VYSOTSKIY, Yu.L. (g.Chelyabinsk)

Train and locomotive traffic control in the operation of lengthened hauling distances. Zhel.dor.transp. 43 no.4:38-41 Ap '61. (MIRA 14:3)

(Railroads—Management)

VYSOTSKIY, Yu.L., inzh.

Establishing operative norms for train movements under the conditions of considerable fluctuations in the traffic volume. Trudy NIIZHT no.25:165-173 '61. (MIRA 16:11)

FILIPPOV, M.P.; VYSOTSKIY, Yu.L.

Cuvette for luminescent analysis at low temperatures. Zav. lab. 29 no.9:1147-1148 '63. (MIRA 17:1)

1. Lisichanskiy filial Gosudarstvennogo instituta azotnoy promyshlennosti.

VYSOTSKIY, Yu.L. (g. Chelyabinsk).

Operational planning of train work with the new types of traction. Zhel. dor. transp. 40 no.12:72-73 D '58. (MIRA 12:3)

1.Starshiy dispatcher otdela ekspluatatsii Chelyabinskogo otdeleniya. (Railroads--Management)

BODYAKO, M.M. [Badziaka, M.M.]; VYSOTSKIY, Yu.M. [Vysotski, IU.M.]

Problem of temperature control in induction heating. Vestsi AN BSSR.Ser.fiz.-tekh.nav. no.4:52-56 '58. (MIRA 12:4)
(Temperature regulators) (Induction heating)

USSR/Chemistry - Adsorption, Alumina-. Jan 53
Silica Gel

"The Effect of the Conditions of Preparation of Alumina-Silica Gel on Its Structure and Sorption Properties," I. Ye. Neymark, Z. Z. Vysotskiy, Inst of Phys Chem imeni L. V. Pisarzhevs'kiy, Acad Sci Ukrainian SSR

"Dopovidi Ak Nauk Ukrains'koi RSR" No 1, pp 17-20

The effect of conditions of preparation of alumina silica gel on its structure, composition, and sorption properties was studied. Results indicate that the pore structure and sorption properties differ from

245116

that of the starting material. In an acid medium, small additions of $Al(OH)_3$ to silicic acid sol lead to the formation of an alumina-silica gel with finer pores and greater specific surface than that of the original gel. In neutral and alkaline media, the silica gels are coarser than the control sample of alumina gel. It was demonstrated that the rules for the formation of the pore structures previously established for silica gel could be extended to mixed hydrophylic sorbents of the alumina-silica gel type if the characteristics due to the second component are taken into account. Presented by A. I. Brodskiy, Acting Mem, Acad Sci Ukrainian SSR.

245116

VYSOTS'KYY, Z.Z.; NEYMARK, I.Ye.; BRODS'KYY, O.I., diysnyy chlen.

Applicability of the mechanism forming the porous structure of hydrophilic gells of mixed sorbents. Dop.AN URSR no.5:333-336 '53. (MLRA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR (for Brods'kyy). 2. Instytut fizychnoyi khimiyi im. L.V.Pysarzhevs'koho Akademiyi nauk Ukrayins'koyi RSR (for Vysotskyy and Neymark).
(Sorbents)

VYSOTSKIY, Z. Z.

USSR/Chemistry - Adsorption 11 Sep 53

"The Influence of the Hydrophobic Component of Mixed Adsorbents on the Formation Mechanism of Their Porous Structure," Z. Z. Vysotskiy and I. Ye. Neymark, Inst of Phys Chem im L. V. Pisarzhevshiy, Acad Sci Ukr SSR.

DAN SSSR, Vol 92, No 2, pp 347-350 .

During the formation of adsorbents prepd from carbon and silica gel, there is an increase in the apparent density of the silica gel as the amount of carbon is increased. This is due to penetration of silicic acid into the carbon. After passing a

269T19

max, the apparent density (corresponding to an increase of porosity) drops sharply as the amount of carbon is increased. This drop is due to the hydrophobic action of the carbon which prevents contraction of the SiO_2 in dehydration. Presented by Acad M. M. Dubinin 23 Jun 53.

VYSOTSKIY, Z.Z.; NEYMARK, I.Ye.; DUBININ, M.M., akademik.

Effect of the hydrophobic component of mixed sorbents, on the mechanism of formation of their porous structure. Dokl.AN SSSR 92 no.2:357-359 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Dubinin). 2. Institut fizicheskoy khimii im. K.V.Pisarzhevskogo Akademii nauk Ukrainskoy SSR (for Vysotskiy and Neymark). (Sorbents)

VYSOTSKIY, Z.Z.; NEYMARK, I.Ye.

Structure and sorptive properties of mixed sorbents -- aluminosilica gels. Ukr.khim.zhur. 20 no.5:513-522 '54. (MLRA 8:1)

1. Institut fizicheskoy khimii im. L.V.Pisarzhevskogo Akademii nauk USSR.
(Sorbents) (Silica)

Vysotskiy, Z. Z.

USSR/Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry. Catalysis, B-9

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 450

Author: Vysotskiy, Z. Z., and Polyakov, M. V.

Institution: None

Title: On the Effect of Small Additions of Nitric Oxides on the Oxidation of Metnane in the Presence of a Platinum Catalyst

Original Periodical: Ukr. khim. zh., 1956, Vol 22, No 2, 180-185

Abstract: The oxidation of CH_4 by air in the presence of nitric oxides at 550° was studied with the aid of a differential thermocouple in a cylindrical reaction vessel coated with Pt; the reaction mixture contained 15% CH_4. A preliminary flushing of the reactor with a mixture of nitric oxides and air increases the initial temperature rise (ΔT_{max}) and reduces the time required to attain it. At total pressures of 0-400 mm Hg, ΔT_{max} is proportional to the percent of nitric oxides present in the mixture (0.13-0.68%). When the pressure increases

Card 1/2

USSR/Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry. Catalysis, B-9

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 450

Abstract: above 400 mm Hg, the ΔT_{max} begins to fall off at 0.68% nitric oxide content in the mixture. At these pressures the ΔT_{max} begins to decrease in the presence of nitric oxide. The authors are of the opinion that the nitric oxides, when present in small quantities, accelerate the homogeneous oxidation of the CH_4 by taking part in the primary heterogeneous step in which the chains are initiated at the Pt surface.

Card 2/2

VYSOTSKIY Z.Z.

USSR/Surface Phenomena. Adsorption. Chromatography. Ion Interchange B-13

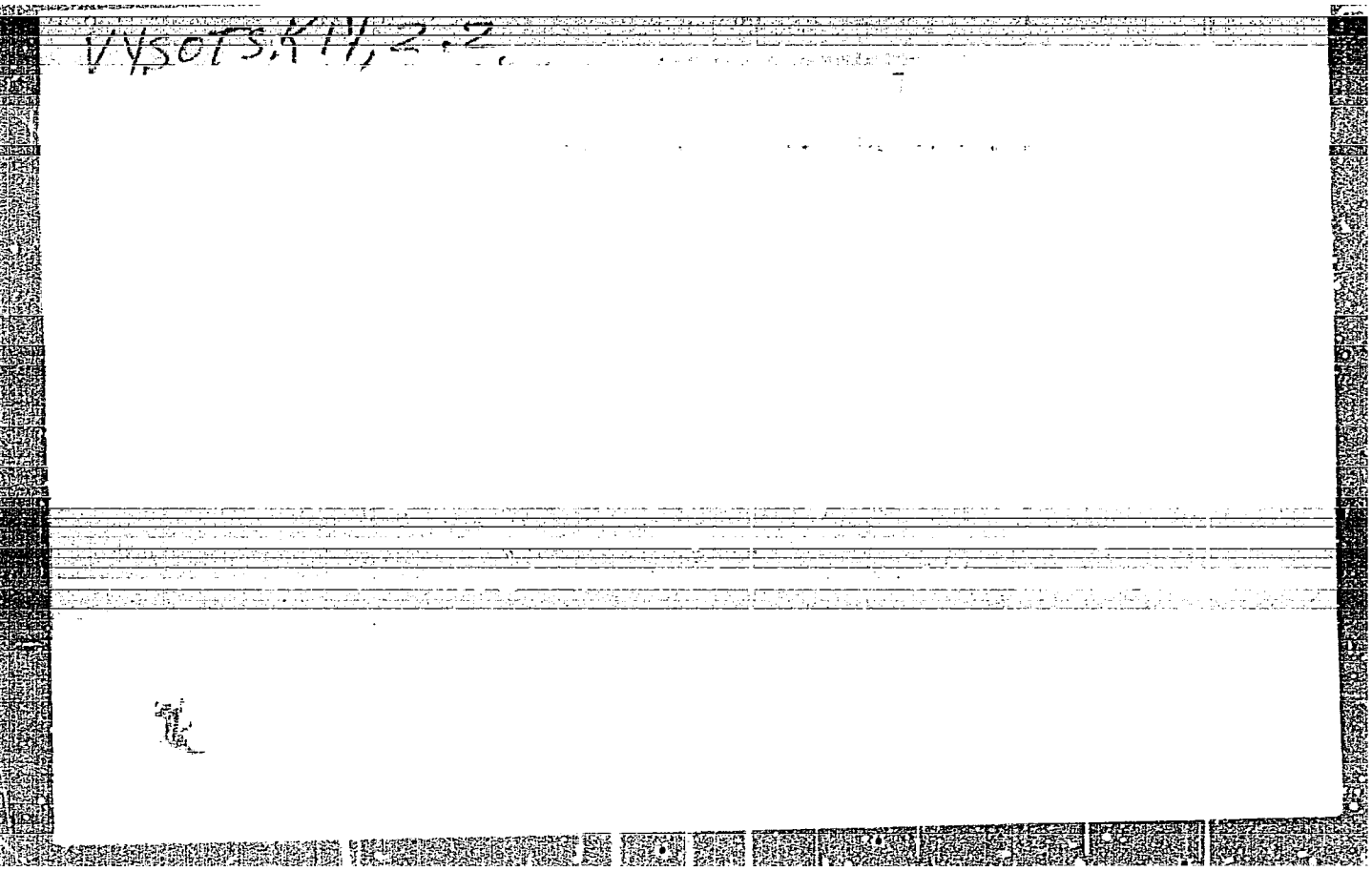
Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26364

Author : Z.Z. Vysotskiy, I.Ye. Neymark
Title : Special Case of Porous Structure of Mixed Sorbents in Sorption Region

Orig Pub : Ukr. khim, zh., 1956, 22, No 4, 485-488

Abstract : The isotherms of sorption of C_6H_6 and H_2) vapors at 20° on coal (C) and silica gel (SG), and on carbon-silica gels (CSG) prepared on their basis were recorded by the method of quartz spring balance. The isotherms of C_6H_6 sorption on CSG differ sharply from isotherms on C and SG, especially by the presence of a vertical rise near $p / p_s = 1$. It is shown that this isotherm section is indicating the presence of macropores in CSG, in which capillary condensation of C_6H_6 takes place. The H_2O isotherms are also different on CSG-s and their components. The conclusions arrived at earlier (RZhKhim, 1954, 25053) regarding the part of C in the formation mechanism of the porous structure of CSG were confirmed.

Card : 1/1



BALANDINA, V.A. [translator]; VYSOTSKIY, Z.Z. [translator]; BALANDIN, A.A., akademik, redaktor; RUBINSHTEYN, A.M., professor, redaktor; OGAND-ZHANOVA, N.A., redaktor; BELEVA, M.A., tekhnicheskiy redaktor

[Advances in catalysis and related subjects. Translated from the English] Kataliz, issledovanie gomogennykh protsessov. Perevod s angliiskogo V.A.Balandinoi i Z.Z.Vysotskogo. Pod red. A.A Balandina, A.M.Rubinshteina. Moskva, Izd-vo inostr.lit-ry, 1957. 252 p. (MLRA 10:9)
(Catalysis)

VYSOTSKIY, Z.Z. [Vysots'kiy, Z.Z.]; POLYAKOV, M.V.

Peculiarities of the oxidation of methane in the methane - air mixture near its upper explosion limit [with summary in English]. Dop. AN URSR no.3:284-288 '58. (MIRA 11:5)

1.Institut fizichnoi khimii im. L.V. Pisarzhevskogo AN URSR. Predstavleno akademikom AN USSR A.I. Brodskim [O.I. Brods'kyy].
(Methane) (Oxidation)

VYSOTSKIY, Z.Z.

AUTHORS: Vysotskiy, Z.Z., and Shalya, V.V. 69-20-1-4/20

TITLE: The Heats of Hydration of Some Cations and the Effect of Their Adsorption on the Structure of Silica Gels (Teploty gidratatsii nekotorykh kationov i vliyaniye adsorbtsii poslednikh na strukturu silikagelya)

PERIODICAL: Kolloidnyy Zhurnal, 1959, Vol. XX, # 1, pp 29-33 (USSR)

ABSTRACT: The washing of silica gels, by solutions of various electrolytes, causes differences in the porous structure of the product. The principal cause is the pH of the medium, which influences the character of the ion exchange. In the article, the influence of the nature of some cations adsorbed by the hydrogel of silicic acid on the structure of the dry silica gel is investigated. The structural adsorption characteristics of the silica gels were determined by measuring the adsorption isotherms of methyl alcohol vapors, at 25°C, in a vacuum device with a quartz spring scale. Fig. 1 shows that the silica gel has a fine porous structure when the washing medium is strongly acid (pH 3.5). If the medium is weakly acid, neutral or alkaline, i.e. when a cation

Card 1/3

The Heats of Hydration of Some Cations and the Effect of Their Adsorption on the Structure of Silica Gels

exchange is possible during formation and drying of the gel and the cations of the metal substitute H^+ on the surface of the micelles of the silicic acid, the structure of the dry silica gels gains a coarser porosity. It is established, that between the heat of hydration of the investigated cations and their influence on the porous structure of dry silica gels (especially on the radius of the pores and the specific surface area), a direct connection exists. The lower the hydration heat in the scale $H^+ > Ca^{2+} > Na^+ > K^+$, the coarser the porosity of the silica gel, the lower its surface. It has been suggested that the degree of wettability of the silicic acid hydrogel framework has an important effect on the porous structure of the silica gels.

