

USSR/Cultivated Plants - Grains.

M-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29716

Author : Cherednichenko, M.S.

Inst : The Ukrainian Scientific Research Institute for Agriculture.

Title : Corn Raising from Seed.

Orig Pub : V sb.: Vopr. razvitiya s. kh. Poles'ya. Kiyev, AN USSR, 1956 (1957), 19-28.

Abstract : In field crop rotations of the Buchanskiy Auxiliary Site of the Ukrainian Scientific Research Institute for Agriculture Bor'ba variety corn was sown at the rate of 25-30 kg/ha. for grain crops. According to the findings of 1950-1951 the best planting time is 10-20 days right after the early spring crops are sown. When the cobs were stored in a warm place and planting took place on 17 April and

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USSR/Cultivated Plants - Grains.

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Abs Jour : Ref Zhur - Biol., No 7, 1958, 29716

18 May there was 91-97% germination in the field, and when stored in a cold place 38-78%. The optimal density for the plant stand according to the data of these experiments in 1951-1952 is 60 x 60 cm with 2 plants per cluster. In tests with fertilizers the maximum grain yield boost (20.9 centners/ha.) on the average for 1950-1953 was gotten by applying 20 tons/ha. of manure and  $N_{30}P_{30}K_{30}$  to the autumn plow land. Exposure of the cobs prior to harvesting in the stage of waxy ripeness lowered the grain moisture by 4.6%.

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- 40 -

EUGENOV, M.G., kand. tekhn. nauk, CHEREDNICHENKO, N.G., inzh.

Increasing the quality of spot joints of tungsten and nickel  
in electric bulbs. Svar. proizvod. no. 12:11-13 B '65.

(MIRA 18:12)

L. Moskovskoye vyssheye tekhnicheskoye uchilishche im.  
Baumana.

L 33489-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l)

ACC NR: AP6012282 JD/HM/EM

SOURCE CODE: UR/0125/65/000/011/0044/0047

AUTHOR: Kaganov, N. L.; Cherednichenko, N. G.

ORG: NVTU im. Bauman

TITLE: Evaluation of the plasticity of the resistance-welded cross joints of miniaturized electronic components

SOURCE: Avtomaticheskaya svarka, no 11, 1965, pp 44-47

TOPIC TAGS: resistance welding, spot welding, electronic component, plasticity, test stand

ABSTRACT: Joints of this kind often display low plasticity, which causes their premature fracture. Since the existing test methods are not always suitable for quantitatively evaluating the plasticity of these joints, the authors suggest a new method of such evaluation which takes into account not only the shear stresses but also the bending stresses acting on these joints, with special reference to the highest-stressed sectors of the spot-welded cross joints for which no reliable test method has previously existed. The principle of the new test method is as follows: a torque is exerted on one of the finished components with respect to the weld zone, under a constant load (constant tensile stress), with recording of the angle of rotation at

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UDC: 621.791.763.539.214

L 33489-66

ACC NR: AP6012282

which the joint fractures. To this end, component 1 of the weldment (Fig. 1,a) is

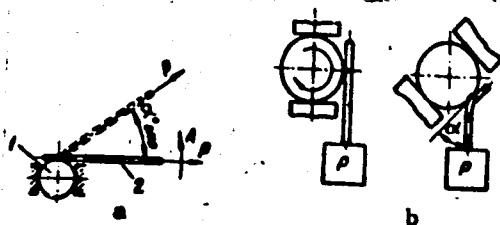


Fig. 1. Schematic representation of the fracture-angle tests of cross joints under static loading:

a - first version; b - second version

clamped between the sponge tips of a specially designed setup (Fig. 2), while at the same time a constant tensile stress P is applied to component 2 of the same weldment, causing it to smoothly revolve about the weld zone in the direction of arrow A until

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ACC NR: AP6012282

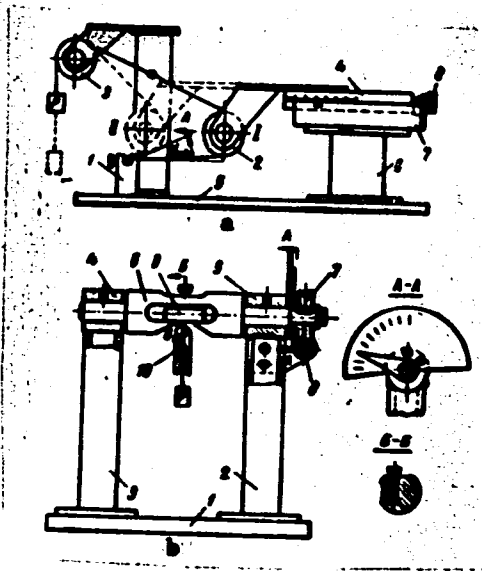


Fig. 2. Schematic representation of the devices for determining the fracture angle under static loading:

a - first version; b - second version

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ACC NR: AP6012282

fracture of the specimen at some angle of rotation  $\alpha$ . The angle  $\alpha$  between the initial position of the component's axis and its position at the instant of fracture of the specimen, termed the fracture angle, and the stress  $P$  characterize the plasticity of the joint at its highest-stressed spot. Two versions of this method may be employed. In the first version (Fig. 2,a) one of the specimen's components is rigidly held in clamp 1 and a tensile load  $P$  is applied to the other component via blocks 2 and 3. The arm of block 2 is attached to carriage 4 which moves with the turning of screw 8. As carriage 4 moves together with block 2, weight  $P$  continually descends, thus widening the angle between the initial and intermediate positions of the rotated component of the weldment until fracture sets in, whereupon weight  $P$  falls freely. In the second version (Fig. 2,b) the rotated component is so attached that the weld zone lies along a horizontal line passing through the center of the component, mounted on revolving shaft 6. This method and devices for testing plasticity make it possible to more correctly evaluate the effect of the welding technique employed and hence also to sharply increase the efficiency and durability of the finished products. Orig. art. has: 4 figures, 2 tables.

SUB CODE: 13, 11, 09/    SUMM DATE: 09Sep64/    ORIG REF: 005

Card 4/4 92

SVESHNIKOV, Aram Arutyunovich; FAZLAKOVSKIY, S.P., kand. tekhn. nauk, retsenzent; CHEREDNICHENKO, N.Ya., kand. tekhn. nauk, retsenzent; DINER, I.Ya., ~~nauchnyy red.~~; APTEKMAN, M.A., red.; SHISHKOVA, L.M., tekhn. red.

[Applied methods of the theory of random functions] Prikladnye metody teorii sluchainykh funktsii; Leningrad, Gos. soizuznoe izd-vo sudostroit. promyshl., 1961. 251 p. (MIRA 14:8)  
(Probabilities)



VOLODIN, Boris Grigor'yevich; GANIN, Mikhail Pavlovich; DINER, Isay Yakovlevich; KOMAROV, Lazar' Borisovich; SVESHNIKOV, Aram Arutyunovich, doktor tekhn. nauk, prof.; STAROBIN, Kalman Berkovich; GINZBURG, R.I., kand.tekhn.nauk, reitsentent; CHEREDNICHENKO, N.Ya., kand. tekhn.nauk; reitsentent; SHAYKEVICH, I.A., red.; KONTOROVICH, A.I., tekhn.red.

[Manual for engineers on the solving of problems in probability theory; collection of basic formulas, typical solutions, and problems for exercises] Rukovodstvo dlia inzhenerov po resheniiu zadach teorii veroiatnostei; sbornik osnovnykh formul, tipovykh reshenii i zadach dlia uprazhnenii. [By] B.G.Volodin i dr. Leningrad, Sudpromgiz, 1962. 422 p. (MIRA 15:7)  
(Probabilities)

CHEREDNICHENKO, O.I.  
~~CHEREDNICHENKO, O.I.~~

Certain features of the distribution of ore deposits in the  
northern part of the Saksagan Valley of the Krivoy Rog Basin.  
Visnyk AN URSS 28 no.9:33-41 S '57. (MIRA 11:1)  
(Krivoy Rog Basin--Ore deposits)

CHEREDNICHENKO, O.I.

BELEVTSSEV, Ya.M. [Believtsev, IA.M.]; CHEREDNICHENKO, O.I. [Cherednychenko, O.I.]

Structural conditions for secondary transformations in iron ores of the Krivoy Rog Basin. Visnyk AN URSR-29 no.2:50-52 P '58.

(MIRA 11:4)

1.Chlen-korrespondent AN URSR (for Belevtsev).  
(Krivoy Rog Basin--Iron ores)

CHEREDNICHENKO, P.; PESENKO, A.

Durability of piston rings. Avt. transp. 42 no. 5:17-18 My '64.  
(MIRA 17:5)

PESENKO, A.; CHEREDNICHENKO, P.

Life of the M-21 engines. Avt.transp. 43 no.5:30-32 My '65.  
(MIRA 18:6)

1. Rostovskoye oblastnoye avtoupavleniye.

CHEREDNICHENKO, P. A.

Cherednichenko, P. A. - "Rapid elongation of glass tape by Furko machines," Trudy  
Tekhn. konf-tsii rabotnikov stekol. prom-sti, Moscow, 1948, p. 64-68

SO: U-3600, 10 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 6, 1949).

CHEREDNICHENKO, P.M., mashinist teplovoza

Fire prevention equipment for diesel locomotives. Elek.1  
tepl. tiaga 5 no.10:16-17 0 '61. (MIRA 14:10)  
(Diesel locomotives--Safety appliances)  
(Fire prevention)

CHEREDNICHENKO, P.M., mashinist teplovoza

Persistently strive to improve the TE3 diesel locomotive. Elek.  
i tepl. tiaga 7 no.6:7 Je '63. (MIRA 16:9)  
(Diesel locomotives)



PORUTSKIY, G.V. [Poruts'kyi, H.V.]; CHEREDNICHENKO, S.V.; FERENBOK, Ya.L.

