AKISHEV, I.M.

Structure of the natural reservoir of the Devonian terrigenous formation in the northern portions of the Romashkino field. Uch. zap. Kaz. un. 117 no.9:297-300 '57. (MIRA 13:1)

1.Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina. Kafedra geologii nefti i gaza.
(Romashkino region--Petroleum--Geology)

AKISHEV, I. M. Cand Geol-Min Sci -- "Peculiarities of the structure and petroleum-bearing ~~quality~~ potential of the Devonian deposits on the northern and western slopes of the southern boss and the southeastern slope of the northern boss of the Tatar anticline." Bugul'ma, 1961 (Kazan' Order of Labor Red Banner State Univ im V. I. Ul'yanov-Lenin. Tatar Petroleum Sc. Res Inst "TatNII"). (KL, 4-61, 189)

AKISHEV, K.A.

USSR/ Miscellaneous - Archeological expeditions

Card 1/1 Pub. 123 - 9/17

Authors : Ageeva, E. I., and Akishev, K. A.

Title : Archeological expeditions conducted by the Institute of History in 1954

Periodical : Vest. AN Kaz. SSR, 11, 67-75, Nov 1954

Abstract : Four expeditions organized by the Institute of History, Archeology and Ethnography, Acad. of Sc., Kaz. SSR are described. The expeditions investigated individual regions of the Kazakhstan and archeological maps were compiled. Illustration.

Institution : .....

Submitted : .....

AKISHEV, K.A., kand. istorich. nauk

Principal results of archaeological research in Kazakhstan. Vest. AN Kazakh. SSR 19 no.4:90-96 Ap '63. (MIRA 16:5)

(Kazakhstan—Archaeology)

AKISHEV, S.

USSR

"From the Experiences of Leading Collective Farms," Sotsialisticheskoye selskoye khozyaistvo, No. 6, 1948.

Current Digest of the Soviet Press, Vol. 1, No. 3, 1949, page 61. (In CIA Library)

1. SMIRNOV, A. ; AKISHEV, S.

2. USSR (600)

4. Flax

7. Increase in communal economy on flax-growing collective farms. Sots. sel'khoz. 23 no. 12 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

AKISHEV, T.A.; NASYRKHANOV, A.N.

Practice in applying electric prospecting to the karst-interstitial waters in central Kazakhstan. Izv. AN Kazakh. SSR. Ser. geol. 21 no.2:78-86 Mr-Ap'64. (MIRA 17:5)

1. TSentral'no-Kazakhstanskoye geologicheskoye upravleniye, Karaganda.

S/137/62/000/003/191/191
A154/A101

AUTHORS: Naymark, L. E.; Akisheva, R. Z.; Chalykh, P. N.

TITLE: The effect of current intensity and rate of evaporation of the sample on the intensity of the lines in the spectrum of an a.c. carbon arc.

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 14, abstract 3 K 76 ("Izv. AN KazSSR, Ser. metallurgii, obogashcheniya i ogneuporov," vyp. 2, 97 - 103; Kaz. summary)

TEXT: Tests were made with $SiO_2$- and NaCl-based mixtures containing hundredths and tenths of a percent of In, Tl, Ga, Ge, As, Cd, Te, Sn, Pb, and Zn, as well as 1.5 % of Cu in the form of oxides and sulfides. Weighed 20 mg samples were placed in the channel of the bottom carbon arc electrode and ignited until total evaporation of impurities. АИСП-22 (ISP-22) spectrograph was used. Upon increase of the channel depth from 2 to 6 mm, the "idle" burning time of the arc noticeably increases, but the evaporation time of the elements changes little. The evaporation time dropped by 3 - 5 times when the bottom electrode was cooled

Card 1/3

The effect of current intensity ....

by a massive metal collet. It was found that upon ignition of the arc, the temperature of the electrodes increases rapidly for 20 - 40 sec. at all points at a constant distance from the discharge until it reaches a constant value, irrespectively of the sample's composition. The temperature attained by the electrode depends most of all on the ionization potentials of the elements entering the discharge and on the power of the arc; the sample's boiling point is of secondary importance. The heating-up rate and temperature of the electrodes increase considerably with increasing current intensity. The temperature of the top electrode does not depend on the nature of the substance introduced into the bottom electrode. A series of empirical formulae were proposed for describing these regularities. The dependence of the intensity of the lines I on the current intensity i was examined at 5 - 20 amps. It was found that $I = i^k$, where $k = 1.3 - 1.55$. It is supposed that the increase of I with the growth of i is due to the observed widening of the discharge column. It was found that at a constant exposure time the constant background intensifies with growing i at the same rate as I. However, at large i values considerable reduction of the exposure time is possible. By using this effect the sensitivity may be increased by several times.

Card 2/3

AKISHEV, V.

USSR/ Electronics - Radio

Card 1/1 Pub. 89 - 24/33

Authors : Akishev, V., and Klyusov, V.

Title : Fastening miniature tubes

Periodical : Radio 2, page 48, Feb 56

Abstract : Directions are given for making a clamp out of spring steel wire for fastening miniature tubes in radio receivers which are subject to shaking as in the case of those mounted in automobiles or portable receivers. Diagram.

Institution : .....

Submitted : .....

KINZIKEYEV, A.R.; AKISHEVA, A.S.

Types of oil pools in the coal-bearing horizon of the Romashkino field. Geol.neft i gaza 6 no.10:50-54 O '62. (MIRA 15:12)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, g. Bugul'ma.
(Romashkino region--Petroleum geology)

AKISHIN, Anatoliy Andreyevich, zhurnalist; OGORODNIKOVA, N.N., red.

[Commander of the blue "two"] Komandir golubŏi dvoiki. Moskva, Znanie, 1965. 93 p. (MIRA 18:10)

AKISHIN, A. I.

AKISHIN, A. I.

"Special Electron Multipliers Which Coulb be Employed for the Counting of Ions,"

A conference on Electron and Photo-Electron Multiplier; Radiotekhnika i Elektronika, 1957, Vol. II, No. 12, pp. 1552-1557 (USSR)

Abst: A conference took place in Moscow during February 28 M and March 6, 1957 and was attended by scientists and engineers from Moscow, Leningrad, Kiev and other centres of the Soviet Unica. Altogether, 28 papers were read and discussed.

120-3-19/40

AUTHOR: Akishin, A.I.

TITLE: An Axially-Symmetric Electron Multiplier for the Recording of Ions (Aksial'no-simmetrichnyy elektronnyy umnozhitel' dlya registratsii ionov)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, Nr 3, pp.72-73 (USSR)

ABSTRACT: Maxson et al (Ref.2) have described a method of using Allen's multiplier together with an electrostatic spherical analyser of slow ions. A disadvantage of this method is that the electrode at which the ion beam is transformed into an electron beam is outside the multiplier and therefore electron collection is difficult and some losses are possible. In the present work a new axially symmetric electron multiplier is described which was specially designed for work in conjunction with an electrostatic spherical analyser of low energy ions. The construction of the analyser is shown in Fig.1. The electrodes of the multiplier are in the form of surfaces of revolution obtained by rotation of the contours of the electrodes in Allen's multiplier about the axis $OO_1$ . The electron-optical arrangement was checked using a model and an electrolitic tank. The possibility of electron losses is very small. Fig.2 shows the count rate

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120-3-19/40

An Axially-symmetric Electron Multiplier for the Recording of Ions.

versus discriminating voltage. For α-particles from $Po^{210}$ the efficiency is about 100% at the threshold of the discriminator. The corresponding efficiency for γ-rays is about 0.3% (γ-rays from $Co^{60}$). The natural background of the multiplier for a 50% count of α-particles is about 20 counts per minute. The following persons collaborated: S.S.Vasil'yev, F.Pankov and M.Kiselev. There are 2 diagrams, no tables and 2 references, both English.

ASSOCIATION: Second Scientific Research Institute for Physics of the Moscow State University imeni M.V. Lomonosov (2-y Nauchno-issledovatel'skiy fizicheskiy institut MGU im. M. V. Lomonosova)

SUBMITTED: December 22, 1956.

AVAILABLE: Library of Congress.

Card 2/2

1. Electron multipliers-Application 2. Ions-Recording
3. Electrostatic meters

AKISHIN, A. I.

120-5-7/35

AUTHORS: Akishin, A.I., Vasil'yev, S.S. and Mikhaleva, T.N.

TITLE: A Two-channel Electron Multiplier with a Plane Cathode (Dvukhkanal'nyy elektronnyy umnozhitel' s plenochnym katodom)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No. 5, pp. 36-38 (USSR)

ABSTRACT: It is sometimes necessary in nuclear studies to record ions having a small range in a material in the presence of an intense background of scattered quanta and high energy ions. In such cases, it is difficult to use ordinary single-channel electron multipliers since the pulse heights due to slow ions and the scattered radiations are comparable. It is not always possible to discriminate against the background without an appreciable loss in the slow ion counting efficiency. In such cases, it is possible to use a two-channel electron multiplier with a plane cathode (Ref.1). The present paper describes the construction and some characteristics of such multipliers. Each channel consists of 15 stages and an anode. The form and position of the stages is similar to that described by Allen (Ref.2). The form of the cathode is such as to focus the electrons from both of its sides onto the first stages. Corresponding stages in the two channels are electrically

Ca: Card 1/3

A Two-channel Electron Multiplier with a Plane Cathode. 120-5-7/35

function of interstage voltage. Curves 1 and 2 are for a single-channel multiplier and Curve 3 for the present two-channel device working with a coincidence circuit. It can be seen that Curve 3 reaches a plateau at inter-stage potential greater than 300 V. $\gamma$-ray detection efficiency ($Co^{60}$) in the latter case is about $10^{-5}$ while $\alpha$-particle detection efficiency is about unity (cathode: aluminum foil 7 $\mu$ thick). The proton counting efficiency (cathode: aluminum foil 0.145 mg/cm$^2$) was found to be about unity above 65 keV for the two-channel instrument working with a coincidence circuit. M.K. Listov and M.V.Kiselev prepared the multipliers.
There are 4 figures and 4 referemces, 1 of which is Slavic.

ASSOCIATION: Scientific Research Institute for Nuclear Physics MGU imeni M.V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki MGU im. M.V. Lomonosova)

SUBMITTED: March 13, 1957.

AVAILABLE: Library of Congress

Card 3/3

focussing electrode being added. The geometry of the stages is the same as in Ref.1. After activation, the overall efficiency was $10^8$ with the inter-electrode potential at 400 V. Special precautions were taken to screen the first few dynodes from external fields. The cathodes were earthed and the anodes were at a positive potential. The efficiency for α-particle detection was found to be a 100% when the inter-stage voltage was greater than 270 V. When α-particle detection efficiency was 100%, the γ-ray detection efficiency was about $6 \times 10^{-4}$, i.e. 300 times less than in Allen's multiplier. S.S. Vasil'yev and V.S. Zazulin assisted in this work. There are 4 figures and 3 references, 2 of which are Slavic

ASSOCIATION: Scientific Research Institute for Nuclear Physics MGU im. M.V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki MGU im. M.V. Lomonosova)

SUBMITTED: March 13, 1957.

AVAILABLE: Library of Congress

AKISHIN, A.I., Cand Tech Sci--(diss) "Construction and study of the properties of electronic multipliers used in the registration of ions." Mos, 1958. 10 pp (Min of Higher Education USSR. Mos Order of Lenin Power Engineering Inst), 100 copies (KL,26-58,108)

57-28-4-15/39

AUTHOR: Akishin, A. I.

TITLE: The Emission of Secondary Electrons Under the Action of Deuterons With an Energy of From 1 to 4 MeV (Emissiya vtorichnykh elektronov pod deystviyem deytronov s energiyey ot 1 do 4 Mev)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 4, pp. 776-778 (USSR)

ABSTRACT: The author examined the dependence of the factor $\gamma$ of the knocking-out of secondary electrons by the recorded ions from the cathode of the electron-multiplier on the energy of the deuterons in the range of from 1 to 4 MeV. Plates of activated and nonactivated metallic alloys CuBe($\sim$2 % Be), CuMg ($\sim$4 % Mg), AlMg ($\sim$4 % Mg), thin Be-layers applied to a nickel-base by means of evaporation in a vacuum, as well as metals such as Cu and Ni were used as target. The obtained data show that $\gamma$ in the case of deuterons with 1 to 4 MeV on the average changes from 3,5 to 2 on bombardment of the targets of activated CuBe-

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The Emission of Secondary Electrons Under the Action of Deuterons With an Energy of From 1 to 4 MeV

and CuMg-alloys as well as of BeO. Analogous results were also obtained in the case of an activated AlMg-alloy. In non-activated alloys and metals $\gamma$ on an increase in the deuteron-energy in the same interval on the average changes from 1,5 + 2 to 1. The activation of the alloyed emitters permits to increase the factor $\gamma$ on bombardment of the emitter by deuterons with 1 to 4 MeV by about the double amount (as compared to non-activated alloys and metals). The maximum error in the determination of $\gamma$ did not exceed $\pm$ 10 %. S. S. Vasil'yev supported the work and the cyclotron-screw, as well as N. S. Kirpichev helped in the work. There are 4 figures and 6 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki MGU (Scientific Research Institut for Nuclear Physics, Moscow State University)

SUBMITTED: December 10, 1957

SOV/53-66-2-7/9

AUTHOR: Akishin, A. I.

