YEFREMKIN, V.V.

137-58-5-9291

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 72 (USSR)

AUTHORS: Mikulinskiy, A.S., Yefremkin, V.V., Selyanskiy, A.P. Serebrennikova, M.A.

TITLE: Loading of a Calcium Carbide Bearing Charge Into a Hot Furnace (Zagruzka shikhty, soderzhashchey karbid kaltsiya, v goryachuyu pech')

PERIODICAL: Tr. Ural'skogo n.-i. khim. in-ta, 1957, Nr 4, pp 200-202

ABSTRACT: In order to achieve conditions conducive to safety in the loading of a charge containing CaC_2 into a hot furnace, a number of experiments was conducted at temperatures ranging from 950°C to 1150° on a pilot-plant furnace with a charge containing NaCl and CaC_2. Pure NaCl, thoroughly heated for 1-1.5 hrs at a temperature of 500-600°, was employed during the experiments together with waste products of high-purity CaC_2 (particle size 0.2 mm) containing about 65% CaC_2. The charge was subjected to briquetting under a pressure of 30 kg/cm^2. The furnace in which the experiments were conducted consisted of a cylindrical housing with an internal lining of fireclay brick. A Fe retort vessel 140 mm in diameter was placed into the furnace. It was

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137-58-5-9291

Loading of a Calcium Carbide Bearing Charge Into a Hot Furnace

established that a backfire occurred 2-5 minutes after an entire charge weighing approximately 4 kg had been introduced in one batch into the furnace which was inclined at an angle of 25°; a portion of the charge would occasionally be ejected from the furnace. When a small portion of the charge (particularly if the charge had not been briquetted) was placed into the furnace, flames formed over it and subsequent charging proceeded without backfire. Therefore, in order to eliminate the hazard connected with the loading of charges containing CaC_2 into a hot furnace, it is imperative that only a small portion be introduced into the furnace initially, followed by the rest of the charge in small batches only after an open flame has appeared.

G.S.

1. Electric furnaces--Operation 2. Transformers--Operation

Card 2/2

YEFREMKIN, V. V.

SOV/137-58-9-18754

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 86 (USSR)

AUTHORS: Yefremkin, V.V., Fefelova, G.F.

TITLE: Investigation of a Calcium Hydrogenation Process (Issledovaniye protsessa gidrirovaniya kal'tsiya)

PERIODICAL: Tr. Ural'skogo n.-i. khim. in-ta, 1957 (1958), Nr 5, pp 136-151

ABSTRACT: An investigation is made of the possibility of hydrogenating Ca filings with and without the addition of catalyst thereto. It is found that the reaction of Ca filings (without the addition of catalyst) and H_2 occurs at a furnace temperature of 600-700°C. The filings overheat and fuse. Addition of 1.3-2.6% NaCl reduces hydrogenation temperature to 300°. Fusion of the filings can be prevented by introducing a given amount of Ar into the reaction vessel. The hydrogenation process goes in 3 stages: Chemo-sorption of H_2 on the surface of the Ca; an autocatalytic reaction described by the equation $g = k\tau^n + C$ and a period of diffusion in which the hydrogenation reaction goes in accordance with the equation $g = l\sqrt{\tau} - m\tau - d$. 1. Calcium--Hydrogenation 2. Calcium--Catalysis 3. Hydrogenation--Analysis G.S.

Card 1/1

YEFREMKIN, V.V.

Serebryakova, A.V., and V.V. Yefremkin (Urals Branch, Academy of Sciences USSR). A Study of Some Questions of the Chlorination of Titaniferous Materials in a Fusion of Mixed Chlorides, p. 78. Titan i yego splavy. vyp. II: Metallurgiya titana (Titanium and Its Alloys. No. 2: Metallurgy of Titanium) Moscow, Izd-vo AN SSSR, 1959. 179 p.

This collection of papers deals with sources of titanium; production of titanium dioxide, metallic titanium, and titanium sheet; slag composition; determination of titanium content in slags; and other related matters. The sources of titanium discussed are the complex sillimanite ores of the Kyakhtinskoye Deposit (Buryatskaya ASSR) and certain aluminum ores of Eastern Siberia. One paper explains the advantages of using ilmenite titanium slags for the production of titanium dioxide by the sulfuric acid method. Production of metallic titanium by thermal reduction processes (hydrogen, magnesium, and carbon reduction) is the subject of several papers, while other papers are concerned with the electrolytic production of titanium. Other subjects dealt with are interaction of titanium with water vapor and with hydrogen and the determination of titanium in slags.

SOV/136-59-4-19/24

AUTHORS: Mikulinskiy, A.S., Professor, Doctor of Technical Sciences and Yefremkin, V.V., Candidate of Technical Sciences

TITLE: Reviews and Bibliography (Retsenzii i bibliografiya)

PERIODICAL: Tsvetnyye metally, 1959, Nr 4, pp 84-85 (USSR)

ABSTRACT: The following book is reviewed: V.A.Pazukhin and A.Ya.Fisher - "Vacuum in Metallurgy". (Metallurgizdat, 1956)

ASSOCIATION: UFAN

Card 1/1

NAKHABIN, V.P., inzh.; MIKULINSKIY, A.S., doktor tekhn.nauk, prof.; SHIRER, G.B., kand.tekhn.nauk; NEVSKIY, R.A., inzh.; SHOLOKHOV, V.F., inzh.; YEFREMKIN, V.V., kand.tekhn.nauk; ZHUCHKOV, V.I., inzh.; KURNUSHKO, O.V., inzh.

Preparation of silicomanganese and ferromanganese from carbonate ores of the "Polunochnoye" deposit. Stal' 20 no. 12:1099-1103 D '60. (MIRA 13:12)

1. Zavod ferrosplavov, TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i Institut metallurgii Ural'skogo filiala AN.
(Silicon-manganese alloys) (Ferromanganese)
(Polunochnoye region--Ore deposits)

MIKULINSKIY, A.S.; YEFREMKIN, V.V.; ZHUCHKOV, V.I.; SHOLOKHOV, V.F.; EPSHTEYN, N.Ye.

Obtaining manganese alloys from Polunochnoye deposit ores in pilot plant thermal ore furnaces. Trudy Inst. met. UFAN SSSR no.7: 107-117 '61. (MIRA 16:6)

(Manganese alloys)

MOLEVA, N.G.; ZHUCHKOV, V.I.; MIKULINSKIY, A.S.; KUSAKIN, P.S.; YEFREMKIN, V.V.

Change in the phase composition of materials in relation to the height of the thermal ore furnace in obtaining manganese sinter. Trudy Inst. met. UFAN SSSR no.7:119-125 '61. (MIRA 16:6)
(Sintering) (Manganese ores)

NAKHABIN, V.P.; MIKULINSKIY, A.S.; SHIRER, G.B.; NEVSKIY, R.A.; SHOLOKHOV, V.F.; YEFREMKIN, V.V.; ZHUCHKOV, V.I.; KURNUSHKO, O.V.; EPSHTEYN, N.Ye.; PANFILOV, S.A.; Prinimali uchastiye: IL'IN, V.M.; ZEMLYAKOV, V.V.; SHMULEVICH, Ye.Yn.

Smelting out manganese-silicon and ferromanganese from Polunochnoye deposit ores in a furnace with a power of 10,500 kilovolt-amperes. Trudy Inst. met. UFAN SSSR no.7:127-145 '61. (MIRA 16:6)
(Manganese alloys) (Sintering)

MIKULINSKIY, A.S.; NAKHABIN, V.P.; SHIRER, G.B.; NEVSKIY, R.A.; STEBLYANKO, N.V.; YEFREMKIN, V.V.; VOROB'YEV, V.P.; ZHUCHKOV, V.I.; KURNUSHKO, O.V.

Change in the position of the electrodes and the capacity coefficient in obtaining manganese alloys. Trudy Inst. met. UFAN SSSR no.7: 147-151 '61. (MIRA 16:6)

(Manganese alloys) (Sintering)

ZHUCHKOV, V.I.; MIKULINSKIY, A.S.; YEFREMKIN, V.V.; MOLEVA, N.G.

Use of a fluxed sinter in obtaining carbon ferromanganese. Trudy Inst. met. UFAN SSSR no.7:157-161 '61. (MIRA 16:6)
(Manganese alloys) (Sintering)

YEFREMKINA, A. K.

USSR / Cultivated Plants, Medicinal Plants. Essential Oil Plants. Toxic Plants.