There is 1 figure, 2 tables, and 18 references, 14 of which are Soviet, 3 English, and 1 German.

69-20-1-4/20

The Heats of Hydration of Some Cations and the Effect of Their Adsorption on the Structure of Silica Gels

ASSOCIATION: Institut fizicheskoy khimii AN UkrSSR imeni L.V. Pisarzhevskogo, Kiyev (Institute of Physical Chemistry of the Ukrainian AS imeni L.V. Pisarzhevskiy, Kiyev)

SUBMITTED: July 6, 1956

AVAILABLE: Library of Congress

Card 3/3

VYSOTSKIY, Z.Z.; POLYAKOV, M.V.

Study of methane oxidation. Ukr. khim. zhur. 24 no.1:46-54 '58. (MIRA 11:4)

1. Institut fizicheskoy khimii im. L.V. Pisarzhevskogo AN USSR.
(Oxidation) (Methane)

AUTHORS: Vysotskiy, Z.Z. and Shalya, V.V.

SOV/80-59-1-5/44

TITLE: Properties of Silica Gels Obtained by Drying Gels of Silicic Acid in Vacuum (Svoystva silikageley, poluchennykh s obkoy geley kremnevoy kisloty v vakuume)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Nr 1, pp 35-39 (USSR)

ABSTRACT: The authors describe the results of a comparative investigation of silica gels obtained from the hydrogels, alcogel and benzogels of the silicic acid. A method of drying the gels of the silicic acid in vacuum at a lowered temperature was developed in the course of this investigation, and it is also described in the article. The properties of silica gels obtained under various conditions are as follows: 1. The dehydration of hydrogels of the silicic acid yields fine-porous silica gels with the uniform porous structure. The structure of benzogels almost does not depend on the method of drying but essentially depends upon the conditions of water substitution by the benzene; 2. The substitution of the water of a hydrogel by the ethyl alcohol at room temperature almost does not change the porous structure of the dry gel; the substitution of water by the benzene, however, leads to a change in the structure; 3. The surface tension of the intermicellar liquid does not generally play any important role in the formation of the porous structure of the silica gels. Physico-chemical

Card 1/2

Properties of Silica Gels Obtained by Drying Gels of Silicic Acid in Vacuum

processes proceeding on the surface of the micellar skeleton of the silica acid gels are, apparently, of the primary importance for the porous structure of the silica gels. There are 2 graphs, 1 diagram, 1 table and 4 Soviet references.

SUBMITTED: December 28, 1956

5(4) SOV/21-59-1-18/26

AUTHORS: Polyakov, M.V., Vysotskiy, Z.Z., Shalya, V.V. and Gushchin, P.P.

TITLE: On the Existence of a Heterogeneous-Homogeneous Mechanism in Fluid Catalysis Conditions (K voprosu o nalichii geterogenno-gomogennogo mekhanizma v usloviyakh flyuidnogo kataliza)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1959, Nr 1, pp 67-71 (USSR)

ABSTRACT: The method of fluid catalysis is used (on the example of the reaction of conversion of methanol into formaldehyde in the presence of a copper-pumice catalyst) to clear up the macromechanism of gas reactions in conditions as close as possible to the conditions of the usual industrial catalytic processes. The results in the whole, and the analysis thereof, lead to the conclusion that the studied catalytic process in the

Card 1/2

On the Existence of a Heterogeneous-Homogeneous Mechanism in Fluid Catalysis Conditions.

boiling contact layer is a complex heterogeneous-homogenous reaction with homogeneous stages proceeding not only beyond the fluid catalyst's layer, but inside the catalyst's layer, between its grains, as well. The observed facts do not fit into the picture of a purely heterogeneous catalytic process. There are 4 graphs and 8 references, 6 of which are Soviet, 1 Italian and 1 English.

ASSOCIATION: Institut fizicheskoy khimii im. L.V. Pisarzhevskogo, AN UkrSSR (Institute of Physical Chemistry imeni L.V. Pisarzhevskiy of the AS UkrSSR).

PRESENTED: July 28, 1958, by A.I. Brodskiy, Member of the ASUkrSSR

5.1190,5.3300

75676
SOV/80-32-10-25/51

AUTHORS: Polyakov, M. V., Shalya, V. V., Vysotskiy, Z. Z.

TITLE: Investigation of the Catalytic Conversion of Methanol Into Formaldehyde in Fluidized Bed

PERIDOCIAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2275-2283 (USSR)

ABSTRACT: Copper catalyst suspended in gaseous stream was used in the subject study which was conducted in a wide range of methanol vapor to air ratio, including the explosive range. Pumice and quartz were used as catalyst carriers; the optimum amount of catalyst was 24. mg copper to 1 cm^3 of carrier. The temperature corresponding to the maximum yield of formaldehyde was lower than in catalysis over stationary catalyst layer (540-580° against 700-750°). The content of methanol vapor in the gaseous mixture corresponding to the maximum yield of formaldehyde was 30%. In the range of explosive mixtures, the yield of formaldehyde dropped

Card 1/5

sharply, and the yield of CO_2, H_2, and CO increased. As the methanol content approached the lower limit of explosive mixtures (7% methanol), the yield of formaldehyde increased again. In the range of 9 to 20% methanol content, a flame appeared in some instances over the fluidized catalyst bed; sometimes a quick flash or explosion occurred. When a catalyst of lower activity was used, the formaldehyde yield dropped sharply when the temperature reached 540-550°, and a flame appeared over the fluidized bed. The appearance of this flame showed the presence of a homogeneous reaction within the composite heterogeno-homogeneous catalytic process. This homogeneous reaction originated on the surface of the catalyst; under different conditions, when the walls of the reaction vessel over the fluidized bed are overheated, such reactions can also originate as wall reactions. The presence of homogeneous reactions between the catalyst granules was confirmed by empirical data, as discussed below.

Investigation of the Catalytic Conversion of Methanol Into Formaldehyde in Fluidized Bed

75676
SOV/80-32-10-25/51

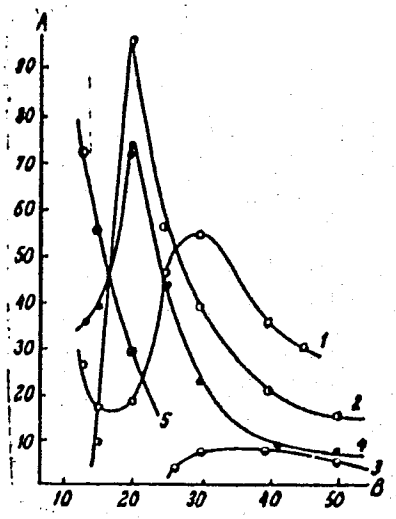


Fig. 3. Yield of products in relation to CH_3OH content in the mixture at 520°; (A) yield (in %) of HCHO (1), H_2 (2), CO (3), CO_2 (4), O_2 (5); (B) content of CH_3OH (in %).

Card 3/5

Investigation of the Catalytic Conversion of Methanol Into Formaldehyde in Fluidized Bed

75676
SOV/80-32-10-25/51

The gradual change of the curves expressing the yield of the products in relation to temperature up to the moment of the appearance of the flame, indicated that the flame constituted a growth of primary homogeneous stages in the space between the catalyst granules. The yield of formaldehyde was lower in stationary than in fluidized catalyst, other conditions being equal; this was explainable by the decrease of the gaps between the catalyst grains in the stationary state which reduced the chances of homogeneous reactions taking place in these gaps. Further, the decrease of the yield of formaldehyde, H_2, and the decrease of the total rate of conversion with the decreasing flow velocity of the gas mixture could be explained only by the contraction of the gaps between the catalyst grains. Porous (with pumice carrier) and nonporous (with quartz carrier) catalysts gave identical yields; this showed that only the outside catalyst layer participated in the catalysis, and this is an additional, indirect argument in favor

Card 4/5

Investigation of the Catalytic Conversion of Methanol Into Formaldehyde in Fluidized Bed

75676
SOV/80-32-10-25/51

of the heterogeno-homogeneous mechanism of the catalytic process. The yield of formaldehyde was from 70 to 74% calculated on methanol; this was considerably higher than the yield over stationary catalyst layer; the above study is, therefore, of practical interest. There are 7 figures; 1 table; and 14 references, 2 U.S., 1 Belgian, 1 British, 10 Soviet. The U.S. references are: Nader, R. N., Wallace, R. D., McKinney, R. W., Ind. Eng. Chem., 44, 1508 (1952); Jones, E., Fowlie, G. G., J. Appl. Chem., 3, 206 (1953).

SUBMITTED: August 15, 1958

Card 5/5

24068
S/069/61/023/003/001/004
B127/B217

5.1115

AUTHORS: Vysotskiy, Z. Z., Divnich, L. F., Polyakov, M. V.

TITLE: Effect of vaporous shaping agents on porous structures and on the sorption properties of a silica gel surface

PERIODICAL: Kolloidnyy zhurnal, v. 23, no. 3, 1961, 248-254

TEXT: The paper deals with new experimental results for clarifying the mechanism in the microrelief formation and the sorption properties of the xero gel surface. Synthesis method: silica gel specimens were treated with benzene-, toluene-, orthoxylene-, dioxane-, isopropanol-, and methanol vapor. The sorption isotherms of toluene vapor were measured in these as well as in a corresponding check specimen at 20°C in vacuum by a quartz spring balance. The isotherms of benzene vapor were recorded in the same manner. The specific surface S of the specimens studied was determined by the BET method. A basal surface of 32 Å was assumed for one benzene molecule. The pore radius of silica gel is best determined by the desorption branch of the sorption isotherm of toluene. The adsorption isotherm of methyl orange for "benzene, toluene, xylene gels" was taken from

Card 1/4

Effect of vaporous shaping agents on...

a 5 % CH_3COOH solution. The size of all adsorption isotherms was referred to 1 m^2 gel surface. It was found that (a) the primary adsorption agrees with the desorption in the branch of the sorption isotherms of benzene vapor in the zone of small p/p_s for all specimens and that the corresponding branches of isotherms do not meet in the case of toluene adsorption. (b) More intensive adsorption of toluene as compared with benzene, in the reversible part of the isotherm. (c) The adsorption of methyl orange decreases in the order: gel treated with benzene > toluene > o-xylene. The first of these results is explained by an alteration of the mutual position of the mobile surface groups, e.g., of the hydroxyl groups, under the influence of the orienting effect of the adsorbed molecules. This effect is the greater, the more polar the adsorbed molecules are. A decrease of the H-bonds between adjacent surface molecules is assumed as fundamental process by which hydroxyls are liberated for their subsequent participation in the adsorption of molecules from the vapor phase. This also explains the initially inconsiderable adsorption. The increasing toluene covering of the gel, above all after its condensation in the gel pores, facilitates the liberation and the position change of surface hydroxyls. At the moment of occupation of all sorption spaces with toluene, this reorganization of

Effect of vaporous shaping agents on...

the gel surface is complete, and the desorption branch corresponds to an equilibrium state, also when p/p_s is small. This is also observed in the toluene adsorption isotherm. S increases in the case of polar molecules of toluene, orthoxylene, and isopropyl alcohol. Methanol and dioxane, the properties of which resemble more those of water than those of other used shaping agents, form gels with maximum S. The quantity S is directly connected with the size of the elementary particles, of which the xerogel skeleton is composed. The latter depends on the chemical character of the shaping agent. The experimental data show that a connection between the physical properties of the shaping agent or the intermicellar liquid and the final structure of the gel is impossible, but they confirm the chemical interaction between shaping agent and gel. An effect of the surface tension of the intermicellar liquid on the formation was not observed either. There are 5 figures, 1 table, and 15 references: 10 Soviet-bloc and 5 non-Soviet-bloc. The most important reference to the English-language publication reads as follows: R. G. Haldeman, P. H. Emmett, J. Phys. Chem. 59, 103, 1955.

ASSOCIATION: Institut fizicheskoy khimii AN USSR im. L. V. Pisarzhevskogo (Institute of Physical Chemistry AS UkrSSR imeni L. V. Pisarzhevskiy)

Card 3/4

S/069/61/023/003/002/004
B127/B217

AUTHORS: Vysotskiy, Z. Z., Polyakov, M. V.