Production of superphosphate enriched with petroleum growth inhibiting substances. Khim. prom. [Ukr.] no.3:48-49 J1-S '64.

(MIRA 17:12)

CHEREDNICHENKO, S. V.

Ukraine - Mangel-Wurzel

Raising feed beets in the southeastern Ukraine. Korm. baza 4, No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.



Cherednichenko, S.V.

VLASYUK, P.A., akademik; PORUTSKIY, G.V.; CHEREDNICHENKO, S.V.

Foliar thiamine administration and the growth of the plant in  
the flowering stage. Dokl. AN SSSR 112 no.4:769-771 P '57.  
(MLRA 10:4)

1. Akademiya nauk USSR (for Vlasyuk).  
(Thiamine) (Corn)

Country : USSR I  
Category : Plant Physiology. Mineral Nutrition.  
Abs Jour. : Ref. Zhur.-Biologiya No. 11, 1958. No. 48539  
Author : Vlasyuk, P.A.; Forutskiy, G.V.; Cherednichenko, S.V.  
Institute : Acad. Sciences USSR  
Title : Non-Root Side-Dressing with Thiamine and Plant  
Growth during Florescence  
Orig. Pub.: Dokl. AN SSSR, 1957, 112, No. 4, 769-771  
Abstract : Top-dressing corn with thiamine during the flower-  
ing period (in field experiments with both stable  
and radioactive preperates) stimulated the verti-  
cal growth of the stalks and intensified the  
growth of the reproductive organs during flower-  
ing, yielding a slight boost in the grain harvest.  
A direct correlation was noted between the plant  
and the activity of the volatile organic secre-  
tions of the plants, which was determined by

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Country : USSR I  
Category : Plant Physiology. Mineral Nutrition.

Abs. Jour.: Ref. Zhur.-Biologiya No. 11, 1958. No. 48539

Author :  
Institute :  
Title :

Orig. Pub.:

Abstract : measuring the geotropic flexure they had produced.  
--N.I. Parisova

Card: 2/2



PA - 2941  
The Effect of Supplementary Feeding by Way of Aerial Organs upon  
Germination Power in Sowing Material.

and corn (P<sub>1</sub>) on the supplementary feeding was studied during bloom. Afterwards, germination, germ energy, the thiamin contents and bio-electrical properties were investigated, which depend on the degree of vitality of the plant. In addition, solutions of thiamin, (0,005%) of radioactive thiamin, of stable phosphorus and radioactive phosphorus were sprayed either from an aeroplane or by means of the spraying apparatus "Zarya". Supplementary feeding with (radioactive) phosphorus and thiamin considerably increases the germ energy, a circumstance which is connected with the acceleration of the process of ripening and the earlier attainment of physiological maturity. On the occasion of the determination of the biological potential the degree of change in the electrical reaction was always dependent on the intensity of the stimulus. The type of change of the local bioelectrical potential in corn seeds displays a clearly marked dependence on the coefficient of polarity. At the outset the texture had a positive charge. A further increase of the stimulus lead to an negative potential of the texture, its absolute value fluctuated considerably, depending on the degree of the maturity of the seed. The stimulus itself accelerates the physiological processes in the cells which display a tendency to return to their

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The Effect of Supplementary Feeding by Way of Aerial Organs upon  
Germination Power in Sowing Material. PA - 2941

initial equilibrium. The fact that no obnoxious mutations were generated are proved by two circumstances: A reduced period necessary for the reestablishment of the biological potential (according to KOSTYCHEV and VENT) in the variation with the radioactive thiamin and the retention by the plant of its normal capacity for thiamin synthesis. The amount of substances concerned were in the same order of magnitude of the natural contents of the seed. (2 tables and 13 citations from Slav publications)

ASSOCIATION: Institute for Plant Physiology and Agricultural Chemistry of the Academy of Science of the Ukrainian SSR.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

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17(4)

AUTHORS: Porutskiy, G. V., Cherednichenko, S. V. SOV/20-124-2-65/71

TITLE: Volatile Flower Excretions and Alteration in the Sex Characteristics in Maize (Letuchiye vydeleniya tsvetov i izmeneniye priznakov pola u kukuruzy)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 473 - 476 (USSR)

ABSTRACT: The characteristics of the formation of the generative plant organs are linked with the activity of the volatile organic excretions. Carbohydrates (mainly terpenes), alcohols (Refs 11, 14), esters (Ref 1), organic acids (Ref 15), aldehydes and ketones (Refs 1, 11) belong to them. Every plant species, even individual ecological types have a different pollen smell and a different composition of gas evaporations which to a different extent excite the pistil in fertilization (Ref 7). Additional nutrition independent roots with ultra-tracer elements and radioactive substances during the time of preparation for blossoming alters the correlative interaction and the sexual specialization of the organs (Ref 10). The specific reaction of plants upon the action of

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Volatile Flower Excretions and Alteration in the Sex Characteristics in Maize SOV/20-124-2-65/71

radioactive substances is connected with the selective accumulation of chromium, beryllium, gallium, vanadium, titanium, tantalum, thorium, zirconium and other ultra-tracer elements in the reproductive organs as well as with the composition of own volatile organic excretions (Refs 2, 9). The authors tried to find the relation between the activity of the liquid excretions of the flowers and the alteration of the sex characteristics of maize of the type VIR-42. During blossoming the plants were additionally fed with radioactive thiamin ( $2.5 \mu$  Ci per plant) under elimination of the roots. In the subsequent generations ( $F_1$ ,  $F_2$ ,  $F_3$ ) the secondary effect of thiamin upon the secretion of air vitamins was investigated as well as the correlative development of the male and female inflorescences. Results are shown on table 1. The prevailing development of male inflorescences reduced the activity of volatile excretions of individual inflorescences in the variants 1. - 3. (table 1:1 - water = control, 2 - thiamin, 3 radioactive thiamin). Radioactive thiamin increased in the variants 4. - 6. (4 - radioactive thiamin - secondary effect in  $F_1$ , 5 - in  $F_2$ , 6) the number of female

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Volatile Flower Excretions and Alteration in the Sex Characteristics in Maize SOV/20-124-2-65/71

inflorescences, in the variants 1. - 3., however, the number of male inflorescences. From the results can be seen that the development of male and female inflorescences are not only connected with respect to their structure (Ref 5) but also by the physiology of hormonal phenomena. By means of N. G. Kholodnyy's method (Refs 14, 17) the authors found that the volatile excretions of the male inflorescences have a much more simple composition than the female ones (Table 2). In generation  $F_3$  the acceleration of the development of male inflorescences arrived at its climax. They excreted volatile excretions to a higher extent. In the case of female inflorescences an inhibition of development occurred in  $F_3$ .

Volatile substances decreased. Malformations occurred (Fig 1). The results obtained confirm the importance of volatile excretions for the sex specialization of inflorescences in maize. N. G. Kholodnyy (Refs 14 - 17) founded a new direction of physiology of hormonal phenomena by his investigations

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Volatile Flower Excretions and Alteration in the Sex Characteristics in Maize SOV/20-124-2-65/71

where air vitamins were qualitatively and quantitatively determined. There are 1 figure, 3 tables, and 17 references, 12 of which are Soviet.

PRESENTED: September 24, 1958, by A. L. Kursanov, Academician

SUBMITTED: May 7, 1958

ASSOCIATION: Predstavleno akademikom A. L. Kursanovym.

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PORUTSKIY, G.V.; GOLOVCHENKO, V.P.; CHERONICHENKO, S.V.

Content of trace elements in various plant organs. Dokl. AN SSSR  
146 no.5:1223-1225 0 162. (MIRA 15:10)

1. Predstavleno akademikom A.L.Kursanovym.  
(Trace elements) (Plants—Chemical analysis)

CHEREDNICHENKO, V.

Line for processing and curing of meat. Mas.ind.SSSR 30  
no.1:46 '59. (MIRA 12:4)

1. Mogilevskiy myasokombinat.  
(Mogilev--Packing houses--Equipment and supplies)

ACCESSION NR.: AT4017000

S/3057/63/000/000/0117/0125

AUTHOR: Cherednichenko, V. A.; Fishevskaya, E. A.

TITLE: The use of mathematical statistics in the processing of data concerning the deactivation of materials for personnel protection and shielding

SOURCE: Zashchitny\*ye pokry\*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 117-125

TOPIC TAGS: nuclear engineering, atomic energy, atomic radiation, reactor shielding, activation, deactivation, statistics

ABSTRACT: The authors note that in studying the deactivation capability of materials after repeated contamination by mixtures of radioactive substances, methods involving the statistical processing of the test results may be successfully employed. The authors suggest that material deactivation tests be conducted in the following order: samples of the material under consideration are contaminated by a mixture of radioactive isotopes, with the samples deactivated after a computation has been made of the magnitude of the degree of activation introduced, after which yet another calculation is made—this time, of the value or degree of activation remaining after deactivation. In the present article, the authors discuss a unified system for the statistical processing of experimental data on the sorption-

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ACCESSION NR.: AT4017000

description properties of various materials. Tests were conducted with materials to be used for purposes of individual (personnel) protection, with a total number of sample contaminations-washings not exceeding ten. The authors made their statistical analysis (using the method of least squares) through a verification of certain a priori advanced hypotheses and through a quantitative estimation of the contribution made to the aggregate process by the action and interaction of individual factors. Fundamental to the methodology employed by the authors in this analysis is the assumption of a linear dependence of the value of residual activation on the repetitiveness of the contaminations. The suitability of the "method of least squares" to a statistical analysis of this type is discussed, certain difficulties associated with its use are pointed out and, finally, the method itself is described in some detail. The authors found that the primary advantage to be gained from the use of the method of least squares in the statistical processing of the results of tests on materials for individual protection purposes and for shielding of equipment consists in the possibility this method affords of completely characterizing the material in question in the most compact form. Orig. art. has: 2 tables, 1 graph, several formulas.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 20Feb64

ENCL: 00

Card

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SUB CODE: NP

NO REF SOV: 003

OTHER: 000

CHEREDNICHENKO, V. I.

