

1/2 076 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CHARACTERISTICS OF P N JUNCTIONS IN PBTE -U-

AUTHOR--(05)-ZHEMCHUZHINA, YE.A., FIGUROVSKIY, YE.N., IVANOV, A.I.,
INOZEMTSEV, K.I., KIREYEV, P.S.
COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, NO. 3, 1970, PP
546-550
DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--PN JUNCTION, LEAD, TELLURIDE, SINGLE CRYSTAL, MANUFACTURING
METHOD, TEMPERATURE GRADIENT, ARGON, ATMOSPHERE, CRYSTAL GROWTH,
ELECTRON HOLE, VOLT AMPERE CHARACTERISTIC, JUNCTION DIODE, IR SENSOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605008/B12 STEP NO--UR/0109/70/015/003/0546/0550

CIRC ACCESSION NO--AP0139945
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139945

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALTHOUGH LEAD TELLURIDE HAS SOME INTERESTING PROPERTIES, ITS P N JUNCTIONS HAVE NOT BEE GIVEN ENOUGH ATTENTION. THIS ARTICLE CONSIDERS THE PROBLEMS IN THE WAY OF OBTAINING PBTE MONOCRYSTALS, THE MANUFACTURE OF THE P N JUNCTIONS AND THE INVESTIGATION OF SOME OF THEIR CHARACTERISTICS. PBTE IS MADE FROM 99.999PERCENT PURE LEAD AND TELLURIUM, BY WEIGHT, BY THE TEMPERATURE GRADIENT METHOD. THE OVEN IN WHICH THE COMPOUND IS SYNTHESIZED, AND ITS TEMPERATURE DISTRIBUTION WITH HEIGHT ARE SOWN IN A DIAGRAM. THE SYNTHESIS WAS MADE IN AN ATMOSPHERE OF SPECTRAL ARGON, AND THE OPERATING TEMPERATURE IN THE SYNTHESIS ZONE AND CRYSTAL GROWTH ZONE WAS MAINTAINED WITH AN ACCURACY OF PLUS OR MINUS 0.5PERCENT C. THE ELECTRON HOLE JUNCTIONS WERE MADE BY THREE METHODS: DIFFUSION OF THE LEAD; VAPORIZATION OF THE TELLURIUM; DIFFUSION OF INDIUM IN THE PBTE. DETAILS OF EACH OF THESE METHODS ARE GIVEN. THE VOLTAMPERE CHARACTERISTICS FOR VARIOUS DIODES, PLOTTED IN SEMILOGARITHMIC COORDINATES, ARE ALSO GIVEN. IT IS STATED THAT THE JUNCTIONS CAN BE USED FOR INFRARED RADIATION SENSORS, LASERS WITH A TUNABLE RADIATION SPECTRUM UNDER PRESSURE, AND SIMILAR DEVICES.

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1/2 C11 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--GAS ABUNDANCE OF MINE NO. 10 VELIKO-MOSTOVSKAYA -U-
AUTHOR-(04)-KLSHNIRUK, V.A., IVANOV, A.K., POPEL, B.S., KOTSKO, YA.N.
COUNTRY OF INFO--USSR I
SOURCE--DOPLV. AKAD. NAUK UKR. RSR, SER. B 1970, 32(2), 106-10
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS
TOPIC TAGS--MINING ENGINEERING, SAFETY ENGINEERING, METHANE, COAL, MINERAL
DEPOSIT, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605060/F04 STEP NO--UR/0442/70/032/002/0106/0110
CIRC ACCESSION NO--AT0144414
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0144414

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE AMT. AND COMPN. OF GASES WAS
DETD. IN VARIOUS COAL LAYERS OF TITLE DEPOSIT FROM 174 GAS SAMPLES TAKEN
FROMD RILL HCLES. THE CH SUB4 CONTENT IN GASES OF THE MINE WAS
EXCEPTIONALLY NONUNIFORM BOTH BY THE SECTION OF INDIVIDUAL LAYERS AND IN
THE ENTIRE AREA. FACILITY: INST. GEOL. GEOKHIM. GORYUCH.
KOPALIN, LVOV, USSR.

UNCLASSIFIED

USSR

UDC 771.537.61

PRUSS, P. Kh., Candidate of Sciences, MATSIYEVICH, L. V., IVANOV, A. M., MODEL', N. M., MUZYCHENKOV, M. S., and SKACHKOVA, Ye. V.

"The Interference Resolvometer 'LIR-1'"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 9, Sep 72, pp 30-34

Abstract: The technical characteristics, operating principle, and design of the first industrial sample of a displayed automatic device, the laser interference resolvometer LIR-1, are described by reference to its optical schema and photographs of the control desk and principal blocks. The resolvometer was developed according to the technical assignment of the State Optical Institute by the Krasnogorsk Mechanical Plant for the determination of resolutions of photographic materials in the $440\text{--}2960\text{ mm}^{-1}$ range. A laser of the LG-36A type ($\lambda = 6328\text{ \AA}$) is used as light source. The LIR-1 is a two-beam interferometer in which interference bands with sinusoidal distribution of brightness develop by interaction of two flat waves. It is designed for operation under laboratory conditions. Visual or diffraction methods can be used for the evaluation of exposed and processed resolvograms. Tests of a series of high-resolution photofilms yielded a value of the resolving ability which can be characterized as $R > 2700\text{ mm}^{-1}$, because all frequency groups up to the limiting, were reproduced. Values of R for high-resolution films are presented. Four illustr., one table, twelve biblio. refs.
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USSR

UDC 541.136

BARANOV, V. I., VDOVICHENKO, N. V., VLASOV, V. M., ~~IVANOV, A. M.~~, KUCHENIK, G. F., RUBASHOV, I. B., and TABAKMAN, L. S., Moscow