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34856

Author : Yefremkina, A. K.
Inst : University of Belorussian
Title : Propagation of the Chinese Lemon Tree by Green Peduncles Under Conditions of Belorussian SSR

Orig Pub : Uch. zap. Belorussk. un-t, 1957, vyp. 33, 99-106

Abstract : According to research data gathered in the botanical gardens of the Belorussian University, the most favorable period for grafting of the lemon tree under conditions prevailing in the Belorussian SSR appears to be the first to second ten day period of July. Grafts taken from only semi-lignified shoots, show a larger percentage of root-taking than those from totally

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USSR / Cultivated Plants. Medicinal Plants. Essential Oil Plants. Toxic Plants.

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34856.

lignified shoots. Treating of peduncles with an extract from aloe leaves (1 : 100) for 24 hours increases their root-taking capacity by 10%. Implantation of the peduncles in a hot-bed requires high atmospheric humidity (86 to 90%) and temperatures of 20 to 25°C. In early graftings, it is recommended to use the middle sections of the shoots, while the upper sections are recommended for late graftings. -- Serebryannly.

Card 2/2

YEFREMKINA, A.K.

Effect of growth promoting substances on the yield of Schisandra chinensis. Bot.; issl.Bel.otd.VBO no.7:215-216 '65. (MIRA 18:12)

YEFREMOCHKIN, N.V.

Flowsheet for gas producer plant drainage in the northeastern part of "Shatskii" deposit. Podzem.gaz.ugl. no.2:3-5 '59.
(MIRA 12:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut podzemnoy gazifikatsii ugley.
(Moscow Basin--Coal gasification, Underground)
(Mine drainage)

YEFREMOCHKIN, N.V.; FISENKO, N.Ye.

Drainage of the experimental gas producer section under complicated hydrogeological conditions. Nauch. trudy VNII Podzemgaza no.6:96-101 '62. (MIRA 15:11)

1. Laboratoriya gidrogeologicheskaya Vsesoyuznogo nauchno-issledovatel'skogo instituta podzemnoy gazifikatsii ugley.
(Coal gasification, Underground)
(Mine drainage)

YEFREMOCHKIN, N.V.

Evaluating the conditions for the inflow of underground waters of overlying coal series into a gas producer and their effect on the underground coal gasification process in Moscow Basin deposits. Trudy VNIIPodzemgaza no.12:74-84 '64. (MIRA 18:9)

1. Laboratoriya gidrogeologicheskaya Vsesoyuznogo nauchno-issledovatel'skogo instituta podzemnoy gazifikatsii ugley.

TERESHCHENKO, N.V.

Role of Upinskii level underground waters in the flooding of a gas generator. Nauch.trudy VNIIPodzemgaza no.10:91-99 '63. (MIRA 17:5)

1. Laboratoriya gidrogeologicheskaya Vsesoyuznogo nauchno-issledovatel'skogo instituta podzemnoy gazifikatsii ugley.

YEFREMOCHKIN, N.V.; KHVOINSKAYA, R.S.

Draining operating gas producing sections Nos. 8 and 9 in the Moscow Station "Podzemgaz." Nauch. trudy VNIIPodzemgaza no.9:22-28 '63. (MIRA 16:11)

1. Laboratoriya gidrogeologicheskaya Vsesoyuznogo nauchno-issledovatel'skogo instituta podzemnoy gazifikatsii ugley.

YEFREMOCHKIN, N.V.

Effect of the air-blast and gas pressure on the performance of vertical drainage holes. Trudy VNIIPodzemgaza no.23:81-85 '65.
(MIRA 18:8)

1. Laboratoriya gornogeologicheskaya Vsesoyuznogo nauchno-issledovatel'skogo instituta podzemnoy gazifikatsii ugley.

YEFREMOV, A.

"Hydrogeological and Meteorological Research Work on Board of the Ice Breaker 'Sedov'," Dokl. AN SSSR, 27, No.2, 1940

BUSHIN, B.; YEFREMOV, A.

New devices. Biul.tekh.inform. 4 no.11:24 N '58. (MIRA 11:12)
(Building--Tools and implements)

BUSHIN, V.; YEFREMOV, A.

Suggestions by finishers of the Cherepovets Trust for the Construction of Metallurgical Plants. Stroitel' no.11: 18-20 N '59. (MIRA 13:3)

1. Glavnyy inzhener stroitel'nogo upravleniya Spetsstroy tresta Cherepovetsmetallurgstroy (for Bushin). 2. Glavnyy inzhener upravleniya Montazhspetsstroy (for Yefremov).
(Building--Tools and implements)

BUSHIN, V., inzh.; YEFREMOV, A., inzh.

Precast concrete porches with mosaiclike surfaces. Zhil.stroi. no.12:16 '59. (MIRA 13:4)
(Porches)

BUSHIN, V.; YEFREMOV, A.; STOUMOV, V., inzh.

Using assembly-line methods in building large-panel houses. Stroitel' no.12:7,10-11 D '59. (MIRA 13:3)

1. Glavnyy inzhener upravleniya Spetsstroy (for Bushin).
2. Glavnyy inzhener upravleniya Montazhspetsstroy (for Yefremov).
3. Trest Cherepovetsmetallurgstroy, Cherepovets, Vologodskaya oblast' (for Stoumov).
(Assembly-line methods) (Leningrad--Apartment houses)

YEFREMOV, A.

Scientific and technical cooperation of the Ministry of the Merchant Marine with foreign countries. Mor. flot 19 no.5:43-44 My '59. (MIRA 12:7)

1. Starshiy inzhener Tekhnicheskogo upravleniya Ministerstva Morskogo flota.
(Merchant marine)
(Russia--Relations (General) with foreign countries)

BUSHIN, V., inzh.; YEFREMOV, A., inzh.; DMITRIYENKO, A., inzh.

Precast tile floors. Stroitel' no.5:10 My '60. (MIRA 13:9)
(Tiles) (Floors)

YEFREMOV, A. A.; ZEL'VENSKIY, Ya. D.

Studying the purification by rectification of methylphenyldichlorosilane with the method of radioactive indicators. Khim prom no. 3: 201-207 Mr '64. (MIRA 17:5)

1. Moskovskiy Ordena Lenina khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva.

21C

L 18316-65 EWG(j)/EWT(l)/EWP(e)/EWG(k)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EEC(b)-2/EWP(b) Pz-6/Pr-4/Ps-4/Pu-4 IJP(c)/APWL/SSD WW/AT/WH S/0089/64/017/005/0329/0335

ACCESSION NR: AP4049532

AUTHOR: Millionshchikov, M. D.; Gverdtsiteli, I. G.; Abramov, A. S.; Gorlov, L. V.; Gubanov, Yu. D.; Yefremov, A. A.; Zhukov, V. P.; Ivanov, V. Ye.; Kovy*rzin, V. K.; Koptelov, Ye. A.; Kosovskiy, V. G.; Kukharkin, N. Ye.; Kucherov, R. Ya.; Laly*kin, S. P.; Markin, V. I.; Nechayev, Yu. A.; Pozdnyakov, B. S.; Ponomarev-Stepnoy, N. N.; Samarin, Ye. N.; Serov, V. Ya.; Usov, V. A.; Fedin, V. G.; Yakovlev, V. V.; Yakutovich, M. V.; Khodakov, V. A.; Kompaniyets, G. V.

TITLE: The "Romashka" high-temperature reactor-converter 19

SOURCE: Atomnaya energiya, v. 17, no. 5, 1964, 329-335

TOPIC TAGS: nuclear power reactor, reactor feasibility study, research reactor, thermoelectric converter/Romashka

ABSTRACT: The authors briefly describe the construction, parameters, test results, and operating experience of the "Romashka" reactor-

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L 18316-65
ACCESSION NR: AP4049532

converter unit, which has been in operation at the Kurchatov Atomic Energy Institute since August 1964. The fuel used is uranium dicarbide enriched to 90% U^{235}. Graphite and beryllium are used as reflectors. Electricity is generated by silicon-germanium semiconductor thermocouples distributed on the outer surface of the reflector and connected in four groups which can be connected in series or in parallel. The temperatures of the active zone and outer surface are 1770 and 1000C, respectively. The power ratings are 0.50—0.80 kW electric and 40 kW thermal, the maximum current (parallel connection) is 88 A, the neutron flux is 10^{13} neut/cm^2 sec in the center of the active zone and 7×10^{12} on its boundary. The reactor has a negative temperature reactivity coefficient. The equipment has high inherent stability and requires no external regulator, and little change was observed in the thermocouple properties after 2500 hours of operation. Tests on the equipment parameters are continuing, and the results are being analyzed for use in future designs. Orig. art. has: 8 figures and 1 formula.

