

ZUYEV, V.I.

Some problems concerning the development of a specialized computer for
determining the dynamic characteristics of automatic control systems.
Vych. tekhn. no.3:5-11 '62. (MIRA 15:6)
(Automatic control) (Electronic calculating machines)

ZUYEV, V.K.; LESHCHEN, P.W., Izv. Akad. Nauk SSSR, Ser. Tekhn. Nauk, 1957, No. 1, p. 10.

Our method for increasing the rate of drilling. Neftianik 2 no.7:4-5
Jl '57. (HLRA 10:8)

1. Burovoy master Kraanokanskey kontory turbinnoy drevniya.
(Oil well drilling)

L 04271-67

ACC NR: AP6013297

SOURCE CODE: UR/0413/66/000/008/0090/0091

AUTHORS: Gurevich, A. M.; Zuyev, V. M.; Oleynikov, P. P.

34
B

ORG: none

TITLE: Automatic radiation pyrometer for measuring actual temperature of reflecting non-black bodies. Class 42, No. 180832 [announced by Central Laboratory of Automation (Tsentral'naya laboratoriya avtomatiki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 90-91

TOPIC TAGS: pyrometer, radiation pyrometer, pyrometry, temperature measurement

ABSTRACT: This Author Certificate presents an automatic radiation pyrometer for measuring the actual temperature of reflecting non-black bodies. The pyrometer contains a radiation receiver, a comparator in the form of an incandescent lamp or a black body, and an optical system. To diminish its inertia and to simplify the construction of the head and the placing of the head at a desired distance from the investigated surface, the pyrometer is provided with an additional comparator (an incandescent lamp or a black body) connected in series or in parallel with the basic comparator unit. The radiation characteristics of the two comparators are identical. To make the utilization of older pyrometers possible, the additional comparator may be placed in a separate holder.

SUB CODE: 13/ SUBM DATE: 18Jul63

Card 1/1

UDC: 535.521.087.4

ACC NR: 112063-66 AP6005358

SOURCE CODE: UR/0413/007

39
3

AUTHOR: Zuyev, V. M.

ORG: none

TITLE: Photoelectric pyrometer. Class 42, No. 177660 [announced by Central Automation Laboratory of the State Committee for Ferrous and Nonferrous Metallurgy under Gosplan SSSR (Tsentral'naya laboratoriya avtomatiki gosudarstvennogo komiteta po chernoy i tsvetnoy metallurgii pri Gosplane SSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 98

TOPIC TAGS: photoelectric pyrometer, temperature measurement

ABSTRACT: This Author Certificate presents a photoelectric pyrometer for measuring the temperature of nonluminous objects. The pyrometer contains an objective which projects the image of the object through a field diaphragm onto a sensing element, and an incandescent sighting lamp (see Fig. 1). To increase the sighting accuracy

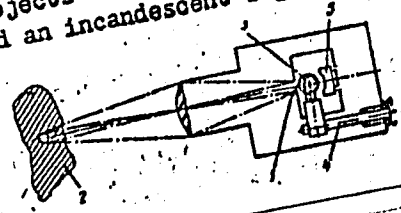


Fig. 1. 1 - field diaphragm; 2 - object; 3 - sighting lamp; 4 - swivel arm; 5 - sensing element

UDC: 535.521.2

ANAN'YEVA, L.M.; ZUYEV, V.M.; DZERDZEYEVSKIY, B.L., prof., otv. red.;
OGANOVSKIY, P.N., red.

[Materials on glaciological research: Zagorsk; heat balance] Ma-
terialy gliatsiologicheskikh issledovaniy: Zagorsk; teplovoi ba-
lans. Moskva, No.4. [Temperature of the soil and the snow cover]
Temperatura pochvy i snezhnogo pokrova. 1961. 141 p.

(MIRA 14:11)

1. Akademiya nauk SSSR. Institut geografii.
(Zagorsk--Soil temperature) (Zagorsk--Snow--Temperature)

ANAN'YEVA, L.M.; ZUYEV, V.M.

Main trends in modern climatological research in France. Izv.
AN SSSR. Ser. geog. no.2:104-107 Mr-Apr '61. (MIRA 14:3)

1. Insitut geografii AN SSSR.
(France—Climatology)

SHESTOPAL, V.M., doktor tekhn. nauk; BERRI, L.Ya., doktor ekon. nauk, retsenzent; ZUYEV, V.M., inzh., retsenzent; IVANOV, D.P., doktor tekhn. nauk, retsenzent; KRYLOV, V.I., inzh., red.; BARYKOVA, G.I., red.iad-va; SMIRNOVA, G.V., tekhn. red.

[Specialization and the design of foundry shops and plants]
Spetsializatsia i proektirovanie liteinykh tsekhov i zavodov. Moskva, Mashgiz, 1963. 223 p. (MIRA 16:10)
(Foundries)

ZUYEV, V.H.; SUBBOV, I.B.; SUBZHINA, K.P.; DTKINA, E.F.; CHESTOV, I.B.

New data on the occurrence mode of tantalum and niobium in wolframite. Dokl. AN SSSR 166 no.1:192-197, July 1966.

(MIRA 1966)

I. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy Institut redkometallicheskoy promyshlennosti. Submitted July 27, 1965.

KOSTERIN, A.V.; KIZYURA, V. Ye.; ZUYEV, V.N.

The ratio of rare earth elements in orthites of some igneous rocks
of northern Kirghizistan. Geokhimiia no. 5:454-456 '61. (MIRA 14:5)

1. Dal'nevostochnyy geologicheskii institut Sibirskogo otdeleniya
AN SSSR, Vladivostok.

(Trans-Ili Ala-Tau--Allanite)
(Rare earth metals)

ZUYEV, Vasily Nikiforovich

ZUYEV, Vasily Nikiforovich, Academic degree of Doctor of Medical Sciences, based on his defense, 29 June 1955, in the Council of the Tashkent Med Inst imeni Molotov, of his dissertation entitled: "Etiology and pathogenesis of chronic gastritis in the hot climate of Central Asia."

For the Academic Degree of Doctor of Sciences

Byulleten' Ministerstva Vysshego Obrazovaniya SSSR, List No. 7, 31 March 1956
Decision of Higher Certification Commission concerning Academic Degrees and titles.

JPRS 512

Zuyev, V. N.

AUTHORS:

Kosterin, A. V., Zuyev, V. N., Shevaleyevskiy, I. D. 7-1-9/12

TITLE:

On the Zr-Hf Ratio in the Zircons of Some Igneous Rocks of North Kirghizia (Ob otnoshenii Zr/Hf v tsirkonakh nekotorykh izverzhennykh porod severnoy kirgizii)

PERIODICAL:

Geokhimiya, 1958, Nr 1, pp. 86-89 (USSR)

ABSTRACT:

In the rocks of the acidic series zirconium, and together with it hafnium, is almost only found as zircon. Thus the Zr-Hf ratio of the zircon can be taken as that of the rock. This ratio depends on the origin. The igneous rocks of the southern slope of the Zailiyskiy Alatau were investigated because there all types from gabbros to alaskite granites are found. According to Tikhomirov, Luyk and others the rocks of this region were formed in the following sequence:

- 1) Proterozoic cycle, gneissoid alaskite granites;
- 2) Caledonian cycle, gabbro, diorites, granodiorites, porphyroid biotite hornblende granites;
- 3) Varistic cycle, rose-colored biotite hornblende granites, syenites, alaskite granites;

There is a genetic connection between the Varistic alaskite

Card 1/3

On the Zr-Hf Ratio in the Zircons of Some Igneous Rocks
of North Kirghizia

7-1-7/12

granites and zircon-bearing hydrothermal veins.

The Zr-Hf ratio of the different rocks and of the hydrothermal veins was determined by X-ray analysis: the relative error of the ratio was 5%. The data are given in a table, and besides are shown in a diagram.

The investigations have shown:

- 1) In the zircons of the Variscite and Proterozoic alaskite granites the Zr-Hf ratio is equal and amounts to 36.
- 2) In differentiation this ratio is changed according to certain laws from 71 in the gabbro to 36 in the alaskites and 29 in the corresponding hydrothermal veins;
- 3) In zircons of rocks of the same compounds certain variations in the ratio were stated. With that an overlapping of the Zr-Hf ratio of rocks of different compounds was observed, but these rocks are placed closely together in the series of magmatic differentiation. There are 1 figure, 1 table, and 4 references, 3 of which are Slavic.

ASSOCIATION:

Institute for Geochemistry and Analytical Chemistry imeni
V. I. Vernadskiy AN USSR, Moscow (Institut geokhimii i
analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva)

Card 2/3

On the Zr-Hf Ratio in the Zircons of Some Igneous Rocks of
North Kirghizia

7-1-9/12

SUBMITTED: October 10, 1957

AVAILABLE: Library of Congress
1. Rock-Analysis

Card 3/3

ZUYEV, V.N.

