiment performed to study the cause and the mechanics of coal and methane ejection when a sealed strata of coal and gas under pressure is suddenly exposed. Concludes that when a coal zone, saturated with gas is exposed, the coal starts to disintegrate as a result and through the action of the escaping gas. The disintegration occurs very rapidly and in the form of a thin front. This "disintegration wave" travels rapidly towards the end opposite the one exposed. At the same time the gas escapes rapidly in the opposite direction causing an explosive ejection of gas and disintegrated coal particles. Drawings, photographs, tables, graphs, formulae. Three references, all USSR.

Institution :

Submitted : April 11, 1955

Kravchenko, V.S.

3

3962. SPARKING SAFETY OF ELECTRICAL EQUIPMENT IN ATMOSPHERES OF EXPLOSIVE GAS MIXTURES. // Kravchenko, V.S. and Petisov, P.A.

(Elektrichestvo (Electricity, U.S.S.R.), 1956, (12), 48-52). The investigations reported were carried out with a view to improving considerably the sparking safety of equipment used in mines where firedamp dangers exist; the stipulations are more strict than in British regulations. A very efficient means of rendering inductive circuits practically non-inductive is the use of shunts including selenium or germanium diodes and short-circuited turns.

E.R.A.

Inst. Gornogo dela AN SSSR

KRAVCHENKO, V.S.

Searching for new methods of breaking hard rock. Gor. zhur. no.1: 36-43 Ja '57. (MLRA 10:4)

1. Institut gornogo dela AN SSSR.
(Ultrasonic waves--Industrial applications)
(Electric spark)

KRAVCHENKO, V.

Mechanizing and automatizing surface equipment. Mast.ugl. 7 no.4:17 Ap '58. (MIRA 11:4)

1. Uchenyy sekretar' Tekhniko-ekonomicheskogo soveta Luganskogo sovnarkhoza.
(Coal mining machinery)

KRAVCHENKO, V. S.

AUTHOR: Loguntsov, B. M. SOV/3o-58-8-33/43

TITLE: On Problems of Rock Disintegration (Voprosy razrusheniya gornykh porod) Transactions of the Conference in the Mining Institute (Soveshchaniye v Institute gornogo dela)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 8, pp. 13o - 132 (USSR)

ABSTRACT: This coordination conference was held from May, 2o - 22. It was called by the Institut gornogo dela Akademii nauk SSSR (Mining Institute AS USSR). Representatives of scientific research institutes, of universities, of planning bureaux and manufacturing plants participated in the work. The following lectures were held:
B.M.Leybov on methods of evaluating coal structure.
M.M.Protod'yakonov and B.M.Loguntsov on the standardization and the establishment of a uniform scale of drilling work.
A.N.Zelenin on a more precise method of the determination of limit values of rock stress values.
V.S.Kravchenko, A.P.Obraztsov and D.A.Denisov on the application of magnetic high-frequency fields for the breaking

Card 1/2

up of quartzites from the anomalous magnetic ores from Kursk and from ores of other sites."
A.P.Ostrovskiy, A.I.Gol'binder and A.A.Pavlichenko on "New methods of blasting in the drift advance of bore holes."
M.I.Koyfman on "Rules governing the rock disintegration by means of rotating and percussion drilling."
R.M.Eygeles on "the dependence of bore thrust on the drill pressure, on the drill speed, on rock properties etc."
Ye.I.Il'nitskaya on "mechanical extraction of coal."
N.G.Karatavoy on "the specific pressure distribution on the leading edge of the cutter in coal extraction."
At the end of the conference it was emphasized that the majority of research work which has hitherto been conducted was entirely of an experimental nature. Theoretical and experimental research is to be intensified in the future.

