L 3885-66

ACCESSION NR: AT5025232

3

From the output slit of the monochromator, the light falls on the input of a photomultiplier. The output signals from the photomultiplier are fed through a balanced d-c amplifier to a K4-51 optical recorder. The monochromator in this instrument is modified by replacing the wavelength drum with a rotating conchoidal cam. In a single revolution, this cam moves a lever which rotates the prism so that the entire spectrum of the oxygen-cesium cathode passes through the output slit of the monochromator in 16 seconds. The prism is reset to its original position in 1 second. The cam is rotated by an MS-160 motor through a gear reducer. Wavelength markers are superimposed on the spectrogram for analysis of the spectral recordings. The upper passband limit of the system is more than five times the upper frequency necessary for reproducing a signal with small distortions. On the other hand, the time constant of the system is great enough to eliminate the need for a focusing system in front of the monochromator slit. Thus there is no angular error of measurement and the angular brightness distribution of the reference specimen (baryte paper) can be studied directly. Measurement errors under actual operating conditions do not exceed 1.5-2%. Orig. art. has: 6 figures.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory)

44,55

SUBMITTED: 00 ENCL: 01 SUB CODE: OP

NO REF SOV: 002 OTHER: 000

Card 2/3

L 3885-66

ACCESSION NR: AT5025232

ENCLOSURE: 01

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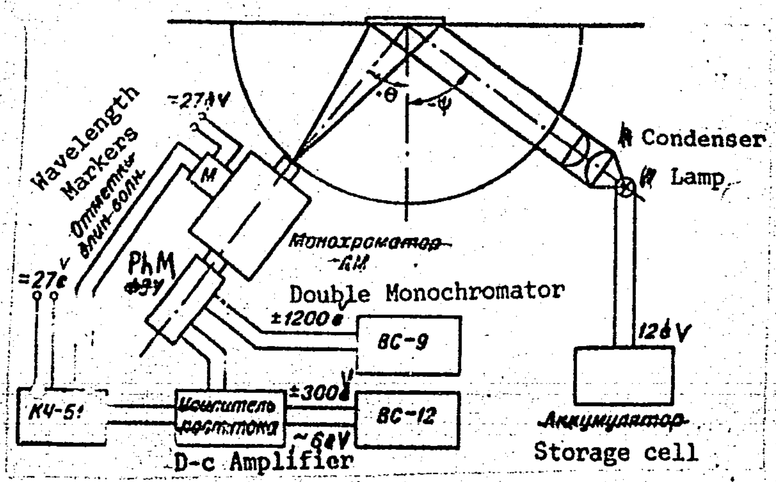


Fig. 1. Schematic diagram of the installation

BVK

Card 3/3

L 40282-66 EWT(1)/FCC IJP(c) GG/WW/GW

ACC NR: AR6014562 SOURCE CODE: UR/0169/65/000/011/B034/B034

43
B

AUTHORS: Kasatkina, O. I.; Shifrin, K. S.

TITLE: On the problem of the indicatrix of light scattering by a system of spherical particles

SOURCE: Ref. zh. Geofizika, Abs. 11B250

REF SOURCE: Tr. Gl. geofiz. observ., vyp. 170, 1965, 105-114

TOPIC TAGS: light scattering, atmospheric cloud, fog, light diffraction, light interference, geometric optics

ABSTRACT: The problem of the possibility of obtaining indicatrices of light scattering in systems of spherical particles--particularly in clouds and fogs--is examined. The existing data necessary for calculating these indicatrices are evaluated. Calculations by the authors of indicatrices of light scattering by an individual particle with m = 1.335 for values of ρ equal to 59, 60, and 61 are given. The calculations were made by the formulas of geometric optics, taking into account diffraction and interference in the range of scattering angles from zero to 25° every 0.5°. It is concluded that the data necessary for calculation of the indicatrices of light scattering in systems of particles can be obtained only experimentally. Authors' abstract [Translation of abstract]

SUB CODE: 04, 20

Card 1/1 mlr UDC: 551.521.3

5(2) SOV/32-25-1-19/51

AUTHORS: Rabovskiy, G. V., Yegorova, T. N., Kasatkina, O. P.

TITLE: Rapid Method of Determining Sulfur Dioxide in Hydrogen Fluoride (Bystryy metod opredeleniya dvuokisi sery vo ftoristom vodorode)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 1 pp 36-38 (USSR)

ABSTRACT: As the iodometric method does not allow an accurate measurement of SO_2 in gaseous HF, a determination in a bicarbonate medium is proposed in the present case. By the reaction of HF with the bicarbonate an equal volume of CO_2 is formed and in a reaction of one SO_2 mole with iodine in a bicarbonate medium, four moles CO_2 are formed. The CO_2 volume can be determined with sufficient accuracy and so can the content of SO_2. It is assumed that the errors caused by a dissolution of CO_2 in the bicarbonate solution are rather small under the conditions given. Experiments in an absorption vessel (Fig) (with stirrer and Hg seal) were carried out to confirm this. The experimental results obtained (Table 1) showed that the above mentioned

Card 1/2

SOV/32-25-1-19/51

Rapid Method of Determining Sulfur Dioxide in Hydrogen Fluoride

error does relatively not exceed ±3%. An analysis step as well as the results obtained therefrom (Tables 2,3) are mentioned. The method allows determinations of 0.01% by weight of SO_2 and more, with an analysis taking from 10 to [illegible] minutes, and the relative error is mentioned to be 5 %. There are 1 figure and 3 tables.

Card 2/2

L 2670-66 EWT(1)/EWT(m)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023943 UR/0000/65/000/000/0293/0306

AUTHOR: Dmitriyeva, G. V.; Kasatkina, V. I.

44,55 44,55

32

B+1

TITLE: Aerosynoptic conditions for the appearance on the earth's surface of areas of increased concentrations of stratospheric radioactive products

SOURCE: Nauchnaya konferentsiya po yadernoy meteorologii. Obninsk, 1964. Radioaktivnyye izotopy v atmosfere i ikh ispol'zovaniye v meteorologii (Radioactive isotopes in the atmosphere and their use in meteorology); doklady konferentsii. Moscow, Atomizdat, 1965, 293-306

TOPIC TAGS: nuclear meteorology, radioactive pollution, radioactive fallout

19

12,44,55

ABSTRACT: This paper describes the methods used by the authors to identify the characteristics of various synoptic situations present in the surface boundary layer of the atmosphere over regions which have exhibited especially high radioactivity after thermonuclear explosions, and to identify the mechanisms by which radioactive air passes from the stratosphere into the surface boundary layer. The data used in these studies were collected from approximately 50 stations in the United States during the IGY. Orig. art. has: 8 figures and 2 tables. [ER]

Card 1/2

L 2670-66

ACCESSION NR: AT5023943

O

ASSOCIATION: none

SUBMITTED: 28Apr65 ENCL: 00 SUB CODE: ES, NP

NO REF SOV: 004 OTHER: 012 ATD PRESS: 4101

Card 2/2

CHOLAKOV, Iordan, dots, inzh. khim.; KASATKINA, Volia

Some problems in the prospective steel production in Bulgaria, and the problem of its raw material base. Tekhnika Bulg 13 no. 3:4-7,11 '64.

1. Member of the Board of Editors, "Tekhnika" (for Cholakov).

KASATKINA, Yelena

Our review of technological developments. Tekh.mol. 29 no.5:26 '61. (MIRA 14:5)

(Technological innovations)

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2

KASATKINA-TITOVA, V.V., assistent

Blood transfusion into the bone marrow in obstetrics and gynecology.
Akush. i gig. 33 no.2:24-27 Mr-Ap '56. (MLRA 9:7)

1. Iz kafedry akusherstva i ginekologii (zav.-dotsent N.T.Rayevskaya)
Tashkentskogo instituta usovershenstvovaniya vrachey.
(BLOOD TRANSFUSION, in various dis.
gyn. dis. & labor)
(LABOR
blood transfusion is)
(GYNECOLOGICAL DISEASES
same)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

USSR/Human and Animal Physiology- (Normal and Pathological). T
Blood Circulation. Blood Pressure. Hypertension.

Abs Jour : Ref Zhur Biol., No 4, 1959, 17497

Author : Kasatkina-Titova, V.V.
Inst : -
Title : Ovarial-Menstrual Function in Hypertensive Patients.

Orig Pub : Med. zh. Uzbekistana, 1957, No 1, 36-38

Abstract : No abstract.

Card 1/1

KASATKINA, Yelena

Review of new developments. Tekh.mol. 29 no.2:26 '61.
(MIRA 14:3)

1. Korrespondent zhurnala "Tekhnika molodezhi."
(Technological innovations)

KASATKINA, Yelena

Our review of new developments. Tekh.mol. 29 no.3:39 '61.
(MIRA 14:3)

1. Korrespondent zhurnala "Tekhnika molodezhi."
(Technological innovations)

KASATKINA, Yelena

Our review of technological developments. Tekh.mol. 29
no.10:39 '61. (MIRA 14:10)

1. Korrespondent zhurnala "Tekhnika molodezhi".
(Technology)

PASKHALIS, T.K.; SIVOV, V.A.; RODIONOV, S.Ye.; KOSTINA, S.I.; KASATKINA,
[redacted]Ya.I.

Preparation of soft butadiene-nitrile rubbers. Kauch.i rez. 19 no.9:1-4 S '60. (MIRA 13:10)

1. Yaroslavskiy zavod sinteticheskogo kauchuka.
(Rubbers, Synthetic)

ARONOVICH, Kh.A.; KASATKINA, Ye.I.; SEMENOV, V.N.

Attachment for a fractionation column. Zav.lab. 30 no.12:1520 '64.
(MIRA 18:1)

1. Yaroslavskiy zavod sinteticheskogo kauchuka.

GLOZMAN,O.S.; KASATKINOVA,A.P.

Some theoretical and clinical problems in blood replacement.
Bratisl. lek. listy 2 no.9:536-541 '63.

1. Katedra patofyziologie Kazasskeho lekarskeho institutu v Alma
Ate, Kaz., SSR.; veduci: prof. O.S.Glozman, Dr.Sc.

*

KASATOCHKIN, A.V., gornyy inzh.

Experience in diamond drilling of blast holes abroad. Gor. Zhur. no.4:35-37 Ap '60. (MIRA 14:6)

1. Moskovskiy gornyy institut.
(Boring)

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2

KASATOCHKIN, Anatoliy Vasil'yevich; LYUBIMOV, N.G., otv. red. izd-va; OVSEYENKO, V.G., tekhn. red.; BOLDYREVA, Z.A., tekhn. red.

[Diamond drilling of blast holes] Almaznoe burenie vzryvnykh skvazhin. Moskva, Gosgortekhizdat, 1962. 67 p. (MIRA 15:7)

(Boring)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

KUTUZOV, B.N., kand.tekhn.nauk; KASATOCHKIN, A.V., inzh.; MAKAREVICH, D.M., inzh.; TOKAR', M.G., inzh.

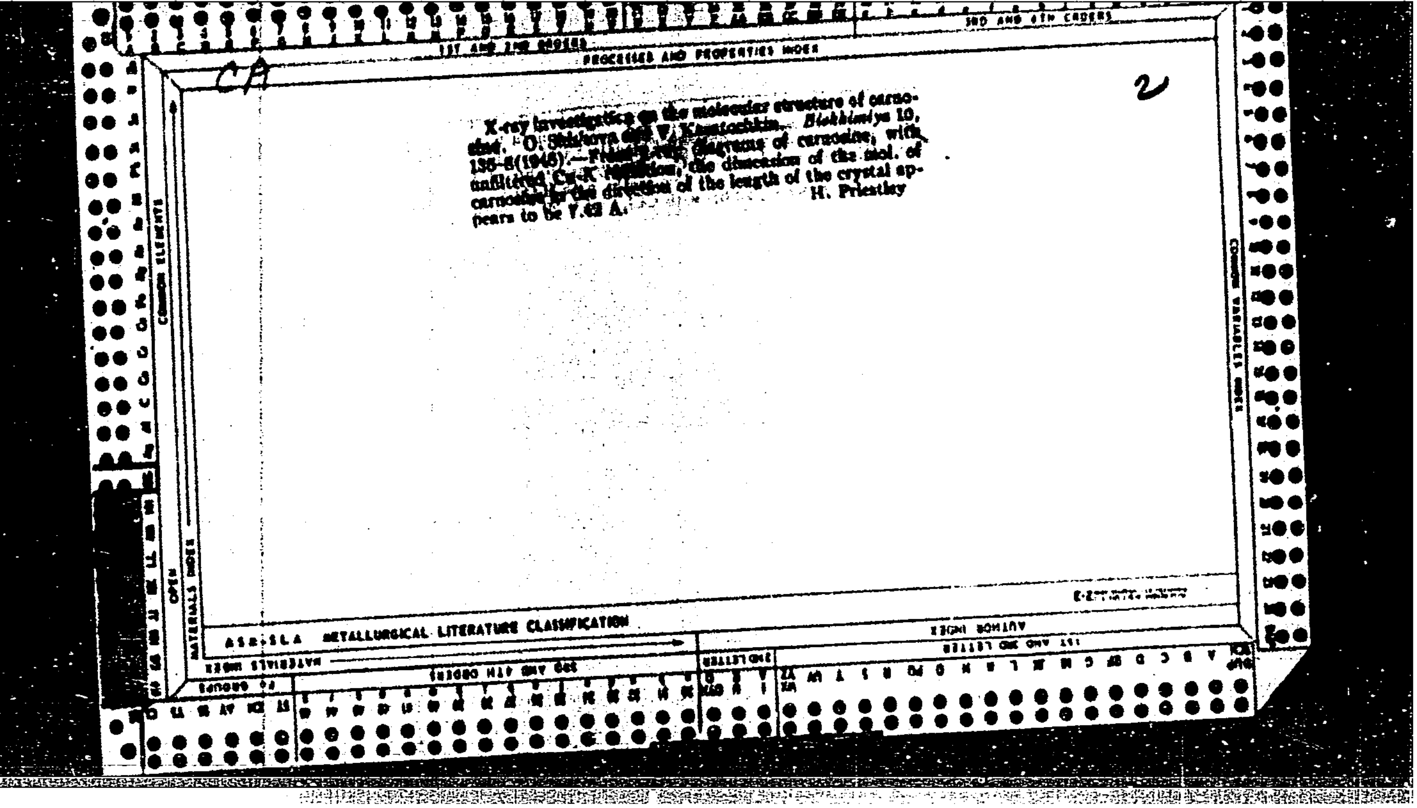
Dust collection during boring with the cleaning of bore holes with compressed air. Bezop.truda v prom. 5 no.11:23-24 N '61. (MIRA 14:11)

1. Kafedra burovzryvnykh rabot Moskovskogo gornogo instituta. (Mine dusts--Safety measures)

SHISHOVA, O.A.; OGURTSOVA, L.A.; KASATOCHKIN, V.I.