Peculiarities of the zonal structure of scheelite and wolframate. Trudy Min.muz. no.9:185-189 '59. (MIRA 12:6)
(Scheelite) (Wolframite)

KOSTERIN, A.V.; ZUYEV, V.N.; SHEVALEYEVSKIY, I.D.

Zr/Hf ratio in zircons of some igneous rocks of Northern Kirghizistan.
Geokhimiia no.1:86-89 '58. (MIRA 11:4)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo
AN SSSR, Moskva.
(Kirghizistan--Rocks, Igneous) (Zirconium) (Hafnium)

ZUYEV, V. N.

ZUYEV, V. N. -- "The Etiology and Pathogenesis of Chronic Gastritis under
Conditions of the Hot Climate of Central Asia." Tashkent, 1955.
(Dissertation for the Degree of Candidate in Medical Sciences)

SO: Knizhnaya Letopis', No 1, 1956

ZUYEV, V.N.; KOSTERIN, A.V.

Fluocerite from deposits of Central Asia. Trudy Inst. min.,
geokhim. i kristalloghim. red. elem. no. 3:151-153 '59.

(Soviet Central Asia--Fluocerite) (MIRA 14:5)

DRUZHININ, A.V.; TIKHONOV, N.D.; ZUYEV, V.N.

Lead-zinc mineralization in molybdenum deposits of eastern
Transbaikalia. Trudy IGEM no.83:505-522 '63. (MIRA 16:11)

L 2256-55 EWT(1)/T/EWA(h) IJP(c) AT

ACCESSION NR: AP5007687

AUTHOR: Zuyev, V. O. (Zuyev, V. A.); Savchenko, A. V.; Tolpygo, K. B. (Tolpygo, K. B.)

44, 55

8/0185/65/010/003/0275/0286 40
44, 55 31 B

TITLE: Kinetics of photoconductivity in semiconductors with minority carrier capture levels on the surface

44, 55

21, 44, 55

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 3, 1965, 275-286

TOPIC TAGS: semiconductor, minority carrier, photoconductivity, capture level, surface state

ABSTRACT: The dependence of photoconductivity on the modulation frequency and on the semiconductor parameters is determined for the case of sinusoidally modulated and strongly absorbed light. Account is taken of the bending of the bands at the surface, due to the existence of several surface levels. It is assumed that capture of minority carriers and adhesion of majority carriers on the surface are possible. The problem is solved in the linear approximation under several simplifying assumptions. The expression obtained is the sum of the bipolar photoconductivity and the monopolar photoconductivity. The contributions of these two

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L 2256-66

ACCESSION NR: AP5007687

components are different for different bending of the bands and depend on the ratio of the lifetimes of the carriers in the bands and at the surface levels. An analysis of several limiting cases is presented. The nonstationary photoconductivity produced in the case when strongly absorbed light produces carriers of both signs is considered for sinusoidally modulated light, and the dependence of the complex photoconductivity on the frequency of modulation and on the parameters of the semiconductor is determined. The results show that the frequency dependence of the photoconductivity depends appreciably on the ratio between the volume and surface parameters of the semiconductor and can vary in proportion to the frequency raised to negative powers $1/2$, 1 , $3/2$, or 2 . The transition from one type of fall-off to the other depends on the semiconductor parameters. It is also shown that, depending on the surface kinetic parameters, carriers of any one polarity can accumulate on this surface. The expressions obtained can be used to interpret photoconductivity-kinetics experiments in which the surface has a strong effect, and also to determine the parameters of the surface centers. "The authors thank Candidates of Physical Mathematical Sciences V. G. Edizorchaniko and O. V. Snitko for interest in the work." Orig. art. has: 3 figures and 41 formulas.

4459
Card 2/3

L 2256-66

ACCESSION NR: AP5007687

9

ASSOCIATION: Instytut napivprovidnykiv AN URSR, Kiev [Institut poluprovodnikov AN UkrSSR] (Institute of Semiconductors, AN UkrSSR)

SUBMITTED: 28 May 64

ENCL: 00

14.55

HRB CODE: 21,88

HR REF SOV: 005

OTHER: 002

Card 3/3

RYZHKOVA, O.A.; HAIMOV, R.N.; ZUYEV, Yu.N.

New data on the gas potential of the Paleozoic sediments of the Samarkand megasyncline. Neftegaz.geol. i geofiz. no. 12:3-5 '63. (MIRA 17:5)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy AN UzSSSR.

ZUYEV, V. N.

PHASE I BOOK EXPLOITATION

307/5740

31

Akademiya nauk SSSR. Institut mineralogii, geokhimi i kristalloghimi redkikh elementov

Voprosy mineralogii, geokhimi i genezisa mestorozhdeniy redkikh elementov
(Problems in Mineralogy, Geochemistry, and Deposit Formation of Rare Elements)
Moscow, Izd-vo AN SSSR, 1960. 253 p. (Series: Its: Trudy, v. 72. 4) Errata
printed on the inside of back cover. 2,200 copies printed.

Chief Ed.: K. A. Vlasov, Corresponding Member, Academy of Sciences USSR;
Resp. Ed.: V. V. Lyakhovich; Ed. of Publishing House: L. S. Tarasov;
Tech. Ed.: P. S. Kashina.

PURPOSE: This book is intended for geologists, mineralogists, and petrographers.

COVERAGE: This is a collection of 25 articles on the formation, geology,
mineralogy, petrography, and geochemistry of deposits of rare elements in
Siberia and [Soviet] Central Asia. The distribution and characteristics of
rare elements found in these areas as well as some quantitative and qualitat-
ive methods of investigating the rocks and minerals in which they are found,

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Problems in Mineralogy (Cont.)

807/9740

or with which they are associated, are discussed. Two articles present an economic investigation of the possibilities of industrial extraction and utilization of selenium, tellurium, and hafnium. No personalities are mentioned. Each article is accompanied by references.

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Card 2/6

Problems in Mineralogy (Cont.)

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MINERALOGY AND PEGMATITIS

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Problems in Mineralogy (Cont.)

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Igakherich, V. V., and A. D. Chervinskaya. On the Character of the Distribution of Accessory Minerals in Granite Massifs

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Kuz'menko, M. V. Genetic Types of Deposits and Ore Manifestations of Niobium and Tantalum

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Card 4/6

Problems in Mineralogy (Cont.)

31

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Card 5/6

Problems in Mineralogy (Cont.)

407/5740

31

Loginova, L. A. Experiment in Measuring the Optical Constants of
Görmannite and Renierite

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ECONOMICS OF RARE ELEMENTS

Leksin, V. N. Prospects in the Industrial Extraction of Selenium
and Tellurium From the Products of Copper-Molybdenum Ore Processing

235

Kaganovich, S. Ya. Hafnia (Economic Survey)

246

AVAILABLE: Library of Congress

Card 6/6

JH/urz/ras
11-14-61

KOSTERIN, A.V.; ZUYEV, V.N.

Hydrothermal huttonite. Zap. Vses. min. ob-va 91
'62.

(Huttonite)

no.1:99-102
(MIRA 15:3)

BASS, Yu.P.; GILYAZETDINOV, L.P.; ZUYEV, V.P.; SAULINA, V.V.

Obtaining low cross-linkage active furnace black. Kauch. i rez.
22 no.4:25-27 Ap '63. (MIRA 16:6)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Carbon black)

ZUYEV, V.P.; MIKHAYLOV, V.V.; LUCHINSKIY, G.P., redaktor; HAKOV, S.I.,
tekhnikheskiy redaktor.

Proizvodstvo sashi, Moskva, Gos.nauchno-tekhn. izd-vo khim. lit-ry,
1953. 198 p.

(MKRA 7:4)

(Carbon black)

SOV/138-58-8-2/11

AUTHORS: Zuyev, V. P.; Gilyazetdinov, L. P. and Yevreinova, M. O.