TITLE: The Recording of Ion Beams by Means of Electronic Multipliers in Mass Spectroscopy and in Nuclear Investigations (Registratsiya ionnykh puchkov elektronnymi umnozhitelyami v mass-spektroskopii i yadernykh issledovaniyakh)

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol 66, Nr 2, pp 331-346 (USSR)

ABSTRACT: The author of the present paper gives a survey of the present stage of development of electronic multipliers as seen from the experimental point of view. Results mentioned by 92 Soviet and non-Soviet publications are taken into account. For a number of mass-spectroscopic methods of analyzing radioactive "hot" products and for the detecting of isotope tracks highly sensitive and inertialess ion detectors are necessary. (Recording of beams of charged particles up to $10^{-19}$ A and $10^{-9}$ sec duration). In nuclear research such electronic multipliers are used e.g. for the purpose of recording recoil nuclei with some 10 or 100 eV, as well as in all cases in which other counters fail to give satisfaction. In the introduction the author draws special atten-

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The Recording of Ion Beams by Means of Electronic Multipliers in Mass Spectroscopy and in Nuclear Investigations

tion to the book by N. O. Chechik, S. M. Faynshteyn and T. M. Lifshits "Elektronnyye umnozhiteli" ("Electronic Multipliers"). Individual chapters deal with the following subjects: 1) Transformation of an ion current into an electron current (on the cathode of the multiplier); 2) The counting of charged particles by means of electronic multipliers; 3) The stability of multiplication; 4) The application of electronic multipliers in mass spectroscopy, and 5) its application in nuclear investigations. There are 13 figures and 92 references, 23 of which are Soviet.

AKISHIN, A.I.; VASIL'YEV, S.S.

Secondary electron emission effected by lithium, boron, and nitrogen ions with energy of up to 10 Mev. Fiz.tver.tela 1 no.5:833-834 My '59. (MIRA 12:4)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Electron emission)

SOV/120-59-2-22/50

AUTHOR: Akishin, A.I.

TITLE: A High Vacuum Radioactive Ionisation Manometer (Radioaktivnyy ionizatsionnyy manometr dlya vysokogo vakuuma)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 2, pp 78-80 (USSR)

ABSTRACT: Fig 1 shows a schematic drawing of the manometer using an electron multiplier which has a 44 x 25 $mm^2$ input window. The figure caption in Fig 1 is as follows: K - cathode, Э1 ... Э13 - emitters, A - anode, C - grid, И - ions, α - a specimen of $Po^{210}$, Al - foil, Б - metallic envelope, O - connection to the vacuum system. The electron optics in the cathode section of the multiplier is based on design studies using a mechanical model. The geometry of the remaining dynodes and their activation is as described by Allen in Ref 3. The cathode of the multiplier is maintained at a negative potential of about 6 kV while the anode is earthed. The grid of the input window is at the cathode potential. To measure the characteristics of the instrument a $Po^{210}$ α-source (10 μcurie) was used. The Po film was covered by a 7 μ aluminium foil. In order to prevent background

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SOV/120-59-2-22/50

A High Vacuum Radioactive Ionisation Manometer

There are 3 figures and 3 references, one of which is English and 2 are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki MGU (Scientific Research Institute for Nuclear Physics, Moscow State University)

SUBMITTED: March 14, 1958

Card 3/3

AKISHIN, A.I.

Electron multiplier for recording transit charged particles. Prib. i tekh.eksp. 6 no.5:54-56 S-O '61. (MIRA 14:10)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Photoelectric multipliers)

S/048/62/026/011/019/021
B125/B102

26.2312

AUTHORS: Akishin, A. I., and Doktorov, Yu. A.

TITLE: Emission of charged particles from various substances induced by impacts of sand particles

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 11, 1962, 1435-1437

TEXT: The emission of electrons and of positive ions in the bombardment of metallic and dielectric targets by brass and quartz grains was studied with the aid of electronic multipliers. The experimental setup (Fig. 1) consists of a rotating drum 1 with various targets, an electronic multiplier 2, a grain container with feeding device 3, and the housing 4. In the first test series, grains of $\sim 10^{-2}$ to $10^{-4}$ g fell on the targets from $\sim 40$ cm height. In the experiments the counting rates N were determined as functions of target potential, coil current and time. If electrons are recorded, N rapidly increases with increasing voltage $U_M$ between target and multiplier cathode. The shape of the function $N = \varphi(U_M)$ depends on the efficiency of accumulation of the target

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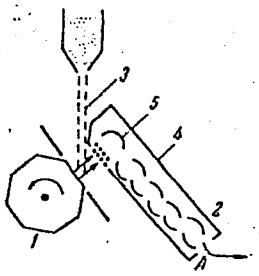
[illegible] counting
[illegible] further increase
[illegible] has not been fully

clarified yet. Perhaps, the atoms and molecules of the films of gas and organic vapors adsorbed on the target surface are ionized at the instant of impact. The emission may also be due to microdischarges between target and grain. The counting rate depends only slightly on the target and grain materials. There are 4 figures.

Fig. 1. Diagram of the experimental setup.




Card 3/4

AKISHIN, A.I.; VASIL'YEV, S.S.; ISAYEV, L.N.

Cathode sputtering of mica and molten quartz by krypton ions.
Izv. AN SSSR. Ser.fiz. 26 no.11:1356-1358 N '62.
(MIRA 15:12)

(Sputtering (Physics)) (Mica) (Quartz) (Krypton)

AKISHIN, A.I.; DOKTOROV, Yu.A.

Emission of charged particles from various substances when hit by grains of sand. Izv.AN SSSR. Ser.fiz. 26 no.11:1435-1437 N '62. (MIRA 15:12)
(Photoelectric multipliers) (Electrons—Emission)
(Ions)

AM4008908 BOOK EXPLOITATION S/

Akishin, Anatoliy Ivanovich

Vacuum ion bombardment (Ionnaya bombardirovka v vakuume) Moscow, Gosenergoizdat, 63. 0143 p. illus., biblio. 9,000 copies printed. 1963.

TOPIC TAGS: ion bombardment, ion bombardment in vacuum, vacuum tubes, secondary emission, photoemission, ion beam registration, cold cathode emission, harmful ion bombardment, outer space ion bombardment

PURPOSE AND COVERAGE: The book, claimed to be the first to deal especially with the role of ion bombardment in electric vacuum techniques and experimental physics, describes briefly the secondary processes which occur when the surface of a solid is bombarded by ions. The useful and harmful roles of ion bombardment in electronic vacuum devices, experimental physics, and outer-space flights are

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AM4008908

considered. Several applications of secondary electron emission induced by ions in various vacuum tubes and in measurement techniques are described. The book is intended for engineers, scientific workers, and senior students specializing in electronics and experimental physics. The author is grateful to Professor R. A. Nilender for interest and valuable remarks, to the staff of the Laboratory of Nuclear Reactions NIIYaF MGU, particularly S. S. Vasil'yev, L. N. Isayev, Yu. A. Doktorov, for great help in the work and to the staff member of the Institut atomnoy energii imeni I. V. Kurchatova (Institute of Atomic Energy) B. V. Panin, to the members of the MGU Physics Faculty V. Ye. Yurasova and V. A. Molchanov who reviewed the manuscript and made several valuable remarks, and to corresponding member AN SSSR S. N. Vernov, I. A. Savenko, V. Ye. Nesterov, and Ye. V. Gorachkov for useful discussions.

TABLE OF CONTENTS [abridged]:

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AM4008908



SUB CODE: PH SUBMITTED: 17Jun63 NR REF SOV: 135

OTHER: 170 DATE ACQ: 30Nov63

Card 3/3

AKISHIN, A.I.; ZAZULIN, V.S.

Use of a quartz resonator in checking the thickness of films produced in a vacuum. Prib. i tekh. eksp. 8 no.1:152-154 Ja-F '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Solid films--Measurement) (Oscillators, Crystal)

AKISHIN, A.I.; ANDREYEVA, M.G.; VASIL'YEV, S.S.; ISAYEV, L.N.; TSEPLYAYEV, L.I.

Action of electron bombardment and glow discharge on alloyed secondary electron emitters. Radiotekh.i elektron. 8 no.2: 288-293 F '63. (MIRA 16:2)
(Cathodes) (Thermionic emission)

ACCESSION NR: AP4013153 S/0203/64/004/001/0202/0205

AUTHORS: Akishin, A. I.; Tseplyayev, L. I.

TITLE: Secondary emission multiplier for recording micrometeors

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 1, 1964, 202-205

TOPIC TAGS: secondary emission, secondary emission multiplier, micrometeor, current pulse, electron, electron pulse, hemispherical cathode, scintillation counter

ABSTRACT: Various detectors are now being used to record micrometeors, the most sensitive being the scintillation counter, but the sensitivity of this instrument may be reduced in time by damage from the micrometeors and from corpuscular and electromagnetic radiation. Pressure-sensitive detectors (piezoelectric pickups) cannot record micrometeors that have a mass less than $10^{-9}$-$10^{-10}$ g. The authors consider the possibility of a specially designed secondary-emission multiplier, with a large hemispherical cathode and an open entrance, which may record masses smaller than $10^{-10}$ g. They examine the parameters of such a device on the basis of a model study. They compute (roughly) that the emission at the moment of impact of an iron micrometeor having a mass of $10^{-13}$ g and a velocity of 45 km/sec will give an

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ACCESSION NR: AP4013153

electron pulse of $\approx 10^5$-$10^6$ electrons for an interval of $10^{-8}$ seconds. If the micrometeor is considered to be a cloud of individual atoms, the kinetic energy of each would be about 750 ev, and this would exceed the energy of the interatomic bond almost a hundredfold. The authors conclude that a hemispherical cathode of large diameter may be used for reliable recording of the pulse of an electron beam that may be hundreds or thousands of times weaker than expected in the recording of micrometeors. Tests on the multiplier during simultaneous transmission of current pulses to the cathode and imposition of a steady charge (imitating the cosmic background) have shown that the device permits reliable separation of current pulses lasting 1 microsecond against the steady background. "The authors thank S. S. Vasil'yev for his support of this work." Orig. art. has: 3 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University); Institut yaderncy fiziki (Institute of Nuclear Physics)

SUBMITTED: 18Jul63 DATE ACQ: 02Mar64 ENCL: 00

SUB CODE: AS, PH NO REF SOV: 006 OTHER: 002

Card 2/2

AKISHIN, A.I.; VASIL'YEV, S.S.; TULINOV, A.F.; TSEPLYAYEV, L.I.

Recording of neutral atoms having an energy of 50 - 500 ev. Izv. AN SSSR. Ser. fiz. 28 no.1:138-140 Ja '64. (MIRA 17:1)

ACCESSION NR: AP4013428 S/0057/64/034/002/0352/0353

AUTHOR: Akishin, A.I.; Doktorov, Yu.A.

TITLE: Concerning high-vacuum electric breakdown

SOURCE: Zhurnal tekhn.fiz., v.34, no.2, 1964, 352-353

TOPTIC TAGS: breakdown, high vacuum breakdown, metallic particle, metal electrode, metallic particle electric breakdown, Cranberg theory, electrode gap

ABSTRACT: In order to obtain experimental material relating to Cranberg's theory of high vacuum breakdown (L.Cranberg,J.Appl.Phys.1952,No.5,1952), the behavior of minute metallic particles between plane electrodes in vacuo was observed. Particles of carbonyl iron and molybdenum about $10^{-4}$ cm in diameter were employed, as well as larger particles ($10^{-3}$ to $10^{-2}$ cm) of brass. The smallest particles were drawn into the interelectrode region through an opening in one of the electrodes by means of an auxiliary electric field; the larger particles were introduced mechanically. The electrodes were of copper and aluminum, their gap was adjustable up to 1 cm, and a pressure of $10^{-5}$ mm Hg was maintained between them. Potentials up to 25 kV were applied. Charged particles (ions or electrons) originating on one electrode were re-

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ACC.NR: AP4013428

corded by an electron multiplier via an opening in the other electrode. The number of charged particles produced per microdischarge increased very rapidly both with increasing field strength and increasing particle size. If the data can be extrapolated from the experimental field strengths of $10^4$ to 4 x $10^4$ V/cm to fields of the order of $10^5$ to $10^6$ V/cm (where vacuum breakdown occurs), it may be concluded that the $10^{-4}$ cm particles would produce more than $10^5$ to $10^6$ ions and electrons per discharge at these higher fields. It is suggested that the production of these electrons and ions is due to the presence of adsorbed gas on the electrodes. Orig.art. has: 2 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im.M.V.Lomonosova (Moscow State University)

SUBMITTED: 21Nov62 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 002

Card 2/2

AKISHIN, A.I.; ISAYEV, L.N.; TYUTRIN, Yu.I.

Scattering of alkali halide monocrystals by argon ions.
Radiotekh. i elektron. 9 no.11:2063-2067 N '64. (MIRA 17:12)

L 2572-66 EWT(m)/EPF(c)/EWP(j) DJ/GS/RM

ACCESSION NR: AT5022679 UR/0000/65/000/000/0285/0289

AUTHORS: Akishin, A. I.; Troyanovskaya, G. I.; Isayev, L. N.; Sergeyeva, L. M.; Andreyeva, M. G.; Marchenko, Ye. A.; Alekseyev, N. M.