SOV/110-58-9-17/20

AUTHORS: Kravchenko, V.S. (Doctor of Technical Science) and Ul'yashchenko, V.E. (Engineer)

TITLE: A Study of Explosion-proof Electrical Equipment in an Atmosphere of Explosive Gas (Vzryvobezopasnost' elektrooborudovaniya v atmosfere vzryvchatykh gazov)

PERIODICAL: Vestnik Elektropromyshlennosti,1958,Nr 9,pp 69-74 (USSR)

ABSTRACT: Heavy-current electrical equipment is usually made flame-proof by the provision of an explosion-proof casing having flanges with gaps of such dimensions that gases, expelled to relieve the internal pressure formed when an explosion occurs, are cooled down before reaching the surrounding explosive atmosphere. Recent Soviet work has clarified the mechanism of flame-extinction in narrow gaps and some new properties of explosion-proof casings have been discovered. The critical gap between infinite planes at which flame propagation ceases depends primarily on the properties of the burning mixture, particularly the energy of activation, the maximum flame temperature, the thermal conductivity of the gas and the rate of propagation of the flame relative to the products of combustion. Theoretical equations for the critical gap are written, but they give

Card 1/6

A Study of Explosion-proof Electrical Equipment in an Atmosphere of Explosive Gas

only the order of magnitude for different gases. It is clear that the reason why the material nature of the flange has little effect on the flame-suppressing efficiency is that the heat-transfer is mainly governed by the thermal conductivity of the gas. The effects are more complicated in the closed casings met in practice than they are in the theoretical infinite gaps. There are considerable increases of pressure and temperature inside the casing, so that the gaps must be smaller. In experimental work on explosion-proof gaps the variability of the effect of explosion propagation is important. A special test rig was made up, as schematically illustrated in Fig 3, and consists of a special spherical casing of 2.5 litres for determining safe gaps, with a controlled gap between the flanges. This was filled with an explosive-mixture and placed in a large (220 litres) explosion chamber containing the same explosive mixture. The mixture inside the sphere was ignited by a magneto spark. It was found that for a given set of conditions an explosion could occur only occasionally, for

example, only once in 60 tests, and in one case only once in 167 tests. It is usually considered that a gap is safe if no explosion occurs in a certain number of tests. In practice a safety factor of 2½ or so was allowed in gap length. Tests made in the TsNIPO served as a basis for a more reliable method of determining safe gaps. An attempt was first made to establish a relationship between the probability of an explosion being transmitted and a factor governing the intensity of the source of ignition, such as the size of the flange gap. Similar work was recently done in England by Bruce, but later tests were not in accordance with the linear relationship that he established. Our tests were made in hydrogen, acetylene and propane. Only a limited number of tests could be made and we had to be satisfied with 3 - 5 positive results in about 300 tests. It will be seen from the results given in Fig 4 that a reliable relationship was nevertheless obtained. The tests confirmed the validity of the law of probability of ignition for ignition sources of unstable intensity. The

relationship between the statistical probability of transmission of explosion and the size of the flange gap is given in Fig 5 and the corresponding formula in equation (5). This relationship forms a basis for a new method of determining the safe gap. A method is given of determining the relationship between the probability of explosion transmission and the length of gap from experimental data. A procedure is then offered for finding a value of gap length that corresponds to a given low value of explosion probability. The relevant calculations were made by L.N. Bol'shev at the Mathematical Institute imeni Steklov of the Academy of Science of the USSR. Formula (8) gives the value of the safe gap. Values of the magnitude t that enters into this formula are given in Table 1. The procedure was used to determine safe flange gaps for very dangerous mixtures of air with hydrogen and acetylene, also with propane. The most explosive concentrations of these gases in air are given in Fig 6. The safe gaps were calculated by means of formula (8) for an explosion

A Study of Explosion-proof Electrical Equipment in an Atmosphere of Explosive Gas

probability of 10^{-6} and gave the dimensions recorded in Table 2. The corresponding results of explosion tests are given also. It will be seen that even if the safety factor of 2 is allowed in the gap length, it is practicable to manufacture some kinds of explosion-proof equipment for hydrogen/air mixtures. Explosion-proof enclosures can also be made for acetylene atmospheres, provided the volume is not greater than 0.25 litres. On the basis of this work the Elektrosila Works has developed and put into series production an explosion-proof lighting fitting for hydrogen/air atmospheres and has developed an inflammable-gas indicator for hydrogen and acetylene atmospheres. Previous authors have pointed out that explosion-proof equipment may become unsafe if prolonged power-arcs occur inside it. The way in which this happens is discussed, leading to the conclusion that the problem cannot be solved merely by suitable design of the casing but requires that appropriate electrical

A Study of Explosion-proof Electrical Equipment in an Atmosphere of Explosive Gas

protective equipment be used to cut off the supply quickly in such cases. Additional safety measures are the use of arc-resisting insulation, increased clearances between live parts and periodical checking of insulation resistance.