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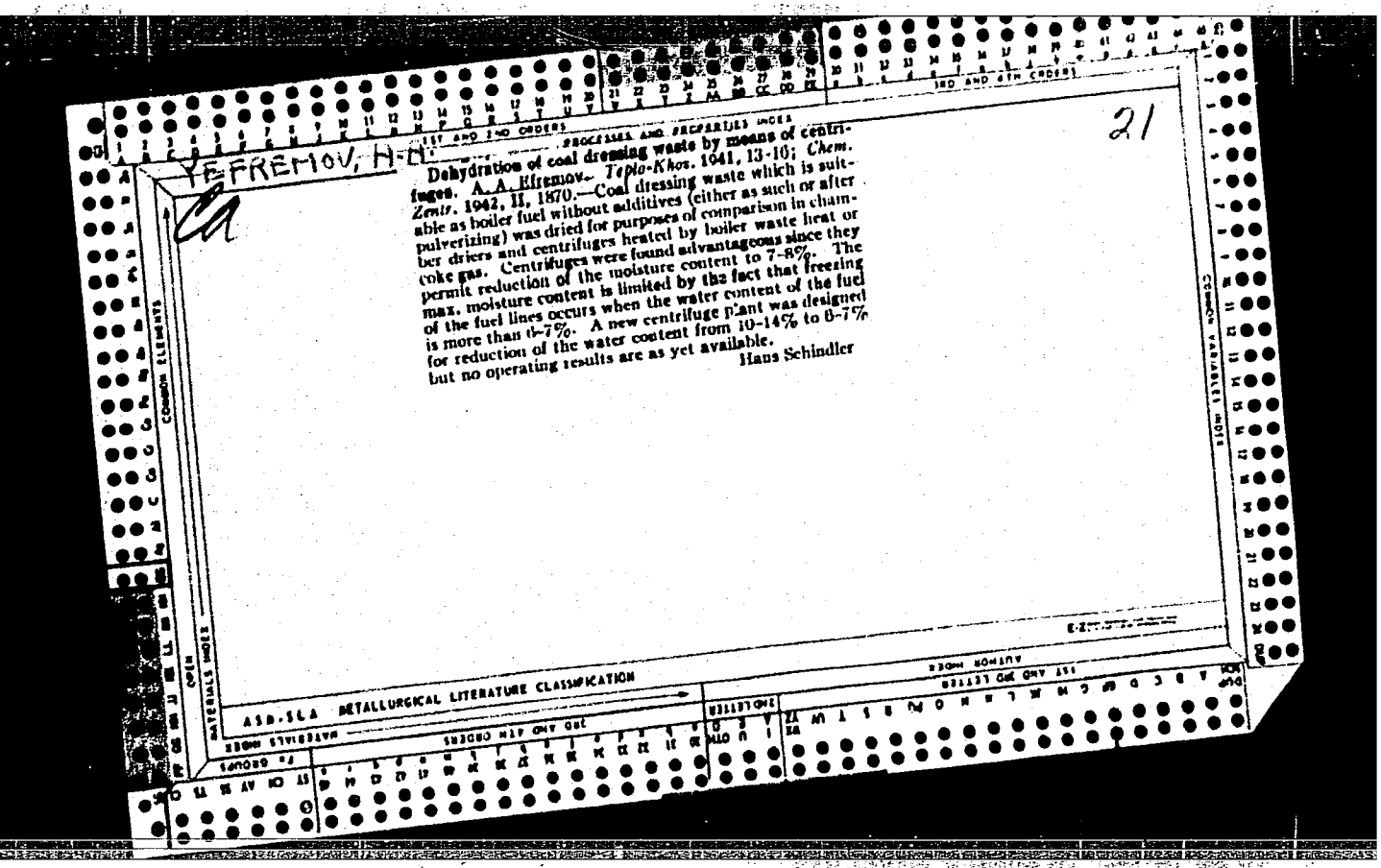

YEFREMOV, A-A

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Dehydration of coal dressing waste by means of centrifuges. A. A. Efremov.—*Teplo-Khoz.* 1941, 13-16; *Chem. Zentr.* 1942, II, 1870.—Coal dressing waste which is suitable as boiler fuel without additives (either as such or after pulverizing) was dried for purposes of comparison in chamber driers and centrifuges heated by boiler waste heat or coke gas. Centrifuges were found advantageous since they permit reduction of the moisture content to 7–8%. The max. moisture content is limited by the fact that freezing of the fuel lines occurs when the water content of the fuel is more than 6–7%. A new centrifuge plant was designed for reduction of the water content from 10–14% to 6–7% but no operating results are as yet available.

Hans Schindler

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

YEFREMOV, A.A.; ZEL'VENSKIY, Ya.D.

Effect of the isotopic substitution of deuterium for hydrogen on the vapor pressure of some alcohols. Zhur.VKHO 6 no.3:359-360 '61. (MIRA 14:6)

(Deuterium) (Alcohols)

ZEL'VENSKIY, Ya. D.; YEFREMOV, A. A.

Separation of hydrogen, carbon, and oxygen isotopes during the rectification of isopropanol. Izv. vys. ucheb. zav.; khim. i khim. tekh. 5 no.5:727-730 '62. (MIRA 16:1)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I. Mendeleyeva, kafedra tekhnologii razdeleniya i primeneniya izotopov.

(Isopropyl alcohol) (Distillation, Fractional)
(Isotope separation)

YEFREMOV, A.A.

Variation of the design for the frame of one-story industrial buildings with a cellar. Prom. stroi. 40 no.5:51 '62. (MIRA 15:5)
(Factories--Design and construction)

ACCESSION NR: AP4031444 S/0064/64/000/003/0201/0207

AUTHORS: Yefremov, A.A.; Zel'venskiy, Ya.D.

TITLE: Investigation of distillation purification of methylphenyldichlorosilane by the radioactive tracer method

SOURCE: Khimicheskaya promy*shiennost', no. 3, 1964, 201-207

TOPIC TAGS: methylphenyldichlorosilane, purification, distillation, radioactive tracer, tagged carbon, vacuum distillation, separation factor, liquid vapor equilibrium, phenyltrichlorosilane methylphenyldichlorosilane system, dimethylphenylchlorosilane methylphenyldichlorosilane system, heat of vaporization

ABSTRACT: To provide data required for the vacuum distillation purification of methylphenyldichlorosilane (MFDKhS) the liquid-vapor equilibria were experimentally determined for the two binary systems, the dilute solutions of phenyltrichlorosilane (FTKhS) and of dimethylphenylchlorosilane (DMFKhS) in MFDKhS, and the effect of pressure on the effectiveness of MFDKhS rectification was also determined. Concentrations of FTKhS and DMFKhS were determined by the radioactivity of the solutions: their phenyl groups were

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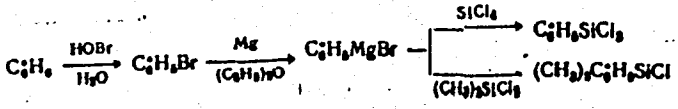
ACCESSION NR: AP4031444

tagged with O^{14} by the following synthesis:



With concentrations of 0.01-5 mol% (pressures of 5-760 mm Hg) the investigated systems are subject to Henry's law. The separation factor-temperature relationship for the FTKhS-MFDKhS system is shown by $\lg\alpha = -0.0451 + \frac{3.67}{T}$ and for the DMFKhS-MFDKhS system by $\lg\alpha = 0{,}0230 + \frac{3{,}67}{T}$

These values can be used for calculations for fractionation of the technical MFDKhS. For MFDKhS, $\lg P = 8.001 - \frac{2440}{T}$

and for DMFKhS, $\lg P = 8.013 - \frac{2400}{T}$

The heat of vaporization for MFDKhS = 10980 cal/mol; for DMFKhS, 11170 cal/mol. The height equivalent of the theoretical degree of separation, its dependence on pressure, and the dependence of the

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ACCESSION NR: AP4031444

degree of separation on pressure were determined. It was found that maximum separation is at pressures of 25-100 mm Hg. "The experimental part of the work was conducted with the participation of V.I. Morozova." "A purified sample of MFDKhS was obtained by M.A. Kleynovsk and A.S..Ginzburg." Orig. art. has: 7 figures, 5 tables and 10 equations.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00

SUB CODE: IC, NP NR REF SOV: 009 OTHER: 005

Card 3/3

L 11[illegible] EWT(l)/EPF(n)-2/EWP(t) [illegible] RM

ACCESSION NR: AP4044291 S/0286/64/000/013/0023/0023

AUTHOR: Kleynovskaya, M. A.; Sobolevskiy, M. V.; Ginzburg, A. S.; Zel'venskiy, Ya. D.; Yefremov, A. A.; Strebkov, V. A.

