SOV/124-58-1-1409

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 173 (USSR)

AUTHOR: Stol'nikov, V. V.

TITLE: Investigation of Concrete by the Resonance Method (Issledovaniye betona rezonansnym metodom)

PERIODICAL: Izv. Vses. n.-i. in ta gidrotekhn., 1957, Vol 57, pp 166-177

ABSTRACT: A brief presentation of the history of the subject, accompanied by a derivation of formulas for the assessment of the modulus of elasticity of a material in terms of the natural vibration frequency of a specimen brought to the resonance condition in a "modulemer" (modulus-of-elasticity meter). Test results obtained by the author are described and analyzed. It is established that within the limits of the experiment the natural vibration frequency of a specimen drops with increasing concrete temperature. It is shown that this phenomenon cannot be explained solely by the changes in specimen dimensions, Poisson ratio, and void ratio of the concrete which accompany the temperature changes. The basic cause of the drop in natural vibration frequency evoked by an increase in concrete temperature appears to be a reduction in its modulus of elasticity

Card 1/2

Investigation of Concrete by the Resonance Method

brought forth by the generation of structural defects in the cement texture as a result of changes of the psychro-thermal regime. The author also examines the behavior of the nondisintegrating grains of clinker in the cement texture with changing temperature. It is established that the natural vibration frequency of concrete specimens saturated with water up to constant weight exceeds substantially (by up to 42.6%) the frequency of specimens dried down to constant weight. The increase in natural vibration frequency (increase in modulus of elasticity) is produced by the self-compaction of the concrete. It is established that the growth curve of the natural vibration frequencies of the concrete in the course of its saturation with water lags with respect to the curve of the growth in weight-per-unit-volume. The self-compaction process of the concrete proceeds more slowly than the process of water saturation thereof. Bibliography: 14 references.

Yu. Ya. Shtayerman

Card 2/2

SOV/124-57-9-11135

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 173 (USSR)

AUTHORS: Stol'nikov, V. V., Gubar', A. S.

TITLE: Investigation of the Effect of Surface-active Additives on the Stability of Cement Mortars in Aggressive Sulfate Media (Issledovaniye vliyaniya poverkhnostno-aktivnykh dobavok na stoykost' tsementnykh rastvorov v agressivnykh sul'fatnykh sredakh)

PERIODICAL: Izv. Vses. n.-i. in-ta gidrotekhn., 1957, Vol 57, pp 178-197

ABSTRACT: Bibliographic entry

Card 1/1

STOL'NIKOV, V.V.

98-58-5-19/33

AUTHORS: Stol'nikov, V.V., Professor and Doctor of Technical Sciences and Sukhotskiy, A.V., Engineer

TITLE: From the Experience of Engineering Abroad (Iz opyta zarubezhnoy tekhniki). On the Construction of Some Dams in Italy (O stroitel'stve nekotorykh plotin v Italii)

PERIODICAL: Gidrotekhnicheskoye Stroitel'stvo, 1958, Nr 5, pp 51-56 (USSR)

ABSTRACT: The article deals with hydroelectric constructions in Italy. Statistical data on international and particularly on the capacity of Italian electric power is given. The construction of the Kampo-Moro Dam in Italy and the Flumendoza and Mulardzh dams in Sardinia is also described. There are 5 tables, 4 schematic drawings, 4 photographs and 1 Italian reference.

AVAILABLE: Library of Congress

Card 1/1

SOV-99-58-8-12/22

AUTHOR: Stol'nikov, V.V., Doctor of Technical Sciences, Sukhotskiy, A.V., Engineer

TITLE: Scientific Research Works in the Field of Hydrotechnical Constructions in Italy (Nauchno-issledovatel'skiye raboty v oblasti gidrotekhnicheskogo stroitel'stva v Italii)

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1958, Nr 8, pp 56-59 (USSR)

ABSTRACT: The article deals with the organization of the research work in Italy in the field of hydrotechnical constructions. There are 3 photos and 1 Soviet reference.

1. Scientific research--Italy 2. Power plants--Italy 3. Dams --Italy

Card 1/1

S/Y-58-9-17/21

AUTHORS: Troskuryakov, B.V. and Stolnikov, V.V., Doctors of Technical Sciences and Borovoy, A.A., Engineer

TITLE: Hydraulic Engineering Works in Turkey (Gidrotekhnicheskoye stroitel'stvo v Turtsii)

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1958, Nr 9, pp 48 - 50 (USSR)

ABSTRACT: The authors describe dams already existing in Turkey and those now under construction. Turkey's economic dependence on foreign capital is stressed. There are 4 diagrams and 1 photo.

1. Dams--Turkey 2. Economic conditions--Turkey

Card 1/1

SOV-98-58-10-7/16

AUTHORS: Stol'nikov, V.V., Doctor of Technical Sciences, Professor; Znachko-Yavorskiy, I.L., Candidate of Technical Sciences

TITLE: Blast Furnace Waste Slag as a Filler for Hydrotechnical Concrete (Otval'nyye domennyye shlaki v kachestve zapolniteley v gidrotekhnicheskom betone)

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1958, Nr 10, pp 27-29, (USSR)

ABSTRACT: The authors consider the use in the USSR of blast furnace waste slag as a filler for hydrotechnical concrete. Research work on this is being carried out by scientific institutes and building construction firms. The need of finding a new local source of fillers for hydrotechnical concrete is quoted as an important problem for technologists and builders. Cast crushed slag production amounted to 800,000 cu m in 1955 and had reached 1,210,000 cu m in 1957. Existing regulations in the USSR recommend the use of blast furnace waste slag as filler for usual concrete and road building only. Experiments in using blast-furnace waste slag as a filler for hydrotechnical concrete are now being carried

Card 1/2

SOV-98-58-10-7/16

Blast Furnace Waste Slag as a Filler for Hydrotechnical Concrete

out by VNIIG imeni B.Ye. Vedeneyeva (VNIIG imeni B.Ye. Vedeneyev). First results of this study have proved the stability of crushed and ground slag against freezing and atmospheric effects. There is 1 photo.

1. Slags--Applications 2. Concrete--Preparation 3. Concrete --Materials

Card 2/2

STOL'NIKOV, V.V., prof., doktor tekhn.nauk; GINZBURG, TS.G., starshiy nauchnyy sotrudnik, kand.tekhn.nauk

Winter concreting with the use of air-entraining agents and small doses of calcium chloride. Izv. VNIIG 60:28-38 '58. (MIRA 13:6)

(Frost resistant concrete)

STOL'NIKOV, V.V., prof., doktor tekhn.nauk; GURAR', A.S., starshiy nauchnyy sotrudnik, kand.tekhn.nauk

Investigating the sulfate resistance of concrete by the resonance method. Izv. VNIIG 60:89-104 '58. (MIRA 13:6)
(Concrete--Testing)

STOL'NIKOV, V.V., prof., doktor tekhn.nauk; SUDAKOV, V.B., insh.

Determining the tensile strength of concrete. Izv. VNIIG 60: 128-141 '58. (MIRA 13:6)
(Concrete—Testing)

14(10) SOV/98-59-9-19/29

AUTHOR: Stol'nikov, V.V., Doctor of Technical Sciences. Professor

TITLE: Problems of Hydro-Engineering Concrete at the 6th International Congress on Large Dams

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 9, pp 52-55 (USSR)

ABSTRACT: The author reviews some papers dealing with concrete used for construction of hydraulic structures, presented at the 6 th International Congress on Large Dams, held in September 1958 in New York. Among the papers read, was one by V.V. Stol'nikov on Soviet structural-engineering practice. There are 2 diagrams.

Card 1/1

STOL'NIKOV, V.V., doktor tekhn.nauk; ZHACHKO-YAVORSKIY, I.L., kand.tekhn. nauk

Using dump furnace slags as aggregates in making concrete for hydraulic structures. Stroi. mat. 6 no.9:25-28 S '60. (MIRA 13:9)

(Concrete) (Slag)

STOL'NIKOV, Vladimir Vladimirovich

[Effect of the age of concrete on its basic engineering properties]Vliianie vozrasta betona na ego osnovnye tekhnicheskie svoistva. Moskva, Gos.energ.izd-vo, 1960. 66 p. (MIRA 16:3)

(Concrete--Testing)

STOL'NIKOV, V.V., prof., doktor tekhn.nauk

Problems of hydraulic concrete at the Sixth International Congress on Large Dams in New York and the construction of dams on the Missouri River. Izv.VNIIG 63:41-72 '60. (MIRA 14:5)
(Concrete) (Missouri River--Dams)

STOL'NIKOV, V.V., prof., doktor tekhn.nauk; GINZBURG, TS.G., starshiy nauchnyy sotrudnik, kand.tekhn.nauk; LITVINOVA, R.Ye., starshiy nauchnyy sotrudnik, kand.khim.nauk

Stiff concrete mix for the interior areas of hydraulic structures. Izv.VNIIG 63:73-83 '60. (MIRA 14:5)
(Concrete) (Hydraulic structures)

STOL'NIKOV, V.V., prof., doktor tekhn.nauk; GUBAR', A.S., starshiy nauchnyy sotrudnik, kand.tekhn.nauk; SUDAKOV, V.B.

Influence of age on the principal characteristics of hydraulic concretes. Izv.VNIIG 64:55-65 '60. (MIRA 14:5)
(Concrete)

S/081/62/000/002/076/ 0
B150/B101

15.3200

AUTHOR: Stol'nikov, V. V.

TITLE: Designation of the requirements and unification of cements for hydraulic concretes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 385, abstract 2K307 (Izv. Vses. n.-i in-ta gidrotekhn., v. 66, 1960, 185 - 209)

TEXT: The requirements were stated for cements for the production of hydraulic concretes for different purposes. It is proposed to produce two kinds of Portland cement for hydraulic concrete: a) Γ-I(G-I) for concrete of external underwater zones of massive installations and of external frost-resistant zones of hydroconstructions (with air-entraining additives). Average mineralogical composition (in %): ~C_3S~45, C_2S~30, C_3A~6, C_4AF~ 9, free CaO~0.5, MgO~4; Γ-II(G-II) for thin-walled prefabricated and prestressed hydraulic structures. Average mineralogical composition: ~C_3S~54, C_2S~25, C_3A~9, C_4AF~9, free CaO~0.5, MgO~4. If the

Designation of the requirements...

aggregates contain amorphous silica, both kinds of cement must present the requirement for lowering the alkali content (<0.6%). Slag Portland cement for hydraulic concrete must be manufactured on the clinker basis, fulfilling the requirements of cements G-I and G-II. The amount of slag in the cement is not limited. The most type of G-I cement should form 400, and G-II cement 500. [Abstracter's note: Complete translation.]