There are 2 tables, 6 figures and 6 references, 5 of which are Soviet.

SUBMITTED: February 17, 1958

1. Electrical equipment--Performance 2. Explosive gases--Safety measures 3. Electrical equipment--Test methods 4. Electrical equipment--Safety measures

Card 6/6

KARPOV, Yevgeniy Fedorovich; KRAVCHENKO, Vladimir Sergeyevich, doktor tekhn. nauk; LEYBOV, Ruvim Moiseyevich, doktor tekhn.nauk; SHEYNBERG, Samuil Davydovich; MIRSKAYA, V.V., red.izd-va; KOROVENKOVA, Z.A., tekhn.red.; BERESLAVSKAYA, L.Sh., tekhn.red.

[Automatic protective devices in mines] Avtomaticheskie shakhtnye zashchitnye ustroistva. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1960. 111 p.

(MIRA 13:7)

(Electricity in mining--Safety measures)

S/180/60/000/03/025/030
E071/E333

AUTHORS: Kravchenko, V.S. and Khaleyev, R.M. (Moscow)

TITLE: Some Relationships in the Inflammability of Explosive Mixtures of Saturated Hydrocarbons with Air

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, Nr 3, pp 133-139 (USSR)

ABSTRACT: The relationships described in the paper were found during the authors' investigations on spark safe currents in electrical circuits in an explosive atmosphere of multi-component mixtures of hydrocarbons of C_nH_{2n+2} series.

On the basis of their own experiments and with two and multi-component mixtures of alkane series and literature data, the authors established that the most dangerous concentrations of hydrocarbons in air are inversely proportional to the square roots of their specific (or molecular) concentrations. Similar relationships were found to hold in respect of minimal current which on breaking of the circuit would ignite such mixtures. Thus, a direct relationship exists between the most dangerous concentrations of hydrocarbon-air explosive mixtures and minimal igniting currents. Using this relationship one can

Card1/3

S/180/60/000/03/025/030
E071/E333

Some Relationships in the Inflammability of Explosive Mixtures of Saturated Hydrocarbons with Air

determine the most dangerous concentrations of any explosive mixture, lower and upper explosive limits and safe currents on the basis of the same data for methane. A comparison of calculated and determined most dangerous concentrations of alkane-air explosive mixtures and their dependence on the specific gravity of the explosive component are given in Table 1 and Figure 1; the dependence of igniting currents for gas and vapour air mixtures of saturated hydrocarbons on their specific gravity - Table 2 and Figure 2 (probability of ignition $p = 10^{-3}$, contacts from steel wire 0.35 mm in dia); the dependence of minimal igniting currents on the dangerous concentration of explosive component - Figure 3; the dependence of the probability of ignition of various hydrocarbon-air mixtures by circuit-breaking currents - Figure 4; the probability of the appearance of a mixture of hydrocarbons of various specific gravities for a mine, situated in a neighbourhood of oil-bearing strata - Figure 5. It is concluded that the relationships established can be used for calculating

Card2/3

S/180/60/000/03/025/030
E071/E333

Some Relationships in the Inflammability of Explosive Mixtures of Saturated Hydrocarbons with Air

minimum igniting and permissible currents and for the evaluation of spark safety of electrical circuits on chemical, petroleum and mining industries susceptible to explosions. There are 5 figures, 2 tables and 6 references, 3 of which are Soviet and 3 English.