Kinetics of the absorption of amino acid in the intestines. Fiziol. zhur. 47 no.5:630-637 My '61. (MIRA 14:5)

1. From the Laboratory of Higher Nervous Activity Institute of Nutrition and the Department of Physical and Colloidal Chemistry, I.M.Sechenov Medical Institute, Moscow.
(INTESTINES) (AMINO ACIDS)



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

2

X-ray investigation on the molecular structure of carnosine. O. Shishova and V. Kasatochkin. *Biokhimiya* 10, 135-8(1945).—From x-ray diagrams of carnosine, with unfiltered Cu-K radiation, the dimension of the mol. of carnosine in the direction of the length of the crystal appears to be 7.63 A. H. Priestley

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

cA

11A

Reversibility of thermal denaturation of protein under pressure. V. S. Tongur and V. I. Kasatochkin (Moscow Pharm. Inst.). *Doklady Akad. Nauk S.S.S.R.* 74, 553-6 (1950).—Cryst. human blood albumin (1%) in phosphate buffer at pH 6 was heated in rubber sacs in a high-pressure autoclave 1 hr. Controls were run in the same app. without pressure. With pressure of 1000–7000 atm. at 20°, 70.5°, and 78.4°, the following was found: at pressures above 1000 atm. the equil. shifts toward natural protein (measured by turbidity of solns.); at pressures above 6000 atm. the protein is denatured by pressure and turbidity rapidly rises. Initial pressure needed for denaturation rises with increased temp. (results given graphically). The calcd. equil. concns. of denatured protein, calcd. as a function of pressure, agreed well with exptl. data. The following values for ΔF, ΔH, and ΔS, for the reaction were calcd.: at 293°K. and 1000 atm. 1635 kcal./mole, 24,000, and 76.3 kcal./mole/degree, resp.; at 2000 atm. and 343.5°K. −1133, 23904, and 73.0, resp.; at 2500 atm. and 343.5°K. −457, 24050, and 71.2, resp.

G. M. Kosolapoff

CA

12

Application of x-ray analysis to the study of milk products. K. P. Alekseeva and V. I. Kasatochkin (Moscow Pharm. Inst.). *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 15, 222-4 (1951). Lactose can exist in the α-hydrate form crystg. below 93.5° and the β-anhydride form crystallizing above 93.5°. Since the crystn. and the size of the crystals determine the quality of condensed milk, quant. detn. of α- and β-lactose is important and can be obtained by x-ray analysis. It is also shown that a sample of powd. milk contained 28% β- and 72% α-form. Powd. and degreased milk and condensed milk contained only α-lactose. S. Pakswer

TONGUR, V.S.; KASATOCHKIN, V.I.

Effect of high pressures on thermal denaturation of proteins. Khim. i Fiz.-Khim. Vysokomolekul. Soedineniy, Doklady 7-oy Konf. Vysokomolekul. Soedineniyam, '52, 124-30. (MLRA 5:7)
(CA 47 no.22:12438 '53)

KASATOCHKIN, V. I.

USSR

Protein regeneration under pressure. The kinetics and thermodynamics of the process. V. S. Tongur and V. I. Kasatochkin (Acad. Med. Sci. U.S.S.R., Moscow). ~~Trudy Vsesoyuz. Obshchestva~~ *Fiziologov, Biokhimikov i Farmakologov, Akad. Nauk S.S.S.R.* 2, 166-76(1954).—A new method was developed for the regeneration of denatured proteins with the aid of high pressure. On the basis of the general concept of heat denaturation as a structural disorganization of the protein mol. resulting in an increased molar vol., it was assumed that pressure would prevent heat denaturation and revert the process to that of regeneration of the protein mol. Under study were cryst. egg and human-serum albumin, conalbumin, γ-globulin, cryst. chymotrypsin, and insulin. The methods of study used were similar to those described by Tongur (*C.A.* 44, 170*f*). Preliminary expts. (*C.A.* 47, 643*h*) with egg albumin verified the correctness of the theoretical assumption, and indicated that the noncryst. fractions were primarily the ones that regenerated under pressure. However, such protein heated at 62° for 8 min. and subjected to pressure of 2000 atm. for 20 hrs. resulted in a regenerated protein that, in the properties studied, differed from both the native and the denatured protein, probably owing to the oxidation of certain active groups during the process of denaturation. High pressure in the presence of reducing substances such as glucose and ascorbic acid in N-satd. soln. causes the denatured proteins to go into soln. Denatured ovalbumin thus regenerated differs from the original native and the denatured proteins. Horse γ-globulin was similarly studied with much the same results. Cryst. human serum albumin in 0.5*N* phosphate buffer at pH 6.0 was heated at 70° for 13 min. and then subjected to a pressure P of 2000 atm. for 20 hrs. The regenerated protein was practically identical with the initial native protein. Partial regeneration of heat-denatured serum albumin can be accomplished [illegible] in 1.5 hrs.

1/3

3I

Specific immunoprecipitin properties of such regenerated serum proteins remain unaffected. Generally the degree of regeneration that denatured serum protein undergoes depends largely on exptl. conditions and particularly on the pH of the medium. No pressure regeneration in a phosphate-buffered soln. could be effected with serum albumin denatured by light or urea; this points to a different denaturing mechanism. Heat-denatured cryst. chymotrypsin can be regenerated to a considerable degree by pressure in a pH-5.4 medium more rapidly than under spontaneous regeneration conditions. Heat-denatured insulin in $^1/_{10}N$ H_3PO_4 (to prevent formation of fibrils) can be regenerated by increased pressure, but its insulin properties remain irreversibly lost. A brief theoretical generalization is presented. As a result of numerous expts. with pressures of

V. S. Tongur

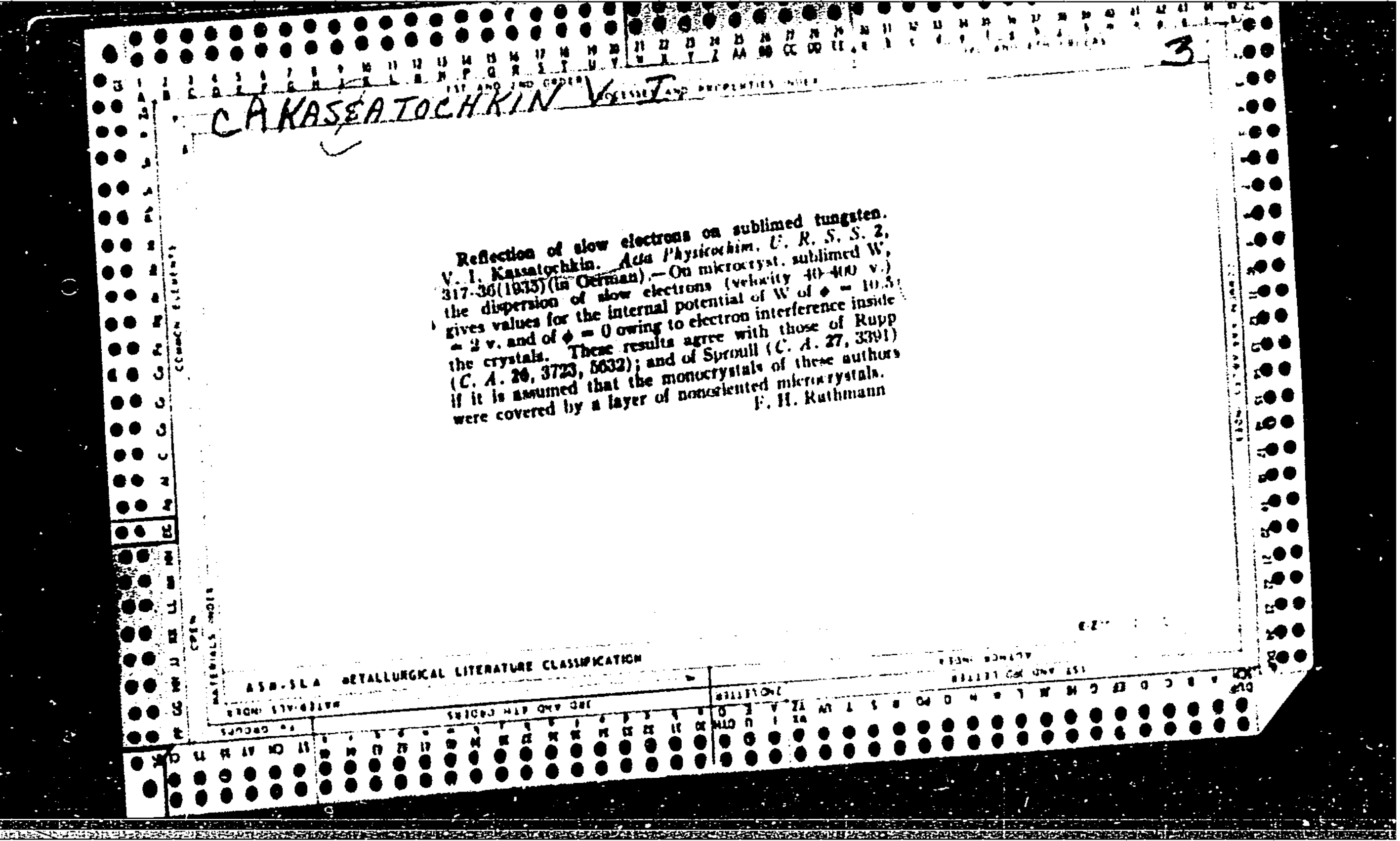
1000, 2000, and 3000 atm., it was concluded that the rate of regeneration of serum albumin can be satisfactorily expressed by a reaction-rate equation of the 1st order. Since the rate of serum-albumin denaturation can be presented by an equation of the 1st order, the mechanism of the process of serum albumin denaturation is of a unimol. type, provided that some possible interaction between the protein and H_2O is not considered. If the mol. of protein in soln. is conceived as a globular entity, then the process of denaturation and regeneration must proceed in each individual globule independently. The comparatively small value of heat of activation indicates that few weak bonds in the denatured globulin are being broken during activation. The pos. and small value of activation entropy likewise indicates that in some parts of the macromol. there may occur link rotations. Throughout the expts. the activation heat remained practically const. and independent of the pressure. Thus, the basic factor that dets. the increase in the rate of regeneration under pressure is the change in the activation entropy with change of P. Results of calcns. of equil. consts. and thermodynamic values for different temps. and 1000, 2000, and 3000 atm. of P for denatured serum proteins are tabulated. The effect of denaturation and of the reduction in the concn. of the native protein with the increase in P can be explained on the basis of equil. between the native and denatured forms of protein, as per equation $K = (C_0 - C)/C$, where C_0 is total protein concn., and C is equil. concn. of the native protein. The shift in the denaturation equil. under the influence of p in the direction of native protein is explained by the increase in the molar vol. of the protein during the denaturation process. Equil. concns. of regenerated protein in relation to pressure were obtained by the following equation $\log K_2 = \log K_1 - (\Delta V/2.3RT)(P_2 - P_1)$, where ΔV is the mean value of the protein vol. conversion during the pressure interval P_1 to P_2. The calcd. approx. values of the equil. const., of the free energy, and of the entropy of denaturation under atm. pressure and 20° indicate that the equil. form of protein under normal conditions is that of denatured protein. B. S. Levine

3/3

KASATOCHKIN, V. I.

with R. A. Dulitskaya "Examined kinetics and thermodynamics of renaturation under pressure"

report presented at the 10th All-Union Conf. on Highly Molecular Compounds, Biologically Active Polymer Compounds, Moscow, 11-13 June 1958. (Vest. Ak Nauk SSSR, 1958, No. 9, pp. 111-113)



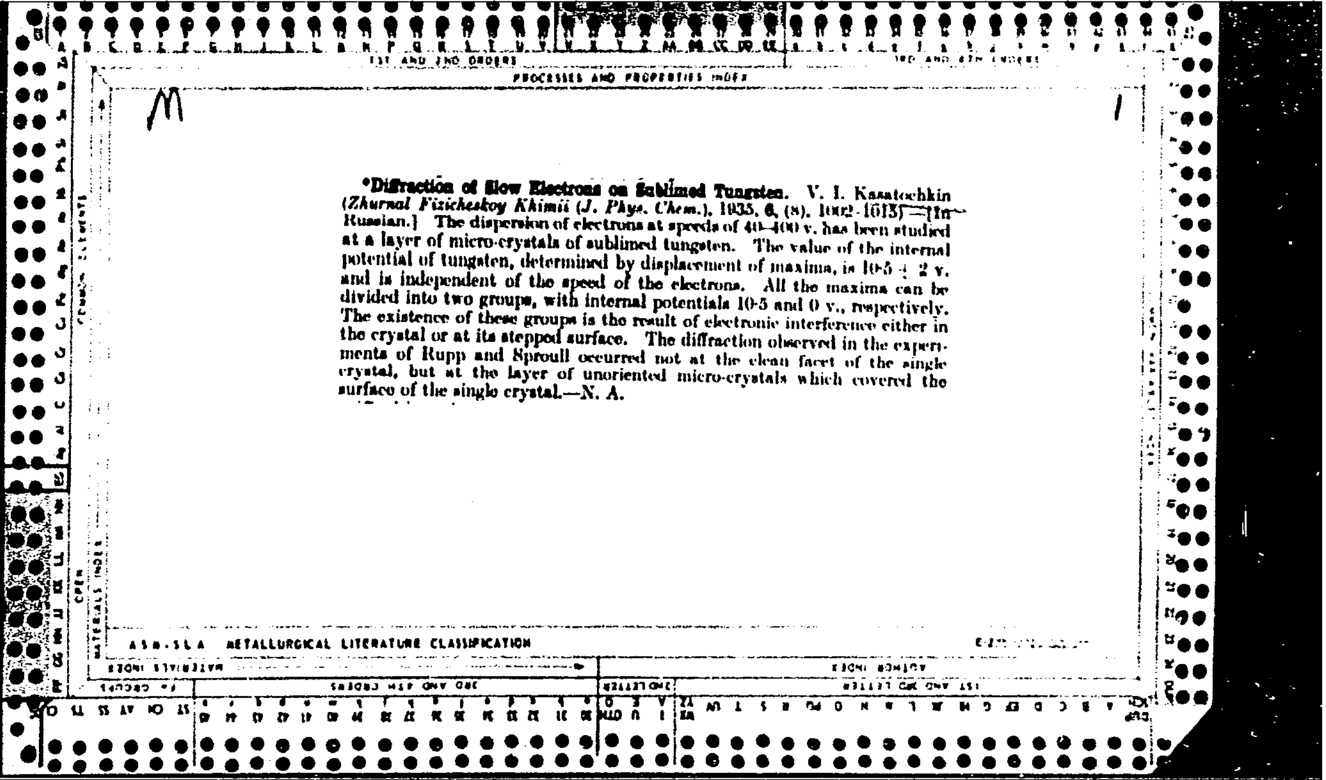
CA KASSEATOCHKIN V. I.

3

Reflection of slow electrons on sublimed tungsten. V. I. Kassatochkin. *Acta Physicochim. U. R. S. S.* 2, 317-36(1935)(in German).—On microcryst. sublimed W, the dispersion of slow electrons (velocity 40-400 v.) gives values for the internal potential of W of ϕ = 10.5 ± 2 v. and of ϕ = 0 owing to electron interference inside the crystals. These results agree with those of Rupp (*C. A.* 26, 3723, 5632); and of Sproull (*C. A.* 27, 3391) if it is assumed that the monocrystals of these authors were covered by a layer of nonoriented microcrystals.