X

Card 2/2

STOL'NIKOV, V.V., doktor tekhn.nauk, prof.; KIND, V.V., kand.tekhn.nauk

Using fly ash from thermal electric stations as cement additives.
Gidr.stroi. 31 no.6:18-22 Je '61. (MIRA 14:6)
(Fly ash) (Concrete)

STOL'NIKOV, V.V., doktor tekhn.nauk, prof.

Concrete in the construction of large dams in Japan. Gidr. stroi. 31 no.9:51-57 S '61. (MIRA 14:12)
(Japan—Dams)

STOL'NIKOV, V.V., doktor tekhn.nauk, prof.

Choosing, preparing, and assigning the requirements for concrete aggregates for large dams. Gidr. stroi. 32 no.1:55-59 Ja '62. (MIRA 15:3)

(Aggregates (Building materials)) (Dams--Congresses)

STOL'NIKOV, V.V., doktor tekhn.nauk, prof.

Cements for hydraulic concretes. Gidr. stroi. 32 no.2:24-27 F '62. (MIRA 15:7)
(Cement) (Hydraulic structures)

STOL'NIKOV, V.V., doktor tekhn.nauk, prof.

Third Coordination Conference on Hydraulic Engineering Concrete. (MIRA 15:4)
Gidr.stroi. 32 no.4:61-62 Ap '62.
(Concrete--Congresses)

STOL'NIKOV, V.V., prof., doktor tekhn.nauk; SUDAKOV, V.B., inzh.

Aspects of using a resonance method in studying concrete.
Bet. i zhel.-bet. 8 no.8:354-357 Ag '62. (MIRA 15:9)
(Concrete--Testing)
(Vibration)

Sidorov, V. V.

"Concrete design for large dams in the USSR and the influence of age on the basic properties of hydrotechnical concrete."

report presented at the 30th Exec Mtg & 9th Intl Conf, Intl Comm on Large Dams, Edinburgh, 4-8 May 64.

STOL'NIKOV, V.V., prof., doktor tekhn. nauk; LITVINOVA, R.Ye., kand. khim. nauk, starshiy nauchnyy sotrudnik; BORISOV, A.A., inzh.

Evaluation of the crack resistance of cement mortars. Izv. VNIIG 76:61-76 '64. (MIRA 18:10)

IGNATENOK, Filipp Vasil'yevich; STOL'NIKOVA, G., red.

[Subsurface drainage of soils] Zakrytyi drenazh pochv. Moskva, Kolos, 1965. 199 p. (MIRA 19:1)

[illegible], [illegible].A.; [illegible], [illegible].A., red.

[Irrigation technique for grain crops] Tekhnika poliva zernovykh kul'tur. Moskva, Kolos, 1964. 61 p. (MIRA 17:12)

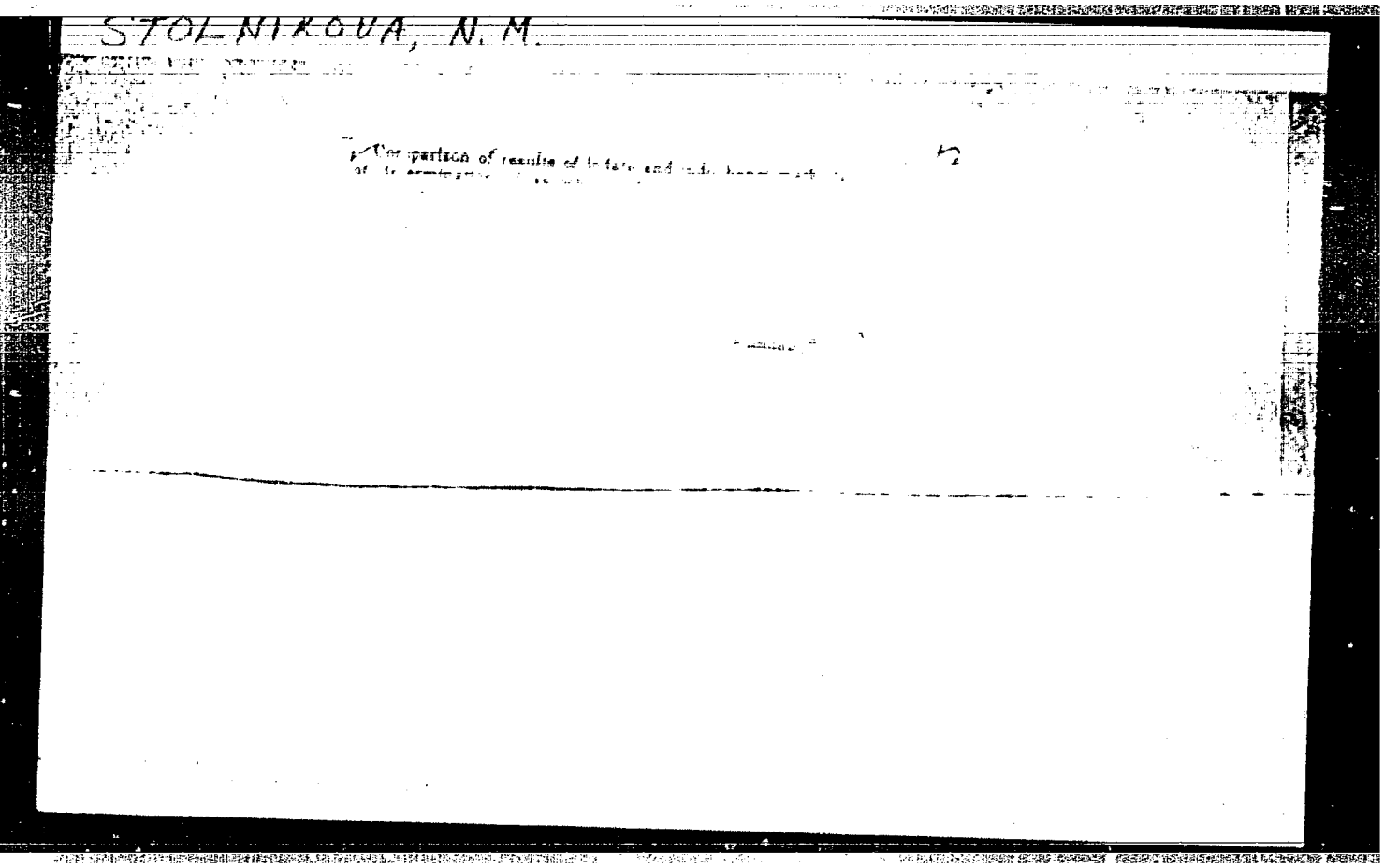
STOL'NIKOVA, N. M.

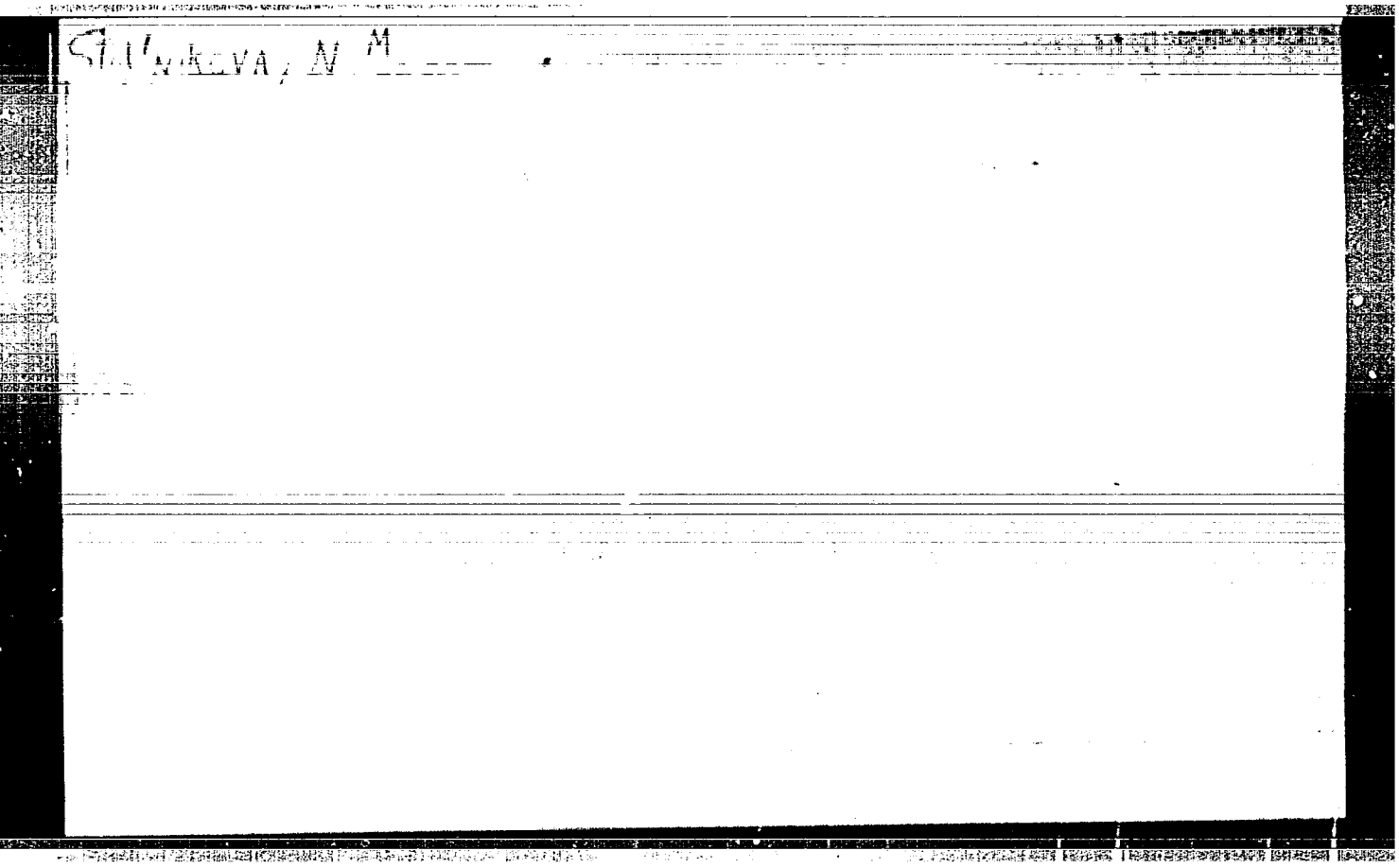
USSR

Chemical analysis of vitamin B, in industry. V. A. Pevyatnits, T. N. Kravchina, and N. M. Stol'nikova. *Trudy Vsesoyuz. Nauch.-Issled. Inst. Vitamin.* Inst. 4, 230–40 (1953). B. S. Levine

Effect of moisture on decomposition of vitamins C and B_1 in formulations. V. A. Devyatnin, V. V. Zvorykina, and N. M. Stol'nikova. *Trudy Vitaminn. Nauch. Issledovatel. Vitaminn. Inst.* 5, 42-6(1954).—Moisture accelerated oxidation of ascorbic acid in glucose tablets, as does citric acid which should not be formulated with ascorbic acid for this reason. Moisture also catalyzes the loss of thiamine in tablets, but citric acid has no effect on this decompn., which appears to consist in a formation of a Schiff base.