TITLE: Production of ultraporous silica gels of "intraparticular" porosity

PERIODICAL: Kolloidnyy zhurnal, v. 23, no. 3, 1961, 255-256

TEXT: The authors treat the production of anhydrous silica gel from aqueous silica gel at low temperatures. The gel thus produced adsorbs benzene and methanol to an inconsiderable extent, but large amounts of water. These sorption properties are explained by the fact that the porosity is preserved in the gel particles and its surface is chemically not affected. In the usual industrial methods, dehydration is carried out either at very high temperatures by evaporation or at very low temperatures by freezing. In either case, however, the basic structure of the hydrogel is destroyed. A new drying method was found in the course of the study of the effect of vapor pressure over the hydrogel, of temperature and dehydration rate on the silica gel structure. An intensive dehydration of the hydrogels of silicic acid under mild conditions occurs, while the gel

Production of ultraporous silica gels of...

structure is preserved. Aqueous silica gel is obtained by mixing sodium silicate solution and sulfuric acid. The washed gel was dried in the exsiccator with the aid of P_2O_5, $CaCl_2$, alumina gel, silica gel, or concentrated sulfuric acid. In order to obtain a maximum reduction of the vapor pressure over the hydrogel, it was put into a Petri dish and the dish covered with a gauze net. Then, the dish was put in reverse position in the exsiccator, as closely as possible to the surface of the drying agent. In order to prevent the aging of the gel, the exsiccator was put in the refrigerator at approximately 0°C. 98-99 % of the water was evaporated by this method within 10-15 days, just as much as by six hours' heating in the drier at 180°C. After drying, the hydrogel was kept for 4-6 hr in the vacuum drying oven at 80-100°C. The adsorption isotherm of steam rises sharply at all p/p_s, and has a large hysteresis loop. The retardation of thermal gel aging in this method prevents the condensation to polysilicic acids under formation of siloxane bonds between the particles. As a result, an ultraporous xerogel was obtained in which the original porosity of the hydrogel was maintained. The table gives the sorption properties:

Card 2/3

Type	Static activity, %	
	with C_6H_6	with H_2O
C-209 (S-209)	4.2	17.8
C-210 (S-210)	1.5	21.5
C-211 (S-211)	3.3	16.4
C-212 (S-212)	2.2	16.6

There are 1 figure and 1 table.

ASSOCIATION: Institut fizicheskoy khimii AN USSR im. L. V. Pisarzhevskogo (Institute of Physical Chemistry AS UkrSSR imeni L. V. Pisarzhevskiy)

SUBMITTED: May 24, 1960

Card 3/3

VYSOTSKIY, Z.Z.; DIVNICH, L.F.; POLYAKOV, M.V.

Effect of dissolved dyes on the formation of specific adsorption properties of a silica gel surface. Dokl. AN SSSR 139 no.6:1400-1402 Ag '61. (MIRA 14:8)

1. Institut fizicheskoy khimii im. L.V. Pizarzhevskogo Akademii nauk USSR. Predstavleno akademikom A.A. Balandinym.
(Silica) (Adsorption)

VYSOTSKIY, Z.Z. [Vysots'kyi, Z.Z.]; DIVNICH, L.F.

Preparation, porous structure and sorptive characteristics of specific absorbents - aluminosilicate gels. Dop. AN URSR no.4: 501-503 '62. (MIRA 15:5)

1. Institut fizicheskoy khimii AN USSR. Predstavleno akademikom AN USSR A.I.Brodskim [Brods'kyi, O.I.].
(Aluminosilicates)

VYSOTSKIY, Z.Z.; DIVNICH, L.F.; BUTSKO, S.S.

Method for recording absorption spectra of dyes in transmitted light on plate-shaped silica and aluminosilicate gels. Opt. i spektr. 12 no.2:327-328 F '62. (MIRA 15:2)
(Dyes and dyeing)
(Silica)
(Aluminosilicates)

S/073/62/028/002/002/006
B101/B110

AUTHORS: Vysotskiy, Z. Z., Divnich, L. F., Strelko, V. V.

TITLE: Influence of the degree of preliminary dehydration of hydrogels and of water-vapor pressure in the drying process on the structure of forming silicic-acid xerogels

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 2, 1962, 156-161

TEXT: The present investigation includes (1) the influence of preliminary dehydration of silicic-acid hydrogels on the rate of formation of their pore structure in benzene vapor; (2) the influence of water-vapor pressure, P_{H_2O}, on the structure of silicic-acid xerogels at room temperature and below; and (3) the influence of aging on structure formation. Results: (a) Silica gel dried in air at room temperature possessed a low static adsorptive capacity (21.8%) for benzene. Hydrogels dehydrated by 80-90% possessed at higher adsorptive capacity (39-58%). Dehydration up to 96.7% does not affect their static activity. The influence of C_6H_6 manifests itself in widening pores and in an increasing specific sorption volume.

Card 1/3

Influence of the degree of ...

(b) The pore diameter and the sorption volume of the xerogel increase with an increase in P_{H_2O}, to which also a longer drying period corresponds. When dried over P_2O_5 ($P_{H_2O} = 2 \cdot 10^{-5}$ mm Hg), xerogel washed in H_2O (pH~8) had a static activity of 60.7% for C_6H_6 after 26 days which increased to 71.0% with xerogel dried over dilute H_2SO_4 (specific gravity 1.22; P_{H_2O} = 13 mm Hg) for 75 days. (c) Hydrogel samples kept in water for 31, 88, or 102 days showed a density of 1.052, 1.065, and 1.080 g/cm^3, and a water content of 882, 832, and 824% by weight, respectively. Accordingly aging also takes place under water. (d) A new method of obtaining silica gels is to prevent aging by drying at a low temperature. Drying over silica gel, aluminogel, $CaCl_2$, and concentrated H_2SO_4 at 0°C or at room temperature showed that the xerogels obtained at 0°C had almost completely lost their ability to adsorb benzene (1.5-4.2%), while they still adsorbed 16.4-21.5% of water vapor. This effect is attributed to the formation of ultrapores. There are 5 figures and 3 tables.

Card 2/3

S/073/62/028/002/002/006
Influence of the degree of ... B101/B110

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo AN USSR (Institute of Physical Chemistry imeni L. V. Pisarzhevskiy AS UkrSSR)

SUBMITTED: May 24, 1960

Card 3/3

L0390
S/020/62/145/006/014/015
B106/B144

5.3833

AUTHORS: Strelko, V. V., Ganyuk, L. N., Kachkurova, I.Ya, and Vysotskiy, Z. Z.

TITLE: Polycondensation of acetaldehyde on dehydrating silica gel

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 6, 1962, 1297 - 1300

TEXT: Polycondensation occurred at room temperature when silica hydrogels liberated from salts with the aid of distilled or acidified (pH 4) water were desiccated by heating $CaCl_2$ in acetaldehyde vapor atmosphere, the silica gel being dissolved in 1 N NaOH to isolate the polycondensate. The polymer was extracted with benzene. It consists of partially oxidized polyene aldehydes with similar molecular weights, and is red-brown, viscous, and soluble in organic solvents. Further polycondensation and cross-linkage of the polymer molecules set in if silica gel and the polymer are kept for 2 hrs at 120°C and for 1 hr at 150°C in air. The product is dark-brown, insoluble in benzene and CCl_4, and partially soluble in acetone. If the polymer obtained at room temperature after the separation

Card 1/3

Polycondensation of acetaldehyde on ...

of silica gel is heated, the conjugations of the C=C double bonds are destroyed by oxidation and diene-type synthesis. The polymer structures, and thereby the course of polycondensations, were confirmed by e.p.r. and IR absorption spectra. The e.p.r. signals show that the polyenes form a temperature-dependent reversible donor - acceptor complex with the silica gel surface, which is destroyed by heating and restored by cooling. Adsorption experiments with methanol and water vapors, performed on silica gel containing the polycondensate, showed that the polymer does not completely block the pores of silica gel. It is assumed that part of the polymer molecules are linked with the macroradicals ≡Si-O· and ≡Si· which form by a radical mechanism during the desiccation of the gel through rupture of the siloxane bonds between the micelles. Silica gels with similar properties also form from hydrogels desiccated in vinyl acetate vapors is hydrolyzed of vinyl acetate to acetic acid and acetaldehyde which decomposes to polyene aldehydes. Silica gels containing polymers with conjugated double bonds, are suitable for use as active fillers which simultaneously act as acceptors of free radicals. There are 3 figures. The most important English-language reference is: E. R. Blout, M. Fields, R. Karplus, J. Am. Chem. Soc., 70, 194 (1948).

Card 2/3

S/020/62/145/006/014/015
B106/B144

Polycondensation of acetaldehyde on ...

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo Akademii nauk USSR (Institute of Physical Chemistry imeni L. V. Pisarzhevskiy of the Academy of Sciences UkrSSR)

PRESENTED: May 5, 1962, by V. A. Kargin, Academician

SUBMITTED: May 4, 1962

Card 3/3

MITSYUK, B.M.; VYSOTSKIY, Z.Z.; POLYAKOV, M.V.

Role played by the polarity of the intramicellar liquid and by the intensity of its interaction with the surface of silicic acid hydrogel particles in the formation of silica gel texture. Dokl. AN SSSR 155 no.6:1404-1406 Ap '64. (MIRA 17:4)

1. Institut fizicheskoy khimii im. L.V.Pisarzhevskogo AN UkrSSR. Predstavleno akademikom P.A.Rebinderom.

STRELKO, V.V.; GUSHCHIN, P.P.; VYSOTSKIY, Z.Z.

Interaction of certain amino compounds with silica gels subjected to dehydration. Dokl. AN SSSR 153 no.3:619-621 N '63. (MIRA 17:1)

1. Institut fizicheskoy khimii im. L.V. Pisarzhevskogo AN SSSR. Predstavleno akademikom V.A. Karginym.

MITSYUK, B.M.; VYSOTSKIY, Z.Z.

Possibility of changing the texture of silicic acid xerogels in the process of vapor sorption. Dokl. AN SSSR 152 no.5:1166-1168 O '63. (MIRA 16:12)

1. Institut fizicheskoy khimii im. L.V.Pisarzhevskogo AN UkrSSR. Predstavleno akademikom M.M.Dubininym.

STRELKO, V.V.; GANYUK, L.N.; VYSOTSKIY, Z.Z.

Appearance of paramagnetism during adsorption of anthracene by dehydrated aluminosilicate, silica gel, and alumina gel. Ukr. khim. zhur. 29 no.4:363-365 '63. (MIRA 16:6)

1. Institut fizicheskoy khimii im. L.V. Pisarzhevskogo AN UkrSSR.

(Anthracene) (Adsorption)
(Electron paramagnetic resonance and relaxation)

VYSOTSKIY, Z.Z.; DIVNICH, L.F.

Formation of a porous structure of chalklike aluminum hydroxide gels in the vapors of the conditioning agents. Ukr.khim.zhur. 29 no.1:64-66 '63. (MIRA 16:5)

1. Institut fizicheskoy khimii im. L.V.Pisarzhevskogo AN UkrSSR. (Aluminum hydroxide) (Porosity)

POLISHCHUK, Yu.N.; KORNIYENKO, T.P.; VYSOTSKIY, Z.Z.

Polymerization of styrene, vinyl acetate, and methyl methacrylate in the presence of aluminosilica gel coatings. Ukr.khim.zhur. 29 no.3:325-329 '63. (MIRA 16:4)

1. Institut fizicheskoy khimii imeni L.V.Pisarzhevskogo.
(Polymerication) (Organic compounds) (Aluminosilicates)

GRAGEROV, I. P.; PONOMARCHUK, M. P.; STRELKO, V. V.; GANYUK, L. N.; VYSOTSKIY, Z. Z.

Free radical formation in benzoquinhydrone and phenazohydrin on solid surfaces studied by the electron paramagnetic resonance method. Dokl. AN SSSR 147 no.4:867-869 D '62. (MIRA 16:1)

1. Institut fizicheskoy khimii im. L. V. Pisarzhevskogo AN UkrSSR. Predstavleno akademikom M. I. Kabachnikom.

(Quinhydrone) (Phenazine) (Radicals(Chemistry))

SKARCHENKO, Vladimir Konstantinovich; VYSOTSKIY, Z.Z., otv. red.; POKROVSKAYA, Z.S., red.; TURVANOVA, N.A., tekhn. red.

[Aluminosilicate catalysts in the light of the modern theory of heterogeneous catalytic processes] Aliumosilikatnye katalizatory v svete sovremennoi teorii geterogenno-kataliticheskikh protsessov. Kiev, Izd-vo Akad. nauk USSR, 1963. 117 p. (MIRA 16:4)
(Aluminosilicates) (Catalysis)

S/073/63/029/003/006/009
A057/A126

AUTHORS: Polishchuk, Yu. N., Korniyenko, T. P., Vysotskiy, Z. Z.

TITLE: Polymerization of styrene, vinylacetate, and methyl methacrylate in the presence of alumo-silica gel coatings

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 29, no. 3, 1963, 325 -329

TEXT: Polymerization kinetics of the radical polymerization in liquid phase were studied with styrene, vinylacetate, and methyl methacrylate in reaction vessels with alumo-silica gel coatings. Also investigated was the effect of xerogels, formed in vapors of the investigated monomer, and the structure-adsorptive and catalytic properties were compared with control samples. The present work was carried out in the Institut fizicheskoy khimii im. L. V. Pisarzhevskogo (Institute of Physical Chemistry imeni L. V. Pisarzhevskiy) in continuation of earlier investigations (Ukr.khim.zhur., v. 28, 1962, 1024) with non-porous coatings. The hydrogel was prepared in the usual manner forming alumosilic acid. Thus the alumo-silica gel surface showed properties of a strong acid. The process with monomer vapors resulted after drying in a yellow-

Card 1/3

S/073/63/029/003/006/009
A057/A126

Polymerization of styrene,...

brown product in case of styrene, in a black product with vinylacetate, and in a colourless product with methyl methacrylate. Adsorption isotherms of methanol vapors on the alumo-silica gel samples treated with styrene or vinylacetate show two characteristics: both curves lie below the control curve and have reproducible hysteresis loops. This is explained by the change of the xerogel surface effected by grafting of polymer chains to it. Thus, a polystyrene skeleton is formed in the pores of the gel. The adsorption isotherm of the methyl methacrylate alumo-silica gel lies above the control sample curve. This difference to the other two samples is in agreement with the colour difference observed, showing thus a connection between the two effects. The prepared alumo-silica gels were applied, powdered (100 - 250 μ) and mixed with water glass, to the inner surface of the reaction vessel. The polymerization was carried out with 1% benzoyl peroxide admixture in nitrogen atmosphere. The technique used was described in an earlier paper (Zh. fiz. khim., v. 25, 1951, 647). A strong effect of the drying method of the alumo-silica gel on styrene and vinyl acetate polymerization kinetics was observed. This effect was especially pronounced for alumo-silica gel coatings dried over $CaCl_2$ in the monomer vapor. The styrene polymerization is initiated at 85°C, that of vinyl acetate above 65°C.