TITLE: The Chemical Composition of Crude Petroleum Products Used in the Manufacture of Carbon Black (O khimicheskoy sostave neftyanogo syr'ya dlya proizvodstva "sazhi")

PERIODICAL: Kaucuk i Rezina, 1958, Nr 8, pp 12 - 14 (USSR)

ABSTRACT: The kerosine-gas-oil fraction (obtained during pyrolysis and coking of petroleum) is used as raw material for the preparation of jet carbon black in the USSR. In the USA and England aromatised gas-oil fractions, obtained during the thermal and catalytic processing of petroleum, are used for the manufacture of the activated carbons HAF, ISAF and SAF. No detailed investigations have been published on the effect of the chemical composition of the raw material on the yield and properties of the carbon black. The nature of the gas-oil fraction of crude petroleum and its products is defined by the GrozNII method by which the percentage of aromatic, naphthenic, paraffinic and olefinic hydrocarbons is determined. The authors used the n-d-M method (Ref.3) for defining the composition of the pyrolysis and of the coke distillate. They determined by experiments the molecular weight M , the refractive index n_D^{20} and the specific weight d_4^{20} . The hydrocarbon content was de-

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SOV/138-56-84/11

The Chemical Composition of Crude Petroleum Products Used in the Manufacture of Carbon Black

defined by chromatographic analysis according to the TsIATIM method (Ref.6) and the degree of unsaturation of the samples was determined iodometrically. The physico-chemical characteristics of the samples of raw material are listed in Tables 1 and 2, and results of the chromatographic analysis in Table 3. The total content of pure paraffins and olefins in the pyrolysis fraction does not exceed 5%; therefore, this fraction consists of aromatic and naphthenic-aromatic hydrocarbons, two condensed rings and partially unsaturated side chains. The content of paraffinic-naphthenic hydrocarbon in the coke distillate fraction varies between 40 - 53%. Approximately 50% of this quantity represents pure paraffinic and olefinic hydrocarbons and it comprises 27% bicyclic aromatic hydrocarbons. The degree of aromatization increases in both

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SOV/138-58-8-2/11
The Chemical Composition of Crude Petroleum Products Used in the
Manufacture of Carbon Black

fractions when the temperature is raised (Table 5).
The degree of aromatization and cyclisation can be
increased in the coke distillate fraction by boosting
the content of high boiling-fractions. There are 5
Tables and 7 References: 3 Soviet and 4 English.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promy-
shlennosti (Research Institute of the Tyre Industry)

Card 3/3

S/138/60/000/008/007/015
A051/A029

AUTHORS: Gilyazetdinov, L.P.; Zuyev, V.P.; Livshits, F.B.; Saulina, V.V.

TITLE: The Production of Low-Module Furnace Carbon Blacks From Liquid Shale Raw Material

PERIODICAL: Kauchuk i Rezina, 1960⁹, No. 8, pp. 32 - 35

TEXT: The effect of the chemical composition of the raw material on the properties of the carbon black was studied on shale oil, shale softener and its mixtures with green oil. The experimental procedure for the production of furnace carbon black with an output capacity of 20kg/h was described in Refs. 1,2. The content of oxygen and oxygen-containing compounds in the liquid shale raw material is 10.9 and 77.8%, respectively, which is a significant difference from green oil. It was established that with an equal specific surface the carbon black produced from shale raw material has significantly lower oil numbers than carbon blacks from green oil. Rubbers containing carbon blacks derived from a shale softener and its mixtures with green oil are close to rubbers with gaseous channel carbon black in their physico-mechanical properties. The carbon blacks from shale raw material produce rubbers with low modulus and high relative elongations. Tests were carried out on semi-active and active carbon blacks and it was noted that the

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S/138/60/000/008/007/015
A051/A029

The Production of Lower-Module Furnace Carbon Blacks From Liquid Shale Raw Material

vulcanizates of the standard mixtures based on CK6(SKB), CKC-30AM (SKS-30AM) containing shale carbon black had low modulae at high values of the tenacity limit and the specific elongation. With an increase of the shale softener in the initial raw material, the tensile strength changes within the limits of 220 - 257 kg/cm², whereas in modulae with 300% the elongation and specific elongations are equal to 130 - 56 kg/cm² and 470 - 667%, respectively. The low structuralization of the carbon blacks produced from shale raw material and the low modulae of the vulcanizates using these carbon blacks is explained by the specific effect of the oxygen-organically bound with a raw material molecule on the formation process of the carbon black particles in a turbulent flame. The authors point out that this mechanism has not been completely investigated. They stress the fact that the shale oil and the shale softener can be applied as raw material to the production of special low-module carbon blacks or as a component part of raw material, which gives the carbon black a low structuralization with a wide variety of properties. There are 4 tables and 7 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

Card 2/2

S/138/61/000/002/006/008
A051/A129

AUTHORS:

Zuyev, V.P.; Gilyazetdinov, L.P.; Tesner, P.A.

TITLE:

The effect of the structural group composition of hydrocarbon oils on the yield and properties of carbon black

PERIODICAL:

Kauchuk i rezina, no. 2, 1961, 29 - 32

TEXT:

The authors have investigated the possibility of using a new complex index for characterizing the raw material: the factor of aromatization A , which is the product of the total number of rings in the molecule and the carbon content in aromatic structures: $A = K_0 \cdot C_A$ (1), where K_0 is the total number of rings in the molecule (aromatic + naphthene), C_A is the carbon content in the aromatic structures, %. The aromatization factor is additive with respect to the molecular parts of the mixture components. The disadvantage of this index is that it cannot be applied to low-aromatized oils, which, however, are hardly used in the production of carbon black. The authors show that this aromatization factor A characterizes the effect of the composition of oil and coal raw materials on the yield and the properties of the carbon black in the same way. With an increase in the aromatization factor, the yield, specific surface and oil number of

Card 1/4

The effect of the structural....

8/138/61/000/002/006/008
A051/A029



the carbon black increase at the same time. Various forms of petroleum and coal oils and their mixtures were burned experimentally, using equipment with a productivity of 20 kg/h based on the raw material. The relationship of the specific surface of the carbon black S determined by the kinetic method to the aromatization factor is expressed by the equation: $S = 30 + 8.13 \cdot 10^{-4} \cdot A^{2.14} \text{ m}^2/\text{g}$ (2). The intensity coefficient of the process of carbon black formation I calculated on the basis of data on the yield and dispersion of the carbon black. This coefficient is the number of carbon black particles formed from one gram of carbon raw material: $I = 3.1 \cdot p \cdot 10^8 \cdot S^3 \text{ g}^{-1}$ (3), where p is the carbon black yield, %.

The logarithm of the intensity coefficient has a linear relationship to the logarithm of the aromatization factor of the raw material (Fig. 3). This relationship is expressed by the equation: $I = 8.5 \cdot 10^8 \cdot A^{3.43} \text{ g}^{-1}$ (4). The results showed that the number of carbon black particles formed depends to a great extent on the aromatization factor. The authors point out that an aromatization factor of no less than 140 must be used in the production of jet and lamp oil carbon black with a yield of 56 and 63%, respectively. They also point out that compounds containing sulfur, nitrogen and oxygen increase the specific gravity of the raw material, but their action is not equivalent to the increase in the degree of aromatization of the raw material. There are 4 figures, 1 table and 15

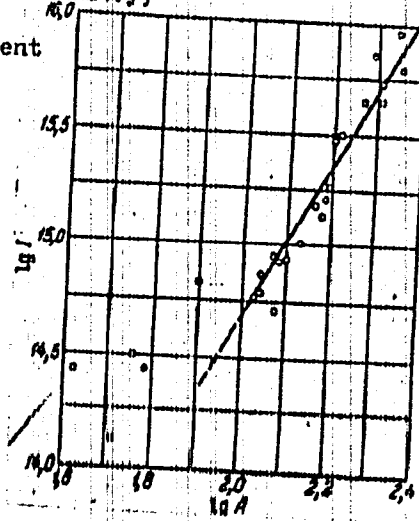
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The effect of the structural....

B/138/61/000/002/006/008
A051/A129

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

Figure 3: Relationship of the intensity coefficient of the carbon black formation process to the aromatization factor of raw material.



Card 3/4

The effect of the structural....

S/138/61/000/002/006/008
A051/A129

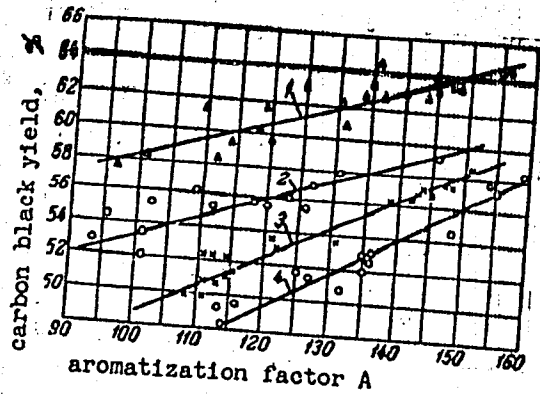


Figure 4: Relationship of the yield of lamp and jet carbon black to the aromatization factor of the raw material (industrial production of carbon black):
1 - lamp carbon black with a specific surface of 14 - 16 m²/g;
2 - Jet carbon black with a specific surface of 20 - 21.5 m²/g;
3 - Jet carbon black with a specific surface of 22 - 22.5 m²/g;
4 - Jet carbon black with a specific surface of 23 - 25 m²/g.

Card 4/4

ZUYEV, V.P.

All-Union Conference on the quality and the variety output of
carbon black. Kauch. i rez. 20 no. 4:59-61 Ap '61.

(Carbon black--Congresses) (MIRA 14:5)

S/138/62/000/001/002/009
A051/A126

AUTHORS: Gilyazetdinov, L.P.; Zuyev, V.P.; Bernshteyn, I.D.; Suyetanko,
L.P.