SUBMITTED: October 20, 1959

Card 3/3

KRAVCHENKO, V.S., doktor tekhn.nauk; KARPOV, Ye.F., inzh.; BIRENBERG, I.E., inzh.

Continuous methane-detection relay. Bezop.truda v prom. 4 no.2:22-24 F '60. (MIRA 13:5)

1. Institut gornogo dela AN SSSR (for Kravchenko, Karpov).
2. Giprougle-avtomatizatsiya (for Birenberg).
(Mine gases--Safety measures)

S/194/61/000/008/041/092
D201/D304

AUTHORS: Kravchenko, V.S and Serov, V.I.

TITLE: A new method of spark protection in remote control and remote signalling installations

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1961, 48, abstract 8 V363 (Bezopasnost' truda v prom-sti, 1960, no. 11, 20-21)

TEXT: The new method consists in making a small current flow along the spark protecting supply line. The current produces a certain energy build-up (e.g. at a capacitor) at the motor stage. This energy is then dissipated in pulses at a given signal. The described principle makes it possible to extend the applicability of spark protecting lines to high power systems. [Abstracter's note: Complete translation]

Card 1/1

KRAVCHENKO, V.S., doktor tekhn.nauk; OBRAZTSOV, A.P., kand.tekhn.nauk; USTINOV, V.V., inzh.

Dust-free rock breaking by electric methods. Gor.zhur. no.9: 42-45 S '60. (MIRA 13:9)

1. Institut gornogo dela AN SSSR, Lyubertsy, Moskovskoy oblasti. (Ore dressing) (Electric cutting machinery)

24.2400 (1385, 1162, 1395)

S/105/61/000/001/005/007
B012/B059

AUTHORS: Kravchenko, V. S., Doctor of Technical Sciences, and Sun Yuy-chi, Engineer

TITLE: Spark-over Strength of High-frequency AC-circuits

PERIODICAL: Elektrichestvo, 1961, No. 1, pp. 77-80

TEXT: The authors of the present paper used the fundamentals of spark-over strength, given in the papers of L. I. Gavril'chenko (Ref. 2) and Refs. 1,3,4,5,6,7, to determine the ignitability of discharges occurring on opening of AC-circuits. Fig. 3 illustrates the experimental characteristics for determining the spark-over strength of inductive DC- and AC-circuits on variation of inductance (Fig. 3a) and of frequency (Fig. 3b). In all cases investigated (inductance between 0.1 and 10 millihenries) discharges from opening of DC-circuits were always more dangerous than discharges in high-frequency AC-circuits. The experiments showed that the stabilized capacity voltage, determined at the ignition limit at various values of capacity, characterizes the spark-over strength of the inductive-

Spark-over Strength of High-frequency AC-circuits

S/105/61/000/001/005/007
B012/B059

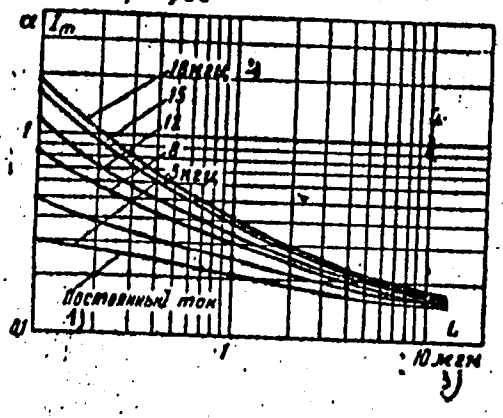
capacitive circuit under the given conditions of ignition. This relation proved to be a unit characteristic of the circuit spark-over strength at frequencies of 5 to 15 kc/sec and at inductances of 1 to 20 millihenries, at resonance and non-resonance parameters. Experiments showed that in a high-frequency circuit with inductance and capacitance ignitability of the discharges in the ranges investigated are entirely determined by the energy of these discharges, independent of changes in frequency or other circuit parameters. The investigation of the ignitability of discharges occurring on opening of high-frequency circuits proved the principle of the constant least ignition energy of these discharges (within the ranges investigated) to be true. This investigation also made it possible to write down the ignition conditions of discharge in an inductive-capacitive circuit in mathematical form: Equation (4): $I_{min} = \omega\sqrt{CA_{min}}$, where I denotes the effective current with open terminals, ω the angular frequency, A_{min} the least energy causing spark-over, and C the capacitance. Calculations and experimental data offered the possibility of explaining the effect of frequency on the least ignition currents in the inductive and inductive-

Spark-over Strength of High-frequency AC-circuits

capacitive circuits at various values of inductance and capacitance (Fig. 5). There are 5 figures and 9 references: 8 Soviet.

