

FEDOROVICH, N.V.

JPRS 58046
23 January 1973

UDC: 615.014.2:66.047.5

PRELIMINARY OF A CONTINUOUS DRYER DEVELOPED BY THE USSR
ACADEMY OF SCIENCES BELARUSSIAN SSR

Article by N. V. Fedorovich, S. M. Borzhitskaya, K. G. Chikhik, P. N. Pyzantov, and V. V. Kozlovskiy of the Institute of Heat and Mass Transfer (Leningrad), AS Belarussian SSR, Minsk, the Kharkov Chemical and Pharmaceutical Scientific Research Institute, and the Kharkov Chemical and Pharmaceutical Plant "Zdorov'ye (Zelnyashchitsy)", Moscow, Kharkov-Farmakheticheskii Zhurnal, Russian, No. 11, 1972, pp 53-55]

The Institute of Heat and Mass Transfer of the Academy of Sciences Belarussian SSR has developed a continuous method of drying pharmaceutical chemical preparations. The method consists in having the moist granulation and drying in a falling and fluidized bed be accomplished in a single apparatus. This makes the process continuous and also permits curtailing losses of material to a minimum, improving the quality of output, accelerating the process of granulation and drying by tens of times, reducing production areas and creating normal conditions for the work. On the basis of that method, optimum drying conditions have been worked out and a prototype of the equipment has been made which has undergone industrial tests at the Chemical and Pharmaceutical Plant "Zdorov'ye (Zelnyashchitsy)" in Kharkov.

The figure presents a schematic diagram of the drying apparatus. It consists of a granulator (2), drying chamber (1), air heater (5), blower (4), cyclone (3), bucket chain and a control panel. The drying chamber is a vertical pipe 400 mm in diameter with an expanded separator section. The vertical part of the dryer is 1500 mm high. In the lower part is a perforated grid on which the material being dried is fluidized. In the separator part of the dryer is a granulator, which is a cylinder with a perforated bottom. The diameter of the openings can be adapted, depending of the required granulometric composition of the material being dried. In the given case the opening diameter is 2 mm. Screw blades serve as a titrator. On the lower side

USSR

UDC 621.315.593:535.215.6

KIREYEV, P. S., FEDOROVSKIY, A. M., POLISAN, A. A., YUKHTANOV, Ye. D.

"Photomagnetolectric Effect in P-Type Cadmium Telluride"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronic Technology. Scientific-Technical Collection), 1970, Series 14, No 1, pp 72-74 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8B204)

Translation: The photomagnetolectric effect is investigated in p-type cadmium telluride. Complete conformity of the results obtained with theory is established. The spectral characteristics of the effect are presented and the diffusion length and life time of minority carriers is determined. Summary.

1/1

USSR

GINZBURG, V. M., and FEDOROVSKIY, B. I.

"Resolution of Holograms for Real Photographic Materials"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 10, Oct 70, pp 2221-2224

Abstract: The article describes results of an experimental study of the dependence of the resolution of a hologram on its size and the angle between the reference and the signal radiation flux for three types of Soviet photographic materials used in holography; viz., Mikrat-VR plate, type-18, and Mikrat-300 film. The results indicate that variation with angle in hologram resolution (given a fixed hologram size) is substantially less for real than for ideal holograms. Conversely, the curve for the variation in hologram resolution with hologram size (given a fixed angle) is steeper in the real than in the idealized case. There is little change in hologram resolution as a result of a significant difference in the resolution of the photographic material (~ 2.5 -fold) over a wide range of variation in the angle between the reference and the signal flux; i.e., variations in the resolution of the material in the linear sector of the hologram resolution curve have comparatively little effect on holographic resolution. The authors thank E. G. SEMENOV and A. V. MOROZOV for their part in the experiment and in analysis of the results.

1/1

+ 2

USSR

UDC 547.295.94:665.4

MASKAYEV, A. K., MAN'KOVSKAYA, N. K., LEND'YEL, I. V., FEDOROVSKIY, V. T.,
SIMUROVA, Ye. I., and TARENT'YEVA, V. N., VNIIPKneftekhim [All-Union Scien-
tific Research, Planning and Design Institute of Petrochemical Processes]

"Production of 12-Hydroxystearic Acid -- Raw Material for Plastic Lubricants"

Moscow, Khimiya i Tekhnologiya Topliv i Masel, No 2, 1971, pp 21-24

Abstract: It has been established that commercial grades of Soviet castor oil contain 4-6 percent fewer glycerides of ricinoleic acid than foreign specimens. Therefore, the production of a high yield of 12-hydroxystearic acid (12-HSA) requires that the hydrogenation process take place under conditions which assure the maximum conversion of ricinoleic acid into 12-HSA. The purpose of the article was to study the effect of castor oil hydrogenation conditions on the process rate, the composition of the hydrogenate and the selection of optimal conditions assuring hydroxy acid conservation. Experiments were conducted in an autoclave with a 5 l. load of castor oil with mechanical stirring (1500 rpm) in the presence of a powdered skeleton metallic catalyst containing 68.8 percent (by weight) nickel. The raw material used was grade I refined castor oil and commercial hydrogen with 1/2

USSR

MASKAYEV, A. K., *et al*, *Khimiya i Tekhnologiya Topliv i Masel*, No 2, 1971, pp 21-24.

a purity of 99.5 percent by volume. After the catalyst was filtered out, the iodine numbers and fatty acid composition of the samples were determined.

It was found that the conditions assuring maximum (98.5 percent) conversion of ricinoleic acid into 12-HSA are: temperature 130°C, quantity of catalyst at least 2 percent by weight, hydrogen pressure 10-15 atm. In order to conserve hydroxy acids, the castor oil hydrogenation process should not be permitted to go to an iodine number below 5. The Soviet oil and fats industry produces various grades of castor oil differing in purification efficiency. A study of the hydrogenation rate showed that the higher the purification efficiency, the higher the process rate. However, medicinal castor oil cannot be recommended because of its short supply and high cost. The isolation of fatty acids from hydrogenated castor oil presents no difficulties. Using the described technique, VNIIPKneftexhim has for the first time in the USSR organized the pilot production of 12-HSA and new types of 12-HSA-based plastic lubricants possessing high operating properties.

2/2

FEDOROVSKIY, Ye.

Computers

Article compiled by Y. Fedorovskiy, Moscow, Literaturnaya Gazeta, Nizhny Novgorod, Russia, April 13 March 1972

FORECAST ON FUTURE USES OF COMPUTER TECHNOLOGY
Americans Forecast Technological Advances

JPRS 56250
13 June 1972

The rapid development of electronic computer technology is one of the most characteristic features of the modern scientific and technical revolution. At the same time, this revolution is fundamentally changing the human economic labor in a large number of fields. But what will it be like several decades from now, what are the prospects of "cybernetic" assimilation of new fields?

Today we are publishing a prediction compiled by experts at the Rand Corporation and the U.S. Institute of the Future, as well as a selection from the book God 2019 (The Year 2019) by Ch. de Karlo.

Literaturnaya Gazeta correspondent Ye. Fedorovskiy joined V. Sidorov, corresponding member of the AI (Academy of Sciences) USSR and director of the Institute for Problems of Information Transmission of the AI SSSR, to comment on the predictions of the Western experts.

It can be seen that the current rate of progress in the area of existing technical means of memory and communication is maintained for the next five years, an impressive picture open before us.

USSR

UDC 669.71.053.4(038.8)

BAZHENOV, A. YE., GRECHUKHIN, N. V., OSOKINA, V. K., PAL'CHIKOVA, A. I.,
PAL'CHIKOVA, T. A., TARASOV, I. A., FEDORTSOV, V. D., CHALIK, A. D.,
CHERNOV, V. Ye

"Method of Obtaining Cryolite"

USSR Author's Certificate No 312834, filed 3 Mar 70, published 15 Oct 71
(from RZh--Metallurgiya, No 4, Apr 72, Abstract No 46179P)

Translation: The procedure for obtaining cryolite by roasting the slurry at 700-800° formed as a result of wet removal of the gases in aluminum production is distinguished by the fact that in order to improve the quality of the product, the roasted slurry is subjected to water treatment at 35-40° with a L:S ratio of 5-10: 1 with subsequent leaching out of the precipitate by a 2-10% solution of HF at 55-75° with a L:S ratio of 3-10:1. An example is presented.

1/1

1/2 031 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--STRUCTURE AND ELECTRON ADSORPTION PROPERTIES OF SODIUM FILMS ON THE
(011) FACE OF TUNGSTEN -U-
AUTHOR-(03)-MEDVEDEV, V.K., NAUMOVETS, A.G., FEDORUS, A.G.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(2), 375-85
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--SODIUM, METAL FILM, TUNGSTEN, ELECTRON, ADSORPTION, PHYSICAL
PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY KEEL/FRAME--1984/0131 STEP NO--UR/0131/70/012/002/0375/0335
CIPC ACCESSION NO--AP0054927
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054927

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRUCTURE OF NA FILMS ADSORBED ON THE W (011) FACE AT 77-400DEGREES K WERE STUDIED BY USING SLOW ELECTRON DIFFRACTION. THE ADSORBED FILMS EXHIBITED A SERIES OF ORDERED STRUCTURES WHICH ARE FORMED AT VARIOUS CONCNS. OF NA ATOMS. ORDER DISORDER TRANSITIONS WERE ALSO OBSD. DATA ON THE NA FILM STRUCTURE ARE COMPARED WITH CONTACT POTENTIAL DIFFERENCE DATA ON THE WORK FUNCTION AND THE CONCEN. OF NA ATOMS ADSORBED ON THE W (011) FACE. DISTORTION OF THE LONG RANGE ORDER IN NA MONOAT. FILMS DOES NOT CHANGE THE WORK FUNCTION. REPULSIVE FORCES ARE PRESENT BETWEEN THE ADSORBED ATOMS ON THE (011) FACE OF W.

UNCLASSIFIED

FEDORUS, G.A.

semiconductors



DEPARTMENT OF THE ARMY
U.S. ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER
218 BELMONT STREET NE
CHARLOTTEVILLE, VIRGINIA 22901

To Request Material:
AFSC 011 23 113-72
DMA Task No. 178-23-01

Date: 7 Sep 72

TRANSLATION

ENGLISH TITLE: HETEROGENEOUS SOLAR CONVERTORS BASED ON POLYCRYSTALLINE

CADMIUM SULFIDE AND CADMIUM SELENIDE

RUSSIAN TITLE: Geterogeniyie Solnuchnye Peryobrazovatelyi na Osnove
Polikristallicheskogo Sulfida i Selenida Kadmiya

III - Semiconductors

AUTHOR: V.I. Kuznetsov, A.I. LANCUANGI, Russian

Moscow, U.S.S.R.

SOURCE: Poluprovodnikovyye ~~_____~~ TRANSLATOR: A. Parkedy, Let. Colonel
Tehnika i Mikroelektronika, Association
No. 6, pp 112-121.

REQUESTOR: Mr. Turner, ACROSS-CE

CIRG FD11/000243/CSA

Approved for public release; Distribution unlimited

USSR

UDC 621.383.44

MARCHENKO, A. I., FEDORUS, G. A., and ZHURKOVA, V. N.

"Some Characteristics of Photoconverters Using Pressed Sintered Tablets of CdS"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 6, 1971, pp 101-107

Abstract: This article is the latest of a series of four dealing with photoconverters and published by the same authors. The first three demonstrated the possibility of fabricating photoelectric converters from sintered tablets of cadmium sulphide and selenide; the present article gives the results of investigations of the photoelectric and electrical characteristics of the CdS converters. The method for preparing the converters, from the initial material of the ETO 021009 TU brand to the final product, is described. The spectral characteristics of the converters are discussed, and a curve of the spectral short-circuit current distribution for two types of converter is plotted; the volt-ampere and volt-capacitance static characteristics of the heterojunction $p-Cu_{2-x}S--n-CdS$ are investigated in a broad range of temperatures.

1/1

- 49 -

USSR

UDC 621.383.44

MARCHENKO, A. I., ~~FEDORUS, G. A.~~, ZHUKOVA, V. N.