F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

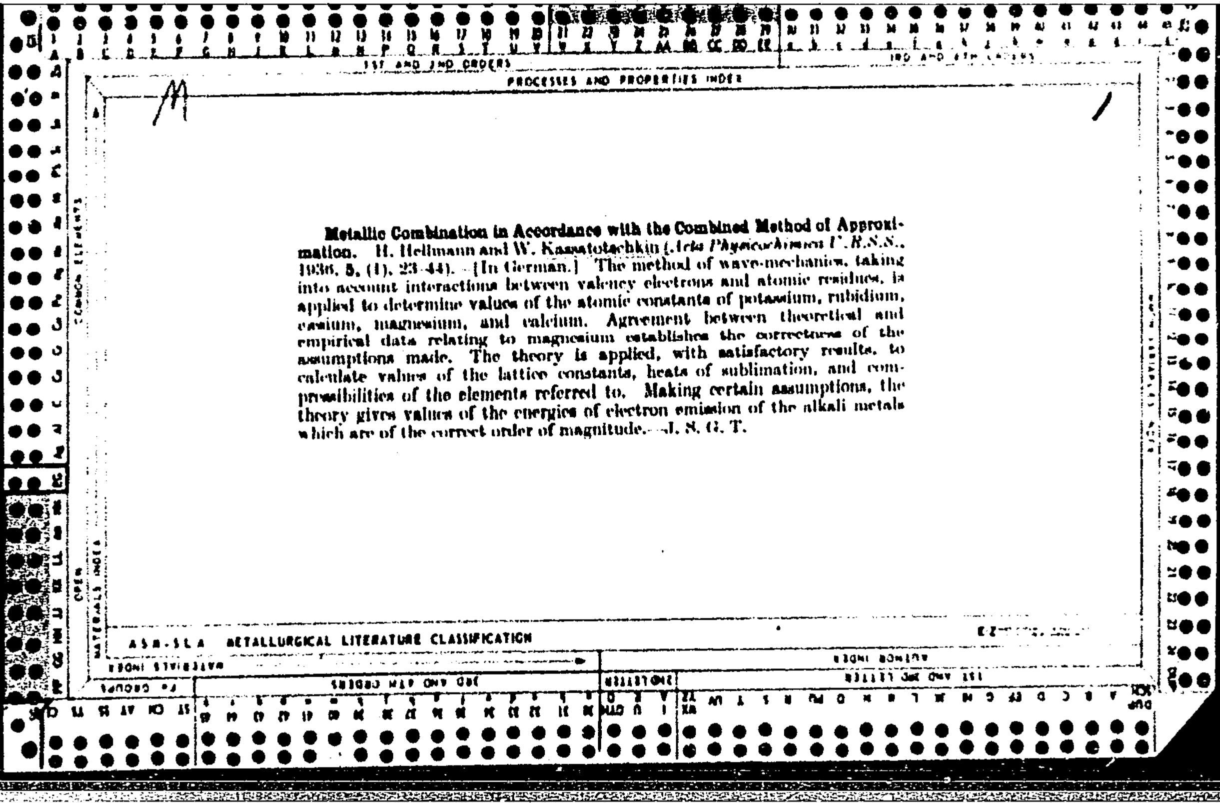
PROCESSES AND PROPERTIES INDEX

M

1

***Diffraction of Slow Electrons on Sublimed Tungsten.** V. I. Kasatochkin (*Zhurnal Fizicheskoy Khimii* (*J. Phys. Chem.*), 1935, 6, (8), 1002–1013.) [In Russian.] The dispersion of electrons at speeds of 40–400 v. has been studied at a layer of micro-crystals of sublimed tungsten. The value of the internal potential of tungsten, determined by displacement of maxima, is 10·5 ± 2 v. and is independent of the speed of the electrons. All the maxima can be divided into two groups, with internal potentials 10·5 and 0 v., respectively. The existence of these groups is the result of electronic interference either in the crystal or at its stepped surface. The diffraction observed in the experiments of Rupp and Sproull occurred not at the clean facet of the single crystal, but at the layer of unoriented micro-crystals which covered the surface of the single crystal.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

M

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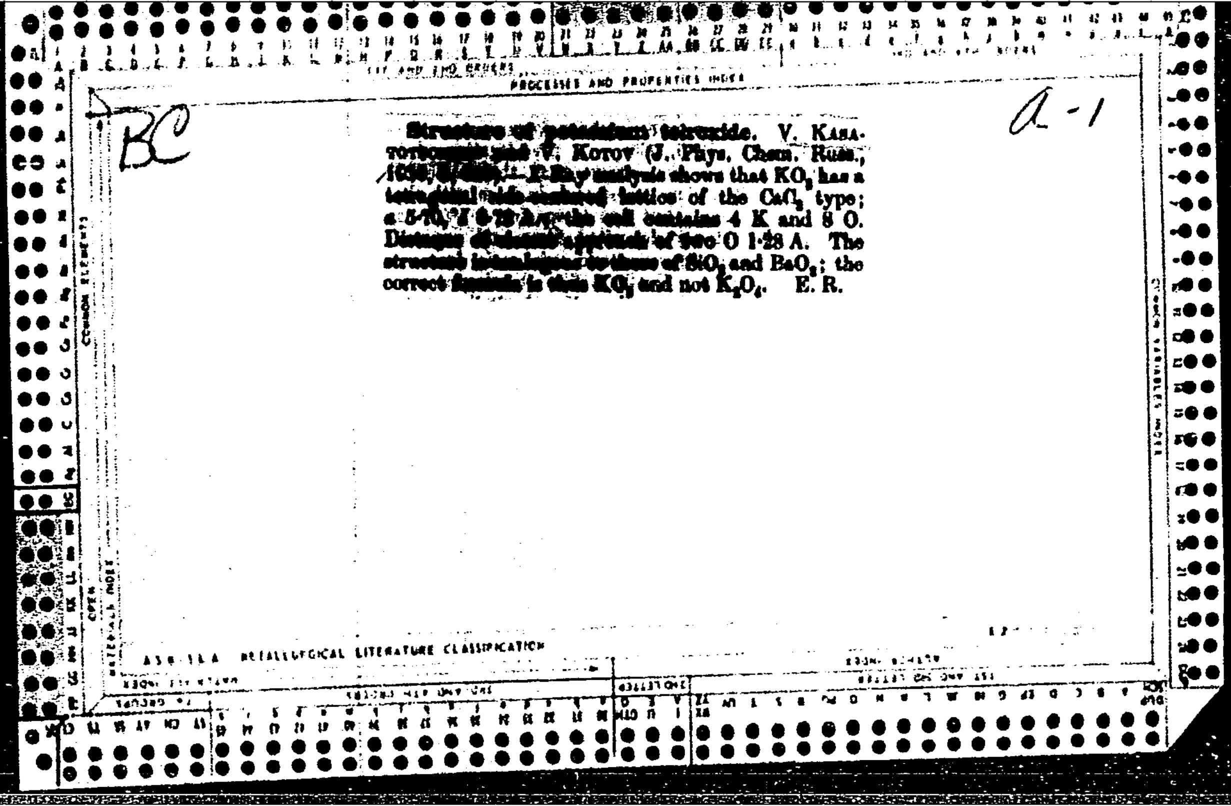
Metallic Combination in Accordance with the Combined Method of Approximation. H. Hellmann and W. Kassatotschkin (*Acta Physicochimica U.R.S.S.*, 1936, **5**, (1), 23–44). [In German.] The method of wave-mechanics, taking into account interactions between valency electrons and atomic residues, is applied to determine values of the atomic constants of potassium, rubidium, caesium, magnesium, and calcium. Agreement between theoretical and empirical data relating to magnesium establishes the correctness of the assumptions made. The theory is applied, with satisfactory results, to calculate values of the lattice constants, heats of sublimation, and compressibilities of the elements referred to. Making certain assumptions, the theory gives values of the energies of electron emission of the alkali metals which are of the correct order of magnitude.—J. S. G. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX



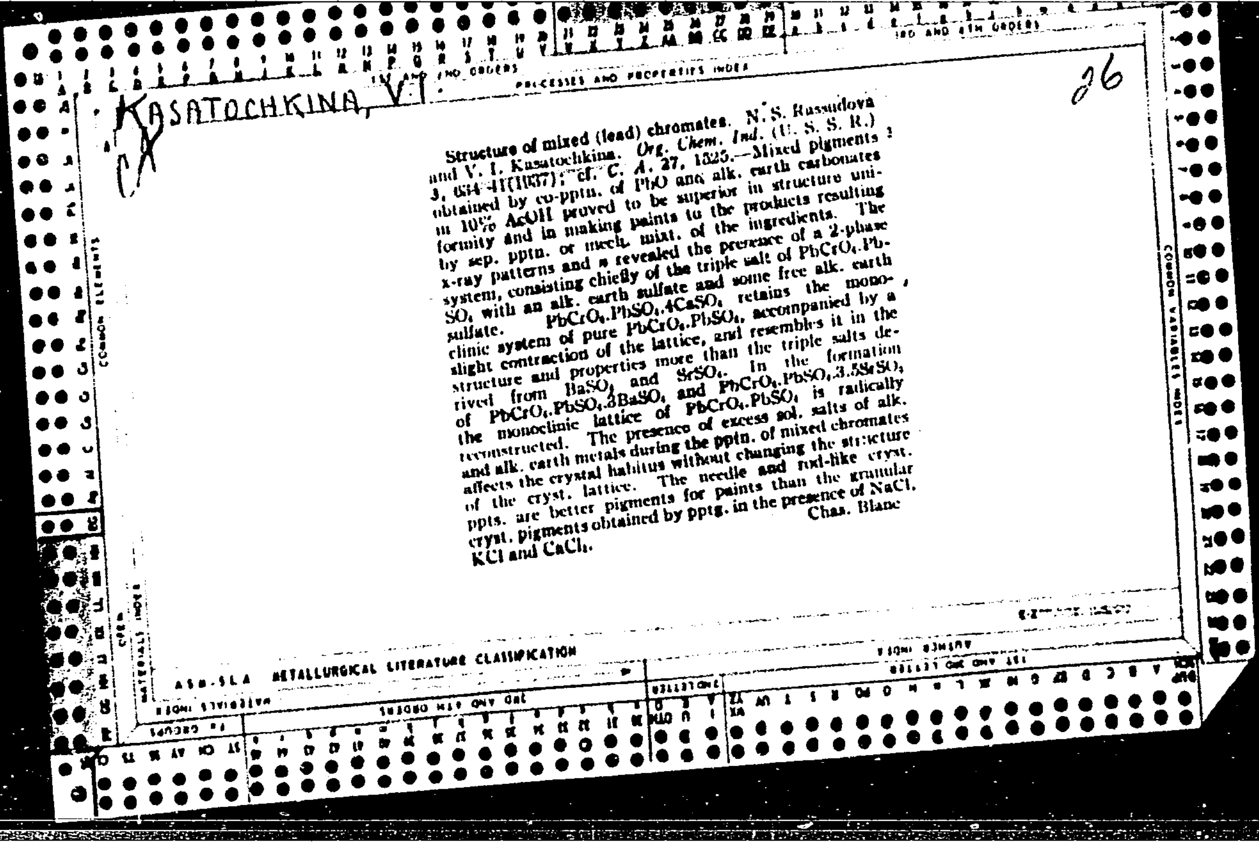
PROCESSES AND PROPERTIES INDEX

BC

a-1

Structure of potassium tetroxide. V. Kasatotschkin and V. Kotov (J. Phys. Chem. Russ., 1936, [illegible]).—X-Ray analysis shows that KO_2 has a tetragonal side-centred lattice of the CaC_2 type; a 5·70, c 6·72 A.; the cell contains 4 K and 8 O. Distance between atoms of two O 1·28 A. The structure is analogous to those of SrO_2 and BaO_2; the correct formula is thus KO_2 and not K_2O_4. E. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

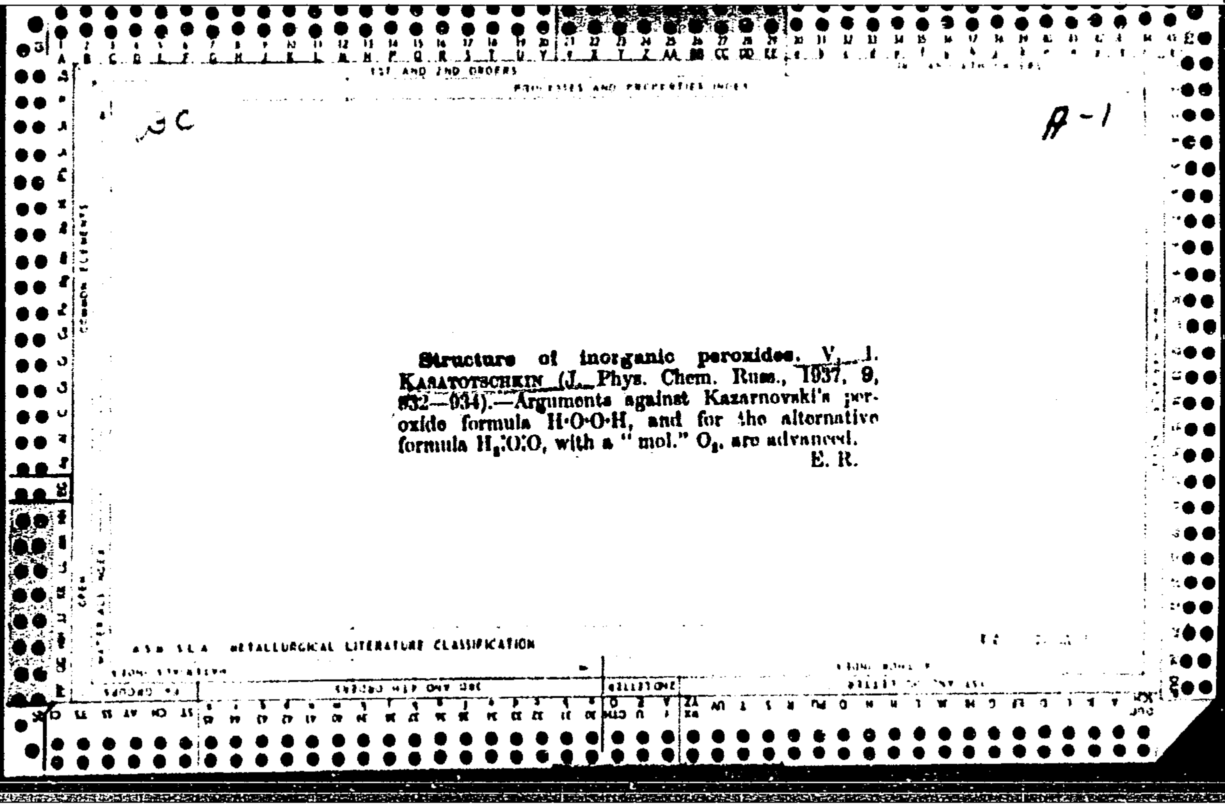


KASATOCHKINA, V.I.