TITLE: The production of active furnace carbon blacks from mixtures of pe-
troleum and coal oils

PERIODICAL: Kauchuk i rezina, ²¹no. 1, 1962, 5 - 6

TEXT: Tests were carried out to determine the optimum composition of pe-
troleum and coal oil mixtures and the production of active furnace carbon blacks.
The experiments were made in a single-chamber cylindrical reactor with an inter-
nal diameter of 500 mm and 3.5 m in length. The reactor capacity was 25 kg/h.
The experimental carbon blacks were analyzed according to physico-chemical meth-
ods and tested in vulcanizates based on OKC-30 AM (SKS-30 AM) (standard composi-
tion). Experimental results showed that the active furnace carbon black output,
the total air consumption and the process temperature corresponded to the aroma-
tization factor. The obtained relation points to the expediency of a wide in-
troduction of the aromatization factor for characterizing the raw material and
for correcting the production methods of the active furnace carbon blacks. Pe-

Card 1/2

The production of active furnace carbon blacks S/138/62/000/001/002/009
A051/A126

petroleum and coal oil mixtures are recommended. There is 1 table and 1 figure.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

Card 2/2

8/138/62/000/011/003/008
A051/A126

AUTHOR: Zuyev, V.P.

TITLE: Investigation of the carbon black formation process in a turbulent flame and the development in the production of active furnace carbon blacks from liquid raw material

PERIODICAL: Kauchuk i rezina, no. 11, 1962, 6 - 11

TEXT: Series of experiments were conducted to develop the production technology of active furnace carbon blacks from liquid raw materials - hydrocarbons. Experiments showed that it is possible to produce highly-dispersed carbon blacks in incomplete combustion of diffused liquid raw material in a highly turbulent flame. The present article describes the major aspects of the relations between process conditions and the properties of the furnace carbon blacks. Active and semi-active furnace carbon blacks can be produced with a wide range of proper- ties in a cylindrical single-chamber reactor. With the growing specific air con- sumption at constant distribution, the carbon black dispersion increases and its yield decreases. At a constant specific air consumption, an increase in the air

Card 1/3

Investigation of the carbon black formation process... S/138/62/000/011/003/008
A051/A126

quantity supplied to the tangential channel, reduces texture and dispersion of the carbon black. With an increase in consumption and rate of the dispersing air and also of the air supplied to the base of the torch, the carbon-black-yield drops and its dispersion increases. An increase in the air-supply rate to the tangential channel has no significant effect on the production process and on properties of the carbon black. The optimum consumption and rate of the dispersing air were found to be $1.0 \text{ m}^3/\text{kg}$ of raw material and 80 m/sec , respectively. With an increase in the reactor load of raw material, during the production of ПМ-70 (PM-70) carbon black, the heat losses of the reactor and the specific air consumption are both dropping as a result of this. The optimum specific load of the cylindrical reactor, in the production of PM-50 and PM-70 from green soap, was found to be $225 - 440$ and $440 \text{ kg/m}^2 \cdot \text{h}$ of raw material. The experimental carbon blacks PM-50, PM-70 and PM-100 were found to be equivalents to their imported counterparts in physico-mechanical tests of standard and tread rubber mixtures, based on CKC -30 APM (SKS-30ARM) and CKC -30 AM (SKS-30AM). The possibility of producing PM-70 carbon black with a lowered structuralization in a cyclon reactor was proved. The carbon-black yield increases by $1.3 - 1.5$ times as compared to that in the cylinder reactor. Recommendations

Card 2/3

Investigation of the carbon black formation process... \$/138/62/000/011/003/008
have been made and industrial production processes developed for production, re- A051/A126
covery and processing of active furnace carbon blacks. There are 9 tables and 4
figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scien-
tific Research Institute of the Tire Industry)

Card 3/3

Lo0905-66 EWT(m)/EPF(c)/EWP(j) RM

UR/0138/65/000/006/0019/0024
678.046.2.002.2.001.4 23

ACCESSION NR: AP5016635

AUTHORS: Zuyev, V. P.; Gilyazetdinov, L. P.; Gyl'minaryan, T. G.; Safronov, N. B.;
Ya.; Vernshetyn, I. D.; Glagolev, V. I.; Tsypankova, E. I.; Sokolova, V. V.;
Bystrov, K. M.; Khokhlov, B. P.

TITLE: Some peculiarities of the production of carbon black PM 70 in cyclone-
type reactors by using thermocatalytic gas oil

SOURCE: Kauchuk i rezina, no. 6, 1965, 19-24

TOPIC TAGS: gas oil fraction, carbon black, catalytic cracking / PM 70 carbon
black

ABSTRACT: The production of active carbon black PM-70 from a 1:1 mixture of
thermocatalytic gas oil and green oil was investigated to correct certain tech-
nological parameters and to determine the behavior of carbon black during its re-
covery and processing. The tabulated physico-chemical properties of green oil,
and their mixture show that the thermocatalytic gas oil is distinguished by a high
polycyclic aromatic hydrocarbon content. The analysis of several gas oil frac-
tions showed that its kinematic viscosity at 50C varies over a range of

Card 1/3

L00905-66

ACCESSION NR: AP5016635

9.5-11.8 x 10⁻² m²/sec. The viscosity of the 1:1 mixture varies from 3.6 to 3.9 x 10⁻² m²/sec. The kinematic viscosity plotted against heating temperature shows that the green oil and gas oil have the same viscosity only at a temperature of 280-300C. The viscosity value of 1.05 x 10⁻² m²/sec is reached for green oil only at 100C, and for gas oil and green oil mixture at 140C. Pure gas oil has this viscosity at 185C. The high viscosity, high boiling point, and the wide fractional composition of the gas oil make it necessary to preheat it by 80-100C higher than the green oil at minimum 160C before its introduction into the reactors. The average diameter of the droplet of raw material is plotted against the vaporizing air flow rate and the temperature before the atomizer. With an increase in the air flow rate from 0.45 to 1.0 m³/kg, the diameter of the droplet decreased 2.0-2.2 times. During the experiments the gas oil content in the mixture, the heating temperature, and the specific flow rate of vaporizing air were varied. The other technological parameters were almost constant (total specific air flow rate of 4.8-5.1 m³/kg, gas flow rate of 0.25-0.28 m³/kg of raw material, reactor temperature of 1395-1400C). Tabulated data show that by increasing the air flow rate and temperature the specific surface and the oil content of carbon black were increased, while the optical density of the benzene extract of carbon black decreased. The technological data and properties of carbon black PM-70

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100905-66

ACCESSION NR: AP5016635

2

are tabulated and discussed. It was established that the carbon black yield is almost the same as that obtained from pure green oil. The thermophysical properties of the gaseous reaction products of carbon black formation are compared. Vulcanizates obtained with FM-70 carbon black have a higher tear strength due to the larger specific surface and oil content. Experimental data show that a carbon black plant equipped with cyclone-type reactors and a dry system of carbon black recovery can be altered to use a mixture of gas oil and green oil. An increase in the vaporizing air flow rate leads to an increased dispersal and oil content of FM-70 carbon black and to the decrease in coking of reactors. It is recommended to increase the air flow rate to 1.0 m³/kg oil. The addition of gas oil to green oil results in the stabilization of the granulation operation on the ASA 1 drums. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute for the Tire Industry); Novo-Yaroslavl'skiy sazhevyy zavod (Novo-Yaroslavl Carbon Black Plant)

SUBMITTED: 00

ENCL: 00

SUB CODE: FP, GO

NO REF SOV: 005

OTHER: 001

Card 3/3 DP

ZUYEV, V.P.; GILYAZETDINOV, L.P.; GYUL'MISARYAN, T.G.; SAFRONOV, N.Ya.;
BERNSHTEYN, I.D.; GLAGOLEV, V.I.; TSYGANKOVA, E.I.; SOKOLOVA, V.V.;
BYSTROV, K.M.; KHOKHLOV, B.P.

Some characteristics of the production of PM 70 carbon black in
cyclone reactors with the use of thermogas oil. Kauch. i rez. 24
no.6:19-24. Je '65. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i
Novo-Yaroslavskiy sazhevyy zavod.

ZUYEV, V.P.; GILYAZETDINOV, L.P.; GYUL'MISARYAN, T.G.; BERNSHTEYN, I.D.;
SAULINA, V.V.; MAGARIL, R.Z.; SEREBRYAKOV, K.F.; BORSHCHEV, B.S.

Extracts of catalytic gas oils as raw stock for the production
of furnace black. Khim. i tekhn. topl. i masel 9 no.12:6-11 D '64.
(MIRA 18:2)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti,
Omskiy nauchno-issledovatel'skiy konstruktorskogo-tekhnologicheskoy
institut shinnoy promyshlennosti, Omskiy sazhevyy zavod i
Kudinovskiy sazhevyy zavod.

