18 (7)

05727

SOV/32-25-10-16/63

AUTHORS: Tomashov, N. D., Andreyev, L. A., Isayev, N. I.

TITLE: Comprehensive Investigation of Stress-Corrosion Cracking Processes

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, pp 1200 - 1203 (USSR)

ABSTRACT: A device and a suitable method for simultaneous microscopic and electrochemical investigation of stress-corrosion cracking processes were developed. The device includes a tensile-testing machine with a visual and measuring recording system. Axial tensile loads up to 250 kg can be applied; the total electrode potential of the metal, and the potentials in the resulting cracks, are automatically recorded, and visual observation of the propagation kinetics of cracks is possible. The tests are carried out in a corroding medium which is constantly renewed. The loading (stretching) takes place on the tensile-testing machine (Fig 1) by means of a metal spring, and is adjusted by a set wheel. Visual observation of the sample (of cracks) is done by a microscope of type MIS-11. The tensile-testing machine was adjusted by a dynamometer of type DS-1. Immediately before the test loading, the corroding liquid was put on the

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sample by a glass tube. The changes in the electrochemical potential in the cracks were measured by means of appropriate capillaries, an electron amplifier (Fig 2, Diagram), and a loop oscillograph of type MPO-2. The corrosion of alloy MA 2 was tested in a solution of Na_2CrO_4(20 g/l) and NaCl (35 g/l). The oscillogram (Fig 3) of the potential changes on the sample surface on stretching shows that, by the destruction of the oxide film, an intense formation of anode segments occurs producing a maximum in the oscillogram. New microcells (oxide-film pores) formed at the same time effect a retardation of anodic polarization on the whole metal surface. The appearance of cracks causes the formation of a steadily increasing anodic segment. From a visual point of view, the propagation of cracks can be divided into 3 periods: (1) The incubation period (from the beginning of loading until the formation of cracks); (2) the period of uniform propagation of cracks (formation of hydrogen bubbles), and (3) the period of accelerated crack development (apparently of purely mechanical character). An increase in load shortens the first and second periods, and slightly ac-

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Comprehensive Investigation of Stress-Corrosion Cracking Processes SOV/32-25-10-16/63

celerates the third one. The results obtained confirm the assumption of a film-electrochemical mechanism of stress corrosion cracking. There are 3 figures and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

Card 3/3

5(4)
AUTHORS: Tomashov, N. D., Isayev, N. I. SOV/20-126-3-45/69

TITLE: The Stability of the Passive State of Mechanical Stresses in Metals (Ustoychivost' passivnogo sostoyaniya mekhanicheski napryazhennogo metalla)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 3, pp 619-622 (USSR)

ABSTRACT: It is said in the introduction to the present paper that the influence of mechanical stresses upon the electrode potential has hitherto been hardly investigated and that it may be seen from such publications as are available that mechanical stresses shift the electrode potential in the negative direction. It is looked upon as obvious that the variation of the cathode potential is caused by a variation of the internal energy of the metal; a corresponding equation is given with formula (1). For the case in which the thermal effect of deformation is low compared to the mechanical work of deformation, formula (2) is given for the variation of the cathode potential. The variations of the cathode potential are described as being very small on the basis of these formulas, even in the case of strong deformation, and they never exceed 3 - 5 mv. As experimental measuring values are higher, the destruction of the oxide film is considered to be a

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further cause of the variation of the cathode potential in the case of further stresses. It is then said that the state of the oxide film determines the active or passive state of the metal, and that it is thus possible to investigate the influence exercised by mechanical stresses upon the passive state of the metal. The experiments were carried out on wire samples, and the alloys and their mechanical properties are given. As a corroding medium, a solution of $NaNO_3$ and $K_2Cr_2O_7$ is given. The results obtained are shown by diagrams. The first diagram (Fig 1) shows the variation with respect to time of the potential and of capacity in the primary passivation of carbon steel, and the second diagram (Fig 2) shows the same for stainless steel. It was found that, in the case of the carbon steel investigated, the potential goes over into the active state if the short-time stress causes a plastic deformation of the metal. In the case of the stainless steel investigated, only very slight activation is caused even in the case of mechanical stress being very high. Finally, it is shown that at the moment at which the stress is applied two factors become active in the metal. The one is

The Stability of the Passive State of Mechanical Stresses SOV/20-126-3-45/69
in Metals

mechanical stress, which has an activating effect, the other is the oxidizing agent, which counteracts activation. After the decrease of the deformation of the oxide film, passivation by the solution predominates. There are 3 figures and 10 references, 6 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

PRESENTED: February 11, 1959 by P. A. Rebinder, Academician

SUBMITTED: January 29, 1959

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ISAYEV, N. I., Cand Chem Sci -- (diss) "Research into the electrochemical mechanism of corrosive fissuring of metals." Moscow, 1960. 18 pp; (Academy of Sciences USSR, Inst of Physical Chemistry);150 copies; price not given; (KL, 23-60, 122)

ISAYEV, N.I.

Production capacity of continuous vacuum filters. Izv. vys. ucheb. zav.;pishch. tekh. no.3:96-99 '60. (MIRA 14:8)

1. Leningradskiy tekhnologicheskiy institut pishchevoy promyshlennosti, Kafedra oborudovaniya pishchevykh predpriyatiy.
(Filters and filtration)

ISAYEV, N.I.; Prinimali uchastiye: MIKHAYLOVSKIY, Yu.N.; BERUKSHTIS, G.K.

Atmospheric corrosion of steel wire reope. Trudy Inst.fiz.khim. 8:144-154 '60. (MIRA 14:4)

(Wire rope—Corrosion)

S/020/60/132/02/46/067
B004/B007

18.8300

AUTHORS: Tomashov, N. D., Isayev, N. I.

TITLE: Investigation of Anodic Processes in the Crack Formation in Metals Caused by Corrosion

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 409-412

TEXT: The authors investigated the electrical factors of crack formation in metals caused by corrosion in the alloy MA2-1 (4.5% Al, 1.1% Zn, 0.6% Mn, rest Mg). The samples were subjected to a stress of 15 kg/mm^2 and corroded in a solution of 20 g/l K_2CrO_4 + 35 g/l NaCl. An impulse polarization was carried out with an electric current of rectangular amplitude (0-0.5 ma/cm^2) and the potential was measured by means of a loop oscilloscope. The potential in the crack formed was measured by means of a glass capillary with an internal diameter of 3-5 μ. Fig. 1 shows that the anodic polarization of the alloy (with continuous variation of amperage) amounts to 5800 v·cm^2/a in non-stressed state, whereas it attains only 450-500 v·cm^2/a in stressed state. Already herefrom it may be concluded that the development of the corrosion crack is due to

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the reduction of anodic polarizability. Concerning impulse polarization an equation is derived for the potential drop ΔE_τ after switching off of the polarization current i_0. Fig. 2 shows that the discharge curve can be reproduced by the equation for the discharge of a capacitor, which is shunted by means of a resistor. Fig. 3 shows the change of anodic polarizability in the course of development of the corrosion crack. By means of a microscope a vigorous separation of hydrogen was observed at the deepest point of the crack, whereas on the sides of the crack no hydrogen was formed. On the basis of experimental data, the authors arrive at the conclusion that the rapid development of the corrosion crack was caused by the sudden intensive decrease of anodic polarization (up to six orders of magnitude) in the zone of crack formation. Here, not the entire crack, but a limited region in its deepest point served as anode. The authors refer to papers by A. V. Ryabchenkov et al. (Refs. 3, 4) and P. A. Rebinder et al. (Refs. 5, 6). There are 3 figures and 8 references, 6 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

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Investigation of Anodic Processes in the Crack Formation in Metals Caused by Corrosion

S/020/60/132/02/46/067
B004/B007

PRESENTED: January 22, 1960, by A. N. Frumkin, Academician

SUBMITTED: January 14, 1960

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L 45568-65 EWT(d)/EWT(m)/EWP(w)/EPR(c)/EPF(n)-2/EWA(d)/EPR/T/EWP(t)/EWP(z)/
EWP(b) Pr-4/Ps-4/Pu-4 IJP(c) MJW/JD/EM

ACCESSION NR: AP5010177 UR/0125/65/000/004/0034/0037

AUTHOR: Timofeyev, V. N. (Engineer, Leningrad); Isayev, N. I. (Engineer, Leningrad)

TITLE: Building up a steel surface with copper alloys

SOURCE: Avtomaticheskaya svarka, no. 4, 1965, 34-37

TOPIC TAGS: steel, copper alloy, copper alloy facing

ABSTRACT: Eight copper alloys were deposited under identical conditions on carbon (MSt 3) and low-alloy (AK) steels by the argon-shielded arc process. The face-metal penetration into the steel and mechanical characteristics of the bond were investigated. These findings are reported: (1) The depth of penetration depends on the composition of both metals, duration of contact of the molten face metal with the steel base, and stresses that arise during the facing process; (2) With an AMts 9-2 bronze facing, the penetration up to 0.5 mm has practically no effect on the static strength; the penetration to 2-2.5 mm into AK steel

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ACCESSION NR: AP5010177

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reduces the static strength; (3) The penetration of the above bronze into MSt 3 and 10KhSND steels does not affect their fatigue strength; however, it does reduce the fatigue strength of AK-25 steel by 50—70%; (4) In parts functioning under both [illegible] vibration loads, the above bronze may be deposited directly on MSt 3 [illegible] However, depositing of the above bronze on 45G17Yu3 [illegible] layer. Orig. art. has 4 figures and [illegible]

ASSOCIATION: [illegible]

[illegible] ENCL: 00 SUB CODE: MM

[illegible] OTHER: 000

2nd

Card 2/2

KOKUSHKIN, D.P.; FREYDENZON, Ye.Z.; KOMPANIYETS, I.A.; SHMONIN, G.M.; LEBEDEV, A.A.; ZATULOVSKAYA, Ye.Z.; Prinimali uchastiye: DUBROV, N.F.; PASTUKHOV, A.I.; ISAYEV, N.I.; STAROSELETSKIY, M.I.; AKSEL'ROD, L.M.

Improving the quality of a faceted ingot by changing the shape of its side surfaces. Stal' 25 no.7:610-612 Jl '65. (MIRA 18:7)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Nizhne-Tagil'skiy metallurgicheskiy kombinat.

