Investigations by Belorussian Scientists in the Field of Spectroscopy and Luminescence SOV/30-59-1-9/57

A. N. Sevchenko, G. P. Gurinovich, A. M. Sarzhevskiy examined the luminescence polarization of many combined molecules. At the same time they designed an improved apparatus.
A. N. Sevchenko, V. V. Kuznetsova work in the field of luminescence of rare-earths complexes.
V. A. Pilipovich examined the phenomenon of phosphorescence.
The examinations of optical properties of chlorophyll and related compounds are being carried out in close cooperation with the Institut biologii Akademii nauk BSSR (Institute of Biology, Academy of Sciences, Belorusskaya SSR).
T. N. Godnev, L. A. Kravtsov, R. V. Yefremova examined the absorption and luminescence spectra of a live leaf.
A. N. Sevchenko, G. P. Gurinovich, K. N. Solov'yev, L. A. Kravtsov examined polarization spectra and the dependence of polarization on the wave length of fluorescence.
A. N. Sevchenko, L. V. Volod'ko obtained valuable data of the composition of complex compounds and the nature of intermolecular forces of interaction.
I. P. Shapiro examined the optical and electrical properties of some crystal phosphors.

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Investigations by Belorussian Scientists in the Field of Spectroscopy and Luminescence SOV/30-59-1-9/57

A. N. Sevchenko, B. I. Stepanov examined cellulose and its products of transformation.
R. G. Zhbankov, I. N. Yermolenko worked at high pressure in order to study the composition of celluloses by means of spectroscopical methods.
I. N. Yermolenko, R. G. Zhbankov examined the oxidizing kinetics of cellulose by means of nitrogen dioxide, iodic acid and chloride.
R. G. Zhbankov, B. I. Stepanov, A. Ya. Rozenberg, A. I. Skrygan, A. M. Shishko examined the mercerizing process of cellulose.
M. M. Pavlyuchenko, I. N. Yermolenko examined the oxidation of celluloses with the use of absorption spectroscopy in the ultraviolet range.
M. M. Pavlyuchenko and collaborators spectrophotometrically examined the adsorption of coloring substances on cellulose.
I. N. Yermolenko, M. Z. Gavrilov examined the luminescence of cellulose products.
B. I. Stepanov, Yu. I. Chekalinskaya determined the dependence of the spectra of dispersed objects on the reduction

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ratio, the character of the binding agent, and the layer thickness.
A. P. Prishivalko, B. I. Stepanov developed a theory of dispersion light filters.
N. A. Borisevich, Ya. S. Khvashchevskaya, I. F. Laptsevich examined, by experiment, dispersion light filters for the infrared range.
A. P. Prishivalko analyzed the accuracy and the field of application of existing determination methods of optical constants of dispersed and not dispersed materials.
I. G. Nekrashevich, A. A. Labuda, Ye. G. Martynkov obtained important results concerning the kinetics of one single spark discharge (spectral intensity and discharge temperature).
A. A. Yankovskiy, V. S. Burakov examined the mutual influences of elements in spectrum analysis, and explained the methods for their elimination.
G. V. Ovechkin suggested a series of methods to eliminate the influences of third elements.
G. V. Ovechkin, N. P. Krivosheyev succeeded in working out a control method of benzyl penicillin in ordinary penicillin.

Investigations by Belorussian Scientists in the Field of Spectroscopy and Luminescence SOV/30-59-1-9/57

N. A. Borisevich, N. I. Makarevich, A. I. Skryvan examined the infrared spectra of resinous products.
N. A. Borisevich, V. I. Pansevich, I. F. Gurinovich examined a series of structural peculiarities of alcohol oxides.
N. A. Borisevich worked out a luminescence method for the determination of the germinating power of the seed of some kinds of trees.
A. Ya. Prokopchuk obtained good results by the use of luminescence analysis in dermatology.
S. S. Kharamonenko examined the absorption spectra of the albuminous polysaccharide complexes.
D. A. Markov used spectral methods for analyzing albuminous fractions in the blood.
M. M. Pavlyuchenko, G. A. Lazerko, carried out an extensive spectrophotometrical examination of the formation of molecular and complex compounds in solutions.
N. A. Sevchenko spectroscopically examined the structure of various silicas.
B. I. Stepanov, A. M. Prim carried out theoretical investigations of the vibrational spectra of various silicate crystals

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and silicate glasses.
Some branches of research are only at the beginning of their development such as radiospectroscopy (M. A. Yel'yashevich), and nuclear spectroscopy (A. A. Bashilov). Especially mentioned are also the investigations by F. I. Fedorov on new invariant methods of solution of basic equations in classical electrodynamics. The author stated that the research work is being carried out in close cooperation with scientists in Moscow, Leningrad, Kiyev, Tartu, Saratov, and other towns in the Soviet Union. The coordination of work is done by the Komissiya po spektroskopii Akademii nauk SSSR (Comission of Spectroscopy, Academy of Sciences, USSR) (S. L. Mandel'shtam) and the nauchnyy sovet po probleme"Lyuminestsentsiya i yeye primeneniya" (Scientific Council for the Problem of "Luminescence and Its Use") (V. L. Levshin). The 8th Conference on Luminescence will take place in Minsk in 1959. A zone conference on spectroscopy is to take place in the Belorusskaya SSR in 1960, with scientists from Ukraine, Lithuania, Latvia, and Esthonia participating. All work on spectroscopy in the republic is coordinated by the Institute of Physics and

Investigations by Belorussian Scientists in the Field of Spectroscopy and Luminescence SOV/30-59-1-9/57

Mathematics, the Belorusskiy universitet (Belorussian University) and the Komissiya po spektroskopii pri Akademii nauk BSSR (Commission of Spectroscopy at the Academy of Sciences BSSR). Connection with industry is maintained directly and by the respublikanskiy Dom nauchno-tekhnicheskoy propagandy (Republican House for Scientific-Technical Propaganda). In recent years, 2 Republic-wide conferences on radiation spectrum analysis, and one on molecular spectrum amalysis, were held. The Commission of Spectroscopy maintains a connection with the Economic Council of the Republic.

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24(7)
AUTHOR: Kravtsov, L. A. SOV/48-23-1-16/36

TITLE: Some Typical Features of the Luminescence of Chlorophyll and Pheophytin (Nekotoryye osobennosti lyuminestsentsii khlorofilla i feofitina)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 1, pp 78 - 81 (USSR)

ABSTRACT: The spectra of chlorophyll and related compounds are largely dependant on the nature of the solvent and the individual impurities. In the present paper the author studies the contours of the luminescence bands of chlorophyll and pheophytin, the polarization of luminescence bands and luminescence spectra at low temperatures. In order to take into account the reabsorption the presence of which is to be assumed from the large superimposition of absorption and luminescence bands, the authors photographed the absorption and luminescence spectrum of pheophytin in benzene (concentration 10.8 mg/l) at various thicknesses of the luminescence-absorbent layer (Fig 1). The author determines the thickness of the minimum absorbent layer.

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In addition to that, Levshin's method (Ref 3) was applied to the calculation of reabsorption. Both methods yielded identical results. Stepanov's equation was used for a more accurate investigation of the interrelation between absorption and luminescence bands (Refs 5-9):

$$\frac{W_\nu^{lum}}{K_\nu} = d(T)\,\nu^3 e^{-\frac{h\nu}{kt}} \quad (1),$$

where W_ν^{lum} denotes the intensity of luminescence, K_ν the absorption coefficient and d(T) the temperature-dependant constant. The absorption spectra and luminescence of pheophytin a in various solvents and those of chlorophyll a and b in ethanol are given in diagrams which show the logarithmic form of expression (1) as dependant on the frequency (straight line). Furthermore, the polarization of the second luminescence band was studied. The results obtained are in good accordance with those given by Vavilov, Levshin (Ref 11) and Feofilov (Ref 12). From the fact that the degree of polarization within the individual ranges of one and the same band

(Refs 11,13) never varies the author assumed that this is not an oscillation structure of the second band but corresponds to a certain transition of electrons. Additional investigations at lower temperatures dealt with a more accurate determination of the nature of the second band (Fig). Therefrom it followed that the intensity of the first band decreases as related to the second one, while the intensity of the second band increases as related to the first one. According to these data and the results obtained by studying the polarization it is assumed that the two bands represent transitions of two energy levels of electrons.

The author thanks B. I. Stepanov for supervising the work and N. P. Ivanov and V. V. Gruzinskiy for assisting in the investigations and calculations. There are 4 figures and 14 references, 13 of which are Soviet.

81282

S/048/60/024/05/09/009
B006/B017

24.3400

AUTHOR: Kravtsov, L. A.

TITLE: Optical Properties of Chlorophyll and Pheophytin at Low Temperatures

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 5, pp. 610-612

TEXT: The present article is a reproduction of a lecture delivered at the Eighth Conference on Luminescence (Minsk, October 19-24, 1959). The author reports on his investigations of the effect of temperature (+20 ÷ -100°C) upon luminescence spectra and the red absorption band of solutions of chlorophyll a and pheophytin a, as well as on their relative luminescence yield. Isobutanol and petroleum ether were used as solvents. Temperature was measured by means of thermocouples. The luminescence spectra were measured with a УМ-2 (UM-2) monochromator. A photomultiplier of the type ФЭУ-22 (FEU-22) with a direct-current amplifier, and an electrometer tube of the type 2Э2П (2E2P) were used as radiation receivers.