BASS, Yu.P.; GILYAZETDINOV, L.P.; ZUYEV, V.P.

Investigating the formation of carbon black in the pulverization
of hydrocarbon stock in the turbulent flow of combustion products.
Gaz. prom. 8 no.8:35-40 '63.
(MIRA 17:11)

ABAYEVA, B.T.; AGAFONOV, A.V.; GILYAZETDINOV, L.P.; GYUL'MISARYAN, T.G.;
ZUYEV, V.P.; MOROZOV, V.I.

Testing thermocatalytic gas oil in the production of furnace black.
Nefteper. i neftekhim. no.12:17-19 '63. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke
nefti i Nauchno-issledovatel'skiy institut shhinnoy promyshlennosti.

ZUYEV, V.P.

Investigating the process of carbon black formation in a turbulent flame and development of the technology for the production of active furnace black from liquid fuels.
Kauch, i rez. 21 no. 11:6-12 N '62.

(MIRA 15:12)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

(Carbon black)

ZUYEV, V.P.

Preventing the wear of the cable of a cable-drilling machine.
Sbor.rats.predl.vnedr.v proizvod. no.5:10 '60. (MIRA 14:8)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat, Lebyazhinskoye
rudoupravleniye.
(Boring machinery--Safety measures)

ZUYEV, V.S.; KRYUKOV, P.G.

Calorimeter for measuring the energy emitted by an optical maser.
Prib. i tekhn. eksp. 8 no.3:188-189 My-Jib '63. (MIRA 16:9)

1. Fizicheskiy institut AN SSSR.
(Calorimeters) (Lasers)

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002065620019-0

Types of Jets for Flights at High Velocity"

Soviet Source: P: Tekhnika Molodezhi, Aug. (1945) Moscow

Abstracted in USAF "Treasure Island" Report No. 10745, on file in Library of Congress, Air Information Division.

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002065620019-0"

ZUIEV, V. S.

PHASE I Treasure Island Bibliographic Report

AID 135 - I

Call No.: TL709.I.53

BOOK

Author: ZUIEV, V. S., and INOZEMTSEV, N. V.

Full Title: AVIATION GAS TURBINE ENGINES

Transliterated Title: Aviatzionnyye gazoturbinnyye dvigateli

Publishing Data

Originating Agency: None

Publishing House: State Publishing House of the Defense Industry (Oborongiz)

Date: 1949

No. pp.: 467

No. of copies: 8,000

Editorial Staff

Editor: None

Ed.-in-Chief: None

Tech. Ed.: None

Appraiser: None

Others: Gratitude for valuable assistance is expressed to Professor Doctor M. M. Maslennikov.

Text Data

Coverage: Materials on the theory and calculation of aviation gas turbines are classified and processed. The order of classification is as follows: methods of determination of the force of thrust, general characteristics of reaction engines, thermodynamic calculation of the gas turbine engine, method of determination of specific force of thrust and specific consumption of fuel, characteristics of gas turbine engines, methods of calculation of speed and altitude characteristics, principles of adjustment of gas turbine engines, and theoretical premises of con-

Card 2/2

Full Title: AVIATION GAS TURBINE ENGINES

AID 135 - I

Call No.: TL719.I.53

Text Data

Coverage(cont.): bustion in the gas flow. At the end of the book the description of various forms of gas turbine engine design is given.

Comments: Diagrams which appear in the second part of this book represent American, British, and German turbo-jet engines and their components. The major part of these illustrations appeared in the British periodical Flight in 1945 - 1946.

Purpose: A textbook on general problems of the theory and calculation of gas turbine engines, written according to the program of the Ministry of Higher Education, for aviation institutes, and destined for senior students specializing in aviation gas turbine engines. It may also be used by engineers and scientific workers, in the field of reaction technique.

Facilities: None

No. of Russian and Slavic References: 20

Available: Library of Congress

ZUYEV, V. S., and INOZEMTSEV, N. V.

Aviation Gas Turbine Engines, 2nd Edition. 1955.

ZUYEV, V.; KAZAKOV, A.; DERBOGLAV, Ye.

Aviation personnel of the Ukraine discover the potentialities of
production. Grazhd.av. 13 no.8:30-31 Ag '56. (MLRA 9:10)

(Ukraine--Aeronautics, Commercial)

PHASE I BOOK EXPLOITATION

855

Zuyev, Vladimir Stepanovich and Skubachevskiy, Leonid Semenovich

Kamery sgoraniya vozdušno-reaktivnykh dvigateley; uchebnoye posobiye.
(Combustion Chambers of Jet Engines; a Textbook) Moscow, Oborongiz,
1958. 213 p. 8,300 copies printed.

Sponsoring Agency: Moscow. Aviatсионnyy institut im. Sergo
Ordzhonikidze, Ed.: Zaytseva, K. Ya., Engineer; Ed. of Publishing
House: Suvorova, I.A.; Tech. Ed.: Rozhin, V.P.; Managing Ed.:
Zaymovskaya, A.S., Engineer.

PURPOSE: This book is a textbook for students of senior classes of
vuzes who specialize in jet engines and gas turbine power plants
and for engineers and scientific workers working in this field.

COVERAGE: This book is based on lectures given by V. S. Zuyev to
students of the engine design department of the Moscow Aviation
Institute in 1954-1955. It deals with general notions of funda-
mental processes, characteristics and design of combustion cham-
bers. The authors give a brief review of combustion theory,

Card 1/6

Combustion Chambers of Jet Engines (Cont.)

855

describing the elements of kinetics and mechanism of chemical reactions, selfignition, and propagation of the flame in the flow. They review the fundamentals of thermodynamics of jet engine combustion chambers, examine thermal and hydraulic losses, and describe the design and working processes of jet engine combustion chambers. The hydraulic analysis section of Chapter VII was written by Docent G. M. Gorbunov of the Moscow Aviation Institute. For further study the authors recommend works of L. N. Khitrin and G. F. Knorr. The authors thank Docent G. M. Gorbunov and Engineer P. I. Shevchenko for their advice and valuable comments in reviewing the manuscript. The book is based on Soviet materials. There are 12 Soviet references including one translation.

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Combustion Chambers of Jet Engines (Cont.)

855

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IS/wde
11-6-58

PROCESSES AND PROPERTIES INDEX

S. of C. J.

Vulcanised Natural Rubber

Problem of high elastic strain. V. S. Zvez, *Doklady Akad. Nauk S.S.S.R.*, 1967, 73, 730-7; *Chem. Abstr.*, 1961, 48, 922. The model and formula proposed by P. A. Rebanter (*Koll. Zhur.*, 1949, 10, 469-74; *Chem. Abstr.*, 1949, 43, 7770; *Doklady Akad. Nauk S.S.S.R.*, 1949, 71, 85-8; Summary, 1949, 88, 785) are confirmed for natural rubber, polybutadiene, and polychloroprene. Numerical values for constants in the formula are mentioned. 63424

July 5

ASO. SLS METALLURGICAL LITERATURE CLASSIFICATION

10000 01 10000 01 01000 01 01000 01

POLYMER AND PROPERTY INDEX

Polymer from Hydrocarbon

S. J. E. Z.

May 51

Change in the mechanical properties of sodium butadiene rubber under the action of ozone. V. S. ZIL'BER, *Doklady Akad. Nauk S.S.S.R.*, 1920, 14, 987-9. *Chem. Abstr.*, 1921, 16, 2250. The effects of treatment of samples about 100% thick with oxygen containing 0.9% ozone, at room temperature, are characterized by changes in the magnitude of the initial modulus of high elasticity E_{∞} , the equilibrium high-elasticity modulus E_{∞} , the period of viscous afteraction θ and the viscosity of elastic afteraction. The data on P. A. Rebiner's model and defined by $\eta = E_{\infty}(\theta_0 + t)$ and $\theta = (E_{\infty} - E_{\infty}) / \dot{\epsilon}$. The progressive structure formation with increasing length of exposure τ (θ to 4θ) is expressed by a sharp increase of E_{∞} at high τ ; θ remains throughout a maximum and η increases approximately proportionally to τ^2 , which indicates self-acceleration of the process of structure formation. These effects are attributed only to very thin films; they decrease with increasing thickness, and are unobservable with film thickness of the order of 2 mm. The presence of an inhibitor also reduces the effect, with 0.1 to 0.02% β -naphthylamine, no change in the mechanical properties was observed over other 100% of immersion. The self-acceleration of the process is observed in a 2% solution.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

P.A.