Card 2/3

S/073/63/029/003/006/009
A057/A126

Polymerization of styrene...

No effect could be observed in methyl methacrylate polymerization, except a shortening of the induction period. The obtained results prove the assumption of the heterogeneous-homogeneous mechanism of the process studied. However, the expected specific polymerization of the monomer effected by the alumo-silica gel was not observed. This effect is apparently restrained by the change of the chemical nature of the surface because of the intensive polymerization occurring on the alumo-silica gel surface. There are 4 figures.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo (Institute of Physical Chemistry im. L. V. Pisarzhevskiy)

SUBMITTED: January 4, 1962

Card 3/3

VYSOVSKIKH, Ivan Petrovich; AKILOV, G.P., red.; LUK'YANOV, A.A., tekhn. red.

[Lecutres on calculation methods] Lektsii po metodam vychislenii. Moskva, Fizmatgiz, 1962. 342 p. (MIRA 15:7)
(Calculus)

VYSOVSKIY, D.M.

USSR / Radio Physics. Propagation of Radio Waves. I-6

Abs Jour : Ref Zhur - Fizika No 3, 1957, No 7325

Author : Vysovskiy, D.M.
Title : Certain Features of Calculation of Radio Refraction

Orig Pub : Radiotekhnika i elektronika, 1956, 1, No 3, 274-276

Abstract : The author considers expressions for the angle of radio refraction α in the form of an integral and a series. It is shown that the integral expression for the angle of radio refraction can be represented in the form of an alternating series in odd powers of tan z, where z is the visible zenith angle; for small z the series converges very rapidly. If α is determined with an accuracy to 1" it is enough to use the first term of the series for $z < 70^\circ$, two terms for $z < 82^\circ$, and three terms for $z < 85$ -- 86°. It is indicated that if the accuracy is 1' this series can be used only for $z < 87$ -- 88°. At greater values of z, the series becomes divergent. It is noted that the multiplier of the

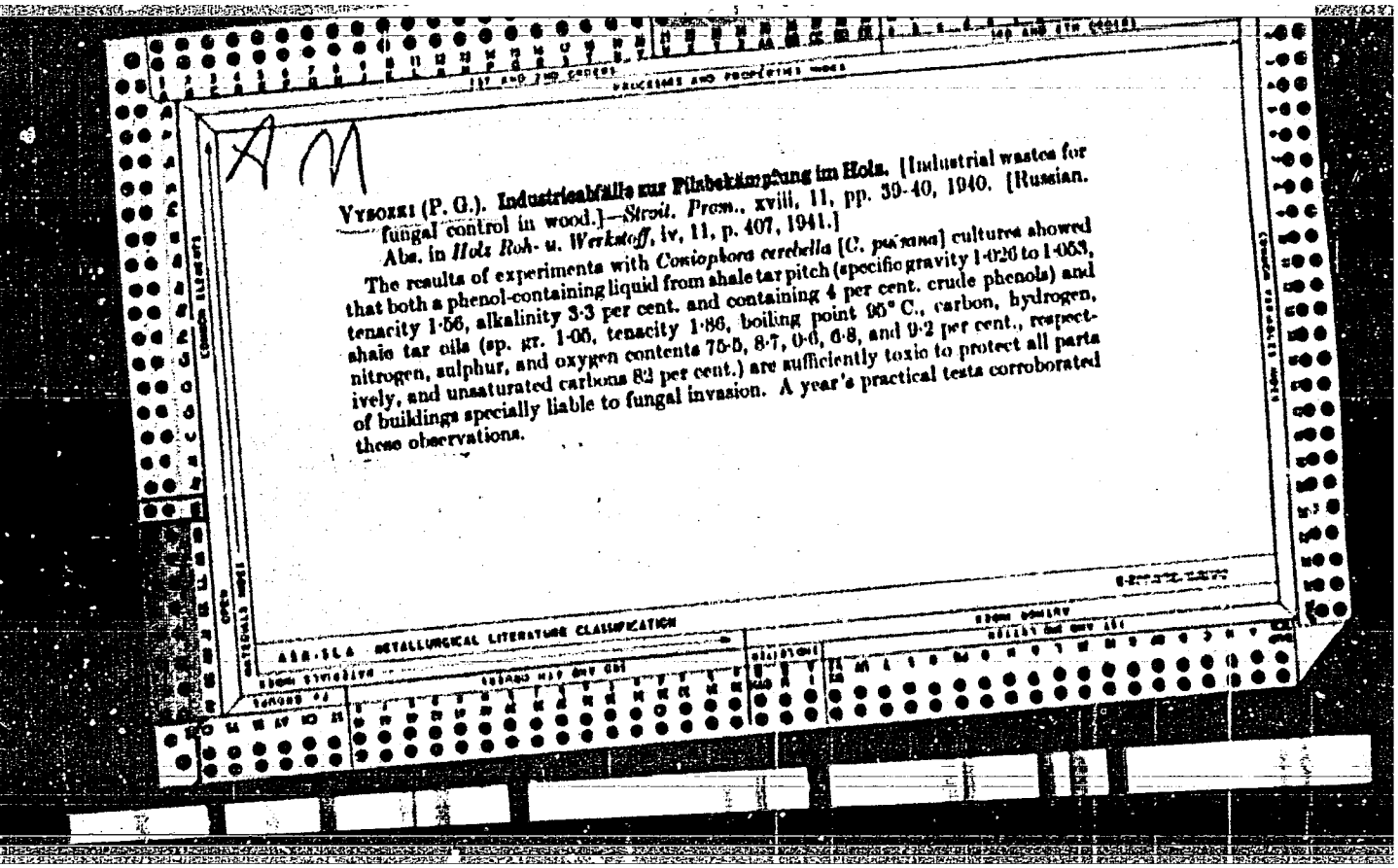
Card : 1/2 - 45 -

USSR / Radio Physics. Propagation of Radio Waves. I-6

Abs Jour : Ref Zhur - Fizika No 3, 1957, No 7325

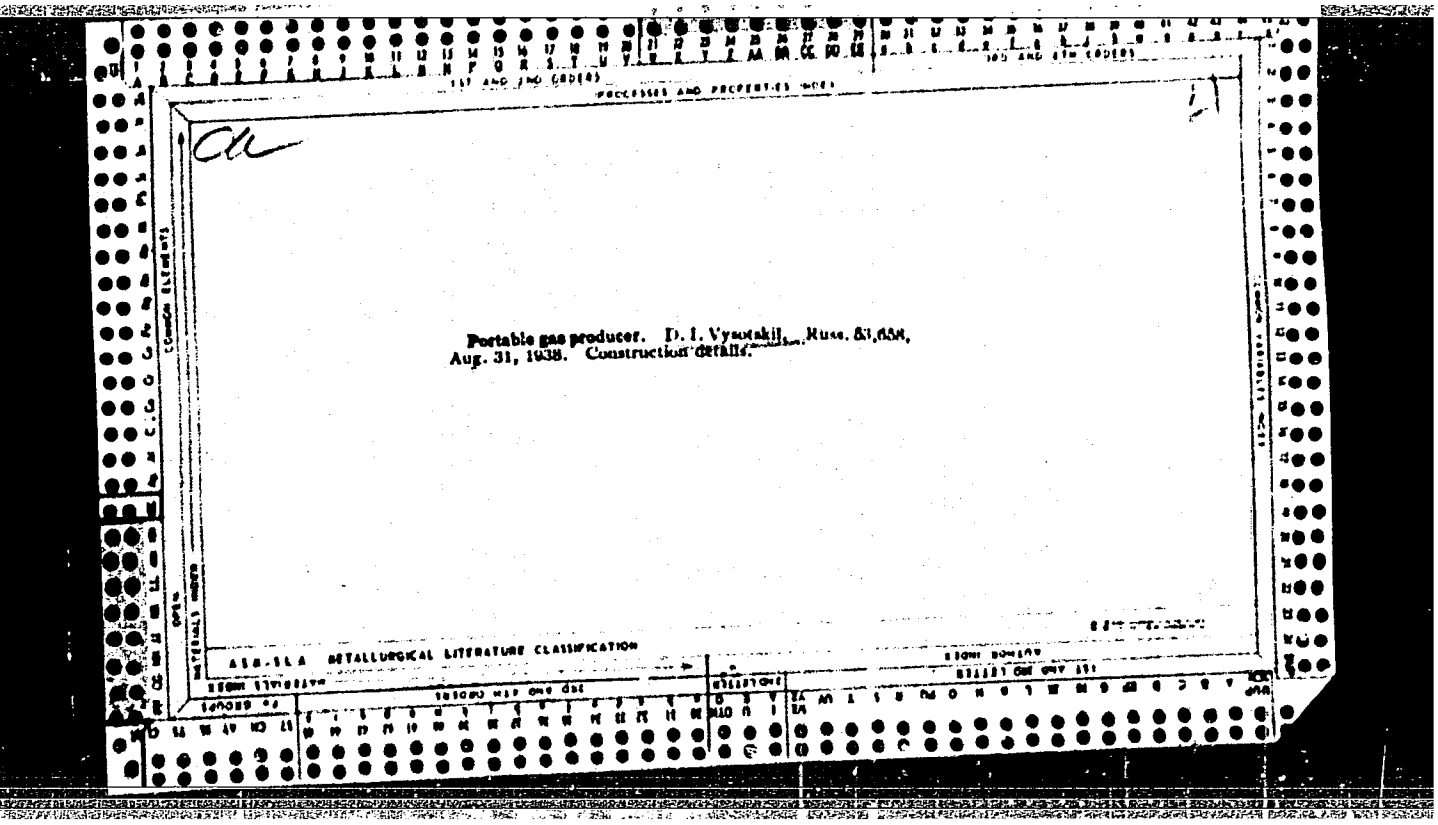
Abstract : first principal term of the series depends only on the value of the index of refraction at the earth's surface. Therefore, in the cases when it is possible to use only the first term of the series in the calculations, the Laplace theorem, known from the theory of astronomical refraction, becomes valid, and the radio refraction does not depend on the distribution of the index of refraction with altitude.

Card : 2/2

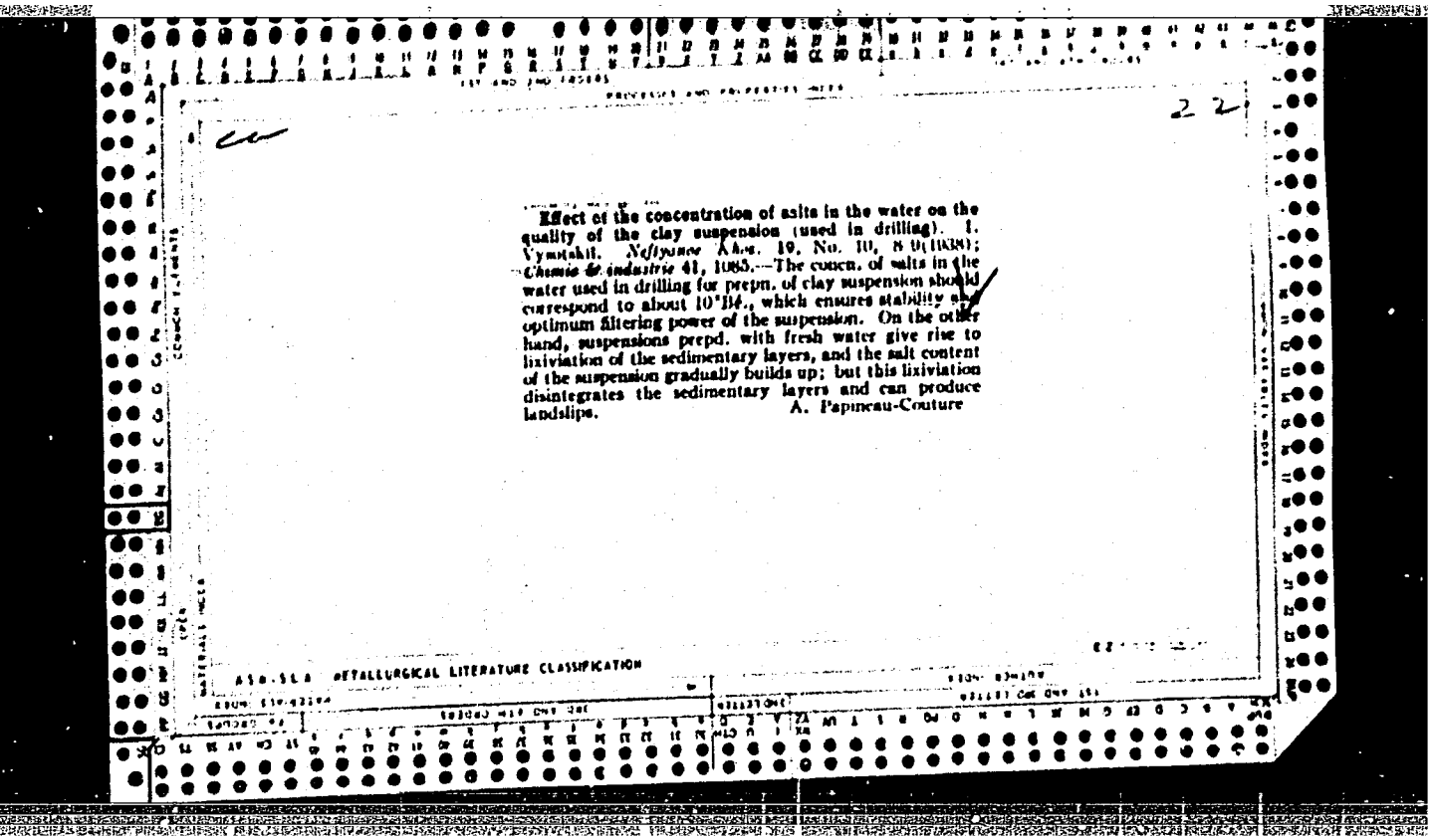


Vysozki (P. G.). **Industrieabfälle zur Pilzbekämpfung im Holz.** [Industrial wastes for fungal control in wood.]—*Strois. Prom.*, xviii, 11, pp. 39-40, 1940. [Russian. Abs. in *Holz Roh- u. Werkstoff*, iv, 11, p. 407, 1941.]