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Optical Properties of Chlorophyll and Pheophytin at Low Temperatures

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Luminescence was excited by means of lamps of the types СВДШ-250 (SVDSh-250) and СВД-120 (SVD-120) whose light flux was controlled by a photocell of the type СЦВ-6 (STsV-6). The concentrations for the spectroscopic measurements of the solutions investigated were chosen in such a way that with λ = 365 mμ 3-10% of the light energy of the exciting flux was absorbed. To investigate the temperature dependence of the yield, the concentrations were raised 5-10 times. The absorption spectra at low temperatures were measured by means of a СФ-4 (SF-4) spectrophotometer. The diagrams of Fig. 1 show the red absorption bands and the main luminescence bands of the solutions investigated. When the temperature is lowered, the absorption and luminescence bands become narrower and are shifted towards each other. The absorption and luminescence maxima are shifted more strongly for chlorophyll a and pheophytin a, respectively. Some further details are given. The results are compared with those published by Freed and Sancier. Fig. 2 shows the temperature dependence of the yield. With decreasing temperature, the yield in the case of chlorophyll a increases in isobutanol, with pheophytin it remains constant. In petroleum ether both substances first slightly increase up to -50 to -60°C, whereas the yield is strongly reduced by a further

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Optical Properties of Chlorophyll and Pheophytin at Low Temperatures

S/048/60/024/05/09/009
B006/B017

temperature drop. In conclusion, the author thanks B. I. Stepanov and L. G. Pikulik for their advice. There are 2 figures and 11 references: 4 Soviet and 6 American.

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Physics Institute of the Academy of Sciences of the BSSR)

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Card 3/3

KRAVTSOV, L.A.

Secondary fluorescence of rhodumine C. Dokl. AN BSSR 5 no.8: 331-335 Ag '61. (MIRA 14:8)

1. Institut fiziki AN BSSR. Predstavleno akad. AN BSSR B.I. Stepanovym.

(Rhodamines) (Fluorescence)

STEPANOV, B.I.; KRAVTSOV, L.A.; RUBINOV. A.N.

Sensitivity of the universal relationship between absorption and luminescence spectra of complex molecules to the presence of admixtures. Dokl. AN Bssr 6 no.1;14-18 Ja '62. (MIRA 15:2)

1. Institut fiziki AN BSSR.
(Molecular spectra)

S/051/62/012/005/016/021
E039/E120

AUTHORS: Kravtsov, L.A., and Rubinov, A.N.

TITLE: The influence of admixtures on the realisation of a universal relation between absorption and luminescent spectra of complex molecules

PERIODICAL: Optika i spektroskopiya, v.12, no.5, 1962, 636-639

TEXT: The difference between experimental values of temperature and values calculated from B.I. Stepanov's theoretical relation between luminescent and absorption spectra was thought to be due to the presence of admixtures. In this paper are described the results of an investigation of the effect of admixtures on the above relation. A theoretical treatment of the relation between luminescent and absorption spectra for a mixture of two substances, one of which is luminescent, gives a value ΔT for the difference between the temperature T' calculated from the universal relation and the experimental value T. The sensitivity of this universal relation to changes in concentration of admixture is also derived. The theoretical expressions are fully confirmed by experiments on solutions of pure

3-aminophthalimide and erythrosine B with suitable admixtures. Graphs of the function

$$F'(\nu) = 3 \ln \nu - \ln \frac{W_\nu^{lum}}{\chi_\nu^{meas}}$$

are plotted for different relative concentrations of admixture (χ_ν^{meas} is the measured value of the absorption coefficient for solutions of 3-aminophthalimide with admixtures of chlorophyll a; W_ν^{lum} is luminescent power). Linear relationships are obtained at all concentrations. The minimum detectable concentration of chlorophyll a is 0.1 for a value of $\Delta T = 9°$. As the concentration is increased a break occurs in the $F'(\nu)$ relation, the position of which remains practically unchanged for further increase in concentration of admixture. Analogous results are presented for erythrosine B with an admixture of blue dye.
There are 2 figures.
SUBMITTED: August 22, 1961
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L 9836-63 EWT(1)/EWT(m)/BDS--AFFTC/ASD/ESD-3/SSD--RM/MAY/IJP(C)

ACCESSION NR: AP3001347 S/0048/63/027/006/0724/0728

AUTHOR: Kravtsov, L. A.

63
59
21

TITLE: Variation of the intensity and polarization of secondary luminescence as a function of the layer depth and dye concentration [Report of the Eleventh Conference on Luminescence held in Minsk from 10 to 15 September 1962]

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v. 27, no. 6, 1963, 724-728

TOPIC TAGS: secondary luminescence, polarization of luminescence, fluorescein, rhodamine C, pheophytin, chlorophyll

ABSTRACT: In view of the fact that in the case of most luminescing substances the long wavelength absorption band overlaps the luminescence band, there occurs reabsorption of luminescence and, consequently, excitation of secondary luminescence. The intensity of secondary luminescence should depend on the degree of overlapping of the absorption and emission bands and on the quantum efficiency. The present work was devoted to investigation of the effect of secondary luminescence on the measured luminescence intensity and the degree of its

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polarization under the usual experimental conditions (normal light incidence on the surface). The data were used to calculate intensity and degree of polarization of the secondary luminescence as a function of the optical depth of the layer and the luminescent dye concentration. The measurements were carried out in rectangular quartz window cells with excitation by the 365, 407, 436 and 546 mmu Hg lines. The investigated substances included rhodamine C and fluorescein in glycerol, pheophytin and chlorophyll in cyclohexanol and lucigenin in glycerol (the overlapping of the bands of lucigenin is negligible). Curves characterizing the variation of the intensity and polarization of secondary luminescence for some of the investigated dyes are presented. The experimental results show that the secondary luminescence intensity may be appreciable in the range of low dye concentrations and, therefore, should be taken into account particularly in polarization measurements. The experimental data are in agreement with theoretical predictions. "In conclusion the author thanks B. I. Stepanov and A. M. Samson for valuable discussion." Orig. art. has: 3 figures.

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Physics Institute, Academy of Sciences, BSSR)

L 63959-65 EWT(l)/EWP(e)/EWT(m)/EWP(l) IJP(c) WH

ACCESSION NR: AP5020601 UR/0048/65/029/008/1369/1373

AUTHOR: Rutkovskiy,F.K.; Gribkovskiy,V.P.; Kravtsov,L.A.

TITLE: Density distribution of diffuse exciting light in a luminescing specimen /Report, Thirteenth Conference on Luminescence held at Khar'kov, 25 June to 1 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1369-1373

TOPIC TAGS: laser, light absorption, light diffusion, ruby, ruby laser

ABSTRACT: The authors have calculated the intensity of the radiation at the distance r from the axis of an infinitely long circular cylinder of radius R, with refractive index n, and absorption coefficient k, located in a field of diffuse radiation, and have checked their results by experiments with plastic cylinders of different sizes containing different amounts of absorbent dye. The investigation was undertaken because of its technical interest in connection with laser design. Calculations were performed numerically for several values of n and kR both for cylinders with polished walls and with diffusing walls, and the results are presented graphically. For cylinders with polished walls the intensity is almost independent of r for a certain value of kR (depending on n); for smaller values of

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L 63959-65

ACCESSION NR: AP5020801

kR the intensity increases with decreasing r because of refraction at the side wall. For cylinders with diffusing walls the intensity always decreases with decreasing r. Calculations were also performed in which the variation of k and n with frequency was taken into account. Results are presented for a material with a single Lorentzian absorption line in a radiation field of which the intensity is independent of frequency, and for a ruby cylinder in 8000K black-body radiation. The experiments were performed on cylinders with radii from 0.75 to 1.25 cm and absorption coefficients from 0.02 to 3 cm^{-1}, using monochromatic light from a mercury arc. The means used for measuring the luminous intensity within the cylinders are not described. The experimental results agreed with the calculations for r/R less than 0.6. For larger values of r/R the measured intensities were up to 25% higher than the calculated. This is ascribed to total reflection from the wall of the cylinder. Orig. art. has: 8 formulas and 3 figures. [15]

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Institute of Physics, Academy of Sciences, BSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: EC

NO REF SOV: 003 OTHER: 006 ATD PRESS: 4071

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KALININ, B.A., inzh.; KRAVTSOV, M.A., kapitan