ISAYEV, N.I.; SHAPOSHNIK, V.A.

Method for determining the electroconductivity of ion-exchanger membranes. Zav.lab. 31 no.10:1213-1216 '65.

(MIRA 19:1)

1. Voronezhskiy tekhnologicheskiy institut.

EWI(m) RM/DS

ACC NR: AP6029209 SOURCE CODE: UR/0076/66/040/006/1207/1212

AUTHOR: Isayev, N. I.; Zolotareva, R. I.

ORG: Voronezh Technological Institute (Voronezhskiy tekhnologicheskiy institut)

TITLE: Polarization of ion exchange membranes

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 6, 1966, 1207-1212

TOPIC TAGS: ion exchange membrane, electric polarization

ABSTRACT: The variation of the membrane potential during passage of electric current through an electrodialyzer with an ion exchange membrane was studied on cation-exchange membranes (brand MK-40 based on KU-2) and anion-exchange membranes (MA-40 based on EDE-10P). Curves representing the change of the membrane potential with time were plotted in order to determine the kinetics and degree of concentration polarization of the membranes. Under conditions where a limiting current flows through the membrane, a substantial part of the current comprises the migration component, so that the segment of the limiting current on the polarization curve has a slope which increases with increasing transference number of the ion in the free solution and with the absolute value of the limiting current. The limiting current densities were determined for MA-40 and MK-40 membranes in solutions of potassium chloride in the 0.005-0.1 N concentration range. A linear character of the dependence of i_{lim} on c_0 can be observed in dilute solutions. As the concentration of the electrolyte

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UDC: 541.13

ACC NR: AP6029209

increases, a disproportionate increase of the limiting current takes place, possibly because of a decrease in the selectivity of the membrane. Orig. art. has: 6 figures and 4 formulas.

SUB CODE: 07/ SUBM DATE: 11Mar65/ ORIG REF: 006/ OTH REF: 010

Card 2/2 mlc

ISAYEV, N.M., inzhener.

Reinforced concrete rail foundations. Put' i put. khoz. no.5:6-8 My '57. (MLRA 10:6)

(Railroads--Rails)

ISAYEV, N.M.

Laying tracks on reinforced concrete blocks. Transp.stroi. 9 no.5:36-38 My '59. (MIRA 12:12)

1. Glavnyy inzhener proyekta Gipropromtransstroya.
(Railroads--Track)

S/800/61/000/004/001/002
A061/A126

AUTHORS: Denishchuk, B.V., Isayev, N.M. - Engineers

TITLE: A remote-control system for the БР-5 (BR-5) air-fractionating apparatus of VNIIKIMASh

SOURCE: Vsesoyuznyy nauchno-issledovatel'skiy institut kislorodnogo mashinostroyeniya. Trudy. No. 4. Moscow, 1961. Apparaty i mashiny kislorodnykh ustanovok. 87 - 100

TEXT: The fixtures of the BR-5 air-fractionating apparatus, which is in operation at Chelyabinsk and Krivoy Rog, are regulated by six types of push-button-controlled ЭИМ (EIM) servo-mechanisms. The latter consist of an electric motor, a reducing gear, a coupling between reducer shaft and armature shaft; further, of additional fixtures such as position indicator and limit switches. The remote-controlled fixtures differ from earlier hand-controlled types only by a spindle which has been modified for linkage with the servo-mechanism shaft. The electric motors of the servo-mechanisms are push-button-controlled from a desk stand using reversing switches. Thermal relays prevent overloads. There are 13 figures and 3 tables.

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IVANOV, G.S., kand.tekhn.nauk; BALASHOV, A.A., inzh.; ISAYEV, N.M., inzh.; KARAMYSHEV, I.A., inzh.; LIVANOV, V.F., inzh.

Increase the production and improve the quality of reinforced concrete crossties. Transp. stroi. 14 no.8:23-25 Ag '64. (MIRA 18:1)

ISAYEV, N.O. (raz"yezd Velet'ma, Gro'kovskoy dorogi).

I. M. Rogozhin, track inspector. Put' i put.khoz.5 no.2:37 F '61. (MIRA 14:3)
(Railroads--Employees)

ISAYEV, N. P.

PHASE I BOOK EXPLOITATION SOV/5078

Akademiya nauk URSR, Kiyev. Instytut elektrozvaryuvannya

Vnedreniye novykh sposobov svarki v promyshlennost'; sbornik statey. vyp. 3. (Introduction of New Welding Methods in Industry; Collection of Articles, v. 3) Kiyev, Gos. izd-vo tekhn. lit-ry UkrSSR, 1960. 207 p. 5,000 copies printed.

Sponsoring Agency: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni akademika Ye. O. Patona Akademii nauk Ukrainskoy SSR.

Ed.: M. Pisarenko; Tech. Ed.: S. Matusevich.

PURPOSE: This collection of articles is intended for personnel in the welding industry.

COVERAGE: The articles deal with the combined experiences of the Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton) and several industrial enterprises in solving scientific and engineering problems in welding technology. Problems in the application of new methods of mechanized welding and electroslag welding in industry are discussed. This is the third collection of articles published under the same title. The Foreword was written by B. Ye. Paton, Academician of the Academy of Sciences Ukrainian SSR and Lenin prize winner. There are no references.

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Lashkevich, R. I. [Candidate of Technical Sciences], Y. L. Mandel'berg [Candidate of Technical Sciences, Electric Welding Institute imeni Ye. O. Paton], Z. O. Knyazhinskiy [Candidate of Technical Sciences, Ukrainskiy nauchno-issledovatel'skiy trubnyy institut (Ukrainian Scientific Research Institute for the Pipe Industry)], and S. A. Frikke [Chief Engineer, Chelyabinskiy truboprokatnyy zavod (Chelyabinsk Pipe Mill)]. New Process for Producing Large-Diameter Straight-Weld Pipes for Oil and Gas Lines 140

Zvonkov, M. L. [Engineer], D. M. Rabkin [Candidate of Technical Sciences], I. M. Savich [Engineer, Electric Welding Institute imeni Ye. O. Paton], V. A. Verchenko [Engineer of the Trust "Prodmontazh" (Trust for Installation of Food Industry Establishments)], and I.M. Mirgorodskiy [Formerly Chief Engineer of the "Bol'shevik" Plant]. Experience in the Successful Welding of Aluminum and Its Alloys 154

Rozenberg, O. O. [Engineer], L. N. Kolomiyets [Engineer], I. I. Sushchuk-Slyusarenko [Engineer, Electric Welding Institute imeni Ye. O. Paton], I. G. Batrakov [Chief Mechanic, Belgorodskiy tsementnyy zavod (Belgorod Cement Plant)], N. P. Isayev [Chief of the Welding Engineering Department, Krasnoyarskiy zavod "Sibtyazhmash" (Krasnoyarsk Siberian Heavy Machinery Plant)], and V. G. Kotlyarov [Deputy Chief Process Engineer, Syzranskiy zavod "Tyazhmash" (Syzran' Heavy Machinery Plant)]. Electroslag Welding of Large Type 35L Steel Tie-Rings for Cement Kilns 176

Lebedev, B. P. [Candidate of Technical Sciences, Electric Welding Institute imeni Ye. O. Paton], A. I. Aleksayev [Trest Uralstal'konstruktsiya (Ural Fabricated-Steel Trust)], and S. Yu. Rabinovich [Trest Dneprostal'konstruktsiya (Dnepr Fabricated-Steel Trust)]. Experience in the Mechanization of Welding [Operations] in the Erection of Metallic Structures for a Blast-Furnace Plant 194

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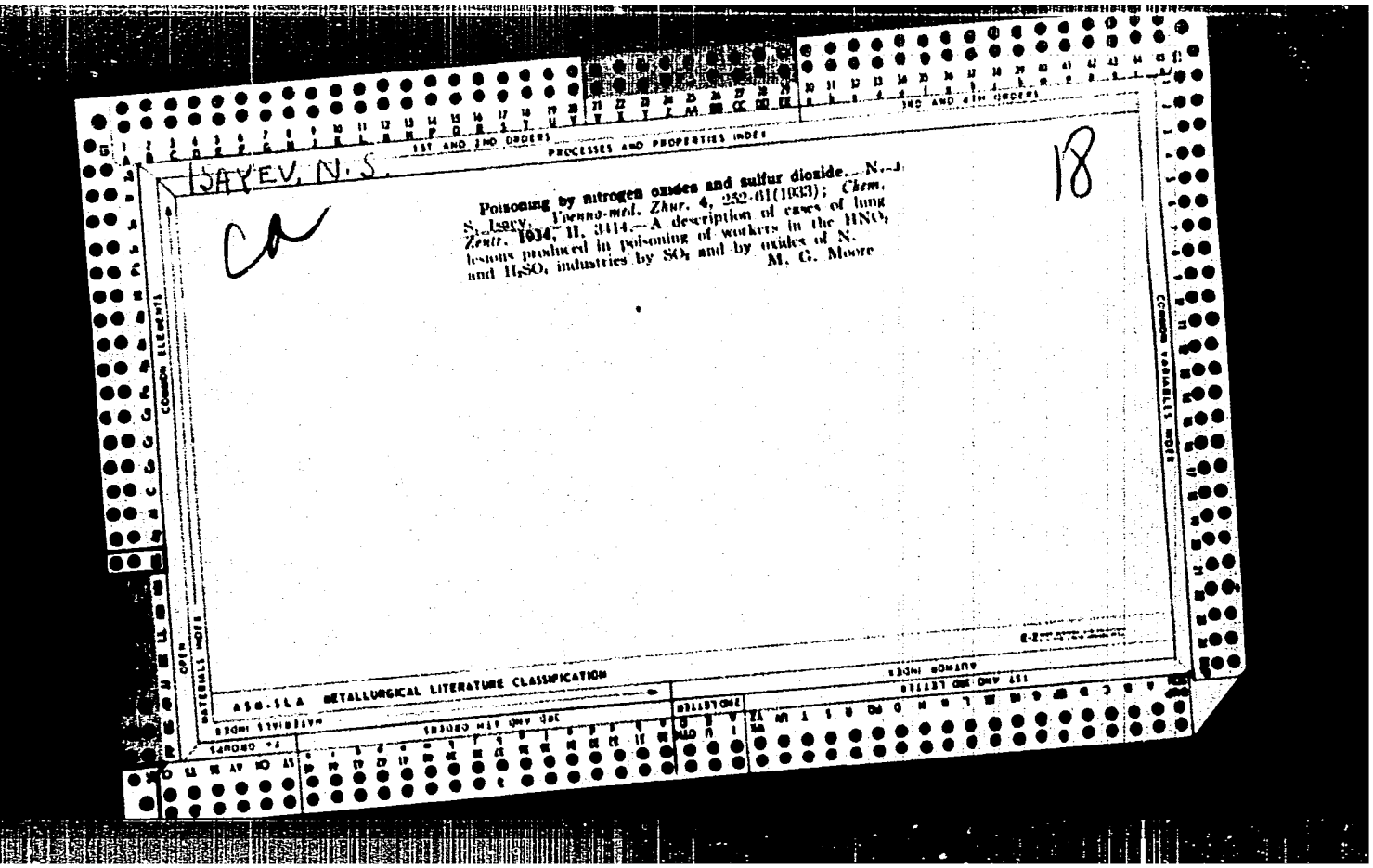

ISAEV, N. S.