The results of experiments with *Coniophora cerebella* [*C. puteana*] cultures showed that both a phenol-containing liquid from shale tar pitch (specific gravity 1·020 to 1·053, tenacity 1·56, alkalinity 3·3 per cent. and containing 4 per cent. crude phenols) and shale tar oils (sp. gr. 1·05, tenacity 1·86, boiling point 95° C., carbon, hydrogen, nitrogen, sulphur, and oxygen contents 75·5, 8·7, 0·6, 6·8, and 9·2 per cent., respectively, and unsaturated carbons 82 per cent.) are sufficiently toxic to protect all parts of buildings specially liable to fungal invasion. A year's practical tests corroborated these observations.

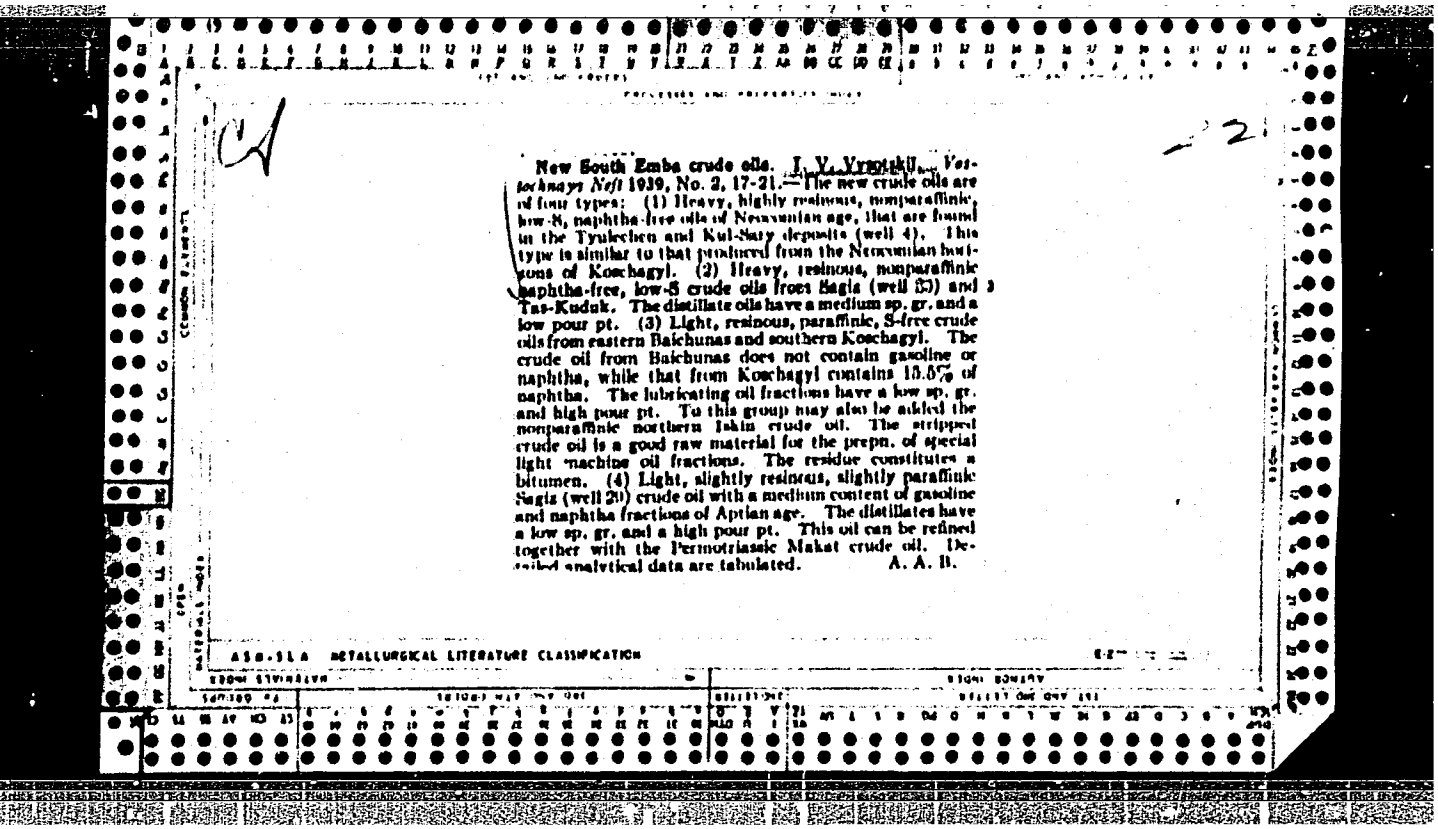


Portable gas producer. D. I. Vysotskii, Russ. 51,658, Aug. 31, 1938. Construction details.

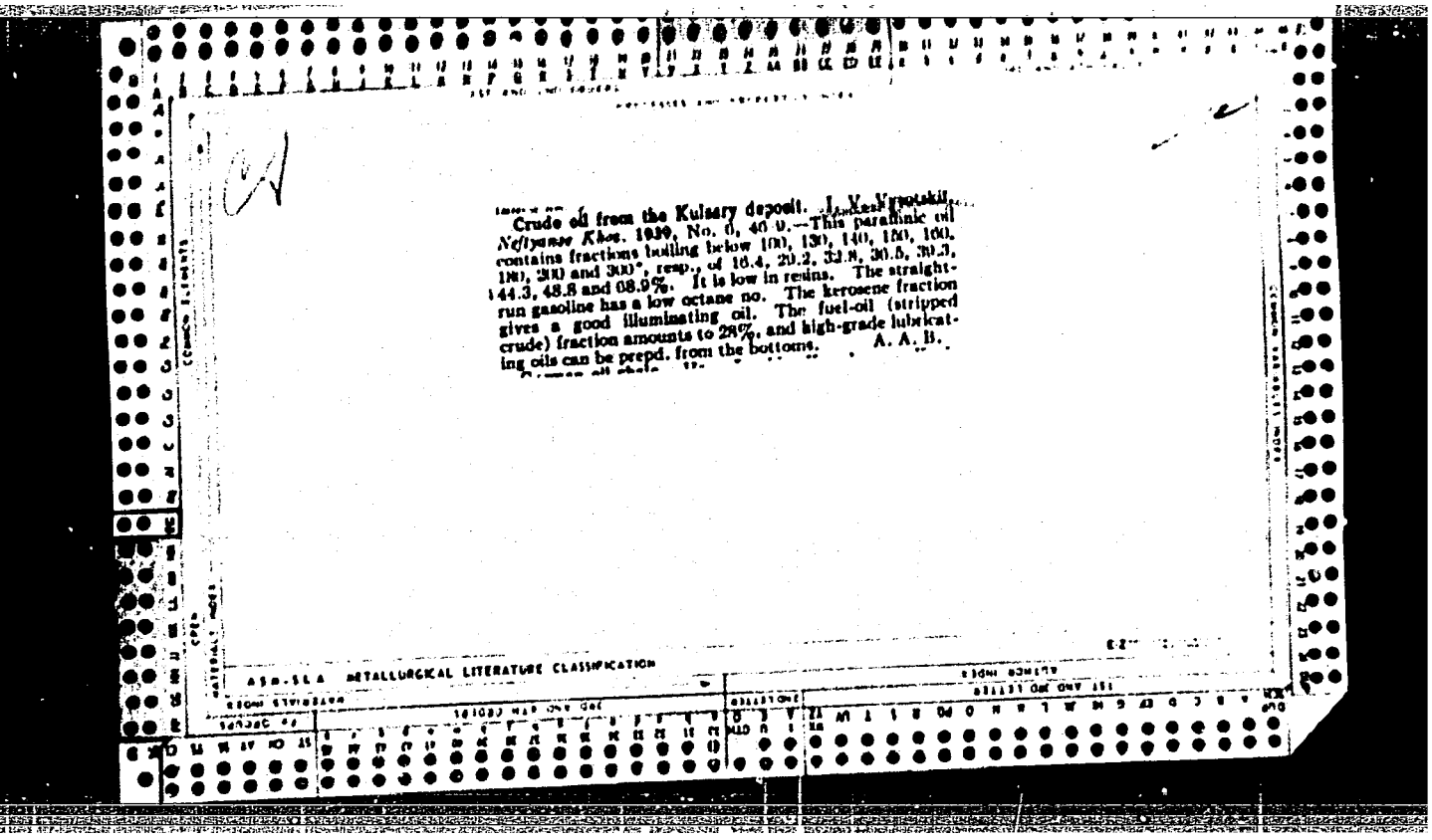


Effect of the concentration of salts in the water on the quality of the clay suspension (used in drilling). I. Vymetshil. *Neftyanoe Khoz.* 19, No. 10, 8-9(1938); *Chimie & industrie* 41, 1085.—The concn. of salts in the water used in drilling for prepn. of clay suspension should correspond to about 10°Bé., which ensures stability and optimum filtering power of the suspension. On the other hand, suspensions prepd. with fresh water give rise to lixiviation of the sedimentary layers, and the salt content of the suspension gradually builds up; but this lixiviation disintegrates the sedimentary layers and can produce landslips. A. Papineau-Couture

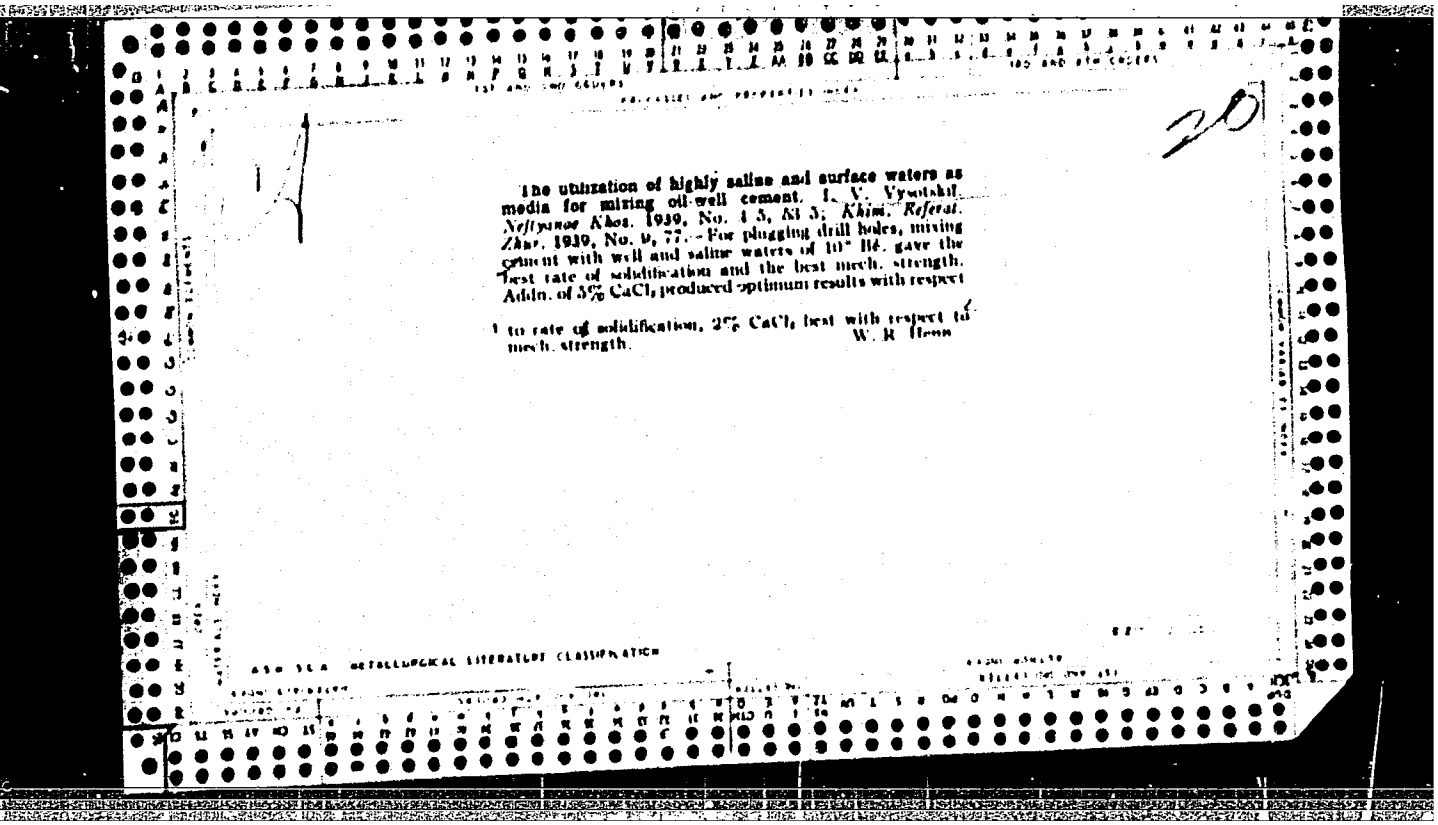
A50.SLA METALLURGICAL LITERATURE CLASSIFICATION