"Some Properties of Photoconverters Based on Pressed Caked CdS Tablets"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No 6, 1971, pp 101-107

Abstract: The results of studying a number of photoelectric and electrical properties of photoconverters based on pressed caked CdS tables are described. The possibility of obtaining effective photoconverters on the basis of such tablets was demonstrated previously [St. Kynev, et al., Acta Phys., Pol., No 25, 313, 1964; A. I. Marchenko, UFZh, No 12, 1392, 1967]. A procedure for manufacturing the tablets is also described. The photoconverters have high sensitivity in the entire visible range of the spectrum. The efficiency of converting the energy of solar radiation to electric energy is 3.5 percent. The sensitivity of the photoconverters in the long wave range of the spectrum is basically determined by the extrinsic absorption of light in CdS. The volt-ampere and volt-capacitive characteristics of the p-Cu_{2-x}S-n-CdS heterojunction were investigated in a broad temperature range. The return branches of the volt-ampere characteristics do not reveal the current saturation section. The volt-ampere curves are characterized by "soft" breakdown usually observed in heterojunctions and the presence of excess currents appreciably exceeding the calculated values with respect to magnitude for materials with a CdS width of 1/2

USSR

MARCHENKO, A. I., et al., Poluprovodnikovaya tekhnika i mikroelektronika, No 6, 1971, pp 101-107

the forbidden zone. The magnitude of the critical voltage corresponding to the direct current increases with a drop in temperature. The negative temperature coefficient of the critical voltages is characteristic of Zener tunneling. Thus, the tunnel mechanism of passage of the current through the junction is indicated.

2/2

-- 55 --

USSR

UDC 536.421.5+539.231

MARCHENKO, A. I., FEDORUS, G. A.

"Obtaining and Studying Some Electrophysical Properties of Baked Tablets of Cadmium Sulfide and Selenide"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No 6, 1971, pp 55-58

Abstract: A simple process for obtaining low-resistance ($\rho = 0.5-20$ ohms-cm) baked tablets of cadmium sulfide and selenide has been developed suitable for manufacturing photoelements of the heterogeneous type. Some of the properties of these elements are investigated. The resistance of the tablets decreases with an increase in the roasting temperature, and the density of the tablets also increases. The specimens obtained were always n-type; the current carrier concentration varied from $10^{15}-10^{18}$ cm⁻³, the mobility was within the limits of 1-50 cm²/volt-sec for cadmium sulfide, for cadmium selenide, the mobility was about 100 cm²/volt-sec, and the concentration was $10^{16}-10^{18}$ cm³ at room temperature.

1/1

- 58 -

USSR

UDC 621.385.292.8:621.382

PANOVA, V.G., FEDORUS, G.A., FURSENKO, V.D.

"Amplification Of Electronic Current During Irradiation Of Crystals And Films of A_2B_6 By Fast Electrons"

Poluprovodn. tekhn. i mikroelektronika. Rep. mezhved. sb. (Semiconductor Technology And Microelectronics. Republic Interdepartmental Collection), 1971, Issue 6, pp 76-80 (from RZh--Elektronika i yeye primaneniye, No 10, October 1971, Abstract No 10E240)

Translation: The dependence of the amplification factor (γ) of the electron current in A_2B_6 compounds as a function of the energy (E_0) and the intensity of the electron beam (i_n) is investigated in a wide interval of values (E_0 , 5--40 keV; i_n , 10^{-12} -- 10^{-8} a/cm²). It is shown that in highly-sensitive single crystals of CdS and CdSe during steady electron excitation with the energy of the electrons 30 keV and 20 v of the voltage applied to the specimen $\gamma \approx 10^8$. The maximum possible value γ_{max} is estimated with $E = 30$ keV under extreme conditions, which for single crystals of CdS can attain values of 10^{11} . 2 ill. 16 ref. A.B.

1/1

- 158 -

Photoelectric Effect

USSR

UDC 621.472:621.363

PAVELETS, S. Yu. and FEDORUS, G. A.

"Efficiency of CdS-Cu_{2-x}S Heterojunction Solar Energy Transducers"

Tashkent, Geliotekhnika, No. 3, 1971, pp 3-8

Abstract: Solar energy transducers using the CdS-Cu_{2-x}S heterojunction are most efficient of such devices and are thus the most promising candidates for practical application. Although the full nature of the conversion occurring in the junction is not understood, it is possible to compute the efficiency of the device for the case of light absorption by impurities. This article undertakes this computation for solar energy transducers under the best conditions, such as maximum concentration of impurity centers, maximum cross section of photon capture by these centers, and the like. The energy losses and the possibility of increasing the efficiency of the CdS-Cu_{2-x}S element efficiency are analyzed. It is found that that the experimentally obtained value of 9% for the efficiency of the transducer is close to the limit and less than the efficiency of Si transducers. However, this type of device can be made cheaply enough to compete with the silicon equivalent. The

1/2

USSR

PAVELETS, S. Yu., and FEDORUS, G. A., *Geliotekhnika*, No 3, 1971, pp 3-8

peculiarities of the crystalline structure of CdS layers are also examined with a view to increasing their efficiency. The authors are associated with the Semiconductor Institute, Academy of Sciences, USSR.

2/2

- 65 -

USSR

UDC 621.383.567

KOMASHCHENKO, V.N., MARCHENKO, A.I., FEDORUS, G.A.

"Heterogeneous Solar Transducers Based On Polycrystalline Cadmium Sulfide And Cadmium Selenide"

Poluprovodn. tekhn. i mikroelektronika. Resp. mezhved. sb. (Semiconductor Technology And Microelectronics. Republic Interdepartmental Collection), 1970, No 4, pp 112-121 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No EE218)

Translation: This paper gives the results of development of polycrystalline phototransducers based on cadmium sulfide and cadmium selenide. The method of preparation and the photoelectric and electrical properties of the devices are described. The phototransducers possess high photosensitivity in all the visual region of the spectrum. The efficiency of conversion of the energy of solar radiation into electricity is ~ 3 percent. The photocells are characterized by a high stability of their parameters in time. Using as an example studies of the electrical (voltampere and volt-capacitance) characteristics of heterogeneous $p(\text{Cu}_{2-x}\text{Se})-n(\text{CdSe})$, conclusions are drawn concerning the prevalence of the tunnel-recombination process in the mechanism for passage of the current through the heterogeneous system developed. 8 ill. 1 tab. 11 ref.

1/1

1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--OPTIMUM THICKNESS OF A COPPER SULFIDE LAYER IN N,CDS,P,CD SUB2-X 5
PHOTOCELLS -U-
AUTHOR--(03)-PAVELETS, S.YU., FEDORUS, G.A., KONONETS, YA.F.
COUNTRY OF INFO--USSR **F**
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 347-9
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--COPPER SULFIDE, CADMIUM, PN JUNCTION, PHOTOCONDUCTIVE CELL

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0993 STEP NO--UR/0449/70/004/002/0347/0349
CIRC ACCESSION NO--AP0115014
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0115014

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS DESCRIBED FOR DETG. THE DIFFUSION LENGTH, L_{SUBD} , FOR P-N HETEROJUNCTIONS FROM THE SPECTRAL CHARACTERISTICS. THE METHOD WAS USED TO DET. L_{SUBD} FOR A $Cu_{SUB2-X}S$ HETEROJUNCTION FROM THE SPECTRAL DISTRIBUTION OF THE SHORT CIRCUIT PHOTOCURRENT. DETNS. WERE MADE FOR A THICKNESS OF $Cu_{SUB2-X}S$, L EQUALS 1000-1200 ANGSTROM; L LARGER THAN L_{SUBD} FOR THESE HETEROJUNCTIONS. L_{SUBD} WAS EVALUATED AS $(2.5 \pm 1) \times 10^{-6}$ CM. SUCH A SMALL VALUE FOR THE PHOTOACTIVE REGION IN A NARROW BAND SEMICONDUCTOR IS RELATED TO HETEROGENEITIES IN THE POLYCRYST. STRUCTURE OF THE THIN $Cu_{SUB2-X}S$ FILM. DETNS., ON FILMS OF L CONGRUENT TO 200 AND 500 ANGSTROM, OF THE PHOTOACTIVE REGION (L_{SUBP}) OF THE $Cu_{SUB20X}S$ LAYER SHOWED THAT FOR L CONGRUENT TO 500 ANGSTROM, L LARGER THAN L_{SUBP} , AND FOR L CONGRUENT TO 200 ANGRSTOM, L SMALLER THAN L_{SUBP} . FACILITY: INST. POLUPROV., KIEV, USSR.

UNCLASSIFIED

1

USSR

UDC 620.193

BRYNZA, A. P., KOSOLAPOVA, T. YA., KEMELOVSKAYA, S. A., FEDORUS, V. B., and SIMONOVA, YE. K., Dnepropetrovsk State University and Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Corrosion Resistance of Titanium Carbide Powders"

Kiev, Poroshkovaya Metallurgiya, No 8, 1971, pp 67-72

Abstract: The decomposition kinetics of titanium carbide were studied in the region of homogeneity in mixtures of sulfuric acid (from 0.5 to 10 geq/l) with hydrogen peroxide (from 1.08 to 6.44 geq/l) at 25-80°. The carbides were prepared in a laboratory vacuum furnace (10⁻³ mm Hg) with a slow temperature rise (for 30-40 minutes) to 1500-1600°, with subsequent exposure at this level for 2 hours. The mean particle size of carbide powder was 15 microns. In the corrosion testing, all carbide phases completely decompose when maintained in a solution containing 10 geq/l H₂SO₄ and 6.44 geq/l H₂O₂ for 120 hours at 25°. With temperature rise, the time required for total decomposition was reduced to 10 hours at 40°, 6 hours at 60°, and 2 hours at 80°. When the concentration of sulfuric acid was increased from 0.5 to 5 geq/l, the rate of dissolution of titanium carbides was reduced, and when the acid content was varied from 5 to 10 geq/l, the rate of decomposition did not depend on solution acidity. When the hydrogen peroxide content was increased, the rate of decomposition of the titanium carbides rose. When the carbon content in titanium

1/2

USSR

BRYNZA, A. P., et al, Kiev, Poroshkovaya Metallurgiya, No 8, 1971, pp 67-72

carbide was increased, the decomposition rate declined. That is, the more defect-free the carbide is relative to carbon, the higher is its resistance in a mixture of sulfuric acid and hydrogen peroxide.

2/2

USSR

UDC 621.762.001

FEDORUS, V. B., KOZOLAPOVA, T. YA., KUZ'MA, YU. B., and KUGAY, L. N.

"Investigation of the Reaction of Zirconium Oxide With Carbides of Group VI Metals"

V sb. Tugoplavk. karbidy (The Refractory Carbides -- Collection of Works), Kiev, "Nauk. Dumka," 1970, pp 244-250 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G378 by authors)

Translation: An investigation is made of the character of the reaction of zirconium oxide with carbides of Group VI metals -- Cr_3C_2 , Mo_2C and WC -- by the methods of x-ray, chemical, and metallographic analyses. The authors determine the nature of the intermediate and final reaction products, and establish the dependence of the phase composition of the reaction products on sintering temperature. A study is made of the stability of Mo and W carbides and ZrC_2 in acids and in mixtures of acids with oxidizing and complexing agents. A method is suggested for chemical phase separation of the above-indicated compounds. Four tables. Bibliography with 21 titles.

1/1

Conferences

USSR

KOSOLAPOVA, T. YA., and FEDORUS, V. B.

"Third Scientific Seminar on Methods of Production and Properties of Refractory Carbides and Heat-Resistant Materials Based on Them"

Kiev, Poroshkovaya Metallurgiya, No 2, Feb 71, p 107

Abstract: The Third Scientific Seminar on Methods of production and Properties of Refractory Carbides and Heat-Resistant Materials Based on Them, organized by the Institute of Problems of Material Science, Academy of Sciences, Ukrainian SSR, was held in Kiev on 26-28 October 1970. Over 100 persons representing 35 scientific research organizations in Moscow, Leningrad, Novosibirsk, Kiev, Sverdlovsk, Dnepropetrovsk, and other cities took part in the conference. Forty-three reports were heard and discussed, covering a wide range of problems, including: the nature of compounds of carbon with elements of the periodic system; the conductivity band of transition metal monocarbides; calculation of the band structure of zirconium and niobium mono-
1/2

USSR

KOSOLAPOVA, T. YA., and FEDORUS, V. B., Poroshkovaya Metallurgiya, No 2, Feb 71, p 107

carbides in the strong bonding approximation; studies of the properties of carbides in the area of homogeneity; the study of the thermodynamic properties and structures of oxycarbides and oxycarbonitrides; the determination of new superconductivity effects in carbides; and the use of carbides and carbide-based alloys in technology. One section was dedicated to studies of non-metallic carbides.