G. M. Kosolapoff





ACC NR: AP6035652 HW SOURCE CODE: UR/0133/66/000/011/1014/1015

AUTHOR: Smirnov, V. S.; Danilevskiy, O. P.; Aleksandrov, A. A.; Stol'nyy, V. I.; Kagan, E. S.

ORG: none

TITLE: Manufacture of clad plates by rolling evacuated packs

SOURCE: Stal', no. 11, 1966, 1014-1015

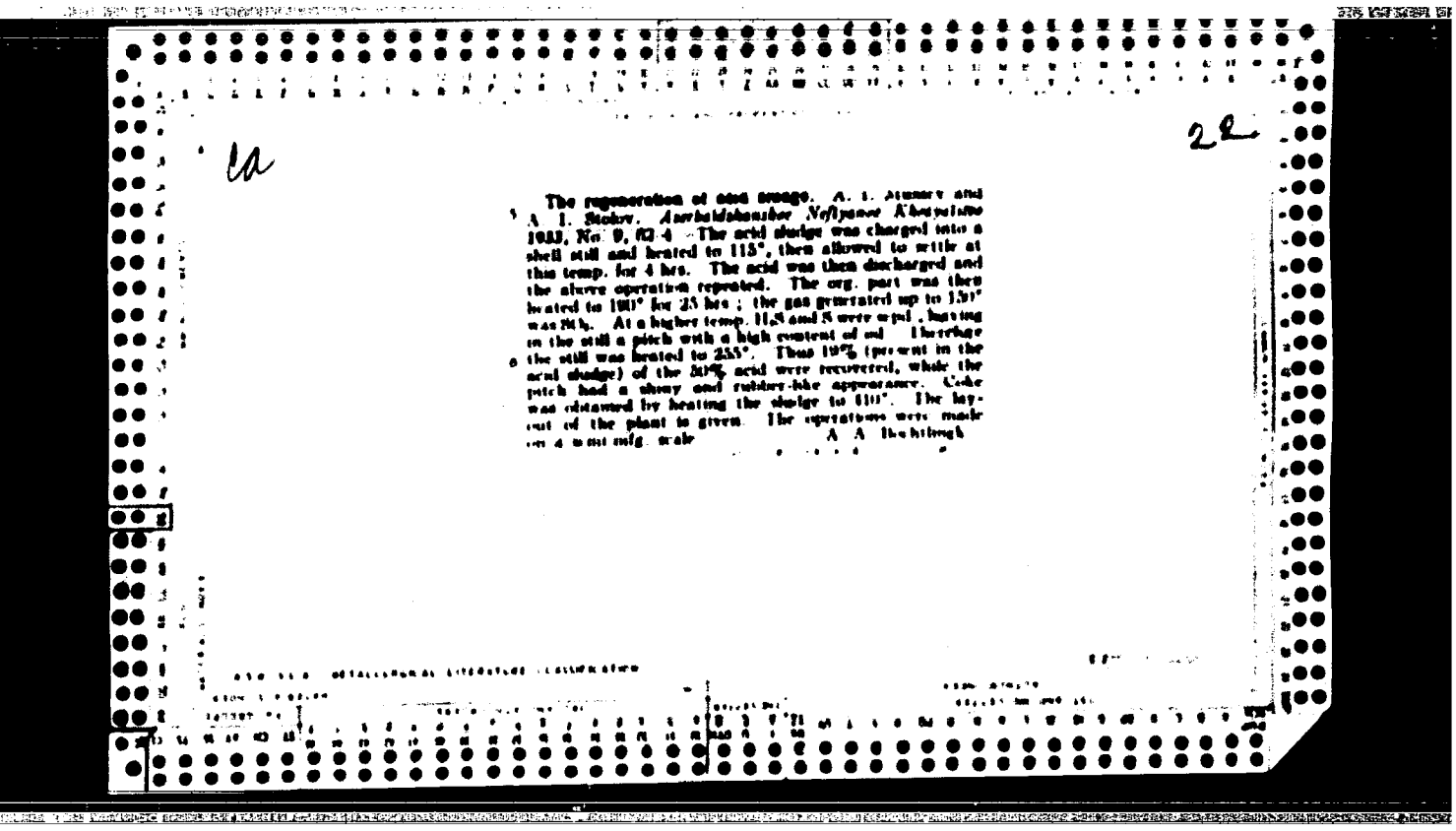
TOPIC TAGS: metal cladding, clad plate, titanium, steel

ABSTRACT: A method of cladding of steel plates (45 x 1300 x 3500 mm) with titanium with a magnesium oxide interlayer has been developed. Cladding was done by rolling a pack composed of an St.3 steel slab, a VT-1 titanium cladding plate, and a magnesium oxide interlayer. To prevent oxidation of the titanium, the edges of the pack were sealed by welding and all the air was evacuated from the inside of the pack. The pack, preheated to 1050C, was rolled to the desired thickness. The surface of the cladding plate was found to be smooth and even. Ultrasonic inspection did not reveal any lamination between the titanium and steel. Introduction of this method in the industry would help in production of clad plates of good quality and eliminate the need of vacuum rolling mills. Orig. art. has: 1 figure.

bimetal

SUB CODE: 13, 14/ SUBM DATE: none/ ORIG REF: 007/ ATD PRESS: 5104

Card 1/1 UDC: 621.771.8



1a

2a

The regeneration of used sludge. A. I. Stumov and A. I. Stolov. *Azerbaidzhanskoe Neftyanoe Khozyaistvo* 1933, No. 9, 62-4.—The acid sludge was charged into a shell still and heated to 115°, then allowed to settle at this temp. for 4 hrs. The acid was then discharged and the above operation repeated. The org. part was then heated to 180° for 25 hrs.; the gas generated up to 150° was SO$_2$. At a higher temp. H_2S and S were evol., leaving in the still a pitch with a high content of oil. Therefore the still was heated to 255°. Then 19% (present in the acid sludge) of the 50% acid were recovered, while the pitch had a shiny and rubber-like appearance. Coke was obtained by heating the sludge to 410°. The layout of the plant is given. The operations were made on a semi-mfg. scale.

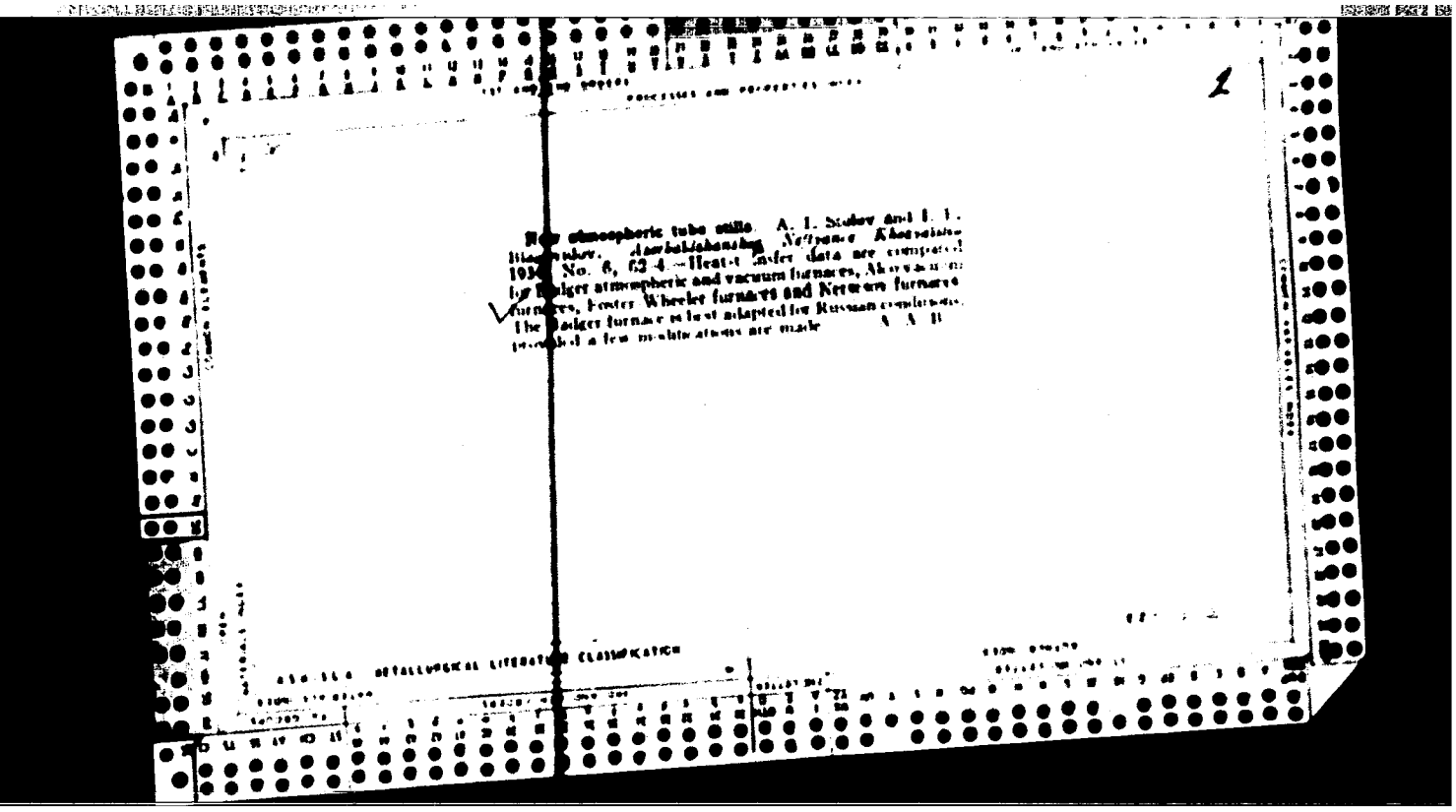
A. A. Bochkarev

2L

1h

Results of the regeneration of acid sludge on a commercial scale. A. I. Musaev and A. I. Stolov. *Azerbaidzhanskoe Neftyanoe Khozyaistvo* 1933, No. 11-12, 113-16.—The investigated acid sludge had the following characteristics: sp. gr. 0.948, Brenken flash 200°, viscosity E_{50} 18.56, pour point 2°. It contained H_2SO_4 15.08, tar 13.5, oil 44.84, and H_2O 22 (loss 3.06%). The process was carried out as follows: The acid sludge was preheated to 100-110° (with closed steam), and live steam was admitted for agitation 2-3 min. before the transfer of the sludge into the still. The transferred sludge was heated to 110-115° in the open still for 4-5 hrs. and allowed to settle 4 hrs. and the acid discharged. The heating was then continued for another 2 hrs., and the sepd. acid discharged once more. The heating of the remaining org. part was carried out slowly at 180-190° for 16-24 hrs., whereby SO_2 was sepd. within the interval of 150-200°. It was used for the prepn. of acid oil. The contents of the still were kept at 200° for 2-3 hrs., the vacuum was then connected and the still was heated to 400-450° for 20 hrs., distillate samples being taken every 4 hrs. The coke was discharged after 48 hrs. The SO_2 was passed into alkali sludge (from cylinder stock) having: org. constituents 31.87%, acid no. 8.2, naphthenic acids 2.19, acid no. of naphthenic acids 140.7 and content of unsaponifiable matter on the org. mass 93.77%. The product obtained on passing SO_2 into the above sludge had: acid no. of the org. part 6.68 and of naphthenic acids 140.7; content of pure naphthenic acids 4.55% and unsaponifiable matter on the org. mass 93.45%.