TITLE: Behavior of friction junctions and some self-lubricating materials in a vacuum under ion bombardment

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya treniya i iznosa (Theory of friction and wear). Moscow, Izd-vo Nauka, 1965, 285-289

TOPIC TAGS: friction, wear, solid lubricant, molybdenum disulfide, polymer, ion radiation effect/ AMAN self lubricating material, AF ZA plastic lubricant

ABSTRACT: The effects of hydrogen ion bombardment on the coefficient of friction and on wear of friction junctions were investigated. Self-lubricating materials containing graphite, $MoS_2$, $WS_2$, $MoSe_2$, and various polymeric bonding matrices, and, in particular, material AMAN, bronze-based metalloceramic coated with $MoS_2$ and plastic AF-ZA were tested in the apparatus shown on Fig. 1 on the Enclosure. The specimens were irradiated with 3-Kev hydrogen ions, and their friction and wear characteristics against a steel shoe (1 kg load, 1.2 m/sec) were measured over a

Card 1/4

9.5-hour period (1 hour run-in, 2 hours in vacuum, 6 hours in vacuum under radiation and 30 minutes without radiation, or 1 hour run-in and 8.5 hours in vacuum without radiation). It was found that the coefficient of friction decreased significantly in vacuum, but that radiation had no measurable effects on friction or wear of any materials tested. Thus the coefficient of friction can be calculated from

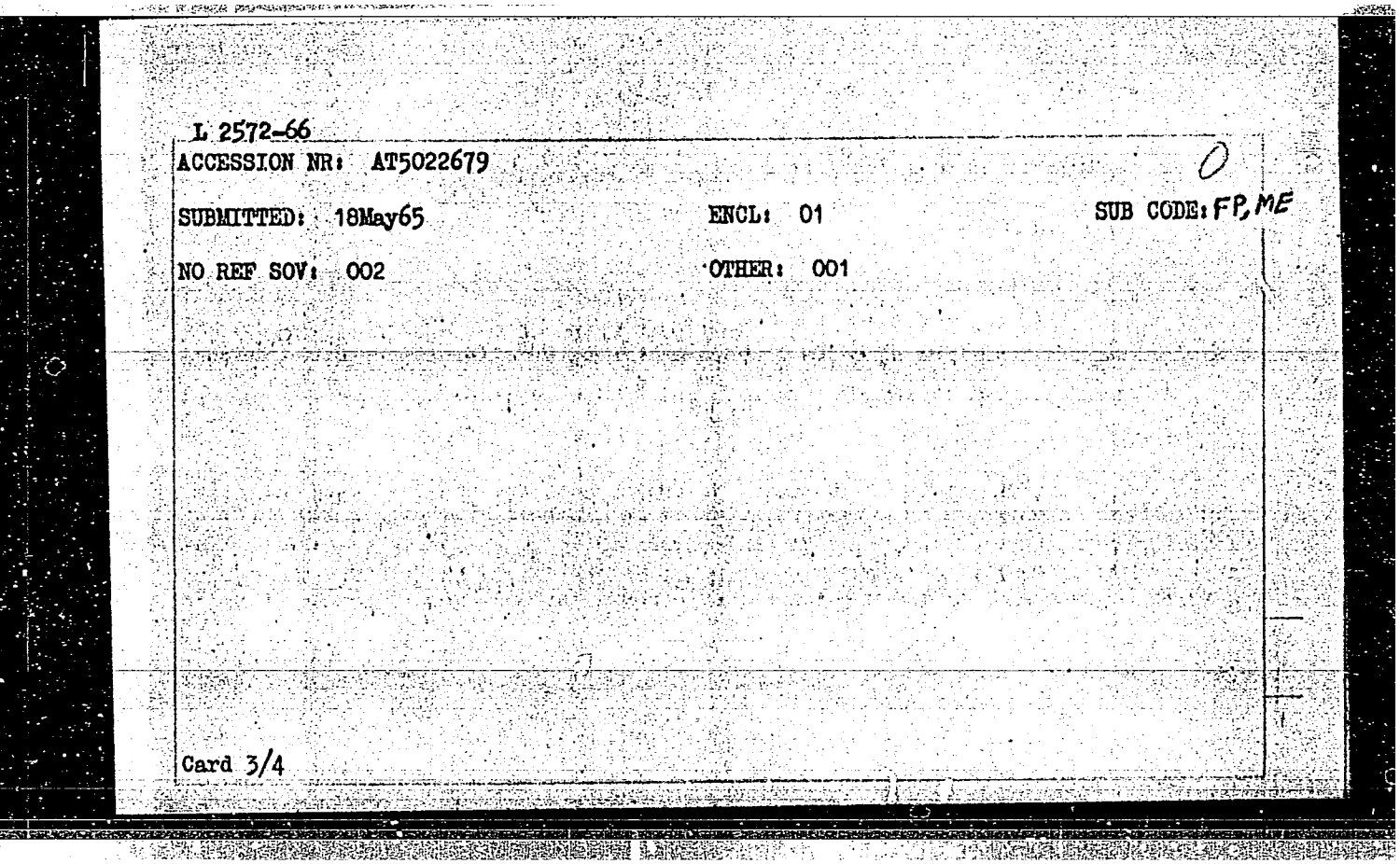
$$f = 0{,}35 C_s \left(\frac{p_0}{H_0 B}\right)^{\frac{1}{\gamma}} + 0{,}9\beta + \frac{\tau_0}{HB},$$

(where $\beta$ = adhesion coefficient, $C_5$ and $\gamma$ = microstructure characteristics, $\tau_0$ = specific shear adhesion, $p_0$ = contour pressure) which is suggested by Kragel'skiy and Mikhin. The wear can be calculated from

$$I = k \frac{h\left\{-\ln\left[1 - \frac{h_{max}}{R}\left(\frac{p}{bHB}\right)^{\frac{1}{\nu}} - \sqrt{2\frac{h_{max}}{R}\left(\frac{p}{bHB}\right)^{\frac{1}{\nu}}\frac{1-\frac{2\tau}{\sigma_s}}{1+\frac{2\tau}{\sigma_s}}}\right]\right\}^{\vartheta}}{\delta(\nu+1)[\ln(1+\delta)]^{\vartheta}} \frac{p}{HB},$$

(where $\theta$ = angle of irregularities on friction surface, $\delta$ = elongation in tension, $\tau_s$ = yield point). Orig. art. has: 2 formulas, 3 tables, and 2 figures.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkam, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)



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Card 3/4

L 2572-66

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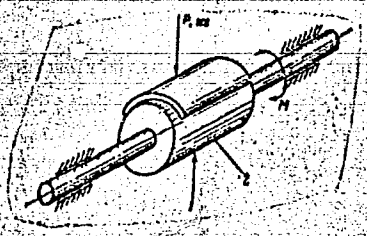


Fig. 1. Experimental apparatus: 1 - ion stream, 2 - specimen

Card 4/4

AKISHIN, F. D., Cand Agric Sci (diss) -- "Increasing the productivity of natural fodder growth on the kolkhozes and sovkhozes of the Latvian SSR (On the example of the 'Skriveri' experimental farm, Ogrskiy Rayon)". Riga, 1959. 31 pp (Latvian Agric Acad), 200 copies (KL, No 11, 1960, 135)

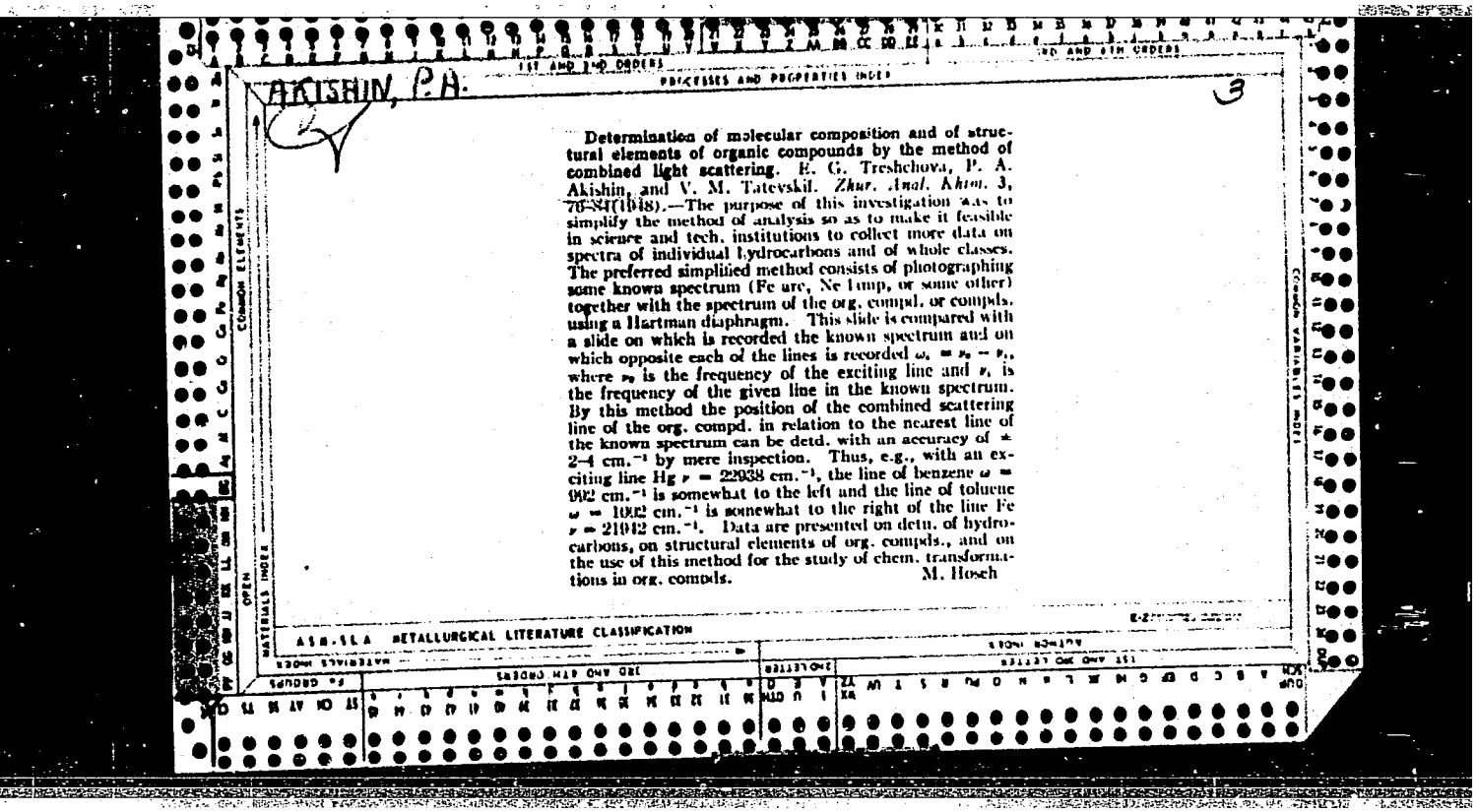
AKISHIN, F. D. Cand Agr Sci -- "Raising the productivity of natural fodder-crop lands in kolkhozes and sovkhozes of the Latvian SSR (According to the example of the experimental farm 'Skriveri', Ogrskiy Rayon)." Skriveri, 1960 (State Committee of Higher and Secondary Specialized Education of the Council of Ministers Latvian SSR. Latvian Agr Acad). (KL, 1-61, 200)

AKISHIN, F.D.

"The Transformation of Natural Fodders by Cultivation";

dissertation for the degree of Candidate of Agricultural Sciences
(awarded by the Timiryazev Agricultural Academy, 1962)

(Izvestiya Timiryazevskoy Sel'skokhozyaystvennoy Akademii, Moscow, No. 2, 1963, pp 232-236)



AKISHIN, P.A.

3

**Determination of molecular composition and of structural elements of organic compounds by the method of combined light scattering.** E. G. Treshchova, P. A. Akishin, and V. M. Tatevskii. *Zhur. Anal. Khim.* 3, 76-84(1948).—The purpose of this investigation was to simplify the method of analysis so as to make it feasible in science and tech. institutions to collect more data on spectra of individual hydrocarbons and of whole classes. The preferred simplified method consists of photographing some known spectrum (Fe arc, Ne lamp, or some other) together with the spectrum of the org. compd. or compds. using a Hartman diaphragm. This slide is compared with a slide on which is recorded the known spectrum and on which opposite each of the lines is recorded $\omega_i = \nu_0 - \nu_i$, where $\nu_0$ is the frequency of the exciting line and $\nu_i$ is the frequency of the given line in the known spectrum. By this method the position of the combined scattering line of the org. compd. in relation to the nearest line of the known spectrum can be detd. with an accuracy of ± 2–4 cm.$^{-1}$ by mere inspection. Thus, e.g., with an exciting line Hg $\nu$ = 22938 cm.$^{-1}$, the line of benzene $\omega$ = 992 cm.$^{-1}$ is somewhat to the left and the line of toluene $\omega$ = 1002 cm.$^{-1}$ is somewhat to the right of the line Fe $\nu$ = 21942 cm.$^{-1}$. Data are presented on detn. of hydrocarbons, on structural elements of org. compds., and on the use of this method for the study of chem. transformations in org. compds.

M. Hosch

AKISHIN, P. A.