2/2

- 28 -

USSR

UDC: 658.562:624.012.43

F
TYSHKEVICH, Yu. A., FEDORYAKO, I. I., Engineers, Kiev

"Testing the Water Permeability of Concrete in Thin-Walled Reinforced Concrete Structures"

Gidrotekhnika I Melioratsiya, No 8, 1970, Pages 49-52

Abstract: The existing method for testing water permeability of concrete (All-Union State Standard GOST 4800-59) allows permeability to be determined only in large, monolithic structures. This article suggests a method allowing the actual permeability of concrete to be established in thin-walled products 5-10 cm thick. The method uses the structures themselves or sample slabs of the same thickness, exposing them to one-sided water pressure for a fixed period of time. The apparatus used is diagrammed. Field tests were performed in 1968, indicating satisfactory operation of the equipment.

1/1

USSR

UDC:669.046.558.7:669.14.018.85

VOINOV, S. G., KALINNIKOV, Ye. S., KHASIN, G. A., EEDOSENKO, F. V., and MOKHIR, YE. D.

"Study of the Quality of Pipe Skelp of Type 20K Steel, Made According to the Ordinary Technology and By Various Versions With Treatment With Liquid Synthetic Slag in the Ladle"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 206-215

Translation: Experiments are described on the development of means for improving the quality of pipe skelp of type 20K steel, produced in ordinary open hearth furnaces according to the ordinary technology and produced with treatment by synthetic slag in the ladle. When the new technology was used, various versions of deoxidation were tested. The effectiveness of the versions of the technology tested were compared on the basis of the results of inspection of blooms, evaluation of the macrostructure, determination of the chemical composition of the steel, evaluation of nonmetallic inclusions and mechanical tests. It is established that the melting of type 20K steel with treatment with synthetic slag, regardless of the deoxidation treatment used, allows the production of pipe skelp with low sulfur content, free of nonmetallic inclusions, with compact macrostructure and high mechanical properties, particularly across the

1/2

USSR

UDG 621.385.632

ALGAZINOV, E.K., FEDCSENKO, Y.N.

"Experimental Investigation Of The Amplitude Distortions Of A Multifrequency Signal In A TWT (Summary Of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue 11, p 91 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A190)

Translation: The nonlinear effects were experimentally investigated which take place in a traveling-wave tube during simultaneous amplification of several signals with different frequencies. To such phenomena there apply first of all a change of the ratio of the signal levels at the output of an amplifier in comparison with their ratio at the input, and compression and mutual suppression of the signals. The dependences were investigated of each of these phenomena, on the performance of the tubes and the amplitude of the input signals. It is established that there is an optimum voltage of the spiral in order to insure minimum suppression and a minimum ratio of levels. These voltages are several percent higher than the voltages corresponding to maximum amplification. The character of the phenomena considered practically does not depend on the beam current. Summary.

1/1

USSR

UDC 632.95

PYATHOVA, YU. B., GOLUBEVA, V. A., GOLYSHIN, N. M., ~~UKRAINETS, N. S.~~
ABELENTSEV, V. I., ~~FEDCENKO, L. G.~~, VISHNEVSKAYA, A. M., PUSTOVOLTCOVA, V. I.,
and DVUKISHNERSTOV, R. G.

"Editone"

Khim. sredstva zashchity rast. (Chemical Means of Protecting Plants --
collection of works), Issue 1-M, 1970, pp 129-134 (Referativnyy Zhurnal --
Khimiya, No 10, (II), 1972, Abstract No 10H550 by T. A. Belyayeva)

Translation: Investigation of editone -- 3,3'-ethylene-bis-4,6-dimethyl-
tetrahydro-1,3,5-thiadiazin-2-one (I) -- in laboratory conditions in vitro
showed that I is equivalent in fungicidal property to Phygon and offers no
threat to green plants. The effectiveness of I in countering apple scab,
grapevine mildew, cherry-plum Clasterosporium, monilial blight, grey mold
of cherry trees, and Macrosporium in tomatoes is equal to or exceeds the
effectiveness of zineb and copper oxychloride (concentration 0.25-0.125%)
and of Bordeaux mixture in 1% concentration. I is not effective in combatting
powdery mildew.

1/1

- 73 -

USSR

UDC 621.385.632

ALGAZINOV, E.K., FEDOSENKO, N.M.

"Experimental Investigation Of Combination Components In TWT (Summary Of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn.sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue 11, p 92
(from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A189)

Translation: The dependences are investigated of combination components (CC) in a traveling-wave tube, on the accelerating voltage and current of the beam, both with equal and with different levels of several input signals, in a search for methods of improvement of the ratio signal--CC at the output of the TWT. During simultaneous feeding of several signals to the TWT input, even at extremely low input levels, CC develop if the levels of the input signals do not exceed -10 db from the level of the appropriate saturation; then the CC level at the TWT output does not exceed -25 db from the level of the signals and in a saturation regime amounts to -10 ÷ -16 db. Besides a decrease of the level of the input signals,

1/2

USSR

ALGAZINOV, E. K., et al., Elektron. tekhnika. Nauchno-tekhn. sb.
Elektron. SVCh, 1970, Issue 11, p 92

it is possible to achieve an improvement of the ratio signal--CC by an increase of the accelerating voltage up to 4% in comparison with the optimum. Both of these methods are of equal value with respect to maintenance of the output power. Change of the beam current in the limits acceptable in practice does not give a gain in the ratio signal--CC. Summary.

2/2

- 78 -

FEDOSENKO, V.S.

TECHNICAL TRANSLATION

AI-71 / PSIC-INT-23-1498-72

ENGLISH TITLE: UNSTABLE INTERNAL WAVES IN A VISCOUS FLUID

FOREIGN TITLE: НЕУСТОЙЧИВЫЕ ВНУТРЕННИЕ ВОЛНЫ В ВЯЗКОМ ЖИДКОСТИ

AUTHOR: V. S. FEDOSENKO, L. V. GIBKESOV

SOURCE: МАРИНЕ ГИДРОФИЗИКАЛ. ИСЛЕДЖИ, NO. 1 (43)

Translated for FSTC by ACS1

NOTICE

The contents of this publication have been translated as presented in the original text. No attempt has been made to verify the accuracy of any statement contained herein. This translation is published with a minimum of copy editing and graphics preparation in order expedite the dissemination of information. Requests for additional copies of this document should be addressed to Department A, National Technical Information Service, Springfield, Virginia 22151. Approved for public release; distribution unlimited.

Marine and Shipbuilding

USSR

FEDOSENKO, V. S., CHERKESOV, L. V.

"Dissipation of Internal Waves"

Mor. Gidrofiz. Issled. No 2(52), [Marine Hydrophysical Studies, No 2(52)], Sevastopol', 1971, pp 88-112. (Translated from Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No. 1 B514 by V. V. Lugovskiy).

Translation: Two problems on wave motions of a viscous, incompressible, 2-layered fluid are studied. The first problem is dedicated to flat, long, unstable waves, resulting from the initial perturbations of a free surface and a division surface. The equations of motion of the liquid, initial and boundary conditions are written. The solution is found using a Laplace transform with respect to time and a Fourier transform with respect to the horizontal coordinate. Expressions are produced for the form of the free surface of the liquid and the division surface. These expressions are analyzed in the case of small values of the relative viscosity coefficient of the lower layer of liquid. It is found that two systems of waves are formed on the free surface and two more are formed on the division surface, propagating at essentially different speeds; the most important properties of these waves are studied. It is noted that the viscosity has a much greater influence on the internal waves than on the surface waves; as the depth of the liquid decreases, the influence of viscosity is stronger; the main increasing waves are preceded

1/3

USSR

UDC 532.593

FEDOSENKO, V. S.

"On Directed Radiation of Waves of the Tsunami Type"

V sb. Mor. gidrofiz. issled. No 4(50) [Marine Hydrophysical Research-- collection of works, No 4(50)], Sevastopol', 1970, pp 67-74 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10B387)

Translation: The problem of waves on the surface of an ideal, incompressible liquid filling an unbounded basin of constant depth H is considered in the linear formulation. It is assumed that at the initial time $t=0$ the liquid is quiet, and the initial deviation of its free surface from the horizontal equilibrium position is given by the formula

$$\zeta(x, y, 0) = a f(x, y) \tag{1}$$

where

$$f(x, y) = \begin{cases} 1 & |x| < a, |y| < b \\ 0 & |x| > a, |y| > b \end{cases} \tag{2}$$

1/3

USSR

FEDOSENKO, V. S., Mor. gidrofiz. issled. No 4(50), Sevastopol', 1970, pp 67-74

In this case, the free surface has the form

$$\zeta = \frac{a}{\pi^2} \int_0^{\infty} \frac{\cos \sqrt{gr} \operatorname{th} r h}{r} I(r, x, y) dr \quad (3)$$

$$I(r, x, y) = \int_{-i/4\pi}^{i/4\pi} \frac{\sin(ra \cos \theta) \sin(rb \sin \theta)}{\cos \theta \sin \theta} e^{ir(x \cos \theta + y \sin \theta)} d\theta$$

The author studies the integral I for large $r = \sqrt{x^2 + y^2}$. The path of integration bI is deformed into the path (L_1) bypassing the points $\theta_1 = 0$ and $\theta_4 = \frac{3}{2}\pi$ on small circles in the upper half-plane, and the points $\theta_2 = \pi/2$ and $\theta_3 = \pi$ in the lower half-plane. Otherwise, this path coincides with the initial integration path.

The resultant integrals are studied by the stationary phase method. It is found that directed radiation of waves takes place: 1) unsteady plane waves whose amplitude damps out as $R^{-\frac{1}{2}}$ propagate in bands $|x| < a$, $|y| < b$, 2) over the entire remaining part of the free surface, unsteady annular waves propagate with an amplitude which depends on the angle

2/3

USSR

FEDOSENKO, V. S., Mor. gidrofiz. issled. No 4(50), Sevastopol', 1970, pp 67-74

$\gamma = \tan^{-1}(x/y)$, damping as R^{-1} . The velocity of the leading edges of the waves is equal to \sqrt{gH} .

A similar pattern takes place in the case of small vertical oscillations of the bottom of the basin taking place at a velocity

$$w = w_0 f(x, y) \psi(t) \quad (\psi(0) = 0)$$

and under the effect of surface pressures

$$p = p_0 f(x, y) \psi(t) \quad (\psi(0) = 0)$$

where the functions $f(x, y)$ are determined from formula (2).

It is then pointed out that the proposed method is applicable to steady-state wave problems as well. An example is considered where the periodic pressure

$$p = p_0 f(x, y) \cos \omega t$$

is applied to the surface, where $f(x, y)$ has the form of (2). A. K. Nikitin.

3/3

USSR

UDC 632.95

MEL'NIKOV, N. N., SMOLOVA, YE. M., TRUNOV, P. P., VOZDOLZHICH, S. D.,
DYNSHAKOVA, G. I., GOLYSHIN, N. M., ABELENTEEV, V. I., URSICILIS, K. S.,
FEDOSYENKO, L. G., ZAIMIN, B. A., DVUREZHNESTOV, M. G., VISHNEVITSKAYA, A. N.,
ORLOV, S. I., ZAVIZION, A. P., and TALASH, A. I.

"Polycarbazin"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 95-104 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N503 by T. A. Belyayeva)

Translation: The effectiveness of polycarbazin (I) on apple scab and grapevine mildew equals that of zineb (II) and polyran-combi, while on cherry-fruit gray rot it equals Bordeaux liquid (III) (1 percent), but is ahead of II. I equals II and III for Clasterosporium infection of the cherry plum and tomato macrosporiosis. The decisive factor which determines the length of action of I is precipitation, which washes the preparation off plants.

1/1

- 61 -

USSR

UDC 632.95

MANDEL'BAUM, YA. A., SOYFER, R. S., ~~FEDOSEYENKO, I. G.~~, GOLYSKIN, N. M.,
MEL'NIKOV, N. N.

"A Fungicide"

USSR Author's Certificate No 243998, filed 10 Jul 67, published 2 Nov 71
(from RZh-Khimiya, No 11, Jun 72, Abstract No 11N442)

Translation: O-Aryl S,S-di-(N-alkylcarbamoylmethyl) trithiophosphates (I) are used for disinfecting seeds (cereal grains) against rust and mold fungi. In a concentration of 0.003%, compound I is 100% effective in suppressing growth of *Botrytis cinerea*, *Fusarium noniflorae*, *Aspergillus niger* and other pathogenic fungi. The disinfectant is nontoxic for plants in a dose of 2 kg per ton of wheat seeds and 4 kg per ton of oat seeds.