V. I. Cherednichenko

Physical peculiarities of Satellites of large planets.

Prirada

5, 1951, 9

From: D.S.I.R. Trans. con. list. of R-Per. No. 31, Oct. 1951, p. 59

CHEREDNICHENKO, V.I.

Secular variation in the brilliance of Fay's short-period comet.  
Publ.Kiev.astron.obser. no.5:83-104 '53. (MIRA 7:6)  
(Comet, Fay's)

~~CHEKEDNICHENKO, V.I.~~

VSEKHSVIATSKIY, S.K.; NIKOL'SKIY, G.M.; PONOMAREV, Ye.A.; ~~CHEKEDNICHENKO,~~  
V.I.

On the problem of corpuscular solar radiation. Astron.zhur.32 no.2:  
165-176 Mr-Apr '55. (MLRA 8:5)

1. Kafedra astronomii Kiyevakogo gosudarstvennogo universiteta.  
(Solar radiation)

CHEREDNICHENKO, V. I.

CHEREDNICHENKO, V. I. "The Role of the Corpuscular Radiations of the Sun in the Physical Processes Occurring in Comets." Min Higher Education USSR. Kiev State U imeni V. I. Lenin. Minsk, 1956. (Dissertation for Degree of Candidate in Physicomathematical Science)

So: 'Knishnaya Ietopis', No. 17, 1956.

67624

SCV/81-59-14-49006

3. 1550

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 14, p. 92 (USSR)

AUTHOR: Cherednichenko, V.I.

TITLE: The Probability of Dissociation and Ionization of Atoms and Molecules in Comet Atmospheres During Ion and Photon Bombardment

PERIODICAL: Byul. Komis. po kometam i meteoram Astron. Soveta AS USSR, 1958, Nr 2, pp 10 - 19

ABSTRACT: The experimental results and the methods of calculating the efficient cross sections for the processes of ionization, dissociation and overcharging of molecules in comet atmospheres were considered under the action of corpuscular radiation from the sun<sup>1</sup> (mainly protons and electrons), as well as cross sections for the processes of photoionization and photo-dissociation of these molecules in a field of photon radiation from the sun. The bulk of the protons and electrons have velocities of  $\sim 5 \cdot 10^7$  cm/sec. At these velocities the electrons cannot play any role in the ionization and dissociation of comet mole-

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SOV/81-59-14-49006

The Probability of Dissociation and Ionization of Atoms and Molecules in Comet Atmospheres During Ion and Photon Bombardment

cules. But it was suggested earlier that there exist small corpuscular flows, in which the velocities attain  $3.2 \cdot 10^8$  cm/sec, and which affect all ionization processes in comet atmospheres. There are 55 references.

Ye. Frankevich

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CHEREDNICHENKO, V.I.

Role of solar corpuscula radiation in the excitation of the  
fluorescence of comet gases. Biul. Kom. po komet i meteor. AN  
SSSR no.3:19-26 '58 (MIRA 13:3)

1. Kiyevskiy politekhnicheskiy institut.  
(Comets) (Solar radiation)



BURKSER, Ye.S. [Burkser, I.E.S.]; GORDELADZE, Sh.G., kand.fiz.-mat.nauk;  
CHEREDNICHENKO, V.I. [Cherednychenko, V.I.]; kand.fiz.-mat.nauk;  
SHUGAYLIN, O.V. [Shuhaylin, O.V.], kand.filos.nauk

Evidences of evolution of small bodies in the solar system :  
("Physical characteristics of comets" [in Russian] by S.K.  
Vsekhsviatskii, Reviewed by I.E.S. Burkser and others. Visnyk AN  
URSR 29 no.11:70-73 N '58. (MIRA 11:12)  
(Comets) (Vsekhsviatskii, S.K.)

CHEREDNICHENKO, V.I. [Cherednychenko, V.I.], kand.fiz.-mat.nauk

Artificial satellites of Mars? Nauka i zhyttia 9 no.11:8  
N '59. (MIRA 13:3)

(Satellites--Mars)

3(1)

**AUTHOR:** Cherednichenko, V.I. SOV/33-36-2-7/27

**TITLE:** The Dissociation and Ionization of Cometary Molecules in the Photon and Corpuscular Field of Solar Radiation

**PERIODICAL:** *Astronomicheskii zhurnal*, 1959, Vol 36, Nr 2, pp 254-263 (USSR)

**ABSTRACT:** The author investigates the influence of the photon and corpuscular solar radiation on the dissociation and ionization of cometary molecules. The investigation is based on observation data on the solar radiation obtained a.o. by rockets and sputniks. The author calculates the life-time of the assumed parent cometary molecules and of the observed cometary molecules and radicals. The results are in good coincidence with observational data. The author mentions the papers of S.M. Poloskov, O.V. Dobrovol'skiy and G.M. Nikol'skiy. He thanks S.K. Vsekhsvyatskiy and O.V. Dobrovol'skiy for advices. - There are 1 figure, 7 tables and 30 references, 18 of which are Soviet, 4 American, 3 English, 3 French, 1 German, and 1 Belgian.

**ASSOCIATION:** Kiyevskiy politekhnicheskii institut (Kiyev Polytechnical Institute) Kiyevskiy gosudarstvennyy universitet (Kiyev State University)

**SUBMITTED:** December 18, 1957

Card 1/1

KAPLAN, Samuil Aronovich, doktor fiz.-matem.nauk; CHEREDNICHENKO, V.I.,  
kand.fiz.-matem.nauk, otv.red.; STAROSTENKO, T.N., red.

[New data on cosmic space; results of the International  
Geophysical Year] Novye dannye o kosmicheskom prostranstve;  
itogi MGG. Kiev, 1960. 37 p. (Obshchestvo po rasprostraneniui  
politicheskikh i nauchnykh znani. Ser.5, no.16).

(MIRA 14:2)

(Cosmography)

CHEREDNICHENKO, V.I.

Nature of the luminosity of Schwassman-Wachmann's comet. Astron.  
sbor no. 3/4:92-101 '69. (MIRA 14:11)

1. Kiyevskiy politekhnicheskii institut.  
(Comets--1925)

CHEREDNICHENKO, V.I.

Effect of the corpuscular and photon radiation from the sun on the  
the flares of comets. Astron.sbor no.3/4:81-91 '60.

(MIRA 14:11)

1. Kiyevskiy politekhnicheskij institut.  
(Comets)  
(Solar radiation)

89340

3.1550 (1057, 1062, 1129)

S/534/60/000/019/005/005  
D226/D303

AUTHOR: Cherednichenko, V.I.

TITLE: The lifetime of solid comet gases in the field of electromagnetic and corpuscular radiation from the sun

PERIODICAL: Akademiya nauk SSSR. Komitet po meteoritam.  
Meteoritika, no. 19, 1960, 143-154

TEXT: This paper was read at the extended plenum of the Committee on Meteorites AS USSR, on May 8, 1959. The lifetime of comet nuclei, which may consist either of pure or of contaminated ice and of solid  $\text{CH}_4$ ,  $\text{NH}_3$ ,  $\text{CO}_2$ ,  $\text{C}_2\text{H}_2$  and  $\text{C}_2\text{N}_2$  is of great importance in the problem of analyzing the origin of the comets. The majority of the above compounds exist on the planets and satellites of the solar system, as has been proved to some extent by L. Whipple (Ref. 1: Astroph. J. 113, 464, 1951). In the present work, an

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89340

The lifetime of solid comet ...

S/534/60/000/019/005/005  
D226/D303

attempt is made to theoretically evaluate the lifetime of comet nuclei composed of pure solid gases, to check the results thus obtained by statistical data and to evaluate the effectiveness of the assimilation process of disintegration products OH and H by the parent molecule of  $H_2O$ . The work consists of two main parts. In the first part the lifetime of comet nuclei is evaluated and in the second, the author shows that the process of recombination into the parent molecules occurs at a much slower rate than the process of disintegration itself. The lifetime  $t$  of a comet nucleus, for a comet in an elliptical orbit, is evaluated under several simplifying assumptions, the final expression being given as Eq. (7)

$$t = 2.34 \cdot 10^2 \frac{\rho L D_0 \leftarrow a \sqrt{a^2 - (a - q)^2}}{m} \quad (7)$$

In this expression  $a$  is the major axis and  $q$  the perihelion ex-

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S/534/60/000/019/005/005  
D226/D303

The lifetime of solid comet ...

pressed in astronomical units;  $L$  = heat of vaporization of one molecule of solid gas,  $D_{0\leftarrow}$  = the diameter of the comet nucleus;  $m$  = the mass of the molecule to be vaporized and  $\rho$  = density of the solid gas as evaluated from the formula  $\rho = \frac{nm}{a_1^3}$ . In this ex-

pression  $n$  = number of molecules in the crystal cell,  $m$  = mass of the molecule and  $a_1$  = the crystal lattice constant. Using the data of physical properties of various solid gases as given in Table I:

Table I

Gas Solidified	$\rho$ g/cm <sup>3</sup>	$L \cdot 10^{-10}$ eV/molecule	$m \cdot 1,66 \cdot 10^{-24}$ g
H <sub>2</sub> O	0,9	8,40	18
CH <sub>4</sub>	0,52	2,08	16
NH <sub>3</sub>	0,8	5,13	19
C <sub>2</sub> N <sub>2</sub>	1,45	3,72	52
CO <sub>2</sub>	1,09	5,21	28
C <sub>2</sub> H <sub>2</sub>	0,57	4,16	26

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D226/D303

The lifetime of solid comet ...