TITLE: Process for the purification of technical methylphenyldichlorosilane. Class 26, No. 163613

SOURCE: Byulleten' izobreteniy i tovarny*kh znakov, no. 13, 1964, 23

TOPIC TAGS: methylphenyldichlorosilane, technical methylphenyldichlorosilane, methylphenyldichlorosilane purification

ABSTRACT: An Author Certificate has been issued for a process for the purification of technical methylphenyldichlorosilane involving its treatment with air and subsequent rectification. In order to simplify the process and to increase the yield and purity of the product, the starting material is treated with moist air at room temperature.

ASSOCIATION: Organizatsiya goskomiteta khimicheskoy promy*shlennosti pri gosplane SSSR (Organization of the State Committee of the Chemical Industry, Gosplan SSSR)

Card 1/2

L 11235-65

ACCESSION NR: AP4044291

SUBMITTED: 25Jun63	ATD PRESS: 3104	ENCL: 00
SUB CODE: MT, OC	NO REF SOV: 000	OTHER: 000

2/2

MILLIONSHCHIKOV, M.D.; GVERDTSITELI, I.G.; ABRAMOV, A.S.; GORLOV, L.V.; GUBANOV, Yu.D.; YEFREMOV, A.A.; ZHUKOV, V.F.; IVANOV, V.Ye.; KOVYRZIN, V.K.; KOPTELOV, Ye.A.; KOSOVSKIY, V.G.; KUKHARKIN, N.Ye.; KUCHEROV, R.Ya.; LALYKIN, S.P.; MERKIN, V.I.; NECHAYEV, Yu.A.; POZDNYAKOV, B.S.; PONOMAREV-STEPNOY, N.N.; SAMARIN, Ye.N.; SEROV, V.Ya.; USOV, V.A.; FEDIN, V.G.; YAKOVLEV, V.V.; YAKUTOVICH, M.V.; KHODAKOV, V.A.; KOMPANIYETS, G.V.

High-temperature reactor-converter "Romashka." Atom. energ. 17 no.5:329-335 N '64. (MIRA 17:12)

YEFREMOV, A.A.; ZEL'VENSKIY, Ya.D.

Preparation of some organochlorosilanes tagged with the isotope C^{14}. Zhur. ob. khim. 34 no.8:2622-2625 Ag '64. (MIRA 17:9)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.

ZEL'VENSKIY, Ya.D.; YEFREMOV, A.A.; LARIN, G.M.

Studying the vapor-liquid equilibrium in the systems hydrocarbon-water with the use of the hydrogen-tritium radioisotope. Khim. i tekh. topl. i masel 10 no.7:3-7 Jl '65. (MIRA 18:9)

1. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva.

L 53894-65 EWT(m)/EPF(c)/T/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5014154 UR/0080/65/038/005/0987/0992
541.183+546.18

22
21
B

AUTHOR: Zel'venskiy, Ya. D.; Yefremov, A. A.; Afanas'yev, O. P.

TITLE: Adsorptive purification of trichlorosilane containing traces of phosphorus

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 5, 1965, 987-992

TOPIC TAGS: adsorptive purification, purification, trichlorosilane, phosphorus adsorption, adsorbent

ABSTRACT: Purification of trichlorosilane containing phosphorus using several commercial adsorbents and radioactive tracer technique (PCl_3 containing P^{32}) was studied in both liquid and vapor phases. In the case of the liquid phase, adsorbents used were: A-1 alumina, ASM and KSM silicagels, CKT and BAU charcoals, and NaX synthetic zeollite. Adsorption capacity of these materials for phosphorus was measured at 20°C and PCl_3 concentrations in trichlorosilane ranging from 1 to 10^{-7}%. For the liquid phase operation the specific purifying capacity (in kilograms per kilogram) of the adsorbents is as follows: A-1 alumina = 4300, ASM silicagel = 24, CKT charcoal = 4.4, and KSM silicagel = 1.4. In the case of the vapor phase, ad-

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L 53894-65

ACCESSION NR: AP5014154

sorptive capacity of various sorbents was measured by circulating trichlorosilane and phosphorus trichloride vapor until equilibrium was reached. A-1 alumina and ASM silicagel showed the highese adsorption capacity in the vapor phase operation. At 40°C, the adsorption capacity of A-1 alumina at the initial concentration of PCl_3 in trichlorisilane of 2.34 wt. % was 1.01 millimoles per gram. At 40°C, the adsorptive capacity of ASM silicagel at initial PCl_3 concentration of 3.33 wt. % was $4.45 \cdot 10^{-1}$ millimoles per gram. At PCl_3 concentrations higher than 10^{-5}%, purifying effectiveness of A-1 alumina is greater in the liquid phase than in the vapor phase. In the case of ASM silicagel the reverse is true at 40°C. Orig. art. has: 6 tables, 3 figures and 4 formulas.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I. Mendeleyeva (Moscow Institute of Chemical Technology)

SUBMITTED: 13Mar63 ENCL: 00 SUB CODE: GC

NO REF SOV: 003 OTHER: 001

Card 2/2

YEFREMOV, A.A.; ZEL'VENSKIY, Ya.D.

Liquid - vapor equilibrium in the binary systems methyltrichlorosilane - dimethyldichlorosilane and phenyldichlorosilane - phenyltrichlorosilane. Zhur.prikl.khim. 38 no.11:2513-2522 N '65. (MIRA 18:12)

1. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva. Submitted October 11, 1963.

L 42064-66 EWT(d)/EWP(1) IJP(c) BB/GG SOURCE CODE: UR/0413/66/000/001/0094/0094
ACC NR: AP6005353

AUTHORS: Sobolev, A. F.; Kuznetsov, A. A.; Yefremov, A. A.

48
B

ORG: none

TITLE: Electronic integrator. 16C Class 42, No. 177646

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 94

TOPIC TAGS: electronic circuit, pulse integrator

ABSTRACT: This Author Certificate presents an electronic continuous signal integrator containing an integrating capacitor. To increase the integration accuracy and the response rate, the signal is fed to the input of the pulse-amplitude converter. The output signals are fed to the input of a pulse-width converter at whose output the integrating storage capacitor is connected (see Fig. 1).

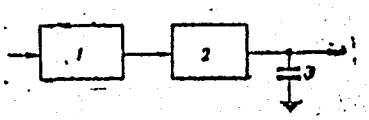

Fig. 1. 1 - pulse-amplitude converter; 2 - pulse-width converter; 3 - capacitor

Orig. art. has: 1 diagram.

SUB CODE: 09/ SUBM DATE: 14Aug64

UDC: 681.142.334

Card 1/1

ACC NR: AP6034916 SOURCE CODE: UR/0419/66/000/003/0005/0011

AUTHOR: Ogloblina, I. P.; Krasnyy, E. B.; Yefremov, A. A.; Musin, T. G.

ORG: none

TITLE: Preparation and properties of high-purity silicon dioxide sorbents

SOURCE: AN BSSR. Vestsi. Seryya khimichnykh navuk, no. 3, 1966, 5-11

TOPIC TAGS: silica gel, silicon dioxide, sorbent, ethyl silicate, silicon tetrachloride, impurity

ABSTRACT: Two methods, both based on the hydrolysis of ethyl silicate and silicon tetrachloride, have been developed at the Institute of Chemical Reagents and High-Purity Substances (IREA) for obtaining high-purity synthetic silicon dioxides having a variety of adsorption properties. These are: $Si(OC_2H_5)_4 + 4H_2O \rightarrow Si(OH)_4 + 4C_2H_5OH$ and $SiCl_4 + 4H_2O \rightarrow Si(OH)_4 + 4HCl$. The silica gels obtained from ethyl silicate showed strong water-repellent properties. A comparison of the capacity of heat treated samples to absorb benzene and water vapor showed that surface resistance to water is a function of surface dehydration. Silica

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ACC NR: AP6034916

gels obtained by either method are characterized by a purity of not less than $2 \cdot 10^{-6}$% and may be used for the absorption of microimpurities in processing leading to a high degree of purification. [SP]

SUB CODE: 07/SUBM DATE: none/ORIG REF: 012/OTH REF: 002/

Card 2/2

ZEL'VENSKIY, Ya.D.; YEFREMOV, A.A.; AFANAS'YEV, O.P.