ASSOCIATION: Institut gornogo dela AN SSSR (Mining Institute AS USSR)

SUBMITTED: June 20, 1960



Card 3/6

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B012/B059

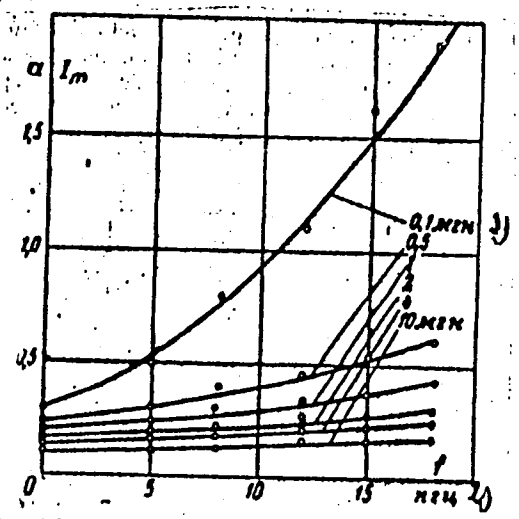

Fig. 3

Card 4/6

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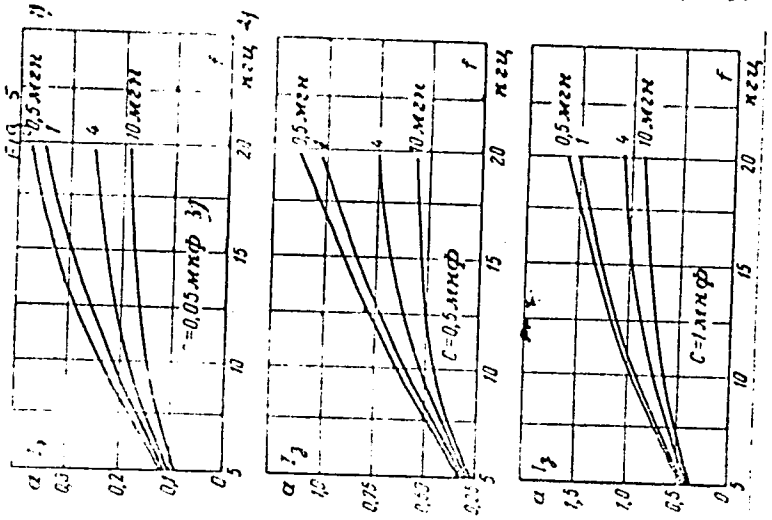

S/105/61/000/001/005/007
B012/B059

Le[illegible] Fig. 3: Amplitude values of the least ignition currents [illegible] in an inductive circuit: 1) DC, 2) kc/sec, 3) millihenry.

[illegible] to Fig. 5: Dependence of the effective least ignition currents, measured in the inductive-capacitive circuit before opening of the capacitor, on current frequency at various values of inductance and capacitance. 1) millihenry, 2) kc/sec, 3) microfarad.

Card 6/6

S/196/62/000/010/004/035
E073/E155

AUTHORS: Kravchenko, V.S., and Serov, V.I.

TITLE: New explosion chamber for testing electrical circuits for safety against sparking

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1962, 16, abstract 10 A95. (Vezopasnost' truda v prom-sti, no.11, 1961, 20-21)

TEXT: Institut gornogo dela im. A.A. Skockinskogo (Mining Institute imeni A.A. Skochinskiy) developed an automatic explosion chamber which permits rapid determination of the probability of ignition of explosive gas-air mixtures during closing and opening of electrical circuits (inductive, non-inductive and capacitive); the circuit current which is safe from the point of view of explosions can also be determined. The equipment is used by a number of institutes in the gold mining industry, and considerably speeds the development, design and introduction of apparatus to be used in explosive atmospheres. 3 illustrations.