Isaev, N. S. - Khigiena na minorskiia trud. Prevel ot ruski L. Boianov. (Sofiya) Nauka i izkustvo (1952) 23 p. (Hygiene for mine workers. Tr. from the Russian. Illus)

SO: Monthly List of East European Accessions, Library of Congress, Vol. 2, No. 9, Oct. 1953, Uncl.

MATSAK, V.G., kandidat tekhnicheskikh nauk; ISAYEV, N.S., kandidat meditsinskikh nauk

Problem of dust control in Moscow Basin mines. Bor'ba s sil. 2: 199-201 '55. (MLRA 9:5)

1. Moskovskiy oblastnoy nauchno-issledovatel'skiy sanitarno-gigiyenicheskiy institut (for Isayev)
(MOSCOW BASIN--DUST--PREVENTION)

L 2417 C V, N. S.

ISAYEV, N.S.; SMELYANSKIY, Z.B.; KHOTSYANOV, L.K.; KHUKHRINA, Ye.V.
(Moskva)

On the project for new sanitary standards to be observed in the planning of industrial interprises (substituting standard 101-54) Gig.turda i prof.zab. no.4:3-11 Jl-Ag '57. (MIRA 10:11)

1. Institut gigiyeny truda i profzabolevaniy AMN SSSR i kafedra gigiyeny truda TSentral'nogo instituta usovershenstvovaniya vrachey
(INDUSTRIAL HYGIENE--STANDARDS)

KHOTSIANOV, L.K.; MATSAK, V.G.; DITERIKHS, D.D.; ISAYEV, N.S.; SUPONITSKIY, M.Ya., kand.med.nauk

"Hygienic principles of industrial ventilation and its operation" by L.K.Khotsianov and others. Gig.i san. 24 no.8:86-87 Ag '59. (MIRA 12:11)

(VENTILATION) (KHOTSIANOV, L.K.)

VADKOVSKAYA, Yu.V., prof.; ISAYEV, N.S.; SHIBANOV, N.M.

All-Union Conference on Thermal Clothing and Footwear. Gig. i san. 25 no. 6:101-102 Je '60. (MIRA 14:2)
(CLOTHING, COLD WEATHER) (BOOTS AND SHOES)

ISAYEV, N.S., kand.med.nauk

Sanitary requirement of industrial buildings without skylights. Gig. i san. 26 no.7:75-81 Jl '61. (MIRA 15:6)

1. Iz Instituta gigiyeny truda i professional'nykh zabolevaniy AMN SSSR.

(INDUSTRIAL BUILDINGS--HYGIENIC ASPECTS)

ISAYEV, N.S.; BELOVA, Ye.I.; KUKARKINA, M.N.; OZHIGANOVA, Z.I.; SHEREMETEVSKAYA, T.A.; YURIN, B.A., red.; KOROBOVA, N.D., tekhn. red.

[Documents of proletarian solidarity; collected documents on the cooperation of Soviet Union workers with the workers of Asia, Africa and Latin America in 1918-1961]Dokumenty proletarskoi solidarnosti; sbornik dokumentov o sodruzhestve trudiashchikhsia Sovetskogo Soiuza s trudiashchimisia stran Azii, Afriki i Latinskoi Ameriki v 1918-1961 godakh. Moskva, Profizdat, 1962. 207 p. (MIRA 15:12)

(Trade unions)

ISAYEV, N.S., inzh.

Frost resistance of soft limestones. Avt. dor. 27 no.9:21-22
S '64 (MIRA 17:11)

67148

~~28(2)~~ 16.6800 SOV/31-59-9-8/21

AUTHORS: Vulis, L.A., Isayev, N.U., and Luk'yanov, A.T.

TITLE: Static Analog Devices

PERIODICAL: Vestnik Akademii nauk KazSSR, 1959, Nr 9, pp 53-58 (USSR)

ABSTRACT: The article deals with an entirely new type of analogs, the static electrointegrators (SEI). Having been under development at the Problemnaya teplofizicheskaya laboratoriya Kazakhskogo universiteta (Laboratory for Thermal and Physical Problems of the Kazakh University) since 1957, they greatly simplify the computing methods and at the same time widen the scope of problems to be investigated. The static electrointegrators have already been used for computing diffusion of neutrons as well as for solving nonlinear problems pertaining to the theories of heat conductivity and hydrodynamics (Figure 2). The article also mentions two additonal SEI models.

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Static Analog Devices

the first being practically an electric analog of D. V. Budrin's hydrostatic integrator and the second an SEI with an ohmic-type, moving computor device (Figures 3 and 4). The latter has a great advantage as it can make calculations by dividing the space-time component into as many elements as desired. In addition to this, the SEI with an ohmic-type moving computor device has small dimensions, its only bad point being the necessity to make intermediate entries. The article also mentions the Problemnaya laboratoriya kafedry obshchey fiziki Kazakhskogo universiteta (Problem Laboratory of the General Physics Faculty of the Kazakh University). There is 1 graph, 1 set of graphs, 1 set of hookups, 1 photograph, and 12 references, of which 2 are American and 10 Soviet.

Card 2/2

ISAYEV, N. U., Cand Phys-Math Sci -- (diss) "Towards the solution of problems in the diffusion theory of the transport of neutrons, by means of electrical modeling." Alma-Ata, 1960. 16 pp; with charts; (Committee of Higher and Secondary Specialist Education under the Council of Ministers Kazakh SSR, Kazakhstan State Univ im S. M. Kirov, Physics Faculty); 200 copies; price not given; (KL, 17-60, 139)

ISAYEV, N.U.; LUK'YANOV, A.T.

Experiment of simulating the critical state of nuclear reactors by means of static electrointegrators. Izv. AN Kazakh.SSR Ser.energ. no.2:122-129 '60. (MIRA 13:7)

(Nuclear reactors--Electromechanical analogies)

ISAYEV, N. V.

PHASE I BOOK EXPLOITATION SOV/5179

Alma-Ata, Kazakhstan. Universitet.

Issledovaniye protsessov perenosa. Voprosy teorii otnositel'nosti (Study of Transfer Processes. Problems in the Theory of Relativity) Alma-Ata, 1959. 236 p. Errata slip inserted. 1,000 copies printed. (Series: Its Trudy)

Sponsoring Agency: Ministerstvo vysshego obrazovaniya SSSR and Kazakhskiy gosudarstvennyy universitet im. S.M. Kirova.

Editorial Board: V.P. Kashkarov, N.D. Kosov, and N.M. Petrova; Resp. Ed.: L.A. Vulis; Tech. Ed.: L.D. Kashkarov.

PURPOSE: This collection of articles is intended for research physicists and engineers. It can also be used by instructors and students at universities.

COVERAGE: The articles of this collection contain the results of 19 studies in transport problems and the general theory of relativity made from 1956 to 1958 by the staff of the kafedra obshchey fiziki i teoreticheskoy fiziki Kazakhskogo universiteta im. S.M. Kirova (Department of General Physics and Theoretical

Card 1/5

Physics of the S.M. Kirov Kazakh State University). The articles are arranged in two groups. Group one contains 16 articles concerning the research activity of the teplofizicheskaya laboratoriya pri kafedre obshchey fiziki (Heat Physics Laboratory of the Department of General Physics) in the investigation of transport processes of matter, impulse and energy; group two contains three articles reporting on studies of the Department of Theoretical Physics on problems of the theory of relativity. Article one of the collection is an introduction and reviews the problems of transport processes and gives a fairly detailed bibliography of contributions of members of physics department of Kazakh State University. No personalities are mentioned. References accompany each article.

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Isayev, N.U. Electric Simulating of Neutron Transport Process and of the Critical State of a Nuclear Reactor 43

Vulis, L.A., and A.T. Luk'yanov. Electrostatic Integrator 65

Klinger, V.G., and V.V. Ronzhin. Simulation of Light Produced by Gamma Radiation From a Cyclindrical Source 89

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Kosov, N.D. Application of the Normal Thermal Regime Method in the Determination of the Coefficient of Diffusion of Liquids 101

GLOVINSKIY, Ya.G., inzh., red.; ISAYEV, N.V., inzh., red. [deceased]; BOL'BERG, N.Ye., N.Ye., inzh., red.

[Construction specifications and regulations] Stroitel'nye normy i pravila. Moskva, Stroiizdat. Pt.3., sec.G., ch.10.3[Pumps; regulations for performing and accepting repair work] Nasosy; pravila proizvodstva i priemki montazhnykh rabot (SNiP III-G. 10.3-62). 1964. 21 p. (MIRA 17:9)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Glovinskiy). 3. Mezhduvedomstvennaya komissiya po peresmotru Stroitel'nykh norm i pravil (for Isayev). 4. TSentral'noye proyektno-konstruktorskoye otdeleniye Gosudarstvennogo proizvodstvennogo komiteta po montazhnym i spetsial'nym stroitel'nym rabotam SSSR (for Bol'berg).

ISAYEV, Nikolay Viktorovich

DECEASED

1964

c.64

Construction
Materials
Specifications

AMTIPINA, T.V.; ISAYEV, O.V.

Catalytic activity of aluminum silicates treated with alkali. Part 2 [with summary in English]. Zhur. fiz.khim. 31 no.9: 2078-2084 S '57. (MIRA 11:1)

1.Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Aluminum silicates) (Catalysts)

ISAYEV, O.V.