1/1

- 44 -

USSR

UDC 632.95

MANDEL'BAUM, Ya. A., ABRAMOVA, G. L., GOLEVLEVA, L. M., FEDOSEYENKO, L. G.,
ANDREYEVA, Ye. I., and PRONCHENKO, T. S.

"Fungicides"

USSR Author's Certificate No 254254, Filed 8 Jul 68, Published 13 Mar 72
(from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II),
1973, Abstract No 1N490P by T. A. Belyayeva)

Translation: Compounds of a general formula $(RO)R'HNP(S)SR''$ (I) ($R_1 = C_1 - C_3$ -alkyl or chloralkyl, R' and $R'' = C_1 - C_4$ -alkyl) are suggested for use as fungicides. They were tested on pure cultures of phytopathogenic fungi and gummosis bacteria. The LD₅₀ for rice weevil of these compounds was determined. Compounds I are toxic for fungus mycelium, and compounds $(EtO)PrHNP(S)SPr$ and $(PrO)PrHNP(S)SPr$ (Ia) are effective against Verticillium cotton wilt and their increase the cotton yield 1.5 times.

1/1

- 33 -

USSR

UDC 632.95

KORNOUKHOVA, M. V., LOMAKINA, V. I., MANDEL'BAUM, Ya. A., GAR, K. A.,
 GOLYSHIN, N. M., BOKAREV, Ye. M., FEDOSEYENKO, L. G., and BODRCVA, M. R.

"Reaction of Thiophosphate Hydrazides with Sulfochlorides"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 2, Moscow, 1972, pp 194-199 (from RZh-Khimiya, No 22, 25 Nov 73, Abstract No 224567 by L. V. Razvodovskaya)

Translation: Compounds with the general formula $R^1(RO)P(S)NHNHSO_2R^2$ (I) and $R^3XP(S)(NHNHSO_2R^2)_2$ (II) (R = alkyl, R^1 = aryloxy, NHR , NR_2 , R^2 , R^3 = alkyl, aryl, X = O or NH) are obtained from the reaction of $R^1(RO)P(S)NHNH_2$ (III) or $R^3XP(S)(NHNH_2)_2$ (IV) with $ClSO_2R^2$. Examples. (1) 0.03 mole of Et_3N solution in 30 ml of C_6H_6 at 20° is added to 0.03 mole of III (R = Et, R^1 = PhO) and 0.03 mole of Et_3N in 70 ml of C_6H_6 . The mixture is mixed for 5 hours at 35 to 40° and the sediment is filtered off. The filtrate is washed, dried, and the solvent distilled off to obtain I (R = R^2 = Et, R^1 = PhO, yield 66%, melting point $91-3^\circ$). I is obtained in a similar fashion (R , R^1 , yield in %, melting point in $^\circ C$ or n_D^{25} and d_4^{25} are given): Me, iso-PrNH, Me, 70, 1.5204, 1.2964; 1/2

USSR

KORNOUKHOVA, M. V., et al., Khim. sredstva zashchity rast, No 2, 1972, pp 194-199

Et, iso-PrNH, Ph, 56, 117-8; Et, iso-BuNH, Me, 84, 1.505, 1.1974; Ph, iso-PrNH, Et, 68, 66-8; Et, Me₂N, PhMe, 30, 78-80; Et, Et₂N, Et, 50, 1.5148, 1.2035; Et, Et₂N, PhMe, 55, 1.5350, 1.1756; Et, PhO, Ph, 55, 72-4. (2) 0.05 mole of PhSO₂Cl at 20° is added to a solution of 0.05 mole of IV (R³X = PhO) and 0.05 mole of Et₃N in 100 ml of alcohol. The mixture is mixed for 6 hours at 20° and 8 hours at 60-70°; the alcohol is distilled off in part. The sediment is filtered off and the filtrate evaporated to obtain II (R²=R³=Ph, X = O), yield 56%, melting point 168-70°. II is obtained in a similar fashion (R³X, R² yield in %, melting point in °C are given): EtO, Et, 50, 158-60, EtO, Ph, 30, 102-5; PhO, Me, 45, 173-5; PhNH, Me, 46, -. I and II have fungicidal and weak contact insecticidal activity.

2/2

- 33 -

USSR

UDC 632.95

GOLYSHIN, N. M., FEDOSEYENKO, L. G., UKRAINETS, N. S., ABLENTSEV, V. I.,
and SOLOV'YEVA, G. V.

"Use of a Combined Preparation of Copper Oxychloride and Zineb"

V sb, Khim. sredstva zashchity rast, (Chemical Agents for Plant Protection --
collection of works), vyp 1, Moscow, 1970, pp 110-115 (from RZh-Khimiya,
No 11, Jun 72, Abstract No 11N428)

Translation: Mixtures of copper oxychloride and zineb in ratios of 1:1.5, 1:6
and 4:1 freshly prepared immediately before spraying had greater effectiveness
in controlling apple tree mange and grape mildew than did the components
applied separately. The most effective was a mixture with a ratio of 1:1.5.
A mixture prepared with the same ratio of components as in Cuprosan Super
D was just as effective in field tests as the latter.

1/1

USSR

UDC 616.981.42

SHIN, N. G., KEMENTSOVA, M. M. YEREMIN, Yu. P., and FIDISENKO, V. N.,
Institute of Zoology, Kazakh Academy of Sciences, and Institute of Regional
Pathology, Kazakh Ministry of Health

"Ultrasonic Disintegration of Brucella"

Alma-Ata, Izvestiya Akad. Nauk Kazakh SSR, Ser. Biol., No 1, 1973, pp 68-71

Abstract: Suspensions of 12 Brucella strains (*Br. melitensis* 16 M, *Br. abortus* 544, and *Br. ruis*) isolated from human being, deer, and cattle disintegrated on exposure to ultrasound, the rate varying with the intensity and duration and with the physicochemical factors (pH of the medium, viscosity, concentration of the microbial suspension, etc.). For example, at a frequency of sonication of 22 kHz and intensity of 15 to 18 wt/cm², selective disintegration was evident within 7 or 8 minutes and it became "explosive" in 30 to 45 minutes. Destruction was total after 1 hour. Further sonication resulted in complete homogenization. By an appropriate choice of the frequency, intensity, and other parameters of ultrasound, one can control the process of cell disintegration to permit isolation of the nuclear substance and other organelles. Meanwhile the biological activity of the material thus isolated is preserved. Ultrasound appears to be an effective method of fractionating Brucella and possibly other biological objects.

1/1

- 40 -

USSR

TAKIBAYEV, ZH. S., BOOS, E. G., SAN'KO, L. A., TEMIRALIYEV, T., ANTONOVA, M. G., YERMILOVA, D. I., MUKHOMDOVA, T. I., KHOLMETSKAYA, A. V., and FEDOSEYENKO, V. V., Institute of Nuclear Physics, Academy of Sciences Kazakh SSR

"Study of Dynamics of Resonance Production in Four-Track Proton-Proton Interactions at Momentum of 10 GeV/c"

Moscow, Yadernaya Fizika, Vol 13, No 1, 1971, pp 113-123

Abstract: The article gives an analysis of 1800 four-track proton-proton interactions recorded in an 81-cm Saclay hydrogen bubble chamber irradiated with protons with a momentum of 10.01 ± 0.01 GeV/c on the CERN synchrotron. The following reactions are considered:

- $pp \rightarrow pp\pi^+\pi^-$, (1)
- $pp \rightarrow pp\pi^+\pi^-\pi^0$, (2)
- $pp \rightarrow pp\pi^+\pi^+\pi^-$. (3)

1/2

USSR

TAKIBAYEV, ZH. S., et al., Yadernaya Fizika, Vol 13, No 1, 1971,
pp 113-123

Nucleon and meson resonance production cross-sections are determined and the contribution of two-particle reactions studied. It is shown that pion production in all the channels considered is accompanied in most cases by nucleon resonance production. The contribution of boson resonances, which is greatest in the channel with π^0 meson production, does not exceed 10 percent of the reaction channel cross-section. The use of the maximum momentum method permits estimates of the cross-sections for different quasi-two-particle reactions. The cross-sections of the dynamic states being observed differ considerably in channels (2) and (3), where the number of pions and nucleons coincides. This may be due to changes in the nucleon charge in inelastic pp interactions.

2/2

AAC044748

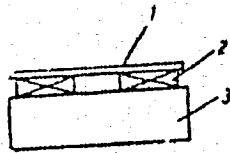
FEDOSEYEV AN UR 0482

4

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243974 RECEIVER FOR ACOUSTIC SIGNALS. When an acoustic signal is applied to the diaphragm (1), eddy currents are generated in it. Their interaction with the magnet (3) magnetic field generates an e.m.f. in the coil (2). As the diaphragm mass is small, the receiver reproduces without distortion the shape of the applied signal within a wide frequency range.



20.10.67 as 1191772/18-10. BAKSHEEV A.F. et alia.
KUIBYSHEV PETROLEUM IND. RES. INST. (3.10.69) Bul 17/
14.5.69. Class 42s. Int.Cl. B 06b.

1/2

3-21

19771511

AA0044748

AUTHORS: Bashkeyev, A. F., Yerusalimskiy, I. N., Kalinkin, G. N., Kudashov,
N. V., Laptov, V. V., Sakharov, Yu. I., Fedoseyev, A. N., Tshlav, L. Z.

Kuybyshevskiy Nauchno-Issledovatel'skiy Institut Neftyancy Promyshlennosti

2/a

19771512

USSR

UDO 621.372.822.09:5

NIKOL'SKIY, V.V., IZMAYLOV, F.F., FEDOSEYEV, A.P.

"Application Of Impedance Treatment To The Problem Of Diffraction For A Rectangular Waveguide"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1305-1309

Abstract: The paper studies a projection method proposed by one of the authors [V.V. Nikol'skiy, Radiotekhnika i elektronika, 1971, 16, 7, 1120 and 8, 1342] which employs an impedance treatment, using as an example a class of problems of practical interest -- diffraction of the H_{10} wave of a rectangular waveguide at a system of bodies in the form of parallelepipeds, gyrotropic and isotropic. On the whole the results obtained confirm the legitimacy of the proposed algorithm; they are of importance also by themselves, demonstrating admissibility but not having been subjected to a well-grounded experimental study as well as a calculation. 6 fig. 4 ref. Received by editors, 15 November 1971.

1/1

agriculture

FEDOSEYEV, B.

IMPROVE SUGGESTS WAYS TO CUT HARVEST LOSSES

Article by Борис Федосеев ^{Механик} Candidate of Technical Sciences, and Л. Пурд-Башкин, ^{Кандидат сельскохозяйственных наук} Candidate of Agricultural Sciences, workers of the Всероссийский научно-исследовательский институт сельского хозяйства им. К.И. Скрябина of the Central Region of the USSR, Moscow, 28 July 1971, p 1.]

Harvesting has begun on the fields of Moscow and its environs. But the abundant rain that fell caused the grain crops to fall down to the ground and increased the number of weeds among them. How is the harvest to be carried out under these conditions?

One method is to reduce the cutting height by 40-60 millimeters, which makes it possible to reduce losses in harvesting grain crops that have been growing close to the ground. This is achieved by turning the finger-pin beam of the reaper and combine by 180 degrees. Two-blade cutting apparatus can also be used. That apparatus cuts well through moist, tangled, and weedy grain crops with green second growth.

However, this apparatus is insufficiently sturdy, and the working clearance between the mobile and immobile segments is frequently disrupted. It is more reliable to use an open moving-machine cutting apparatus made from an adaptation of the PM-2.1 with segments riveted onto shortened finger-pin instead of counter-cutting plates. These fingers can be installed either onto the row reaper or onto a combine reaper.

One ought not to forget about stalk-lifters. In order to harvest low-lying grain crops with a low cut, the mechanization division of our institute recommends installing on a self-propelled combine a cutting apparatus and stalk-lifter from the ZMA-3.5 reaper.