CA

26

Structure of mixed (lead) chromates. N. S. Rassudova and V. I. Kasatochkina. *Org. Chem. Ind.* (U. S. S. R.) 3, 634-41(1937); cf. *C. A.* 27, 1525.—Mixed pigments obtained by co-pptn. of PbO and alk. earth carbonates in 10% AcOH proved to be superior in structure uniformity and in making paints to the products resulting by sep. pptn. or mech. mixt. of the ingredients. The x-ray patterns and a revealed the presence of a 2-phase system, consisting chiefly of the triple salt of $PbCrO_4.PbSO_4$ with an alk. earth sulfate and some free alk. earth sulfate. $PbCrO_4.PbSO_4.4CaSO_4$ retains the monoclinic system of pure $PbCrO_4.PbSO_4$, accompanied by a slight contraction of the lattice, and resembles it in the structure and properties more than the triple salts derived from $BaSO_4$ and $SrSO_4$. In the formation of $PbCrO_4.PbSO_4.3BaSO_4$ and $PbCrO_4.PbSO_4.3.5SrSO_4$ the monoclinic lattice of $PbCrO_4.PbSO_4$ is radically reconstructed. The presence of excess sol. salts of alk. and alk. earth metals during the pptn. of mixed chromates affects the crystal habitus without changing the structure of the cryst. lattice. The needle and rod-like cryst. ppts. are better pigments for paints than the granular cryst. pigments obtained by pptg. in the presence of NaCl, KCl and $CaCl_2$. Chas. Blanc



3C

A-1

Structure of inorganic peroxides. V. I. KASATOTSCHKIN (J. Phys. Chem. Russ., 1937, 9, 932—934).—Arguments against Kazarnovski's peroxide formula H·O·O·H, and for the alternative formula H_2:O:O, with a "mol." O_2, are advanced.

E. R.

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

CA

2

X-ray investigations of the structure of potassium peroxide, KO$_2$. V. Kasatochkin and V. Kotov. *J. Tech. Phys.* (U. S. S. R.) 7, 1468-75(1937); *Chem. Zentr.* 1938, II, 1183; cf. *C. A.* 30, 6853^4; 32, 441^6.—Geometric evaluation of powder photographs according to the method of Debye-Scherrer with unfiltered Cu K_α radiation and indexing according to the method of Hull-Davey (cf. *C. A.* 16, 1703) showed a hexagonal elementary cell with the dimensions a = 5.[illegible]0 A. and c = 6.72 A. and including 4 mols. KO$_2$. The structure corresponds to the CaC$_2$ type. The space group is D_{4h}^{17}. The co-ordinates of the 4 K atoms are: 0 0 0, 0 $^1/_2$ $^1/_2$, $^1/_2$ $^1/_2$ 0, $^1/_2$ 0 $^1/_2$ and those of the 8 O atoms: $^1/_2$ 0 0 ± u, 0 $^1/_2$ 0 ± u, 0 0 $^1/_2$ ± u, $^1/_2$ $^1/_2$ $^1/_2$ ± u (u = 0.085). The lattice of the higher K peroxide is formed by K ions which alternate with singly charged ions of O$_2$. It is similar to a deformed KCl lattice. The distance between the O atoms of the ions of the mol. amounts to d_{O-O} = 1.28 A.

M. G. Moore

COMMON ELEMENTS

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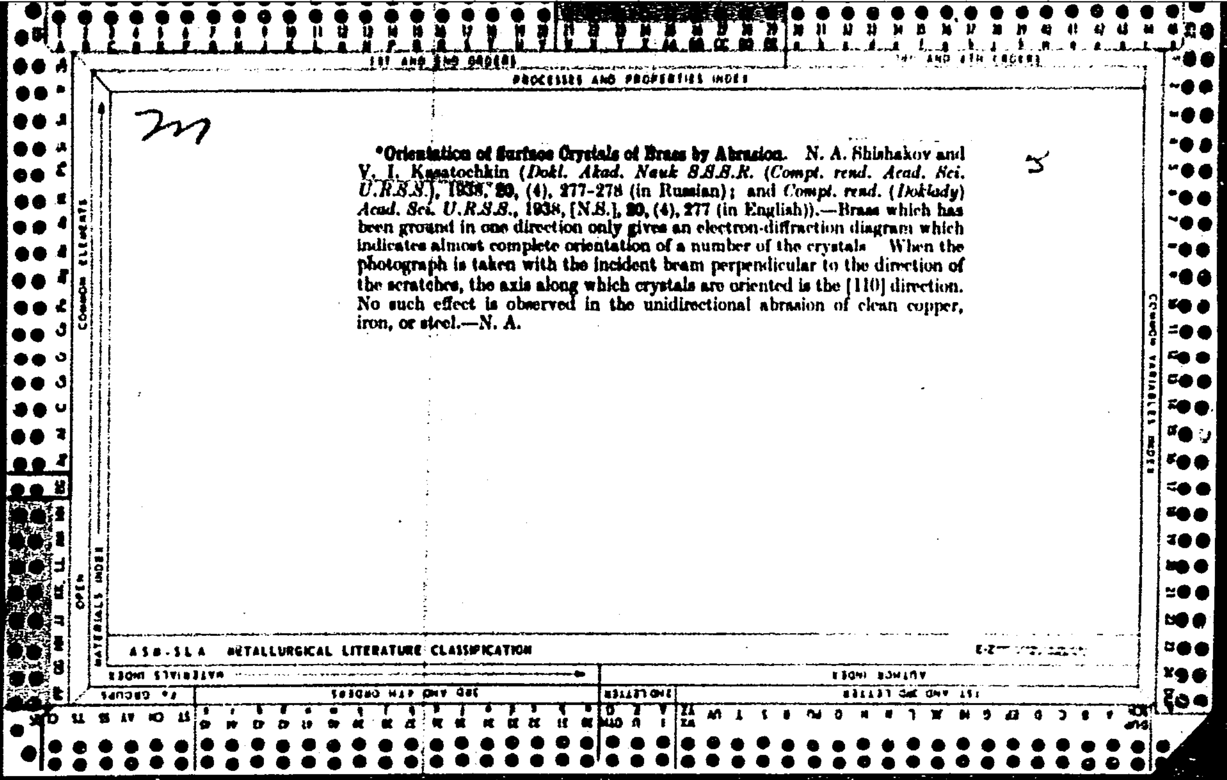
OPEN

COMMON VARIABLES INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



7m

5

Orientation of Surface Crystals of Brass by Abrasion. N. A. Shishakov and V. I. Kasatochkin (*Dokl. Akad. Nauk S.S.S.R.* (*Compt. rend. Acad. Sci. U.R.S.S.*), 1938, 20, (4), 277-278 (in Russian); and *Compt. rend.* (*Doklady*) *Acad. Sci. U.R.S.S.*, 1938, [N.S.], 20, (4), 277 (in English)).—Brass which has been ground in one direction only gives an electron-diffraction diagram which indicates almost complete orientation of a number of the crystals. When the photograph is taken with the incident beam perpendicular to the direction of the scratches, the axis along which crystals are oriented is the [110] direction. No such effect is observed in the unidirectional abrasion of clean copper, iron, or steel.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

9

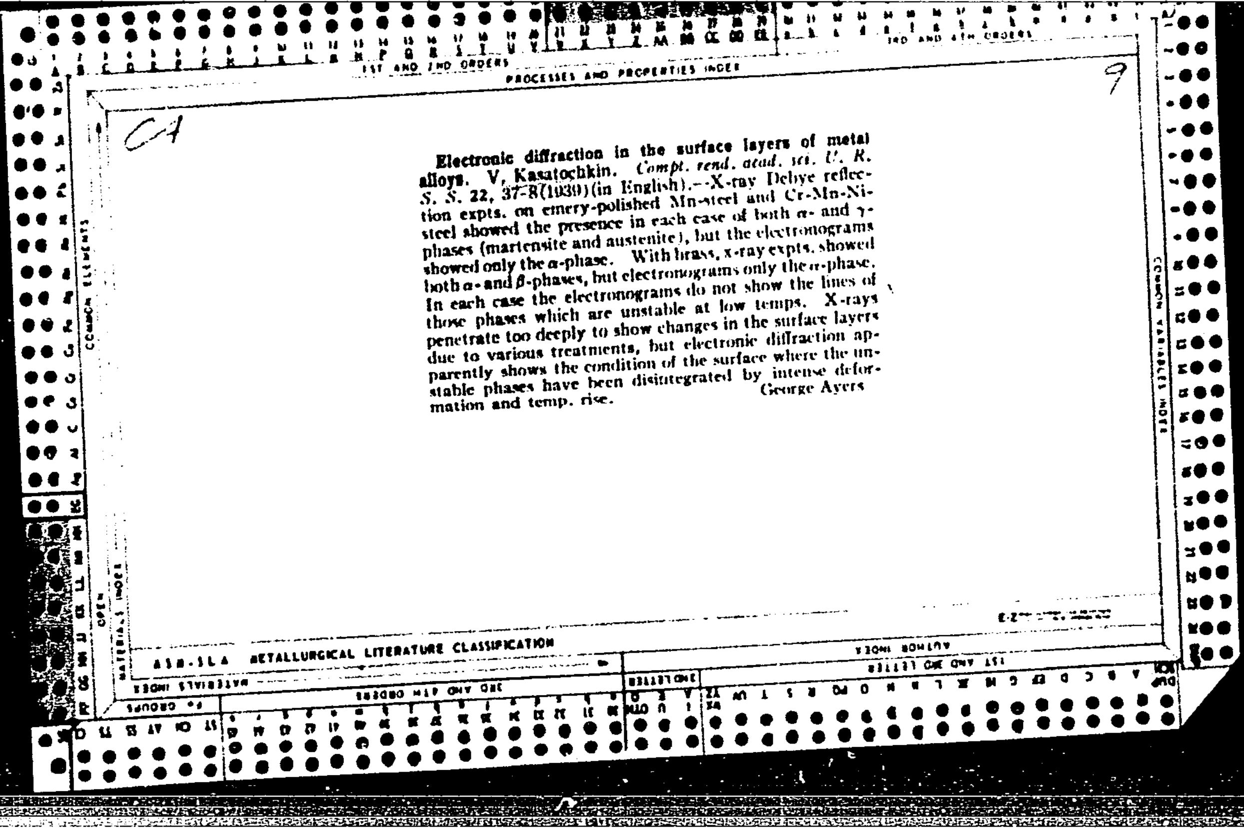
Orientation of crystals on the surface of brass during polishing. N. A. Shishakov and V. I. Kasatochkin. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 1215-17 (1938); *Chem. Zentr.* 1939, II, 4439.—In the polishing of brass with emery an orientation of the crystals of emery on the surface of the brass was observed, the (1 1 0) axis of the crystal lying in the direction of polishing. M. G. M.

COMMON ELEMENTS

OPEN

MATERIALS INDEX

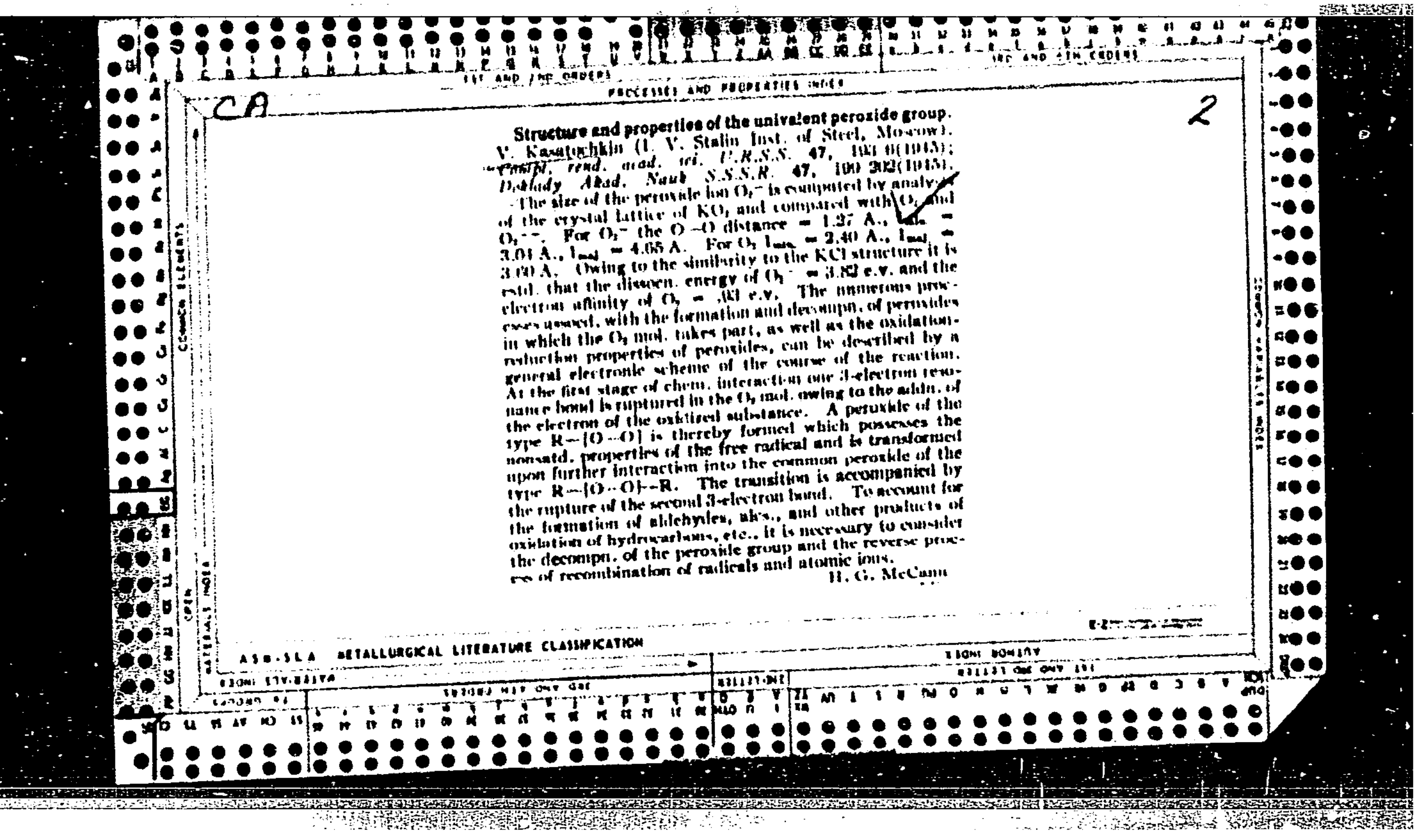
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

9

Electronic diffraction in the surface layers of metal alloys. V. Kasatochkin. *Compt. rend. acad. sci. U. R. S. S.* 22, 37-8(1939)(in English).--X-ray Debye reflection expts. on emery-polished Mn-steel and Cr-Mn-Ni-steel showed the presence in each case of both α- and γ-phases (martensite and austenite), but the electronograms showed only the α-phase. With brass, x-ray expts. showed both α- and β-phases, but electronograms only the α-phase. In each case the electronograms do not show the lines of those phases which are unstable at low temps. X-rays penetrate too deeply to show changes in the surface layers due to various treatments, but electronic diffraction apparently shows the condition of the surface where the unstable phases have been disintegrated by intense deformation and temp. rise. George Ayers



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

2

Structure and properties of the univalent peroxide group. V. Kasatochkin (I. V. Stalin Inst. of Steel, Moscow). *Compt. rend. acad. sci. U.R.S.S.* 47, 195-8(1945); *Doklady Akad. Nauk S.S.S.R.* 47, 199-202(1945).—The size of the peroxide ion O_2^- is computed by analysis of the crystal lattice of KO_2 and compared with O_2 and O_2^{--}. For O_2^- the O–O distance = 1.27 A., l_{min} = 3.01 A., l_{max} = 4.65 A. For O_2 l_{min} = 2.40 A., l_{max} = 3.00 A. Owing to the similarity to the KCl structure it is estd. that the dissocn. energy of O_2^- = 3.82 e.v. and the electron affinity of O_2 = .83 e.v. The numerous processes assocd. with the formation and decompn. of peroxides as well as the oxidation-reduction properties of peroxides, in which the O_2 mol. takes part, can be described by a general electronic scheme of the course of the reaction. At the first stage of chem. interaction one 3-electron resonance bond is ruptured in the O_2 mol. owing to the addn. of the electron of the oxidized substance. A peroxide of the type R—[O–O] is thereby formed which possesses the nonsatd. properties of the free radical and is transformed upon further interaction into the common peroxide of the type R—[O–O]—R. The transition is accompanied by the rupture of the second 3-electron bond. To account for the formation of aldehydes, alcs., and other products of oxidation of hydrocarbons, etc., it is necessary to consider the decompn. of the peroxide group and the reverse process of recombination of radicals and atomic ions.