A. A. B.



CA

Experimental use of a propane propylene fraction in the Duosol process. I. E. Gurevich and A. I. [illegible]. [illegible] Khoz. 24, No. 6, [illegible] (1946). The throughput capacity of a comm. Duosol extn. plant was adversely affected when a corresponding cut of the propane propylene fraction of cracked gases was used in place of propane. The propylene (12-15%) [illegible] the [illegible] of the raffinate and ext. phases. The S content of the fraction [illegible] by wt. of H_2S and [illegible] causes extensive corrosion of app. To remove the propylene, a combination of the Duosol process with a preliminary alkylation or absorption step, with H_2SO_4, is suggested. In either case, H_2S must be removed before. [illegible]

BASHILOV, Arsenii Aleksandrovich, kand.tekhn.nauk; STOLOV, Al'bert Izrailevich; KVOCHKIN, Fedor Abramovich; KOLESNIKOV, F.M., red.; BABICHEVA, V.V., tekhn.red.

[Ways of reducing losses of petroleum products in refineries] Puti sokrashchenila poter' nefteproduktov na neftepererabatyvaiushchikh zavodakh. [Groznyi] Groznenskoe knizhnoe izd-vo, 1957. 125 p. (MIRA 12:1)
(Petroleum--Refining)

PHASE I BOOK EXPLOITATION 1094

Bashilov, Arseniy Aleksandrovich, Kvochkin, Fedor Abramovich, and Stolov, Al'bert Izrailevich

Kompaundirovaniye motornykh topliv (Blending of Motor Fuels) Moscow, Gostoptekhizdat, 1958. 138 p. 2,500 copies printed.

Ed.: Sukhanov, V.P.; Exec. Ed.: Yefremova, T.D.: Tech. Ed.: Mukhina, E.A.

PURPOSE: This book is intended for the engineers and other technical workers employed in petroleum refining plants, commodity transportation offices, petroleum supply and storage enterprises of various branches of industry, automotive, water and air transportation, and in agriculture.

COVERAGE: This book, gives theories and methods for blending fuels and the characteristics of basic components of automobile and aviation gasolines, tractor kerosenes, and diesel and reactive fuels. Problems of ethylating and inhibiting motor fuels, practical calculation and industrial examples of blended fuels obtained from slightly sulfurous and sulfurous petroleum, automation problems, and safety techniques during blending are also discussed.

Card 1/3

STOLOV, A. I.; ZINOV'YEV, V.B.

Doubling the capacity of pressure vacuum apparatus. Neftianik 5 no.10:15-16 O '60. (MIRA 13:10)

1. Sotrudniki Groznenskogo nauchno-issledovatel'skogo neftyanogo instituta.

(Distillation apparatus)

ARUTYUNOV, I.Kh.; STOLOV, A.I.; LEZHNEVA, V.A.

Efficient field crops growth stimulant from petroleum refining wastes. Nefteper. i neftekhim. no. 11:22-24 '63. (MIRA 17:5)

1. Groznenskiy neftemaslozavod i Groznenskiy nauchno-issledovatel'skiy institut.

STOLOV, A. L., AND FIDEMAN, I. S.

Computation of Errors in Nonuniform Measurements

Formulas for Computation of mean square and mean arithmetic errors without computing the mean value, but using only the difference between two consecutive measurements, are derived. The same method may be applied in "nonuniform measurements," i.e., measuring with different accuracy. (RZhFiz, No. 8, 1955) Uch. Zap. Kazansk. un-ta, 113, No. 9, 1953, 145-153.

SO: Sum. No. 704, 8 Dec 55 - Supplementary Survey of Soviet Scientific Abstracts (17)

USSR/Optics - Optical Methods of Analysis. Instruments. K-7

Abs Jour : Referat Zhur - Fizika, No 3, 1957, 7942

Author : Fishman, I.S., Storey, A.L.
Title : Calculation of Errors in Spectral Analysis by Current Measurements. II.

Orig Pub : Uch. zap. Kazansk. gos. un-ta, 1955, 115, No 12, 57-71

Abstract : Continuation of work published in the Uch. Zap. (Scientific notes) of the Kazan University, 1953, 113, Book 9, 145. Using the least squares method, expressions are obtained for the errors in the analysis when plotting graphs using the method of three standards and the method of control standard. The analysis of these expressions made it possible to predict the following concerning the three-standard method: (1) given a number of standards and given a concentration, the minimum error is obtained when the standards are placed at the ends of the interval, symmetrically relative to the middle; (2) for a given set

Card 1/2 - 89 -

STOLOV, A. I.

Spectrum analysis of gases in flash discharges. Uch.zap.Kaz.un. 116 no.1:118-120 '55. (MLRA 10:5)

1.Kafedra molekulyarnykh i teplovykh yavleniy.
(Spectrum analysis) (Electric discharges through gases)

Name: STOLOV, A. L.

Dissertation: A spectroscopic study of elementary processes in a high-frequency jet discharge

Degree: Cand Phys-Math Sci

Affiliation: Min Higher Education USSR, Kazan' Order of Labor Red Banner State U imeni V. I. Ul'yanov-Lenin

Defense Date, Place: 1956, Kazan'

Source: Knizhnaya Letopis', No 45, 1956

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4693

systems. Edges of bands of N_2, CO_2 and CO_2^+ serve as analytical couples. By means of standard mixtures containing from 1.5 to 33% N_2, calibration graphs have been plotted in the coordinates $lg\ I_{an.}/\ I_{mean}$-$lg\ C_{N_2}$. Error of analysis is within 1.1-2.25%. Analytical lines: N_2 3576.9 - CO_2^+ 2897.5; N_2^+ 4278.1 - CO_2^+ 2897.5; N_2 3576.9 - CO_2 3370.0.

STOLOV, A.L.; MOCHALOV, K.N.

Investigating elementary processes and chemical reactions in a torch discharge. Fiz.sbor. no.4:323-327 '58. (MIRA 12:5)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina i Kazanskiy khimiko-tekhnologicheskiy institut imeni S.M.Kirova.
(Electric discharges through gases)

SOV/51-5-5-23/23

AUTHOR: Stolov, A.L.

TITLE: Spectrum of a Glow Discharge in Nitrogen-Hydrogen Mixtures at High Pressures (Spektr tleyushchego razryada v azoto-vodorodnykh smesyakh pri vysokikh davleniyakh)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 5, pp 626-628 (USSR)

ABSTRACT: The author studied spectrum of a glow discharge in nitrogen in order to find the nature of emission in various parts of the discharge. Measurements were made in a wide range of pressures (1-76 cm Hg) using d.c. discharges (0.1 amp, 900 V). Spectra, obtained using spectrographs ISP-22 and ISP-51, were found to be the same for three types of discharges: high-frequency (13 Mc/s), double-electrode and single-electrode. In the positive column and negative emission spectra first and second positive systems of N_2 bands were observed at all pressures. On addition of oxygen those bands remain only in the negative-emission region. Bands of the first negative system of N_2^+ and ionic nitrogen lines were observed only in the negative-emission portion of the discharge. At high pressures small amounts of organic substances produce intense bands of the violet system of CN in the positive column. A N_2^+ band at 3914.4 Å also appears in the positive

Card 1/3

Spectrum of a Glow Discharge in Nitrogen-Hydrogen Mixtures at High Pressures

column and its intensity increases with increase of the organic impurity concentration. Bands of the Gaydon--German singlet system were observed in the negative-emission region at high pressures. The table on p 627 gives the wavelengths of these bands together with their intensities. Spectrum of a glow discharge in hydrogen does not differ from that described by Feast (Ref 1). Discharges in nitrogen-hydrogen mixtures and in ammonia produce intensification of the Gaydon--German bands (systems δ and P); this occurs in the negative-emission region. Nitrogen-hydrogen and ammonia spectra contain also the second positive and first negative systems of nitrogen, and 3360 and 3240 Å NH bands. In the positive column and the surrounding sheath of the nitrogen-hydrogen and ammonia discharges a-bands of NH_2 and Schuster bands (NH_3) were observed. The Schuster bands are particularly strong for discharges in flowing ammonia. The same regions of the discharge emit continuous radiation in the yellow-red portion of the spectrum. This emission and the ammonia bands are retained in the discharge afterglow which lasts

Spectrum of a Glow Discharge in Nitrogen-Hydrogen Mixtures at High Pressures

for 10^{-3}sec. The figure on p 628 shows a glow discharge spectrum in ammonia; the upper part represents negative emission, the lower part positive-column emission and iron lines are shown in the middle. There are 1 table, 1 figure and 6 references, 2 of which are Soviet, 2 English, 1 German and 1 translation.

SUBMITTED: June 4, 1958

Card 3/3 1. Gas mixtures--Properties 2. Slow discharges--Spectra 3. Hydrogen --Properties 4. Nitrogen--Properties

14 34 10

66604

SOV/139-59-3-21/29

AUTHOR: Stolov, A.L.