76-10-11/34

AUTHORS: Antipina, T.V., Isayev, O.V.

TITLE: The Effect of the Composition of the Alumosilicate Catalysts on the Hydration of Diethyl Ether and Dehydration of Ethyl Alcohol (Vliyaniye sostava alyumosilikatnykh katalizatorov na reaktsii gidratatsii dietilovogo efira i degidratatsii etilovogo spirta)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp.2245-2252 (USSR)

ABSTRACT: The dependence of the reaction velocities in the case of the hydration of the diethyl ether and of the dehydration of the ethyl alcohol on the concentration of OH-groups at the surface of an alumosilicate catalyst and on aluminum oxide was investigated here. The kinetics of the hydration of ether and of the dehydration of ethyl alcohol at alumosilicates of different composition and at types treated with lye solution was investigated at 400°C. It is shown that the degree of the transformation from ether into ethylene is lower in the case of the ether-hydration-reaction by $\sim 1/3$ than that of the transformation of alcohol into ethylene in the dehydration of the alcohol. It was

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The Effect of the Composition of the Alumosilicate Catalysts on the Hydration of Diethyl Ether and Dehydration of Ethyl Alcohol

found that in the hydration of ether the ethylene separation does not increase considerably with the reduction of the aluminum oxide percentage, whereas it decreases linearly in the dehydration of alcohol. There are 13 figures, 2 tables, 7 Slavic references.

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

SUBMITTED: July 11, 1956

AVAILABLE: Library of Congress

Card 2/2

20-119-1-28/52

AUTHORS: Isayev, O. V., Kushnerev, M. Ya, Margolis, L. Ya.

TITLE: On a Copper Catalyst for the Oxidation of Propylene to Acrolein (O mednom katalizatore okisleniya propilena v akrolein)

PERIODICAL: Doklady Akademii Nauk SSSR,1958,Vol.119,Nr 1,pp.104-106(USSR)

ABSTRACT: First a short report is given on previous papers dealing with the same subject. Several patents recommended the application of cupric oxide which has to be applied to different carrier materials. The following problems remained unsettled: What is the phase composition of the copper contacts ? What happens to the catalyst during the reaction and which oxide is catalytically active ? For settling these problems 3 series of experiments were carried out, the following catalysts being used: 1) CuO; 2) Cu_2O; 3) metallic copper applied to pumice stone. The phase composition of the catalysts before and after the experiment was roentgenographically investigated. The roentgenographs were taken by a Debye (Debaye)-chamber of a diameter of 57,3 mm with the K_α-radiation of iron. The catalysts were tested for 40 minutes in a dynamic device under atmospheric pressure in a mixture of propylene

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On a Copper Catalyst for the Oxidation of Propylene to Acrolein

and air (10 - 12 % propylene and about 20 % oxygen) in a temperature interval between 300 and 400°C. A figure shows the results of the identification of the roentgenographs of 3 catalysts. The application of cupric oxide in an air-propylene-mixture at 300°C does not modify the phase composition of the catalyst. Raising the temperature to 400°C leads to a reduction of the cupric oxide to protoxide and also to metal. Originally existing cuprous oxide was reduced to copper under these conditions. The sweeping of the copper by an air-propylene-mixture at 300°C leads to its partial oxidation to Cu_2O. The additional electronographic investigation of these catalysts showed that after its application in a propylene-air-mixture the surface of all investigated samples was covered with a layer of cuprous oxide. Thus, the cupric oxide in the presence of a propylene-air-mixture is reduced to the system Cu_2O + Cu and metallic copper is oxidized to cuprous oxide. Propylene in the presence of cuprous oxide is oxidized to acrolein and in the gases developing in this process almost no oxygen is contained. Consequently the catalyst during the reduction has an effect in a reducing medium and therefore a transition $Cu_2O \rightarrow Cu$ is possible. By changing the relation propylene : oxygen in the

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reaction mixture the reduction of the cuprous oxide can either be suppressed or intensified. The composition of the catalyst is automatically regulated by the existence of the reversible process of the reduction of Cu_2O to Cu and the oxidation of Cu to Cu_2O. There are 2 figures and 8 references, 3 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute for Physical Chemistry AS USSR)

PRESENTED: August 6, 1957, by V. N. Kondrat'yev, Member, Academy of Sciences, USSR

SUBMITTED: July 25, 1957

SOV/79-29-5-26/75

5(4)
AUTHORS: Isayev, O. V., Margolis, L. Ya., Roginskiy, S. Z.

TITLE: Catalytic Oxidation of Propylene in Acrolein. 1
(Kataliticheskoye okisleniye propilena v akrolein. 1)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1522-1527 (USSR)

ABSTRACT: In the present paper the properties of the cuprous oxide catalyst which was used in the catalytic oxidation of propylene in acrolein were investigated. Further its activity was compared with other oxidizing contacts. In order to clarify the part acetaldehyde plays in the oxidation of propylene the method of the marked atoms was used. The oxidation of the propylene mixture with oxygen and with acetaldehyde marked with radioactive carbon (1 : 2 : 0.5) on cuprous oxide at 350° permitted the definition of the genetic compounds of these reaction products. The results of a typical experiment are illustrated in figure 1. As can be seen, the carbon dioxide is mainly not formed from acetaldehyde but independently via other intermediates. The data devised according to the kinetic method of M. B. Neyman (Ref 5) are given in figure 2. By the use of radioactive carbon it could be proved that in these processes at the

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same time and independently of one another several parallel reactions take place, in which connection unstable intermediates of the peroxide type are formed. Further some experiments were carried out in which the effect of the contact time upon the oxidation process of propylene was investigated (Fig 3). The acrolein yield first increases on prolonged contact time but later remains constant whereas the yield of carbon dioxide continuously increases. During the oxidation of propylene on the copper catalyst the acrolein is not completely destroyed. Probably at the same time and independently two reactions take place: The formation of acrolein and its oxidation up to the carbon dioxide. The rate ratio of this process is determined by the composition of the gas mixture. In order to clarify the dependence of the acrolein yield on the concentration of the catalyst on the carrier, several samples of the catalyst on pumice and carborundum were investigated (Figs 4-7). The investigation indicated that the selectivity of the process can be obtained by shortening of the contact time, by increase of the linear velocity of current as well as by a decrease of the copper concentration on the carrier which determines the course of the process in the kinetic range. Under certain conditions the length of the catalyst layer can be of decisive importance: Further the

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oxidation of propylene on other catalysts was investigated: V_2O_5, MoO_3, WO_3, Cr_2O_3, CdTe, CuSe, CuTe, Cu_3As. Selenide, telluride, arsenide and cuprous oxide were found to have the highest selectivity with respect to the formation of acrolein. On the formation of the mixture of saturated aldehydes and acrolein, oxides of transition metals (MoO_3, V_2O_5 etc.) are especially active. There are 7 figures and 6 references, 5 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR
(Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: April 22, 1958

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SOV/20-124-4-36/67

5(4)

AUTHORS: Isayev, O. V., Kushnerov, M. Ya.

TITLE: The Investigation of the Phase-Composition of the Copper Catalyst for the Oxidation of Propylene to Acrolein (Izucheniye fazovogo sostava mednogo katalizatora okisleniya propilena v akrolein)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 858-860 (USSR)

ABSTRACT: The phase transformations were continuously controlled by means of radiographic recordings in the course of the reaction itself. These pictures were taken by means of a specially constructed camera, the constructional principles of which are described in form of a schematical drawing. The temperature of the catalyst was recorded by means of a thermocouple and was kept constant with an accuracy of $\pm 1^{\circ}$. The X-ray beam dispersed by the sample was recorded on a plane film. For the catalyst investigated, good resolution and a satisfactory intensity of reflections was attained by using an X-ray tube of the type BSV-4-Cu without filter. Like in a previous paper, copper oxide, cuprous oxide, and metallic

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copper were investigated. The copper oxide was produced by the oxidation of Cu and Cu_2O by atmospheric oxygen. The cuprous oxide was produced according to a method developed by D. N. Finkel'steyn (Ref 2). All experiments were carried out at atmospheric pressure in a gas mixture of the following composition: propylene 15%, oxygen 15%, and nitrogen 70%. The results obtained by identification of the X-ray pictures of the catalysts are shown by two diagrams. In the oxidation of propylene over copper oxide at 310° the catalyst was reduced, and after operation of 210 minutes cuprous oxide was radiographically determined. An increase of temperature (343 and 370°) increases the rate of reduction considerably. Besides the formation of cuprous oxide a metallic phase could in both cases be observed, which occurs all the more rapidly the higher the experimental temperature. If, however, the propylene is oxidized for 135 minutes over CuO (370°), only one phase, namely only metallic copper, is observed. The same results are obtained by the oxidation of propylene over cuprous oxide. Details are given. By oxidation of propylene

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on a copper oxide catalyst a highly reactive compound is obtained, viz. acrolein, is obtained, which may enter into an oxidation- and polymerization reaction in the volume phase and also on the surface of the catalyst at temperatures of 400-450°. It was therefore of interest to investigate the influence exercised by acrolein upon the phase conversions of the copper oxide. The passing of a mixture of acrolein vapors (0.5%) with nitrogen leads to the reduction of copper oxide to Cu_2O + Cu. The addition of oxygen to the gas mixture sharply slows down the reduction of the catalyst, and a polymer film is formed. By treating a copper film by a mixture of acrolein (0.5-5.0%), oxygen (15%), and nitrogen at 400° for 2-3 hours the copper is oxidized to copper oxide, and at the same time a polymer film is produced on the surface of the catalyst. There are 3 figures and 2 Soviet references.

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The Investigation of the Phase-Composition of the Copper Catalyst for the Oxidation of Propylene to Acrolein

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute for Physical Chemistry of the Academy of Sciences, USSR)

PRESENTED: October 6, 1958, by V. I. Spitsyn, Academician

SUBMITTED: October 3, 1958

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SOV/20-129-1-39/64

~~5(4)~~ 5.3300(A)

AUTHORS: Isayev, O. V., Margolis, L. Ya., Sazonova, I. S.