H. G. McCann

COMMON ELEMENTS

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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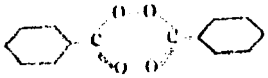
CA

KASATOCHKIN, V.

10

X-ray study of the structure of benzoyl peroxide. V.
Kasatochkin, S. Perlina, and K. Ablesova (Moscow Men-
~~deleev~~ Institute of Chemical Technology). *Compt
rend. acad. sci. U. R. S. S.* **47**, 36-8(1945); *Doklady
Akad. Nauk S. S. S. R.* **47**, 37-9(1945).—Analysis of
Laue diffraction patterns and rotation and oscillation di-
agrams for Bz_2O_2 fix the symmetry class as D_2h and the
elementary cell dimensions (in A.) as: a = 8.91, b =
9.15, c = 14.31, with an axis ratio a:c:b = 0.622:1:0.600.
The no. of mols. in a cell is four. The calcd. d. is 1.328 as
compared to an observed value of 1.334. Bz_2O_2 should
be ascribed the sym., elongated structure:



where lc o = 1.47 A., lo o = 1.45 A., lc c (or
the aliphatic bond) = 1.54 A., lc c (for the benzene
ring) = 1.41 A., and where lc c = 3.0 A. is the shortest
distance between the C atoms of adjacent unassocd. mols.
along the c axis. The valence angle in the peroxide group
is calcd. as 113° 15′. In the lattice the 4 elongated mols.,
with their peroxide groups in close contact, form an assocd.
active bromides are those of metals of the 2nd and 3rd
G. M. Kosolapoff
groups.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

30

X-ray investigation of the crystallization of vulcanized rubber on stretching. B. V. Lukin and V. I. Kasatochkin. *J. Tech. Phys.* (U.S.S.R.) **16**, 1381-8(1946)(in Russian). —The method of Field (*C.A.* **35**, 2029, 8389) was used to det. by debyogram microphotometry the percentages of cryst. phase ϵ in 4 samples of rubber vulcanized at 143° for varying lengths of time τ (in min.), after stretching, as a function of τ. Four samples (I-IV) were prepd. from a base mixt. of smoked sheet rubber 100, S 7, ZnO 5, stearic acid 2, without and with the addn. of mercapto- benzothiazole 0.3, diphenylguanidine 0.378, and a thiuram accelerator 0.127, resp. The samples were stretched only 500% 600%, except III, which could be stretched 600% only after τ 60 min., and IV, which was stretched 600% only up to τ 3, and 500% after τ 5 min. Each of the 4 samples showed a max. ϵ at a certain τ, increasingly shorter in the order I, III, II, IV; the height of the max. increased in the order I, III, II (63, 71, 75%); for a given sample, it increases with the degree of stretching, but the position of the max. remained unchanged for a given sample; ϵ fell to zero at τ 55 and 108 min. for 300% stretching and 400%, resp. Curves of tensile strength σ against τ had a max. at about the same τ as curves of ϵ (100, 60, and 20 min. for I, III, and II, resp.). Stress-strain curves (II) show, for a given strain, stresses increasing with τ up to τ 40) min., after which they decreased with further in- crease in τ. Curves of the ultimate elongation ϵ of I and III had minima (at τ 10, ϵ 12% and τ 15, ϵ 14%, resp.), then maxima (at τ 30, ϵ 24, and τ 68, ϵ 25, resp.). The observations lead to the conclusion that, in addn. to progressive cross-linking, eventually resulting in pre- vention of crystn., oxidative destruction accompanying vulcanization takes place. The increase of ϵ at its max. in the presence of accelerators is explained by the shorter τ and correspondingly lesser accumulation of oxidation products; on the other hand, the observed reversal of the stress from τ 60 upwards, indicates increased plasticity due to such an accumulation. The fact that the decrease of ϵ beyond the max. is the more marked the less the stretching is linked with a corresponding increase in creep, inversely related to ϵ.

N. Thon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

Application of infrared absorption spectra to the investigation of the oxidation process of sodium butadiene rubber. B. A. Dogadkin, V. Kasatochkin, N. Klausen, and A. Smirnova (Moskov. Inst. shinnoi promyshlennosti). *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 12, 616-20 (1948).—Measurements were made with a Hilger spectrometer in the region 2.5-11.3 μ. The receiver was a Bi Ag thermopile. The rubber was investigated as a film 45-50 μ thick cast on water. The absorption spectrum of Na butadiene rubber shows a band near 3.35, caused by CH vibrations, a band near 6.1 μ by C:C vibrations, a band near 6.9 μ attributed to the deformation of the methylene group, and 2 bands at 10.75 μ and 11.0 μ, caused by deformations of the group —C:CH—. Polymers (1) (-CH$_2$CH:CHCH$_2$CH$_2$CH:CHCH$_2$-) and (2) (-CH$_2$CH(CH:CH$_2$)CH$_2$CH(CH:CH$_2$)-) can be obtained. The second predominates. The films were oxidized in air at 142-3° for 5, 10, 20, 30, 40, and 60 min. Bands corresponding to the OH and the CO group appear; also bands corresponding to vibrations of -C-O-C- (8.5 μ). Oxygen acts on the double bonds and the appearance of new groups accounts for the change in the properties of Na butadiene. S. Pakswer

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2

KASATOCHKIN, V. I.

[illegible]

[illegible] and its crystn. by elongation, for various stages of vulcanization. Natural rubber (smoked sheet) gives [illegible]

[illegible]

ments of the same thickness give different intensities of the [illegible]

[illegible]

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

[illegible] increase of intensity of the cryst. interference. This indicates that the cryst. phase arises from that part of the amorphous phase which does not take part in x-ray scattering in the form of the amorphous ring, but rather simulates gaseous scattering. This probably represents parts of chains that are not held together by van der Waals forces [illegible] orientation of chain links [illegible]

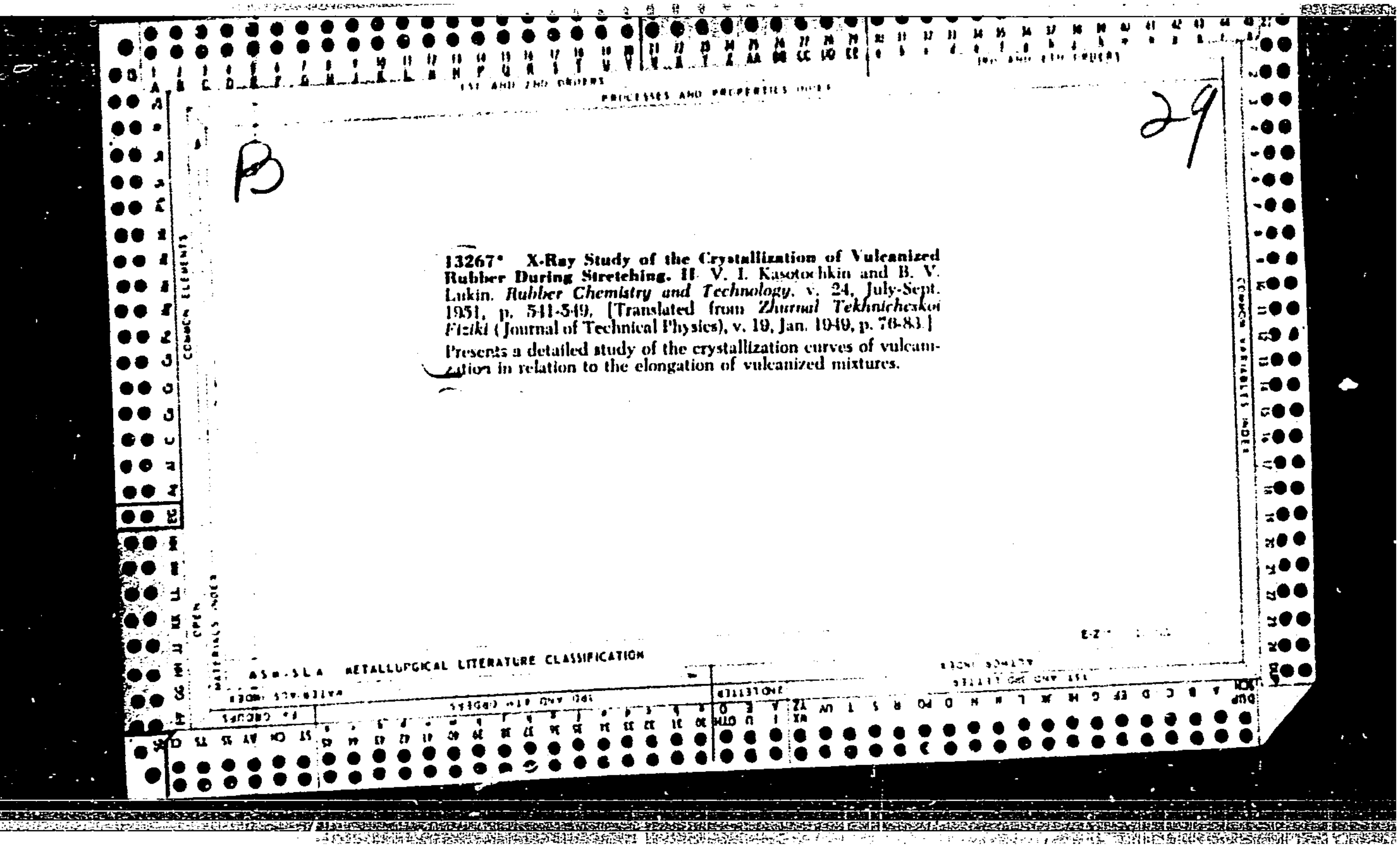
[illegible] steadily. Heating smoked-sheet rubber in a vulcanization press 1 hr. (especially during the initial period) greatly reduces the ability to form cryst. patterns on elongation. This can be explained by oxidative destruction. However, [illegible] ability without [illegible] with increase of [illegible] at rest and elongated [illegible] shows a continuous diffuse pattern of the gaseous type; this does not seem to be explainable by the action of the cryst. areas.

G. M. Kosolapoff

KASATOCHKIN V. I. Vulcanised Natural Rubber Aug. 52

3445. Molecular structure and properties of rubber. V. I. Kasatochkin and B. V. Lukin. *Doklady Akad. Nauk U.S.S.R.*, 1949, **67**, 683–5; *R. Chem. Tech.*, 1952, **25**, 124. Cf. this journal, 1950, **28**, 400. A translation of this paper now appears.

6324



PROCESSES AND PROPERTIES INDEX

B

29

13267* X-Ray Study of the Crystallization of Vulcanized Rubber During Stretching. II V. I. Kasotochkin and B. V. Lukin. *Rubber Chemistry and Technology*, v. 24, July-Sept. 1951, p. 541-549. [Translated from *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 19, Jan. 1949, p. 76-83.]

Presents a detailed study of the crystallization curves of vulcanization in relation to the elongation of vulcanized mixtures.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

C.A.

30

An x-ray investigation of the crystallization of vulcanized rubber on stretching. II. V. I. Kasatochkin and B. V. Lukin. *Zhur. Tekh. Fiz.* 19, 76-83(1949); cf. *C.A.* 41, *5747d*.—In smoked sheet, without previous plasticization and contg. no fillers, vulcanized at 143° for lengths of time τ from 0 to 60 min., and stretched 500%, the fraction f of the cryst. phase decreases regularly, from 70 to 50%, with increasing τ because of destructive oxidation. Within the same limits, the mol. wt. (by viscosity of dil. solns.) falls from 70,000 to below 40,000, and the creep, measured under 1 kg./sq. cm. at 18° in 50 hrs., rises from 150 to 450%. The tensile strength σ falls linearly from 18 to 12 kg./sq. cm. With smoked sheet (100) + S (2), ZnO (5), stearic acid (2), and mercaptobenzothiazole (0.6), f rises steeply to a max. within the 1st 40 min., then falls off slightly and remains const. with further increasing τ. The curve of σ has a similar shape, except that σ falls off slightly with long τ. This latter effect is even more pronounced with smoked sheet with the same percentages of S, ZnO, and stearic acid, but with thiuram (0.854) or diphenylguanidine (0.758) instead of mercaptobenzothiazole. In smoked sheet with the latter, but with 7 instead of 2% S, the max. f is sharper, and its fall with further prolonged τ somewhat more marked. The factor responsible for the decrease of f is evidently the formation of S bridges which reduce the mobility of the mols. and thus counteract crystn.; with a low S content of 2%, the process of spatial network formation is practically completed at the optimum, and has no further effect on more prolonged τ. The subsequent fall of both f and σ is attributed to the plasticizing action of the oxidation products of rubber. This is borne out by the observed fall of the modulus of elasticity with τ prolonged beyond the optimum in mixts. with 2% S. This is not so with 7% S, where prolonged τ results in further increasing modulus, owing to continued growth of bridges. Addn. of 30% plasticizer lowers f at all stages of vulcanization; dibutyl phthalate has a stronger f-lowering effect than mazut. The tensile strength σ is an increasing function of f over the whole range of vulcanization, but, for a given mixt., each f is assocd. with 2 values of σ, one corresponding to the 1st phase, the other to the 2nd phase of the vulcanization (beyond the optimum). This indicates a different nature of the strength in the 2 phases. The amt. of bound S increases with time at the initial stages of the vulcanization, but the material still remains plastic as long as the spatial network has not spread throughout its whole mass. This may account for the fact that a relatively small change in bound S can be accompanied by a relatively large change of f. Crystn. of vulcanizates in the 2nd phase, beyond the optimum, is governed by the d. of the spatial network. More completely crystd. vulcanizates have a greater σ, owing to the greater no. of chains. However, high tensile strength may still be present, even though crystals may have disappeared almost completely; in that case, σ is detd. by oriented chains. Inhibition of crystn by bound S is due to the noncoincidence of the C—S bond distance and the lattice period of cryst. rubber. Nonbridge S lowers the crystallizability by occupying points which otherwise might have formed part of the crystal.