Present-day combines are equipped with eccentric reels which, when low-lying grain crops are being harvested, substantially reduce the grain losses and reduce the clogging of the cutting apparatus. Industry also produces reels on order for the ZMS-4.9 and ZMV-6 reapers. The ZMR-4.9, ZMR-4.9, and ZMR-4.6 row reapers can also be equipped with eccentric reels that have been taken off of combine combines. But the advantages of the

SD: SPAS: 438A1
26 Aug 71

p/s

USSR
KROSHKIN, V. A., TSAREVSKIY, V. V., KABANOV, N. M., MAKSHANOV, V. S., FEDOSEYEV,
B. A., GEYNISH, Z. V., GORKUMENKO, G. N., and GUBANOV, A. S., All-Union Scientific
Research, Planning Technological Institute of Chemical Petroleum Equipment

"Electro-Slag Welding With Concomitant Normalization by the Induction Method"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 73, pp 48-51

Abstract: The authors study methods for increasing the resistance to brittle fracture of joints made from low-alloy grades of steel and which were electro-slag welded. The results show that the coincidence of the heat cycles ensures the required impact strength for all joint zones up to 80 mm thick down to -70°C during the pilot introduction of the new technology for the electro-slag welding of the O9G2S grade steel. The developed industrial frequency, induction unit makes it possible to coincide the heat cycles of electro-slag welding with the concomitant normalization of the longitudinal and annular seams on large and small equipment made from cold-resistant and heat-resistant, low-alloy grades of steel. Further study is required to select the optimal heat cycles for electro-slag welding and normalization of joints as a function of thickness and steel grade.

1/1

USSR

UDC 546.26

FEDOSEYEV, D. V., DERYAGIN, B. V., VARNIN, V. P., and USPENSKAYA, K. S.,
Institute of Physical Chemistry, Acad. Sc. USSR, Moscow

"Diamond Synthesis. II. Diamond Synthesis From Methane in the Diffusion
Zone"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 1, Jan 73, pp 28-31

Abstract: The transition from the kinetic zone to the diffusion zone is affected by temperature, by the thickness of the powder layer, its dispersion and dilution by the reaction product of methane decomposition -- i.e., hydrogen. Hydrogen slows down the growth of diamond, but even more so it slows down the formation of soot, so that the original process is prolonged. A similar effect is achieved by limiting the consumption of methane. The rate of growth of diamond powder of various degrees of dispersion was determined. Experimental data obtained agree with the calculated values obtained from the equation of diffusion kinetics.

1/1

USSR

UDC 546.26

DERYAGIN, B. V., FEDOSEYEV, D. V., and USPENSKAYA, K. S., Institute of Physical Chemistry, Acad. Sc. USSR, Moscow

"Diamond Synthesis. I. Kinetic and Diffusion Zones of Diamond Synthesis From Gaseous Methane"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 1, Jan 73, pp 24-27

Abstract: Diamond which under normal conditions is a metastable form of carbon may be grown from carbon-containing gases under reduced pressures. In this paper the kinetics of diamond synthesis from methane is reported. An equation was derived for diamond growth in the kinetic zone of the process. Comparable expressions have been obtained for the diffusion, transition and kinetic zone. Experimental data showed no difference between the specific growth rates on synthetic and natural diamonds under comparable conditions. The rate of growth decreases with time due to the blocking action exerted on the surface of the diamond by the non-diamond carbon. The agreement between the experimental data and the theoretically calculated ones was very good.

1/1

- 66 -

Miscellaneous

USSR

DERYAGIN, B. V., BAKUL', V. M., and FEDOSEYEV, D. V.

"Synthesis of Diamonds at Low Pressures"

Kiev, Visnik Akademiyi Nauk Ukrayins'koy RSR, Vol 35, No 5, May 71, pp 80-88

Abstract: On the basis of results obtained at the Institute of Superhard Materials, State Plan of the UkSSR, production of synthetic diamonds was organized in 1961 at an experimental plant of this institute. This initiated the development of a USSR synthetic diamond industry. At present the static method of high-pressure synthesis (50-70 kilobar at 1200-1500°) is being applied in preference to the dynamic method involving shock-wave compression to 750-1000 kilobar, which takes less time, but leads to smaller crystals. Since 1956, work on the low-pressure synthesis of diamonds has been conducted at the Division of Surface Phenomena, Institute of Physical Chemistry, Academy of Sciences USSR. The low-pressure synthesis is based on the decomposition of a carbon-containing gas such as methane and epitaxial crystallization of C in the diamond form on face (III) of diamond seed crystals. The theory of epitaxial synthesis is outlined in articles by Fedoseyev, V. P. Varnin, and Deryagin (DAN SSSR, Vol 195, No 6, 1970) and Bakul' (Sinteticheskiye Almazy Vol 2, No 8, 1970). In work carried out jointly by the Institute of Physical Chemistry and the Institute of Superhard Materials, it was established that

1/3

USSR

DERYAGIN, B. V., et al, Visnik Akademiyi Nauk Ukrayins'koy RSR, Vol 35, No 5, May 71, pp 80-88

epitaxial crystallization of C on diamond seed crystals with the formation of diamond single crystal grains takes place at 1000-1100° and a CH₄ pressure of 0.20 mm. Epitaxial diamond films that can be applied in radioelectronics were also obtained. Epitaxial crystallization of C in the form of diamond was furthermore found to take place from molten metals in which C was dissolved. In the experiments conducted, it was necessary to remove black non-diamond carbon from the diamond surface by treatment with HClO₄ or with H₂ at 200 atm and 1000°, because this carbon interfered with the growth of diamond crystals, but methods for purification by gas treatment under mild conditions and a procedure in which parasitic C does not form have been developed. It was found that it is possible to grow epitaxial diamond crystals in the form of threads (Deryagin et al, Kristallografiya, Vol 14, No 3, 1969). This discovery was of importance because of the high rate of growth of such crystals (approx. 10 microns per hr. on the average, reaching 100-400 microns/hr) and because of the exceptional mechanical strength of thread-like crystals or whiskers (presence of 50% by weight sapphire whiskers increases the strength of Nb by a

2/3

- 77 -

USSR

DERYAGIN, B. V., et al, Visnik Akademiyi Nauk Ukrayins'koy RSR, Vol 35, No 5, May 71, pp 80-88

factor of four). The VLS method has been developed for growing diamond whiskers under drops of molten metals. Diamond whisker crystals formed minute spheroids that often developed facets, giving rise to isometric crystals. The low-pressure synthesis, in addition to being of value as such, forms a useful supplement to the high-pressure synthesis, because it makes it possible to increase the size of diamond micropowders obtained by the high-pressure method and thus produce a powder with a larger particle size that can be used for industrial grinding. An installation for the application of the low-pressure, epitaxial synthesis on an industrial basis has been completed; production of the first batch of diamonds by this method on a semi-industrial scale is expected in 1971. The weight of the diamonds used for seeding can be increased by 20% per day by the method in question. In the epitaxial synthesis fractionation of C isotopes takes place, so that the crystals which are grown become enriched in ^{13}C . The authors thank V. O. Ryabov, B. V. Spitsyn, Yu. I. Nikitin, A. V. Bochko, V. P. Varnin, V. L. Primachuk, and A. V. Lavrent'yev for their collaboration in the work described.

3/3

USSR

UDC 546.26

FEDOSEYEV, D. V., GALIMOV, E. M., VARNIN, V. P., PROKHOROV, V. S., and DERYAGIN, B. V., Corresponding Member Academy of Sciences USSR, Institute of Physical Chemistry, Academy of Sciences USSR, Moscow, Moscow Gas and Oil Institute

"Fractionation of Carbon Isotopes During the Physical-Chemical Synthesis of Diamond From Gas"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 5, 1971, pp 1149-1150

Abstract: In the synthesis of diamond from gas by deposition, a highly dispersed diamond powder was used as the primer. Methane pressure was 0.2 - 0.5 torr at 1000 - 1050°. The isotopic composition of the deposited carbon was studied by mass spectrometry. From the results obtained it was concluded that assumptions on the thermodynamic isotopic effect can be eliminated since the value of the distribution coefficient in the methane-diamond system at 1050°C is negligible. Probably the fractionation of the isotopes of carbon during the synthesis of diamond is determined by a kinetic effect together with a formation process and the growth of a new phase.

1/1

Chemical Sciences

1285 5312
29 May 71

PHYSICO-CHEMICAL PROBLEMS OF CRYSTALLIZATION
(Conference in Moscow)

Article by Doctor of Chemical Science V. P. Fedoseyev, Institute of Physical Chemistry of the AS USSR, Moscow, U.S.S.R.
Vol 40, No 3, March 1971, pp 18-19

The Second Conference on Physicochemical Questions of Crystallization was held on 10-14 November 1970 in the Institute of Physical Chemistry of the AS USSR. Participation in it were over 450 representatives of scientific and research institutes and industrial enterprises (a total of about 50 organizations). Twenty-seven reports were presented.

These reports were devoted to the chemical crystallization of refractory metals from the gaseous phase. In one of them there was discussion of the mechanism of low-temperature crystallization of refractory metals (mainly tungsten) from a mixture of hydrogen and halogens of those metals (R. K. Chugayev, Yu. N. Golovnyov). The formation of properly faced crystals with a density close to the theoretical (in spite of the fact that the process was carried out at 400-600°C) the authors explained by the fact that the activation energy of a heterogeneous chemical reaction decreases with increase of the heat of sorption of the hydrogen and that the net of reaction and the building of the atom in the crystal lattice are combined. In other reports (R. K. Chugayev and co-authors) dealt with physicochemical decoration by deposition of tungsten, titanium, crystals of lithium fluoride, scandium, nickel, and copper were decorated.

Attention was attracted by certain physicochemical features of the formation of synthetic diamonds (D. P. Fedoseyev, P. Buturov, and G. N. Bekasov), the epitaxial growth of diamonds from gas at low pressures and the process of joint crystallization of a metastable phase -- diamond and a stable phase -- graphite (V. P. Varniyak). In the last report the rates of nucleation of the two phases were compared.

FEDOSEYEV, D. Y.

The application of radial flow for the epitaxial synthesis of crystals was illuminated by G. G. Lopatin, who emphasized the effectiveness of its use for formations of crystals, as in that case contact-free heating is assured and also the possibility of carrying out the crystallization under pure conditions. It is predicted by means of radial flow that needle-shaped and isometric crystals of diamond have been grown. The epitaxial described epitaxial diamond films (polycrystalline and monocrystalline) and their properties (hardness, density, electrical conductivity, etc.).

Questions of the theory of chemical transport reactions, which have found wide application in the crystallization of many substances, also were dealt with.

Work on the interaction of the surface of a diamond with iron and nickel by M. M. Korovin and A. M. Korovin is directly related both to problems of diamond synthesis under high pressure in the presence of metallic catalysts and to the epitaxial method of diamond synthesis in the region of metastability of the latter. It was shown that one of the possible methods of growing needle-shaped crystals is growth under drops of metal by a gas-liquid-solid mechanism.

In reports on the structure of solids and the influence of defects on their properties, light was also shed on such questions as the formation of structural defects during the electrodeposition of metals (Ye. A. Kuznetsov), the near-surface distribution of dislocations in tungsten foils (D. M. Vasil'kovskiy and O. F. Zhelezovskiy), the influences of pressure on the metal-gas boundary on the diffusion of hydrogen in metals (V. P. Zolotarev). In the last-mentioned report it was shown that under certain conditions the influence of surface processes can prove to be deciding and the entire process of diffusion will be limited to the surface stage, as the slowest one.

Interest was aroused by reports on the copying of amorphous boundary layers of the electrical relief of the surface of crystals and on the influence of the geometry of the micro-relief on the process of formation of the new phase.

Methodically very important results were contained in the report of Ye. G. Popov and A. G. Pavlodskiy. The authors worked out general principles for the discovery of dislocations in metallic crystals by means of selective etching.

Also heard at the conference were survey reports on international conferences. K. M. Gerasimov characterized in detail the main problems discussed at the Conference on Epitaxy

and Growth of Crystals, held in Zurich. A. P. Zvyagin
told about the principal new methodical developments reported
at the Seventh International Congress of Electron Microscopy.
The Third Conference on Physicochemical Problems of
Crystallization is to be held in the fall of 1971 in Moscow.