Adsorption purification of trichlorosilane for the removal of phosphorus impurities. Zhur. prikl. khim. 38 no.5:987-992 My '65. (MIRA 18:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.

YEFREMOV, A.D. (Ul'yanovsk).

"Astronomy textbook for grade 10 of secondary schools" by B.A. Vorontsov-Vel'iaminov. Reviewed by A.D. Efremov. Fiz. v shkole 18 no.2:86-87 Mr-Ap '58. (MIRA 11:2)

(Astronomy--Textbooks)
(Vorontsov-Vel'iaminov, B.A.)

22(1) SOV/3-59-4-9/42

AUTHOR: Yefremov, A.F., Professor

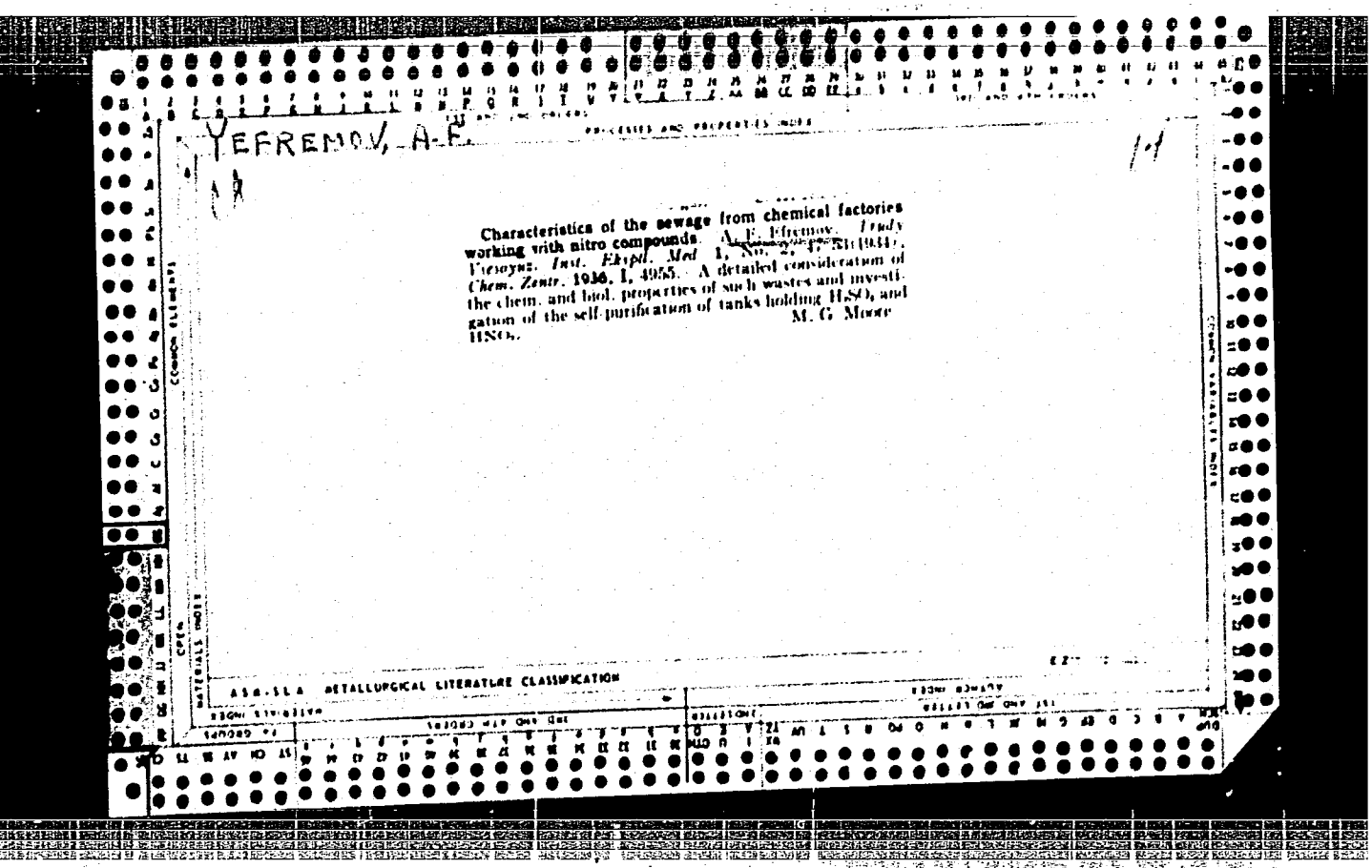
TITLE: The School is Waiting for an All-Round Educated Teacher

PERIODICAL: Vestnik vysshey shkoly, 1959, Nr 4, pp 31-33 (USSR)

ABSTRACT: In connection with the alteration of the vuz curricula and programs taking place at present, the author examines the problem of teaching the history of the Russian literary language in pedagogical institutes. He points out that contrary to the demands contained in the school program, it is suggested in the pedagogical institute programs that the students study the language of ancient Russian literature during their practical training. The author cites the works of Russian literature which the students should use in studying the history of the Russian literary language. There are 2 Soviet references.

ASSOCIATION: Saratovskiy pedagogicheskiy institut (Saratov Pedagogical Institute)

Card 1/1


YEFREMOV, A.F.

Characteristics of the sewage from chemical factories working with nitro compounds. A. F. Efremov. *Trudy Yaroslav. Inst. Eksptl. Med.* 1, [illegible] (1941); *Chem. Zentr.* 1936, I, 4955. A detailed consideration of the chem. and biol. properties of such wastes and investigation of the self-purification of tanks holding H_2SO_4 and HNO_3.

M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

YEFREMOV, A. F.

Dispensaries

Observation on dispensary services available to workers in leading professions at the Molotov Gor'kii Automobile Factory. Sov. zdrav. 11 no. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, September 1952. UNCLASSIFIED.

1. YEFREMOV, A. F.

2. USSR (600)

4. Industrial Hygiene

7. Results of the struggle to lower the incidence of diseases at the Gorkiy V. M. Molotov Automogile Plant. Sov. zdrav. 11 no. 5, 1952

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

MESHCHANIKOV, B.N.; STRAKHOV, K.I.; LEVIN, Ya.Ye.; BOS'KO, K.P.; KUZ'MIN, V.A. MELYANTSEV, V.F.; YEFREMOV, A.F.

New method of smelting and pouring oxidising alloys. Prom. energ. 12 no.3:25 Mr '57. (MLRA 10:6)
(Alloys) (Smelting)

YEFREMOV, A. G.

Heating from Central Station

Control of the operation of a heating system. Elek. sta. 23 no. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, April 1952. UNCLASSIFIED.

SHAKHMATOV, S.S., gornyy inzh.; USACHEV, P.A., gornyy inzh.; YEFREMOV, A.G., gornyy inzh.; ZELENOV, P.I., gornyy inzh.; BERDICHEVSKIY, N.I., gornyy inzh.

Using flotation and settling for dressing nonmagnetic ores. Gor. zhur. no.7:60-62 Jl '64. (MIRA 17:10)

1. Kol'skiy filial AN SSSR (for Shakhmatov, Usachev, Yefremov). 2. Olenegorskiy gornoobogatitel'nyy kombinat (for Zelenov, Berdichevskiy).

BATIN, O.V.; TUZINSKIY, A.G.; YEFREMOV, A.G.; SAVCHENKO, I.V.

Drawing 100,753 tons of anthracite in one month from plow-mined longwalls. Ugol' 40 no.6:12-15 Je '65. (MIRA 18:7)

1. Shakhta "Yuzhnaya" No.1 tresta Shakhtantratsit kombinata Rostovugol'.

YEFREMOV, A.I.

The TKM-1 hold bucket loader. Biul.tekh.-ekon.inform. no.6:67-68 '61. (MIRA 14:6)
(Loading and unloading--Equipment and supplies)

YEFREMOV, A.I.

The BMT-3 small bilge bulldozer. Biul.tekh.-ekon.inform. no.5:71-72 '61. (MIRA 14:6)
(Bulldozers)

YEFREMOV, A.I.

The MVSh-1 and MVS-3 car-unloading machines. Biul. tekh.-ekon. inform. no. 2:67-69 '61. (MIRA 14:2).
(Railroads—Freight)

YEFREMOV, A.I. (Petropavlovsk-Kamchatskiy)

On the problem of photodermatitis caused by Heracleum dulce.
Vest.derm.i ven. 35 no.4:64-66 Ap '61. (MIRA 14:5)
(SKIN--DISEASES)

YEFREMOV, A.I.