N. Thon

CA

Molecular structure and properties of rubber. V. I.
Kasatochkin and B. V. Lukin. *Doklady Akad. Nauk*
S.S.S.R. 67, 683-5(1949).—In smoked-sheet rubber,
vulcanized NK-1 (smoked sheet 100, ZnO 5, stearic acid 2,
S 7, mercaptobenzothiazole 0.3), and vulcanized NK-3
(100, 5, 2, 2, 0.6), the intensity of the amorphous ring in x-
ray diffraction was const. over a wide range of extension,
notwithstanding the steady increase in intensity of the
spots corresponding to an increase in the amt. of the cryst.
phase up to 60%. This constancy of the intensity of the
amorphous ring on stretching is interpreted as an indica-
tion that the crystals are not formed from the "liquid"
part of the amorphous rubber, but from what is termed its
"gaseous" part, presumed to consist of free fragments of
mol. chains. The considerable change in the d. of rubber
on crystn. is in accord with this idea. The "gaseous"
part of the amorphous rubber, which should scatter x-
rays as a gas, dets. the elastic properties of rubber. Com-
parison of the intensities of the amorphous ring of 3 samples
of different elasticities, plasticized and unplasticized
smoked sheet, and a highly elastic vulcanizate NK-31
(strength 183 kg./sq. cm., relative elongation 900%, creep
under 20 kg./sq. cm. in 50 hrs., 5%), as a function of the
thickness (up to 1.0 mm.), showed the highest intensities
for low-elasticity and high-plasticity plasticized smoked
sheet, lowest intensities for the very highly elastic NK-31,
and intermediate values for the unplasticized smoked sheet.
N. Thon

KISALOCHKIN, V.L.

4110. X-ray investigation of the process of vulcanisation of rubber. B. V. Lukin, and V. [illegible]

[illegible]

Rubber Abs.
Vol. 31
Nov. 1953
Vulcanised
Natural
Rubber

4664. X-ray investigation of the crystallisation of vulcanized rubber on stretching. IV. V. I. KASATOCHKIN and B. V. LUKIN. Zhur. Tekh. Fiz., 1950, 20, 1160-6; Chem. Abs., 1953, 47, 78[illegible]. Cf. this journal, 1950, 28, 565. The number of crystals was determined as a function of the period of vulcanisation for smoked sheet rubber stretched 400% without and with carbon black as filler, using varying proportions of carbon black, sulphur, stearic acid, zinc oxide, MBT, and thiuram. Without carbon black, crystallisation began to be apparent after 10 min., growing rapidly at first, slowing down, reaching a 60% maximum after 60 min., remaining constant to 220 min., and falling to zero at 300 min. Using 30% carbon black, maximum was reached very soon after the beginning of vulcanisation, fell slightly within 20 min., and then reached a constant value of 60%. This checks with the relationship between the content of rubber crystals and the content of bound sulphur. Carbon black reduced the modulus of elasticity. Without black, tension strength increased but little with the amount of sulphur crystals; with black present, it was small while the sulphur content was small, but became four times as large when the sulphur content reached its optimum. Carbon black also increased the crystallisation of plasticised rubber.

(over)

s/r. V. I. [illegible] & E. [illegible]

The elongation of the X-ray spots indicates that carbon black makes the orientation of the crystals less definite. With carbon black, thiuram makes the rubber crystals more nearly perfect, the explanation of this effect by adsorption of the rubber mol. chains to the carbon particle surface being confirmed by the fact that carbon causes crystallisation of the rubber even in the absence of vulcanising agents, and also by the difference between the crystal orientation and the direction of the mechanical forces in the stretched rubber. The orientation of the mols. in the direction of elongation, coupled with restricted rotation due to adsorption creates an effect of single-dimensional crystals. Two-dimensional crystals are likely to be formed at the surfaces of adsorption.

63423

KASATOCHKIN, V. I.

125. X-RAY STUDY OF HUMIC ACIDS (OF COAL). Kasatochkin, V.I., Kukharenko, T.A., Zolotarevskaya, E. Yu. and Razumova, L.L. (Doklady Akad. Nauk SSSR (Rep. Acad., Sci. U.S.S.R.), 1950, vol. 74, 775-778: abstr. in Chem. Abstr., 1952, vol. 46, 1227, 1228). Humic acids are aromatic hydroxy carboxylic acids of high molecular weight. Changes in their molecular structure during the gradual coalification were studied by X-ray examination of peats and soft coals of different localities, and artificially oxidized coal (with ratios C:H from 13.2 to 26.8). The interferences are increasingly distinct and sharper with advancing degree of coalification and molecular rearrangement. The humic acid from coal shows three maxima which correspond to a double hexagonal carbon lattice similar to that in graphite. With progressive coalification the ordered lattice of the aromatic nuclei of the humic acid increases: the disordered part appears peripheral owing to the groups of the molecules. The changes of the ratio C:H as an indicator for increasing condensation of aromatic nuclei parallel these diffraction phenomena. The calculated mumber of rings in the nucleus varies between 1 and 10 or more: the progressive coalification corresponds to their condensation to increasingly (over)

~~212. WOOD PITCH. Chernenko, A.A. and Borisov, I.I. (Za Ekon. Topliva (Fuel Econ.), May 1950, 35, 36; abstr. in Chem. Abstr., 1952, vol. 46, 4738). Dehdration and distillation of wood pitch give a solid and liquid fuel, both of which have low calorific values and are easily burned in any type of burner. Lossed during~~

KASATOCHKIN, V. I.

USSR/Fuels - Coal, Structure Sep 51

"Certain Problems of Studying the Fine Structure of Coals," V. I. Kasatochkin

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 9, pp 1321-1334

Presents results of studying fine structure of coals and their components by X-ray and electron-microscope methods. Discusses X-ray diffraction in coals, mol structure of anthracite, metamorphism of coals and their petrographic components, sapropelites and carbonaceous substances of combustible shales, humic acids, and thermal processing of coals. Submitted 21 Apr 51.

205T33

USSR/Physics - X-ray Analysis, Rubber Mar/Apr 51

"The X-ray Analysis of the Molecular Structure of Rubber," V. I. Kasatochkin, B. V. Lukin, Sc. Res Inst of Tire Ind

"Iz Ak Nauk SSSR, Ser Fiz" Vol XV, No 2, pp 209-217

Authors lectured on scattering of X-rays in amorphous caoutchouc, variations in mol structure of caoutchouc under fatigue and wear, crystn of filler vulcanizers of rubber, and mol orientation of filler vulcanizers of synthetic rubber. The following participated in

187T95

LC

USSR/Physics - X-ray Analysic, Rubber Mar/Apr 51
(Contd)

discussions after the lecture: Z. G. Pinsker, I. Kasatochkin, V. I. Kitaygorodskiy, N. S. Kostetskaya, V. L. Karpov, V. I. Danilov. Lecture read at 3d All-Union Conference on Use of X-rays in Study of Materials held 19 - 24 Jun 50 in Leningrad.

187T95

LC

KASATOCHKIN, V. I.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

B

29

13269* Application of Infrared Absorption Spectra to Studies of the Oxidation of Sodium-Butadiene Rubber. B. Dogadkin, B. Kasatochkin, N. Klauzen, and A. Smirnova. *Rubber Chemistry and Technology*, v. 24, July-Sept. 1951, p. 591-596. [Translated from *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR). Physics Series, v. 12, no. 5, 1948, p. 616-620.]

Presents a qualitative and limited quantitative analysis of those groups which originate during oxidation and also an examination of the structures which determine the changes of the physical and chemical properties in the reaction of rubber with molecular oxygen.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KASATOCHKIN, V. I.

γ

88. FINE STRUCTURE OF COALS. Kasatochkin, V. I. (Izvest. Akad. Nauk SSSR, Otdel. Tekh. Nauk (Bull. Acad. Sci. U.S.S.R., Sect. Tech. Sci.). Sept. 1951, 1321-1334).

Results are given of (1) X-ray examination of brown and bituminous coals, anthracite, schungite and graphites, (2) X-ray and electron microscope examination of the petrographic constituents of coals, and (3) X-ray examination of changes in molecular and intermolecular structure of coals during thermal treatment. A suggestion is made for quantitative estimation of the degree of graphitization.

immediate source clipping

CA

Molecular aggregation in amorphous polymers. V. I. Kasatochkin and B. V. Lukin. *Doklady Akad. Nauk S.S.S.R.* **77**, 81-4(1951).—The previously given (*C.A.* **44**, 2200b) interpretation of the structure of amorphous *rubber* as consisting of a liquid-type part, giving an interference max. of the scattered intensity of x-rays as a function of the scattering angle (due to near-range order), and a disordered gas-type part, is further corroborated by the change of the scattering intensity curves with the temp. With rising temp. (20, 80, 120°), the max. becomes increasingly flatter, and the intensity in the range of small scattering angles increases. The curves are very strongly reminiscent of Noll's (*Phys. Rev.* **42**, 338(1932)) curves for the x-ray scattering intensity of Et_2O at different temps., with the max. disappearing completely at 210°. The total scattering intensity $I = I_g + I_l$, where the subscripts *g* and *l* refer to "gaseous" and the "liquid" part, resp. The former is $I_g = PN_gF^2$, where F = structure amplitude of scattering by single links of the mol. chains (detd. by interference of the radiation coherently scattered by the atoms of the same chain link), N_g = no. of links constituting the "gaseous" part, and $P = (1 + \cos^2 2\theta)/2$, where θ = scattering angle. The intensity I_l of the "liquid" part, detd. by interference of the radiation coherently scattered by links of neighboring chains, as given by Debye's theory of scattering in liquids, is $I_l = PN_lF^2A$, where $A = [1 - \int_0^\infty 4\pi r^2\rho(1 - W)(\sin sr/sr)dr]$, where W = probability of neighboring disposition of links, ρ = mean d., $s = (4\pi \sin\theta)/\lambda$, and $4\pi r^2\rho dr$ = mass of a spherical shell of thickness dr at a distance r from a given link. In the case of complete disorder, $W = 1$, and $I = PNF^2$, where N = total no. of links. For high θ, the integral tends to zero, and I tends to the above value for a completely disordered "gaseous" state. For small θ, the integral tends to unity, $I_l = 0$, and $I = I_g$. The coexistence of the "gas" and the "liquid" phases in an amorphous polymer is due to the difficulty of close packing of all links of neighboring mol. chains. The same cause underlies the incomplete crystn. of polymers, as evidenced by x-rays.

N. Thon

KASATOCHKIN, V. I.

USSR

Changes in the fine structure of fossil coal in various stages of metamorphism. V. I. Kasatochkin, E. Yu. Zolotarevskaya, and L. I. Barunova. *Doklady Akad. Nauk S.S.S.R.* 79, [illegible] 47, [illegible]. The emergence of interference max. and the progressive increase in the sharpness of the x-ray diffraction pattern of a series of Donets basin fossil coals of increasing degree of metamorphism indicates the growth of mol. regularity with metamorphism. However, unlike graphite, in anthracite and lesser coals the hexagonal planar C atom lattices formed do not line up with three-dimensional regularity. It is concluded that under the natural conditions of metamorphism of org. substances, the carbon at the final stage of carbonization is similar to anthracite. X-ray analysis of vitrain and fusain sepd. from coal in various metamorphic stages shows that only vitrain undergoes over-all structure changes typical of coal during carbonization. Fusain, carbonized in the early stages of metamorphosis, contains some orientation in packs of parallel carbon lattices. The resistance of spore coal to carbonization leads to the preservation of the form of the structural elements during the early stages and eventually to a mol. structure relatively less aromatic and planar and more chainlike in nature. C. M. S.

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2

KASATOCHKIN, V. I.

③

X-ray investigation of the amorphous state of rubber. V. I. Kasatochkin and B. V. Lukin. *Khim. i Fiz.-Khim. Vysokomolekul. Soedinenii, Doklady 7-oi Konf. Vysokomolekul. Soedineniyam* 1952, 242-5; cf. *C.A.* 47, 11964e.—The amorphous scattering of rubber is due to 2 types of disorder, one usually found in gases, the other in liquids. Gases show scattering curves which increase strongly towards low angles, while liquids show a diffuse ring which depends on the av. mol. distances. Measurement of the amorphous scattering of rubber as a function of temp. shows a strong increase of the "gaseous" type of scattering with temp. Curves of scattering at 20, 80, and 120° are given and compared with the scattering of diethyl ether (Noll, *C.A.* 27, 1819). Prolonged treatment of rubber at high temps. (20 hrs. at 100°) causes an increase of 15-20% in "liquid" scattering. This is expected, since strong oxidation takes place and leads to stronger interchain interaction.

H. D. Noether

KASATOCHKIN, V.I.

Molecular structure and properties of hard coal. Doklady Akad. Nauk S.S.S.R. 86, 759-62 '52.
(CA 47 no.19:10195 '53) (MLRA 5:11)

[illegible] groups [illegible] org. radicals or functional groups. Th[e] structure of the principal components of bituminous coals, vitrain and fusain [illegible] of other carbonized [illegible] three-dimensional spatial polymers of the structural elements, interconnected through side chains. The [illegible] of carbonized substance [illegible]

Mar/Apr 53

KASATOCHKIN, V.I.

USSR/Physics - X-Ray Analysis, Molecular Order

"Radiographic Method of Determining the Molecular Ordering in Amorphous Polymers,"

V.I. Kasatochkin and B.V. Lukin, Inst of Combustible Minerals, Acad Sci USSR

Iz Ak Nauk SSSR, Vol 17, No 2, pp 219-223

Method is based on quant measurements of intensity of interference maxima and of continuous background of scattered X-rays. Results of tests of coal, graphite, and rubber are tabulated. Received 17 Feb 53.

262T96

Mar/Apr 53

KASATOCHKIN, V.I.

USSR/ Physics - Electronography of Coal

"Electronographic Investigation of Coal and Anthracite Components,"

V. I. Kasatochkin, E. Yu. Zolotorevskaya, and B. V. Lukin, Inst of Combustible Minerals, Acad Sci USSR

Iz Ak Nauk SSSR, Ser Fiz, Vol 17, No 2, pp 246-248

Studied basic petrographic components by analyzing interference patterns. Found 2-dimensional character of diffraction and absence of 3-dimensional ordering in coals such as anthracite, fusain, and vitrain; and in humic acids and soot. Received 17 Feb 53.

262T100

KASATOCHKIN, V. I.

②

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Fuels and Carbonization Products

Structural changes in coal on heat-treatment. V. I. Kasatochkin and L. L. Razumova. *Doklady Akad. Nauk S.S.S.R.* 88, 91-4(1953).—Carbonization by heating org. compds. is characterized by formation and the growth of the flat hexagonal lattices of C atoms similar to the atomic monolayer in a graphite crystal. Part of the C as well as H, O, N, and other elements contained in the substance are eliminated as volatile matter. Formation and growth of the C lattices can be observed according to the origin and the increasing sharpness of the interference bands on the x-ray photographs of the products carbonized. The mol. lattices under the influence of the vector field orient themselves parallel one to the other. Interorientation of the C lattices, occurring simultaneously with their growth, is shown by the interference bands (00*l*) as well as by the change of their sharpness on the x-ray photographs. Relation between temp. and C lattices is discussed.