*Synthetic Rubbers &
Sole Products*

2269. Alteration of the mechanical properties of sodium butadiene rubber caused by light. V. S. ZERN and A. S. KUZMINSKI, *Kolloid Zhur.*, 1951, 13, 421-43; *Chem. Abstr.*, 1952, 46, 2823. Sodium butadiene rubber films, about 0.01 cm. thick, were extended so that the real stress remained constant. Logarithm of the deformation increased linearly with that of time and the coefficient of proportionality m was independent of the real stress when this varied from 200 to 450 g/cm². Illumination of the film in nitrogen lowered m and increased the viscosity of the after-effect and the initial high elastic modulus of elasticity. Interception of light shorter than 2900 Å retarded these changes. Addition of 1% phenyl- α -naphthylamine retarded the changes in full light but in some cases accelerated them in light greater than 2900 Å. In all cases the ratio of the viscosity of the after-effect to initial elastic modulus of elasticity first decreased and then increased during illumination.

352021.3233

ZINGER, Dzh.[Singer, J.R.], prof.; ZUYEV, V.S.[translator]; KARLOV, N.V.,
[translator]; SHMAONOV, T.A. [translator]; BUNKIN, F.V., red.
POPOV, R.Yu., red.; GRIBOVA, M.P., tekhn. red.

[Masers; solid state generators and amplifiers] Mazery; kvanto-
vye usiliteli i generatory. Pod red.F.V.Bunkina, Moskva, Izd-vo
inostr. lit-ry, 1961. 206 p. (MIRA 15:1)

(Masers)

20699

S/120/61/000/001/037/062
E032/E114

9.2574 (also 1163)

AUTHORS: Basov, N.G., and Zuyev, V.S.

TITLE: A Maser Using an ND_3 Molecular Beam

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp.120-121

TEXT: A molecular beam maser has been built and is in operation at the Fizicheskii Institut AN SSSR (Physics Institute, AS USSR). The maser is shown in the figure and uses the inversion transition $J = 6, K = 6$ at 1656.18 Mc/s (Ref.2). The design of the maser is similar to the NH_3 maser described by J.P. Gordon et al. in Ref.5. A particular feature of the present device is that, in order to obtain a sufficient number of "active" molecules, large fields have to be used for which the Stark effect becomes linear, since the intensity of the transition is considerably lower than that for NH_3 . In the figure 1 is the beam source, 2 is the separating system and 3 is the resonator. The diameter of the rings in the separating system is 4 cm and the distance between the rings is 2 cm. Altogether 22 rings are employed, the total length of the system being about 50 cm. A narrow beam is produced with the aid of the liquid nitrogen
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S/120/61/000/001/037/062
E032/E114

A Maser Using an ND₃ Molecular Beam

cooled diaphragms 4 and 5 . The diameter of the latter is equal to the diameter of the rings. The signal is detected by a superheterodyne receiver; the signal-to-noise ratio was found to reach 100. The design of the separating system has been discussed by V.A. Shcheglov in Ref.7. The cylindrical resonator TM₀₁₀ (TM₀₁₀) has a diameter of 13.8 cm and is 40 cm long. Its Q factor is 20 000. Freezing out of the unnecessary gas is achieved with the aid of the liquid nitrogen cooled surface 6. Self-excitation was observed at 80 kV with the pressure in the beam source at about 0.1 mm Hg. At 110 kV, and the same beam source pressure, the power was about 10⁻¹¹ W.

There are 1 figure and 7 references: 5 Soviet and 2 English.

ASSOCIATION: Fizicheskiy institut AN SSSR
(Physics Institute, AS USSR)

SUBMITTED: February 12, 1960

Card 2/3

BASOV, Nikolay Gennadiyevich; KRUKOV; ZUYEV, V. S.

"Increase of Power of Pulsed Ruby Optical Quantum Generator
by Modulation of Resonator Quality Factor"

Paper presented at Optical Society of America Meeting, Washington, D. C.
14-17 March 62

9,2574

AUTHORS:

Zuyev, V.S., and Cheremiskin, I.V.

38212
S/109/62/007/005/021/021
D230/D308

TITLE:

Emission line width of a maser

PERIODICAL:

Radiotekhnika i elektronika, v. 7, no. 5, 1962,
918 - 919

TEXT: The author examines the dependence of the above width on the intensity of the molecular beam, and on the design of the source of the molecular beam (thin diaphragm, long channels). For small beam intensities the frequency pass band of the molecular amplifier corresponds to the spectral line width, but the observation and measurement of the latter is difficult owing to inadequate sensitivity of the receiver. For large beam intensities, the frequency pass band is considerably narrowed due to regeneration, and direct bandwidth measurement does not indicate the spectral line-width. For the measurement of line-width the following method is appropriate: the relation between the frequency pass band and the self-excitation parameter is measured in the region of higher beam intensity in which the observation is not limited by receiver sensitivity; then, one

Card 1/3

Emission line width of a maser

S/109/62/007/005/021/021
D230/D308

can extrapolate the curve towards zero-intensity beam and obtain a value for the initial frequency band width. Expressions are obtained for the maser pass band in terms of the mean transit time of the molecules through the resonator, the self-excitation parameter, and for the amplification factor, in terms of detuning with respect to line peak frequency. Two cases of maser were investigated experimentally, (i), using a beam of ND_3 molecules, (ii) using a beam of NH_3 molecules. For the grid-type beam source 0.05 mm thick and aperture 0.05 x 0.05 mm, the line-width for ND_3 was equal to 800 c/s, for the resonant length 40 cm and temperature 300°K ; this is twice the calculated value. In the case of NH_3 the line-width was 5 kc/s, for the resonant length 80 mm and temperature 300°K ; this is 2.5 times the calculated value. Linear pass band narrowing was observed for both masers; this was from 750 to 20 c/s for ND_3 and, from 4.5 kc/s to 100 c/s for NH_3 . Deviation from linearity was not observed. The measurements showed that for a beam formed by a channel with large aperture (dia. 2 mm and length 10 mm) the emission line-width in-

Card 2/3

Emission line width of a maser ..

S/109/62/007/005/021/021
D230/D308

creases considerably only for those pressures in the beam source which secure the maximum power output. Useful discussions with N.G. Basov and G.M. Strakhovskiy are acknowledged.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva AN SSSR (Institute of Physics im. P.N. Lebedev AS USSR)

SUBMITTED: October 11, 1961

Card 3/3

S/051/62/012/005/018/021
EO32/E514

AUTHOR:

Zuyev, V.S.

TITLE:

Hyperfine structure of the inversion line $J=6, K=6$ of
the $N^{14}D_3$ molecule

PERIODICAL:

Optika i spektroskopiya, v.12, no.5, 1962, 641-642

TEXT:

The hyperfine structure was investigated using the $N^{14}D_3$ maser described by the author and N. G. Basov (PTE, No.1, 120, 1961). Fig.2 shows the spectrum to the left and Fig.3 the spectrum to the right of the central line. The distance of each line from the central line (1656.18 Mc/sec) is given in each case in kc/sec. Since the two spectra shown in Figs. 2 and 3 could not be obtained simultaneously with the central line, use was made of a frequency standard (1656.18 Mc/sec), which took the form of another ND_3 maser tuned to the central line. The accuracy with which the distances between the lines was measured was of the order of ± 100 cps and depended largely on the stability of the standard. The spectra were obtained with super-heterodyne receiver with a synchronous detector at the output. The radiation

Card 1/2

Hyperfine structure of the ...

S/051/62/012/005/018/021
EO32/E514

was modulated by a rotating disc.
SUBMITTED: October 12, 1961

There are 3 figures.



Card 2/2

Fig.2

Fig.3

BASOV, N.G.; ZUYEV, V.S.; KRYUKOV, P.G.

Increasing the power of a ruby-type quantum pulse optical maser
by resonator Q-factor modulation. Zhur. eksp. i teor. fiz. 43
no.1:353-355 J1 '62. (MIRA 15:9)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.
(Masers)

ACCESSION NR: AT3012118

S/2504/63/021/000/0176/0199

AUTHORS: Basov, N. G.; Zuyev, V. S.; Svidzinskiy, K. K.