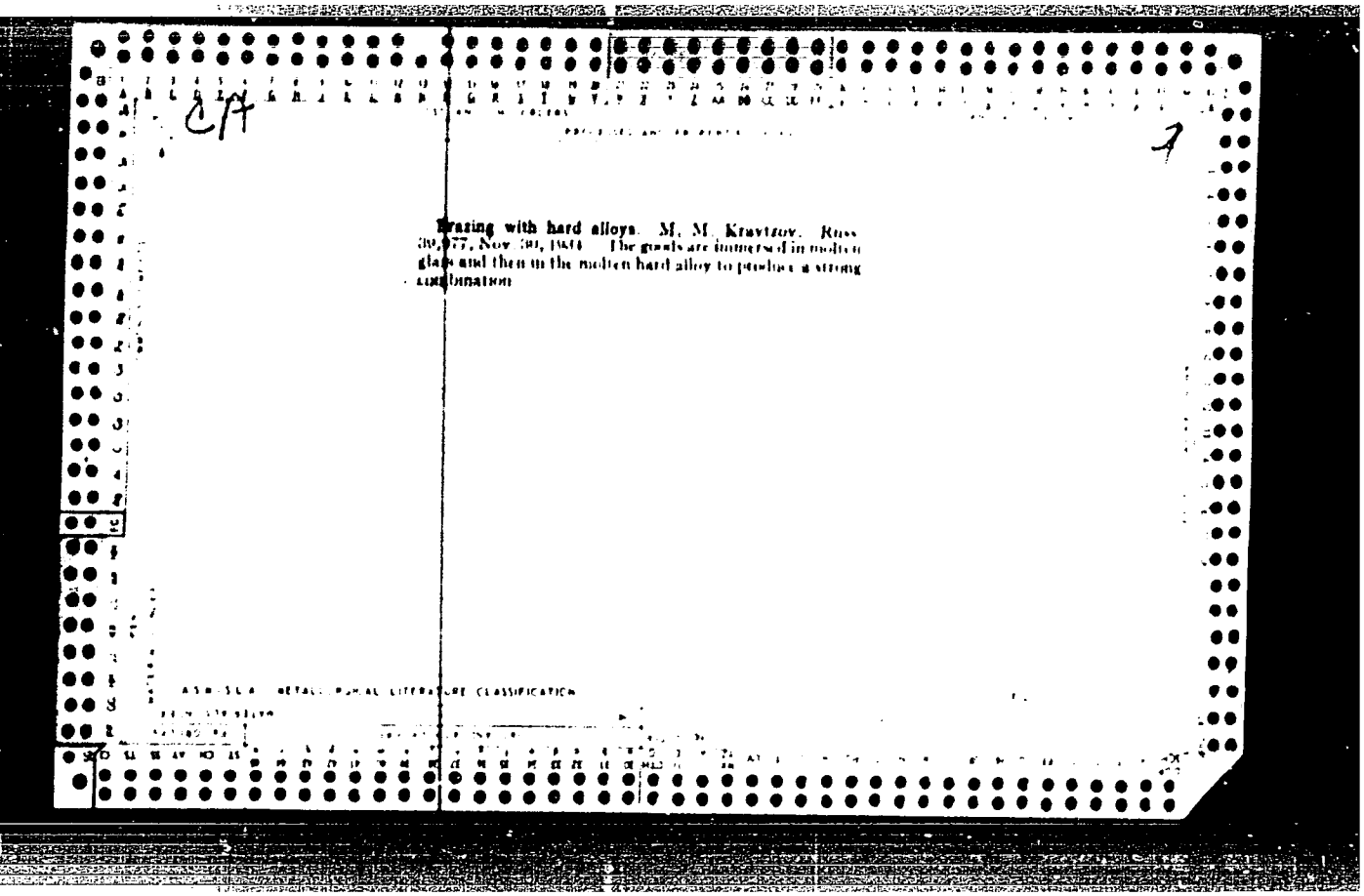
Recent developments in the labor organization of inland water transportation workers. Rech.transp. 17 no.11:5-7 N '58. (MIRA 11:12)

1. Teplokhod "Liski" (for Kravtsov).
(Inland water transportation--Employees)

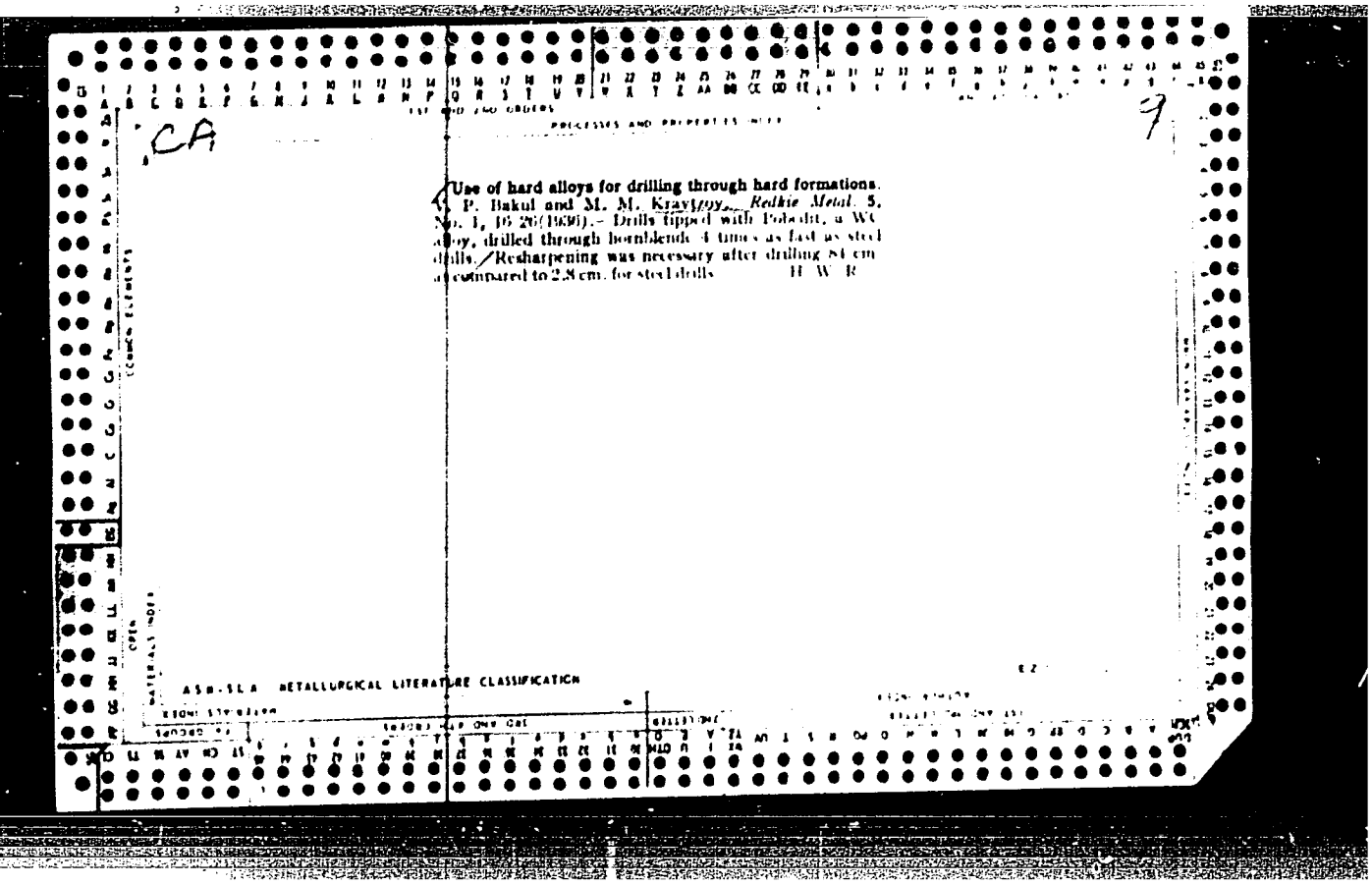
KRAVTSOV, M.A.; kapitan-mekhanik

Work of the combined professions crew on the motorboat "Liski".
Proizv.-tekh. sbor. no.1:31-42 '59. (MIRA 13:9)

1. Severo-Zapadnoye parokhodstvo.
(Inland water transportation--Employees)
(Seamanship)



Brazing with hard alloys. M. M. Kravtzov. Russ. 39,977, Nov. 30, 1934. The goods are immersed in molten glass and then in the molten hard alloy to produce a strong combination.



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Use of hard alloys for drilling through hard formations. P. Bakul and M. M. Kravtsov. *Redkie Metal.* 5, No. 1, 16-20(1939).— Drills tipped with Pobedit, a WC alloy, drilled through hornblende 4 times as fast as steel drills. Resharpening was necessary after drilling 81 cm. as compared to 2.8 cm. for steel drills. H. W. R.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

[illegible], J. ., [illegible], M.M.

"The Results of Using Detachable Boring Bits for Percussive Pneumatic Drilling" Tsvet. Met., 14, No. 4-5, 1939.