TITLE: Investigation of the Peripheral Zone of a Glow Discharge in an Atmosphere of CO_2

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 3, pp 143-149 (USSR)

ABSTRACT: The author studied a glow discharge at 150-760 mm Hg pressure in CO_2; the peripheral zone of such a discharge was known to have some features in common with the ordinary flame of CO in O_2. The discharge was produced in a metal tube shown in Fig 1. The tube contained two hollow copper electrodes with polished copper hemispheres attached to their ends. Both the tube and the electrodes were cooled with running water. The spectra were observed and photographed through a quartz window. The external voltage was supplied from a rectifier through a ballast resistance of 3000 ohms. During discharge the current was 180 mA and the voltage across the tube was 800 V. The gases used in these experiments (CO_2, CO and O_2) were produced, purified and dried in the usual way. The discharge was photographed by means of a mirror camera and the spectra were recorded using Hilger and ISP-22 spectrographs. The intensities were measured employing

Card 1/5

Investigation of the Peripheral Zone of a Glow Discharge in an Atmosphere of CO_2

the usual photographic photometry technique. Four separate zones could be distinguished in a glow discharge at high pressures. These zones were: the anode and cathode spots, a bright channel (positive column) and a diffuse outer zone. In the spectra of the anode and cathode spots and the positive column the CO bands of the Ångstrom and the third positive systems were observed. The cathode spot emitted also the CO_2, CO_2^+, CO^+ and CO bands of the triplet and 5B systems as well as C II lines. In all the zones of the discharge the OH bands, whose intensities depended on the degree of dryness of the gas, were also observed. These features of the emission by a glow discharge in CO_2 do not differ qualitatively from the spectrum of a high-frequency "flame" (point-to-plane) discharge (Ref 17). The peripheral zone spectrum consisted of a continuum from about 3000 Å to the red end of the spectrum, with a system of bands superimposed on it. This band system (Fig 2b) was identical with that observed in the flame of CO burning in O_2 (Fig 2a). This identity indicates that the same process of recombination

Investigation of the Peripheral Zone of a Glow Discharge in an Atmosphere of CO_2

of the products of decomposition of CO_2 occurs in both cases. For the sake of comparison the author obtained also a spectrum of the glow discharge in pure oxygen (Fig 2a). The latter spectrum had O_2^+ bands of the first negative system and O II lines in the cathode spot region. The positive column and the peripheral zone of the glow discharge in pure oxygen emitted Schumann--Runge bands of O_2, which were due to recombination of atomic oxygen, (Ref 18). These bands differed strongly from the band structure observed in the spectrum of CO flame and in the peripheral zone of a glow discharge in CO_2. Moreover the maximum of the oxygen spectrum was displaced with respect to the maximum of the spectrum of CO flame towards a shorter wavelength. This means that the characteristic spectrum of CO flame and the spectrum of the peripheral zone in CO_2 discharge cannot be identified with the Schumann--Runge system of O_2; this conclusion was found to be supported also by results of further experiments on the effect of H_2O vapour (Fig 3) and of CO and O_2 (Figs 4 and 5) on the spectrum of the peripheral zone of a glow discharge in CO_2. The author points out also that, apart

Investigation of the Peripheral Zone of a Glow Discharge in an Atmosphere of CO_2

from the band system shown in Fig 2, very weak O_2 bands are observed at 3200-3500 Å in the spectrum of the peripheral zone of the CO_2 discharge. This does not, however, affect the conclusion stated above. It follows that the mechanism of emission by a CO flame and a CO_2 glow discharge (in the peripheral zone) can be given by the following equations:

$$\left.\begin{aligned} CO + O &\rightarrow CO_2^* \rightarrow CO_2 + h\nu \\ CO + O + M &\rightarrow CO_2^* + M \rightarrow CO_2 + M + h\nu \end{aligned}\right\} \quad (1)$$

As a result of the first of the above processes a continuous spectrum is emitted, and a band spectrum is produced by the second process. The CO and O are products of dissociation of CO_2 molecules in the interior of the discharge, which diffuse outwards into the peripheral zone. Apart from measurements of intensity the author determined also the temperature of the peripheral zone from the distribution of intensities in the rotational system of the first lines of the Q_1 branch of the OH band: for CO_2 and O_2 mixture this

66604

SOV/139-59-3-21/29

Investigation of the Peripheral Zone of a Glow Discharge in an Atmosphere of CO_2

temperature was 1670 ± 30 °K.
There are 5 figures and 24 references, of which 15 are Soviet, 8 English and 1 translation from English into Russian.

ASSOCIATION: Kazanskiy gosuniversitet imeni V.I. Ul'yanova (Lenina)
(Kazan' State University imeni V.I. Ul'yanov (Lenin)

SUBMITTED: November 18, 1958

Card 5/5

4

3(1)
AUTHORS: Baturova, G.S., Pominov I.S., Stolov, A.L., Smirnova, N.N.

SOV/33-36-2-6/27

TITLE: Spectroscopic Observations of the Corona During the Total Solar Eclipse of June 30, 1954

PERIODICAL: Astronomicheskiy zhurnal,1959,Vol 36,Nr 2,pp 247-253 (USSR)

ABSTRACT: The paper contains an evaluation of the observations of the expedition of the AOE ; position of the expedition : stanitsa Novo - Rozhdestvenskaya of the Krasnodar district, $\lambda = 2^h 39^m 44^s$ westward from Greenwich, $\varphi = +45^\circ 53' 2''$; time : June 30, 1954. The results of the evaluation of two spectrograms of the corona in visual region are given (taken by I.S. Pominov and N.N. Smirnova). The obtained spectra contain five coronal lines with the wave length: 6375, 5303, 4312, 4232, 4097 Å . The electron density of the solar corona was calculated according to the method of A.F. Bogorodskiy and N.A. Khinkulova for $\varrho = 1.05$ to 2 from the coronal component of the continous spectrum. The decrease of the electron density with increasing ϱ is somewhat slower than obtained by Bogorodskiy and Khinkulova. G.A. Shayn is mentioned. The authors thank Professor

Card 1/2

Spectroscopic Observations of the Corona During the Total Solar Eclipse of June 30,1954 SOV/33-36-2-6/27

D.Ya. Martynov and N.D. Kalinenkov for their assistance. There are 5 figures, 5 tables, and 16 references, 9 of which are Soviet, 4 German, 1 English, 1 French, and 1 Japanese.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet imeni V.I. Ul'yanova-Lenina (Kazan' State University imeni V.I. Ul'yanov-Lenin)

SUBMITTED: May 15, 1958

Card 2/2

S/058/61/000/007/023/086
A001/A101

AUTHORS: Stolov, A.L., Izosimova, S.V.

TITLE: Investigation of spectrum of an underwater arc

PERIODICAL: Referativnyy zhurnal. Fizika, no. 7, 1961, 138, abstract 7V286 ("Dokl. Mezhvuz. nauchn. konferentsii po spektroskopii i spektr. analizu". Tomsk, Tomskiy un-t, 1960, 64 - 65)

TEXT: It is established that in underwater arc spectrum a considerable enhancement of lines of ions is observed, which takes place because of the rise of plasma temperature. The peculiarities observed can be explained by the increasing specific power of the underwater discharge which burns, at equal other conditions (amplitude value and duration of current pulses), at considerably smaller interelectrode gaps than discharge in air. The proposed interpretation of underwater arc peculiarities is supported by observations of spectra of an arc burning in CCl_4 in which a sharp enhancement of the lines of ions is also noted.

M. Britske

[Abstracter's note: Complete translation]

Card 1/1

S/139/60/000/03/028/045
E032/E314

AUTHORS: Stolov, A.L. and Dolgopolova, N.R.

TITLE: The Infra-red Spectrum of a Glow Discharge

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No 3, pp 154 - 157 (USSR)

ABSTRACT: The infra-red spectrum in the region 650 - 6 500 cm^{-1} was obtained with the aid of the IKS-11 spectrometer incorporating NaCl and LiF crystals. The detector was a vacuum thermocouple, having a sensitivity of 1 V/W. The source of radiation was the positive column of a DC glow discharge. The use of DC discharges led to a considerable reduction in the noise level and the pressure in the discharge vessel could be increased right up to the atmospheric pressure, thus increasing the intensity of the source. The discharge was excited in a metal tube with a NaCl window and water-cooled copper electrodes. The discharge was operated at 1 000 V, 150 mA. The spectrum of a glow discharge in carbon dioxide is shown in Figure 1 and is identical with the flame spectrum of $CO + O_2$ (Refs 6,7). The upper trace was obtained with LiF and

Card1/3

The Infra-red Spectrum of a Glow Discharge

the lower with NaCl. The slit widths were: 1 - 0.4; 2 - 0.3; 3 - 0.19 and 4 - 1.0 mm, respectively. Figure 2 shows the spectrum of the glow discharge in air. The arrows show NO, NO_2 and N_2O_4 bands. These occur at 1945, 1585 and 1815 cm^{-1}, respectively. In absorption, the corresponding wave numbers are 1878, 1621, 1749 cm^{-1}, respectively. A study was also made of the intensity of the CO_2 band at 2349 cm^{-1} as a function of pressure. It was found that the behaviour of the curve depends both on the re-absorption of the radiation and on the distance of the particular section of the discharge from the axis. At greater distances from the axis saturation of the curve occurs at lower pressures. Re-absorption has a similar effect and tends to accelerate the saturation of the curve as the pressure is increased. A calculation was made of the probability of transfer of a vibrational quantum on collision between CO_2 molecules. The result is 0.2×10^{-6}, which

The Infra-red Spectrum of a Glow Discharge

is smaller by an order of magnitude than that obtained by Terenin and Neuymin (Ref 2). The discrepancy may be ascribed to the fact that reabsorption and peripheral regions of the discharge were not taken into account in Ref 2. The above results for the probability, on the other hand, were obtained by investigating the CO_2 band at 4.6 μ, where reabsorption is practically absent. There are 4 figures, 1 table and 14 references, 12 of which are Soviet and 2 English.

ASSOCIATION: Kazanskiy gosuniversitet (Kazan State University)

SUBMITTED: Muly 17, 1959

Card 3/3

8

S/057/60/030/009/009/021
B019/B054

21.2311

AUTHOR: Stolov, A. L.

TITLE: The Problem of the Entry of Substance Into a Discharge Arc

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 9, pp. 1061-1063

TEXT: The author studied the entry of substance and the discharge stability of an arc discharge in the course of the combustion phases of an a.c. arc. For this purpose, a beam from the central part of the arc was directed onto a photomultiplier. The latter was connected with an oscilloscope, and it was possible to record the radiation intensity during each half-life period of the arc discharge. Fig. 1 shows an oscillogram of the intensity of a Zn arc, and Fig. 2 represents the fluctuations $\Delta I/I$ of the intensity in percents as a function of the combustion phase of the arc for the metals Bi, Pb, Al, Fe, W, Zn, C, Cu, Ni. These metals can be divided into two groups as to their intensity fluctuations. The first group includes Al, Bi, Pb, in which the fluctuations are large at

Card 1/3

the beginning of the combustion phase and become smaller toward the end of the phase. The remaining six metals belonging to the second group show only slight intensity fluctuations. The mean values of fluctuations of this group lie below the minimum value of fluctuations of the first group. Further, it appeared that the smallest intensity fluctuations were observed at a discharge current of 4 a. At lower and higher discharge currents, the fluctuations were stronger. An exact study of the luminescence of the arc discharge with a quickly passing photographic plate (6 m/sec) and a suitable focusing made it possible to investigate the intensity variations during one half-life period of discharge. Fig. 3 shows that the entry of substance depends on the polarity of electrodes, and is different for different metals. A steady evaporation of substance can be observed with C, W, and Fe. An irregular ejection can be observed in a number of photographs, particularly with iron. The irregularity depends on the amperage, the electrode spacing, or the electrode preheating time. Closer investigations of Bi, Pb, and Al electrodes clearly showed that strong brief jets existed during the individual discharges.