TOROPOV, N.A.; KONOVALOV, P.F.; YEFREMOV, A.I.; ANAN'YEVA, G.V.

Use of the high-temperature X-ray ionization method for studying processes that take place in alumina production. TSvet.met. 27 no.2:37-42 Mr-Ap '54. (MIRA 10:10)

1. Giprotsement.

(Alumina) (X rays)

YEFREMOV, A. I.

USSR /Chemical Technology. Chemical Products and Their Application I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31638

Author : Konovalov P. F., Yefremov A. I.

Title : Use of Rapid Ionizational Roentgenostructural Analysis in the Studies of Cements

Orig Pub: Tr. Soveshchaniya po khimii tsementa. M., Promstroyizdat, 1956, 106-113

Abstract: Description of an accelerated ionizational roentgenographic method for the investigation of kinetics of formation of silicates under the influence of high temperatures. Results are given of studies of the transformations of kaolinite and alumina at different temperatures and different duration of heating.

Card 1/1

YEFREMOV A.I.

USSR/ Laboratory Equipment. Apparatuses, Their Theory, Construction and Application. I

Abs Jour: Referat. Zhur.-Khimiya, No. 8, 1957, 27324.

Author : P.F. Konovalov, A.I. Yefremov.

Title : Application of Fast Ionization X-Ray-Structural Analysis to Study of Crystalline Substances.

Orig Pub: Zavod. laboratoriya, 1956, 22, No. 7, 824 - 827.

Abstract: The installation with ionization recording (self-quenched counter tube) was constructed on the basis of the x-ray goniometer. The recording of ionization curves is carried out on oscillographic photographic paper 120 mm wide with a mirror galvanometer. Several ionization curves and the voltampere characteristic of the counter are shown.

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24(2,4) PHASE I BOOK EXPLOITATION SOV/3149

Konovalov, P. F., A. I. Yefremov, and B. V. Volkonskiy

Ionizatsionnaya rentgenostrukturnaya ustanovka dlya issledovaniya kristallicheskikh veshchestv pri razlichnykh temperaturakh (Ionization X-ray Apparatus for Study of Crystalline Substances at Various Temperatures) Leningrad, 1958. 133 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: Nauchno-tekhnicheskoye obshchestvo promyshlennosti stroitel'nykh materialov, Leningradskoye oblastnoye pravleniye.

Ed. (Title page): N. A. Toropov, Member of the Academy of Building and Architecture, USSR, Professor, Doctor of Technical Sciences; Ed. (Inside book): V. I. Sadkov.

PURPOSE: This book is intended for physicists and engineers in industry, civil engineers, physical metallurgists, researchers in scientific research institutes and persons affiliated with higher educational institutions who are interested in the construction, application and operation of ionization x-ray units

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for studying the composition and structure of building materials, metals and other substances.

COVERAGE: The book gives a detailed description of the development and operation of an ionization x-ray unit by members of the laboratory for physical chemistry and petrography at Giprotsement and present some practical methods for its utilization. The second part of the book reviews a number of investigations which demonstrate the superiority of this method in the analysis of polycrystalline substances and building materials, and in studies of polymorphic transformation processes, clinker formation, and the hydration processes of cements, clinker metals and other materials. Many of the figures are reproductions of ionization roentgenograms of hydration and dehydration products of metallic salts. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Ionization X-ray Apparatus (Cont.) SOV/3149

AVAILABLE: Library of Congress (QD 945.K67)

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YEFREMOV, A. I. and P. F. KONOVALOV

"Use of Ionizing X-ray Structure Analysis in the Study of Certain Physicochemical Processes" p. 146

~~"Synthesis and Structure of Hydrosilicates containing Simple and Complex Heavy Metal Cations." p. 38~~

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems.

SOV/58-59-7-15386

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 112 (USSR)

AUTHORS: Konovalov, P.F., Yefremov, A.I.

TITLE: Application of Ionization X-Ray Diffraction Analysis to the Study of Some Physico-Chemical Processes

PERIODICAL: Tr. 5-go Soveshchaniya po eksperim. i tekhn. mineralogii i petrogr., 1956, Moscow, AS USSR, 1958, pp 146 - 158

ABSTRACT: The authors describe the design of an ionization X-ray diffraction device. Studies were carried out in the region of polymorphic transitions for γ-$2CaO \cdot SiO_2$, alumina, and aluminum hydroxide. The authors point cut the advantages of the ionization method of registration as compared with the usual photographic method. It makes it possible to study rapidly proceeding processes, as well as high-temperature reactions. (Vses. n.-i. i proyektnyy in-t tsementnoy promyshlennosti, Leningrad, USSR).

Card 1/1

YEFREMOV, A.I.

PHASE I BOOK EXPLOITATION SOV/3559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 425 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Ageyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.M. Pavlov, and I.F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and W on the heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

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SOV/32-25-3-37/62

25(2)
AUTHORS: Marineta, T. K., Yefremov, A. I.

TITLE: Apparatus for the Recording of the Flexure of a Bracket-sample in Testing the Fatigue-resistance (Pribor dlya registratsii progiba konsol'nogo obraztsa pri ispytanii na ustalostnuyu prochnost')

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 3, pp 353-355 (USSR)

ABSTRACT: In a previous paper it was shown that in fatigue-tests in all stages of cyclic disruption-tests a control of the stage of the test is possible by plotting the curve of variations in flexure. In the laboratory of metallography of the institute mentioned in the Association a device was constructed which facilitates an automatic plotting of the curves showing the variation in the flexure of the bracket-samples in tests of the fatigue resistance. The device is equipped with a differential induction element, a measuring arrangement and an electric arrangement for charging the element and the measuring device (Figs 1,2). The flexure of the sample is transformed into an electric quantity by means of the induction element and measured with an electronic automation-recorder-potentiometer EPP-06 or

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Apparatus for the Recording of the Flexure of a Bracket-sample in Testing the Fatigue-resistance

a millivoltmeter MSShchPr-054. The current-charge of the element and the potentiometer is carried out over a ferro-resonant voltage stabilizer ST-200. In the case under investigation the fatigue-tests are carried out on a bracket-machine VU-8 of the Veler-type. In order to secure an increased accuracy and sensitivity and a reduced vibration the load scheme has been changed (Fig 2). A diagram obtained on a copper sample M 2 at a stress of 13.6 kg/mm^2 is mentioned as example (Fig 3). There are 3 figures and 4 Soviet references.

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. M. I. Kalinina (Leningrad Polytechnic Institute imeni M. I. Kalinin)

PHASE I BOOK EXPLOITATION SOV/4375

Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova

Ustalost' metallov; materialy soveshchaniya po ustalosti metallov 22-24 sentyabrya 1958 g. (Fatigue of Metals; Materials of the Conference on Fatigue of Metals, September 22-24, 1958) Moscow, 1960. 157 p. 3,500 copies printed.

Resp. Ed.: I.A. Oding, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: A.M. Chernov; Tech. Ed.: L.N. Dorokhina.

PURPOSE: This collection of articles is intended for mechanical engineers, metallurgists, and scientific research workers.

COVERAGE: The collection contains discussions relating to fatigue failure of metals, fatigue in finished parts, and methods for testing endurance. Included are a critical review of existing theories on metal fatigue, some data on physical regularity patterns, and features of steel failure caused by fatigue. Possibilities for applying a new criterion to the notch sensitivity of metals and high-strength steels are investigated. The mechanism of failure due to corrosion fatigue of metals is discussed along with pertinent experimental data. Also presented are the results of testing the fatigue strength of such metal parts as large-size plates and various parts of machines used in the petroleum industry. Problems involved in testing metals for fatigue are examined. No personalities are mentioned. Each article is accompanied by bibliographic references, most of which are Soviet.

AVAILABLE: Library of Congress (TA460.A377)

Card 4/4

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11-9-60

YEFREMOV, A.I.

S/137/62/000/012/054/085
A006/A101

AUTHORS: Lebedev, T. A., Marinets, T. K., Yefremov, A. I.