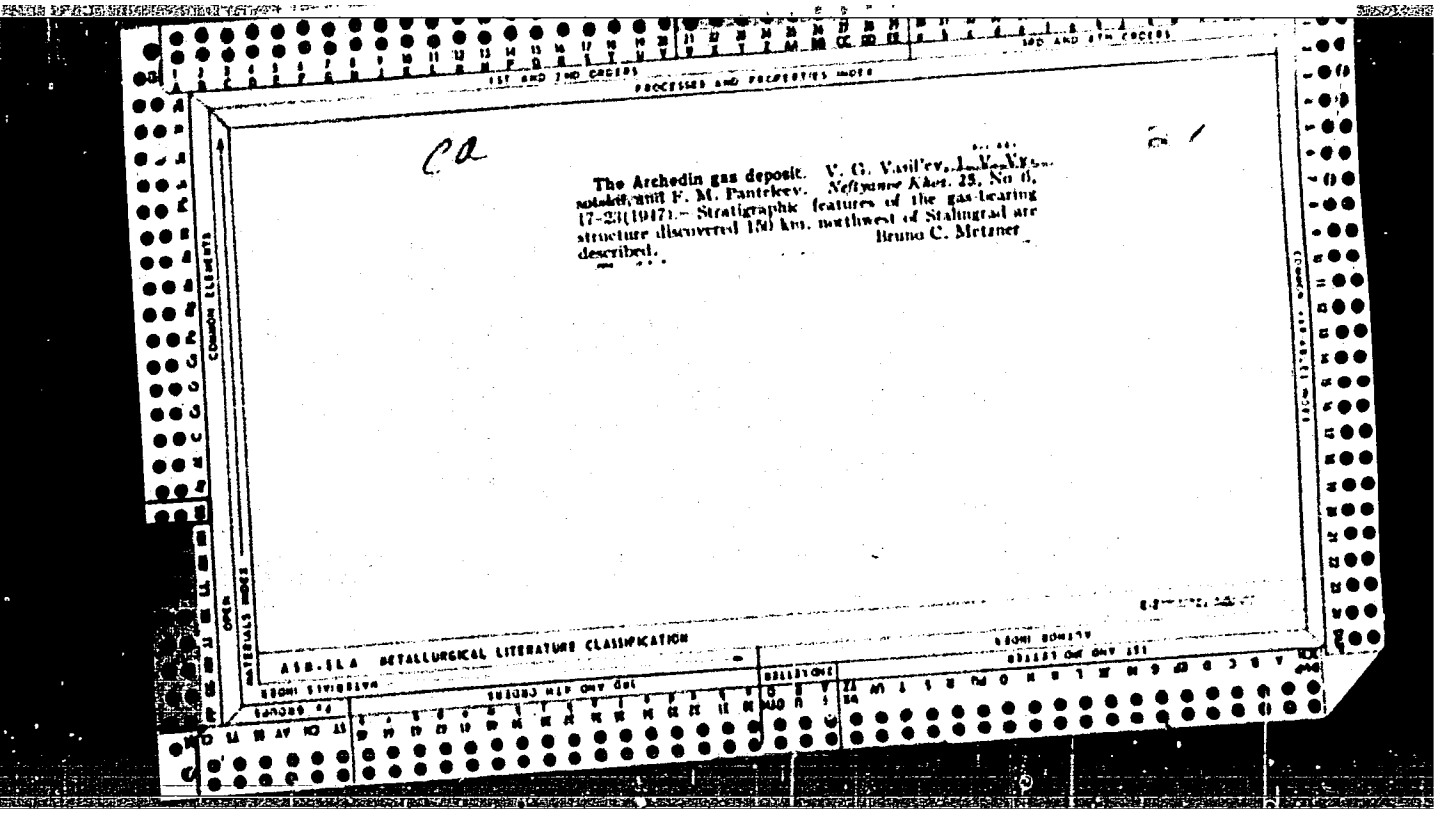
New South Emba crude oils. I. V. Vyatkin. *Vestochnaya Neft* 1939, No. 2, 17-21.—The new crude oils are of four types: (1) Heavy, highly resinous, nonparaffinic, low-S, naphtha-free oils of Neocomian age, that are found in the Tyulechen and Kul-Sary deposits (well 4). This type is similar to that produced from the Neocomian horizons of Koschagyl. (2) Heavy, resinous, nonparaffinic naphtha-free, low-S crude oils from Sagis (well 33) and Tas-Kuduk. The distillate oils have a medium sp. gr. and a low pour pt. (3) Light, resinous, paraffinic, S-free crude oils from eastern Baichunas and southern Koschagyl. The crude oil from Baichunas does not contain gasoline or naphtha, while that from Koschagyl contains 15.5% of naphtha. The lubricating oil fractions have a low sp. gr. and high pour pt. To this group may also be added the nonparaffinic northern Ishim crude oil. The stripped crude oil is a good raw material for the prepn. of special light machine oil fractions. The residue constitutes a bitumen. (4) Light, slightly resinous, slightly paraffinic Sagis (well 20) crude oil with a medium content of gasoline and naphtha fractions of Aptian age. The distillates have a low sp. gr. and a high pour pt. This oil can be refined together with the Permotriassic Makat crude oil. Described analytical data are tabulated. A. A. B.



Crude oil from the Kulsary deposit. I. V. Vyrotskii. *Neftyanoe Khoz.* 1939, No. 6, 40-9.—This paraffinic oil contains fractions boiling below 100, 130, 140, 150, 160, 180, 200 and 300°, resp., of 16.4, 20.2, 32.8, 30.5, 30.3, 44.3, 48.8 and 68.9%. It is low in resins. The straight-run gasoline has a low octane no. The kerosene fraction gives a good illuminating oil. The fuel-oil (stripped crude) fraction amounts to 28%, and high-grade lubricating oils can be prepd. from the bottoms. A. A. B.



The utilization of highly saline and surface waters as media for mixing oil-well cement. I. V. Vyatskii. *Neftyanoe Khoz.* 1939, No. 4-5, 81-3; *Khim. Referat. Zhur.* 1939, No. 9, 77.—For plugging drill holes, mixing cement with well and saline waters of 10° Bé. gave the best rate of solidification and the best mech. strength. Addn. of 5% CaCl, produced optimum results with respect to rate of solidification, 2% CaCl, best with respect to mech. strength.
W. R. Ilson

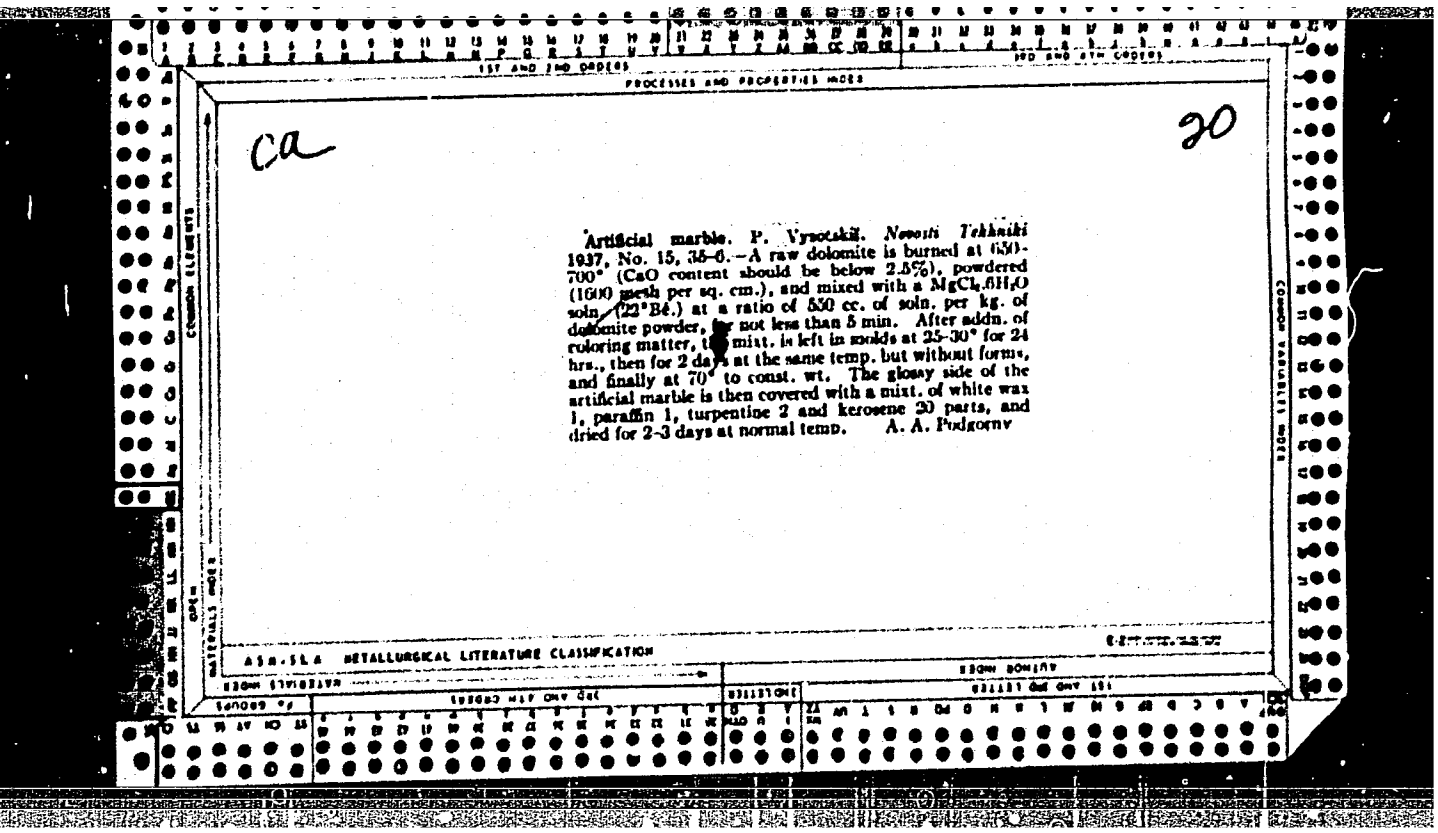


Ca

The Archedin gas deposit. V. G. Vasil'ev, I. V. V[illegible], notable, and F. M. Pantelеev. *Neftyanoe Khoz.* 25, No 6, 17–23(1947).— Stratigraphic features of the gas-bearing structure discovered 150 km. northwest of Stalingrad are described.