and assuming the albedo of all solid gases to be that of ice, i.e.  $A = 0.7$ , the author obtained six graphs as shown in Figs. 1-6. The results thus obtained agree well with those given by A. Hrushka (Ref. 8: Bull. Astron. Inst. Czechoslov., no. 2, 47, 1957). In the conclusion to the first part of the article, the author proves that the process of vaporization is due mainly to electromagnetic, not corpuscular radiation from the sun, the recombination of molecules being achieved due either to electromagnetic or corpuscular radiation. The latter two effects are analyzed in the second part of the article for the case of an  $H_2O$  molecule. Two processes of stabilization are considered: 1) Stabilization of the  $H_2O$  molecule owing to reradiation of field quanta. This would occur during the formation of molecules from various radicals and atoms only and depend on the effective cross section of the process  $OH + H \rightarrow H_2O^*$  [Abstractor's note: Asterisk denoting a molecule in the excited state]. The number of molecules  $Z_1$  formed

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D226/D303

The lifetime of solid comet ...

during the process  $OH + H \rightarrow H_2O^*$  is derived as Eq. (23):  $Z_1 = 2.04 \cdot 10^{-24} \text{ cm}^{-3} \text{ sec}^{-1}$ . 2) Stabilization of  $H_2O$  molecules can be also achieved by the process of electron capture. The rate of formation of stable molecules of  $H_2O$  from OH and H, with the subsequent loss of one  $H_2O$  molecule of excess energy by way of radiation due to electron capture, is derived as Eq. (26):  $Z_2 = 9.4 \cdot 10^{-20} \text{ cm}^{-3} \text{ sec}^{-1}$ , which shows that the process of formation of  $H_2O$  molecules accompanied by the electron capture is much more effective than the previous process. The next possible process in forming  $H_2O$  is triple collision ( $OH + H + H_2O \rightarrow H_2O + H_2O$ ), when the newly formed molecule of  $H_2O$  transfers the excess energy to another molecule of  $H_2O$  and itself becomes stable. For this case the rate at which triple collisions occur is given by  $Z_3 = 6.45 \cdot 10^{-5} \text{ cm}^{-3} \text{ sec}^{-1}$ . Finally the rate of disintegration  $Z_4$  of mole-

Card 5/12/6

X

40010

S/035/62/000/008/045/090

A001/A101

3,2430

AUTHOR: Cherednichenko, V. I.

TITLE: The role of corpuscular and photon radiation of the Sun in outbursts of comet brightness

PERIODICAL: Referativnyy zhurnal, *Astronomiya i Geodeziya*, no. 8, 1962, 82 - 83, abstract 8A574 ("Izv. Gl. astron. observ. AN USSR", 1960, v. 3, no. 1, 94 - 104)

TEXT: The author discusses the difficulties in explaining the outbursts of brightness of the comet 1925 II by the solar photon radiation. It is more probable, in the author's opinion, that they are caused by solar corpuscular streams. The least brightness of the Schwassmann-Wachmann comet prior to the largest outburst of January 24, 1933, was  $17^m$ . Such a brightness may be caused by a proton stream of the order of  $\sim 5.66 \times 10^8 \text{ cm}^{-2} \text{ sec}^{-1}$ . On the other hand, in order to ensure the brightness outburst of the mentioned comet of the order of  $4^m_5 - 5^m$  (January 24, 1933), an extremely powerful corpuscular stream is necessary, - the proton velocities should be of the order  $3 \times 10^8 \leq v \leq 5 \times 10^8 \text{ cm/sec}$  and density  $n_{H^+} \geq 10^2 \text{ cm}^{-3}$  if the glow is caused by CN IV, and  $n_{H^+} \approx 10^2 \text{ cm}^{-3}$

Card 1/2

S/035/62/000/008/045/090  
A001/A101

The role of corpuscular and...

if it is due to C<sub>2</sub> IV. A correlation between outbursts of comet brightness and magnetic storms is pointed out. It is shown that, within the error limits, the time span between the beginning of the outburst of January 24, 1949 ( $\Delta m = 4^m - 5^m$ ) and the commencement of the magnetic storm coincides with the observed one. Magnitudes of velocity and density of a stream were found, which could ensure this outburst:  $n_{H^+} \approx 10^3 \text{ cm}^{-3}$ ;  $4 \times 10^8 \leq v \leq 4.5 \times 10^8 \text{ cm/sec}$ . To explain the outburst of the Halley comet of January 13, 1910, a stream is necessary with  $v \approx 820 \text{ km/sec}$  and  $n_{H^+} \approx 10^4 \text{ cm}^{-3}$ . There are 18 references.

L. Marochnik

[Abstracter's note: Complete translation]

Card 2/2

CHEREDNICHENKO, V.I.

Nature of the luminescence of Schwassmann-Wachmann's comet (1925 II).  
Izv.Glav.astron.obser. AN URSR 3 no.1:105-114 '60. (MIRA 14:2)  
(Comets—1925)

CHEREDNICHENKO, V.I., kand.fiz.-matem.nauk

Nature of gravitation and weightless rockets. Nauka i zhyttia 10  
no.3:9-13 Mr '60. (MIRA 14:8)  
(Gravitation) (Astronautics)

CHEREDNICHENKO, V.I. [Cherednychenko, V.I.], kand.fiz.-mat.nauk.

Man in outer space. Nauka i zhyttia 10 no.8:12-16 Ag '60.  
(MIRA 13:8)

(Astronautics)



CHEREDNICHENKO, V.I. [Cherednychenko, V.I.], kand.fiz.-matem.nauk

Comets as indicators of solar activity. Nauka i zhyttia 10 no. 11:53-  
55 N '60. (MIRA 14:4)

(Solar radiation) (Comets)

3.1810 (1041)  
11.1530

30158  
S/609/61/000/003/006/008  
D039/D112

AUTHOR: Cherednichenko, V. I.

TITLE: Ionization and dissociation of molecules and atoms in auroras under the effect of corpuscular radiation of the Sun.

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Organizatsionnyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. Mezhdunarodnyy geofizicheskyy god; informatsionnyy byulleten', no 3, 1961, 39-46

TEXT: The paper shows the important part played by hydrogen and helium ions in recharging processes, when neutral and ionized N, O, N<sup>+</sup>, O<sup>+</sup>, N<sub>2</sub><sup>+</sup>, O<sub>2</sub><sup>+</sup> and CH particles are formed in auroras. The intensity distribution of helium ions  $n_{\text{He}^+} \approx 600 \text{ cm}^{-3}$  and hydrogen ions  $n_{\text{H}^+} \approx 90 \text{ cm}^{-3}$  in the helium emission

$\lambda$  10830Å and the hydrogen emission  $\lambda$  6563Å of an aurora observed at the Zvenigorod station near Moscow on the night of 10/11 February 1958 is explained by the author by the intrusion of a corpuscular flux into the Earth's atmosphere; it is also considered that the majority of auroral emissions can be also explained by the corpuscular mechanisms of recharging with

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30258

S/609/61/000/003/006/008

D039/D112

Ionization and dissociation ...

excitation. It has already been shown in other works that upon interaction of solar corpuscles  $H^+$ ,  $He^+$ , and  $He^{++}$  with the molecules and atoms of the Earth's atmosphere, recharging processes, i.e. recharging with dissociation and recharging with ionization, are the most probable. According to V. I. Krasovskiy (Ref. 4: Astr. zhurn., t. 35, vyp. 2, 1958), the absence of hydrogen emission in certain auroras is a proof of the intrusion of corpuscular fluxes consisting of helium ions into the Earth's atmosphere. I. S. Shklovskiy (Ref. 6: Izv. Krymsk. astrof. obs., t. 8, 1952) also points out the possibility of discovering helium emissions in auroras. In the light of these facts, the author examines the effectiveness of both the hydrogen and helium ions of corpuscular fluxes in the process of dissociation and ionization of the molecules and atoms of the Earth's atmosphere. For this purpose, he uses his own empirical formulae, the correctness of which has been proved in the works of the Leningradskiy fiziko-matematicheskii institute (Leningrad Physical-Mathematical Institute), to find the maximum effective cross-sections of various transformations of the  $N_2$ ,  $O_2$ ,  $H_2O$  molecules when bombarded with hydrogen and helium ions ( $He^+$ , and  $He^{++}$ ) of corpuscular fluxes. The results show that the helium ions  $He$  and  $He^{++}$  of corpuscular fluxes

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S/609/61/000/003/006/008

D039/D112

Ionization and dissociation ...

together with the  $H^+$  ions can play an important part in the dissociation of the  $N_2$ ,  $O_2$  and  $H_2O$  molecules, accompanied by the formation of the  $O^+$ ,  $O^{++}$ ,  $N^+$ ,  $N^{++}$ ,  $OH^+$ ,  $H_2^+$  ions and the  $O(^1S)$  and  $O(^1D)$  excited atoms. The  $O^{++}$ ,  $N^{++}$ ,  $H_2^{++}$ ,  $O_2^{++}$  emissions have not yet been discovered in auroras. This may be due to the low content of the  $He^{++}$  ions in corpuscular radiation, or by the fact that the lines and bands of these particles lie in the far ultraviolet, which is inaccessible to modern optical devices. Referring to the paper by V. I. Krasovskiy (Ref. 4), in which he notes the important role of recharging with excitation in the formation of separate emissions of auroras, the author makes a calculation to find the value of the maximum effective cross-section of recharging with excitation and to explain the distribution of intensities in the aurora spectrum. Other authors have already stated that the velocity of particles causing powerful auroras can be accepted as  $v_{H^+} = v_{He^+} = 10^8$  cm/sec. There are 4 tables and 24 references: 15 Soviet-bloc and 9 non-Soviet-bloc. The four most recent references to English-language publications read as follows: D. R. Bates, Theories of the Airglow Spectrum, IAGA Bulletin No. 15 b, Physique de la Haute Atmosphere, Paris, 1956.; L. Biermann, Physical Processes in Comet Tails and their Relation

Card 3/4

30158

S/609/61/000/003/006/008  
D039/D112

Ionization and dissociation ...

to Solar Activity, Mem. Soc. Roy. Scien. Liege, Quatrieme Serie, t. XIII, Fasc. I - II, 1955.; M. J. Seaton, Theories of the Airglow Spectrum, IAGA Bulletin, No. 15 b, Physique de la Haute Atmosphere, Paris, 1956.; M. J. Seaton, Excitation processes in the aurora and airglow, Journ. Atmosp. a. Terr. Phys., v. 4, No. 6, 1954.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet (Kiyev State University).