TITLE: Maser using a beam of ND_3 molecules

SOURCE: AN SSSR. Fizicheskiy institut. Trudy*, v. 21, 1963, 176-199

TOPIC TAGS: ND_3 maser, maser power output, maser frequency stability, maser absolute stability, microwave band maser, signal to noise ratio

ABSTRACT: The purpose of the investigation was to ascertain the feasibility of a maser using the inversion transitions in a beam of heavy-hydrogen ammonia ND_3 , and resulted in the construction of an operating model of such a maser generating approximately 10^{-11} W at 1656.18 Mc (line $J = 6, K = 6$ of the ND_3 inversion spectrum). The absolute frequency stability is of the order of 10^{-9} . The calcula-

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ACCESSION NR: AT3012118

tions proving the feasibility of the maser are presented and include proof that self-excitation can be attained with sensible maser parameters and a calculation of the hyperfine structure of the inversion spectrum of ND_3 . In addition to estimating the absolute stability for the (6, 6) line, the possibilities of increasing the absolute stability of the maser by choosing other lines (3, 2 and 5,5) or by replacing N^{14} with N^{15} are also considered. The measurement results agree well with the calculated data. The power yield of the ND_3 maser is approximately one-hundredth that of the NH_3 maser, but the sensitivity of microwave receivers at 1600 Mc is much higher than that at 24,000 Mc, so that detection of an ND_3 maser signal entails no more difficulty than that of an NH_3 maser. The signal/noise ratio exceeded 100 at 10^{-12} W. The resonator used had a diameter of 14 cm and a beam length 1.2--1.5 meters, compared with 1 and 20--30 cm

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ACCESSION NR: AT3012118

respectively for the NH_3 maser. The entire apparatus (without diffusion pump) measured 1.5 x 0.5 x 0.5 meters and weighed 150 kg, but further reduction in size and weight is expected. "In conclusion the authors thank A. M. Prokhorov for a useful discussion. Orig. art. has: 17 figures, 14 formulas, and 2 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 00

DATE ACQ: 29Jul63

ENCL: 00

SUB CODE: PH

NO REF SOV: 010

OTHER: 015

Card 3/3

L 10270-61 EWA(W)/EWT(1)/FBI/BIS/1-2/3/2/REC(6)-2/EN(6)-2-APTC/ASW/
ESD-3/RADC/APWL--JHB/WG/LJP(C)/E/ER
ACCESSION NR: AP3002751 B/0120/53/000/003/0188/0189

76
71

AUTHOR: Zuyev, V. S.; Kryukov, P. G.

TITLE: Calorimeter for measuring radiation energy of an optical quantum oscillator 5

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1963, 108-109

TOPIC TAGS: optical quantum oscillators, measurements of radiation energy

ABSTRACT: Fig. 1 of Enclosure shows the schematic diagram of a calorimeter-type receiver used for measuring the radiation energy of an optical quantum oscillator. Copper-foil hollow sphere 1 with aperture 2 is placed in a vacuum. The ray is directed through the aperture into the sphere and is absorbed by the walls, temperature is measured by thermocouple 4; the sphere is evacuated inside and its outer surface is coated with a thin layer of silver. The sphere is suspended by glass hooks 3, which insure thermal insulation. It is placed in glass flask 6, whose vacuum is maintained by getter 5. The emf of the thermocouple is measured with a galvanometer whose sensitivity is $10 \text{ sup } -7 \text{ v/mm/m}$ and internal resistance is approximately 10 ohms. For a sphere of a

L 10270-63

ACCESSION NR: AP3002751

5

mass of 0.6 g, a diameter of 20 mm, an aperture diameter of 7 mm, a foil thickness of 0.05 mm, and a thermocouple sensitivity of $5 \times 10 \text{ sup } -4$ joule, the measurement range was $5 \times 10 \text{ sup } -4$ to 1 joule. For a sphere of a mass of 0.7 g, a diameter of 30 mm, an aperture diameter of 3 mm, a foil thickness of 0.5 mm, and a thermocouple sensitivity of $3.5 \times 10 \text{ sup } -4$ joule, the measurement range was $3.5 \times 10 \text{ sup } -4$ to 1 joule. In both cases, the thermocouples consisted of copper (0.07 mm) and constantan (0.06 mm) wires, and measurement accuracy was 1%. "In conclusion, the authors thank N. G. Enayov, M. D. Galanin, A. M. Legontovich, and V. I. Malyahev for their useful discussions." Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Fizicheskii Institut AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 24Jul62 DATE ACQ: 12Jul63

ENCL: 01

SUB CODE: 00

NO REF SOV: 001

OTHER: 008

Card 2/32

ACCESSION NR: AP4019968

S/0020/64/154/006/1303/1305

AUTHORS: Grasyuk, A.Z.; Zuyev, V.S.; Kokurin, Yu.L.; Kryukov, P.G.;
Kurbasov, V.V.; Lobanov, V.F.; Mozherin, V.M.; Sukhanovsky,
A.N.; Chernykh, N.S.; Chuvayev, K.K.

TITLE: Optical moon ranging

SOURCE: AN SSSR. Doklady*, v. 154, no. 6, 1964, 1303-1305

TOPIC TAGS: laser, ruby laser, moon ranging, moon
light reflection, celestial ranging, optical ranging

ABSTRACT: The paper describes the preliminary results of moon ranging with a ruby laser. For the transmission and reception of the light pulses, a telescope was used with a mirror diameter of 2.6 m. (see Fig. 1 of the Enclosure). The laser used was developed by V.S. Zuyev and P.M. Kryukov and had the following parameters: wavelength 6943A, pulse energy 50 to 70 joules, pulse duration 2 μ sec, diameter of the beam 11 mm., and divergence 3'. By taking into consideration the light scattering in the atmosphere, the diameter of the spot on the moon is estimated to be 14 km. For the detection of the signal,

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ACCESSION NR: AP4019968

a photomultiplier cooled with dry ice was used. The signal to noise ratio was 0.16. Therefore, statistical treatment was necessary. The authors believe that the results prove the reality of the reflected signal. "The authors are grateful to corresp. members A. G. Basov and A. B. Severnyy, and to B. I. Belov, F. Kh. Nigmatullin of the Lebedev Phys. Institute, and to V. B. Nikonov, V. K. Prokof'ev, P. P. Dobronravin, N. V. Stesheuko, and B. P. Abrazhevskiy of the Crimean Astrophysics Observatory." Orig. art. has: 1 figure.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR (Institute of Physics, AN SSSR), Krymskaya astrofizicheskaya observatoriya akademii nauk SSSR (Crimean Astrophysics Observatory, AN SSSR)

SUBMITTED: 05Nov63

ATD PRESS: 3047

ENGL: 01

SUB CODE: EC, AA

NO REF SOV: 001

OTHER: 001

Card

2/3

ACCESSION NR: AP4019968

ENCLOSURE: 01

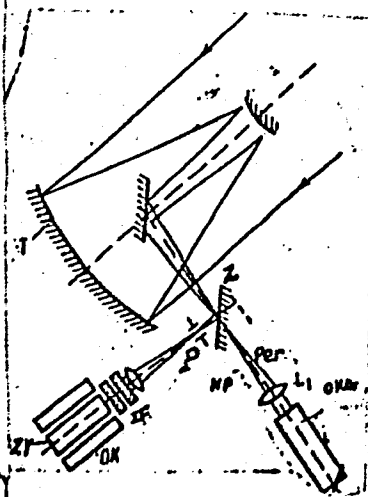


Fig. 1. Diagram of unit for optical moon ranging

T - Telescope; OKG - optical quantized generator; L₁ - matching lens; Z - throwover mirror; D - diaphragm; IF - interference filter; FZY - electron photomultiplier; OK - dry ice container.

Card 3/3

ZUYEV, V.S.; KROKHIN, O.N.

Two conferences on lasers and their uses held in London and
in Geneva. Vest. AN SSSR 35 no.4:80 Ap '65.

(MIRA 18:6)

L 1379-66 EWA(k)/FBD/EWT(I)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EVA(h) SCTB/IJP(c)

ACCESSION NR: AP5022443 WG

UR/0109/69/010/009/1729/1730
621.378.325.001.5:621.383.52

AUTHOR: Ambartsumyan, R. V.⁴⁴; Basov, N. G.⁴⁴; Yeliseyev, P.⁴⁴; Zurev, V. S.⁴⁴ 62
Kryukov, P. G.; Stoylov, Yu. Yu.⁴⁴ B

TITLE: The measurement of the time parameters of a giant pulse laser by means of a photodiode 25,44

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1729-1730

TOPIC TAGS: giant pulse laser, gallium arsenide, photodiode, resolving time, Kerr cell, photomultiplier

ABSTRACT: The time-dependent characteristics of a giant pulse laser switched by a Kerr cell were measured by means of a gallium arsenide photodiode. The photodiode was obtained by diffusion of cadmium into n-type GaAs with a $2 \times 10^{18} \text{ cm}^{-3}$ concentration of tellurium during a period of 60 hr. The depth, thickness, and area of the p-n junction were 80μ , 0.9μ , and $2.5 \times 10^{-3} \text{ cm}^2$, respectively. The photodiode was pumped at right angles by a nonfocused laser beam and the pulse width from the photodiode (connected across a 75-ohm load) was 40 nanosec at room temperature, and 20 nanosec at 77K. The results indicate that the resolving time of the

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ACCESSION NR: AP5022443

photodiode is not greater than 5 nanosec, a quality which makes it competitive with photomultipliers. Unlike photomultipliers, which introduce a signal time lag, photodiodes are capable of accurately determining the time lag of a laser pulse released by the Kerr cell. The experimental value of the lag was 80 nanosec. Orig. art. has: 2 figures. [YK]

ASSOCIATION: none

SUBMITTED: 09Dec64

ENCL: 00

SUB CODE: EC

NO REF SOV: 001

OTHER: 001

ATD PRESS: 4072

Card 2/2

BASOV, N.G.; ZUYEV, V.S.; SENATSKIY, Yu.V.