PA 16/49T26

USSR/Chemistry - Organic Compounds, Sep 49
Determination of
Aromatic in Gasoline
Chemistry - Analysis, Spectrochemical

"Quantitative Determination of Aromatic Hydrocarbons $C_6$--$C_8$ in Cracking Gasoline by the Method of Combined Dispersion of Light," M. D. Tilicheyev, P. A. Akishin, Ye. G. Treshchova, V. M. Tatevskiy, Con Inst of Aviation Fuels and Lubricants and Moscow State U, 8½ pp

"Zavod Lab" Vol XIV, No 9

Measures frequency and intensities of lines in

16/49T26

USSR/Chemistry - Organic Compounds, Sep 48
Determination of
Aromatic in Gasoline (Contd)

combination dispersion spectra of aromatics - ethylbenzene, o-, m-, and p-xylenes. Demonstrates possibility of determining these aromatics in cracking gasolines in the presence of alkenes by this method for 60 artificial mixtures. Concentration of individual compounds varied 2 - 40%.

16/49T26

AKISHIN, P. A.

PA 64/49T18

USSR/Chemistry - Diene Conversion
Chemistry - Cyclopropane

Jun 49

"Synthesis of Olefin, Paraffin, and Cycloparaffin Hydrocarbons: VII, The Conversion of Diene Hydrocarbons Into Cyclopropanes. The Synthesis of 1, 1-, 2, 2-Tetramethylcyclopropane," R. Ya. Levina, B. M. Gladshteyn, P. A. Akishin, Moscow Ord of Lenin State U. Lab of Org Chem imeni N. D. Zelinskiy, 5 3/4 pp

"Zhur Obshch Khim" Vol XIX, No 6

Develops a method for extracting cyclopropanoic hydrocarbons in three steps, and by this method synthesizes 1, 1-, 2,2-tetramethylcyclopropane, and determines its previously underscribed structure from its physical and chemical properties (which are mentioned). Investigates possibility of using ditertiary 1, 3-dibromide in Gustavson's reactions for first time.

Submitted 5 Jan 48.

PA 64/49T18

AKISHIN, P. A., KELLE, V. I., TATEVSKIY, V. M., SILAYEV, A. V.

Biophysics

One mistaken theory of Professor Kobozev. Vest. Mosk. un. 5, No. 8, 1950.

9. Monthly List of Russian Accessions, Library of Congress, November 1952 ~~1953~~, Uncl.

AKISHIN, P. A.

"For the Development of an Advanced Theory of Chemical Science (On the Results of a Discussion About the 'Theory of Resonance' at Moscow University)," Vest. Mosk., 5, No.9, 1950

AKISHIN, P. A., VIKTOROVA, Ye. A. and LEVINA, R. Ya.

"Contact Isomerization of an Acetylene Hydrocarbon with the Triple Bond in the Central Position", Dokl AN SSSR, Vol. LXXI, No 6, 1950.

Abstract W-12713, 10 Aug 1950.

AKISHIN, P. A. 178T15

USSR/Chemistry - Hydrocarbons 1 Feb 51

"Intensity of the Band of the C=C Valency Vibration in Combination Dispersion Spectra of Hydrocarbons," P. A. Akishin, V. M. Tatayevskiy, Moscow State U imeni M. V. Lomonosov

"Dok Ak Nauk SSSR" Vol LXXVI, No 4, pp 527-530

Lists frequencies in $cm^{-1}$ produced by C=C bonds, differential intensities per mol in $cm^{-1}$, and integral intensities per mol for 21 unsatd hydrocarbons of different constitution. General relationships established on basis of these data can be used in quant mol analysis and for detg structural elements (isolated C=C bonds).

178T15

KHROMOV, S. I.: PIK, YE. I.: AKISHIN, P.A.: NIKITINA, L. M.

Ethylcycloheptane

Contact transformation of ethylcycloheptane in the presence of platinized carbon. Vest. Mosk. un 7 No. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October, 1952. Unclassified.

LEVINA, R. YA: MEZENTSOVA, N.J.: AKISHIN, P. A.

Alkycyclohexene

Contact isomerization of unsaturated hydrocarbons. XVII. Isomerization of alkylcyclopentane and alkylcyclohexene in chrome oxide on aluminum oxide. Vest. Mosk. un., 7, No. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October, 1952. Unclassified.

AKISHIN, P. A.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

8-30-54

Contact isomerization of unsaturated hydrocarbons. XVIII. Isomerization of methylenecyclohexane through chromium oxide on aluminum oxide. R. Ya. Levina, N. N. Mezentsova, and P. A. Akishin (Moscow State Univ.). *Vestnik Moskov. Univ. 7*, No. 12, *Ser. Fiz.-Mat. i Estestven. Nauk* No. 8, 49–53(1952); cf. *C.A.* 47, 3248c.—Methylenecyclohexane, $CH_2:C_6H_{10}$, passed at 250° through $Cr_2O_3$ on $Al_2O_3$ (length 45 cm., diam. 1.6 cm.) at the rate of 0.06 g./min., gave 80–85% catalyzate consisting (by Raman-spectra analysis) of 66% 1-methylcyclohexene (I), 33% 3-methylcyclohexene (II), and possibly a small amt. of 4-methylcyclohexene. In a single pass, I and II undergo disproportionation to 2 methylcyclohexane + PhMe to the extent of 7%, and, on recycling, 21%. N. Thon—

AKISHIN, P. A.

Yuryev, Yu. K., Kondratyeva, G. Ya., Akishin, P. A., and Derbeneva, A. A.- "The Catalytic Dehydration of 2,2,5,5-Tetrasklyl- and 2,5-Dialkylfuranidines in an Atmosphere of Hydrogen Sulfide" (p. 339)

SO: Journal of General Chemistry,(Zhurnal Obshchei Khimii), 1952, Vol. 22, No. 2

AKISHIN, P. A. and OBTEMPERANSKAYA, S. I.

"In the Chemical Faculty," Vest. Mosk. Un., No.8, 1953

Translation U-7895, 1 Mar 56

AKISHIN, P.A

Raman spectra of acetylenic hydrocarbons. P. A. Akishin, [illegible]

[illegible]
stances in the [illegible]
The intensities [illegible]

Akishin P.A.

62 Chem Phys-Chem.

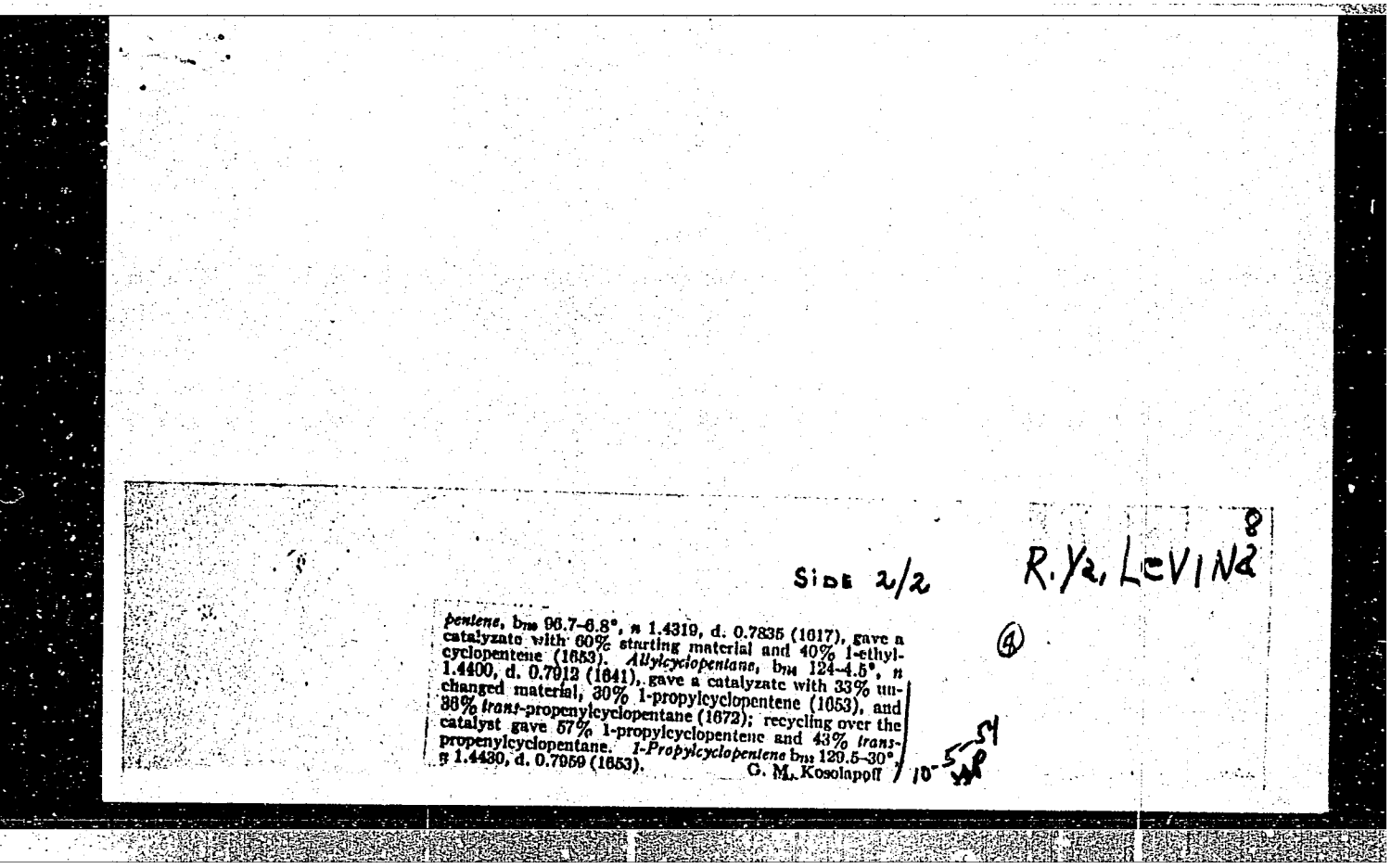
**Electronic investigation of molecular structure. I.** A. V. Frost, P. A. Akishin, L. V. Gurvich, G. A. Kurkchi, and A. A. Konstantinov (Univ. Moscow). *Vestnik Moskov. Univ.* 8, No. 12; *Ser. Fiz.-Mat. i Estestven. Nauk* No. 8, 85-95(1953).—An electron-diffraction instrument for the study of any vaporizable substance is described in which a beam of electrons of 1 mm. diam., projected from an electron gun with water-cooled anode, is focused by an electromagnetic lens and diffracted by a stream of vapor of the given substance (I) onto a photographic film. The film chamber is water-cooled for high-temp. work. The vapor stream issues from a jet assembly made of Mo glass for low temps. or metal for high temps., which consists of a nozzle connected through a tube jacketed to prevent condensation to an ampul contg. the I. The position of the nozzle is adjusted with a microscope; a well is provided for the latter. A 2nd well opposite the nozzle contains liquid N and acts as a trap for the I vapor. A sliding holder contg. a standard cryst. substance can be placed in the electron beam for calibration. This electronograph was used to det. the mol. structure of $CCl_4$ (II) and $CdBr_2$ (III) at temps. of 15 and 600°, resp. The intensities and radii of max. and min. in the diffraction patterns are tabulated and graphed. Av. values for the C—Cl and Cl—Cl distances in II are 1.756 ± 0.010 and 2.868 ± 0.015 A., resp.; for the Cd—Br and Br—Br distances in III they are 2.35 ± 0.03 and 4.70 ± 0.03 A., resp. The values for II and III agree within exptl. error with those of Allen and Sutton (*C.A.* 44, 4746c) and Lister and S. (*C.A.* 36, 511), resp. J. W. L., Jr.

(4)

AKISHIN, P. A.