Card 1/1 Abstractor's note: Complete translation.

IVANOVSKIY, V., inzh.; KRAVCHENKO, V., inzh. MILKIS, G., inzh.

How automatization works. Sov.shakht. 10 no.3:21-22 Mr '61. (MIRA 14:7)

1. Luganskiy filial instituta Giprougleavtomatizatsiya.
(Coal mines and mining)
(Automatic control)

KRAVCHENKO, VLADIMIR S.; KOTYARSKIY, AM

(1)

"Research on the safety of electrical installations in mining"

report to be submitted for the third Int. Mining Congress, Salzburg Austria, 15-21 Sep 63

KRAVCHENKO, V. S., doktor tekhn. nauk; KARPOV, Ye. F., kand. tekhn. nauk; BIRENBERG, I. E., inzh.; ERENBURG, I. I., inzh.

AMT-2 thermocatalytic methane analyzer. Ugol' Ukr. 7 no.4: 38-39 Ap '63. (MIRA 16:4)

1. Institut gornogo dela im. A. A. Skochinskogo (for Kravchenko, Karpov). 2. Gosudarstvennyy proyektno-konstruktorskiy institut avtomatizatsii rabot v ugol'noy promyshlennosti (for Birenberg). 3. Konotopskiy zavod "Krasnyy metallist" (for Erenburg).

(Mine gases—Measurement) (Transducers)

KRAVCHENKO, V.S., doktor tekhn. nauk, prof.

Ignition of explosive gas-air-vapor media by electric discharges. Elektrichestvo no.11:75-80 N '65.

(MIRA 18:11)

1. Institut gornogo dela im. A.A. Skochinskogo.

KRAVCHENKO, V.S., inzh.

Uncentering of assembled auxiliary ship mechanisms after their installation on ships. Sudostroenie 25 no.9:32-35 S '59. (MIRA 12:12)
(Marine engineering)

KRAVCHENKO, V.S., inzh.

Ways to speed the delivery of ships built in series.
Sudostroenie 26 no.2:46-49 (208) Feb '60. (MIRA 14:11)
(Shipbuilding)

KRAVCHENKO, V. S., inzh.

Aspects of assembling and mounting marine diesel generators.
Sudostroenie 27 no.7:49-54 Jl '61. (MIRA 14:11)
(Marine diesel engines)

KRAVCHENKO, V.S., inzh.

Design workability of coupling joints. Sudostroenie 27 no.12:42-48 D '61. (MIRA 15:1)

(Marine engineering)

KRAVCHENKO, V.S.

Ultrasonic method of inspecting the quality of material for parts of turbines. Trudy LKI no.31:65-73 '60. (MIRA 15:2)

1. Kafedra tekhnologii sudovogo mashinostroyeniya Leningradskogo korablestroitel'nogo instituta.
(Ultrasonic waves—Industrial applications)
(Turbines)

KRAVCHENKO, V.S.

Causes of the derangement of shaft coaxiality in ship machine units. Trudy LKI no.34:133-149 '61. (MIRA 15:8)

1. Kafedra tekhnologii sudovogo mashinostroyeniya Leningradskogo korablestroitel'nogo instituta.
(Marine engineering) (Shafting)

KRAVCHENKO, V.S., inzh.

Analysis of tolerances for the lack of coaxial shafting in marine machine units. Sudostroenie 28 no.3:41-45 Mr '62. (MIRA 15:4)

(Marine engines) (Shafting)

KRAVCHENKO, V.S., kand. tekhn. nauk

Vibration of marine machine assemblies under the effect of noncoaxial shafts. Sudostroenie 29 no.8:54-60 Ag '63.(MIRA 16:10)

(Vibrations (Marine engineering))