Laser with Q-factor modulation operating on neodymium glass.
Zhur. eksp. i teor. fiz. 48 no. 6: 1562-1564. Ja '65.

(MIRA 18:7)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

AMBARTSUMYAN, R.V.; BASOV, N.G.; BOYKO, V.A.; ZUYEV, V.S.; KROKHIN, O.N.;
KRYUKOV, P.G.; SENATSKIY, Yu.V.; STOYLOV, Yu.Yu.

Heating of a substance under focused radiation from a laser. Zhur.
eksp. i teor. fiz. 48 no.6:1583-1586 Je '65.

(MIRA 18:7)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

BOROVICH, B.L.; ZUZEY, V.S.; SHCHEGLOV, V.A.

Laser with a saturating filter. Zhur. eksp. i teor. fiz. 49
no. 4: 1031-1037 0 1965. (MIRA 18:11)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

ACC NR: AP5026590EWA(h) SCTB/IJP(c) SOURCE CODE: UR/0056/65/049/004/1031/1037
WJ/RM/WH

AUTHOR: Borovich, B. L.; Zuyev, V. S. ¹⁴⁴ Shcheglov, V. A. ¹⁴⁴

ORG: Physics Institute in P. N. Lebedev, Academy of Sciences, USSR (Fizicheskii institut Akademii nauk SSSR) 59
B

TITLE: Laser with a saturated Q-switch 44

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 4, 1965, 1031-1037 15, 44

TOPIC TAGS: solid state laser, ruby laser, Q switching, passive switching, phthalocyanine

ABSTRACT: On the basis of rate equations an analysis is made of the kinetics of processes in a ruby laser where Q-modulation is accomplished by means of a saturated vanadium phthalocyanine solution in nitrobenzene. Two modes of excitation (soft and hard) are shown to exist. In the hard mode, the laser excitation threshold is determined by the parameters of the system. At amplitudes of the initiating signal in excess of the threshold, a pulse of standard amplitude and width is produced in the system. If spontaneous decay is neglected, the problem can be solved in quadratures. The condition for generation of a giant pulse and its maximal value are derived for this case. Two experiments were carried out with a ruby rod 120 mm long and 10 mm in diameter (see Fig. 1). In the first experiment, the end of the ruby rod

Card 1/3

D 2083-56

ACC NR: AP5026590

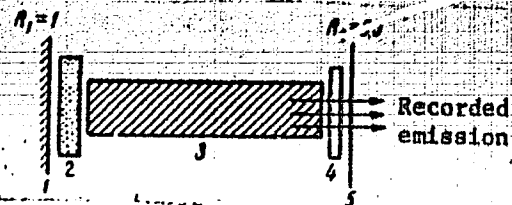


Fig. 1. Experimental setup

1 - 100% mirror; 2 - vessel containing phthalocyanine solution (5 mm thick, initial absorption 90%); 3 - ruby rod 120 mm long and 10 mm in diameter with opaque ends; 4 - plane parallel glass plate; 5 - 70% mirror.

was parallel with the mirrors (100 and 70% transparent). A giant pulse was generated when the pumping energy was sufficiently high to excite standard generation at the 30% mirror and the ruby end. A 10-nanosec 1-j pulse was emitted 300 μ sec after the flashlamp firing. In the second experiment, the ruby was placed at a certain angle ($\sim 0.5^\circ$) to the mirrors, and the plane-parallel glass disk (which maintains total resonator losses at the same level in both experiments) was removed. A considerable increase in pumping energy failed to yield standard generation. A 20-25 nanosec $\sim 1/15$ -j pulse was emitted after 400-600 μ sec. The experiments demonstrated that a considerable delay in the development of a giant pulse occurred during excitation without a starting pulse, and significant differences between the experimental values of pulse width and energy were apparent. The low energy yield in the second experiment was attributed to uneven pumping. The increased pulse width was explained in terms of two mechanisms, of which one, suggested earlier by R. W. Hellwerth (Quantum Electronics, Proc. of the 3rd Intern. Congress, ed. P. Grival, M. Bloembergen, Diod Editeur. Paris, Columbia Univ. Press, N. Y., 2, 1964, 1203), is due to cross-

Card 2/3

L-2005-00
ACC NR: AP5026590

relaxation of the R_1 lines in ruby and, partly, to relaxation between the E and $2\bar{A}$ levels. Orig. art. has: 7 figures and 11 formulas.

[YK]

SUB CODE: EC/ SUBM DATE: 26Apr65/ ORIG REF: 002/ OTH REF: 004/ ATD PRESS: 4/22

Card 3/3

1-4965-66 EWA(k)/RBD/INT(1)/RWD(c)/RWT(m)/REG(k)-2/COMP(1)/INT(1)/RWA(1)/RWA(1)
ACC NR: AP5027834 SCTB/IJP(c) WCI/WH SOURCE CODE: 001/0020/65/165/001/0018/0060

AUTHOR: Basov, N. G. (Corresponding member AN SSSR); ^{4/1}Amantsunyan, R. V.; ^{4/1}Eyer, V. S.;
V. S.; ^{4/1}Kryukov, P. G.; ^{4/1}Letokhov, V. S.

ORG: ^{4/1}Physics Institute im. P. N. Lebedev, Academy of Sciences, USSR (Fizicheskiy ⁷⁰
institut, Akademiya nauk SSSR) ^{4/1} ^B

TITLE: Velocity of propagation of a powerful light pulse in a medium with population inversion

SOURCE: AN SSSR. Doklady, v. 165, no. 1, 1965, 58-60

TOPIC TAGS: ^{25, 4/1}laser, ruby laser, laser pumping, optic pumping

ABSTRACT: The article is a brief advance report of a comprehensive work to be published separately. It was shown that the leading edge of such a pulse does not change materially while propagating within a medium with inverse population. In the case of a ruby medium with usual parameters, the velocity of the pulse maximum on reaching its stationary value was shown to be 17×10^{10} cm/sec, which greatly exceeds the velocity of light. This fact, however, does not contradict the causality principle, since such a propagation takes place as the result of the deformation of the initially weak leading edge, and can continue only to the point of zero intensity which always propagates with the velocity of light in the medium. An amplifier composed of two ruby rods 24 cm long was used for experimental study of the problem. The end faces

Card ¹⁵ 1/2 UDC: 621.375.9 290/1239

L 4965-66

ACC NR: AP5027834

0

of the rods were cut at the Brewster angle. The total gain for a weak signal was about 50. Both input and output pulses were recorded by the same coaxial photocell arrangements, but the output pulse was made to travel an additional distance so that it reached the photocell 56×10^{-9} sec after the input pulse. The parameters of the input pulse were as follows: energy 1.3 J, pulse width 16×10^{-9} sec. A comparison of oscillograms of weak and strong pulses revealed that no appreciable shortening of the pulse occurred, and that only the time interval between the input and output pulse shortened as the pulse strength increased. The shift in the time interval in this case was 9×10^{-9} sec, which agrees with the theoretical considerations presented above. It follows that amplification of the exponentially growing leading edge of the pulse results not in a shorter pulse, but in an additional shift of the pulse peak. To shorten the pulse, it is necessary to increase the steepness of the leading edge by, say, cutting it off by a shutter, by nonlinear absorption, etc. It is noted further that the shift of the pulse peak with velocity exceeding the velocity of light is accompanied by the shift of the boundary of inverse population and can lead to the emergence of a number of new effects such as that of Cherenkov radiation. Orig. art. has: 1 figure and 2 formulas.

[FP]

SUB CODE: EC, OP/ SUBM DATE: 31Jul65/ ORIG REF: 002/ OCH REF: 002/ AND PRESS:

4138

mlr
Card 2/2

ACC NR: AP6004913

SOURCE CODE: UR/0056/66/050/001/0023/0034

AUTHOR: Basov, N. G., Ambartsumyan, R. V., Zuyev, V. S., Kryukov, E. G., Letokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR
(Fizicheskiy institut Akademii nauk SSSR)

51
8

TITLE: Nonlinear amplification of a light pulse

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966, 23-34

TOPIC TAGS: laser, nonlinear optics, stimulated emission, quantum amplifier

ABSTRACT: A theoretical and experimental analysis is made of the passage of a powerful light pulse from a laser through a laser amplifier consisting of two ruby rods operating in a saturation regime. The preliminary experimental results have already been reported (Akademiya nauk SSSR. Doklady, v. 165, no. 1, 1965, p. 58-60 (see ATD Press, v. 4, no. 138, p. 7-8)). In the experiments performed, it was shown that as the result of nonlinear amplification the velocity of the pulse is 6—9 times greater than the velocity of light in vacuum. To decrease the pulse duration during nonlinear amplification, the slope of the incident pulse should be

Card 1/2