TITLE: Investigating cyclic strength of metals by the method of recording fatigue diagrams

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1962, 104, abstract 12I638 (In collection: "Tsiklich. prochnost' metallov", Moscow, AN SSSR, 1962, 141 - 146)

TEXT: The authors investigated the cyclic strength of metals by recording fatigue diagrams. The investigations were made with specimens of annealed red copper (M2) (σ_{-1} 8.9 kg/mm^2), technically pure Fe (σ_{-1} 21 kg/mm^2) and Ti alloy, containing 2.5% Al (σ_{-1} 34 kg/mm^2). In the fatigue tests a device was used for recording the deflection of a bracket specimen; it was thus possible to record automatically the curves of varying deflections of the specimen in the fatigue process, directly during the test. These tests revealed some peculiarities in the behavior of the materials investigated during the process of their cyclic loading. Fatigue diagrams illustrate the development of cracks during

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S/137/62/000/012/054/085
A006/A101

Investigating cyclic strength of...

the second stage of cyclic loading. They show that the fatigue crack develops initially very slowly and only at the end of the second stage its development is considerably accelerated. The speed of the crack propagation depends mainly upon the magnitude of alternating loading. The data obtained are in a satisfactory agreement with the curves showing the growth of the fatigue crack, obtained by A. Forest on annealed steel specimens. The authors recommend the use of the proposed method for investigating the fatigue strength of metals for a large-scale material range. There are 8 references.

Z. Fridman

[Abstracter's note: Complete translation]

Card 2/2

YEFREMOV, A.I. (Petropavlovsk-Kamchatskiy)

Bicillin-3 therapy of acute uncomplicated gonorrhea in males.
Vest. derm. i ven. no.2:58-60 '64.

(MIRA 17:11)

YEFREMOV, A.I.

4803* Ionization X-Ray Analysis for the Investigation of Cements. **Ionizatsionnyi rentgenovskii analiz dlia issledovaniia tsementov.** (Russian) N. A. Toropov, P. F. Konovalov, A. I. Efremov, and G. V. Anan'eva. *Tsement* v. 20 no. 3 May-June 1954, p. 17-20

Equipment and methods for study of clinker formation. Diagram, photograph, X-ray recordings.

YEFREMOV, A.I.; TYUTIKOV, A.M.

Recording X-ray vacuum spectrograph (for the 20--300 A range).
Izv.AN SSSR.Ser.fiz.20 no.7:794-797 Jl '56. (MLRA 9:11)
(Spectrograph) (X-ray spectroscopy)

YEFREMOV, A.I.

AUTHOR MANDEL'SHTAM, S.L., YEFREMOV, A.I. 53-1b-11/18

TITLE Investigations of the Short-Wave Ultraviolet Radiation of the Sun (Issledovaniya korotkovolnovogo ul'travioletogo izlucheniya solntsa. Russian)

PERIODICAL Uspekhi Fiz. Nauk, 1957, Vol 63, Nr 1b, pp 163 - 180 (U.S.S.R.)

ABSTRACT The present paper gives a short report on recent results obtained by experimental and theoretical work on the short-wave radiation of the sun which were published since the first survey given of this topic (S.L. MANDELSHTAM, Uspekhi Fiz. Nauk, Vol 46, p 145 (1952)). The author further suggests that experiments be carried out by means of artificial earth satellites.

The radiation of the photosphere: The authors describe the paper by H. CLEARMAN, Astrophys. J. Vol 117, p 29 (1953) as the most important in this field. Above all the presence of various elements in the sun is discussed, something is also said on molecular bonds. According to the authors' opinion this paper by Clearman does not contain any essentially new results. Other papers (among them theoretical ones) are then discussed.

The radiation of the chromosphere was investigated by the spectral analysis of light by means of spectrographs. Photoelectric receivers with separation of a narrow spectral region were also used. By special systems

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Investigations of the Short-Wave Ultraviolet Radiation of the Sun

the optical axis of the spectrograph could be oriented to the sun, while the rocket covered the upper part of its orbit. In this manner the recorded spectrum could be farther advanced into the short-wave region. Various papers on this problem are discussed.

The radiation of the corona was investigated in earlier as well as in more recent works by means of photoelectric receivers, i.e. photon counters which separate narrow spectral regions by filters. The papers on this problem are discussed in short.

The variations of radiation and the experiments carried out by means of artificial earth satellites. The results given in the preceding articles indicate the existence of very considerable variations of intensity of the line L_α emitted by the chromosphere and of the roentgen region of the spectrum emitted by the corona. These variations are doubtlessly connected with physical processes taking place in the chromosphere and in the corona of the sun. These variations of the intensity of short-wave ultraviolet ionizing radiation of the sun cause considerable perturbations in the terrestrial atmosphere (disturbance of radio communication, magnetic storms etc.). The attempt was recently made to connect these variations with solar eruptions.

53-1b-11/18

Investigations of the Short-Wave Ultraviolet Radiation of the Sun

The international geophysical year just coincides with the 11 years' period of maximum solar activity, which is very favorable for the investigations of the variations of the intensity of short-wave solar radiation. Artificial earth satellites should be well suited for this purpose. Experiments planned in the USA are mentioned. In the U.S.S.R. the measurements of solar radiation will be begun in the roentgen region of the spectrum. The individual spectral regions will be separated by filters. The radiation currents will be measured by a single receiver. The block system of an apparatus for the recording of the roentgen region of the solar spectrum is illustrated by a drawing. Multipliers of beryllium bronze will be used as radiation receivers for secondary electrons. In front of the receiver are placed filters consisting of aluminum, beryllium, and polyethylene filters of various thicknesses. The calculated transmission curves of various filters are illustrated by a diagram and discussed. Every other two filters are changed in series. In the disk with the filters there are also normal holes through which the radiation directly impinges on to the photocathode. The signals (voltage pulses) coming from the receiver impinge on to a counting and recording radiotechnical system. At the output of this system continous voltages develop proportional to the counting speed of the pulses. The

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Yefremov, A.I.

AUTHORS: Tyutikov, A. M. , Yefremov, A. I. 20-222/60

TITLE: Secondary Electron Multipliers for Recording Long-Wave X-Ray Radiation (Vtorichno-elektronnyye umnozhiteli dlya registratsii dlinnovolnogo rentgenovskogo izlucheniya)

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 2, pp. 286 - 288 (USSR)

ABSTRACT: The application of the open type of a secondary electron multiplier (the multiplier is fastened in the vacuum-zone of the spectrometer without separating windows and the radiation directly falls upon the photo-cathode) as receiver prevents the absorption in the window, whereas all the other advantages of the photoelectric recording are kept up. At such a secondary electron multiplier to the usual requirements (high coefficient of amplification, low background, high performance rating, high stability of the current) is added also the claim for high stability of the parameter in case of application of the device in air. These requirements meet multipliers with diodes, which are made of alloys of a light component (Mg, Be,

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Secondary Electron Multipliers for Recording Long-Wave X-Ray Radiation

Al) with a heavy component (Cu, Ni). These alloys were activated by oxygen at a certain temperature. The authors worked out secondary electron multipliers of beryllium-bronze, which combine a high coefficient of amplification with a good usability in air. The method for producing multipliers is shortly described. Such electron multipliers with 16 cascades (including photo-cathode and collector), at a voltage of 3600 V, have a coefficient of amplification of 1.10^9 to $2,10^9$. The stability of the coefficient of amplification in case of long working in dry and also in moist air is illustrated by a diagram. The background is 5 to 10 impulses per minute. On occasion of working in a vacuum of 10^{-4} to 10^{-5} torr and in case of current of 10 microamperes, which emerges from the collector, the coefficient of amplification does not change remarkably during a duration of work of 1 to 2 hours. In case of daily operation the apparatus must become overhauled after 3 to 5 months. Such multipliers with a photocathode of nickel have been used successfully for recording the radiation in the reach of 10 to 2 000 Å. The effect of the secondary electron multiplier in the range of the long-wave X-ray radiation and of the remote ultraviolet radiation is at least a few

Secondary Electron Multipliers for Recording Long-Wave X-Ray Radiation

per cent. Thus, the secondary electron multiplier of beryllium-bronze with a photo cathode of platinum, gold, nickel is a device, which fits very well for investigation in the reach of the long-wave X-ray radiation and of the remote ultraviolet radiation. There are 4 figures, and 8 references, 3 of which are Slavic.

PRESENTED: July 22, 1957, by A. A. Lebedev, Academician

SUBMITTED: July 16, 1957

AVAILABLE: Library of Congress

33303
S/560/61/000/010/001/016
D299/D302

3.2430 (1482,2806)
17.2450

AUTHORS: Yefremov, A. I., Podomoshenskiy, A. L., Yefimov, O. N., and Lebedev, A. A.