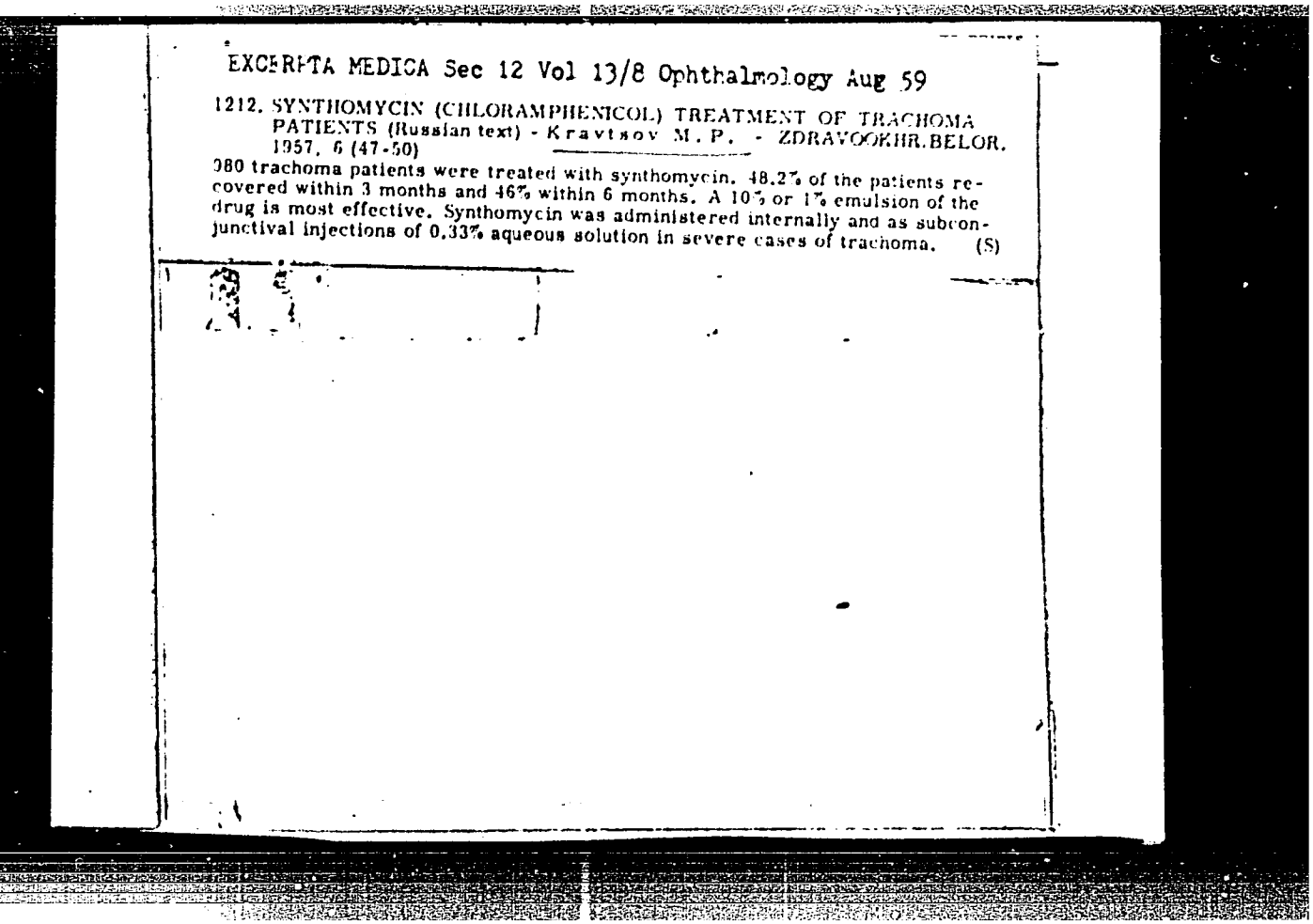
Report U-150, 4 Oct. 1951.

Kravtsov, M. M., jt. au.

BAKUL', V. N.

Mining tool for boring blast holes. Khar'-kov, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1952. 282 p. (54-18396)

TN279.B26



EXCERPTA MEDICA Sec 12 Vol 13/8 Ophthalmology Aug 59

1212. SYNTHOMYCIN (CHLORAMPHENICOL) TREATMENT OF TRACHOMA PATIENTS (Russian text) - Kravtsov M. P. - ZDRAVOOKHR.BELOR. 1957, 6 (47-50)

980 trachoma patients were treated with synthomycin. 48.2% of the patients recovered within 3 months and 46% within 6 months. A 10% or 1% emulsion of the drug is most effective. Synthomycin was administered internally and as subconjunctival injections of 0.33% aqueous solution in severe cases of trachoma. (S)

YERMENKO, S.A.; KRAVTSOV, M.P.

Morphological changes in the skin and nerve apparatus of a rabbit caused by the action of rays from radioactive arsenic. Sbor.nauch. rab.Bel.nauch.-issl.kozhno-ven.inst. 6:106-111 '59. (MIRA 13:11)
(SKIN)
(NERVOUS SYSTEM)
(ARSENIC--ISOTOPES)

KRAVTSOV, N.

We will carry out the party's assignment. Mast.ugl.9 no.10: 7 0'60. (MIRA 13:10)

1. Predsedatel' komiteta profsoyuza shakhty No.12 tresta Kiselevskugol'.
(Kuznetsk Basin--Coal mines and mining--Labor productivity)

KRAVTSOV, N.A., starshiy prepodavatel'

Investigating the effect of the lateral force on the limiting moment in case of a moving load on continuous beams. Izv.vys. ucheb.zav.; mashinostr. no.8:93-100 '63. (MIRA 16:11)

1. Bashkirskiy sel'skokhozyaystvennyy institut.

KRAVTSOV, N.A., starshiy prepodavatel'

Investigating the least safe position of moving loads on a continuous multispan beam. Izv.vys.ucheb.zav.; mashinostr. no.7: 78-82 '61. (MIRA 14:9)

1. Bashkirskiy sel'skokhozyaystvennyy institut.
(Beams and girders, Continuous)

KRAVTSOV, N.A.

Approximate solution of the problem of temperature distribution along the shaft of a gas well with constant rate of production. Gaz.prom. 10 no.11:13-15 '65.

(MIRA 19:1)

KRAVTSOV, N.A.

Determining pressures on the bottom of gas, gas condensate, and oil wells with the DGM-4 manometer. Gaz. prom. 8 no.8:7-10 '63.
(MIRA 17:11)

AKAVTSOV, N. D.
3(5)

PHASE I BOOK EXPLOITATION SOV/1637

Akademiya nauk SSSR. Kompleksnaya antarkticheskaya ekspeditsiya.

Opisaniye ekspeditsii na dizel'-elektrokhode "Ob', "1955-1956 gg. (Description of the Expedition Aboard the Diesel-electric Ship "Ob'" 1955-1956) Moscow, Izd-vo AN SSSR, 1958. 237 p. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Sovet po antarkticheskim issledovaniyam. Chief Ed.: I. P. Bardin, Academician; Resp. Ed. for this vol.: V.G. Kort, Professor, Chief, 1st trip of the Marine Antarctic Expedition, USSR Academy of Sciences; Editorial Board: A.A. Afanas'yev (Chief, Main Administration of the Northern Sea Route, Sea Route, MMF),V.G. Bakayev (Minister of Sea Transport), V. F. Burkhanov (Deputy Chief, Main Administration of the Northern Sea Route), A.A. Zolotukhin (Chief, Main Administration of the

Card 1/9

Description of the Expedition SOV/1637

Hydrometeorological Service), V.G. Kort (Professor, Chief, 1st trip of the Marine Antarctic Expedition, USSR Academy of Sciences), M.M. Somov (Chief, Combined Antarctic Expedition, USSR Academy of Sciences), V. V. Frolov (Director, Arctic Scientific Research Institute, Main Administration of the Northern Sea Route), D. I. Shcherbakov (Chairman, Council for Antarctic Research, USSR Academy of Sciences; Eds. of Publishing House: L.I. Sprygina, and B. S. Shokhet; Tech. Ed.: P. S. Kashina.

PURPOSE: This volume is intended for the general reader.

COVERAGE: The Report of the Combined Antarctic Expedition of the AN SSSR, headed by N. N. Somov, contains an account of the work on the first trip of the Diesel-electric ship "Ob'" to the Antarctic and the aims and problems involved, including the establishment of an observatory at Mirnyy. A major part of the book is devoted to scientific research in aerology, meteorology and actinometry,

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Description of the Expedition (Cont.) SOV/1637

conducted in cooperation with the IGY program. A large part of the observations and preliminary findings cited are in the field of hydrology and hydrochemistry, marine geology, geophysics, hydrography, and hydrobiology. A roster of the members of the expedition together with their specialities is included. There are 72 figures, including maps. Bibliographic references accompany separate chapters.

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Description of the Expedition (Cont.) SOV/1637

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AVAILABLE: Library of Congress

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DOBROKHOTOV, A.A., inzh.; PANCHENKO, A.G., inzh.; SAVEL'YEV, D.N., inzh.; KOPYLENKO, Ye.A., inzh.; BRYUNETKIN, M.G., inzh.; KRAVTSOV, N.F., inzh.; TIMOFEYEVA, R.G., inzh.

Improving the performance of open-hearth furnaces. Stal' 23 no.4: 304-308 Ap '63. (MIRA 16:4)
(Open-hearth furnaces)

KRAVTSOV, N.N.

First results of the work of industrial associations. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.4:73-74 Ap '64. (MIRA 17:6)

AL'FIONOVA, O.A., inzh.; KOL'YANOV, V.V., inzh.; KRAVTSOV, N.S., inzh.

Modernizing construction windlasses. Mekh. stroi. 18 no.6:15-16 Je '61. (MIRA 14:7)

1. Saratovskiy zavod stroitel'nykh mashin.
(Winches)

24.2300

66012

AUTHORS: Strakhovskiy, G. M., Kravtsov, N. V. S/053/60/070/04/005/011
B006/B011

TITLE: Strong Magnetic Fields

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol 70, Nr 4, pp 693-714 (USSR)

TEXT: The present article offers a survey of the possibilities of producing strong magnetic fields. P. L. Kapitsa is said to be a pioneer in this field: in 1924 he already attained 5.10^3 oersteds by means of an accumulator discharge over a low-resistance solenoid, and $3.2.10^5$ oe with an electromechanical method in 1927. $1.6.10^6$ oe are attainable today under laboratory conditions, which is by no means to be considered the upper limit. Table 1 offers a chronological picture of the magnetic field strengths attained by various authors, among whom V. S. Komel'kov, N. F. Aretov, and G. I. Budker are mentioned. The latter theoretically investigated the problem of the production of strong magnetic fields by the use of relativistically stabilized electron beams. L. N. Rozentsveyg pointed out the possibility of polarizing electron beams injected into accelerators by means of strong magnetic fields. A number of other fields of application of strong magnetic fields is briefly dealt with. Part II contains a discussion of electromagnets with iron cores, which are used up to 50 koe. Since such laboratory magnets must meet with a number of requirements (large H, easily accessible range of operation and a homogeneous