Card 4/4

3.5120  
3.2430

37951

S/035/62/000/005/060/098  
A055/A101

AUTHOR: Cherednichenko, V. I.

TITLE: The role of the Sun's corpuscular radiation in the excitation of the night airglow

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 5, 1962, 60, abstract 5A450 ("Mezhdunarodn. geofiz. god. Inform. byul", 1961, no. 4, 52 - 63, English summary)

TEXT: Night airglow characteristics are presented that confirm, in the opinion of the author, the corpuscular mechanism of the excitation of a series of lines and bands in the night airglow spectrum. Under the assumption of the corpuscular mechanism of excitation of the glow of line  $\lambda 5577$  OI and band  $\lambda 3914$  N<sub>2</sub><sup>+</sup> in the glow spectrum, the author obtains, for the solar corpuscular field proton concentration, values ( $10^2 < n_H^+ < 10^4$ ) which are in good agreement with the data obtained with the aid of the Soviet space rocket. There are 31 references.

[Abstracter's note: Complete translation] From the author's summary

Card 1/1

CHEREDNICHENKO, V.I.

Density of protons in the corpuscular solar radiation. Publ.  
KAO no.11:45-54 '62. (MIRA 16:7)

(Solar radiation) (Protons)

ACCESSION NR: AT4034466

S/3091/63/000/002/0062/0072

AUTHOR: Cherednichenko, V. I.

TITLE: Possible elementary processes of ionization and dissociation of molecules and atoms in auroras by solar hydrogen and helium ions

SOURCE: Kiyev. Universitet. Sbornik rabot po Mezhdunarodnomu geofizicheskomu godu, no. 2, 1963. 62-72

TOPIC TAGS: atmospheric ionization, aurora, solar helium ion, solar hydrogen ion, atmospheric dissociation, solar corpuscular stream

ABSTRACT: A study has been made of elementary processes of interaction of heavy solar corpuscles with molecules and atoms in the earth's atmosphere. The presence of hydrogen ions in solar corpuscular streams has been established. There has been only a single observation of helium ions in auroras (February 1958, Zvenigorod). However, V. I. Krasovskiy believes that the absence of a hydrogen emission in certain auroras indicates the penetration into the earth's atmosphere of corpuscular streams consisting of helium ions. The author therefore has investigated the possibility of various processes of transformations of  $N_2$ ,  $O_2$  and  $H_2O$  molecules and their decay products during bombardment by hydrogen and helium ( $He^+$  and  $He^{++}$ ) ions of corpuscular streams. Formulas used for the process of

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ACCESSION NR: AT4034466

dissociation of molecules by ion collision without formation of ionized decay products, the process of dissociation of molecules by ion collision with the formation of ionized decay products, and the process of charge exchange of a molecule with its simultaneous dissociation are cited, although they are available elsewhere in the literature. The author presents evidence that heavy particles of corpuscular streams are responsible for excitation of the principal auroral emissions. The formulas mentioned were used to investigate various processes of transformation of the  $O_2$ ,  $N_2$  and  $H_2O$  molecules during their bombardment by heavy particles of corpuscular streams; the results are presented in nine tables. These tables were used in preparing charts of the most probable processes of transformation of molecules of nitrogen, oxygen and water in the earth's atmosphere under the influence of hydrogen and helium ions of corpuscular streams (see Figures 1-5 of the Enclosure). Orig. art. has: 4 formulas, 5 figures and 9 tables.

ASSOCIATION: Kiyevskiy universitet (Kiev University)

SUBMITTED: 00

DATE ACQ: 07May64

ENCL: 05

SUB CODE: AA

NO REF SOV: 013

OTHER: 007

Card 1 2/7

ACCESSION NR: AT4034466

ENCLOSURE: 01

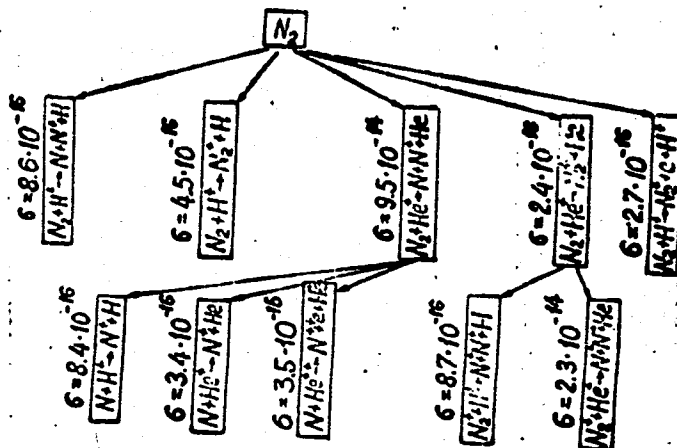


Fig. 1. Diagram of the most probable transformations of nitrogen molecules under the influence of hydrogen and helium ions of solar corpuscular streams.

Card 3/7

ACCESSION NR: AT4034466

ENCLOSURE: 02

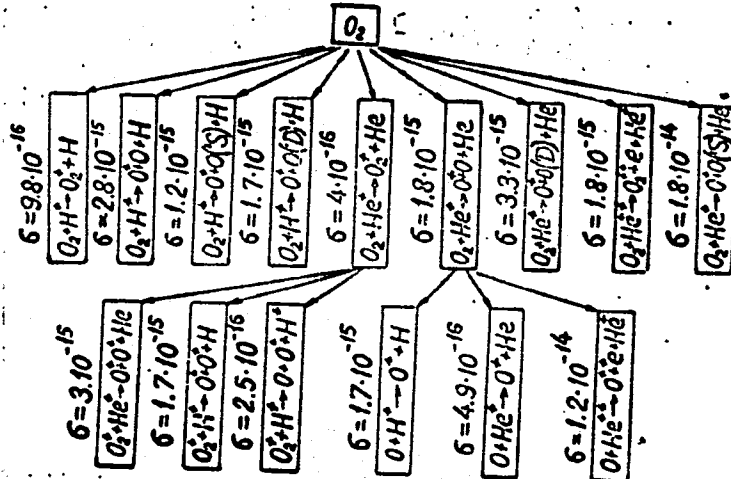


Fig. 2. Diagram of the most probable transformations of molecules of oxygen under the influence of hydrogen and helium ions of solar corpuscular streams.

Card 4/7

ACCESSION NR: AT4034466

ENCLOSURE: 03

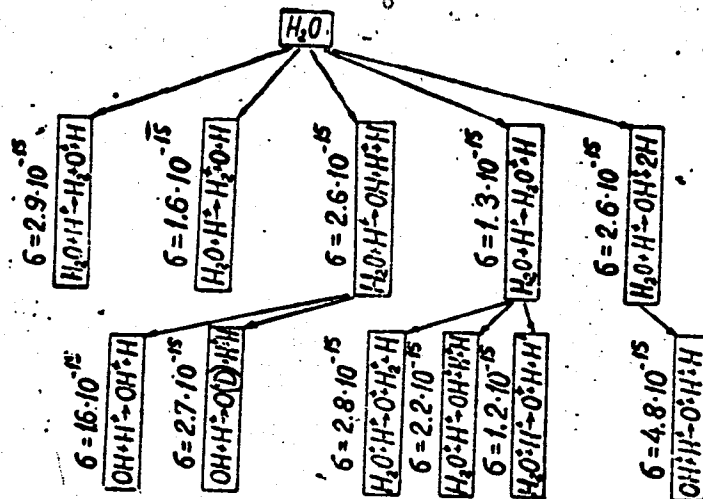


Fig. 3. Diagram of the most probable transformations of H<sub>2</sub>O molecules under the influence of hydrogen (H<sup>+</sup>) ions of solar corpuscular streams.

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ACCESSION NR: AT4034466

ENCLOSURE: 04

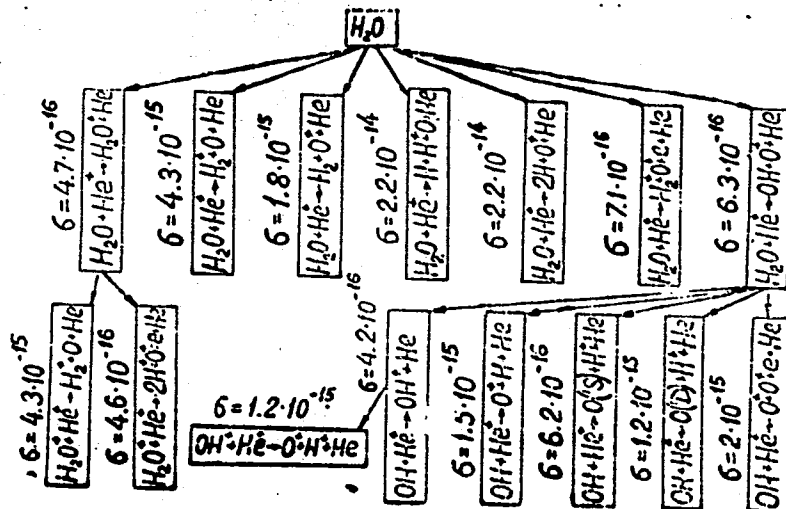


Fig. 4. Diagram of the most probable transformations of H<sub>2</sub>O molecules under the influence of helium (He<sup>+</sup>) ions of solar corpuscular streams.