TITLE: Study of short-wave radiation of the sun

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 3-11

TEXT: The apparatus was installed in the 2nd Soviet sputnik. Depending on the orientation of the space-ship, the various photon-counter units were switched on and off. The "zero" (i.e., the reading when the entrance window was covered by an aluminum film 1 mm thick) was basically determined by radiation penetrating the photon-counter unit through the gaps between the entrance window and the discs with filters. Owing to the little sensitivity of the apparatus to hard X-rays, no significant increase in the "zero"-level was observed in the polar regions. The effect

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Study of short-wave...

of charged-particle flow on the readings was accounted for by means of a special tungsten-plate in front of one of the entrance windows; this effect was found to be negligible. Sample-readings (taken on August 19, 1960) for a photon-counter with a BeO photo-cathode are shown in a figure; another figure shows the readings for a SrF_2 photo-cathode. Each figure has 3 parts indicating the readings for various positions of the disc with filters. The area and thickness of the Cu, Be, Al, $(CH)_n$ - filters are also indicated. The figures show the variations in the readings due to the rotation of the space-ship. A comparison of the curves corresponding to the SiO_2, LiF and CaF_2 -filters with those for Al, $(CH)_n$, Be and Cu -filters permitted ascertaining the X-ray level registered. The results of data processing led to the following conclusions: (1) The radiation in the 44 - 110 Å range ($(CH)_n$-filter) was constant to an accuracy of

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± 8%, corresponding to $1.5 \cdot 10^7$ counts $\cdot$ cm^{-2} $\cdot$ sec.$^{-1}$. (2) The radiation in the 8 - 21 Å range (Al-filter) was constant ($6.2 \cdot 10^4$ counts $\cdot$ cm^{-2} $\cdot$ sec.$^{-1}$) except for the time between 15 hr. 45 min. and 15 hr. 54 min., when it increased by a factor of 3.2, and also between 14 hr. 24 min. and 14 hr. 28 min., when it increased by 63%. (3) In the region below 8 Å (Be-filter), the radiation was very weak and often could not be distinguished from the background radiation of non-solar origin. (4) During increased solar activity, the radiation in the 5 - 10 Å range (Be-filter) increased elevenfold. (5) In the 1.4 - 3 Å range (Cu-filter), only background radiation of non-solar origin was recorded. In order to determine the energy flux from the recorded data, it was assumed that the spectral distribution of the radiation follows the law of black-body radiation (Planck's

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Law). A figure shows the dependence of output signals on sun temperature for a receiver with BeO-photocathode and Cu, Be, Al, and $(CH)_n$-filters. Another figure shows the spectral distribution of the short-wave radiation. It was found that the radiation fluctuations are constant for wavelengths shorter than 20 Å and in particular for those shorter than 10 Å. The temperature of the quiescent corona was found to be almost double the value obtained by American investigators (Ref. 3: H. Friedman, Trans. Intern Astr. Un., 10, 706, 1960, Cambridge Univ. Press.). The observed flare, too, corresponds to a higher temperature $6.5 \cdot 10^6$ °K as compared to $(4 \div 2) \cdot 10^6$ °K). There are 7 fi- and 3 references : 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Friedman, Trans. Intern. Astr. Un., 10, 706, 1960, Cambridge Univ. Press.

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9.6150 (also 1482)

AUTHORS: Yefremov, A. I., Podmoshenskiy, A. L., Ivanov, M. A., Nikiforov, V. N., and Yefimov, O. N.

TITLE: Filtering equipment for study of the short-wave radiation of the sun

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 48-54

TEXT: The method of investigation involves separation of the various spectral components of the short-wave radiation of the sun by a set of filters which successively pass in front of a detector. The most suitable detector for such purposes is a secondary-electron multiplier which operates under the conditions of cosmic-space vacuum. The main requirement towards the photocathode of the detector is a sharp decline in its photoemission in the near ultraviolet and visible regions of the spectrum. The most suitable material for such photocathodes is

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BeO and SrF_2. The spectral sensitivity of secondary-electron multipliers with such cathodes is shown in a figure. The filters are mounted on a disk which rotates in front of the detector. Each second, the disk makes 1/12 of a full turn, placing a different filter in front of the detector. Six positions of the disk are occupied by filters for soft X-rays and far-ultraviolet radiation; three have filters of crystalline quartz for the ultraviolet region with wavelength longer than 1500 Å, where the sun's radiation does not undergo fluctuations; the quartz filters can be used for correcting the readings of the apparatus related to the other filters; thereby, a β-source (radioactive C^{14}) is placed in front of the apparatus for calibrating its sensitivity. Two other positions serve for checking the zero of the apparatus. The above method of investigation has the following advantages over the Geiger-Müller counter method: (1) The filters can be chosen from a wide

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range of materials, as they are not part of the detector itself (as in the case of Geiger counters). (2) The radiation in the various spectral regions is measured by a single detector, and not by different ones (as with Geiger counters), which excludes errors due to variations in the sensitivity of the various detectors. (3) A wide spectral range (from X-ray to ultraviolet) can be covered (unlike Geiger counters). (4) The sensitivity to cosmic-ray and hard X-ray background is smaller. (5) The range of recorded counting-rates is at least a hundredfold that of Geiger counters. (6) Regular checking of the zero and of the sensitivity of the apparatus is possible. The apparatus consists of 2 main parts: the three optical units СФ-1, СФ-2, СФ-3, (SF-1, SF-2, SF-3), and the recording unit РТ (RT). Each of the SF-units incorporates 2 detectors and disks with filters, a relay mechanism for turning the disks, a preamplifier, and optical sensors for switching off the apparatus when it is on the dark side of the orbit. The SF-units are placed on the outside of the space-ship at various points. The presence of

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3 autonomously operating units, each having 2 detectors, permits increasing the total angle of vision of the apparatus. The RT-unit, placed inside the space-ship, incorporates 3 autonomous counting-rate meters (CRM) with a common output connected to the telemetering system; each CRM is linked to its SF-unit. The radiation is recorded by means of pulse counting. The pulses pass through the secondary-electron multiplier, the preamplifier, and the integrating circuit. For greater accuracy, the integrating circuit of each counting-rate meter operates over 3 ranges, corresponding to 0 - 500 counts per sec., 0 - 5000 counts per sec., and 0 - 50000 counts per sec. Each SF-unit is switched on autonomously by means of a special sensor. Particular care is taken to prevent switching-on by light reflected from the earth's surface. The overall power requirement of the apparatus is 12 watt. To ensure a normal heat balance, the SF-units on the outside of the space-ship have aluminum polish and colorless-oxidized casings. The equipment was tested and calibrated in the laboratory prior to being installed in

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the Sputnik. There are 10 figures and 8 references: 9 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Friedman, Trans. Intern. Astr. Un., 10, 706, 1960, Cambridge Univ. Press.

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D228/D307

3,2430

AUTHORS: Yefremov, A. I., Podmoshenskiy, A. L., Yefimov, O. N. and Lebedev, A. A.

TITLE: Investigating short-wave solar radiation

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 7, 1962, 8, abstract 7G53 (V sb. Iskusstv. sputniki Zemli, no. 10, M., AN SSSR, 1961, 4-11)

TEXT: The authors state the results of measuring the intensity of short-wave solar radiation through different filters by means of secondary-electron multipliers, working under pulse-counting conditions on the 2nd space satellite of 19 August 1960. Specimen records of readings are given. These were made on equipment with a BeO photocathode when the sun was quiet (14.15 hrs - 14.21 hrs; 17.18 hrs - 17.23 hrs; and 20.17 hrs - 20.25 hrs) and at the time of solar flares (15.45 hrs - 15.54 hrs) and also on equipment with a SrF_2 photocathode when the sun was quiet (17.18 hrs - 17.23 hrs). Signal variations are connected with the change in the orientation of in-

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struments relative to the sun. Zero instrumental readings, even in polar regions, corresponded to the normal working background during laboratory tests; the effect from charged particle flows constituted a negligible portion of the effect from short-wave solar radiation. There were, however, occasional splashes of radiation when the equipment was not aimed at the sun. It is supposed that roentgen radiation, induced by particles of an atmospheric radiation belt in the polar region, may be a possible cause of this phenomenon. Comparison of the recordings for SiO_2, LiF and CaF_2 filters with those for Al, $(CH)_n$, Be and Cu filters showed that roentgen radiation is registered through Al and $(CH)_n$ filters but not through a Cu filter (1.4 - 3 Å). The Be filter recording level increased distinctly at the time of solar flares, but it was negligible in quiet periods. The following conclusions are drawn on the basis of the processing of the measurement results. The radiation flow in the region 44 - 110 Å ($(CH)_n$-filter) was constant with a precision of $\pm$ 8% and corresponded to 1.5×10^7 pulses$\cdot cm^{-2} \cdot sec^{-1}$.

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