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Strong Magnetic Fields

field in the latter, good cooling, et al.), they constitute a compromise. Figure 1 illustrates such a typical magnet. When using common iron it is possible to attain 17,000 - 20,000 gauss, and up to 26,000 gauss if special alloys are employed. With a special shape of the pole pieces it is possible to attain 70 koe; figure 2 shows such a case. The requisite of field homogeneity in the range of operation opposes a limit to an increase in the field strength by a special shape of the pole pieces. Figure 4 shows a photograph of a laboratory electromagnet, the characteristics of which are given. Figure 5 illustrates the dependence of the H on the gap width. Part III deals with the iron-free electromagnets with constant field, i. e. construction and theory of solenoids. First, the theory of solenoids with constant current density is briefly dealt with and next, solenoids with optimal radial distribution of the current are discussed. Figure 7 shows a schematic representation of such a solenoid which makes it possible to attain as much as 10^5oe. Figure 8 illustrates the field distribution along the solenoid axis, figure 9 the dependence of the H on the solenoid diameter with different powers (20-3000 kw). Part IV is devoted to the pulsed magnetic fields. Field strengths exceeding 10^5oe can be attained in solenoids fed by pulsed currents. Such currents are attained by condenser discharge, discharge of chemical batteries, and on the electromechanical way. Figure 10 shows a basic scheme of such a system, the theory of which is

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briefly dealt with. Both methods are frequently used (pulse duration 0.01 sec). In this case, cooling opposes considerable technical difficulties which are related in the first place with the strength of the solenoid. When cooling with nitrogen or helium, $2.5 \cdot 10^5$ oe can be attained during 0.1 sec, but in the theory it is then necessary to consider the change in conductivity of the solenoid. Next, such theories are dealt with: that of a solenoid with trapezoidal cross section and homogeneous current density distribution, such a solenoid in which the current density is inversely proportional to the radius, and a solenoid with rectangular cross section in which the current density is inversely proportional to the radius. Graphs, diagrams, and tables complete the representation. Part V briefly deals with form and duration of the pulses with special regard to the square pulses. The last part is devoted to the measurement of pulsed magnetic fields by the ballistic method (accuracy $\pm$ 1%), the Faraday effect, magnooptical and galvanomagnetic effects. Rogovskiy is mentioned. There are 27 figures, 5 tables, and 124 references, 48 of which are Soviet.

KRAVTSOV, N.V.; LAZUKIN, V.N.; CHEKALIN, N.V.

Microwave spectroscope with a high-frequency modulated magnetic field for investigations in a wide range of temperatures. Vest. Mosk. un. Ser. 3: Fiz., astron. 18 no.6:18-22 N-D '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

L 10764-63 EPF(c)/EWT(1)/BDS/
EEC(b)-2--AFFTC/ASD/ESD-3--Pr-4--GG
ACCESSION NR: AP3003222 S/0020/63/150/006/1267/1269

64
63

AUTHOR: Kravtsov, N. V.; Lazukin, V. N.; Chekalin, N. V.

TITLE: Observation of spin induction in electron paramagnetic resonance

SOURCE: AN SSSR. Doklady, v. 150, no. 6, 1963, 1267-1269

TOPIC TAGS: electron paramagnetic resonance, spin induction method

ABSTRACT: The nuclear induction method developed by F. Bloch *et al.* [Phys. Rev., 69, 127, (1946)] for observation of nuclear magnetic resonance has been applied to observation of electron paramagnetic resonance. The method consists of placing the sample in a constant magnetic field perpendicular to a variable magnetic field and observing the variable component of the electron spin magnetic moment through an emf induced in the direction perpendicular to the two crossed fields. Experiments were conducted with a setup employing a klystron oscillating at 9500 Mc and feeding a hybrid ring through a ferrite valve and variable attenuator. Part of the power passes into a bimodal cylindrical cavity positioned in the field of a 50-cps electromagnet. Input and output waveguides are perpendicular to one another. The sample is placed at the

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ACCESSION NR: AP3003222

end of the cavity, where the microwave power is at a maximum, and the hybrid ring permits observation of the EPR signal by the usual method of reflection from the cavity. The system was tested with diphenylpicrylhydrazyl and yttrium ferrite single crystals. The results indicate high sensitivity of the device and high stability of the microwave circuit balance as particular advantages. It is suggested that observation of EPR by spin inductance can be accomplished in a radio spectroscope with superheterodyne detection. The use of such a spectroscope would obviate the necessity of using a hybrid ring or circulator, permit the use of high-power microwaves (which increases sensitivity), and provide very stable operation. Pulsed methods can also be used to observe electron spin induction and make relaxation time measurements. The article was presented by Academician L. A. Artsimovich, 29 January 1963. Orig. art. has: 3 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 16Jan63 DATE ACQ: 24Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 000 OTHER: 002

Card 2/2

L 10745-63 EWP(j)/EPF(c)/EWT(l)/EWT(m)/BDS--AFFTC/ASD--Pc-4/
Pr-4--GG/RM/WW
ACCESSION NR: AP3003509 S/0020/63/151/001/0087/0089

AUTHOR: Kravtsov, N. V.; Lazukin, V. N.; Shanditsev, V. A.

TITLE: Many-quantum transitions in EPR

SOURCE: AN SSSR. Doklady, v. 151, no. 1, 1963, 87-89

TOPIC TAGS: EPR, electron paramagnetic resonance, diphenylpicrylhydrazyl free radical, EPR satellites

ABSTRACT: The effect of weak modulating radio frequency magnetic field H_2 on the EPR spectrum of the diphenylpicrylhydrazyl free radical was investigated. Absorption at microwave field frequency ω_1 and absorption and emission at ω_1 and ω_2 (frequency of H_2) were recorded in the experiments. As the amplitude of H_2 was increased, an increase was observed in the number of satellite lines located symmetrically on both sides of the principal line. It was determined that the line intensity decreased with increasing order number of the satellite. The first satellite corresponds to absorption of quantum $\hbar\omega_1$ and emission of quantum $\hbar\omega_2$. The next satellite (in a weaker field) is due to absorption of quantum $\hbar\omega_1$ and emission of quantum $\hbar\omega_2$. An analogous effect occurs on the

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ACCESSION NR: AP3003509

other side of the principal line. The authors note that this effect makes it possible to measure high-frequency radiation by recording lower-frequency radiation. The emission at ω_2 and at multiples of ω_2 can also be utilized in designing quantum mechanical amplifiers. The article was presented by Academician L. A. Artsimovich, 29 Jan 1963. Orig art. has: 4 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University)

SUBMITTED: 16Jan63 DATE ACQ: 30Jul63 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 006

Card 2/2

L 10744-63 EWT(1)/EDS/EEC(b)-2--AFFTC/ASD/AFWL--IJP(C)
ACCESSION NR: AP3003551 S/0020/62/151/002/0314/0314

AUTHOR: Kravtsov, N. V.

TITLE: On the possibility of detecting high-frequency radiation at lower frequencies

SOURCE: AN SSSR. Doklady, v. 151, no. 2, 1963, 314

TOPIC TAGS: quantum devices, high-frequency radiation detection

ABSTRACT: A device is proposed for detecting high-frequency radiation at lower frequencies by using a system of quantum energy levels (such as paramagnetic ions in crystals) with level degeneracy fully or partially removed by a static magnetic field. Two variable magnetic fields are imposed on the system, one parallel to the static field and the other perpendicular to it. The frequency of the parallel variable field is much lower than that of the perpendicular field. The transition probabilities of this system are such that it can detect radiation with

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L 10744-63
ACCESSION NR: AP3003551

the high frequency of the parallel field by using the low frequency of the perpendicular field. The maximum possible ratio of these frequencies depends on the line width of the transition and is shown by experiments to reach values on the order of 10^5. The method will permit application of r-f and microwave techniques to detection of radiation in bands for which there presently are no reliable detectors or for which the present detectors possess poor sensitivity, large time constants, etc. With a two-level quantum system, very large magnetic fields may be required, which can be supplied by pulsed methods. Weaker fields can be used with a multilevel quantum system having a considerable initial splitting of the working levels. The time constant of the device determined by the relaxation properties of the quantum system, will be on the order of 10^{-7} to 10^{-4} sec. An analogous effect can be obtained through utilization of electric fields with particles possessing electric moments. The article was presented by L. A. Artsimovich, 29 January 1963. Orig. art. has: 2 formulas.

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

SUBMITTED: 29Dec62 DATE ACQ: 30Jul63 ENCL: 00
SUB CODE: 00 NO REF SOV: 000 OTHER: 001

Card 2/2

L 8460-65 EEO-2/EWA(k)/EWT(d)/FBD/EWT(1)/EEC(k)-2/K/EEC-4/EEC(t)/T/EEC(b)-2/EWP(k)/EED-2/EWA(m)-2/EWA(h) Pf-4/Pi-4/P1-4/Pm-4/Pn-4/Po-4/Pac-4 IJP(c)/AFETR/AFTC(p)/SSD/AFWL/ASD(d)/RAEM(a)/ASD(a)-5/AFMD(c)/RAEM(c)/ESD(c)/RAEM(e)/ESD(gs)/ESD(t)/RAEM(t)/
ACCESSION NR: AP4042994 ESD(dp) WG S/0051/64/017/001/0143/0144

AUTHOR: Kravtsov, N. V.; Shevchenko, A. K.