USSR

UDC 546.20-162

DERYAGIN, B. V., and FEDOSEYEV, D. V., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"Epitaxial Diamond Synthesis in the Metastable Region"

Moscow, Uspekhi Khimii, Vol 39, No 9, Sep 70, pp 1661-1671

Abstract: The article describes a new direction in the field of diamond synthesis based on the influence of the surface forces of the diamond seed crystal on the process of carbon segregation on its surface. Epitaxial synthesis proceeds from carbon-containing gases or from carbon solutions in molten metals. A survey is given of foreign publications and patents (W. G. EVERSOLE, D. A. BRINKMAN et al.), as well as the work of Soviet scientists (YU. A. LITVIN and V. P. BUTUZOV), devoted to the epitaxial synthesis of diamond in the region of its metastable stability from 10^{-3} mm Hg to 1000 atm. A description is given of the synthesis of diamond whiskers at low pressures by the authors in conjunction with V. M. LUK'YANOVICH, B. V. SPITSYN, V. A. RYABOV, A. V. LAVRENT'YEV and L. L. BUYLOV. Experiments were staged on a radiation heating ap-

1/2

USSR

DERYAGIN, B. V., and FEDOSEYEV, D. V., Uspekhi Khimii, Vol 39, No 9, Sep 70, pp 1661-1671

paratus based on a DKSR-6000 superhigh-pressure xenon lamp. The single seed crystal was secured by rhenium needle holders and placed in the focal spot of the apparatus. The single-crystal character of the diamond whiskers was established by an electron microdiffraction study. Special experiments were performed on the growth of diamond single-crystal whiskers under molten drops of metals by the VLS method. The results indicate that the VLS method is a possible (but not the only) method for diamond crystal growth. The authors also observed the transformation of a diamond whisker into an isometric diamond crystal with an average diameter of 0.1 mm and poorly pronounced faces. An X-ray microdiffraction study of this crystal by V. G. LYUTSAU showed it to be a single crystal. The article includes a photograph of an isometric crystal 20 microns in diameter, taken with a scanning electron microscope in the laboratory of V. G. SPIVAK at Moscow State University.

V. P. VARNIN took part in some of the calculations.

2/2

- 89 -

USSR

UDC 536.46:533.6

VARSHAVSKIY, G. A., FEDOSEYEV, D. V., FRANK-KAMENETSKIY, A. D.

"A Quasi-steady Theory of the Ignition of Drop of Liquid Fuel"

Kiev, Fizika Aerodispersnykh Sistem -- Sbornik (The Physics of Aerially Dispersed Systems -- Collection of Works), Kiev University, No 1, 1969, pp 101-107 (from Referativnyy Zhurnal, Mekhanika, No 7, 1970, Abstract 7D949 By V. M. Gremyachkin)

Translation: The problem of the ignition of a drop of liquid fuel is solved under the assumption that the fuel vapors do not burn up, that the time of thermal and concentration relaxation is infinitely small, that a likeness to excess-concentration and excess-temperature fields exists, and that the chemical reaction is bimolecular. As a result of solving this problem, approximate equations are obtained for the ignition lag time and for the ratio of the ignition radius to the radius of the drop. Adopted here as the ignition point was a point at which there was a local maximum of chemical reaction rate and at which the fuel-oxidizer ratio was stoichiometric. The results obtained by the analytic method are compared with the results obtained by means of numerical integration of the unsteady equations of thermal conductivity and diffusion on an electronic computer.

1/1

Acc. Nr:

A70048312

Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code:

4R 0020

03956r Auto-epitaxial synthesis of diamond crystals. Deryagin, B. V.; Lyuttsau, V. G.; Fedosey, D. V.; Ryabov, V. A. (Inst. Fiz. Khim., Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970, 190 (1), 86-7 [Tech Phys] (Russ). By using the method described by Deryagin, *et al.* (1968), a ~80 μ diam, and 120 μ long diamond crystal was grown on the (111) lattice of a support crystal. HMJR

13VX

1/1

REEL/FRA
19800014

18

Graphite

USSR

UDC 661.009.2

GORODETSKIY, A. YE., LUK"YANOVICH, V. K., and FEDOSEYEV, D. V.

"Controlled Growth of Graphite From a Carbon Solution in Liquid Iron"

Moscow, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 3-5

Abstract: An investigation was made of the possibility of controlled growth of graphite on a graphite substrate from eutectic or hypereutectic solutions of carbon in liquid iron. The phase diagram of the iron-carbon system has been studied previously. When the eutectic melt hardens, a stable iron-graphite eutectic (slow cooling) or a metastable iron-ferriite eutectic (fast cooling) can be formed. For the controlled growth of graphite from the solution, the method of melting with a temperature gradient used earlier to obtain semiconductor crystals, was used. In contrast to the ordinary method, in which the length of the fusion zone varies from several microns to tens of microns, in the investigated experiments the length of the fusion zone was increased to 2-4 mm. Increasing the length of the zone results in the process of convective mixing of the melt being superposed on the process of diffusion of the carbon atoms from the "hot" source to the "cold" substrate.

1/2

USSR

GORODETSKIY, A. YE., et al, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 3-5

In addition to growing large graphite formations, the authors also tried to obtain thin oriented layers of graphite. Electron-diffraction photographs of the pyrographite reflection and graphite films ~10 microns thick grown from solution are presented. A picture of a column of graphite grown on a substrate of spectrally pure graphite heated to 1,250°C is also presented. It is pointed out that the graphite obtained is comparable, with regard to crystal perfection, to natural graphite from the Tayga deposit.

2/2

- 37 -

1/2 031 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--CONTROLLED GROWTH OF GRAPHITE FROM A CARBON SOLUTION IN MOLTEN IRON
-U-
AUTHOR--(03)-GORODETSKIY, A.YE., LUKYANOVICH, V.M., FEDOSEYEV, D.V.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(1), 3-5
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--GRAPHITE, FERROUS LIQUID METAL, CRYSTALLIZATION, IRON
CARBONAL, CARBON, VACUUM TECHNIQUE/(U)VUPI VACUUM FACILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/0150 STEP NO--UR/0363/70/006/001/0003/0005
CIRC ACCESSION NO--AP0054949
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054949

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FEASIBILITY IS SHOWN OF CONTROLLED GROWTH OF GRAPHITE FROM C SOLN. IN MOLTEN FE. THE APP. FOR THE GROWING OF GRAPHITE FROM THE SOLN. WAS SELECTED ON THE BASIS OF THE VACUUM FACILITY VUP-1. ARMCO AND CARBONYL FE WERE USED AS THE MATERIAL OF THE MOLTEN ZONE. PRIOR TO THE EXPTS. THEY WERE ETCHED AND RINSED IN STEAM AND IN WATER, AS WELL AS IN ME SUB2 CO AND ALC., WHEREUPON THEY WERE ANNEALED, FE AT 1000-1100DEGREES, AND GRAPHITE AT 1500DEGREES. THE GRAPHITE OBTAINED IN THIS WAY IS COMPARABLE TO THE NATURAL GRAPHITE OF THE TAIGIN DEPOSITS RELATIVE TO ITS CRYST. PERFECTION. THIS HIGH DEGREE OF CRYST. PERFECTION OF THE GRAPHITE OBTAINED BY THIS METHOD IS PROBABLY ASSOC. WITH THE LOW VALUE OF THE INTERPHASE FREE ENERGY AT THE FE, GRAPHITE INTERFACE, AND ALSO BY THE HIGH MOBILITY OF THE C ATOMS AT THE INTERPHASE BOUNDARY.

UNCLASSIFIED

1/2 028

TITLE--AUTOCLAVE FOR OPERATING WITH HIGH PURITY GASES -U-
UNCLASSIFIED
PROCESSING DATE--23OCT70

AUTHOR--(04)-NIKIFOROV, V.P., MORGUNOV, A.V., SPITSYN, B.V., FEDOSEYEV,
D.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 535-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--AUTOCLAVE, VACUUM TECHNOLOGY, CHEMICAL PURITY, GAS PRESSURE

CONTROL MARKING--NO RESTRICTIONS'

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0440

STEP NO--UR/0076/70/044/002/0535/0537

ACCESSION NO--AP0121114

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 028

CIRC ACCESSION NO--AP0121114

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. AN AUTOCLAVE WITH A 100 ATM
PRESSURE RANGE AND VACUUM UP TO 1.10 PRIME NEGATIVE 4 TORR IS DESCRIBED.
A DIAGRAM IS GIVEN ON THE DEVICES USED FOR FEEDING GASES.

FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

FEDOSEYEV G.S.

Acc. Nr: AP0052454

Ref. Code: UR0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 2 , pp58-61

CHEMOTHERAPY OF PATIENTS WITH CHRONIC DESTRUCTIVE
PULMONARY TUBERCULOSIS IN OUT- AND IN-PATIENT CONDITIONS

G. S. Fedoseyev , M. S. Dvoyrin, and A. L. Karlova (Kiev)

The problem is discussed of improving chemotherapy of patients with chronic destructive pulmonary tuberculosis in out-patient and in-patient conditions of treatment.

//

tdh 2

REEL/FRAME
19821088

USSR

UDC 621.378.35

BOGDANKEVICH, O. V., ZVEREV, M. M., MESTVIRISHVILI, A. N., NASTEOV, A. S.,
PECHENOV, A. N., SVINENKOV, A. I., FIDOSEYEV, K. P.

"A High-Power Semiconductor Laser With Electron-Beam Pumping"

Moscow, Kvantovaya Elektronika, No 2, 1971, pp 92-93

Abstract: Multiple-element structures of gallium arsenide and cadmium sulfide are studied for the purpose of increasing the power of a semiconductor laser with electron-beam pumping. An emission power of 1.5 MW is achieved when a gallium arsenide semiconductor laser is stimulated by a beam of 300 keV electrons at 300 A. Two figures, bibliography of five titles.

1/1

Lasers/Masers

5

USSR

UDC 621.373:530.145.6

BOGDANKEVICH, O. V., ZVEREV, M. M., MESTVIRISHVILI, A. N., NACIBOV, A. S., PECHENOV, A. N., SVINENKOV, A. I., FEDOSEYEV, K. P.

"A High-Power Semiconductor Maser With Electron Beam Pumping"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 2, Moscow, 1971, pp 92-93 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D113)

Translation: To increase the power of a semiconductor maser with electron beam pumping, the authors study multielement structures of gallium arsenide and cadmium sulfide. An emission power of 1.5 MW is achieved when a semiconductor maser on gallium arsenide is excited by an electron beam with an energy of 300 keV and a current of 300 A. Two illustrations, bibliography of five titles.

1/1

USSR

UDC 621.378.33

ZAKHAROV, YU.P., NIKITIN, V.V., FEDCSEYEV, K.P.

"Scanning Device Based On Injection Lasers"

Kvantovaya elektronika, Moscow, No 5, May 71, pp 101-102

Abstract: The feasibility is examined of creating a device for scanning the coherent emission of injection lasers with a potentiality for time and space control. The circuit of such a device was proposed and an operative model of it was prepared. The scanning device is a set of 10 lasers prepared from one single crystal of gallium arsenide. An autonomous inject pulse from a 10-channel power supply was fed to the p-region of each laser diode. Scanning is accomplished because of the delay of the injection pulses among themselves and the successive feeding of them to the straightedge of the lasers. The circuit of the pulse generator and an oscillogram of the emission are presented. The author thanks I.M. Divil'kovskiy's group for assistance in the work. Received by editors, 12 Feb 71; after revision, 12 Apr 71. 2 fig. 1 ref.

1/1

- 92 -

USSR

UDC 535.8:535.214.4

FEDOSEYEV, L. I., KULIKOV, YU. YU.

"Superheterodyne Millimeter and Submillimeter Wave Radiometers"

Moscow, Radiotekhnika i Elektronika, Vol XVI, No 4, 1971, pp 554-560

Abstract: This article contains an investigation of some possibilities of using interferometers in superheterodyne superhigh-intermediate frequency radiometers. In these radiometers, the interferometer plays the role of a directional coupler and a special device for suppressing stray modulation. Mach-Zehnder interferometers and incorporation of them in radiometers, modulation and measurement of the derivative spectrum, and the structural features and parameters of 1.1-1.6 mm and 0.8-1.0 mm radiometers are discussed. It is noted that a 1.1-1.6 mm radiometer without additional devices for stray signal separation has operated for about a year under field conditions of investigation of the radio wavelength emission of the Earth's atmosphere, the sun and the moon.

1/1

- 37 -

USSR

UDC: 534.014

SANSAYEV, YU. A. and FEDOSEYEV, N. M.