Contact isomerization of unsaturated hydrocarbons. XIX. Isomerization of unsaturated five- and six-membered cyclic hydrocarbons with a double bond in the ring or in the side chain. R. Ya. Levina, N. N. Mezentsova, and P. A. Akishin (Moscow State Univ.). *Zhur. Obshchei Khim.* 23, 662–9(1953); cf. *Vestnik Moskov. Gos. Univ.* 10, 109(1949); *C.A.* 45, 536*a*; 47, 3248*c*; 48, 4465*d*.—Passage of alkenylcyclopentanes over $Cr_2O_3$ on $Al_2O_3$ at 250° leads to the double bond shifting from the side chain to the ring and remaining at the C atom which joins the side-chain. Methylene- and vinylcyclopentanes are completely converted to 1-alkylcyclopentenes. With allylcyclopentane there was also detected, besides 1-propylcyclopentene, some *trans*-propenylcyclopentane, an intermediate in the process. Alkenylcyclohexanes (methylene, vinyl, and allyl) similarly rearrange to 1-alkylcyclohexenes which are in part transformed to 1-alkyl-2-cyclohexenes in a subsequent reaction. 1-Alkyl-2-cycloalkenes passed over the above catalyst at 250° are 40–50% isomerized to 1-alkylcycloalkenes, which are more stable to the above catalyst at. Alkylcyclohexenes with other positions of unsatn. in the ring under these conditions undergo, to a slight extent, a transformation into alkylbenzene and alkylcyclohexane. The hydrocarbons with unsatd. side chain were prepd. by pyrolysis of the acetates of the corresponding alcs., obtained by the Grignard route. For the following compds. are given % yield, b.p., $n^{20}_D$, and $d_{20}$: *cyclopentylcarbinol*, 30, $b_{14-15}$ 58–9°, 1.4579, 0.9332 (*acetate*, 70, $b_{10}$ 85–6°, 1.4378, 0.9574); *cyclohexylcarbinol*, 35, $b_{11-12}$ 88–9°, 1.4656, 0.9285 (*acetate*, 73, $b_{14-15}$ 75–6°, 1.4460, 0.9605; *cyclopentylethanol*, 40, $b_{12-13}$ 74°, 1.4578, 0.9231 (*acetate*, 75, $b_{14-15}$ 75°, 1.4408, 0.9504); *cyclohexylethanol*, 33, $b_{13}$ 99–100°, 1.4649, 0.9189 (*acetate*, 80, $b_{13}$ 97–8°, 1.4478, 0.9500). 1-Ethyl-2-cyclopentene and -hexene were prepd. in 50–4% yield from EtMgBr and 1-chloro-2-cyclopentene or 1-bromo-2-cyclohexene, resp. 1-Ethylcyclopentene and -hexene were obtained by dehydration of the tertiary alcs. In the following, all values of *n* and *d*. are for $n^{20}_D$ and $d_{20}$.] Methylenecyclohexane, $b_{760}$ 99.8–100°, *n* 1.4498, d. 0.8065 (Raman line characteristic of double bond at 1651 cm.$^{-1}$), gave a catalyzate contg. 60% 1-methylcyclohexene (Raman line 1676), 33% 1-methyl-2-cyclohexene (1651), 1.5–2% MePh (1003), and about 5% methylcyclohexane (770). *1-Methylcyclohexene*, $b_{760}$ 109–9.2°, *n* 1.4508, d. 0.8134, (double-bond Raman line 1676). *Vinylcyclohexane*, $b_{760}$ 125°, *n* 1.4470, d. 0.8091 (1641), gave a catalyzate contg. 3% original substance, 76% 1-ethylcyclohexene (1671), 13% 1-ethyl-2-cyclohexene (1653), 3% EtPh (1003), and 6% ethylcyclohexane. *1-Ethylcyclohexene*, $b_{760}$ 135.2–5.5°, *n* 1.4562, d. 0.8159 (1671), gave a catalyzate contg. 78% starting material, 17% 1-ethyl-2-cyclohexene (1651), 2% EtPh (1004), and 4% ethylcyclohexane. *1-Ethyl-2-cyclohexene*, $b_{760}$ 131.7–2.0°, *n* 1.4500, d. 0.8104 (1651), gave a catalyzate contg. 25% starting material, 50% 1-ethylcyclohexene (1671), 8% EtPh, and 17% ethylcyclohexane. *Allylcyclohexane*, $b_{760}$ 151.2–1.5°, *n* 1.4500, d. 0.8135 (1641), gave a catalyzate contg. 15% starting material, 79% 1-propylcyclohexene (1671), 2% 1-propyl-2-cyclohexene (1653), 2% PrPh (1091), and 4% propylcyclohexane. *1-Propylcyclohexene* $b_{760}$ 153.5–4.0°, *n* 1.4573, d. 0.8279 (1670). *Methylenecyclopentane*, $b_{760}$ 73–3.2°, *n* 1.4342, d. 0.7803 (1653), gave catalyzate of pure 1-methylcyclopentene, $b_{760}$ 73.2–4.5°, *n* 1.4314, d. 0.7781 (1657). *1-Methylcyclopentene* $b_{760}$ 74.3–4.4°, *n* 1.4326, d. 0.7765 (1657). *Vinylcyclopentane*, $b_{760}$ 98.5–8.7°, *n* 1.4375, d. 0.7834 (1641), gave a catalyzate of pure 1-ethylcyclopentene. *1-Ethylcyclopentene*, $b_{760}$ 105°, *n* 1.4414, d. 0.8015 (1653), is unchanged by passage over the catalyst. *1-Ethyl-2-cyclo-*

OVER



Side 2/2 R. Ya. Levina

pentene, $b_{760}$ 96.7–6.8°, $n$ 1.4319, d. 0.7835 (1617), gave a catalyzate with 60% starting material and 40% 1-ethylcyclopentene (1653). *Allylcyclopentane*, $b_{744}$ 124–4.5°, $n$ 1.4400, d. 0.7912 (1641), gave a catalyzate with 33% unchanged material, 30% 1-propylcyclopentene (1653), and 36% *trans*-propenylcyclopentane (1672); recycling over the catalyst gave 57% 1-propylcyclopentene and 43% *trans*-propenylcyclopentane. *1-Propylcyclopentene* $b_{755}$ 129.5–30°, $n$ 1.4430, d. 0.7959 (1653).

G. M. Kosolapoff

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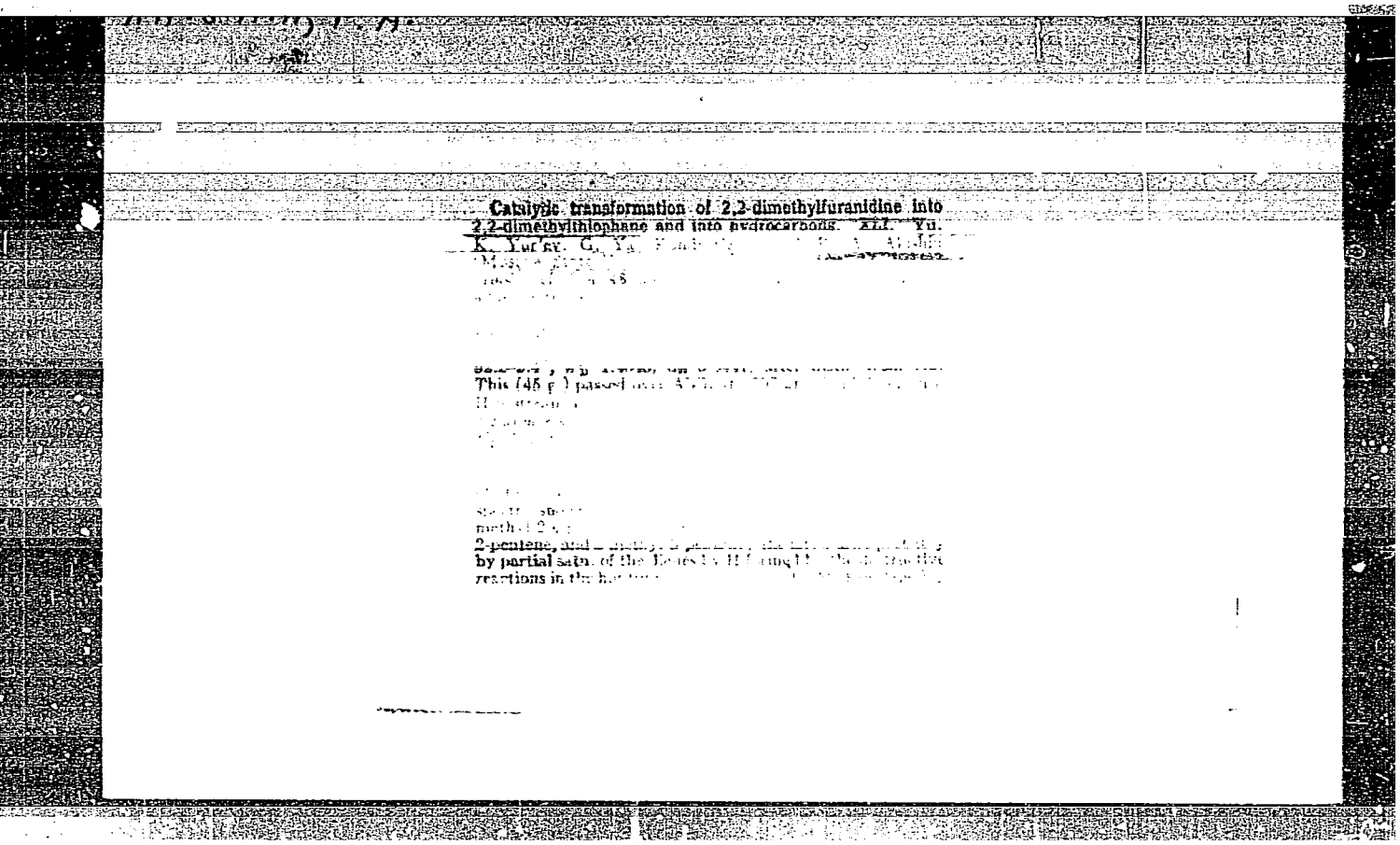
10-5-54 NP



Catalytic transformation of 2,2-dimethylfuranidine into 2,2-dimethylthiophane and into hydrocarbons. A.I. Yu.

AKISHIN, P.A.; TATYEVSKIY, V.M.

Intensity of bands of valence vibration of the C≡C bond in Raman spectra of hydrocarbons. Doklady Akad. Nauk S.S.S.R. 89, 287-9 '53. (MLRA 6:3)
(CA 47 no.20:10349 '53)

1. M.V.Lomonosov State Univ., Moscow.

Evaluation of this paper appears in [redacted]-B-76836
19 July 54

AKISHIN,P.A.; GURVICH,L.V.

Radial distribution methods in electronography and tagle of values for $\sin \frac{\pi}{10} r_n$. Uch.zap.Mosk.un. no.164:153-200 '53. (MIRA 8:7)

(Electronography)

AKISHIN, P.A.

USSR/Chemistry

FD-773

Card 1/2 : Pub 129 10/24

Author : Akishin, P. A.; Rambidi, N. G.; Novitskiy, K. Yu.; Yur'yev, Yu. K.

Title : Raman spectra of heterocyclic compounds. I

Periodical : Vest. Mosk. un., Ser. fizikomat. i yest. nauk, Vol 9, No 2, 77-80, Mar 1954

Abstract : Measured the Raman spectra of cyclic sulfur compoinds to obtain experimental proof for the constancy of the line intensity of the C-S bond vibration. In the spectra of sulfur-saturated compounds (thiophane, 1,4-thioxane and alpha-methyltrimethylene sulfide) the sum of the line intensities of the C-S bond was found to be constant within the limits of experimental error. In the spectra of the unsaturated sulfur compound (delta - dihydrothiopyrane) two facts are apparent: a) the sum of the line intensities for the C-S bond is much less than that of the saturated compounds; b) the intensity of the

C=C bond in the compound is greater than that of the isolated C= bond. One table. Fifteen references (one foreign).

Institution : Chair of Physical Chemistry and Chair of Organic Chemistry

Submitted : July 10, 1953

AKISHIN, P.A.

USSR/Chemistry - Organic FD-1607

Card 1/1 : Pub. 129-10/23

Author : Livina, R. Ya.; Viktorova, Ye. A.; and Akishin, P. A.

Title : Catalytic isomerization of unsaturated hydrocarbons. XX. Isomerization of octyne-1 over chromic oxide on aluminum oxide catalyst

Periodical : Vest. Mosk. un. Ser. Fizikomat. i yest. nauk, 9, No 8, 71-74, Dec 1954

Abstract : Studied the catalytic isomerization of octyne-1 by heating it to 250 degrees over chromic oxide suspended on aluminum oxide. The triple bond was found to migrate from the alpha to the beta position in the chain, and also to disproportionate into two conjugated double bonds forming octadiene-2-4. Traces of the 1,3-diene may also have been present. Prolonged treatment with the catalyst isomerizes the octyne-2 that is first formed into octadiene-2,4. Equations, two tables. Ten references (seven USSR).

Institution : Chairs of Organic Chemistry and Physical Chemistry

Submitted : May 18, 1954

AKISHIN, P. A.

USSR/ Chemistry Catalytic conversions

Card : 1/1 Pub. 151 - 14/33

Authors : Khromov, S. I., Balenkova, E. S., Akishin, P. A., and Kazanskiy, B. A.

Title : Contact conversions of propylcycloheptane in the presence of a platinized carbon

Periodical : Zhur. ob. khim. 24/8, 1360 - 1364, August 1954

Abstract : Contact conversions of propylcycloheptane were investigated in the presence of platinized carbon at 320°. It was established that such contact conversion reactions take place with the formation of large quantities of 1-methyl-1-propylcyclohexane and some aromatic hydrocarbons (toluene, propylbenzene, butylbenzene, o-, m- and p-methyl propyl benzenes). The approximate ratio of hydrocarbons in the total catalysate mass of contact conversion of propylcycloheptane, is described. Seven references: 6 USSR and 1 USA (1937 - 1954). Tables.

Institution : State University, Moscow

Submitted : March 6, 1954

AKISHIN, P. A.

USSR/Chemistry Catalysis

Card : 1/1

Authors : Khromov, S. I., Balenkova, E. S., Akishin, P. A. and Kazanskiy, B. A., Academ.

Title : Contact conversions of 1-methyl-1-butylcyclohexane in the presence of platinum coated carbon

Periodical : Dokl. AN SSSR, 97, Ed. 1, 103 - 106, July 1954

Abstract : Formula is given showing the trend of the chemical reaction leading to the conversion of 1-methyl-1-butylcyclohexane over a platinum coated carbon catalyst. The formation of naphthalin during contact conversions of such hydrocarbons is explained by the secondary chemical conversions occurring during the catalysis of butyl benzene. The approximate ratio of aromatic hydrocarbons found in the catalysate obtained from contact conversion of 1-methyl-1-butylcyclohexane, is described. Five references: 4 USSR, 1 USA. Tables, graph.

Institution : The M. V. Lomonosov State University, The N. D. Zelinskiy Lab. of Org. Chem., Moscow.