TITLE: Possibility of conversion of phase and frequency modulation of light into amplitude modulation

SOURCE: Optika i spektroskopiya, v. 17, no. 1, 1964, 143-144

TOPIC TAGS: laser radiation spectrum, laser modulation, frequency modulation, pulse modulation, amplitude modulation, laser communication, laser

ABSTRACT: The investigation is of interest since phase and frequency modulation of laser radiation is more economical than amplitude modulation, but reception of the latter is simpler. Two schemes are described for this purpose. The system for pm to am conversion is similar to a somewhat modified Jamin interferometer with a phase modulator in each arm. Such a system is not sensitive to variation

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L 8460-65
ACCESSION NR: AP4042994 0

of the laser-light frequency and is claimed to be more economical than a system in which passive compensation of the phase of the second beam is realized. This am method is suitable for both coherent and incoherent light. For the system of fm to am conversion, it is shown that for a wavelength 5×10^{-5} cm and a path difference 25 cm, the beam will go from direction a to direction b when the frequency deviation is 10^{-6}. It is pointed out that observation of the end of a laser crystal through such a system would make it possible to find the distribution of the generated frequencies over the face of the laser crystal. Fig. 1 of the Enclosure presents 2 conversion systems. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 16Sep63 ATD PRESS: 3102 ENCL: 01

SUB CODE: EC NO REF SOV: 000 OTHER: 003

Card 2/3

L 8460-65
ACCESSION NR: AP4042994

ENCLOSURE: 01

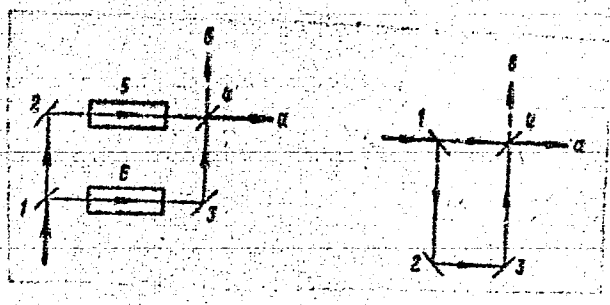

Fig. 1. Systems for the conversion of phase into amplitude modulation (left) and frequency into amplitude modulation (right)

1,4 - Semitransparent mirrors; 2, 3 - mirrors; 5, 6 - phase modulators.

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L 14067-66 EWT(d)/FSS-2

ACC NR: AP6002406 (A) SOURCE CODE: UR/0103/65/026/012/2260/2264

AUTHOR: Kravtsov, N. V. (Moscow); Polyachenko, V. L. (Moscow)

ORG: None

TITLE: Error dispersion in measuring frequency and phase of a sinosoidal signal in the presence of narrow-band noise

SOURCE: Avtomatika i telemekhanika, v. 26, no. 12, 1965, 2260-2264

TOPIC TAGS: signal to noise ratio, signal noise separation, signal frequency, phase measurement, error prediction

ABSTRACT: In the solution of some practical problems, there is sometimes a need for the precise determination of the frequency of a sinosoidal signal in the presence of narrow-band noise. It is, therefore, interesting to perform a theoretical evaluation of the dependence of the dispersion of the error of measurement on the value of the signal-noise ratio and the measurement time interval. This note presents a method for the construction of the appropriate formulas based on the simple physical analogy with unidimensional Brownian motion. An analysis is also made of the physical interpretation of the results obtained with different limiting cases. Only the more well-

Card 1/2 UDC: 621.317.36:621.391.82

L 14067-66

ACC NR: AP6002406

known formulas in random function theory are used. It is noted in conclusion that an analogous problem was solved (by means of a very complicated procedure) by V. P. Zhukov (Dispersiya chisla nuley summy garmonicheskogo signala i uzkopolosnogo shuma. Radiotekhnika i elektronika, vol. 9, no. 3, 1964). Orig. art. has: 3 figures and 22 formulas.

SUB CODE: 09/ SUBM DATE: 15Jul64/ ORIG REF: 002

Card 2/2

ACC NR: AP6027242 SOURCE CODE: UR/0109/66/011/008/1516/1518

AUTHOR: Kravtsov, N. V.; Chirkov, L. Ye.

ORG: none

TITLE: Optical modulator based on the Michelson interferometer

SOURCE: Radiotekhnika i elektronika, v. 11, no. 8, 1966, 1516-1518

TOPIC TAGS: interferometer, optic modulator

ABSTRACT: Experiments with a Michelson-interferometer-type optical modulator are briefly reported. ADP-crystal (40 x 4 x 2-mm) cuts were used. The half-wave displacement was 820 v with one, and 410 v with two crystals. A control-voltage amplitude of 410 v produced a 100% modulation in the single-crystal scheme. The modulator passband, limited by the capacitance of electro-optical cells (28 pF), was about 100 Mc. The above interferention modulator has these advantages: it

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UDC: 535.241.13

ACC NR: AP6027242

requires a much lower control voltage than other types; it does not require rigid monochromaticity of light (a radiation band of 100 Å is acceptable); its operation depends only slightly on the ambient-temperature variations. Disadvantages: high sensitivity to mechanical vibration; no use of TW line is possible. Orig. art. has: 2 figures and 8 formulas.

SUB CODE: 20 / SUBM DATE: 11Nov65 / ORIG REF: 002 / OTH REF: 002

Card 2/2

ACC NR: AP7005621 SOURCE CODE: UR/0413/67/000/002/0066/0066

INVENTOR: Kravtsov, N. V.; Chirkov, L. Ye.

ORG: none

TITLE: Electrooptical element. Class 21, No. 190488

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1967, 66

TOPIC TAGS: phase modulation, optic modulator, optic element, ELECTROOPTIC EFFECT

ABSTRACT: An electrooptical element for a phase modulator is introduced (see Fig. 1) which is based on the quadratic electrooptic effect. To reduce the amplitude of the modulating voltage, the modulator capacitance, and the required power, it is made in the form of a rectangular prism. This form assures complete multiple reflection of the light beam within the element. Orig. art. has: 1 figure. [JR]

Card 1/2 UDC: 621.383.6:621.376.4.08

ACC NR: AP7005621

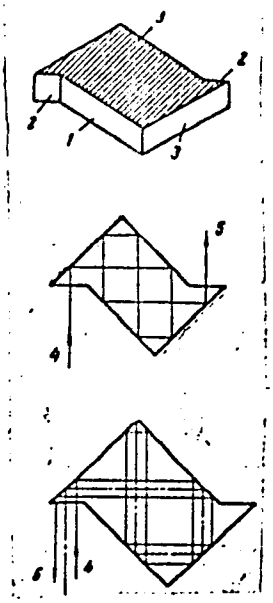

Fig. 1. Electrooptical element

1 - Single crystal cut; 2 - incoming window; 3 - electrodes; 4 - incoming beam; 5 - outgoing beam.

SUB CODE: 09/ SUBM DATE: 07Sep65/

Card 2/2

VINOGRADOV, A.A., kand.tekhn.nauk; KRAVTSOV, N.Ya., inzh.

Analysis of a balanced steady mode of operation of a generator with excitation from a mechanical rectifier. Trudy VZEI no.25:87-102 '64. (MIRA 18:12)

KRAVTSOV, Nikolay Yakovlevich, aspirant

Remarks on I.A.Riabinin's article "Equivalent circuits of the excitation system of self-exciting synchronous generators." Izv. vys. ucheb. zav.; elektromekh. 6 no.11:1274-1276 '63. (MIRA 17:4)

1. Ural'skiy politekhnicheskiy institut.

LEVINTOV, S.D., kand.tekhn.nauk, dotsent; KRAVTSOV, N.Ya., inzh.

Rating the power of the motor of a piercing mill. Vest.mash. 42 no.4:50-51 Ap '62. (MIRA 15:4)
(Pipe mills)

KRAVTSOV, Nikolay Yakovlevich, starshiy prepodavatel'

Equivalent magnitudes of the excitation circuit of a self-exciting synchronous generator. Izv. vys. ucheb. zav.; elektromekh. 5 no.11:1240-1246 '62. (MIRA 16:1)

1. Kafedra elektrifikatsii promyshlennykh predpriyatiy Chelyabinskogo politekhnicheskogo instituta.

(Electric generators)

KRAVTSOV, Nikolay Yakovlevich, aspirant; SIUNOV, Nikolay Sergeyevich, doktor tekhn. nauk, prof.

Equivalent networks and differential equations of synchronous generators with self-excitation. Izv. vys. ucheb. zav.; elektromekh. 6 no.4:451-461 '63. (MIRA 16:7)

1. Kafedra elektricheskikh mashin Ural'skogo politekhnicheskogo instituta (for Kravtsov). 2. Zaveduyushchiy kafedroy elektricheskikh mashin Ural'skogo politekhnicheskogo instituta (for Siunov).
(Electric generators) (Differential equations)
(Equivalent circuits)

LEVINTOV, S.D., kand. tekhn. nauk, dotsent; KRAVTSOV, N.Ya., inzh.

Loads of the electric drives of the auxillary mechanisms of a blooming mill. Izv. vys. ucheb. zav.; energ. 7 no.6:40-46 Je '64 (MIRA 17:8)

1. Chelyabinskiy politekhnicheskiy institut. Predstavlena kafedroy elektroprivoda i avtomatizatsii promyshlennykh ustanovok.

VASIL'YEV, Yu.K., kand. tekhn. nauk; KARPENKO, B.K., kand. tekhn. nauk; KRAVTSOV, O.K., inzh.; MURASHKO, V.A., inzh.; IVANOVA, I.G., inzh.

Direct current motor with printed armature winding.
Energ. i elektrotekh. prom. no.1:25-28 Ja-Mr'64.

(MIRA 17:5)

KRAVTSOV, O.K., inzh.