"Particulars Associated With the Vibration of Turbine Units With High-Speed Integrated Bearings"

V sb. Vibroizolyatsiya mashin i vibrozashchita cheloveka-operatora (Vibration Insulation of Machines and Vibration-Protection of the Human Operator -- collection of works), Moscow, "Nauka", 1973, pp 120-126 (from RZh-Turbostroveniye, No 5, 1973, Abstract No 5.49.128)

Translation: It is proposed that turbine machines be designed with integrated bearings. Methods are indicated for determining the elasticity characteristics of integrated bearings along with the selection of critical turbine rotor speeds while taking into consideration the elastic pliability of ball bearing supports. The problem associated with decreasing the magnitude of initial rotor disbalance is considered. The results presented make it possible to systematize the basic reasons responsible for the vibration of turbine machines with integrated bearings and to determine the frequency spectra of these vibrations. Original article: 4 illus., 10 bibl. entries.

1/1

AA0052381

Fedoseyev, R. Yu.

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 1-70

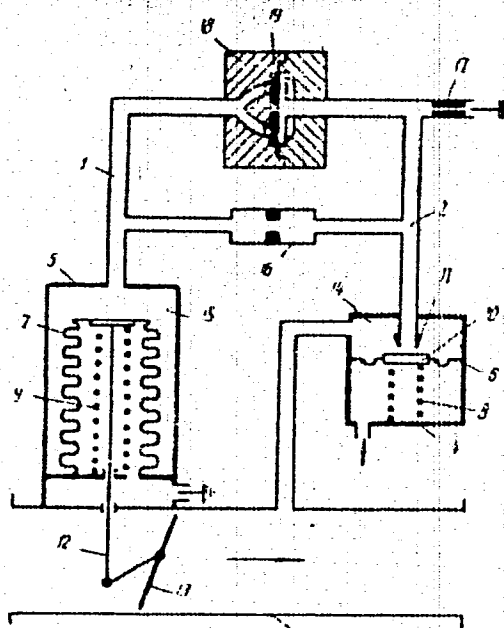
243291 PRESSURE REGULATOR for improved control of air conditioning systems on planes has been designed. The basic drawback of the presently used regulator is that the rate of growth of pressure in the operating mechanism is higher than the drop of pressure and this difference influences the stability of the device. Briefly, the regulator consists of pipes 1, 2 and 3, master device 4 and operating mechanism 5, containing a membrane 6, bellows 7, springs 8 and 9, centre 10, serving as shutter to nozzle 11, counter-weight 12, attached indirectly to the shutter 13 and chambers 14 and 15 and reducing valves 16 and 17, pneumatic diode 18 with valve 19.

9.2.68 as 1216835/40-23.G.I.VORONIN et al.(12.9.69)
Bul 16/5.5.69. Class 42q. 61a. Int.Cl.C 05d, B 64d.

114
19820972

AA0052381

Voronin, G. I.;
Ruskov, Yu. P.;
Fedoseyev, R. Yu.



2/2

19820973

mp

USSR

UDC 536.46:533.6

GLUSHKOV, V. Ye., SELIVANOV, S. Ye., FEDOSEYEV, V. A., TODES, O. M.

"Thermal Combustion of Metal Particles"

V sb. Fiz. aerodispersn. sistem. Vyp. 5 (Physics of Aerodisperse Systems. No. 5 -- Collection of Works), Kiev, Kiev University, 1971, pp 65-71 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B893)

Translation: The period of induction is obtained in implicit form as a function of the temperature of the medium T , particle size d and the functional relationships $t_i(d)$, $T = \text{const}$, and $t_i(T)$, $d = \text{const}$ are analyzed. The relationship $t_i(d)$ in explicit form shows that as $d \rightarrow d_0$, where d_0 is the minimum dimension of the particles for which the particles still ignite, $t_i \rightarrow \infty$ and for a sufficiently large d increases in proportion to d . That particle dimension d^* is found for which the period of induction reaches the minimum value. It was found that $d^* = 1.5 d_0$. It follows from the relationships found for $t_i(T)$ that t_i increases monotonically with a decrease in T and tends toward infinity as $T \rightarrow T_0$ (combustion temperature). The dependence of "conventional" combustion temperatures for finite periods of induction on particle size was investigated. Authors abstract.

1/1

1/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70
 TITLE--EFFECT OF COPPER ON THE FERMENTATIVE CONVERSION OF MOLASSES TO
 CITRIC ACID -U-
 AUTHOR--(05)-FEDOSEYEV, V.F., ALEKSEYEV, I.N., KORUTCHENKO, A.V.,
 KULBASNIKOVA, A.N., SVIRIDOVA, T.V. F
 COUNTRY OF INFO--USSR

SOURCE--KHLBCEPEK. KUNDTER. FROM. 1970, 14(1), 33-5
 DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS--SUCROSE, FERMENTATION, ASPERGILLUS, CITRIC ACID, COPPER
 SULFATE

CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--3004/0639 STEP NO--UR/0344/70/014/001/0033/0035
 CIRC ACCESSION NO--AP0131244
 UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 CC9

CIRC ACCESSION NO--A0131244

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. LAB. EXPTS., VERIFIED AT THE INDUSTRIAL SCALE, REVEALED THAT ADDN. OF CUSO SUB4 AT CONCNS. CORRESPONDING TO 4-7 MG-100 G MOLASSES RESULTED IN BETTER FERMENTATIVE CONVERSION OF THE LATTER TO CITRIC ACID (4-23PERCENT HIGHER YIELDS) BY ASPERGILLUS NIGER (SURFACE CULTURE).

UNCLASSIFIED

USSR

UDC 669.046.5

ANSHELES, I. I., ~~FEDOSEYEV, V. V.~~, OYSK, G. N., YEGOROV, A. V., SOROKIN, S. P., TYURIN, Ye. I., DANILIN, V. I., SELIVANOV, V. M., SIVKOV, S. S., ZYRYANOV, Yu. Ye., and BALDAYEV, B. Ya.

"Use of Electromagnetic Stirring in Vacuum Melting of Steel in a Ladle"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS), (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 222-227

Translation of Abstract: Brief technical characteristics are given of the electromagnetic stirring of steel in a ladle. Data are presented on the effect of electromagnetic metal stirring on the uniform distribution of added deoxidizers and alloying elements, and also on the significant increase in the duration of vacuum smelting. A new production technology for the ShKh15 steel is presented in which complete deoxidation and alloying is conducted in the ladle at the end of vacuum smelting. The suggested method is theoretically substantiated. The results of the first experimental melts are presented. 3 tables.

1/1

- 39 -

Acc. Nr:

AT0102945

Abstracting Service:
CHEMICAL ABST. 6-70

Ref. Code:
URD148

114174b Thermodynamic bases for controlling the deoxidizing capacity of carbon during in vacuo alloying of steel. ~~Edo-seev, V. V.; Zyryanov, Yu. E.; Ansheles, I. I.; Oikis, G. N. (Mosk. Inst. Stali Solavov, Moscow, USSR). Izv. Vyssh. Ucheb. Zaved., Chern. Met. 1970, 13(1), 43-7 (Russ).~~ It was shown exptl. that electromagnetic mixing provided thorough homogenization of the added metals, which increased the time of the vacuum treatment of the steel, utilized more completely the deoxidizing capacity of C, and shortened the time the steel was under vacuum. The thermodynamic anal. of the overall reaction for the oxidn. of C and Cr during the melting of the steel in vacuo is given for various alloys (1% C, 1, 5% Cr-steel ShKh15; 0.3% C, 1% Cr-steel 30KhGSA and other Fe-C-O and Fe-C-O-Cr systems). The equil. capacity of the O in dependence upon the temp. and CO partial pressure is given. It follows from the results that it is better to change the present technol. of steel alloying.

J. Stejskal J. MC

1
1

18

REEL / FRAME
19861011

USSR

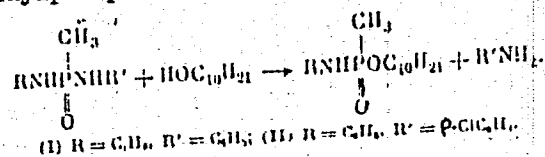
UDC 547.26'118

ZAVLIN, P. M., FEDOSEYEVA, A. S., DUDYAK, N. K., and STUL'NIKOVA, N. A.,
Leningrad Institute of Motion Picture Engineers

"Nucleophilic Substitution in the Presence of Unsymmetric Diamides of
Methylphosphonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 10, 1972, p 2347

Abstract: Heating of the N-butyl-N'-phenyldiamide (I) and the N-phenyl-N'-
-p-chlorophenyldiamide (II) of methylphosphonic acid with decyl alcohol at
220-260°C yielded aniline (I) and p-chloraniline, and the corresponding
amidoester of methylphosphonic acid according to



The reaction of (I) with decyl alcohol yielded aniline (n_D^{20} 1.5840) and the
1/2

USSR

ZAVLIN, P. M., et al., Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 10, 1972,
p 2347

butylamide of decyl methylphosphonate, b.p. 235°C (8 mm), n_D^{20} 1.5080. The
reaction of (II) with decyl alcohol yielded p-chloraniline, b.p. 70°C, and
the decyl ester anilide of methylphosphonic acid, b. p. 189°C (3 mm). The
structure of the initial and end products was verified by IR spectra.

2/2

- 20 -

USSR

UDC 547.241

ZAVLIN, P. M., ZAMORA, V. A., and FEDOSEYEVA, A. S., Leningrad Institute of Cinema Engineers

"Thermal Conversion of Unsymmetric Amides of Methylphosphonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 2, Feb 71, p 481

Abstract: Investigation of the thermal conversion of unsymmetric amides of methylphosphonic acid showed that a thermal dissociation of the P-N bond takes place with elimination of the group which partakes to a lesser degree in the $P-d_{\pi}$ conjugation with vacant d-orbitals of the phosphorus. Heating N-butyl-N'-phenylamide and N-benzyl-N'-phenylamide of phenylphosphonic acid to 250-280° yields aniline and a corresponding phosphorus-containing cyclic diimide. N-p-Chlorophenyl-N'-phenyldiamide of methylphosphonic acid yields p-chloroaniline under similar conditions.

1/1

USSR

UDC 536.46:533.6

SALAMANDRA, G. D., VENTSEL', N. M., FEDOSEYEVA, I. K.

"Measurement of Gas Velocity in the Combustion of Highly Combustible Gas Mixtures in Tubes"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 370-373 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B953)

Translation: The rate of a fresh mixture ahead of the combustion front in a tube of square cross section with glass windows was measured. The thermal heterogeneities produced with the aid of nichrome shelves of diameter 0.3 mm were used as a measure. High-speed photography of the Tepler picture of the gas flow was conducted. In preliminary experiments (where the gas was conducted in the motion of a shock wave) a discharge energy was selected under which the difference between the calculated and measured velocity of the gas did not exceed 1-2%. The accuracy of the measurement is higher as the density of the measure differs less from the density of the surrounding medium. The energy of the discharge should therefore be not too great (but not too small since otherwise the time over the course of which one must conduct the measurement will be insufficient).

1/2

USSR

SALAMANDRA, G. D., et al, Gorennye i vzryv, Moscow, "Nauka", 1972, pp 370-373

Graphs show the profiles of the gas velocity ahead of the combustion front (moving with variable acceleration) in a stoichiometric hydrogen-oxygen mixture at different points of time (in the interval 0.1-0.45 msec). The motion of the gas ahead of the flame front is described by a simple wave. In measuring the rate of motion of the combustion products, thermal measures were produced with the aid of a high-frequency spark discharge. Also measured was the velocity w of the contact discharge upon detonation of a stoichiometric methane-oxygen mixture in a tube of square cross section 20×20 mm. The experimental value w was approximately 16% lower than the calculated value. It is proposed that this difference is associated with losses to friction and heat transfer to the wall. N. N. Bakhman.