Submitted : April 27, 1954

AKISHIN, P.A.

USSR/Electronics - Photoeffect. Electron and Ion Emission, H-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35105

Author: Panchenkov, G. M., Akishin, P. A., Vasil'yev, N. N.

Institution: None

Title: On the Thermionic Emission of Silicate and Alumo-Silicate Ion Exchangers

Original Periodical: Dokl. AN SSSR, 1955, No 4, 571-574

Abstract: See Abstract 35104

Card 1/1

AKISHIN, P.A.

USSR/Optics - Spectroscopy. K-6

Abs Jour : Referat Zhur - Fizika, No 3, 1957, 7854

Author : Akishin, P.A., Rambidi, N.G., Korobitsyna, I.K. Kondrat'yeva, G.Ya., Yur'yeva, Yu.K.

Title : Raman Spectra of Heterocyclic Compounds. II.

Orig Pub : Vestn. Mosk. un-ta, 1955, No 12, 103-108

Abstract : Raman spectra were obtained with a photometric estimate of the intensity of the lines of the following compounds: furan $\Delta^3$-dihydrofuran, tetrahydrofuran, 2,2,5,5-tetramethylfuranide, $\Delta^2$-dihydropyrane, tetrahydropyrane, and 1.4-dioxane. Comparison of the spectra and of the literature data made it possible to establish the characteristic frequencies of fully symmetrical oscillations of these cycles. The integral intensities and the widths of the lines were measured for these frequencies. It was established that the intensity of the band reduces regularly upon transition from the softer to the harder cycle:

Card 1/2 - 79 -



USSR/Optics - Spectroscopy K-6

Abs Jour : Referat Zhur - Fizika, No 3, 1957, 7854

the cyclohexane 801 (250 units), tetrahydropyrane 816 (242) dioxane 835 (223), and the value of the frequency, in accordance with the theory, increases. For six-term cycles the width of the lines remains within the experimental accuracy constant, and for five-term lines it diminishes with the hardness of the cycle. The intensity of the C = C frequencies in the spectra of the investigated compounds is close to the values obtained for the isolated C=C bonds of the alkanes and cyclanes.

AKISHIN P.A.

6

Isomerization of methylcyclohexane and ethylcyclohexane in the presence of aluminum chloride under pressure of hydrogen. A. F. Plate, L. V. Tarasova, and P. A. Akishin (Moscow State Univ.). *Zhur. Obshchei Khim.* 25, 479-83 (1955); *J. Gen. Chem. U.S.S.R.* 25, 447-57 (1955) (Engl. translation); cf. *Doklady Akad. Nauk S.S.S.R.* 89, 79 (1953).—Isomerization of methylcyclohexane (I) and ethylcyclohexane (II) in the presence of 10% (by wt.) AlCl$_3$ under 100 atm. H initial pressure gave the following results. At 150° I gave 18% mixed cyclopentane derivs., at 200° this rose to 25%, and at 250° to 28%. The mixt. contained 1,1-, 1,2-, and 1,3-dimethylcyclopentanes, the latter being predominant. At 250° II gave 20% cyclopentane derivs. (1,1,2-, 1,1,3-, 1,2,3-, and 1,2,4-trimethylcyclopentanes), 30% 1,3-dimethylcyclohexane, 13% 1,4-dimethylcyclohexane, 10% 1,2-dimethylcyclohexane, and 5% 1,1-dimethylcyclohexane. The products were identified by Raman spectra and by conversion to corresponding aromatic substances.

G. M. Kosolapoff

AM PM

(2)

AKISHIN, P. A.

**USSR/** Chemistry - Analytical chemistry

**Card** 1/1 Pub. 22 - 20/51

**Authors** : Akishin, P. A.; Vilkov, L. V.; and Spiridonov, V. P.

**Title** : Electronographic study of the molecular structure of zinc halides $ZnCl_2$, $ZnBr_2$ and $ZnJ_2$

**Periodical** : Dok. AN SSSR 101/1, 77-80, Mar 1, 1955

**Abstract** : The advantages of the electronographic method for the study of molecular structures of inorganic compounds are analyzed. Electronographic study of $ZnCl_2$, $ZnBr_2$ and $ZnJ_2$ molecules showed that all possess a linear structure. This configuration was seen to correspond to the valent state of the central Zn-atom. It was observed that the interatomic spaces in the Cl, Br and J-derivatives of zinc vary in accordance with the linear law depending, of course, upon the ordinal number of the halide. The values of the interatomic spaces are tabulated. Six references: 2 USSR, 1 English, 1 German and 2 USA (1934-1953). Tables; graphs.

Institution : The M. V. Lomonosov State University, Moscow

Presented by : Academician N. N. Semenov, September 22, 1954

AKISHIN, P. A.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 25/53

Authors : Akishin, P. A., and Rambidi, N. G.

Title : Valent oscillation characteristics of a C - S bond in combined diffusion spectra of sulfur containing heterocycles

Periodical : Dok. AN SSSR 102/4, 747-750, Jun 1, 1955

Abstract : The intensities of bands 600 - 700 $cm^{-1}$ in spectra of unsaturated sulfur containing heterocycles of different structure (4-, 5-, and 6 membered cycles) were measured by means of photographic photometric methods and single objective scale. The data obtained were applied to valent oscillations of C - S bonds in spectra of the heterocycles investigated. It was found that the presence in the molecule of sulfur containing multiple bond compounds or phenyl groups leads to reaction between them and the C - S bond the appearance of which in the spectrum depends upon the mutual disposition and structure of the molecule. Eighteen references: 17 USSR and 1 USA (1943-1954). Table.

Institution : The M. V. Lomonosow State University, Moscow

Presented by: Academician A. V. Topchiyev, January 13, 1955

Card : 1/2



B-4

USSR/Physical Chemistry - Molecule, Chemical Bond.

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3575.

quencies with holosymmetrical vibrations of the group containing the quaternary C atom. The intensity decrease of $(C\text{-}S)\nu$ bands in compounds having conjugate C-S and C=C links, for example, in $\Delta^2$-dihydrothiopyran and thiophene, is noted. See part II in RZhKhim, 1956, 53677.

AKISHIN, P. A.

USSR/ Chemistry - Structure of molecules

Card 1/1 Pub. 147 - 18/35

Authors : Akishin, P. A.; Spiridonov, V. P.; Naumov, V. A.; and Rambidi, N. G.

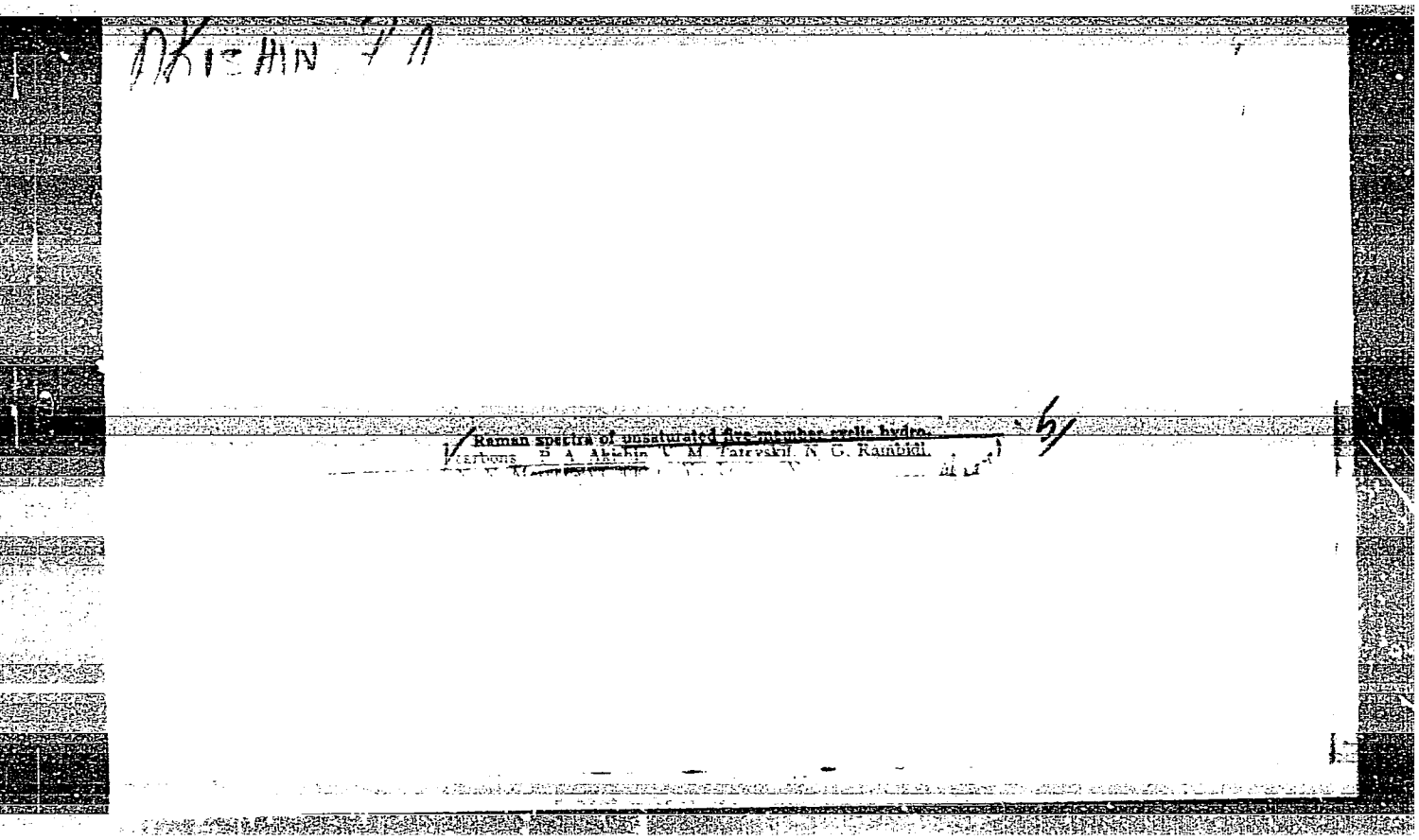
Title : Electronographic investigation of molecular structures. Part 3. Cadmium halides

Periodical : Zhur. fiz. khim. 30/1, 155-160, Jan 1956

Abstract : The geometrical parameters of molecules of all cadmium halides were established through electronographic investigation. The molecules investigated were found to have a linear configuration. It was observed that the space Cd - F does not correspond with the experimental law governing the linear changes in the interatomic metal-halide spaces in many halogen derivatives depending upon the atomic number of the given halide. Thirteen references: 4 USSR, 3 Germ., 5 USA and 1 Indian (1889-1955). Tables; graphs.

Institution : Moscow State University im. M. V. Lomonosov

Submitted : May 26, 1955

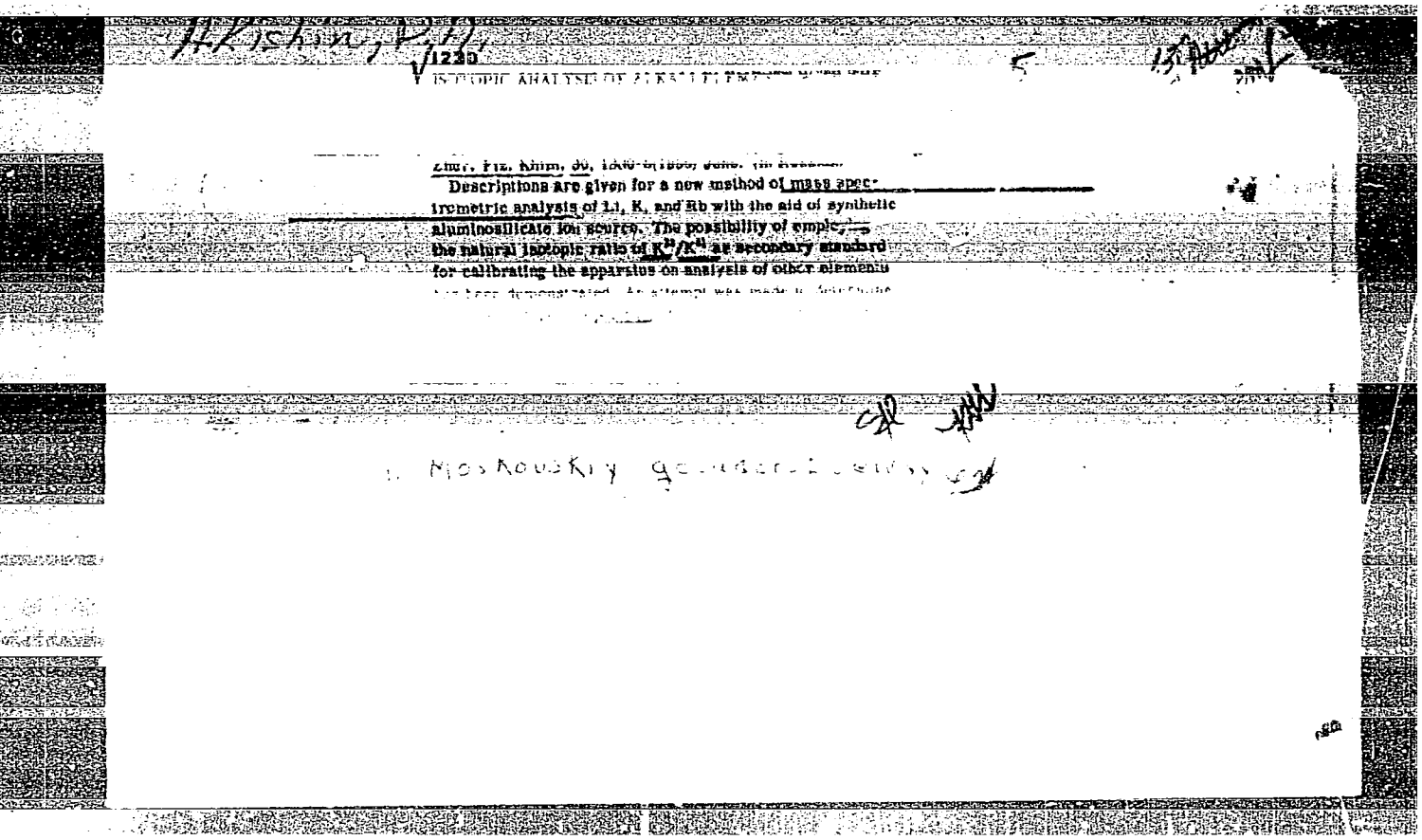


Raman spectra of unsaturated five-membered cyclic hydro...