Analysis and comparison of the characteristics of motors with printed windings on disc rotors and ordinary d.c. motors. Energ. i elektrotekh. prom. no.2:27-30 Ap-Je '64. (MIRA 17:10)

KRAVTSOV, P.A., uchitel'.

Work of young naturalists on a school experimental plot. Biol. v shkole no.3:88-89 My-Je '57. (MLRA 10:6)

1. Shkola No.41 g. Krasnodara.
(Krasnodar--Agriculture--Study and teaching)

BOYKO, V.I., inzh.; KRAVTSOV, P.N., inzh.; USACHEV, K.V., inzh.

Mechanical cleaning and painting of metal poles for electric transmission lines. Energetik 5 no.9:1-4 S '57. (MIRA 10:10)
(Electric lines--Poles)

KRAVTSOV, P.V.; SOROKIN, Yu.I.

Formation of hydrogen sulfide as a process following the reduction of sulfates in Kuybyshev Reservoir. Trudy Inst.biol. vodokhran. no.2:191-196 '59. (MIRA 13:5)
(Kuybyshev Reservoir--Hydrogen sulfide)

KRAVTSOV, P.V.

Effect of additional electricity on the intensification of microbiological processes in the rhizosphere of plants and in fallowed soil. Agrobiologiia no.2:253-257 Mr-Ap '62. (MIRA 15:4)

1. TSentral'naya geneticheskaya laboratoriya imeni I.V.Michurina, g. Michurinsk.
(Rhizosphere microbiology) (Electricity in agriculture)

KRAVTSOV, P.V.; NIKITIN, B.L.; KRAVTSOVA, L.V.

Effect of electricity on the biological activity of soil. Trudy TSGL 7:239-243 '61. (MIRA 15:10)
(Soil biology) (Electricity—Physiological effect)

KRAVTSOV, P.V.; KRAVTSOVA, L.V.

Effect of weak electric currents on the development of free-living nitrogen-fixing micro-organisms in soil. Trudy TSGL 7:244-254 '61. (MIRA 15:10)

(Micro-organisms, Nitrogen-fixing)
(Electricity—Physiological effect)

KRAVTSOV, P.V.

Effect of micro-organisms on the increase of soil fertility under the influence of electricity. Trudy TSGL 7:255-265 '61. (MIRA 15:10)

(Soil micro-organisms) (Electricity—Physiological effect) (Soil fertility)

KRAVTSOV, P.Ya.

"First Experiende with a Charge of 100 Tons and Above in the Open-Hearth Aggregates of the South", Ugol' i zhelezo [Coal and Iron], No 31, 1928.

KRAVTSOV, P. Ya.

"Increased Weight of Furnace Charges as One of the Principal Trends of Technical Progress in Open-Hearth Production of the USSR," Problemy Metallurgii, pp 291-294, 1953

Translation M-286, 22 Mar 55

ZAYKOV, S.T., kand.tekhn.nauk; KRAVTSOV, P.Ya., inzh.

Using ore-lime briquets in converter process. Izobr.v SSSR 2 no.9:16-17 S '57. (MIRA 10:10)
(Bessemer process)
(Briquets)

KRAVTSOV, P.Ya.

24-12-17/24

AUTHORS: Goncharenko, N.I., Zaykov, S.T. Kravtsov, P.Ya., Umnov, V.D. (Khar'kov).

TITLE: Use of ore-limestone briquettes in convertors. (Primeneniye rudoizvestnyakovykh briketov v konverternom proizvodstve).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.12, pp.78-80 (USSR).

ABSTRACT: Use of oxygen in convertors with basic lining permits processing of open hearth pig containing up to 0.30% P and up to 0.08% S. Therefore, acceleration of the process of formation of liquid lime-iron slag during the blowing, which lasts only 12 to 15 minutes, is of great importance. On the suggestion of the Ukrainian Institute of Metals (Ukrainskiy Institut Metallov) several series of experiments were made in the shops of the imeni Petrovskiy Works and the Yenakiyevo Works substituting iron ore and limestone by ore-limestone briquettes. The speeding up of the process of slag formation if such briquettes are used is attributed to the larger specific surface and the good mixing of the limestone and ore which, before briquetting, are crushed to a size of 1 to 3 mm. For making the briquettes, rich powdery iron ore with a low

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content of silica is used. In one of the Works two series of experimental melts were made (60 melts, melting temperature 1250°C) with ore-limestone briquettes of the following composition: 27.12% Fe, 38.74% Fe_2O_3, 2.55% SiO_2, 21.44% CaO, 0.72% MgO, 0.95% Al_2O_3, 0.12% MnO, 0.02% P, 0.022% S. The slag formation is so rapid that slag specimens taken from the convertor three minutes after the beginning of the blowing period were perfectly homogeneous in spite of the fact that they contained 32% CaO; the data given in Table 3 indicate that the basicity of the slag after three minutes blowing remained almost constant and this proves the full and rapid dissolution of the limestone in the slag. Rapid slag formation and a high reaction ability was also proved in the experiments at the Yenakiyevo Metallurgical Works. Due to the higher fluidity of the slags obtained with a briquette variant, the bauxite consumption is reduced by 55 to 60% and the specific consumption of liquid pig-iron is also lower, resulting in an increase in output of 1 to 1.6% and a reduction of the specific oxygen consumption. Thus, ore-lime briquettes substituting

Use of ore-limestone briquettes in convertors. 24-12-17/24

all the admixtures used at present represent fundamentally a slag forming mixture and a cooling agent and such a substitution leads to simpler and easier operation of convertor shops.
There are 3 figures and 4 tables.

SUBMITTED: April 19, 1957.

AVAILABLE: Library of Congress.

Card 3/3

KRAVTSOV, P.Ya.

KRAVTSOV P.Ya.

18(5); 25(5) PHASE I BOOK EXPLOITATION SOV/1574

Kyyiv. Ukrayins'kyy naukovo-doslidnyy instytut metaliv

Vprovadzhennya novoyi tekhniky i tekhnologiyi na metalurhiynykh zavodakh Ukrayiny; zbirnyk, t. 3 (Introduction of New Techniques and Technology in Ukrainian Metallurgical Plants; Collection of Articles, Vol. 3) Kyyiv, Derzhtekhvydav URSR, 1958. 192 p. 1,000 copies printed.

Exec. Ed.: N. Artmina; Tech. Ed.: P. Patsalyuk.

PURPOSE: The book is intended for metallurgists employed in rolling and slabbing operations.

COVERAGE: This is a collection of 11 Ukrainian articles, compiled by 22 authors, some of whom are referred to as eminent specialists. The subjects dealt with in the articles are: use of limestone-fluxed slag in making pig iron, use of blast-furnace gas under increased pressure, use of oxygen in making steel in open-hearth and Bessemer furnaces, description of a new method of "intensified" squeezing of slabs in blooming mills. Some design details, with direct references to actual plants and certain operational practices are also featured. Introduction of full mechanization of rolling processes at steel-works is taking place. Numerous diagrams accompany the text. Some articles have bibliographic entries, mainly Soviet.

TABLE OF CONTENTS:

Introduction of New Techniques (Cont.) SOV/1574

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KRAVTSOV, P. YA.

18(0) PHASE I BOOK EXPLOITATION SOV/1728

Akademiya nauk SSSR. Institut metallurgii

Sovremennyye problemy metallurgii (Modern Problems in Metallurgy) Moscow, Izd-vo AN SSSR, 1958. 640 p. 3,000 copies printed.

Resp. Ed.: A.N. Samarin, Corresponding Member, USSR Academy of Sciences; Eds. of Publishing House: V.S. Rzhevnikov, and A.N. Dernov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This book is intended for scientific and technical personnel in the field of metallurgy.

COVERAGE: This is a collection of articles on certain aspects of Soviet metallurgy. The book is dedicated to Academician Ivan Pavlovich Bardin on the occasion of his 75th birthday. The book is divided into seven parts. The first part consists of two articles presenting a brief account of the biography and professional activity of the Soviet metallurgist. It includes an article by John Chipman, Nicholas Grant, and John Elliott (M.I.T., USA) describing their meeting with Bardin in Moscow and also his visit to the United States. The second part consists of three articles and deals with raw materials and fuels for the Soviet metallurgical industry. The third part represents the major portion of the book. It consists of 25 articles dealing with the various aspects of the metallurgy of pig iron and steel. The fourth part consists of two articles treating the metallurgy of nonferrous metals. The fifth part consists of three articles on the forming of metals. The sixth part consists of eight articles discussing certain aspects of physical metallurgy. The last part deals with general problems in the field of metallurgy. References are given after each article. No personalities are mentioned.

TABLE OF CONTENTS:

Modern Problems in Metallurgy SOV/1728

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SOV/137-58-9-18585

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 59 (USSR)

AUTHORS: Derfel', A.G., Kravtsov, P.Ya.