Bruno C. Metzner

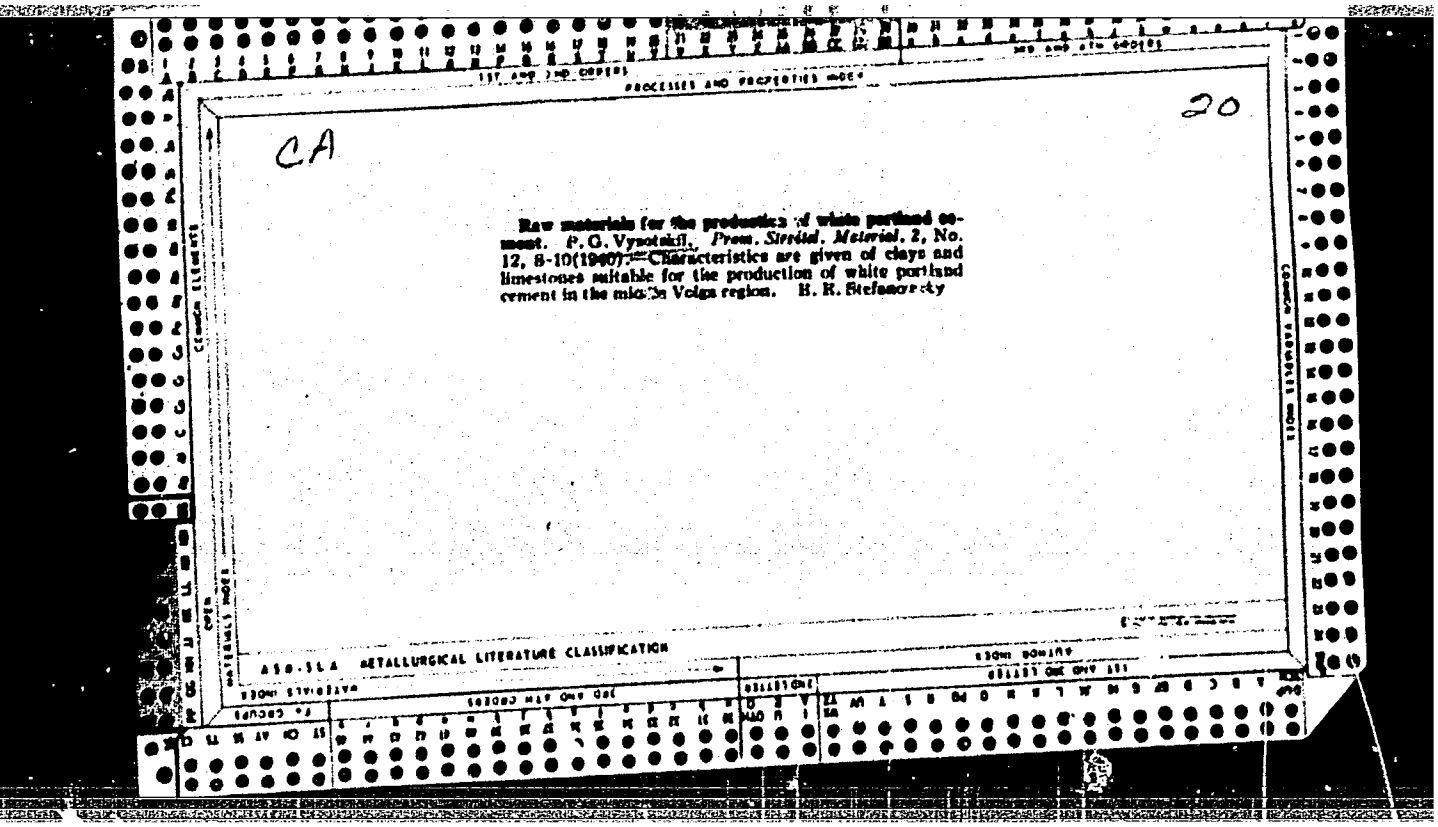
A.S.B.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



Ca

20

Artificial marble. P. Vysotskii. *Newsti Tekhniki* 1937, No. 15, 35–6.—A raw dolomite is burned at 650–700° (CaO content should be below 2.5%), powdered (1600 mesh per sq. cm.), and mixed with a $MgCl_2.6H_2O$ soln. (22° Bé.) at a ratio of 550 cc. of soln. per kg. of dolomite powder, for not less than 5 min. After addn. of coloring matter, the mixt. is left in molds at 25–30° for 24 hrs., then for 2 days at the same temp. but without forms, and finally at 70° to const. wt. The glossy side of the artificial marble is then covered with a mixt. of white wax 1, paraffin 1, turpentine 2 and kerosene 20 parts, and dried for 2–3 days at normal temp. A. A. Podgorny



CA

20

Raw materials for the production of white portland cement. P. G. Vysotskii. *Prom. Stroitel. Material.* 2, No. 12, 8-10(1940).—Characteristics are given of clays and limestones suitable for the production of white portland cement in the middle Volga region. B. R. Stefanovsky

Raw material for white Portland cement. P. O. Vyurinskii. *Prom. Stroitel. Materialov*, 1940, No. 12, pp. 8-10; *Khim. Referat. Zhur.*, 4 [6] 97-98 (1941). — V. describes experiments in producing a white Portland cement from Kemachikhinsk and Orsk clays and Shiryaevs lime. If the conditions in the furnace were oxidizing, the clinker was yellow. In a reducing atmosphere, the clinker was light green. The addition of $K_2Cr_2O_7$ imparted a permanent green color to the cement. M. Ho.

VYSTARKIN, B. V., GANICH, A.A.

30305

1 Eydyel' nant, L.I. Duti polnoy nyekhanizatsii pyeryerabotki gruzov na novykh myetallurgichyeskikh zavodakh. Myekhanizatsiya trudoyemkikh i tyazhyelykh rabot, 1949, No 9, s. 7-12

7. Tyekhnologiya Myetallov

SO: LETOPIS' No. 34

VYSTAVKIN, A

YUSHKIN, N.; NOVIKOV, M.; VYSTAVKIN, A.; KOTYUZHINSKIY, G.

Shortened workday and new wage terms in ferrous metallurgy. Sots. trud no.12:103-118 D '57. (MIRA 11:1)

1. Nachal'nik otdela organizatsii truda stalingradskogo metallurgicheskogo zavoda "Krasnyy Oktyabr'" (for Yushkin). 2. Nachal'nik otdela organizatsii truda Nizhne-Tagil'skogo metallurgicheskogo kombinata (for Novikov). 3. Nachal'nik otdela truda i zarabotnoy platy moskovskogo zavoda "Serp i molot" (for Vystavkin). 4. Zamestitel' nachal'nika otdela truda i zarobotnoy platy Upravleniya chernoy metallurgii Chelyabinskogo sovnarkhoza (for Kotyuzhinskiy).
(Steel industry)

LIFSHITS, T.M.; KOGAN, Sh.M.; VYSTAVKIN, A.N.; MEL'NIK, P.G.

Some phenomena induced in n-type indium antimonide by radio-frequency radiation. Zhur.eksp.i teor.fiz. 42 no.4:959-966 Ap '62. (MIRA 15:11)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Radio waves) (Indium-antimony alloys)

BERLIN, A.S.; VIZEL', A.A.; VYSTAVKIN, A.N.; POPOV, Ye.T.; KHOTUNTSEV, Yu.L.; SHTYKOV, V.D.

Parametric amplification in the 8 mm. band. Radiotekh. i elektron. 10 no.10:1907-1909 O '65. (MIRA 18:10)

VYSTAVKIN, A. N. and LOMIZE, L . G. and BERNASHEVSKIY, G. A.

"Radiation of Relativistic Electron Flow at Millimeter Waves,"

report presented (by Bernashevskiy) at the 9th Symposium on Millimeter Waves, 31 Mar - 2 April 1959, Brooklyn Polytech. Inst, New York.

Inst. for Radioelectricity and Electronics, USSR

VYSTAVKIN, A. N.

11 июня

(с 18 до 22 часов)

Г. И. [illegible]

[illegible]

С. Г. Афанасьев

Об управлении частотой [illegible] генератора

А. Н. [illegible]

[illegible] шумы [illegible]

М. С. [illegible]

Метод [illegible]

12 июня

(с 10 до 16 часов)

[illegible]

[illegible]

36

Г. Д. [illegible]

[illegible] СВЧ [illegible]

А. Н. Выставкин,

[illegible]

С. С. [illegible]

[illegible]

[illegible]

8. СЕКЦИЯ РАДИОИЗМЕРЕНИЙ

Руководитель Г. Д. Бурдун

9 июня

(с 10 до 16 часов)

А. Г. [illegible]

О [illegible]

37

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORIE), Moscow, 8-12 June, 1959

SOV/109- - -4-3-35/38

AUTHORS: Vystavkin, A.N., Anisimova, Yu.V., and Shakhidzhakov, S.S.

TITLE: Simulation of the Trajectories of Relativistic Electrons in a Magnetic Ondulator (Modelirovaniye trayektoriy relyativistskikh elektronov v magnitnom ondulyatore)

PERIODICAL: Radiotekhnika i Elektronika, Vol 4, Nr 3, 1959, pp 550-551 (USSR)

ABSTRACT: The equation of motion of an electron in a magnetic field can be written as:

$$\frac{d\vec{p}}{dt} = e\left[\vec{v}\vec{H}\right] , \qquad (1)$$

where p, e and v are the impulse, the charge and the velocity of an electron, while H is the magnetic field. If tho radiation energy of the electron is neglected, Eq (1) can be written as Eq (2), where m_o is the rest mass of an electron, while β is the ratio of the absolute velocity of the electron to the velocity of light. Eq (2) can also be written as Eq (3) where ds is an element of the curvi-linear trajectory of an electron. The vector of the curvature of the trajectory can be expressed by Eq (4). For the case of a non-relativistic electron, Eq (4) is in the form of Eq (5). By comparing

Card 1/3

Simulation of the Trajectories of Relativistic Electrons in a Magnetic Ondulator

Eqs (4) and (5), it can be seen that, provided the initial co-ordinates and angles and the magnetic fields are identical, the two equations are also identical; the condition expressed by Eq (6) should also be fulfilled. The above result can be used to simulate the trajectories of relativistic electrons by means of a magnetic ondulator such, for example, as described by H. Motz (Ref 1). The authors also devised an ondulator and this is schematically illustrated in Fig 1. The device consists of: (1) an electron gun, (2) a mechanism for displacing the gun, (3) a bellows, (4) magnetic rails, (5) a drift tube with hermetically sealed windows, (6) a stationary collector electrode, (7) a device for imparting a motion in vacuum and (8) pole-pieces for producing the magnetic field. The authors make

SOV/109- -4-3-35/38

Simulation of the Trajectories of Relativistic Electrons in a Magnetic Ondulator

acknowledgement to G.A. Bernashevsky for suggesting the problem and directing the work.
There are 3 figures and 1 English reference.

SUBMITTED: July 12, 1958

Card 3/3

66712

9.1300 SOV/109-4-8-33/35

AUTHORS: Vystavkin, A.N. and Shakhidzhanov, S.S.

TITLE: Excitation of the Waveguide of a Magnetic Ondulator by an Extended Modulated Electron Beam of Finite Length

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1404 - 1408 (USSR)

ABSTRACT: The problem of main interest in the analysis of a magnetic ondulator is the excitation of the waveguide by a train of relativistic electron bunches which move along a periodic trajectory of finite length. The problem can be solved approximately if the radiation losses and the reaction of the radiated field on the relativistic electron beam are neglected. Only the first harmonic of the periodic electron trajectory is considered. The current of the electron bunches moving along a sinusoidal trajectory (see Figure a) can be written in the form of Eqs (1) and (2), where $\bar{v}$ is the velocity of the electrons along the axis z, v is the velocity of the electrons along the trajectory and j_ω is the amplitude of the current density at a

Card 1/4

Excitation of the Waveguide of a Magnetic Ondulator by an Extended Modulated Electron Beam of Finite Length

frequency ω . The current component $j_{\omega y}$ can be represented by Eq (3), where the quantities γ are defined by Eqs (4). The radiation power for the s-th wave can be determined from Eq (5), where p_s is the power carried by the wave having an electric field component E_s (Ref 10). For a fine beam, Eq (5) can be written as Eq (6), where γ_s is the wave number of the s-th wave and L is the length of the waveguide section occupied by the radiating beam; i is the amplitude of one of the current components. From Eq (6), it is seen that a resonance is attained when:

$$\gamma_T = \gamma_s \qquad (7) .$$

Consequently, the resonance frequencies for a uniform waveguide are given by Eqs (8), provided the waveguide is excited by a fast transverse wave of the type given

Excitation of the Waveguide of a Magnetic Ondulator by an Extended Modulated Electron Beam of Finite Length

by Eq (3). The radiation power in a rectangular waveguide of the ondulator for the H_{10}-wave is given by Eq (10), provided the beam is concentrated near the axis of the waveguide. On the other hand, the radiation power of the E_{11}-wave is given by Eq (11). From the above analysis, it is possible to draw the following conclusions:
1) the harmonics of the beam propagating in the waveguide of an ondulator of finite length are radiated when the beam is modulated;
2) it is possible to limit the number of the waves at which the resonance radiation occurs;
3) on the basis of Eq (10), it is possible to evaluate the optimum parameters for the ondulator so that a maximum radiation power will be obtained, and
4) the intensity of the radiation in the ondulator, in the presence of longitudinal currents, can be higher than that in the presence of transverse currents even in the absence of synchronism.

66712

SOV/109-4-8-33/35

Excitation of the Waveguide of a Magnetic Ondulator by an Extended Modulated Electron Beam of Finite Length

The authors express their gratitude to N.D. Devyatkov and G.A. Bernashevskiy for valuable advice and for directing this work.

There are 1 figure and 13 references, of which 6 are English, 2 French and 5 Soviet.

4

SUBMITTED: January 20, 1959

Card 4/4

80567

S/109/60/005/06/012/021
E140/E163

9.1200

AUTHORS: Anisimova, Yu.V., Bernashevskiy, G.A., Vystavkin, A.N., and Lomize, L.G.