TITLE: The Mechanism of Propylene Oxidation to Acrolein on a Cuprous Oxide Catalyst

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol. 129, Nr 1, pp 141-144 (USSR)

ABSTRACT: On the basis of kinetic measurements the authors gave a schene for the oxidation of propylene to acrolein (Ref 2). In the present investigation this scheme is revised by means of tagged atoms. Propylene tagged with radioactive carbon was prepared by dehydrogenating isopropyl alcohol at 400° over Al_2O_3. After mixing with acrolein and oxygen the propylene thus prepared was oxidized on catalysts at atmospheric pressure. The catalysts contained 0.1 and 1% copper, respectively. Carborundum was used as carrier. The acrolein content in the reaction product was determined by the bromide-bromate method, and the propylene content and CO_2 by means of the gas analyzer type VTI. The radioactivities of CO_2 and acrolein were determined by measuring the

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activities of the barium carbonate and the acrolein 2,4-dinitrophenylhydrazone precipitates, respectively. The experimental results are represented graphically in the figures 1-3 (Co_2 and acrolein concentrations as functions of the time of contact, the catalyst, and composition of the initial gas mixture). Table 1 gives the data obtained and the oxidation rate calculated for the transformation of propylene to acrolein. An organic film of acrolein was found to form on the catalyst. The stability of this film was greater in the case of the catalyst containing less copper. The parallel-consecutive reaction scheme suggested in reference 2 was confirmed by the experiments. There are 4 figures, 1 table, and 5 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

PRESENTED: June 19, 1959, by P. A. Rebinder, Academician

SUBMITTED: June 15, 1959

Card 2/2

S/195/60/001/002/004/010
B004/B067

AUTHORS: Isayev, O. V., Margolis, L. Ya.

TITLE: Kinetics of the Oxidation of Propylene to Acrolein on a Copper Catalyst

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 2, pp. 237 - 241

TEXT: The authors attempted to determine the rules governing the oxidation of propylene to acrolein and CO_2 on a copper catalyst. The experiments were made in a continuous apparatus under atmospheric pressure. Temperature was kept constant by means of a photoelectric thermoregulator in which a portable ПП (PP) potentiometer was used. The gases were analyzed for CO and CO_2 on the basis of their infrared absorption spectra and by means of ГИП-5 (GIP-5) gas analyzers. CuO produced by impregnating sillite or pumice with $Cu(NO_3)_2$ and by heating to 600 - 700°C served as catalyst. Experimental data are given in Table 1:

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%Cu	°C	Change of propylene concentration					Change of O_2 concentration					First-order constants, sec^{-1}	
		Initial mixture			Result		Initial mixture			Result, %			
		$\%C_3H_6$	O_2	N_2	$\%CO_2$	Acrolein	$\%O_2$	C_3H_6	N_2	CO_2	Acrolein	k_{CO_2}	k_{acr}
0.5	373	15	10	75	1.2	0.26	3.0	30	67	0.55	0.077	0.62	0.052
		20	10	70	1.25	0.30	5.0	30	65	0.85	0.13	0.58	0.053
		30	10	60	1.1	0.31	10.0	30	60	1.8	0.27	0.61	0.054
		40	10	50	1.2	0.36	15.0	30	55	2.7	0.39	0.61	0.052
		60	10	30	1.2	0.25	-	-	-	mean		0.605	0.053
1.0	362	15	10	75	1.8	-	3.0	30	67	0.50	0.056	0.56	0.038
		20	10	70	1.6	0.30	5.0	30	65	0.75	0.11	0.50	0.045
		30	10	60	1.55	0.26	10.0	30	60	1.6	0.22	0.57	0.044
		40	10	50	1.6	0.29	15.0	30	55	2.4	0.32	0.57	0.042
		60	10	30	1.7	0.30	-	-	-	mean		0.54	0.0421

Summing up: 1) The rate of propylene oxidation is independent of the propylene concentration, and is proportional to the oxygen concentration. 2) The constants of the reaction rate linearly increase with

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increasing copper concentration in the catalyst. 3) The activation energy for the formation of CO_2 on a copper - sillite catalyst was 28 - 30 kcal/mole, and on a copper - pumice catalyst, 23 - 25 kcal/mole. 4) The major part of CO_2 was formed by oxidation of acrolein. Therefore, the kinetics of acrolein oxidation was compared with that of propylene, and the following was found: a) The oxidation rate is proportional to the oxygen concentration and independent of the acrolein concentration; b) the activation energy for the formation of CO_2 is 22 - 24 kcal/mole, and for the formation of CO, 38 kcal/mole; c) the presence of propylene inhibits the oxidation of acrolein. The authors intend to perform experiments with tagged atoms to study this effect more thoroughly. The results will be published in the next paper. There are 6 figures, 2 tables, and 4 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry of the AS USSR)

SUBMITTED: December 19, 1959

Card 3/3

S/195/60/001/003/010/013
B013/B058

AUTHORS: Yenikeyev, E. Kh., Isayev, O. V., Margolis, L. Ya.

TITLE: Modifying Catalysts for the Oxidation of Hydrocarbons

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 3, pp. 431 - 439

TEXT: In this paper the authors studied the oxidation of propylene on cuprous oxide (Cu_2O) and of ethylene on silver. The oxidation of propylene to acrolein on Cu_2O proceeds according to a parallel-successive scheme. A step-by-step scheme is presumed: (I). On the basis of the change of the work function of the electron during adsorption of reaction components on Cu_2O, the sign of their charges could be established: Like most organic substances, propylene and acrolein are the donors and oxygen is the acceptor. The water reduces the work function only slightly and is also a donor. It was shown that the oxidation rate of propylene to acrolein and carbon dioxide is proportional to the oxygen concentration in the gas phase (Ref. 6). This is also valid for modified catalysts. It was established that

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the activation energy and k_o (factor of the exponential functions for the reactions of the formation of acrolein and CO_2) depend on the work function. For greater values of the work function, the activation energy of the formation of acrolein is reduced and that of CO_2 increased. From the dependence of the isotopic exchange on the work function φ, the rate of which increases for smaller values of φ, the controlling effect of the work function on the surface concentration of O_2 may be inferred. The selectivity of the acrolein synthesis is increased through the introduction of acceptor additions (SO_4^{2-}, Cl^-) in CuO and reduced by that of donors (Cr, Fe, Li). The oxidation of ethylene to ethylene oxide is a typical process proceeding according to a parallel scheme (Ref. 10). The following signs of the charges of the components of the studied reaction were ascertained: ethylene and ethylene oxide are donors, oxygen and CO_2 are acceptors. φ is only slightly reduced by water. The step-by-step oxidation scheme proposed in Ref. 4 could be explained on the basis of

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the signs of charges determined: (II). Data with regard to the kinetics of the oxidation process, available from publications and often paradox, can probably be traced back to the dependence of the partial surface concentrations of O_2 and C_2H_4 on the change of the work function. The activation energy of the oxidation of ethylene to ethylene oxide ought to change only little in the modification of silver, since the surface concentration of donor molecules is increased through an increase of φ. These in turn level the change of φ under the effect of metalloid additions. It was shown that an increase of the work function reduces the activity of silver and raises the selectivity of the process. Conclusively, the studies showed the following: There is an interrelation between the work function of the electron and the activity of the catalysts and the selectivity of the oxidation processes of unsaturated hydrocarbons. The oxidation of hydrocarbons proceeds over a number of parallel and successive stages and, according to the reaction mechanism, is differentially controlled by the work function of the electron. The inhibition of a total oxidation with an increase of the work function is characteristic of the reactions studied.

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Modifying Catalysts for the Oxidation of Hydrocarbons

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This can be explained by the similarity of the reaction mechanism. To all appearance chain reactions also play an important role in the formation of CO_2. S. M. Vilenkina, Laboratory Assistant, participated in the work.

S. Z. Roginskiy, Zel'dovich, M. I. Temkin, P. V. Zimakov, and G. D. Lyubarskiy are mentioned. There are 5 figures, 1 table, and 23 references: 19 Soviet, 4 US, 1 British, and 1 Canadian.

ASSOCIATION Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)

SUBMITTED: April 6, 1960

Card 4/4

MARGOLIS, L.Ya.; YENIKEYEV, E.Kh.; ISAYEV, O.V.; KRYLOVA, A.V.; KUSHNEROV, M.Ya.; Prinimala uchastiye: VILENKINA, S.M., laborant

Modification of hydrocarbon oxidation catalysts. Kin.i kat. 3 no.2:181-188 Mr-Ap '62. (MIRA 15:11)

1. Institut khimicheskoy fiziki AN SSSR.
(Hydrocarbons) (Oxidation) (Catalysts)

GOLOVINA, O.A.; ISAYEV, O.V.; SAMARIN, N.M.

Radioactive tracer technique in investigating the mechanism of oxidation of propylene to acrolein on a cuprous oxide catalyst. Dokl. AN SSSR 142 no.3:619-622 Ja '62. (MIRA 15:1)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N.Kondrat'yevym.
(Propene) (Acrolein) (Oxidation)

ISAYEV, O.V.; RUSLANOVA, T.A.; CHERNOV, V.A.; MARGOLIS, L.Ya.; MIKHAYLOV, N.V.

Catalytic oxidation of propylene to acrolein in a vibratory fluidized bed. Khim.prom. 41 no.6:471-472 Je '65.

(MIRA 18:8)

ISAYEV, P.

Millet

High yield of proso millet. Kolkh. proizv., 12. No. 3, 1952.