2/2

- 120 -

1/2 009 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--LEAD SULFIDE LEAD IODIDE SYSTEM -U-
AUTHOR-(04)-NOVOSELOVA, A.V., ODIN, I.N., FEDOSEYEVA, I.N., POPOVKIN, B.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(1), 135-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--LEAD SULFIDE, IODIDE, EUTECTIC, TELLURIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/0846 STEP NO--UR/0363/70/006/001/0135/0137
CIRC ACCESSION NO--AP0114022
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118022

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE M.P. DIAGRAM OF THE PBS-PBI SUB2 SYSTEM WAS CONSTRUCTED FROM HEATING CURVES FOR ANNEALED SAMPLES. THE TEMPS. OF THE EFFECTS IN THE SYSTEM, AS OBTAINED FROM THE HEATING AND THE COOLING CURVES PRACTICALLY COINCIDE. THE EUTECTIC POINT OCCURS AT 17 MOLE PERCENT PBS. ONLY THE SYSTEM CONTG. 40 MOLE PERCENT PBS IS SINGLE PHASE, THE REMAINING SYSTEMS BEING 2 PHASE. THE COMPD. IN THE SYSTEM, MELTING INCONGRUENTLY AT 415DEGREES, HAS THE FORMULA 2PBS.3PBI SUB2. IN ADDN. TO THE LINES OF THIS COMPD., THE 2H PBI SUB2 LINES WERE ALSO PRESENT ON X RAY DIFFRACTION PATTERNS OF SAMPLES OF COMPS. OF 5 AND 25 MOLE PRECENT PBS. THE FORMATION OF THE POLYTYPIC FORM 6R PBI SUB2 DURING THE CRYSTN. OF THE EUTECTICS IN THE PBS-PBI SUB2 AND PBT-PBI SUB2 SYSTEMS IS PROBABLY ASSOCD. WITH THE SIMULTANEOUS CRYSTN. OF PB CHALCOGENIDE, WHICH STABILIZES THIS FORM. IN THE PBS-PBI SUB2 SYSTEM THE EUTECTIC IS FORMED BY LEAD IODIDE AND THE COMPU. 2PBS.3-PBI SUB2. THE SOLY. OF PBI SUB2 IN SOLID PBS AT 415DEGREES WAS ALSO DETD. BY THE METHODS USED, CONSTITUTES 0.8 PLUS OR MINUS 0.3 MOLE PERCENT PBI SUB2.

FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA. MOSCOW, USSR.

ABSTRACT

1/2 026 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--POLYMERIZATION OF CYCLOSILOXANES BY BASES IN THE PRESENCE OF
ACTIVATORS -U-
AUTHOR-(03)-YUZHELEVSKIY, YU.A., KAGAN, YE.G., FEDOSEYEVA, N.N.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(3), 647-50 (CHEM TECHNOL)
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLYMERIZATION RATE, CYCLIC GROUP, SILOXANE, FLUORINATED
ORGANIC COMPOUND, ETHER, DIOXANE, NITROBENZENE, HETEROCYCLIC
OXYGEN COMPOUND, CHEMICAL REACTION MECHANISM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/1577 STEP NO--UR/0020/70/190/003/0647/0650
CIPC ACCESSION NO--AT0100195

2/2 026

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0100195

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ABSENCE OF ACTIVATORS THE POLYMN. OF 1,3,5-TRIMETHYL-1,3,5-TRIS(3,3,3-TRIFLUOROPROPYL) CYCLOTTRISILOXANE IS FIRST ORDER IN MONOMER AND 0.5 ORDER WITH RESPECT TO THE CATALYST (NA SILOXANEDIOLATE, I). IN THE PRESENCE OF APROTIC ACTIVATORS AND 0.002M I THE RELATIVE REACTION RATES (K-K SUBO) INCREASE (ACTIVATOR, ACTIVATOR CONC. (M), POLYMN. TEMP., AND K-K SUBO GIVEN): BU SUB2 O, 0.1, 110DEGREES, 1.2; P-DIOXANE, 0.1, 110DEGREES, 1.2; PHNO SUB2, 0.1, 40DEGREES, 2.1; ET SUB3 N, 0.1, 110DEGREES, 2.5; TETRAHYDROPYRAN, 0.1, 40DEGREES, 5.1; TETRAHYDROFURAN, 0.1, 40DEGREES, 10.5; MECN, 0.1, 40DEGREES, 34.0; BETA-CYANOETHYLHEPTAMETHYLCYCLOTETRASILOXANE, 0.1, 40DEGREES, 35.0; ET SUB2 CO, 0.1, 40DEGREES, 80; ME SUB2 CO, 0.1, 40DEGREES, 95; ETCOME, 0.1, 40DEGREES, 100; MECOPR, 0.1, 40DEGREES, 106; HCONME, 0.01, 30DEGREES, 150; ME SUB2 SO, 0.01, 30DEGREES, 155; BU SUB3 PO SUB4, 0.01, 40DEGREES, 300; MECCH SUB2 CH SUB2 OME, 0.001, 30DEGREES, 4.0; (ETO CH SUB2 CH SUB2) SUB2 O, 0.001, 30DEGREES, 14.0; (MECH SUB2 CH SUB2) SUB2 O, 0.001, 30DEGREES, 28.0; POINME SUB2) SUB3, 0.001, 30DEGREES, 28.0. IN THE PRESENCE OF ACTIVATORS THE POLYMN. IS FIRST ORDER WITH RESPECT TO I AT CONST. (ACTIVATOR)-(I) RATIO. AT CONST. ACTIVATOR CONC., THE RATE CONST. PASSES THROUGH A MAX. WITH INCREASING (I). A MECHANISM IS PROPOSED.

1/2 008 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--REACTION OF CYCLIC TRISULFIDES WITH SODIUM CYANIDE -U-
AUTHOR--(02)-~~FEDOSEYEVA~~, V.N., PETRUNKIN, V.YE. F
COUNTRY OF INFO--USSR
SOURCE--UKR. KHIM. ZH. 1970, 36,(2), 181-3.
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLAROGRAPH ANALYSIS, CYANIDE, HETEROCYCLIC SULFUR COMPOUND,
ORGANOSODIUM COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2220 STEP NO--UR/0073/70/036/002/0181/0183
CIRC ACCESSION NO--AP0125799
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125799

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. S(SCH SUB2 CH SUB2 SO SUB3 NA)
SUB2 AND NACH FORMED NACNS AND (SCH SUB2 CH SUB2 SO SUB3 NA)2, M.
275-60DEGREES (BENZYLTHIURONIUM SALT M. 97DEGREES), ALSO FORMED FROM NA
SUB2 S SUB2 AND CLCH SUB2 CH SUB2 SO SUB3 NA. I AND NACH YIELDED THE
FOLLOWING II (R, M.P., AND M.P. OF BENZYLTHIURONIUM SALT GIVEN): SO
SUB3 NA, 254DEGREES, 92DEGREES; OCH SUB2 CH SUB2 SO SUB3 NA, 250DEGREES,
58DEGREES; SCH SUB2 CH SUB2 SO SUB3 NA, 240DEGREES, 69DEGREES.
POLAROGRAPHIC HALF WAVE POTENTIALS OF II WERE COMPARED WITH THOSE OF THE
PRODUCTS OF OXIDN. OF CH SUB2 SHCHSHCH SUB2 R. FACILITY: KIEV.
NAUCH., ISSLED. INST. FARMAKOL. TOLSIKOL., KIEV, USSR.

UNCLASSIFIED

USSR

UDC 541.13 + 621-35

FEDOSEYEVA, T. A., and VAGRAMYAN, A. T.

"Electrodeposition of Iron-Nickel Alloy and Calculation of Its Composition"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 2, 1971, pp 396-399

Abstract: Previous studies by the authors on the effect of electrolysis parameters in the electrodeposition of iron-nickel alloy (current density, pH, concentration, temperature) showed that the alloy composition is most affected by the electrolyte temperature, viz. at low temperatures the alloy is enriched with iron, at high temperatures with nickel. Such behavior of these metals during simultaneous discharge was attributed to continuous passivation of the electrode surface during electrolysis as a result of adsorption of foreign particles. A method was suggested for approximate calculation of alloy composition which takes the surface state of the electrode into consideration. Calculations of the

1/3

- 81 -

USSR

FEDOSEYEVA, T. A., and VAGRAMYAN, A. T., Doklady Akademii Nauk SSSR, Vol 196, No 2, 1971, pp 396-399

dependence of alloy composition on electrolysis parameters were compared with experimental data. The previous studies concerned regularities of the simultaneous discharge of iron and nickel ions from concentrated solutions. The present article derives the equation

$$i_2 = i / (i / i_{lp_2} + 1 + K\Phi)$$

$$K = i_{10}a_1 / a_{20}a_2 = \text{const} \quad \text{and} \quad \Phi = F(\gamma) / (\Psi)$$

(where i_{lp_2} is the limiting current of the second component), which can be used to calculate the composition of alloys deposited from concentrated solutions and from electrolytes with a small

2/3

USSR

FEDOSEYEVA, T. A., and VAGRAMYAN, A. T., Doklady Akademii Nauk SSSR, Vol 196, No 2, 1971, pp 396-399

concentration of one of the components. Experimental results are compared with calculations for the case of electrodeposition of iron-nickel alloy from electrolytes with a small concentration of iron ions. The effect of current density and iron sulfate concentration of electrolyte on alloy composition was studied. The results indicate that in the determination of alloy composition the above equation can be used not only for concentrated solutions, but also for dilute solutions in a certain range of current densities. With increased current density, the current going into discharge of iron ions first increases, then reaches a constant value close to the limiting currents for the corresponding iron sulfate concentrations of the electrolyte. The suggested equation can be used to predict the dependence of alloy composition on electrolysis parameters.

The authors thank D. V. FEDOSEYEV for assisting in the calculations.

3/3

- 82 -

USSR

UDC 541.15+678.1

KUZ'MINSKIY, A. S., FEDOSEYEVA, T. S., and MAKHLIS, F. A.

"Radiation Vulcanization and Modification of Rubbers"

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. L. Mendeleev,
Vol 18, No 3, 1973, pp 285-293

Abstract: A review with 54 references analyzing contemporary state of the problem of practical utilization of ionizing radiation in rubber industry. A detailed analysis is carried out of the physico-chemical, technological and economical aspects of the problem. The feasibility and desirability of carrying out radiation modification of rubber materials by means of grafted polymerization of polyfunctional compounds from liquid phase have been demonstrated; optimal doses have been decreased and the properties of radiation vulcanizates have been improved.

1/1

- 72 -

USSR

UDC 545.46 + 621.375.325

BASOV, N.G., ZARITSKIY, A.R., ZAKHAROV, S.D., KRCKHIN, O.N., KRYUKOV, P.G.,
MATVEYETS, YU.A., SENATSKIY, YU.V., FEDOSIMOV, A.I.

"Achievement Of Powerful Light Pulses At 1.06 And 0.55 Micron Wavelengths And
Their Use For Plasma Heating. I. Experimental Study Of The Processes Of Radiat-
ion Reflection During Laser Heating Of Plasma At Two Wavelengths"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), 1972, pp 65-71

Abstract: The experimental results are presented of calorimetric, temporal, spectral and polarization measurements of radiation reflected back from plasma which is heated by nanosecond laser pulses with a wavelength of 1.06 and 0.55 micron with fluxes at targets of various materials exceeding 10^{14} watt/cm². The results discussed represent the first attempt to study laser heating of plasma which is produced at solid targets in the green region of the spectrum. It is found that plasma absorption of the heating light at a 0.55 micron wavelength is three times greater than at a 1.06 micron wavelength. The authors express their appreciation to V.B. Rozanov for discussion of the results of the work. 3 fig. 19 ref. Received by editors, 25 Oct 1971.

1/1

- 56 -

USSR

UDC 621.378.325 + 543.46

4

BASOV, N.G., ZARITSKIY, A.R., ZAKHAROV, S.D., KRYUKOV, P.G., MATVEYETS, YU.A.,
SENATSKIY, YU.V., FEDOSIMOV, A.I., CHEKALIN, S.V.

"Achievement Of Powerful Light Pulses At A Wavelength Of 1.06 And 0.53 Micron And Their Use For Plasma Heating. II--Nd-Glass Laser With Conversion Of Radiation To The Second Harmonic"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12), 1972, pp 50-55

Abstract: The construction is described and the characteristics presented of a multistage Nd-glass laser. The laser assembly consists of the following: 1) Active elements of CLS-1 neodymium glass, 700 mm long with ends cut at a Brewsterian angle; 2) Resonator mirror; 3) Cells with clearing absorber; 4) Aperture diaphragms; 5) Selectors of longitudinal types of oscillations in oscillator; 7) Lenses; and 8) Electrooptical gate with a laser discharger. A driving oscillator assembled according to the scheme of an oscillator with self-synchronization of modes serves as the source of short light pulses in the device. The length of the oscillator resonator, formed by two mirrors with reflection coefficients of 100 and 20 percent, amounts to 6 m. Cells with a nonlinear absorber -- a solution of No. 3999 dye in nitrobenzene -- were in contact with an opaque mirror. Two selectors of axial modes in the form of
1/2