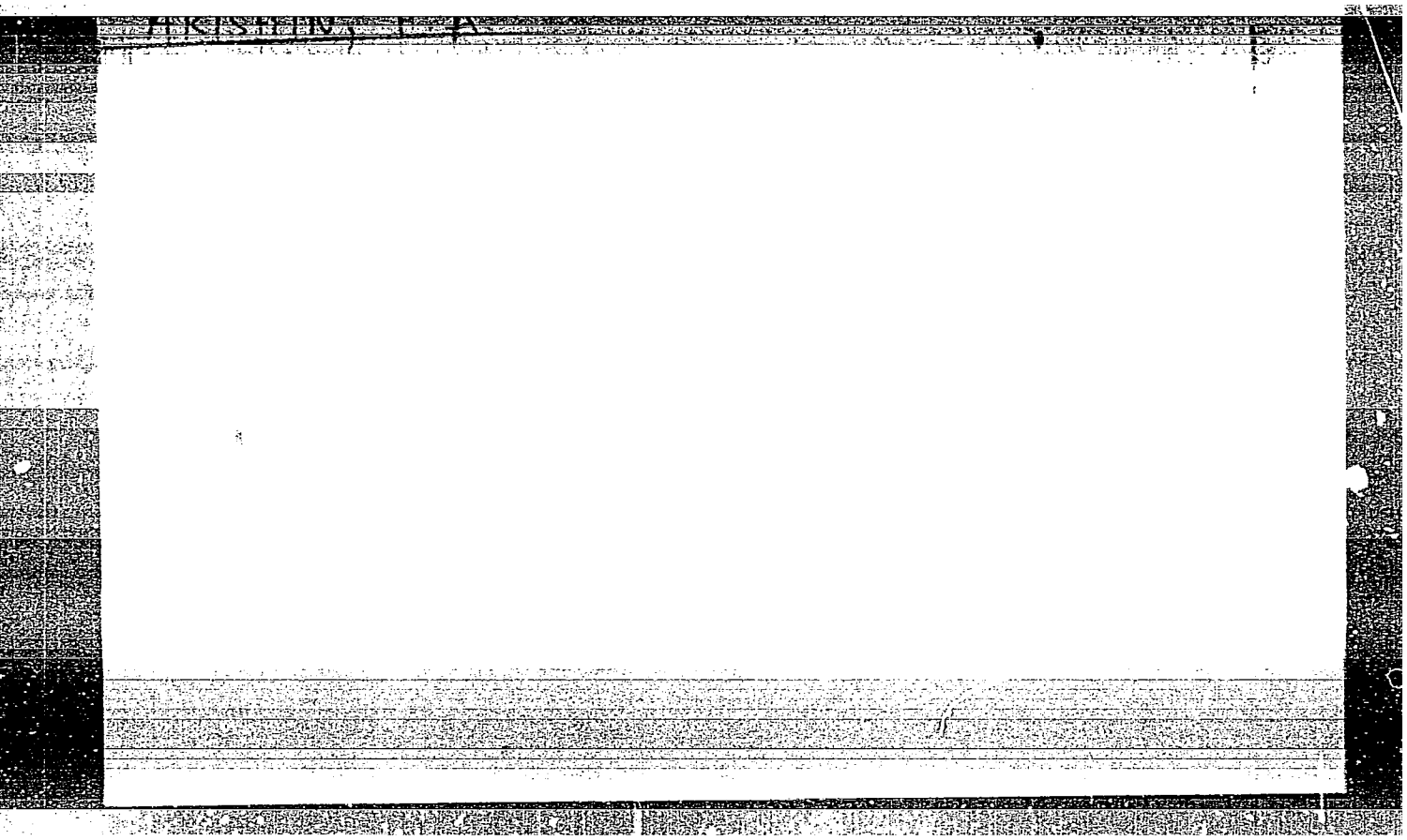
AKISHIN, P.A.; SPIRIDONOV, V.P.; NAUMOV, V.A.

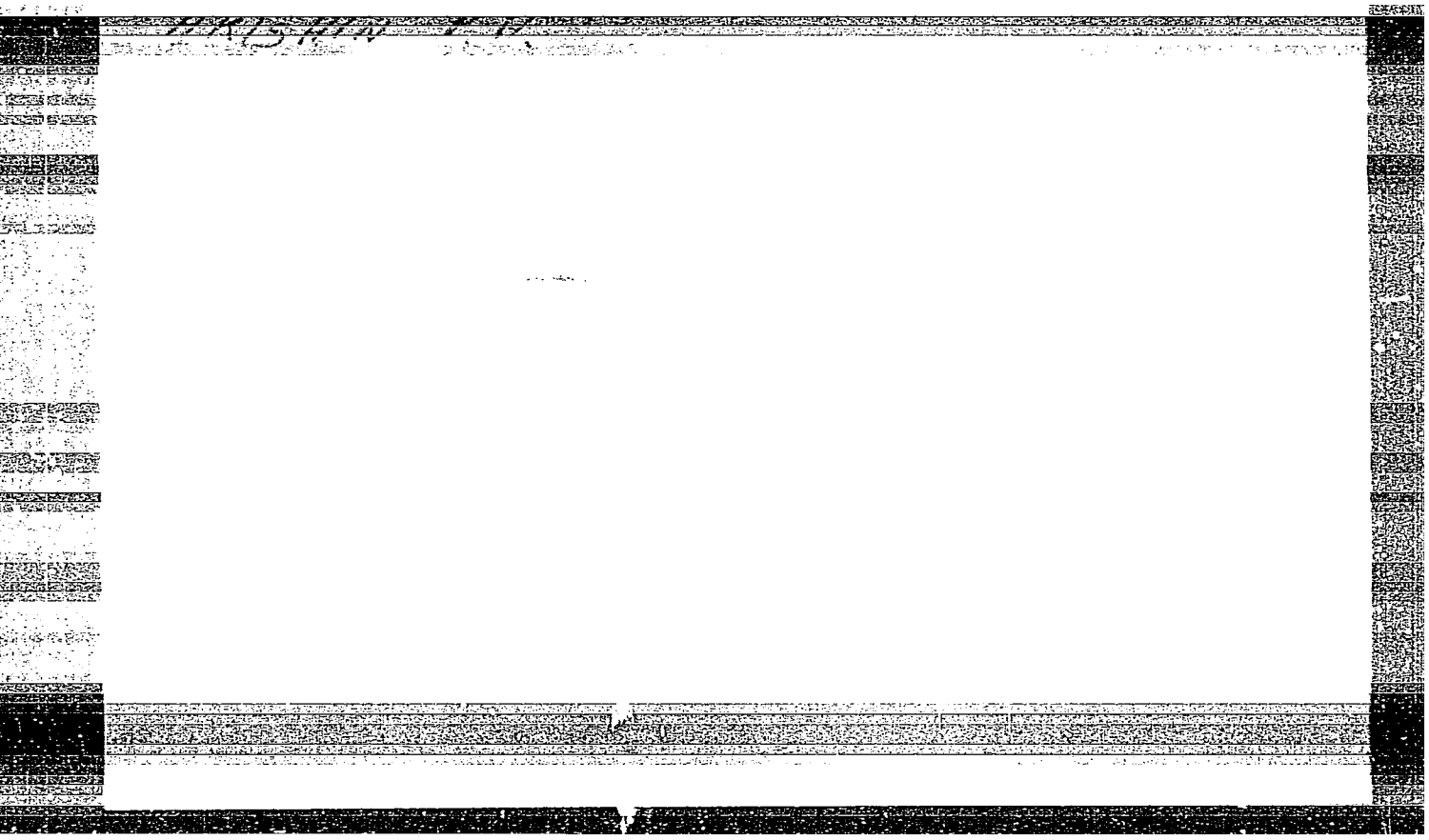
Electron diffraction study of the structure of the $ZnF_2$ molecule. Zhur.fiz.khim. 30 no.4:951-953 Apr. '56. (MLRA 9:9)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Zinc fluoride)



Description are given for a new method of mass spectrometric analysis of Li, K, and Rb with the aid of synthetic aluminosilicate ion source. The possibility of employing the natural isotopic ratio of $K^{39}/K^{41}$ as secondary standard for calibrating the apparatus on analysis of other elements





APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100710003-9"

AKISHIN, P.A.; NIKITIN, O.T.; PANCHENKOV, G.M.

A new effective ion emitter for the isotopic analysis of lead.
Geokhimiia no.5:425-429 '57. (MIRA 12:3)

1. Chemical Faculty of the Moscow State University bearing the name of Lomonosov.

(Lead--Analysis)

AUTHORS: Akishin, P.A. and Spiridonov, V.P.

TITLE: Electronographic Investigation of the Structures of Molecules of the Halides of Group II Elements. (Elektronograficheskoye issledovaniye stroyeniya molekul galogenidov elementov II gruppy periodicheskoy sistemy Mendeleyeva.)

PERIODICAL: Kristallografiya, 1957, Vol.2, Nr 4, pp.475-483 (USSR).

ABSTRACT: The interatomic distances in 30 compounds of the $MX_2$ type have been found by electron diffraction from molecules of these compounds in the gas phase. The electronograph used was that of the Laboratory for the Investigation of Molecular Structure in the Chemical faculty of the Moscow State University (illustrated). Even at 1000 C these Group II halides are not very volatile and a special furnace enabling temperatures of more than 2000 C to be reached was built in to the specimen chamber together with a condenser. At the highest temperatures light from the hot vapour and from the heater tended to fog the film so that ion-optic (MK type) plates were used up to 1500 C and diapositive plates above this. The latter were protected by an evaporated layer of Ca, an Al foil of 5-7 μ thickness or by a layer of indian ink on the emulsion. A drybox was used in preparing the specimens for the evaporator. About 50 exposures were made









of each specimen with different exposures, and voltages (5-30 secs., 40, 60, 80 KV). ZnO was used to standardise the scale both before and after each series. Intensities were estimated visually. Each electronogram was interpreted by the radial distribution method (Walter and Beach, J.Chem. Phys., Vol.8, 601, 1940) and by the method of successive approximations (Pauling and Brockway, J.Chem.Phys., Vol.2, 867, 1934). The bond angle of all the molecules examined was found to be 180° ± 10° for the iodides and ± 20-30° for the chlorides and bromides. Estimation for the fluorides was difficult. No evidence was found for association in the Be compounds although this had been reported. $HgI_2$ patterns were checked in detail by photometry. The interatomic distances found are given in the Table 1 on p.480. These data fit fairly well with the earlier measurements available for

70-4-5/16

Electronographic Investigation of the Structures of Molecules of the Halides of Group II Elements.

ASSOCIATION: Moscow State University im.M.V.Lomonosov. (Moskovskiy Gosudarstvennyy Universitet im.M.V.Lomonosova).

SUBMITTED: February 22, 1957.