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

ISAYEV, P., kand.fiziko-matematicheskikh nauk

The unexhaustible electron. Radio no.1:11-14 Ja '61. (MIRA 14:9)
(Electrons)

ACC NR: AP6017103 (A) SOURCE CODE: UR/0226/66/000/001/0046/0049

AUTHORS: Dubrovskiy, A. P. (Moscow); Isayev, P. A. (Moscow)

ORG: none

TITLE: Investigation of gas-permeability of porous materials

SOURCE: Poroshkovaya metallurgiya, no. 1, 1966, 46-49

TOPIC TAGS: metal powder, powder alloy, ~~powder metal sintering~~, porous metal, porosity, gas permeability, sintered metal

ABSTRACT: The effect of porosity and the particle size and shape of sintered monel metal and bronze on the gas-permeability of the sinters was investigated. The particle size varied from 50 to 400 μ and the porosity from 12 to 33%. The monel metal specimens were sintered at 1200C, and the bronze specimens at 750C. The gas-permeability was determined by measuring the resistance offered by the specimens to the passage of compressed air. The experimental results were treated after the method of Yu. L. Il'in (Izv. vyssh. uch. zav. MVO SSSR, No. 1 Aviatsionnaya tekhnika, 1959),

$$A = B_0 + B_1 G,$$

where A, B_0, and B_1 are given by $A = \frac{(P_1 - P_2)(P_1 + P_2)}{2RThG}$; $B_0 = a\mu$; $B_1 = \frac{\beta}{g}$. Here P_1 and P_2 are the pressures in front and behind the porous specimen, h is the thickness of specimen, R, T, and μ are the gas constant, temperature, and viscosity

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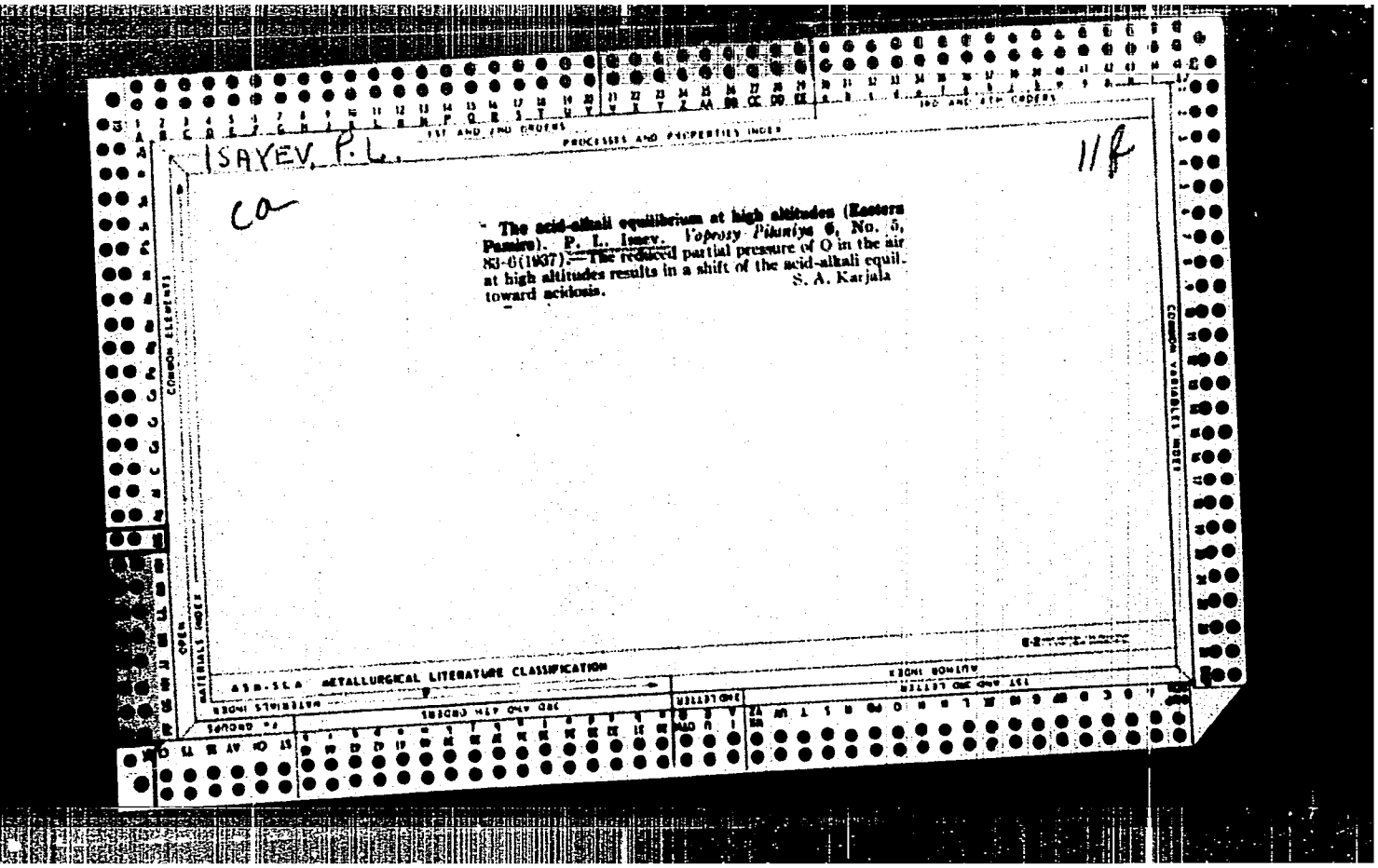

1. ISAYEV, P. I.

2. USSR (600)

4. Medicine

7. Diet for curing uclers. Moskva, Medgiz, 1951

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

ISAYEV, P. L.

Dietetic therapy in peptic ulcer. Feldsher & akush. no.6:42-46 June 1951. (CIML 21:1)

1. Candidate Medical Sciences.

ISAYEV, P. L.

Treatment of peptic ulcer complications. Feldsher & akush no.7:24-29 July 1951. (CLML 21:1)

1. Candidate Medical Sciences.

ISAYEV, P.L.

Lechebnoe pitanie pri iazvennoi bolezni [Therapeutic diet for ulcers]. Moskva, Medgiz, 1952.

SO: Monthly List of Russian Accessions, Vol. 6, No. 2, May 1953

ISAKIEV, V.I.

5962 lechebnoye pitaniye pri yazvennoy bol- ezni. tbilissi, Gruzmedgiz, 1954
40s. 20sm (B-ka san. prosveshcheniya). 3.000 ekz. 45k-na gtuz. yaz.
(55-482) 616.33-002.44-083.2 -616.342.002 44-083.2-613.24

SO: Knizhnaya Letopis', vol. 1, 1955

ISAYEV, P.L.

[Therapeutic diet for diseases of stomach and intestines] Lechebnoe pitanie pri bolesniakh zheludka i kishechnika. Moskva, Medgiz, 1955. 54 p. (MLRA 8:12)

(DIET IN DISEASE) (DIGESTIVE ORGANS--DISEASES)

ISAYEV, P.L.

SOKOLOVSKIY, V.P.

"Therapeutic diet in gastrointestinal diseases.- P.L. Isaev.
Reviewed by V.P. Sokolovskii. Vop.pit.14 no.4:45-46 Jl-Ag '55.
(DIET IN DISEASE) (MLRA 8:10)
(ALIMENTARY CANAL-DISEASE) (ISAEV, P.L.)

ISAYEV, Pinkhus Lazarevich, kandidat meditsinskikh nauk; VAYNTSVEYG,G.Ye., redaktor; YEVDOKIMOVA,Z.N., tekhnicheskiy redaktor

[Nutrition during liver diseases; advices to the sick] Pitanie pri bolesniakh pecheni; sovety bol'nomu. Moskva, Gos. izd-vo med. lit-ry, 1955. 26 p. (MLRA 9:2)
(DIET IN DISEASE) (LIVER--DISEASES)

USSR/Medicine - Nutrition

FD-3300

Card 1/1 Pub. 141 - 15/19

Author : Isayev, P. L. (reviewed by Sokolovskiy, V. P.)

Title : Therapeutic nutrition for diseases of the stomach and small intestine

Periodical : Vop. pit., 45-46, Jul/Aug 1955

Abstract : Gives favorable review of above book which is intended for physicians and laymen as well. Criticizes some errors, but nevertheless endorses the book as a valuable aid. No references.

Institution :

Submitted :

ISAYEV, P.L., kand.med.nauk

Do incompatible products exist? Zdorov'e 8 no.9:12-13 S '62.
(MIRA 15:9)

(FOOD)

ISAYEV, Petr Osipovich

DECEASED
Feb 62

1962/
/7

Medicine

~~see EIC~~

Records Center

PHASE I BOOK EXPLOITATION SOV/3751

Isayev, Pavel Petrovich, and Aleksey Aleksandrovich Bogdanov

Obrabotka metallov rezaniyem; rezaniye metallov, rezhushchiy instrument, metallorezhushchiye stanki (Metal Cutting; Cutting of Metals, Cutting Tools, and Metal-Cutting Machine Tools) Moscow, Oborongiz, 1959. 657 p. Errata slip inserted. 16,000 copies printed.

Reviewer: A. M. Karatygin, Candidate of Technical Sciences, Docent; Ed.: Ya. M. Rozenblit, Engineer; Ed. of Publishing House: F. G. Tubyanskaya; Tech. Ed.: V. I. Oreshkina; Managing Ed.: A. I. Sokolov, Engineer.

PURPOSE: This textbook is intended for students at tekhnikums. It can also be used by technicians, foremen, economists, planners, and other personnel in the machine industry.

COVERAGE: The book deals with the theory of metal cutting. Tool constructions, working methods and constructional features and setup of the principal types of metal-cutting machine tools are discussed. A description of electro-chemical and ultrasonic metal-machining methods is presented. Chapters I to V

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POD''YEMSHCHIKOVA, Yelena Konstantinovna; DANIYELYAN, A.M., doktor tekhnicheskikh nauk, professor, retsenzent; ISAYEV, P.P., kandidat tekhnicheskikh nauk, dotsent, redaktor; SUVOROVA, T.A., redaktor; GLADKIKH, N.N., tekhnicheskiy redaktor.

[Highspeed milling of grooves by slab mills] Skorostnoe frezerovanie pazov diskovymi frezami. Moskva, Ges.izd-vo obor.promyshl. 1955.140p. (MLRA 9:5)
(Milling machines)

USSR

537.591.15

8394 The equilibrium energy spectrum of shower photons. P. S. ISAEV. *Zh. eksper. teor. Fiz.*, 24, No. 1, 78-82 (1953) *In Russian.*

The equilibrium distribution of shower photons in air is calculated for the energy range 4.5–260 MeV, allowance being made not only for radiation damping and pair production, but also for ionization losses and the Compton effect. The calculation formulae are derived from the results of Tamm and Belen'kiĭ's paper [*J. Phys. (USSR)* 1, 177 (1939)]. The obtained photon spectrum is compared with that calculated by Kulchitskiĭ and Moskalev [*Atomn.* 623 (1949)]; the maximum difference are of the order of 30%.

L. LAUBMAN

ISAYEV, P.S.

USSR/Nuclear Physics - Photon showers FD-1859

Card 1/1 Pub. 146-19/25

Author : Isayev, P. S.