TITLE: Scrap-process Smelting of Pipe Steel With Low-manganese Cast Iron (Vyplavka trubnoy stali skrap-protsessom na malo-margantsovistom chugune)

PERIODICAL: V sb.: Staleplavil'n. proiz-vo. Moscow, Metallurgizdat, 1958, pp 19-26

ABSTRACT: Scrap-process smelting of pipe steel of types St. 4 and D involving low-manganese cast iron (LMCI) was investigated in the 185-ton, fuel-oil-operated, open-hearth furnaces with magnesite-chromite crowns at the im. K. Libknekht (K. Liebknecht) plant. The smeltings were carried out with and without the addition of Fe-Mn in the course of the working process. The LMCI contained 1.04% Mn, 0.81% Si, and 0.068% S; standard cast iron contains 2.12% Mn and 0.070% S. It was found that smelting operations employing LMCI as well as processes involving standard cast iron required an identical amount of time for completion. Owing to a reduction in Mn content occurring after fusion and prior to deoxidation (0.15 and 0.20%

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respectively, instead of 0.25-0.27 and 0.29-0.31% as in the case of standard cast iron) during processing of LMCI for the manufacture of steel, the consumption of the Fe-Mn increased to 5.7 kg/t, in processes not involving the addition of this substance, and to 6.2 kg/t in procedures involving the addition of the Fe-Mn for finishing purposes; analogous operations involving the processing of standard cast iron required 4.2 kg of Fe-Mn per ton. After fusion and prior to deoxidation, the slag contained greater quantities of Fe oxides and smaller amounts of Mn oxides than would be the case during processing of standard cast iron. During processing of the LMCI the S content is greater after the smelting of the metal; however, in the finished metal it is identical to the S content of metals manufactured by smelting with standard cast iron. With regard to the amount of spoilage, the consumption of metal during the manufacture of pipes, mechanical properties, macro- and microstructure, as well as with regard to the amount of oxygen, nitrogen, and nonmetallic inclusions, the steel smelted with LMCI does not differ from the steel obtained through processing of standard cast iron.

1. Steel--Processing 2. Cast iron--Performance 3. Manganese --Reduction 4. Pipes--Production

L.K.

ZAYKOV, S.T., kand. tekhn. nauk; KOROBOV, I.I., inzh.; KOSTENETSKIY, O.N., inzh.; KRAVTSOV, P.Ya., inzh.; LIFSHITS, S.I., kand. tekhn. nauk; RUBINSKIY, P.S., inzh.; UMNOV, V.D., inzh.

Using limestone-ore briquettes during oxygen blast through pig iron in converters. Biul. TSNIICHM no. 10:15-21 '58. (MIRA 11:7)
(Bessemer process)

S/137/61/000/010/006/056
A006/A101

AUTHORS: Zaykov, S. T., Kravtsov, P. Ya., Lifshits, S. I.

TITLE: Assimilation of melting new steel grades in converters with oxygen blast

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 10, 1961, 36, abstract 10V240 ("Metallurg i gornorudn. prom-st', Nauchno-tekhn. sb.", 1960, no. 4, 25 - 27)

TEXT: At the plant imeni Petrovskiy and "Krivorozhstal'" the following rimming steel grades are now being melted in converters with O_2 blast: T - for telegraph wire; CB-08 (SV-08) and CB-08A (SV-08A) for electrode wire (S up to 0.040%, and up to 0.030%), K-2, K-3, K-0 for small iron ware; K-5 and KP-62 (KP-62) for crane rails; 25Г2С (25G2S) low-alloy steel for reinforcement wire of variable profile. Further enlargement of the assortment was studied, namely the melting of high-quality CB-08A (SV-08A), K-10 and K-20 pipe steel. It was found that when converting cast iron with S < 0.05%, steel with S < 0.030% can be obtained, if the slag is removed twice and fluorspar (2 kg/t of steel) is added. The repeated slag removal extends the melting time by 15 - 20% and reduces the

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yield by 0.7 - 1.2%. Further investigations showed that SV-08A steel can be melted from cast iron with S < 0.05% and Mn > 1.5% if only fluorspar is used without removing the primary slag. K-10 and K-20 pipe steel was melted. Teeming was performed by the syphon method into molds with risers. The ingot weight was 4.20 - 4.45 t. The steel contained 0.0091% [O], 0.0065% [N] and 4.69 ml/100 g [H]. All the mechanical and technological tests of the pipe specimens yielded satisfactory results.

P. Arsent'yev

[Abstracter's note: Complete translation]

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KRAVTSOV, P.Ya.

3/130/60/000/008/007/009

AUTHORS: Zaykov, S.T., Kravtsov, P.Ya., Lifshits, S.I.

TITLE: Putting Into Production New Steel Grades Melted in Oxygen Converters

PERIODICAL: Metallurg, 1960, No. 8, p. 15

TEXT: The following steel grades are now being produced in oxygen converters at the Plant imeni Petrovskiy and the Krivoy Rog Plant: rimming "T", Cb0 8 (Sv08), KCT.2 (KSt.2), KCT.3 (KSt.3), KCT.0 (KSt.0) steel and killed 25Γ 2C (25G2S), 35ΓC (35GS), KCT.5 (KSt.5), KP62 (KR62), Cb0 8A (Sv08A), K10 and K20 pipe steel. In Sv08A steel the permissible sulfur and phosphorus content is not over 0.030%. The production of oxygen converter steel with a low P and S content is not particularly difficult. It was established by experimental investigations that steel with a sulfur content below 0.03% may be obtained of cast iron containing 0.05% S. This is attained by repeated removal of the slag and the addition of fluorspar in an amount of 2 kg/t of metal. However, the repeated drawing-off the slag increases the melting time by 15-20% and reduces the yield by 0.7-1.2%. K10 and K20 pipe steel was melted in an oxygen converter. The

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finished product met the requirements to standards and the gas content was low. The rolling of the blanks into seamless pipes was easily possible. The pipe tests proved satisfactory.

ASSOCIATION: Ukrainskiy institut metallov (Ukrainian Institute of Metals), Zavod imeni Petrovskogo (Plant imeni Petrovskiy)

POYARKOV, Aleksey Mikhaylovich; KOTIN, A.G., otv. red.; KRAVTSOV, P.Ya., otv. red.; LIBERMAN, S.S., red. izd-va; ANDREYEV, S.P., tekhn. red.

[Steelmaking]Proizvodstvo stali. Izd.2., ispr. i dop. Khar'kov, Metallurgizdat, 1962. 520 p. (MIRA 15:10)
(Steel--Metallurgy)

ZAYKOV, S.T.; KRAVTSOV, P.Ya.; NIKIFOROV, B.V.; KOVAL', V.Ya.; CHIGULIN, V.I.; RUBINSKIY, P.S.; LIFSHITS, S.I.; YEVSTAF'YEV, Ye.I.; NIKONOV, V.F.; VOZLINSKIY, A.G.

Using oxygen-blown converter steel in automobile manufacture. Met. i gornorud. prom. no.4:26-31 Jl-Ag '64.

(MIRA 18:7)

KRAVTSOV, R.L.; SHVETSKIY, B.I.

Problem concerning the choice of an a.c. bridge circuit.
Avtom. kont. i elek. izm. no.2:35-46 '60. (MIRA 15:3)
(Bridge circuits) (Electric measurements)

9.7000

S/194/62/000/006/004/232
D222/D309

AUTHOR: Kravtsov, R.S.

TITLE: Balancing computer circuits with discrete adjustment of the variables

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-1-25 g (Nauchn. zap. L'vovsk. politekhn. in-t, 1961, no. 78, 61-135)

TEXT: Balancing computer circuits are devices for the solution of equations of the form f(x) = 0 relative to the unknown x using the method of implicit functions. The advantages of systems with discrete adjustment of the required variables are enumerated, among others the improved accuracy, higher speed and a number of operational advantages. On the example of a non-dimensional system are shown the process of obtaining the solution, the selection of the increment of the variable and the law of its change depending on the expected character of change for the input variable, and also an estimate is given for the sensitivity of the adjusting system in connection with the required accuracy of the calculations and the

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insensitive zone of the executive element. The stability problems of the one-dimensional system can be considered in two stages: investigation of the degenerate motion and investigation of motion in the vicinity of the solution point for a system with degenerate motion. A general formulation is given for the problem of constructing multi-dimensional systems for the solution of systems of equations of the form $f_i(x_1, \ldots, x_n) = 0$ where $i = 1, \ldots, n$. The concept of the resultant transformation matrix (RTM) is introduced, and it is remarked that the problem of investigating the convergence of multi-dimensional systems can be formulated in terms of the analysis and synthesis of systems. The purpose of the analysis is to establish the conditions imposed on the matrix by the stability requirements, to determine the safety factor with a given matrix, to establish the relationship between the matrix and the duration of the balancing process and the investigation of the error due to the insensitivity of the executive mechanism. The synthesis of a system is reduced to finding RTM's which satisfy the stability conditions of the system, ensure a sufficiently small safety factor, satisfactory speed and sufficiently small error due to insensitivi-

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ty. The stability problems of two-dimensional systems are examined with several variants of motion near the solution point: monotonic, aperiodic, and oscillatory motion. RTM's are presented which ensure the synthesis of two-dimensional systems: permutations, gradient RTM, autonomizing RTM, and orthogonalizing RTM. The synthesis method of two-dimensional systems with the utilization of each of the RTM's is illustrated by the example of the synthesis of a system of transformation for bipolar coordinates into rectangular ones. Each of the transformations is executed in three variants: with variable elements, with parametrically expressed elements, and with constant elements. It is pointed out that the results obtained for the synthesis of two-dimensional systems can be used for the synthesis and investigation of multi-dimensional systems, but the main task in the investigation of multi-dimensional systems is the selection of a system which has sufficiently high qualitative indices of convergence, and the synthesis of only such systems. The circuitry problems in the parallel and series modelling of the equations and in transforming the error signals into control signals are briefly examined. The general validity of the conclusions, and the fact that they can be extended to one-dimensional systems of discrete

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action, to positional control systems and to integrator computer units, is pointed out. 14 figures and 17 references. [Abstracter's note: Complete translation.]

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