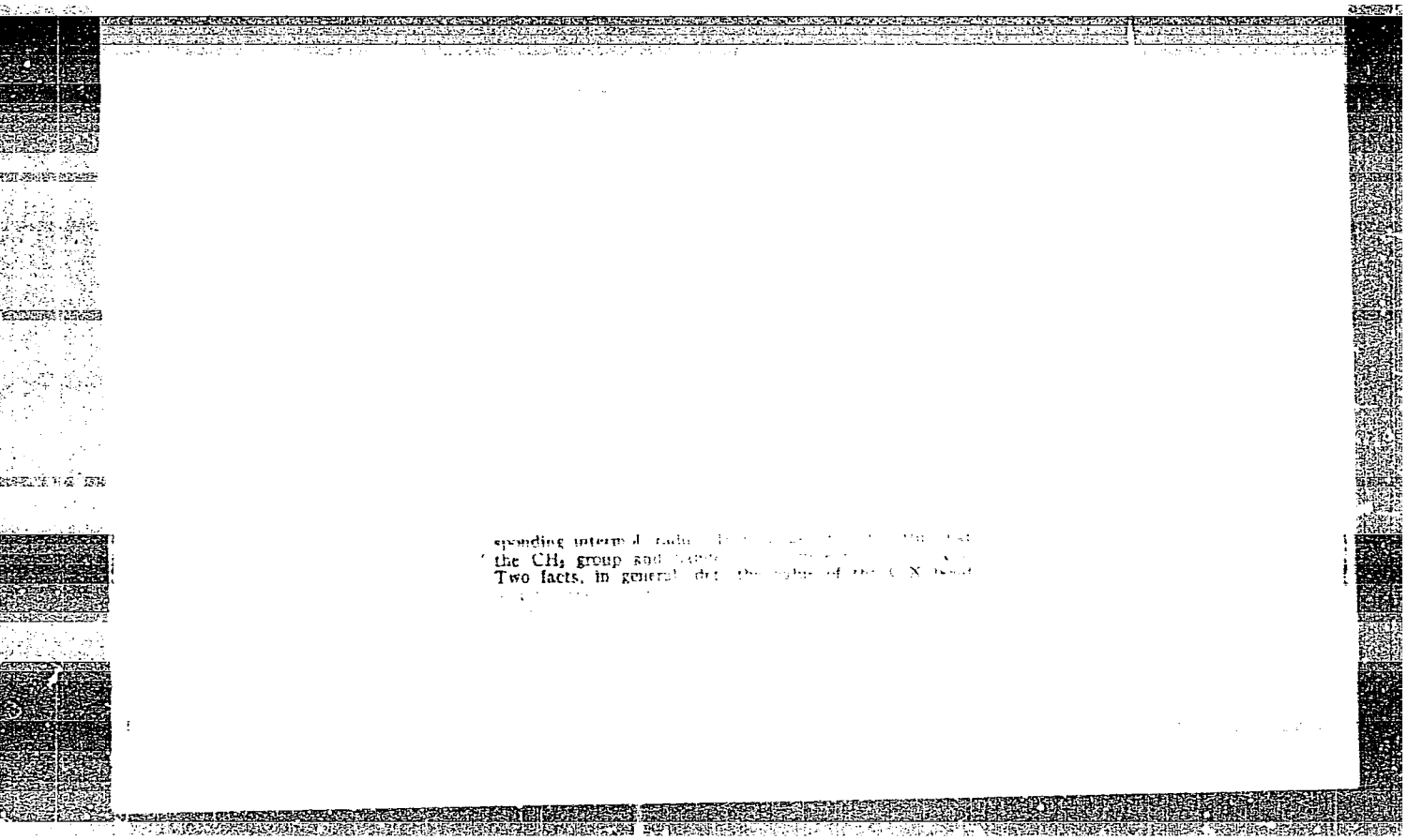
AVAILABLE: Library of Congress.

Card 3/3

AKISHIN, P A.

PANCHENKOV, G.M.; AKISHIN, P.A.; VASIL'YEV, N.N.

Mass-spectroscopic analysis of alumino silicate catalysts. Probl. kin. i kat. 9:378-385 '57. (MIRA 11:3)
(Catalysts) (Mass spectroscopy)



spending interm[illegible]
the $CH_3$ group and [illegible]
Two facts, in general [illegible]

PANCHENKOV, G.M.; SEMIOKHIN, I.A.; AKISHIN, P.A.

Chemistry of isotope separation. Vest. Mosk. un. Ser. mat., mekh., astron. fiz., khim. 12 no. 6:199-214 '57. (MIRA 11:10)

1. Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta.

(Isotopes)

AKISHIN, P. A.

USSR/Physical Chemistry - Molecule, Chemical Bond. B-4

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 6900.

Author : V - P.A. Akishin, V.P. Spiridonov, G.A. Sobolev, V.A. Naumov;
VI - P.A. Akishin, V.P. Spiridonov, G.A.Sobolev.

Inst :

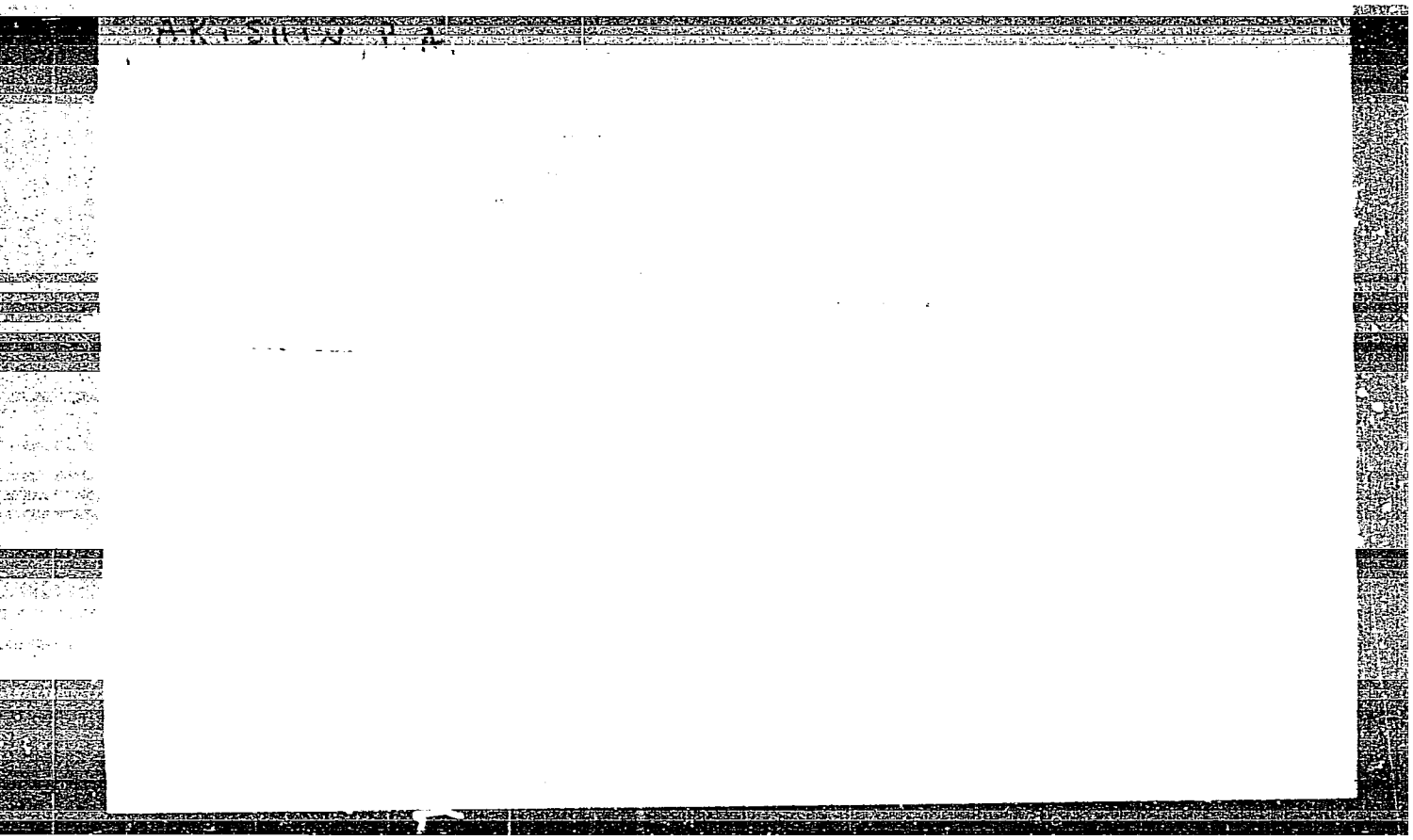
Title : Electronographic Investigation of Molecular Structure. V. Magnium Halides. VI. Calcium Halides.

Orig Pub: Zh. fiz. khimii, 1957, 31, No 2, 461-466; No 3, 648-652.

Abstract: V. The structure of $MgF_2$ (I), $MgCl_2$ (II) and $MgBr_2$ (III) in gaseous state was investigated by the electron diffraction method. Peaks of 1.78 and 3.52 A referred to the distances Mg - F and F - F correspondingly were revealed on the curve of radial distribution for I; 2.18 (Mg - Cl) and 4.36 (Cl - Cl) were revealed for II, and 2.34 (Mg - Br) and 4.36 (Br - Br) were revealed for III. In all these cases the best agreement between the theoretical and visual intensity curves (with the

-5-

Card : 1/2



SOV/120-58-2-18/37

AUTHORS: Akishin, P. A., Vinogradov, M. I., Danilov, K. D., Levkin, N. P., Martinson, Ye. N., Rambidi, N. G. and Spiridonov, V. P.

TITLE: An Electronograph for Studying the Structure of Molecules of Non-Volatile Compounds (Elektronograf dlya issledovaniya stroyeniya molekul trudnoletuchikh soyedineniy)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 2, pp 70-74 (USSR)

ABSTRACT: One of the most widely used and effective methods of studying the geometrical structure of complex molecules is the electronographic method. The method is based on the study of the diffraction of fast electrons by the vapour of the substance under investigation. In the literature there is very little information on the geometry of the molecules of non-volatile compounds. This is due to experimental difficulties associated with such studies. Maxwell and his collaborators have described an electronograph with a high temperature evaporator which was used to study the structure of molecules of substances whose boiling points were 1200-1400°C. The present paper describes an electronograph which

An Electronograph for Studying the Structure of Molecules of Non-Volatile Compounds.

was constructed in 1954 and can be used for substances with boiling points up to 2500°C. The instrument consists of an evaporator in which the substance under investigation is vapourised by electron bombardment, an electron gun and a special "sector device". Attempts were made and are described of preventing the radiation from the evaporator from reaching the photographic plate when studies are made of the diffraction pattern produced by vapours at high temperatures. The most effective way of screening the emulsion was by covering it with a thin layer of black ink which can be washed off before developing. The electronograph described in the present paper has been used to determine the configuration and geometrical parameters of 30 molecules of non-volatile halides of elements of the second group in the periodic table, many of which have boiling points in the range 1500-2500°C. These data were given in Refs.4-11. There are 5 figures, 1 table and 11 references, of which 2

SOV/120-58-2-18/37

An Electronograph for Studying the Structure of Molecules of Non-Volatile Compounds.

are English and 9 are Soviet.

ASSOCIATION: Khimicheskiy fakul'tet MGU (Department of Chemistry of the Moscow State University)

SUBMITTED: July 11, 1957.

Card 3/3

1. Complex compounds 2. Molecules--Structural analysis
3. Electronic equipment--Applications

SOV/156-58-2-1/48

AUTHORS: Akishin, P. A., Naumov, V. A., Tatevskiy, V. M.

TITLE: Electron-Diffraction-Investigations of the Molecular Structure of Gallium-Halides (Elektronograficheskoye issledovaniye stroyeniya molekul galogenidov galliya)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp. 205-209 (USSR)

ABSTRACT: The task of the present paper is the determination of the configuration and of the geometrical parameters of the molecules of the gallium-fluoride, chloride, and bromide by the diffraction-method with fast electrons, with a vapor-jet of the substance to be investigated. Because no data have been found so far in this field (except Ref 1) the authors planned to apply a thoroughly worked-out experimental method as well as a deciphering method. For this reason a new type of electron-diffraction camera was employed (Ref 2) and the ampulla was filled in a drying room. The elaboration of a vapor-electron-diffraction-pattern was carried out visually and photometrically (Ref 3). The process of decoding was carried out by means of: a) construction of curves of the radial distri-

Card 1/3

Electron-Diffraction-Investigations of the Molecular Structure of Gallium-Halides

bution (Ref 4) and b) the method of successive approximation (Ref 5). These investigations disclosed a new insight into the molecular structure of gallium-halides. The electron-diffraction-method proved the presence of monomer-molecules in vapor. Moreover the configuration was determined as well as the geometrical parameter of the $GaF_3$-molecule. The dimerisation of molecules was proved in vaporous gallium-chlorides and gallium-bromides, and more reliable data were obtained from their structure and their geometrical parameters (see table 2). There exist good reasons to assume analogy between structure of the crystalline gallium-halides and aluminium-halides. Data on the configuration of gas molecules of $Ga_2Cl_6$ and $Ga_2Br_6$ agree with data of solid aluminium, gallium, and indium halides (Ref 9) as well as solid trimethyl-aluminium. There are 3 figures, 2 tables, and 9 references, 2 of which are Soviet.

ASSOCIATION: Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chair of Physical Chemistry of the State University imeni M. V. Lomonosov, Moscow)

SOV/156-58-2-1/48

Electron-Diffraction-Investigations of the Molecular Structure of Gallium-Halides

SUBMITTED: October 21, 1957

Card 3/3

5(4)
AUTHORS: Akishin, P. A., Rambidi, N. G. SOV/55-58-6-28/31

TITLE: Electronographic Investigation of the Structure of the Molecule of the Vaporous Halides of Basic Elements (Elektronograficheskoye issledovaniye stroyeniya molekul paroobraznykh galogenidov shchelochnykh elementov)

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 6, pp 223 - 230 (USSR)

ABSTRACT: This paper was read in the electronographic section of the 6th Conference on the use of X-rays for the examination of materials (Leningrad 1958).
The electronographic investigations of the molecular structure of the compounds mentioned above (Maxwell, Hendriks, Mosley Ref 1) and the investigations made on the basis of other methods (Refs 4,5,6,7,8) (see table) have shown that there are different distances between metal and halogen, which was ascribed to the existence and to the formation of associates in the vapor of the halides of the basic elements. The authors tried in this article to explain the deviations existing between the results obtained electronographically and radiospectroscopically, and to find the geometrical configuration of a dimer molecule of the said

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