Title : "Equilibrium" energy spectrum of shower photons

Periodical : Zhur. eksp. i teor. fiz. 28, 374-376, March 1955

Abstract : The author calculates the so-called equilibrium spectrum of photons which are formed in cascade electromagnetic processes taking into account not only radiative damping and pair production, but also ionization losses and the Compton effect. He thanks S. Z. Belen'kiy, who guided this work, and L. Ya. Zhil'tsova, who did the principal computation.

Institution: Physics Institute im. P. N. Lebedev, Academy of Sciences USSR

Submitted : July 24, 1954

ISAYEV, P.S.

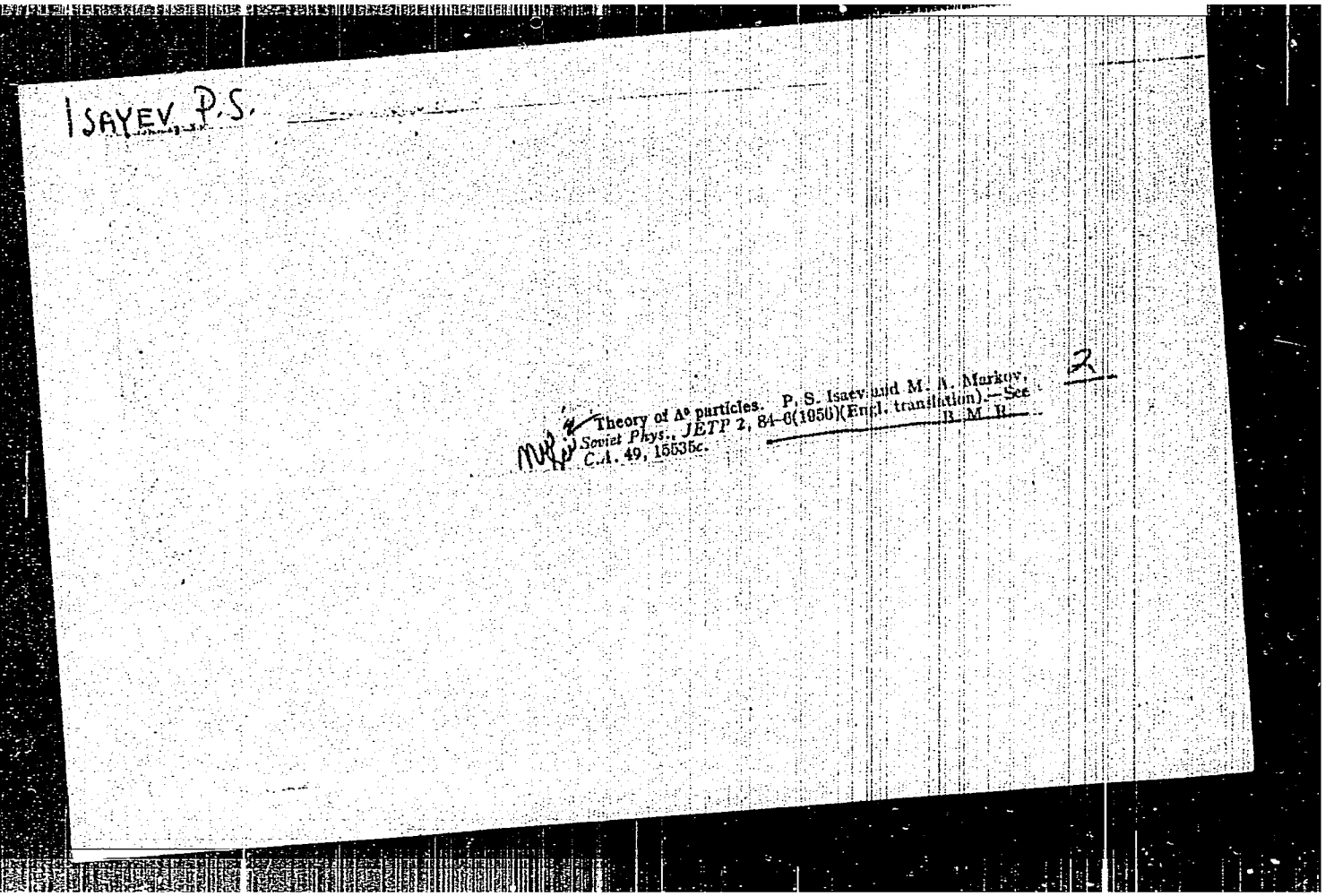
539.18

9115. Theory of the Λ^0-particle. P. S. ISAEV AND M. A. MARKOV. *Zh. eksper. teor. Fiz.*, 29, No. 1(7), 111–14 (1955) In Russian.

A class of equations is considered of which the lowest eigenstate describes the proton, the first excited state, the Λ^0-particle.

G. E. BROWN

Physics Inst. im. Lebedev - AS USSR



ISAYEV, P.S.

Theory of Λ^0 particles. P. S. Isaev and M. A. Markov. *Soviet Phys., JETP* 2, 84-6(1950)(Engl. translation).—See C.A. 49, 15535c. R. M. H.

2

ISAYEV, P.S.

SUBJECT USSR / PHYSICS
AUTHOR ISAEV,P.S., MURZIN,V.S. CARD 1 / 2 PA - 1737
TITLE On a Rule observed on the Occasion of the Decay of Unstable Particles.
PERIODICAL Žurn.eksp.i teor.fis, 31, fasc.4, 715-715 (1956)
Issued: 1 / 1957

At present the following values of the masses of stable and unstable particles (the existence of which has been rigorously proved) are unanimously recognized (in electron masses): $m_\nu = m_\gamma = 0$; $m_e = 1$; $m_\mu = 207$; $m_\pi = 274$; $m_K = 966 \pm 3$; $m_p = 1836$; $m_\Lambda = 2181 \pm 1$; $m_\Sigma = 2327 \pm 3$; $m_\Xi = 2585 \pm 15$. Among these particles μ, π, K, Λ, Σ and Ξ are unstable. The values of decay energies which can be experimentally observed or are computed on the basis of known masses of particles by means of the decay scheme are given below (in MeV):

Decay process:	Q	n	Decay process:	Q	n
$\pi^0 \to 2\gamma$	135	3,8	$K \to \mu + \nu$	~389	11,0
$\mu \to e + 2\nu$	106	3,0	$K \to \mu + \pi^0 + \nu$	~248	7,0
$\pi \to \mu + \nu$	34,5	1,0	$\Lambda^0 \to p + \pi^-$	37,0±1,0	1,0
$K \to 3\pi$	75,0±1,5	2,1	$\Sigma \to n + \pi$	111,0±3	3,1
$K \to 2\pi$	214 ± 5	6,0	$\Xi \to \Lambda^0 + \pi$	66 ± 6	1,9

Zurn.eksp.i teor.fis,31, fasc.4, 715-715 (1956) CARD 2 / 2 PA - 1737

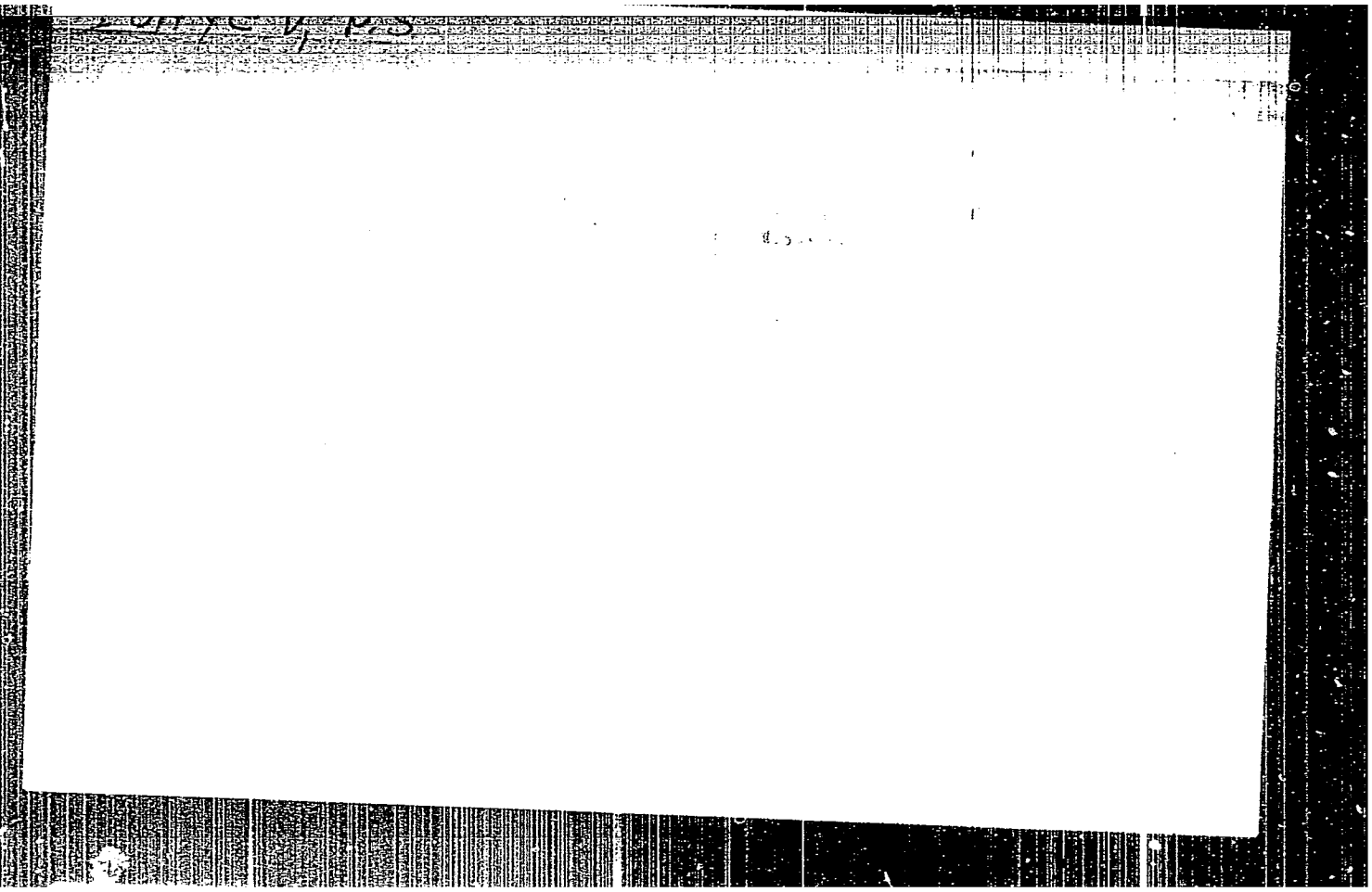
For the quantity mentioned in the third line it applies that $n = Q/q$ with $q = 35{,}5$ MeV $= 69{,}5\ m_e$. All values of n are very near whole numbers, with the exception of some cases in which decay furnishes only stable particles (e.g. neutron, π^o). Thus, the energy liberated on the occasion of unstable particles is a multiple of 35,5 MeV. A drawing shows the experimentally observable scheme of the energy levels of hyperons.