Card 6/7

ACCESSION NR: AT4034466

ENCLOSURE: 05

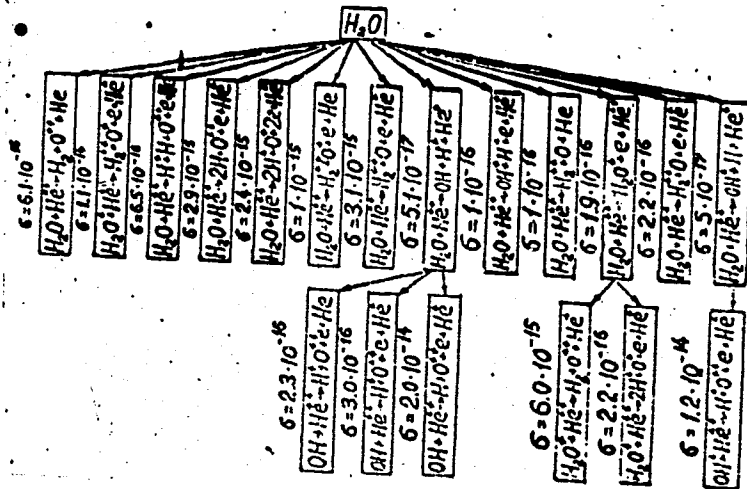


Fig. 5. Diagram of the most probable transformations of H<sub>2</sub>O molecules under the influence of helium (He<sup>+</sup>) ions of solar corpuscular streams.

Card 7/7

TRANSLATION NUMBER SERIES 3020

WRITE BELOW THIS LINE

POSTCARD

BR

ACCESSION NR: AT4034467

S/3091/63/000/002/0073/0083

AUTHOR: Cherednichenko, V. I.

TITLE: Corpuscular mechanisms of excitation of ultraviolet emissions in auroras

SOURCE: Kiyev. Universitet. Sbornik rabot po Mezhdunarodnomu geofizicheskomu godu, no. 2, 1963, 73-83

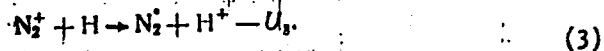
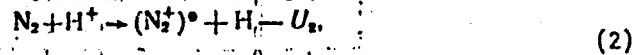
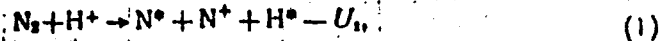
TOPIC TAGS: upper atmosphere, aurora, auroral ultraviolet emission, solar corpuscle, charge exchange

ABSTRACT: Investigations of high auroras have revealed that they apparently are the result of the direct collision of solar H<sup>+</sup> and He<sup>+</sup> corpuscles accompanied by H $\alpha$  emission. A study has been made to determine the possibility of excitation of the ultraviolet emissions of auroras under the influence of solar corpuscular radiation. Spectroscopic auroral observations were made at Roshchino in 1957-1958; a number of spectrograms with H $\alpha$  emissions were obtained. The results are shown in a table. The presence of a H $\alpha$  emission in most of these spectrograms and a displacement of the maximum corresponding to the velocity of hydrogen atoms suggested that hydrogen atoms and ions of solar origin can cause the observed intensity of the bands N<sub>2</sub>PG, N<sub>2</sub><sup>+</sup>1 NG and N<sub>2</sub>VK and the line [N I]. It is noted that the most effective processes of excitation of N<sub>2</sub>, N<sub>2</sub><sup>+</sup> and N at the time of collision with

Card 1/3

ACCESSION NR: AT4034467

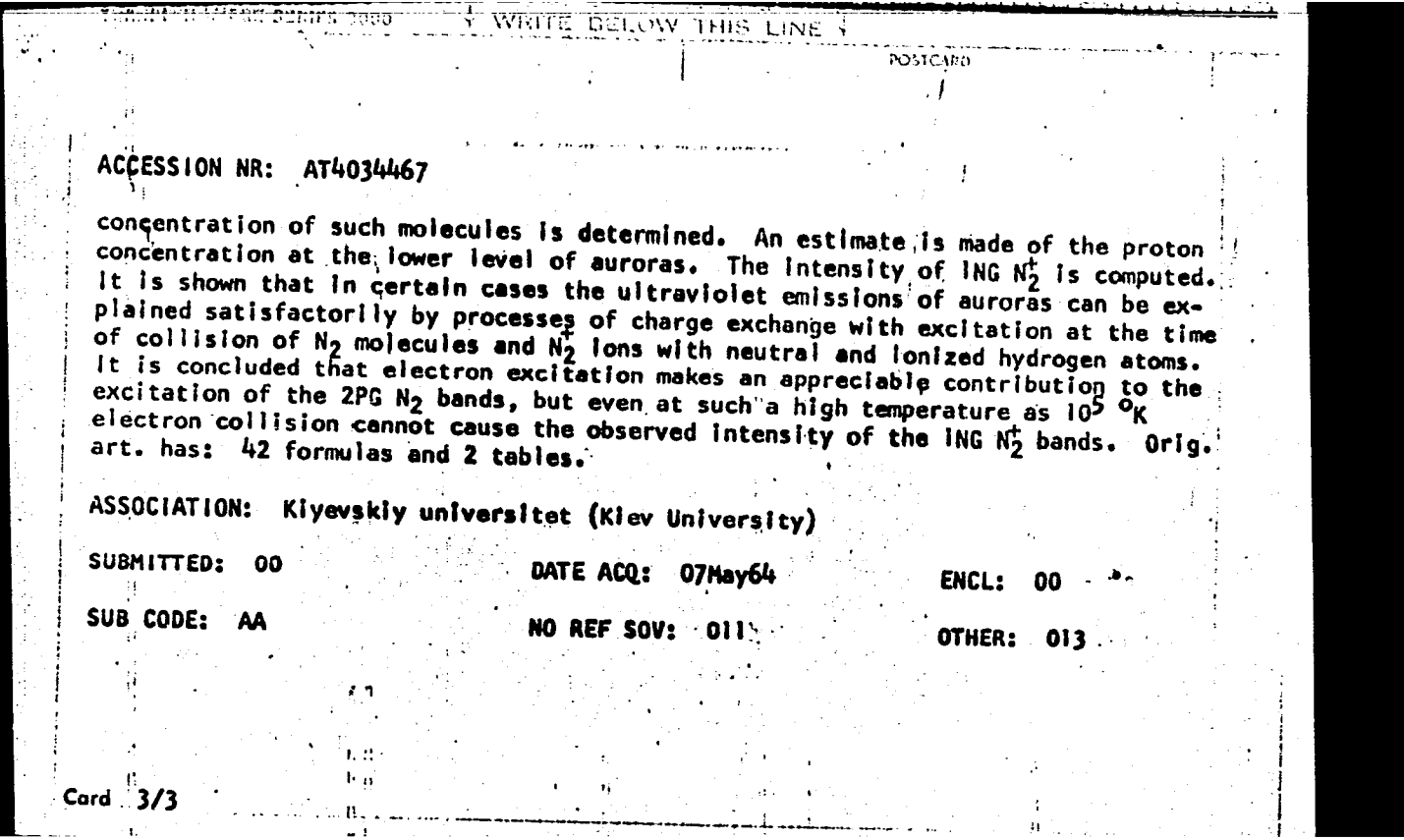
H and H<sup>+</sup> can be processes of charge exchange with excitation and dissociative charge exchange with excitation:



It is shown that for theoretical computation of the intensity of the ultraviolet emissions in auroras it is insufficient to know only the effective cross section of processes (1), (2) and (3). A method is given for expressing the intensity of emissions in absolute units. The process of deexcitation of excited nitrogen N(<sup>2</sup>P) atoms as a result of collisions of the second kind with ionization, charge exchange, transfer of the excitation to an O atom or a N<sub>2</sub> molecule and transfer of excitation to an electron is discussed. It is shown that the process of deexcitation by electron collision is extremely ineffective; the most probable deexcitation mechanism is collision with vibrationally excited N<sub>2</sub> molecules. The

C878 2/3





ACCESSION NR: AT4032225

S/3089/63/000/005/0229/0239

AUTHOR: Cherednichenko, V. I.

TITLE: Role of solar corpuscular emission in excitation of ultraviolet emission of auroras

SOURCE: AN UkrSSR. Mezhdovedomstvennyy geofizicheskiy komitet. Geofizika i astronomiya; informatsionnyy byulleten', no. 5, 1963, 229-239

TOPIC TAGS: molecular ion, nitrogen atom, ultraviolet emission, ultraviolet spectral range, aurora, hydrogen atom, dissociative recharge, reaction formula, effective cross section, homogeneous atmosphere, solar proton, excitation energy, oscillator strength

ABSTRACT: Radiation of the molecular ion  $N_2^+$ , of the nitrogen atom [NI], and of nitrogen molecules  $N_2$  are predominant in the ultraviolet range of the aurora spectrum. Five spectrograms of auroras obtained in Roshchino ( $\phi = 60^\circ$ ) contained the emission line  $H_\alpha$  with

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ACCESSION NR: AT4032225

a shifting which indicated a velocity of hydrogen atoms of 360 km  $\text{sec}^{-1}$ . A recharge with excitation and a dissociative recharge may be the more effective processes for excitation of  $\text{N}_2$ ,  $\text{N}_2^+$ , and N in collisions with H and  $\text{H}^+$ . Formulas of reactions are given. Using effective cross sections of chemical reactions, a height of homogeneous atmosphere for the lower level of auroras, a concentration of  $\text{N}_2$  molecules and O atoms at the same level, and the concentration and velocity of solar protons, the ultraviolet emission from auroras is determined. Processes of extinguishing excited atoms of  $\text{N}(^2\text{P})$  can take place as a result of collisions of the second kind connected with ionization, recharge, delivering of exciting energy to O atoms or  $\text{N}_2$  molecules, and electrons. Extinguishing reactions at a recharge for the line of 3466 Å of [NI] are given the effective cross section of which are  $4.43 \cdot 10^{-16} \text{ cm}^2$  and  $5.25 \cdot 10^{-16} \text{ cm}^2$ . The transfer of excitation from a metastable  $\text{N}(^2\text{P})$  atom to a neutral O atom or  $\text{N}_2$  molecule is studied. The oscillator strength  $f_{0n}$  of an N atom at the transition  $^4\text{S} \rightarrow ^2\text{P}$  is  $f_{0n} = 6.3 \cdot 10^{-10}$ . The most probable process which causes the extinguishing of the line 3466 Å of atomic nitrogen is the process of  $\text{N}(^2\text{P})$  in collision with

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ACCESSION NR: AT4032225

excited N<sub>2</sub> molecules. Orig. art. has: 2 tables and 33 formulas.