STOLOV, A.L.

Concerning a variation of the method of quantitative spectral analysis. Zav.lab. 28 no.9:1016-1017 '62. (MIRA 15:11)

1. Kazanskiy gosudarstvennyy universitet.
(Spectrum analysis)

Absorption of optical crystals in ...

S/048/63/027/001/013/043
B163/B180

Кристалл (1)	ν_0 см$^{-1}$ для 273°K (2)	Граница сплошного поглощения (3)					ε, μ	b
		93°K	193°K	293°K	373°K	693°K		
LiF	2100	7,15	7,02	6,8	6,58	5,97	7,45	477
CaF_2	1400	10,0	9,72	9,53	9,3	8,34	10,30	355
SrF_2	1200	12,3	12,1	11,5	11,1	10,0	12,76	240
$SrF_2 + 0{,}03\%$ ErF_3	1200	12,2	11,84	11,44	11,1	9,75	12,69	240
$SrF_2 + 0{,}1\%$ ErF_3	1200	12,28	11,98	11,38	11,0	9,8	12,69	240
BaF_2	1000	13,3	12,9	12,44	12,0	10,64	13,67	240

Legend: 1) crystal, 2) cm^{-1} for 273°K, 3) continuous absorption edge

Card 3/3

45606
S/033/63/040/001/016/016
E032/E314

3,1240

AUTHORS: Kalinenkov, N.D. and Stolov, A.L.

TITLE: An intensity-recording microphotometer

PERIODICAL: Astronomicheskiy zhurnal, v. 40, no. 1, 1963, 171 - 175

TEXT: The principle of the device is illustrated in Fig. 1. The characteristic curve of the negative 1, which is in the form of a transparent curve on an opaque background, is illuminated through the condenser 3 by the lamp 2. It is then projected onto the screen 6, which carries a narrow slit 7, by means of the objective 4 and the galvanometer mirror 5. When the mirror is rotated the characteristic curve 8 is displaced at rightangles to the slit 7. If the current from the photocell, illuminated by light transmitted through the measured part of the spectrometer is fed through the galvanometer coil, then the image 8 of the characteristic curve will be displaced relative to the slit and the displacement will be proportional to the angle of rotation of the mirror and therefore to the transmissivity of the particular part of the spectrogram. The height at which the

Card 1/3

The intensity-recording ....

image of the characteristic curve on the slit 7 will cut the latter will depend on the displacement of the galvanometer mirror, so that the displacement of the curve 8 at rightangles to the slit 7 is transformed into the displacement of a luminous point along 7 with the law of transformation defined by the form of the characteristic curve 1 . A plateholder 9 is placed behind the slit 7 and the photographic film is displaced at rightangles to the slit in synchronism with the displacement of the spectrogram under investigation. The coordinates in which the curve on the photographic film is recorded will depend on the transformation curve 8 . In particular, the transformation law may be arranged to be such that the final result is recorded directly in terms of the intensity. There are 6 figures.

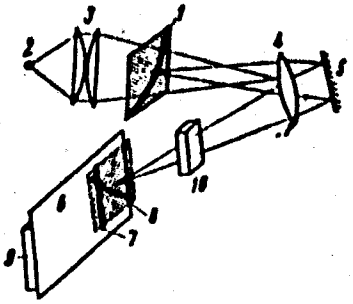
ASSOCIATION: Kazanskiy gosudarstvennyy universitet
(Kazan' State University)

SUBMITTED: February 12, 1962

The intensity-recording ....

S/033/63/040/001/016/016
E032/E314

Fig. 1:



Card 3/3

ACCESSION NR: AP3004324 S/0033/63/040/004/0697/0699

AUTHOR: Stolov, A. L.

TITLE: Relative spectrophotometry of some chromospheric lines during the total solar eclipse of 15 February 1961

SOURCE: Astronomicheskiy zhurnal, v. 40, no. 4, 1963, 697-699

TOPIC TAGS: chromospheric line spectrum, line spectrum, chromosphere, spectrophotometry, relative spectrophotometry, solar eclipse, solar eclipse 15Feb61, H sub Beta line, H sub Gamma line, H sub Delta line, Ca sup +K, Ca sup +H

ABSTRACT: Spectra of the chromosphere, obtained during the total solar eclipse of 15 February 1961, were used for computing the mean gradients β of the formula

$$E(h) = E(0)\, e^{-\beta h}.$$

Here h is the height of the moon's limb above the photosphere and E (h) is the energy of a column of the chromosphere entering the

Card 1/2

ACCESSION NR: AP3004324

spectrograph. Computations are made for the lines H_β, H_γ, H_δ, Ca^+K, and Ca^+H. The derived values of s for the hydrogen lines are close to those found for the 1945 solar eclipse. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet (Kazan State University)

SUBMITTED: 05Jun62 DATE ACQ: 20Aug63 ENCL: 00

SUB CODE: 00 NO REF SOV: 003 OTHER: 003

Card 2/2

L 31986-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AR6009965 SOURCE CODE: UR/0137/65/000/012/I033/I033

AUTHOR: Tagirov, R. B.; Stolov, A. L.; Mashkevich, S. A.

TITLE: Measurement of the work function of electrons for certain alloys

SOURCE: Ref. zh. Metallurgiya, Abs. 12I246

REF SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1963 g. Sekts.: paramagnitn. rezonansa, spektroskopii i fiz. polimerov, radiofiz., astron., bion. Kazan', 1964, 25-27

TOPIC TAGS: steel, brass, bronze, molybdenum, electron interaction, monochromatic radiation, work function

ABSTRACT: The work function of electrons of a number of alloys has been measured by photoeffect observation using the coercive-field method. A sample, placed in the center of a spherical capacitor, was irradiated with monochromatic radiation. The measurements were carried out in vacuum $\leq 10^{-6}$ mm Hg over the wavelength. The work function of electrons (ev) was measured for L-62 (3.9), LS-59-1 (3.6), and L-63 (4.1) brass, St Kh18N9T (4.0) and St 10 (4.2) steel, B-2 (3.9) bronze, and Mo (3.8) molybdenum. For heat-resistant alloys with an Mo base, the work function of electrons

Card 1/2 UDC: 669.01:532.6

L 6644-65 EWT(l)/EWG(k)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pz-6/Po-4/Pab-24/Pi-4 IJP(c)/SSD/ASD(d)/ASD(a)-5/AEDC(b)/RAEM(a)/ASD(f)/
AFWL/AFETR/ESD(t)/ESD(gs) AT

ACCESSION NR: AP4041754 S/0076/64/038/006/1530/1534

102
101 21

AUTHOR: Stolov, A. L.

TITLE: Temperature and equilibrium in the high-frequency gliding discharge plasma and discharge in ozonizer.

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 6, 1964, 1530-1534

TOPIC TAGS: electrical discharge, molecular spectra, rotational temperature, vibrational temperature, plasma, ozonizer, ozonizer discharge, gliding discharge plasma

ABSTRACT: The purpose of this work was to investigate spectrum as well as rotational and vibrational temperature of nitrogen molecules in a gliding discharge plasma and in an ozonizer discharge. In addition, it was of interest to compare the spectral characteristics of these two forms of discharge. The gliding discharge was produced between a steel needle and a flat copper electrode, separated by a 2 mm glass plate. The whole set-up was placed into a glass container with a quartz window. The container was connected with a pump by a U-shaped monometer and the source of gas. The ozonizer discharge was produced between two coaxial

Card 1/3

L 6644-65
ACCESSION NR: AP4041754

glass tubes, with a discharge zone of the order of 1 mm. The internal electrode was a 30 mm long aluminum cylinder and the external electrode was aluminum foil. The nature of equilibrium in discharges was elucidated on the basis of the comparison of temperatures measured from rotational and vibrational structures of molecular spectrum. The rotational temperature of discharges was measured from the intensity distribution in the N_2 λ=3371Å band from lines with rotational quantum numbers j from 28 to 44, free from overlaps with lines of other bands. For the determination of the vibrational temperature the use was made of 19 most intense bands of the second positive system. The intensities of bands in the 2950 - 4060 Å region were measured taking into account the spectral distribution of the sensitivity of the photographic plate. It was found that for the gliding discharge the difference between the higher vibrational temperature and rotational temperature increases with the decrease of pressure from 600 to 2200 C. For ozoniser discharge this difference remains constant at 1000 C. Orig. art. has: 4 figures.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan State University)

Card 2/3

L 6644-65
ACCESSION NR: AP4041754 0

SUBMITTED: 20Jun63 DATE ACQ: 00 ENCL: 00

SUB CODE: GP, GC NO REF SOV: 008 OTHER: 010

Card 3/3

L 18765-66

ACC NR: AP6003776 SOURCE CODE: UR/0181/66/008/001/0142/0147

AUTHORS: Gil'fanov, F. Z.; Livanova, L. D.; Stolov, A. L.

ORG: Kazan State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet) 29 B

TITLE: Investigation of $CaF_2:Gd^{3+}$ centers with positive compensators

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 142-147

TOPIC TAGS: fluorite, gadolinium, activated crystal, optic spectrum, crystal symmetry, luminescence center, epr spectrum

ABSTRACT: The authors obtained experimentally the optical spectrum of Gd^{3+} centers in CaF_2 with rhombic symmetry, compensated with Na^+, K^+, and Ag^+ ions. The crystals were grown in an induction furnace by the Bridgman method. The luminescence and absorption spectra were excited with a high intensity lamp and recorded with a diffraction spectrograph (1200 lines/mm, dispersion 3 Å/mm). Introduction of the 2

ACC NR: AP6003776

compensators gave rise to changes in the structure of the spectra, with suppression of the spectrum of the noncubic fluorine centers, intensification of the spectrum of the cubic centers, and simultaneous production of spectra of new centers, which differed somewhat for the different compensators. The results are compared with those deduced from EPR spectra. Replacement of two Ca^{2+} ions in the lattice of the fluorite with Gd^{3+} and compensator ions causes production of centers of cubic and rhombic field symmetry, with the parameters of the rhombic centers depending on the kind of compensator use. The spectroscopic data indicate that the compensator ion in rhombic centers is located in the third coordination sphere, and distorts relatively little the cubic field of the fluorite lattice. The causes of the easy replacement of the F^- centers in the lattice are briefly explained. The authors thank M. M. Zaripov and V. G. Stepanov for supplying data on the EPR spectra of the crystal and for discussing the results. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 06Jul65/ ORIG REF: 001/ OTH REF: 004

L 21537-66 EWT(1)/EWT(m)/T/EWA(h)/EWP(t) IJP(c) JD

ACC NR: AP6008110 SOURCE CODE: UR/0139/66/000/001/0048/0053

AUTHOR: Ayzenberg, I. B.; Gil'fanov, F. Z.; Stolov, A. L.