W. Farafonow

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2

SHISHAKOV, N.A., KASATO[redacted]ofessor; doktor khimicheskikh nauk, otvetstvennyy redaktor; RAZUMOVA, L.L., redaktor; ZEMLYAKOVA, T.A., tekhnicheskiy redaktor

[Problems pertaining to the structure of silica glass] Voprosy struktury silikatnykh stekol. Moskva, Izd-vo Akademii nauk SSSR, 1954. 191 p. (MIRA 8:3)
(Glass)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

KASATOCHKIN, V. I.

USSR/Mining-Geochemistry

Card 1/1

Authors	: Sapozhnikov, L. M.; and Kasatochkin, V. I.
Title	: Geochemistry of Mineral Coals.
Periodical	: Vest. AN SSSR, Ed. 2, 21-26, Feb/1954
Abstract	: The authors consider the important role of the mineral coals in the light of development of the various branches of industry. They describe, in general terms, the structure, chemical composition and application of the various types of coals, and give the references on the studies and analysis of coals and carbonizers conducted by D. I. Mendeleev, V. I. Yorren, J. Bisco, V. I. Danilov, and A. M. Zubko.
Institution	: ....
Submitted	: ....

Kasatochkin, V. I.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 43 - 50/62

Authors : Kasatochkin, V. I.; Shostakovskiy, M. F.; Zil'berbrand, O. I.; and Kochkin, D. A.

Title : About hydrogen bonds in silanols

Periodical : Izv. AN SSSR, Ser. fiz. 18/6, 726-728, Nov-Dec 1954

Abstract : The infrared absorption spectra of trimethylcarbinol and five different silanols: $(CH_3)_3SiOH$, $(CH_3)_2C_2H_5SiOH$, $CH_3(C_2H_5)_2SiOH$, $(C_2H_5)_3SiOH$ and $C_6H_5(C_2H_5)_2SiOH$ were investigated in a range of wave lengths of from 2 - 4 to determine the nature of molecular association of silanols and the effect of the Si-atom on the hydroxyl group. It was established, among others, that the chem. properties of silanols, particularly their amphoteric properties, are due to the strengthening of the O-H bond and strong reaction between the oxygen and hydrogen of the neighboring molecules which takes place as result of increased polarity of the O-H bond. Graphs.

Institution : Acad. of Sc., USSR, Institute of Combustible Minerals

Submitted : ....

KASATOCHKIN, V.I.

USSR.

The submicroscopic structure of coal. V. I. Kasatochkin, V. K. Shlyapnikov, and L. B. Nepomnyashchii. *Doklady Akad. Nauk S.S.S.R.* 96, 647-8(1954); cf. *C.A.* 47, 11837a.—The structure of coal was studied with an electron microscope. It was observed that in photographs of the replicas of natural coke there were traces of bubbles of different sizes, whereas the gas bubbles for coal were of uniform size. This fact could be interpreted from the point of view of the equality of the rates of replacement of gas bubbles and yield of gas by diffusion through the coal in the slow process of gas formation during metamorphism. Thus, the sizes of the bubbles were detd. by the ratio of the rates of diffusion and gas formation and, therefore, depended on the nature of the coal and on factors detg. the rate of gas formation. Often it was found that there were fine, individual particles adhering to the replica. It is possible that they actually are soot particles and that their origin is connected with fires occurring during the early stages of formation of the coal seam. Gladys S. Macy

KASATOCHKIN, V.I.; SHOSTAKOVSKIY, M.F.; ZIL'BERBRAND, O.I.; KOCHKIN, D.A.

Hydrogen linkage in silanols. Zhur.fiz.khim. 29 no.4:730-733 Ap '55.
(MIRA 8:8)

1. Akademiya nauk SSSR, Institut organicheskoy khimii.
(Silanol)

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2

KASATOCHKIN, V.I.

FU

②

The effect of high pressures on the molecular structure of bituminous coals. L. L. Razumova, V. I. Kasatochkin, and M. P. Volarovich. *Doklady Akad. Nauk S.S.S.R.* 103, 1033-4(1955).—X-ray investigation of coal subjected for a short time to pressures of 20,000 kg./sq. cm. showed that the unidirectional compression causes a reorientation of the at. C lattice, with a preferred distribution of their normals in the direction of the active pressure. The conclusion was drawn that the vitrified mass of bituminous coal of medium metamorphic stages is converted to a liquid-flow system under pressure, similar to its state when heated. The conversion to the liquid state is connected with the destruction of side chains, which explains the ease of rotation of the lattice and the formation of anisotropy under pressure.

W. M. Sternberg

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

KASATOCHKIN, V. I.

B-5

USSR / Physical Chemistry. Crystals.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25998

Author : V.I. Kasatochkin, O.I. Zil'berbrand

Title : Roentgenography and Infrared Spectroscopy in Application to Study of Structure of Humus Substances.

Orig Pub : Pochvovedeniye, 1956, No 5, 80 - 85

Abstract : The curves of absorption in the infrared spectrum range in wave length intervals of 2.8 to 3.9, 5.7 to 6.8 and 7.8 to 11.3μ are given for humic acids of black earth and strongly podzol soil, fulvoacids from the same soils, and humic acids from the culture of Aspergillus Niger. The following bonds were detected: O-H and C-H in aromatic groups (C-H bonds were absent in fulvo-acids of strongly podzol soil), C-H in CH groups, a weak intensity band of C-H in CH_3 groups, C-O in carboxyl groups, and conjugate double bonds C=C. The intensity ratio of the bands C=O and C=C is characteristic of various samples.

Card : 1/2

USSR / Physical Chemistry. Crystals. B-5

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25998

Abstract : There is in the spectra of humic acids of the strongly podzol soil and of both the samples of fulvoacids a band of 6.6μ referred to aromatic groups with lateral alifatic substitutes. In the cases of humic acids from Aspergillus Niger, a band of 8.9μ is observed; this band is characteristic of oxygen containing aromatic compounds, in which the O atom is directly connected with the C atom of the aromatic nucleus (Breger J.A., Fuel, 1951, 30, 204 - 208). These results do not contradict the known data of x-ray studies of the molecular structure of humic acids and similar carbonized substances.

Card : 2/2

15-57-5-6649

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5, pp 137-138 (USSR)

AUTHOR: Kasatochkin, V. I.

TITLE: X-Ray and Electron-Microscopic Examination of Coal at Various Degrees of Metamorphism (Rentgenograficheskoye i elektronnomikroskopicheskoye issledovaniye kamennykh ugley raznykh stadiy metamorfizma)

PERIODICAL: Tr. Labor. geol. uglya. AN SSSR, 1956, Nr 6, pp 150-155

ABSTRACT: X-ray examination of petrographic coal components has shown that the development of carbon in metamorphism occurs in the form of flat lattices or a two-dimensional crystalline lattice. The dimensions and form of the lattice may be determined from the X-ray. Metamorphism of the vitrainized substance contributes most to the development of the crystalline lattice;

Card 1/3

15-57-5-6649

X-Ray and Electron-Microscopic Examination of Coal (Cont.)

the fusain changes little in form. The crystalline lattice develops somewhat more slowly in the structured elements than in the vitrainized substance. The process of carbonization of the substance may be characterized as a two-dimensional crystallization; the final stage of the latter is the formation of the anthracite structure. The transition to the three-dimensional lattice of graphite occurs abruptly. Formation of two-dimensional crystals is characteristic only for caustic bioliths of the humus series; the beginning of the formation of the nuclei of the crystalline lattice must be considered the beginning of carbonization. X-ray structural analysis of oriented specimens has shown that two-dimensional crystalline lattices are located along the plane of stratification. When coal dust is subjected to high pressure, the crystalline lattices of two-dimensional crystals take up a specific orientation after several minutes. The anisotropy which develops differs in various coals. Coal magnified 50 000 times under electron microscope appears as a spongy mass with small round pores. Orientation of the two-

Card 2/3

KASATOCHKIN, V. I.

B-5

Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29789

Author : Kasatochkin V. I., Razumova L. L.
Inst : Academy of Sciences USSR
Title : X-Ray Analysis of Molecular Structure of Coal and Coke

Orig Pub: Izv. AN SSSR. Ser. fiz., 1956, 20, No 7, 751-754

Abstract: On the basis of the concepts of macromolecular structure of carbonaceous matter of coal and coke, the interference function of x-ray scattering is expressed depending upon probability of orderly packing of W network of the C atoms which constitute the scattering units. Widening of the 002 interference band on the roentgenograms, taken as index of inter-reticular orderliness, is determined by magnitude of W, dimension of coherent volumes. The $4\pi r^2 \Delta \rho$ curves of coke, obtained as a result of integral analysis of intensity curves, are interpreted as the result of superposition of $4\pi r^2 \Delta \rho$ functions of the different structural forms of C in coke -- of carbon networks and chains. The difference in $4\pi r^2 \Delta \rho$ curves

Card : 1/2 -57-

: 2/2 -58-

KAZATOCHKIN, V.I.; YUROVSKIY, A.Z.; SHUBNIKOV, A.K.

To P.F.Andreev's review of the book of S.M.Grigor'ev "Formation processes and properties of mineral fuels." Zhur.prikl.khim.29 no.2:315-317 F '56. (MIRA 9:6)

(Coal) (Petroleum) (Grigor'ev, S.M.) (Andreev, P.F.)

KRATOCHKIN, V.I.

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KASATOCHKIN, V.I.

PRIKHOT'KO, A.F.

24(7) p 3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Bugay, P.M. Spectrophotometric Study of the Mechanism and Kinetics of the Interaction of Concentrated Sulfuric Acid With Diphenyl Amines and With Some of its Derivatives 245

Tagirov, R.B. Infrared Emission Spectra of Certain Flames and Combustion-zone Products 252

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Card 17/30

KASATOCHKIN, V.I.

ABRAMOV, S.K., kand.tekhn.nauk; AVERSHIN, S.G., prof., doktor tekhn.nauk; AMMOSOV, I.I., doktor geol.-min.nauk; ANDRIYEVSKIY, V.D., inzh.; ANTROPOV, A.N., inzh.; AFANAS'YEV, B.L., inzh.; BERGMAN, Ya.V., inzh.; BLOKHA, Ye.Ye., inzh.; BOGACHEVA, Ye.N., inzh.; BUKRINSKIY, V.A., kand.tekhn.nauk; VASIL'YEV, P.V., doktor geol.-min.nauk; VINOGRADOV, B.G., inzh.; GOLUBEV, S.A., inzh.; GORDIYENKO, P.D., inzh.; GUSEV, N.A., kand.tekhn.nauk; DOROKHIN, I.V., kand.geol.-min.nauk; KALMYKOV, G.S., inzh.; KASATOCHKIN, V.I., doktor khim.nauk; KOROLEV, I.V., inzh.; KOSTLIVTSEV, A.A., inzh.; KRATKOVSKIY, L.F., inzh.; KRASHENINNIKOV, G.F., prof. doktor geol.-min.nauk; KRIKUNOV, L.A., inzh.; LEVIT, D.Ye., inzh.; LISITSA, I.G., kand.tekhn.nauk; LUSHNIKOV, V.A., inzh.; MATVEYEV, A.K., dots., kand.geol.-min.nauk; MEPURISHVILI, G.Ye., iznh.; MIRONOV, K.V., inzh.; MOLCHANOV, I.I., iznh.; NAUMOVA, S.N., starshiy nauchnyy sotrudnik; NEKIPELOV, V.Ye., inzh., PAVLOV, F.F., doktor tekhn.nauk; PANYUKOV, P.N., doktor geol.-min.nauk; POPOV, V.S., inzh.; PYATLIN, M.P., kand.tekhn.nauk; RASHKOVSKIY, Ya.M., inzh.; ROMANOV, V.A., prof., doktor tekhn.nauk; RYZHOV, P.A., prof., doktor tekhn.nauk; SELYATITSKIY, G.A., inzh.; SPERANSKIY, M.A., inzh.; TERENT'YEV, Ye.V., inzh.; TITOV, N.G., doktor khim.nauk; GOKAREV, I.F., inzh.; TROYANSKIY, S.V., prof., doktor geol.-min.nauk; FEDOROV, B.D., dots., kand.tekhn.nauk; FEDOROV, V.S., inzh. [deceased]; KHOMENTOVSKIY, A.S., prof., doktor geol.-min.nauk; TROYANOVSKIY, S.V., otvetstvennyy red.; TERPIGOREV, A.M., red.; KRIKUNOV, L.A., red.; KUZNETSOV, I.A., red.; MIRONOV, K.V., red.; AVERSHIN, S.G., red.; BURTSEV, M.F., red.; VASIL'YEV, P.V., red.; MOLCHANOV, I.I., red.; RYZHOV, P.A., red.; BALANDIN, V.V., inzh., red.; BLOKH, I.M., kand. tekhn.nauk, red.; BUKRINSKIY, V.A., kand.tekhn.nauk, red.; VOLKOV, K.Yu., inzh., red.; VOROB'YEV, A.A., inzh., red.; ZVONAREV, K.A., prof. doktor tekhn.nauk, red.

(Continued on next card)

ABRAMOV, S.K.--- (continued) Card 2.

ZDANOVICH, V.G., prof.,doktor tekhn.nauk,red.; IVANOV, G.A., doktor geol.-min.nauk, red.; KARAVAYEV, N.M., red.; KOROTKOV, G.V., kand.geol.-min.nauk, red.; KOROTKOV, M.V., kand.tekhn.nauk, red.; MAKKAVEYEV, A.A., doktor geol.-min.nauk, red.; OMEL'CHENKO, A.N.,kand.tekhn.nauk,red.; SENDERZON, E.M.,kand.geol.-min.nauk, red.; USHAKOV, I.N., dots., kand.tekhn.nauk, red.; YABLOKOV, V.S., kand.geol.-min.nauk,red.; KOROLEVA, T.I., red.izd-va; KACHALKINA, Z.I., red.izd-va; PROZOROVSKAYA, F.L., tekhn.red.; NADEINSKAYA, A.A., tekhn.red.

[Mining; an encyclopedia handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav. red. A.M.Terpigorev. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po ugol'noi promyshl. Vol.2. [Geology of coal deposits and surveying] Geologiia ugol'nykh mestorozhdenii i marksheiderskoe delo. Redkolegiia toma S.V.Troianskiy. 1957. 646 p. (MIRA 11:5)

1. Chlen-korrespondent AN SSSR (for Karavayev)
(Coal geology--Dictionaries)

ZIL'BERBRAND, O.I.; KASATOCHKIN, V.I.

Use of infrared spectroscopy in studying the chemical structure of kerogen in shale. Fiz. sbor. no.3:257-261 '57. (MIRA 11:8)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Kerogen--Spectra) (Chemical structure)

[illegible]HKIN, V.T.

[illegible]

KASATOCHKIN, V.I.

68-6-7/19

AUTHOR: Zamoluyev, V.K., Candidate of Technical Sciences, and Kasatochkin, V.I., Doctor of Chemical Sciences.