ASSOCIATION: Kiyevskiy politekhnicheskij institut. ( Poly-  
technical Institute) .

SUBMITTED: 00

DATE ACQ: 16Apr64

ENCL: 00

SUB CODE: AA

NO REF SOV: 011

OTHER: 013

Card 3/3

L 2961-66 EWT(1)/FCC/EWA(h)  
ACCESSION NR: AT5024188

GS/GW

UR/0000/65/000/000/0046/0050

41  
B+1

AUTHOR: Cherednichenko, V. I.

TITLE: Dissociation and ionization of water molecules in cometary atmospheres

SOURCE: AN UkrSSR. Fizika komat i meteorov (Physics of comets and meteors).  
Kiev, Izd-vo Naukova dumka, 1965, 46-50

TOPIC TAGS: comet, solar corpuscular radiation, solar radiation, solar radiation effect  
1255

ABSTRACT: Dissociation and ionization of water molecules in cometary atmospheres, caused by photon and corpuscular radiation of the sun, are discussed. The possible transformation processes in the solar photon field for a comet at 1AU from the sun are given with the wavelength of the effective radiation, quantum flux, effective cross section, and lifetime for each process. The possible processes for water molecule transformations by solar protons are also given with the effective cross section and lifetime for each process. It is shown that the principal processes for water molecule transformations are charge exchange and charge exchange with molecular dissociation with solar protons. Orig. art. has: 1 equation, 1 diagram, and 2 tables.

Card 1/2

L 2961-66

ACCESSION NR: AT5024188

ASSOCIATION: none

SUBMITTED: 21May65

NO REF SOV: 004

ENCL: 00

OTHER: 008

SUB CODE: AA

BVK  
Card 2/2

CHEREDNICHENKO, Vladimir Ivanovich; Balyasnaya, A.Ye., red.

[Physics of the earth's upper atmosphere] Fizika verkhnei  
atmosfery Zemli. Kiev, Izd-vo Kievskogo univ., 1965. 201 p.  
(MIRA 18:8)

CHEREDNICHENKO, V. M.

//Action of a proteolytic enzyme of the trypsin type, necrosin, on the eye tissues in experiments. V. M. Cherednichenko (Med. Inst., Khar'kov). *Vestnik Ophthalm.* 33, No. 5, 28-30(1955).--Necrosine, a proteolytic enzyme obtainable from acidic suppurative exudations, causes local necrosis of eye tissues after deposition on them; introduction into the eye chamber causes destructive changes along with a great increase of vessel permeability and leads to a violent exudative and hemorrhagic inflammation. The enzyme is obtainable from inflammations such as those caused by introduction of turpentine into the pleural cavity of a dog.  
G. M. Kosolapoff



CHEREDNICHENKO, V.M., assistant

"Saturn" fishing line for making sutures in surgical operations.  
Vest.oft. 69 no.6:32-33 N-D '56. (MLM 10:2)

1. Is kliniki glaznykh bolesney (sav. - prof. N.Ye.Brayshteyn)  
Khar'kovskogo meditsinskogo instituta.  
(SUTURES) (FISHING--IMPLEMENTS AND APPLIANCES)

CHEREDNICHENKO, V. M. , Cand Med Sci -- (diss) "Problem concerning the effect of novocaine block and certain other effects on the nervous system with inflammatory processes in the eye." Khar'kov, 1957, 16 pp (Khar'kov State Medical Institute) 240 copies (KL, 36-57, 108)

*Cherednichenko, V.M.*

BLYUMENFEL'D, Lev Aleksandrovich; ~~CHEREDNICHENKO~~, V.M., redaktor;  
GOL'TSMAN, O.G., redaktor izdatel'stva; ~~CHEREDNICHENKO~~, M.S., tekhnicheskiy  
redaktor.

[Hemoglobin and its reversible union with oxygen] Gemoglobin i  
obratimoe prisoedinenie kisloroda. Moskva, Gos.izd-vo "Sovetskaya  
nauka," 1957. 138 p. (MIRA 10:11)

(HEMOGLOBIN)

CHERNICHENKO, V.M.

Effect of a novocaine block and of some other influences on the nervous system in inflammatory processes of the eye. Vest.oft. 70 no.3:3-5 My-Je '57. (MIRA 10:8)

1. Kafedra glaznykh bolezney Khar'kovskogo meditsinskogo instituta (zav. - prof. N.Ye.Braunshteyn)

(EYE DISEASES, exper.)

inflamm., eff. of procaine block)

(PROCAINE, eff.)

procaine block on exper. inflamm. of eye)

(INFLAMMATION, exper.)

eye, eff. of procaine block)

KOTLYAREVSKAYA, S.Z.; CHEREDNICHENKO, V.M.

Intravitally diagnosed tuberos sclerosi (Pringle-Burneville's disease)  
with changes in the fundus oculi. Vest. oft. 73 no. 2:34-37 Mr-Ap  
'60. (MIRA 14:1)

(TUBEROUS SCLEROSIS) (EYE—DISEASES AND DEFECTS)

CHEREDNICHENKO, V.M.

Role of Listeria infection in the etiology of endogenous uveitis.  
Vest.oft. no.4:42-45 '62. (MIRA 15:11)

1. Kafedra glaznykh bolezney (zav. -- prof. N.Ye. Braunshteyn)  
Khar'kovskogo meditsinskogo instituta.  
(LISTERIOSIS) (EYE--INFLAMMATION)

CHEREDNICHENKO, V.M., dotsent; KONTOROVICH, Ya. I. , kand.med.nauk.

Rare lesion of the eye caused by the contents of an *Aporia crataegi* butterfly pupa. Vest. oft. 76 no.1:80-81 Ja-F'63.  
(MIRA 16:6)

1. Kafedra glaznykh bolezney (sav. - prof. N.Ye.Braunshteyn)  
Khar'kovskogo meditsinskogo instituta.  
(MYIASIS) (EYE--FOREIGN BODIES)

CA CHEREDNICHENKO, V.M.

The heat of the reversible transition of butyric acid by-  
 droperoxide from one state to the other. Z. K. Maloz,  
 V. M. Cherednichenko, and N. M. Kuznetsov. Doklady  
 Akad. Nauk S.S.S.R. 70, 835-8(1950); cf. preceding  
 abstr. — The heat of the transition was calcd. from 2 sets of  
 expts., one with the temp. of quenching const. and the amt.  
 of peroxide varied through variation of the stage of the re-  
 action (detd. by the decrease of pressure) at which the re-  
 action mixt. was quenched, the other with the amt. of  
 peroxide kept const. and corresponding to the point of  
 max. decrease of pressure, and the quenching temp.  $t_q$   
 varied. Both sets involved the detn. of the heating-up  
 temp.  $t_i$  at which inflammation took place. The quench-  
 ing effect was independent of the compn. of the mixt., and  
 detd. only by the concn.  $P$  of the low-temp. form of the  
 peroxide. With an equimol. mixt. of  $PrCOH + O_2$   
 at initial pressure 150 mm. Hg, reacted to various stages at  
 100°, the total amt. of peroxide increases linearly with  
 the degree of reaction. At const.  $t_q = 10^\circ$ , and a length  
 of quenching, 10-15 min., sufficient to convert all the  
 peroxide into the low-temp. form,  $t_i$  falls with increasing  
 $P$ ; addn. of fresh amt. of mixt. does not alter the position  
 of the curve. At const.  $P$ ,  $t_i$  increases with increasing  $t_q$ .  
 Elimination of  $t_i$  from the 2 sets of expts. permits con-  
 struction of the curve of  $P$  as a function of  $t_q$ ; this curve  
 shows a fall of  $P$  with increasing  $t_q$ . From the data,  $t_q =$   
 27, 25, and 41°,  $t_i = 104^\circ, 101^\circ$ , and  $105^\circ$ ,  $P = 12.4, 10.8,$   
 and 9.6 mm. Hg, the heat of transition, calcd. from the  
 equil. const., is 7.5 kcal./mole. This is close enough to

the energy of the hydrogen bond to warrant the conjecture  
 that the low-temp. form of the peroxide is hydrogen-  
 bonded,  $RC(O)OOH$  whereas the high-temp. form is not.  
 Quenching would result in restoration of the hydrogen  
 bond, disrupted at the higher temp. N. Thon



CHEREDNICHENKO, V. M.

CHEREDNICHENKO, V. M. - "Kinetics of the Catalytic Synthesis of Methanol." Sub 12 Jan 53, Order of the Labor Red Banner Sci Res Physico-chemical Inst imeni L. Ya. Karpov. (Dissertation for the Degree of Candidate in Chemical Sciences).