ORG: Kazan State University (Kazanskiy gosuniversitet)

TITLE: Absorption and luminescence spectra of the trivalent Pr ion in a calcium tungstate single crystal

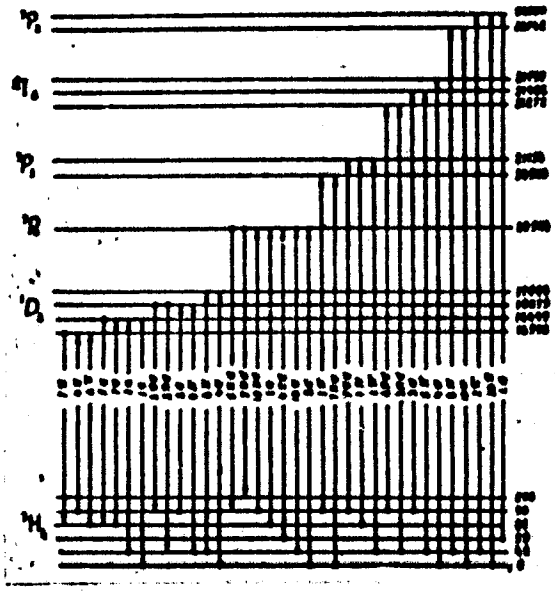
SOURCE: IVUZ. Fizika, no. 1, 1966, 48-53

TOPIC TAGS: calcium compound, tungstate, single crystal, energy band structure, praseodymium, energy level

ABSTRACT: The authors study the absorption and emission spectra of a calcium tungstate crystal with trivalent praseodymium impurity ions to determine the position of some of the energy levels for this ion and the magnitude of their Stark splitting in the crystal. The wave numbers of the energy levels for the ion as well as the transitions observed during absorption and luminescence are given in the figures. The intensity of most transitions is given as well as their polarization: π (along axis C_4), σ (perpendicular to axis C_4), πσ (without polarization). Several

Card 1/4

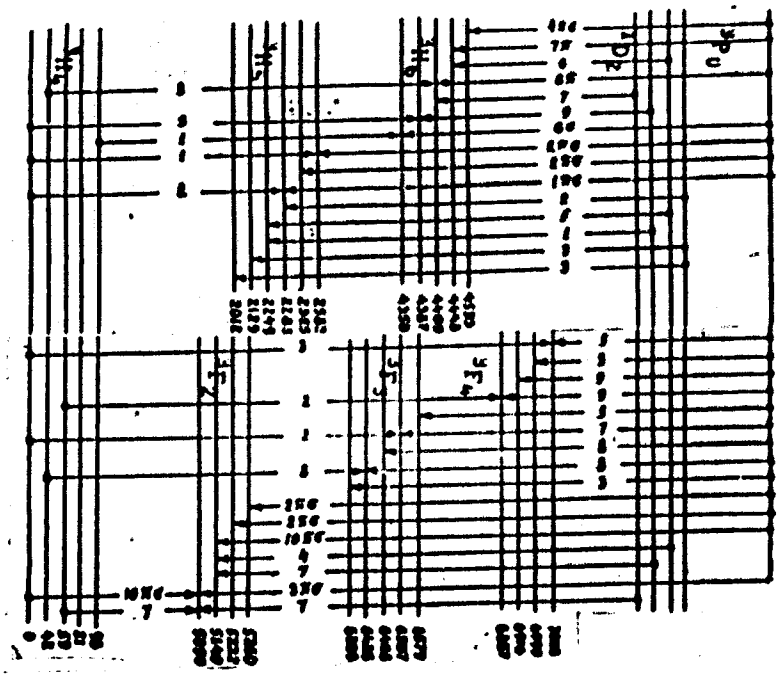
L 21537-66
ACC NR: AP6008110



Card 2/4

L 21537-66

ACC NR: AP6008110



Card 3/4

L 21537-66
ACC NR: AP6008110

relatively weak lines with an intensity which varies from specimen to specimen were not included in the energy diagram. Stark splitting of the levels by the crystal field is greater than splitting of trivalent praseodymium levels in other crystals. "The authors are grateful to L. Ya. Shekun for proposing the topic and for constant interest in this work." Orig. art. has: 4 figures. [14]

SUB CODE: 20/ SUBM DATE: 18May64/ ORIG REF: 002/ OTH REF: 016/ ATD PRESS: 4218

Card 4/4

ACC NR: [illegible]

AUTHOR: [illegible], V. A.; [illegible], L. D.; Stolov, A. L.

ORG: [illegible] State University im. V. I. Ulyanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Investigations of trigonal $CaF_2:Gd^{3+}$ centers with hydroxyl compensation

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1165-1167

TOPIC TAGS: calcium fluoride, activated crystal, optic center, [illegible] crystal, luminescence spectrum, optic transition, line splitting, Stark effect, gadolinium compound

ABSTRACT: The authors point out that previously produced crystals with OH^- centers were subject to various defects which led to erroneous results. In the present investigation they obtained single crystals with single symmetry due to OH^- compensation, with good optical properties. The $CaF_2 + Gd_2O_3$ crystals were grown from the melt in an induction furnace by the dropping crucible method in a vacuum of 2×10^{-4} mm Hg. The crystals grown under such conditions contained in addition to centers with fluorine compensation, also oxygen trigonal centers. The OH^- centers were produced by introducing KOH or NaOH in the charge. Analysis of the field constants, obtained by the EPR method, showed that the OH^- centers obtained in these crystals were identical with those observed by J. Sierro (J. Chem. Phys. v. 34, 2183, 1961). The luminescence spectra of the Gd^{3+} in the OH^- centers were measured at room temperature and at liquid-nitrogen temperature. Transitions were observed from all the Stark

Card 1/2

L 29955-66

ACC NR: AR6012479

components of the $^6P_{7/2}$ and $^6P_{5/2}$ to the ground state. The luminescence lines were narrow and their intensity exceeded somewhat the intensity of luminescence from centers of other symmetries at the same concentrations. The wave numbers and the splitting of these terms are tabulated. The possible model of the OH^- center is discussed in light of the results, and it is suggested that the OH^- ion is located in the interstices of the first coordination sphere, thus producing centers with a single (trigonal) symmetry. The value of the splitting can be reconciled with the relation derived by the authors earlier (FTT v. 8, 142, 1966) between the term splitting and the distance between the Gd^{3+} ion and the compensator. The authors thank V. G. Stepanov for help with the work. Orig. art. has: 1 table.

SUB CODE: 20/ SUBM DATE: 06Sep65/ ORIG REF: 001/ OTH REF: 006

Card 2/2

L 26743-66 EWT(1)/T IJP(c) JD/JG/GG

ACC NR: AP6011468 SOURCE CODE: UR/0070/66/011/002/0243/0250

AUTHOR: Gil'fanov, F. Z.; Livanova, L. D.; Stolov, A. L.

ORG: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

TITLE: Investigation of optical centers in CaF_2 crystals activated with Gd^{3+}

SOURCE: Kristallografiya, v. 11, no. 2, 1966, 243-250

TOPIC TAGS: calcium fluoride, activated crystal, gadolinium, optic center, epr spectrum, luminescence, crystal growth, optic transition

ABSTRACT: This is a continuation of earlier work by the authors (Optika i spektroskopiya v. 20, 99, 1966) devoted to the spectrum of the Gd^{3+} ion isomorphously substituting the cation in the CaF_2 lattice, and to the effect of fluorine color centers. The present study is devoted to optical centers produced by introduction of oxygen atoms into the lattice together with the fluorine centers. It is shown that in addition to the trigonal oxygen centers, which have been previously observed by various workers, other optical centers are also produced, some of which either did not appear in EPR spectra at all, or appeared very weakly. The $CaF_2:Gd^{3+}$ crystals were grown in an induction furnace by the Bridgman method. The absorption and luminescence spectra were obtained at room temperature and at liquid-nitrogen temperature with a diffraction spectrograph (DFS-8-1, dispersion 6 Å/mm). The luminescence was excited by a high pressure xenon lamp. The crystal growth was in an oxidizing temperature at

Card 1/2 UDC: 548.0:535.3

L 26743-66

ACC NR: AP6011468

two different oxygen pressures. The results showed that three types of new centers are produced under these circumstances, two of which occur during the initial growth of the cyrstal and the third occurs at the end of the growth. The different transitions and energies ascribed to the different groups are identified by optical and EPR spectroscopy and tabulated. An analysis of these centers shows that they are either trigonal symmetry centers with oxygen compensation of the charge, or else constitute centers produced by the Gd^{3+} ions included in the CaO lattice. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 18Dec64/ ORIG REF: 006/ OTH REF: 002

Card 2/2

L 24280-66 EWT(m)/EWP(t) IJP(c) JD/JW/JG
ACC NR: AP5006999 SOURCE CODE: UR/0051/66/020/002/0283/0292

AUTHOR: Gil'fanov, F. Z.; Dobkina, Zh. S.; Stolov, A. L.; Livanova, L. D. 71 B

ORG: none

TITLE: Absorption and luminescence spectra of Gd^{3+} in MeF_2

SOURCE: Optika i spektroskopiya, v. 20, no. 2, 1966, 283-292

TOPIC TAGS: absorption spectrum, luminescence spectrum, Stark effect, gadolinium, electron paramagnetic resonance, line width, luminescence center

ABSTRACT: The purpose of the investigation was to identify the terms and the Stark structure of the energy levels belonging to the ions Gd^{3+} in crystals of MeF_2 (Me = Cd, Ca, Ba) on the basis of analysis of the emission and absorption spectra of the Gd^{3+} in these crystals. The optical spectra were measured at temperatures 300 and 77K, using a spectrograph (DFS-8) with linear dispersion 6 Å/mm. The nature of the hosts of the Gd^{3+} ions and their approximate concentration were determined by an electron paramagnetic resonance method. The Stark structures of the $^6P_{7/2}$, $_{5/2}$ and $^6J_{7/2}$, belonging to Gd^{3+} ions in crystal fields of various symmetries, were identified. The results showed that both the luminescence and the absorption spectra of the Gd^{3+} have narrow lines in the ultraviolet region, with widths usually not exceeding 0.7 Å. The lines narrow down by a factor 2--3 times on cooling to liquid-nitrogen temperature. A large number of the lines and the variability of their relative intensity in different samples with different Gd^{3+} concentration point to the presence of several types of optical centers. Orig. art. has: 5 figures and 3 tables.