TITLE: Changes of the Coefficient of Temperature Conductivity of Coals during Isothermal Decomposition. (Izmeneiye koeffitsiyenta temperaturoprovodnosti kamennykh ugley pri izotermicheskom razlozhenii)

PERIODICAL: Koks i Khimiya, 1957, No.6, pp. 21 - 23 (USSR)

ABSTRACT: A study of temperature conductivity of Donets coals of the Д, K and ПС types at various stages of isothermal decomposition at various temperatures (400, 500 and 700 °C) was carried out. Vitrile component of the above coals separated in heavy liquids (properties Table 1) was taken for the investigation. The experimental results are given in Table 2 and a diagram. It is concluded that changes in the coefficient of temperature conductivity depend on the type of coal, temperature and time of decomposition under isothermal conditions. For coal types K and ПС, a sharp decrease of the coefficient is observed during the transition of coal into the plastic state. Time of the transition of various coals into the plastic state is different; therefore, there is a possibility of increasing the coefficient of temperature conductivity of coal blends by a suitable choice of their components.

Card 1/2

68-6-7/19

Changes of the Coefficient of Temperature Conductivity of Coals during Isothermal Decomposition.

There are 2 tables, 1 figure and 7 Slavic references.

ASSOCIATION: Institute of Mineral Fuels of the Academy of Sciences of the USSR. (Institut Goryuchikh Uskopaemykh AN SSSR)

AVAILABLE: Library of Congress

Card 2/2

J-3

USSR / Soil Science. Biology of Soils.

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77400

Author : Lapina, N. K.; Kasatochkin, V. I.
Inst : Institute of Fuel Reserves AS USSR
Title : Ion Exchange and the Structure of Humic Acids

Orig Pub : Poohvovedeniye, 1957, No 9, 28-32

Abstract : Investigation of the IE absorption spectra of humic acids and humates of Na, Ca and Ba that were separated from different coals confirmed the molecular mechanism of ion exchange in the alkaline solutions of humates. Alkaline humates are genuine molecular solutions which consist of individual aromatic lattices with lateral radicals which carry carboxylic groups in ion form. With the formation of Ba- or Ca-humates, an exchange reaction with Na or H takes place; the formation is possible of complexes of two and more molecules of humic acids connected through a cation:

Card 1/2

KASATOCHKIN, V. I.

24-11-31/31

AUTHORS: Zamoluyev, V. K. and Kasatochkin, V.I. (Moscow)

TITLE: Coefficient of temperature conductivity of hard coal at various stages of isothermal decomposition. (Koeffitsiyent temperaturoprovodnosti kamennykh ugley na raznykh stadiyakh izotermicheskogo razlozheniya).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.11, pp. 199-200 (USSR)

ABSTRACT: Results are described of the study of changes in the coefficient of temperature conductivity of five grades of Donets coal, the data of which are given in a Table, as a function of the degree of isothermal decomposition at various temperatures. The tests were carried out with coal after decomposition in heavy liquids. The isothermal decomposition of the coal was effected in a quartz tubular furnace inside a stream of purified nitrogen at the temperatures 400, 500 and 700°C. After various heating times in the furnace, the coefficient of temperature conductivity was determined at 20 to 40°C according to the method of the regular thermal regime proposed by G. M. Kondratev and the author of this paper and perfected for investigating relatively small samples

Card 1/2 (Refs.1,2). The results are given in the form of a

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KASATOCHKIN, V.I.

20-6-36/59

AUTHOR: KASATOCHKIN, V.I., SMUTKINA, Z.S.

TITLE: Thermal Decomposition Kinetics and Structure Transformations of Fossil Coals. (Kinetika termicheskogo razlozheniya i strukturnyye prevrashcheniya iskopayemykh ugley, Russian)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 6, pp 1314-1317 (U.S.S.R.)

ABSTRACT: The thermal decomposition of fossil coals shows a series of characteristic features which can be brought into connexion with the chemical structure of their organic substance. The coal substance combines in its structure a relatively inactive core (carbon nets) with a reactive, peripheric part (lateral radical). By this the usually observed two stages of the primary and secondary decomposition, which differ considerably from each other, can be explained. In the case of the first, which develops comparatively quickly at a low temperature, the main mass of the volatile substances is separated chiefly by the destruction of the lateral radical. Chemical modifications of the core of the structure begin at a later stage of the secondary decomposition. Thus, the carbon nets of the initial coal substance remain in the solid product (coke). They form centers of a bidimensional carbon crystallization in the process of carbonization of the organic coal substance. Structural transformations of the coal substance were investigated by means of radiographic

Card 1/3

process of secondary decompos

depends on the metamorphism stage of the coal and on temperature. The observed rapid rise of activation energy in dependence on α for low decomposition temperatures might be assumed to be connected with the selectivity of the process of the primary destruction of the coal substance. A radiographic investigation of the structural transformations of the coal substance during thermal decomposition was carried out in a series of solid residues of coke coal which originated from the aforementioned experiments. The observed changes are connected with the primary decomposition of the lateral radical and elimination of structural units. The

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Card 2/3

having obtained mobility they endeavor, on the occasion of transition to the liquid-flowing state, to reach a position parallel to each other under the influence of the molecular field of forces. The infrared absorption spectra of the solid residues characterize essential modifications in the atomic groupings of the coal substance. The regular modifications of the position and of the intensity of the absorption strips according to the grade of decomposition indicate a relatively lower thermal stability of the aromatic simple ethers compared to the aliphatic and cyclical simple ethers. (3 illustrations, 4 Slavic references)

ASSOCIATION: Institute for Combustible Fossil Substances of the Academy of Science of the U.S.S.R.

PRESENTED BY: V.A.KARGIN, Member of the Academy

SUBMITTED: 21.11.1956

AVAILABLE: Library of Congress

Card 3/3

20-1-38/64

KASATOCHKIN, V.I.

AUTHOR KASATOCHKIN, V.I., LARINA, N.K.

TITLE The Investigation of the Structure of Humine Acids of Fossil Coals. (Issledovaniye stroyeniya guminovykh kislot iskopayemykh ugley - Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 1, pp 139-142 (U.S.S.R.)

ABSTRACT

The investigation of the structure and the properties of humine acids is of importance in connection with obtaining further knowledge concerning the chemical structure of fossil coals. The experimental material mentioned in this paper confirms the previously formed opinion: The structure of the molescules of humine acids occurs in form of individual flat aromatic nets of carbon with side radicals, containing various oxide and other functional groups. In connection herewith it can be said that the acid process occurring on this occasion is a process of acid-producing destruction of the macromolescules with separation of individual structural units. A precise definition of the structural scheme (as a chemical structural formula) can not yet be given because the carbon nets as molecule cores are characterized by a certain distribution (according to size) and the functional groups are distributed among the molecules.- The importance of the structure of humine acids etc. is of interest because the skeleton of the molecules in the carbon of humine acids corresponds to that of the carbon skeleton of the structural units of the carbonic matter.
(2 rables and 3 diagrams).

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Card 1/2

AUTHORS: Kasatochkin, V. I., and Kaverov, A. T. 20-117-5-31/54

TITLE: The Kinetics and the Mechanism of the Homogeneous Graphitization of Carbon (Kinetika i mekhanizm gomogennoy grafitatsii ugleroda).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 837-840 (USSR).

ABSTRACT: The present paper furnishes the results of the X-ray investigation of the kinetics and of the mechanism of the graphitization of cracking pyrolytic petroleum coke subject to isothermal conditions at temperatures of 2000, 2150, 2420 and 2800°C. The graphitization took place in a furnace with a graphite heater in an atmosphere of nitrogen and argon. According to the duration of the isothermal treatment in the furnace (hkl) bands appear in the roentgenographs, the intensity and acuteness of which increases with an increasing duration of the treatment. At the same time, the half width of the (hkl) bands and of the (00l) bands decreases. These modifications of the roentgenographs indicate an azimuthal orientation of the packets of the parallel basic lattices together with the occurrence and a further perfection of the three-dimensional orderliness of the carbon. Besides, a decrease of the distance d_{002} between the planes in accordance with theoretical principles is observed, which is also connected with the azimuthal orientation of the carbon layers to-

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KASATOCHKIN, V. I.

24-2-25/28

AUTHORS: Zil'berbrandt, O.I., Kazakov, Ye. I., Kasatochkin, V.I. and Tyazhelova, A.A. (Moscow).

TITLE: Investigation of the composition and of the properties of bitumen from **shale tars** of the Volga area. (Issledovaniye sostava i svoystv bituma iz degtey privolzhskikh slantsev).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, No.2, pp. 155-158 (USSR).

ABSTRACT: The results are described of investigation of bitumen obtained by oxidation of heavy fractions of semi-coking tars of Kashiria shale under works conditions. The residual tar fraction, boiling at 320°C, was subjected to oxidation in air at 170 to 180°C. Depending on the duration of the oxidation, various bitumen grades were obtained, the characteristics of which are entered in Table 1, p.156. It is concluded that with increasing duration of the oxidation of the original raw materials an accumulation takes place of hydrogenated and of the condensed asphaltene structures; the quantity is reduced of oils which, in the given case, become more saturated, compensating approximately the constancy of the relative contents of carbon and of hydrogen.

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24-2-25/28

Investigation of the composition and of the properties of bitumen from **shale tars** of the Volga area.

There are 3 figures, 2 tables and 15 references - 9 Russian, 6 English.

SUBMITTED: November 9, 1956.

AVAILABLE: Library of Congress.

Card 2/2

68-58-6-4/21

AUTHORS: Zamoluyev, V. K., Candidate of Technical Sciences, Mazankina, K. T., Candidate of Chemical Science and Kasatochkin, V. I., Doctor of Chemical Science

TITLE: ~~The Dependence of~~ the Coefficient of Thermoconductivity on the Degree of Interlattice Order of Coals During Isothermal Decomposition (Zavisimost' koeffitsiyenta temperaturoprovodnosti ot mezhsetochnoy uporyadochennosti kamennykh ugley pri izotermicheskom razlozhenii)

PERIODICAL: Koks i Khimiya, 1958, Nr 6, pp 11-13 (USSR)

ABSTRACT: The coefficient of thermoconductivity and the degree of interlattice order of the Donets coal of G (gas) and K (coking) types under conditions of isothermal decomposition at 500 and 700°C were investigated. The determination of the thermoconductivity coefficient of specimens obtained after various heating times in a furnace was carried out at 20-40°C using the method of regular heating conditions (Refs.4,5). The agreement between parallel determinations was within 1%. Powder X-ray photographs of the same specimens were also carried out using filtered copper radiation. The experimental results are shown graphically in Figs. 1 and 2 for G and K coals respectively. It was

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63-58-6-4/21

The Dependence of the Coefficient of Thermoconductivity on the Degree of Interlattice Order of Coals During Isothermal Decomposition

established that in the initial stages of isothermal decomposition of coals, the thermoconductivity coefficient substantially decreases and the degree of inter-lattice order sharply increases. Changes in the thermoconductivity coefficient and the degree of inter-lattice order of coals during the process of isothermal decomposition are determined by a rearrangement of steric bonds in the coal substance.
There are 2 figures, 1 table and 6 references, all of which are Soviet.

ASSOCIATION: IGI AN SSSR

1. Coal--Decomposition 2. Coal--Thermochemistry

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

20-119-4-44/60

AUTHORS: Kasatochkin, V. I., Kononova, M. M., Zil'berbrand, O. I.

TITLE: Infra-Red Absorption Spectra of Humus Substances of the Soil (Infrakrasnyye spektry pogloshcheniya gumusovykh veshchestv pochvy)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 4, pp. 785 - 788 (USSR)

ABSTRACT: The humus substances are the most characteristic compounds of the organic part of the soil. They were often investigated. Since, however, many problems connected with them are complicated and the nature of the substances varies according to the conditions of the soil formation, a number of problems concerning their nature and structure is not explained. In the present paper results are given of a comparative investigation of the structure of the humic-and "fulvic" acids, as in the title, and by means of radiographic method. As samples served: common black soil and lawn bleaching earth, both different to a great extent from each other. The method of

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20-119-4-44/60

Infra -Red Absorption Spectra of Humus Substances of the Soil

isolation of the humus substances was already described (Reference 1). Table 1 gives the elementary composition of the humus substances. These data show a higher degree of carbon enrichment in humic acids from black soil compared to those from the lawn "bleaching" earth and especially with the fulvic acids. Figure 1 shows schematically the interference bands on radiographs as rectangles the altitude of which corresponds to the relative intensity, and their width to the half width of the bands. The carbon skeleton of the molecules of the humic-and "fulvic" acids is characterized by the existence of an aromatic carbon atomic net (nuclear part) and of lateral groups (peripheric part) of non-aromatic nature, the latter contain carbon, sulfur, nitrogen, and other elements. In the molecules of humic acids the nuclear part is, in comparison with "fulvic" acids, better marked. This corresponds to a higher carbon percentage which is organized into carbon lattices. In humic acid from lawn bleaching earth the net is marked to a smaller extent than in the case of black soil. The existence of the peripheric

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20-119-4-44/60

Infra-Red Absorption Spectra of Humus Substances of the Soil

part which is marked to a smaller extent is characteristic of "fulvic" acid molecules. The obtained results prove uniform structure principles of humic-and "fulvic"acids from common black soil as well as from the lawn bleaching earth. However, besides the relation between the nuclear-and the peripheric part of the molecular structure, also the structure of the lateral groups in humic-and "fulvic"acids varies. There are 2 figures, 1 table and 3 Soviet references.

ASSOCIATION: Pochvennyy institut im. V. V. Dokuchayeva Akademii nauk SSSR (Soil Institute imeni V. V. Dokuchayev AS USSR)

PRESENTED: October 4, 1957, by I. V. Tyurin, Member, Academy of Sciences, USSR

SUBMITTED: September 28, 1957

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721010008-2"

AUTHORS: Kasatochkin, V. I., Kaverov, A. T. SOV/20-120-5-21/67

TITLE: The Electric Properties and Structure of the Transitional Forms of Carbon (Elektricheskiye svoystva i struktura perekhodnykh form ugleroda)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 5, pp.1007-1010 (USSR)

ABSTRACT: In this paper the results of an experimental investigation of the thermo e.m.f., of the electric resistance and of the structure of transitional forms from "amorphous carbon" to graphite are given. These forms are produced by a high-temperature treatment of different carbon samples. A homogeneous transition from the "amorphous carbon" to graphite was observed in petroleum cokes, in mineral coals and in a few other carbon samples at temperatures of 2000 - 2600°. The nature of this process is essentially a successive azimuthal orientation of the parallel layers formed in the thermal destruction of lateral carbon chains. Numerical data concerning the reduction of the distance between the layers are given. The samples were produced by an isothermal annealing for dif-

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SOV/20-120-5-21/67

The Electric Properties and Structure of the Transitional Forms of Carbon

ferent periods of petroleum cokes in a furnace in a nitrogen current at different temperatures. The positive sign of the coefficient α of the thermo e.m.f. confirms the semiconductor properties and the hole mechanism of electric conduction in the soot samples within the entire temperature interval, whereas in petroleum cokes this temperature range is limited by 1600 and 2800°. At t > 2000° α and the specific electric resistance ρ decrease as the distance between the layers in the homogeneous graphitization of coke. Some numerical data are given. Relations of the type $\alpha = a - b \lg \sigma$ and $\alpha = A/\sigma - B$ exist between α and the specific electric conductivity. The change of α in the pre-crystallization stage can be explained by the following two processes in the thermal treatment: 1) A growth of the carbon layers and 2) A destruction of the lateral carbon chains. There are 4 figures, 1 table, and 8 references, 4 of which are Soviet.

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