TITLE: Millimeter-Band Investigation of Waveguide Radiators Excited by Relativistic Electron Streams

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 6, pp 969-980 (USSR)

ABSTRACT: In previous theoretical and experimental studies in this field relativistic beams were used, accelerated and bunched in linear electron accelerators or accelerating resonators, fed by power resonators in the centimeter waveband. Magnetic undulators and resonators operating at higher oscillation modes have been used, including dielectric-filled. The radiation power obtained experimentally was as a rule 10 to 100 mW in the longwave portion of the millimeter band but reduced to units or tenths of microwatts at waves of the order of 2 to 3 mm, apparently as a result of insufficiently good bunching of the beam. Cherenkov-radiation experiments were carried out only for low-voltage beams (of the order of 10 kV). The radiation power obtained was a fraction of

Card 1/5

S/109/60/005/06/012/021
E140/E163

Millimeter-Band Investigation of Waveguide Radiators Excited by Relativistic Electron Streams

a microwatt at a frequency of 24 Gcs, coinciding with the bunching frequency of the beam. In general Cherenkov radiation in the millimeter region has not been studied experimentally and the theoretical calculations have been carried out for single electrons moving in an unbounded space or an infinitely long waveguide and for an extended electron beam in an unbounded dielectric medium. Such different approaches to the problem make comparison difficult. In the present work different waveguide radiators are studied from a common point of view and an attempt is made to narrow the existing gap between theoretical and experimental results. The present article considers the following three types of waveguide radiators: smooth waveguide of finite length with rectilinear electron beam, dielectric field waveguide (Cherenkov radiator), magnetic undulator. The approach is to consider the radiation resistance R as the quantity fully characterising a given radiator. In a smooth waveguide

Card 2/5

S/109/60/005/06/012/021
E140/E163

Millimeter-Band Investigation of Waveguide Radiators Excited by Relativistic Electron Streams

the radiation resistance reaches appreciable levels and therefore the radiation in such a waveguide may be observed experimentally without difficulty. For a Cherenkov radiator with a long dielectric delay structure it is difficult to realise synchronism simultaneously at several beam harmonics. It is therefore useful to employ ferrite delay systems permitting regulation of the phase velocities of various waves by magnetic bias of a constant longitudinal magnetic field. The maximum radiation resistance in the Cherenkov radiator at a given frequency occurs for a channel diameter coinciding with the beam diameter and a waveguide diameter calculated from the condition of synchronism for the E_{01}-wave. For the undulator maximum power is radiated at transverse dimensions of the rectangular waveguide equal to the beam width and the sum of the electron oscillation amplitude and the beam thickness respectively. The optimum design of a smooth waveguide radiator corresponds to a waveguide diameter equal to the electron beam diameter (not below

Card 3/5

S/109/60/005/06/012/021
E140/E163

Millimeter-Band Investigation of Waveguide Radiators Excited by Relativistic Electron Streams

critical). The length of synchronised radiators is taken equal to L = 10 cm. At this length the efficiency of synchronised radiators is substantially higher than the efficiency of non-synchronised radiators. The efficiency of the Cherenkov radiator for the present example is substantially greater than the undulator efficiency. An experimental study of these radiators was carried out using a linear electron accelerator operating in the 10 cm band with output energy 0.5 to 5 MeV and pulse current 30 to 50 mA, the tested radiator and a set of measuring instruments. The harmonic composition of the electron beam was not studied experimentally. Therefore the values of R obtained are only relative. They are somewhat low for the following reasons: the shape of the bunch at the accelerator output may differ substantially from rectangular; in calculating R reflection, absorption and conversion losses in various elements of the channel were neglected; the radiation power of the investigated

8c587

S/109/60/005/06/012/021
E140/E163

Millimeter-Band Investigation of Waveguide Radiators Excited by Relativistic Electron Streams

signal sometimes reached tens of milliwatts compared with a calibration signal of 45 μW. It was assumed that the detector characteristic is quadratic. On the average in the range from 10 to 2 mm a decrease of radiation power with decrease of wavelength was observed generally constituting approximately 1 dB per harmonic. There are 11 figures, 1 table and 16 references, of which 15 are Soviet and 1 is English.

SUBMITTED: August 20, 1959

Card 5/5

37100

S/056/62/042/004/006/037
B102/B104

24.7700
9.4178

AUTHORS: Lifshits, T. M., Kogan, Sh. M., Vystavkin, A. N., Mel'nik, P. C.

TITLE: Some effects induced by r-f irradiation in n-type indium antimonide

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 959-966

TEXT: Some effects were studied which arise in n-type InSb at 4.2°K when irradiated with r-f electromagnetic waves of the mm-band. The samples were placed in a helium kryostat between the pole-pieces of an electromagnet and were irradiated by $75 \cdot 10^9$ cps modulated with 1000-cps square pulses; the irradiation intensity was $\sim 10^{-5}$ w/cm^{-2}. The carrier concentration in the samples at 80°K was $6.5 \cdot 10^{14}$ cm^{-3}; their mobility was $4 \cdot 10^4$ cm^2/v·sec. The volt-ampere characteristics were taken at several transverse magnetic field strengths; in not too weak electrical fields the conductivity increases with the field, a fact which agrees with the assumption that in

Card 1/3

S/056/62/042/004/006/037
B102/B104

n-type InSb scattering from ionized impurities is predominant at 4.2°K. In weak fields the characteristics are nonlinear; the authors restrict themselves to positive nonlinearities, characterized by $\beta = [\sigma(E)]^{-1} d\sigma/dE^2$, σ being the conductivity. The emf observed is studied in connection with the following effects: (a) The bolometric effect (heating of the sample by irradiation): no indication. (b) Impurity photoeffect: no indication. (c) Effects at the contacts and the crystal grain boundaries: Effects are unclear; it is improbable that they play a role. (d) Heating of the electron gas by irradiation (change of the energy distribution of the conduction electrons): The emf signal observed in non-zero magnetic field and v = 0 (which cannot be attributed to an impurity photoeffect) is due to an electron-temperature gradient and can be considered as a kind of Nernst-Ettingshausen effect. Semiquantitative estimates and theoretical considerations lead to conclusion that, with and without magnetic field, the emf observed is indeed an "electronic" emf, caused by different electron temperatures at the crystallite faces. There are 7 figures.

ASSOCIATION: Institut radiotekhniki i elektroniki Akademii nauk SSSR (Institute of Radio Engineering and Electronics of the Academy of Sciences USSR)

S/056/62/042/004/006/037
B102/B104

Some effects induced by r-f ...

SUBMITTED: November 4, 1961

Card 3/3

S/120/63/000/001/059/072
E039/E420

AUTHORS: Vystavkin, A.N., Mel'nik, P.G.

TITLE: An input cascade for measuring small emf's from a low resistance source

PERIODICAL: Pribory i tekhnika eksperimenta, no.1, 1963, 189-190

TEXT: In order to investigate the noise properties of semiconductors at low temperatures and for other similar investigations it is necessary to measure extremely small emf's of the order of 10^{-10} V from a low resistance source. A design for the input cascade to a close coupled RF amplifier having an equivalent noise resistance of 200 to 300 ohms is described. This input cascade is placed inside one electrostatic and two magnetic shields. The latter consist of a lead and a steel cylinder. The whole cascade is immersed in liquid helium in the immediate neighbourhood of the sample on which noise measurements are being carried out. A reduction of 60 to 70% in the magnetic field is effected by the steel cylinder and the remainder is removed by the lead which is superconducting at the liquid helium temperature. The results show a linear relationship between the square of the emf and the

Card 1/2

resistance. This input cascade is suitable for measuring the emf of thermal noise in a resistance of 20 ohms at 4.2°K or a sinusoidal emf of 5 to 7 x 10^{-11} V. This is equivalent to the emf of thermal noise in a resistance of 0.3 ohm at room temperature. There is 1 figure.

SUBMITTED: April 7, 1962

Card 2/2

L 10369-63 EWT(1)/BDS/EEC(b)-2--AFFTC/ASD/ESD-3--Pi-4--IJP(C)

ACCESSION NR: AP3000997 S/0109/63/008/006/0994/1001

AUTHOR: Vystavkin, A. N.; Kogan, Sh. M.; Lifshits, T. M.; Mel'nik, P. G. 64

TITLE: Electronic thermomagnetic effect 21

SOURCE: Radiotekhnika i elektronika, v. 8, no. 6, 1963, 994-1001

TOPIC TAGS: Electronic thermomagnetic effect, InSb single crystal specimen, electron concentrations, magnetic field, liquid helium temperature, cavity resonator, sensitivity, radiated power

ABSTRACT: The electronic thermomagnetic effect in InSb n-type single crystal 21 specimens has been investigated. Specimens (5 x 5 x 0.8 mm) with an electron concentration of 10 sup 14 cm sup -3 and a mobility of 0.5 x 10 sup 4 to 5 x 10 sup 4 cm sup 2/v x sec at T sub 0 = 4.2K (without magnetic field) were inserted into a cavity cooled by liquid helium. A generator provided a signal of 75 Gc and was modulated by a 1 kc square wave. The appearance of an emf across the specimen terminals caused by the applied signal was observed only in the presence of a permanent magnetic field. With an increase in the intensity of the magnetic field the emf also increased and at H approximately

Card 1/2

L 10369-63
ACCESSION NR: AP3000997

0

equal to 1700 oe, reached its maximum and then dropped again. It follows from the amplitude characteristics obtained that the photoresponse of the electronic thermomagnetic effect remains linear up to the signal level of 2 x 10 sup -4 w. Sensitivity was determined to be 500 v/w for specimens with carrier concentration of 10 sup 14 cm sup -3. The noise level of samples within the limits of measurement accuracy (plus or minus 50%) was found to be equal to the internal thermal resistance noise of the specimens. Consequently, the minimum detected radiated power with a signal-to-noise ratio equal to unity was 2 x 10 sup -13 w. The inertia of the electronic thermomagnetic effect, which is determined by the transfer time of excessive electron energy to the lattice, was found to be less than or equal to 3 x 10 sup -7 sec. It was noted that the described effect depends very little on the frequency and could therefore be observed during bombardment of the specimen by radiation over a broad spectrum. Orig. art. has: 4 figures and 23 formulas.

ASSOCIATION: none

SUBMITTED: 12Feb63 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 004 OTHER: 001

Card 2/2 ch/ec

ETKIN, Valentin Semenovich; GERSHENZON, Yevgeniy Mikhaylovich. Prinimali uchastiye LAVUT, A.P.; LYUBIMOVA, T.F.; SOINA, N.V.; KHOTUNTSEV, Yu.L.; ROZHKOVA, G.I.; KARMANOVA, Ye.S.; STRUKOV, I.A.; VYSTAVKIN, A.N., retsenzent; ARONOV, V.L., retsenzent; MASHAROVA, V.G., red.

[Superhigh-frequency parametric systems using semiconductor diodes] Parametricheskie sistemy SVCh na poluprovodnikovykh diodakh. Moskva, Sovetskoe radio, 1964. 351 p. (MIRA 17:11)

L 5143-66 EWT(d)/EWT(1)/EWA(h)
ACCESSION NR: AP5026910 UR/0109/65/010/010/1907/1909
621.375.933.029.65

AUTHOR: Berlin, A. S.; Vizel', A. A.; Vystavkin, A. N.; Popov, Ye. I.; Khotuntsev, Yu. L.; Shtykov, V. D. 34 B

TITLE: Parametric amplification in the 8-mm band 25

SOURCE: Radiotekhnika i elektronika, v. 10, no. 10, 1965, 1907-1909

TOPIC TAGS: parametric amplification, millimeter wave

ABSTRACT: In recently published articles (B. C. DeLoach, Proc. IEEE, 1963, 51, 8, 1153 and others) on millimeter-band semiconductor amplifiers, no characteristics have been reported. The present article describes the design and characteristics of and indicates an application for an 8-mm-band parametric amplifier. Coaxial-design epitaxial germanium diodes with 0.04—0.08-pf capacitance and 3—5-v reverse voltage were used in most experiments; critical frequency at a bias of -3 v was 280—430 Gc. The diodes operated as amplifiers at a low pumping power and an operating-point bias of 0.5—2 v. The diodes were tested within -60 + 85C; up to +60C, the leakage current at -1.5 v was 1 μamp or less. The new diodes were tested in a single-cavity 8-mm parametric amplifier (see Fig. 1 of Enclosure). The signal is applied via a tapered waveguide matching unit 1. Behind the diode 4, a short-circuiting section 2 is arranged whose length equals an odd number of

Card 1/3

L 5143-66
ACCESSION NR: AP5026910

quarter-waves. The amplifier is tuned by a short-circuiting line 3 that has a characteristic resistance of 100 ohm. Transformer 5 serves for adjusting the coupling. With a gain of 20 db, the passband was 78 Mc and the noise temperature, 600 ± 150K. The parametric amplifier was used in a modulation-type radiometer whose fluctuation sensitivity was measured. Orig. art. has: 3 figures and 2 formulas.

ASSOCIATION: none [03]

SUBMITTED: 23Jan65 ENCL: 01 SUB CODE: EC.

NO REF SOV: 002 OTHER: 003 ATD PRESS: 4134

Card 2/3

L 5143-66
ACCESSION NR: AP5026910

ENCLOSURE: 01

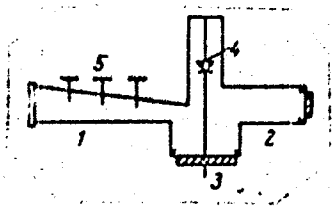


Fig. 1. A parametric semiconductor amplifier for the 8-mm band

Card 3/3

VERKHOVSKAYA, Z.N.; VYSTAVKINA, L.B.; KLIMENKO, M.Ya.; TEVLINA, A.S.; TROSTYANSKAYA, Ye.B.

Coarse-grained ion exchangers as catalysts of the hydration of olefins and dehydration of alcohols. Khim.prom. no.4:248-250 Ap '62. (MIRA 15:5)
(Ion exchange resins) (Hydration) (Dehydration (Chemistry))

VYSTAVKIN, N.I.; RESHETOV, M.; BARKOV, Yu.A.

Readers' letters. Bezop. truda v prom. 8 no.10:56 O '64. (MIRA 17:11)

1. Pomoshchnik glavnogo inzhenera po tekhnike bezopasnosti shakhty im. Oktyabr'skoy revolyutsii tresta Shakhtantratsit kombinata Rostovugol' (for Barkov).

VYSTAVKIN, P. S.

Afforestation - Kursk (Province)

Close planting of oak in spots in the "Dedovo-Veseloe woods." Les i step 4, No. 2, 1952.

Monthly List of Russian Accessions, Library of Congfess , June 1952
Unclassified.