SUB CODE: 20/ SUBM DATE: 21Nov64/ ORIG REF: 007/ OTH REF: 005
Card 1/1 FV UDC: 535.34 + 535.37 : 546.662

L 08373-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AR6028149 SOURCE CODE: UR/0058/66/000/005/H067/H067

AUTHOR: Tagirov, R. B.; Stolov, A. L.; Mashkevich, S. A. 68

TITLE: Measurement of the work function of electrons for several alloys

SOURCE: Ref. zh. Fizika, Abs. 5Zh477

REF. SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1963 g. Sekts: paramagnitn. rezonansa. spektroskopii i fiz. polimerov, radiofiz., astron., bion. Kazan, 1964, 25-27

TOPIC TAGS: work function, photoeffect, brass, bronze, steel, molybdenum, surface finishing, refractory alloy

ABSTRACT: The method of delayed field and red boundary of the external photoeffect were used to measure the work function ϕ of different brands of brass, steel, bronze, and molybdenum. The measurements were made in an instrument constituting a spherical capacitor in vacuum of $\sim 10^{-6}$ mm Hg. It is established that in most cases ϕ decreases following surface finishing of the metal. When the surface is cleaned, the quantum yield γ greatly increases; γ decreases when the samples are kept in air, owing to the appearance of surface oxides. Investigations of a group of refractory alloys based on molybdenum revealed appreciable changes in ϕ, from 3.6 to 4.4 eV, depending on the composition and heat treatment conditions of the alloys. [Translation of abstract]

SUB CODE: 20

Card 1/1 mat

ACC NR: AP6033572 SOURCE CODE: UR/0181/66/008/010/3070/3074

AUTHOR: Gil'fanov, F. Z.; Malkin, B. Z.; Nasyrov, I. K.; Stolov, A. L.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Temperature dependence of the widths and shifts of phononless absorption lines in crystals of fluorides activated with gadolinium

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 3070-3074

TOPIC TAGS: absorption line, line shift, line width, activated crystal, fluoride, temperature dependence, Stark effect, optic transition

ABSTRACT: The authors investigated the widths and shifts of the absorption lines of Gd^{3+} in CdF_2, CaF_2, SrF_2, and BaF_2 crystals, corresponding to phononless transitions to Stark sublevels of the terms $^6P_{5/2}$ and $^6P_{7/2}$ from the ground state $^8S_{7/2}$, as functions of the concentration and temperature. Use was made of the energy levels of Gd^{3+} in these crystals, corresponding to different symmetry centers, published by the authors earlier (Opt. spektr. v. 20, 99, 1966; FTT v. 8, 142, 1966). The Gd content was 0.1, 0.3, and 1.0 at.%. The absorption spectra were obtained with a diffraction spectrograph (DFS-8-1). The crystals were grown by crystallization from the melt. The measurements were made in the interval 78--300K. All line widths increase with

Card 1/2

ACC NR: AP6033572

increasing temperature in nearly linear fashion. The maximum width range from 2 to 6 cm^{-1} at nitrogen and room temperatures, respectively. Line shifts occur with increasing temperature, amounting to 1--4 cm^{-1}, at all wavelengths. The line width is proportional to the Cd concentration. The widths and shifts increase with lowering of the crystal symmetry. The basic metal does not affect the results much. A formula is derived for the temperature dependence of the widths and shifts of cubic centers in metallic fluoride and is found to explain the observed experimental data. Orig. art. has: 3 figures and 5 formulas.

SUB CODE: 20/ SUBM DATE: 15Dec65/ ORIG REF: 003/ OTH REF: 005

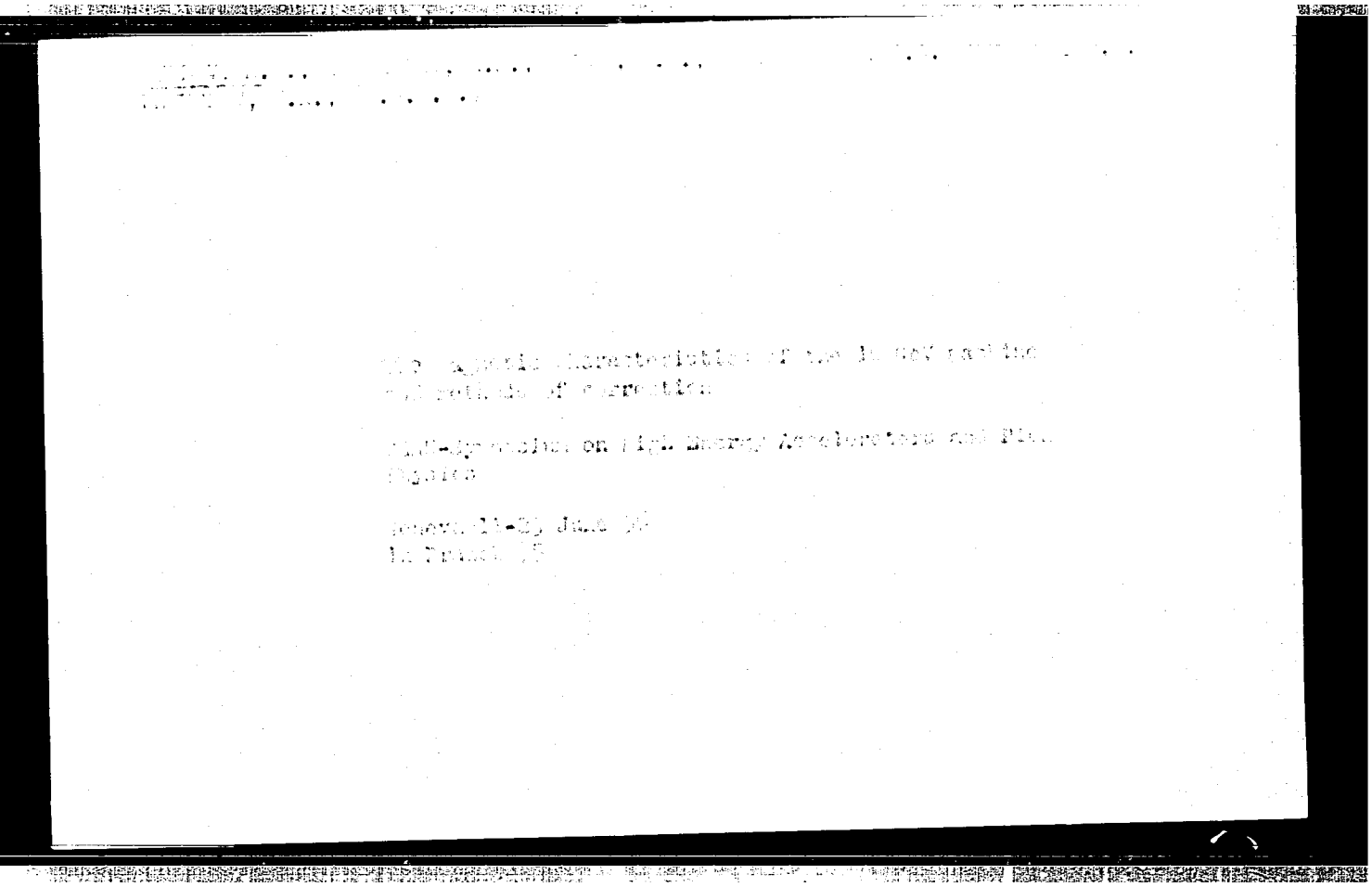
Card 2/2

ACC NR: AP7005879

crystals with lithium vanishes, and only the complicated EPR spectrum observed with copper is seen. The maximum at 6805 Å in the optical spectrum becomes stronger. The results do not lead to any unique conclusions other than that the excess Cr^{3+} charge is compensated by the Li, Na, or Cu in a nonlocal manner. Orig. art. has: 1 figure and 1 formula. [WA-14] [02]

SUB CODE: 20/ SUBM DATE: 28Jun66/ OTH REF: 002

Card 2/2



VEKSLER, V.I.; YEFREMOV, D.V.; MINTS, A.L.; VEYSENBYN, M.M.; VODOP'YANOV, F.A.; GASHEV, M.A.; ZEYDLITS, A.I.; IVANOV, P.P.; KOLOMENSKIY, A.A.; KOMAR, Ye.G.; MALYSHEV, I.F.; MOMOSZON, M.A.; NEYYAZHSKIY, I.Kh.; PETUKHOV, V.A.; RABINOVICH, M.S.; GUBCHINSKIY, S.M.; SINEL'NIKOV, K.D.; STOLOV, A.M.

Ten Bev energy synchrocyclotron built by the Academy of Sciences of the U.S.S.R. Atom.energ. no.4:22-30 '56. (MLRA 9:12)
(Cyclotron)

STOLOV, A.M., KOMAR, E.G., MONOSZON, N.A., TITOV, V.A., SHEKTER, V.M.

"Experimental Ring-Shaped 200-650 MeV Stong-Focusing Proton Accelerator," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30, 1957

STOLOV, A. M., GASHEV, M. A., KOMAR, E. G., MONOSZON, N. A., SPEVAKOVA, F. M.

"The Power Supply System of the 10 GeV Synchrotron Electromagnet," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30, 1957

ZHURAVLEV, A.A.; KOMAR, Ye.G.; MOZALEVSKIY, I.A.; MONOSZON, N.A.; STOLOV, A.M.

Magnetic characteristics of the 10 Bev proton synchrotron operated by the United Institute of Nuclear Research. Atom.energ.supplement no.4:15-26 '57. (MIRA 10:10)

(Synchrotron)

ARKHANGEL'SKIY, F.K.; GASHEV, M.A.; KOMAR, Ye.G.; MALYSHEV, I.F.; MONOSZON, N.A.; STOLOV, A.M.; STREL'TSOV, N.S.

Electric engineering and design problems in constructing large cyclic accelerators. Elektrichestvo no.11:25-34 N '57. (MIRA 10:10)

(Cyclotron)

VEKSLER, V.J.; VODOPJANOV, A.F.; JEFREMOV, D.V.; MINC, A.Z.; VEISBEIN, M.M.; GASEV, M.G.; ZEJDLIC, A.J.; IVANOV, T.P.; KOLOMENSKIJ, A.A.; KOMAR, E. G.; MALYSEV, J.E.; MONOSZON, M.A.; NEVJAZSKIJ, J.Ch.; PETUCHOV, V.A.; RABINOVIC, V.A.; RUBCINSKIJ, S.N.; SINJANIKOV, K.D.; STOLOV, A.M.; KULT, Karel, inz.

The synchrophasotron for particle acceleration to 10 BeV energy of the Soviet Academy of Sciences. Jaderna energie 3 no.1:5-9 Ja '57.

1. Ustav jaderne fysiky (for Kult).