SO: Vechernaya Moskva January-December 1952

SEMEV, N.N., akademik; CHERDNICHENKO, V.M., redaktor; ZEMLYAKOVA, T.A.,  
tekhnicheskiy redaktor

[Some problems in chemical kinetics and reaction capacity] O nekoto-  
rykh problemakh khimicheskoi kinetiki i reaktsionnoi sposobnosti.  
Moskva, Izd-vo Akademii nauk SSSR, 1954. 348 p. (MLRA 7:9)  
(Chemical reaction, Rate of)

*CHEREDNICHENKO V.M.*  
MALRANDYAN, A.B., professor, redaktor; EMANUEL', N.M., professor, redaktor;  
CHEREDNICHENKO, V.M., redaktor; YELENKOVA, Ye.V., tekhnicheskiy redak-  
tor

[Chain reaction of gaseous phase oxidation of hydrocarbons] *TSepnye*  
*reaktsii oksileniya uglevodorodov v gasovoi fase. Moskva, 1955. 209 p.*  
*(:U.S.A 9:1)*

1. Akademiya nauk SSSR. Institut khimicheskoy fiziki  
(Hydrocarbons) (Oxidation)

CHEREDNICHENKO, V. M.

LUR'YE, G. E., redaktor; BOBESKOV, G. K., redaktor; NABEREZHNYKH, M. Ye.,  
redaktor; PSHEZHITSKIY, S. Ya., redaktor; SLIN'KO, M. G., redaktor;  
TEMKIN, M. I., redaktor; CHEREDNICHENKO, V. M., redaktor; SHPAK, Ye. G.,  
tekhnicheskiy redaktor

[Heterogeneous catalysis in the chemical industry; papers from the  
All-Union Conference, 1953] Geterogennyi kataliz v khimicheskoi  
promyshlennosti; materialy Vsesoiuznogo soveshchaniia 1953 goda.  
Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1955. 494 p.  
(MLRA 9:2)

1. Russia (1923- U.S.S.R.) Ministerstvo khimicheskoy promyshlennosti.  
(Catalysis)

CHEREDNICHENKO, V.M.; ZEMKIN, M.I.

Effect of internal diffusion on the course of catalytic reactions retarded by the reaction product. Zhur.fiz.khim. 31 no.1:157-164  
Ja '57. (MLBA 10:5)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova, Moskva.  
(Diffusion) (Catalysts)

*C. HEREDNICHENKO KM*  
 USSR/Physical Chemistry - Kinetics, Combustion, Explosions, Topo-  
 chemistry, Catalysis

P-9

Abs Jour: Referat. Zhurnal Khimii, No 3, 1958, 7253.

Author : V.M. Cherednichenko, M.I. Tsukl...

Inst :

Title : Kinetics of Catalytic Synthesis of Methanol

Orig Pub: Zh. fiz. khimii, 1957, 3, No 5, 1072.

Abstract: The kinetics of  $\text{CH}_3\text{OH}$  synthesis of  $\text{CO}$  and  $\text{H}_2$  in a circulation system at 184 to 302 mm Hg under the pressure of 112 to 640 mm of merc. column and in presence of oxide  $\text{Zr-Cr}$  catalyst was studied. The reaction rate answers the equation  $\omega = k_1 \text{CH}_2 \text{CO}^{0.6} / \text{CCH}_3\text{OH} \dots (1)$ ,  $k_1$  is a constant,  $\text{CH}_2$ ,  $\text{CO}$  and  $\text{CCH}_3\text{OH}$  are the concentrations of the reaction components at the interior catalytic surface. The apparent activation energy is 32 kcal per mole. The reaction proceeds in the kinetic range, if the catalyst grain dimensions were 0.7 mm, and it proceeds

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USSR/Physical Chemistry - Kinetics, Combustion, Explosions, Topo-chemistry, Catalysis.

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Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7253.

in the interior-diffusion range, if the grain dimensions were 4 mm; in the latter case, the reaction rate is slowed down by Knudsen diffusion of  $\text{CH}_3\text{OH}$  in the catalyst pores (size about 20 Å). The  $\text{CO}_2$  yield at the secondary reaction  $2\text{CO} = \text{CO}_2 + \text{C}$  is proportional to the contact duration and does not depend on the catalyst grain size and on  $\text{C}_{\text{H}_2}$ , and it rises at the increase of  $\text{C}_{\text{CO}}$ . According to a computation, the process is carried out under industrial conditions in the transitory range between the kinetic and the interior-diffusion ranges. As the authors point out, the equation (1) agrees qualitatively with the assumption that the reaction rate is determined by the rate of CO or  $\text{H}_2$  adsorption rate, and that the slowing down of the reaction by methanol is caused by the establishing of the adsorption-chemical equilibrium  $\text{CO (ads)} + \text{H}_2 \text{ (gas)} \rightleftharpoons \text{CH}_3\text{OH (gas)}$ .

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C.HEREDNICHENKO, V.M.

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PHASE I BOOK EXPLOITATION

SOV/2267

Akademiya nauk SSSR. Energeticheskiy institut

Kinetika i rasprostraneniye plazeni; sbornik dokladov na obshchemoskovskom seminare po goreniyu pri energeticheskom institute AN SSSR (Kinetics and Propagation of Flame; Collection of Reports at the All-Moscow Seminar on Combustion) Moscow, Izd-vo AN SSSR, 1959. 51 p. Errata slip inserted. 2,500 copies printed.

Ed.: L. N. Khitrin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A. G. Prudnikov; Tech. Ed.: O. M. Gus'kova; Seminar Council: L. N. Khitrin, Corresponding Member, USSR Academy of Sciences (Chairman), G. F. Knorre, Doctor of Technical Sciences, Honored Worker in Science and Technology, Professor (Deputy Chairman); Ye. S. Shchetnikov, Doctor of Technical Sciences, Professor (Deputy Chairman); A. P. Vanichev, Doctor of Technical Sciences; V. V. Voyevodskiy, Corresponding Member, USSR Academy of Sciences; N. V. Golovanov, Candidate of Chemical Sciences; D. S. Zhuk, Candidate of Chemical Sciences; N. V. Inozemtsev, Doctor of Technical Sciences, Honored Worker in Science and Technical, Professor; B. V. Kantorovich, Doctor of Technical Sciences; S. M. Kogarko, Doctor of Chemical Sciences; B. P. Lebedev, Candidate of Technical Sciences; K. A. Nikitin, Candidate of Technical Sciences; A. S. Sokolik, Doctor of Chemical Sciences; and Ye. S. Golovina, Candidate of Technical Science (Scientific

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Kinetics and Propagation of Flame (Cont.)

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Secretary).

**PURPOSE:** This book is intended for engineers and specialists in thermal power production, gas combustion, heat engineering and related fields.

**COVERAGE:** The collection contains three articles which deal with the combustion reaction rate and flame velocity in gaseous mixtures and the influence of ozone on the kinetics of hydrocarbon combustion. References appear at the end of each article.

**TABLE OF CONTENTS:**

**Tsukhanova, O. A.** Calculation of Total Reaction Rate and Flame Velocity in Gaseous Mixtures

3

The author describes the combustion process with a system of differential equations of the conservation of mass, equations of momentum, energy, state and chemical kinetics. The article is subdivided as follows: Derivation of an approximation formula for normal flame velocity; Derivation of equations for calculating coefficients of total reaction rate; Calculation of total

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## Kinetics and Propagation of Flame (Cont.)

SOV/2267

reaction kinetics for mixtures of carbon monoxide with oxygen and nitrogen; Comparison of experimental data with calculated values of the total reaction rate of carbon monoxide with oxygen; On the conformity of exact and approximate solutions. The following personalities are mentioned: N. N. Semenov, D. A. Frank-Kamenetskiy, Ya. B. Zel'dovich, G. A. Barskiy, A. V. Bondarenko, N. A. Karzhvin, N. A. Karzhavina, L. S. Sclov'yeva, G. I. Kozlov, I. S. Bruk.

Kamenskaya, S. A., N. A. Slavinskaya, and S. Ya. Pshezhetskiy. Influence of Ozone on the Combustion of Hydrocarbons 33

The author investigated the influence of ozone on critical conditions for the combustion of mixtures of some hydrocarbons with oxygen. Butane, Butylene and cyclohexane were investigated as it was possible to assume substantial distinction in their primary interactions with ozone. The following personalities are mentioned: N. M. Chirkov, S. G. Entelis, A. B. Nalbandyan, B. Ya. Stern, N. A. Kleymanov, I. N. Antonova, A. M. Markevich.

Cherednichenko, V. M., I. N. Pospelova, and S. Ya. Pshezhetskiy, Influence of Ozone on the Burning Velocity of Hydrocarbons. 43

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Kinetics and Propagation of Flame (Cont.)

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The influence of ozone on the burning velocity of butane was investigated at atmospheric pressure in air mixtures, and in oxygen mixtures at a pressure of 10 mm Hg.

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AUTHORS:

Cherednichenko, V. M., Pospelova, I. N., SOV/76-32-12-3/32  
Pshezhetskiy, S. Ya.

TITLE:

The Effect of Ozone on the Speed of Combustion of Hydrocarbons (Vliyaniye ozona na skorost' goreniya uglevodorodov)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12,  
pp 2673 - 2678 (USSR)

ABSTRACT:

A mixture of n-butane, n-heptane, isooctane (2,2,4-trimethylpentane), and cyclohexane with air or oxygen was burnt with varying ozone additions. The rapid combustions were photographed with a photorecorder F R -60, the slow ones with a time lapse motion camera. The combustion temperature was calculated with the help of the thermodynamical tables of the NACA (Ref 3) (Nat.Ass.Chem.Am.). The rate of combustion of an n-butane-air mixture corresponds to M. Gerstein's (Ref 4) statements. Ozone accelerates the rate of combustion and increases the combustion temperature. The experimental results showed much higher values than were to be expected according to Ya. B. Zel'dovich's and D. A. Frank-Kamenetskiy's

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