If the statements made here are correct, and if new unstable particles exist, they must be found among those mass numbers M which satisfy the relation $M - (m_p + n m_\pi) = n_1 q$ (in the case of particles which are heavier than a proton), or $M - n\, m_\pi = n_1 q$ (for mesons which are heavier than a pion). In these formulae n and n_1 are whole numbers.

It is interesting to note that the number of electron masses contained in q is very near the value $1/2\alpha = 68{,}5$.

This is a nearly verbal translation of this short report.

INSTITUTION: Electro-Physical Laboratory of the Academy of Science in the USSR.
Moscow State University



AUTHORS: Blank, V. Z.(Deceased), Isayev, P. S. 20-117-5-15/54

TITLE: Approximate Dispersion Relations for the Scattering of Nucleons on Nucleons (Priblizhennyye dispersionnyye sootnosheniya dlya rasseyaniya nuklonov na nuklonakh).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 785 - 787 (USSR)

ABSTRACT: Here the scattering of nucleons on nucleons is discussed in the absence of antinucleons, in which case the authors start from a dispersion relation determined in the usual way, which is given here. The amplitudes of the scattering of a nucleon on a nucleon are here linearly expressed by the amplitudes of the scattering of an antinucleon on a nucleon with positive energy. By this means the abovementioned dispersion relation links the amplitude of the nucleon-nucleon scattering and of the antinucleon scattering. This dispersion relation is then given in the approximation considered here. This approximation is satisfactory in that energy range, where the amount of the integral is essentially determined by the behaviour of the function within the integral sign of the approximation relation. In the case of the nucleon-nucleon scattering the identity of the particles must be taken into consideration. Besides, it is not sufficient to consider the amplitude f (θ) of the scattering through a certain angle (θ, but a linear combination of the type f (θ) $\pm$ f(π-θ), θ denoting the

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Approximate Dispersion Relations for the Scattering of Nucleons on Nucleons

scattering angle in the center of mass system. Subsequently a dispersion relation is deduced and given, taking into consideration a further possible approximation. The experimental verification of just this relation is of great experimental interest. The experimental data available at present on the total section $\sigma(k)$ and on the angular distribution permit to compute the integral from the total cross section, and the value of $D(k)$ obtained in this way can then be compared with the value measured experimentally. This verificytion will solve the problem of the limits of applicability of the last mentioned dispersion relation. In the range of very small energy (up to 6 MeV), where the scattering is satisfactorily described by a S-wave, the expansion $k \operatorname{ctg} \delta = -(1/a) + (1/2) rk^2$ may be used to verify the last mentioned dispersion relation. The degree of accordance is given here.

ASSOCIATION: United Institute for Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)
PRESENTED: July 15, 1957, by N.N. Bogolyubov, Academician
SUBMITTED: June 28, 1957

Card 2/2

ISAYEV, P. S.

21(1,8); 24(5) PHASE I BOOK EXPLOITATION SOV/3369

Vsesoyuznaya mezhvuzovskaya konferentsiya po kvantovoy teorii poley i teorii elementarnykh chastits. Uzhgorod, 1958

Problemy sovremennoy teorii elementarnykh chastits. No. 2: Trudy konferentsii... (Problems in the Modern Theory of Elementary Particles. Nr. 2: Transactions of the All-Union Inter-Vuz Conference on the Quantum Field Theory and the Theory of Elementary Particles) Uzhgorod, Zakarpatskoye oblastnoye izd-vo, 1959. 214 p. 5,000 copies printed.

Ed.: Yu. Lomsadze, Docent; Tech. Ed.: N. Belous.

PURPOSE: This book is intended for physicists, particularly those concerned with problems in the field of elementary particles and the quantum theory.

COVERAGE: This book contains articles on elementary particles originally read at the All-Union Inter-Vuz Conference held at Uzhgorod State University on October 26, 1958. Among the topics discussed are: the spinor field theory, the fusion theory, Lorentz contractions, parity studies, nucleon-nucleon scattering, etc. English abstracts accompany each article. References follow each article.

Dolginov, A.Z. Polarization of Quanta Emitted by μ Mesatoms 138

Barashenkov, V.S. Optical Analysis of the Interaction Between Fast Nucleons and Pions Particles With Nucleons and Nucleus 142

Zharkov, G.F. The Semi-Phenomenological Theory of Nuclear Forces 149

Fisher, Ya., and S. Chulli. Partial Wave Analysis of the Generation of Particles 157

Zlatev, I.S., and P.S. Isayev. The Effect of the Form-Factor on the Processes of Bremsstrahlung and Generation of Pairs on Protons 165

Filimonov, V.A. On the Interaction Between Δ -Particles and Nucleons in the Hypernuclei 175

Lomsadze, Yu.M. The 1-Summation of the Perturbation Method Series 182

Lomsadze, Yu.M., V.I. Lend'yel, and I.Yu. Krivskiy. The Problem of Nucleon-Nucleon Scattering in High-Energy Regions 195

Lomsadze, Yu.M., V.I. Lend'yel, I.Yu. Krivskiy, V.I. Fushchich, I.V. Khimich, L.P. Lukin, and B.M. Ernst. The Application of the Modified Perturbation Method to the Interpretation of the Nucleon-Nucleon Scatterings 211

AUTHORS: Zlatev, I., Isayev, P. S.

SOV/56-35-1-58/59

TITLE: The Bremsstrahlung and the Pair Production on Protons Taking Into Account the Form Factor (Tormoznoye izlucheniye i rozhdeniye par na protonakh s uchetom form-faktora)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol.35, Nr 1, pp. 309 - 310 (USSR)

ABSTRACT: From a modern point of view, a nucleon is a "nucleus" which is surrounded by a cloud of virtual mesons. The distributions of the electric charges and of the magnetic moment of the nucleons were investigated thoroughly in Hofstadter's (Khofshtadter) experiments on the scattering of electrons on protons and neutrons. It is therefore interesting, to investigate the influence of the form factor on processes like bremsstrahlung or pair production on nucleons. The authors calculated these processes for the special case of protons in the lowest approximation of the perturbation theory (in the third order with respect to e). The graphs taken into account are shown in a figure. Also the "meson fur" will give an additional contribution to the cross section of these processes. But taking

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account of this contribution is rather complicated and therefore only some comments on it are given in this paper. The exact formulae are rather complicated and therefore are not given in this paper. When the proton mass tends to infinity, these formulae are changed to the corresponding formulae of Bethe (Bete)-Heitler (Gaytler) for the bremsstrahlung and pair production. Deviations from these formulae will be observed only in the region of large scattering angles or in the region of extremely high energies of the incident electron ($\gg$ 500 MeV). This leads to the following conclusion: A difference between the Bethe (Bete)-Heitler (Gaytler) formula will be an argument in favor of the influence of the recoil and of the form factor on the cross section of the investigated process, and also in favor of the possible existence of an additional contribution of the "meson fur" of the nucleon on the cross section. In order to illustrate these considerations, numerical results are given in a table. The above mentioned difference has noticeable values ($\sim$ 15 %) even for relatively small angles (30°) and this fact is an argument in favor of a

The Bremsstrahlung and the Pair Production on Protons in Consideration of the Form Factor SOV/56-35-1-58/59

noticeable contribution of the "meson fur" to the cross section of the bremsstrahlung. Further calculations will solve this problem in a more definite way. The authors thank A.A.Logunov and A.N.Takhvelidze for useful discussions of these results. There are 1 figure, 1 table, and 4 references, 1 of which is Soviet.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (United Institute for Nuclear Research)

SUBMITTED: April 23, 1958

Card 3/3

AUTHORS: Zlatev, I. S., Isayev, P. S. SOV/56-37-3-21/62

TITLE: Dispersion Relations for the Virtual Compton Effect

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 728-734 (USSR)

ABSTRACT: In the present paper the dispersion relations for the virtual Compton effect in the lowest approximation with respect to e are derived by the method of N. N. Bogolyubov. V. S. Vladimirov and A. A. Logunov (Ref 3) furnished a proof for the bremsstrahlung and for the pair formation, and for this reason the authors concentrated on the definition of dispersion relations which are suited for practical use. The authors demonstrate that the cross sections of the processes in single-nucleon approximation agree with those cross sections which were computed in the lowest approximation of the perturbation theory. In this case the method of dispersion relations permits the strict introduction of the form factor (of the Hofstadter type) into the nucleon vertices of the Feynman diagrams which are in connection with the virtual photon line. This is one of the essential advantages which have dispersion relations over the perturbation theory. The resultant

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dispersion relations are suited at least for the estimation of the contribution of the single-pion state to the processes investigated. By taking into account the single-pion state an important extension of the energy range in the examination of quantum electrodynamics at small distances may be attained. The quantum electrodynamics for bremsstrahlung at an energy of $\sim$550 Mev of the incident electron and an energy of $\sim$260 Mev of the emitted photon may be examined up to distances of $\gtrsim 3.10^{-14}$ cm. The individual parts of the present paper deal with the following: dispersion relations for the amplitude of the virtual Compton effect, structure of the amplitude of bremsstrahlung, dispersion relations for the Lorentz invariant coefficient, dispersion relations for the physical amplitudes in the center-of-mass system. By means of the dispersion relations, form factors depending rigorously on a variable may be introduced into the process of bremsstrahlung and pair formation. These form factors have already been deduced by R. Hofstadter for the negative values of the argument (Ref 11). There are 2 figures and 14 references, 8 of which are Soviet.

Dispersion Relations for the Virtual Compton Effect SOV/56-37-3-21/62

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: March 23, 1959

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