"Fuel Cells With ion Exchange Membranes. Development and Investigation"

Moscow, Elektrokimiya, Vol 8, No 5, May 72, pp 694-698

Abstract: Fuel cells are described based on cation exchange resin membranes washed free of unbound acid. The use of solid electrolyte imparts certain specific properties to all physical processes occurring in the fuel cells, such as localization of elementary physical acts responsible for current generation. Current generation on the surface of the membrane could not possibly produce the total generated power, so that the electrode inside the membrane must have been contributing substantially to current generation. Several assumptions are made concerning this problem, and a conclusion is reached that current is generated by a thin layer of a catalyst inside the membrane partially filled with water. Two methods are used for water removal from the electrode surface -- thermal and hydraulic -- to assure proper performance of the unit. Thermal method is more versatile but requires a more

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USSR

BARANOV, V. I., et al, Elektrokimiya, Vol 8, No 5, May 72, pp 694-698

complex equipment. The principal problem in this system concerns uniformity of the removal of water. Both types of current generators are described, pointing out the areas where development is still needed, mainly in synthesis of new materials for membranes.

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USSR

UDC 771.534.5:771.537:555.241.6

GOROKHOVSKIY, Yu. N., Doctor of Sciences, GRIGOR'YEV, A. G., IVANOV, A. M.,
STEPOCHKIN, A. A.

"New Sensitometric Devices"

Optiko Mekhanicheskaya Promyshlennost', No 3, 1972, pp 45-50.

Abstract: A review is presented of new devices for measurement of the properties of black-white and color photographic materials and evaluation of photographic images on these materials. The devices covered include the SR-21 recording densitometer, the SR-22 reflecting goniodensitometer, the SR-25 universal densitometer, the MD-2M recording microdensitometer, the PP-48 automatic projection granulometer and the RP-2M projection resolu-meter. Basic technical characteristics, structural diagrams and photographs are presented for all of these instruments.

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USSR

UDC: 535.853.673

GOROKHOVSKIY, Yu. N., Doctor of Sciences, GRIGOR'YEV, A. G., IVANOV, A. M.,
SOROKIN, V. P., STEPOCHKIN, A. A.

"A High-Sensitivity Recording Microdensitometer"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 11, Nov 70, pp 33-37

Abstract: The article is a description of the design and construction of an instrument developed by the authors -- the MD-2 high-sensitivity two-beam recording microdensitometer. The instrument is based on a compensation circuit with a single light source and a single photomultiplier as the receiver. The measuring element is a fixed gray scale placed in the same beam as the object to be measured. A diagram of the optical system is given as well as a block diagram of the densitometer as a whole. The machine output is a standard 275-mm chart recorder. The recording scale may be varied from 1:1 to 1:2000 in ten steps. The device can be used to measure optical densities up to 4.0 with a precision of ± 0.01 density unit on a field of 500 square microns or more. The authors thank A. P. Grammatin for calculating the optical system of the microdensitometer in his laboratory, and also A.A. Barentseva for her participation in testing the experimental model of the instrument.

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Titanium

USSR

UDC 669.295'28.3

REZNICHENKO, V. A., KOYNOV, S. G., MAKAROV, S. B., IVANOV, A. N., and ORLOVA, N. V., Moscow

"Study of the Process of Alloy Formation by the Joint Magnesiothermal Reduction of Titanium and Molybdenum Chlorides"

Moscow, Izvestiya Akademii Nauk SSSR Metally, No 1, Jan/Feb 74, pp 27-30

Abstract: Results are presented from studying the formation of alloys by the joint reduction of titanium and molybdenum chlorides and subsequent vacuum separation of the reaction masses. The phase composition of the reduction products was a mixture of alpha-titanium and two body-centered cubic, titanium- and molybdenum-base solid solutions and it was determined that the alpha-titanium is formed directly in the reduction process and not during the vacuum separation process at 850 to 1000° C. Extended soaking of the reaction masses at 800-850° C after reduction did not change phase composition of the produced metal. Evidently, particles of the b.c.c-solid solutions and alpha-Ti in the reaction mass were separated from each other by sublayers which hindered diffusion equalization of the concentration. After complete vacuum separation at 1000° C it was established that the main phase constituent is the b.c.c-solid solution which contains about 35% Mo in the titanium. One figure, two tables, one bibliographic references.

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1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT7
TITLE--DETERMINATION OF DIFFUSION PARAMETERS IN MOLYBDENUM-TANTALUM AND
TUNGSTEN-TANTALUM SYSTEMS -U-
AUTHOR-(03)-IVANOV, A.N., KRASILNIKOVA, G.B., MITIN, B.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 204-6

DATE PUBLISHED-----70

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

TOPIC TAGS--MOLYBDENUM ALLOY, TANTALUM ALLOY, TUNGSTEN ALLOY, REFRACTORY
METAL, METAL SINGLE CRYSTAL, METAL CASTING, METAL FORGING, METAL
DIFFUSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1545

STEP NO--UR/0126/70/029/001/0204/0206

CIRC ACCESSION NO--AP0120324

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT

CIRC ACCESSION NO--AP0120324

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. DEPENDENCE OF THE MUTUAL
DIFFUSION COEFF. OF W-TA WAS DETD. AT 2100-500DEGREES AND THAT OF MO-T/
AT 1900-2300DEGREES. THE SPECIMENS WERE SINGLE CRYSTAL W, CAST MO, AND
FORGED TA. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR:

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--REACTIVE MODULATION TYPE AMPLIFIER BASED ON A PARAMETRICALLY
EXCITED OSCILLATOR CIRCUIT -U-
AUTHOR--(02)-IVANOV, A.N., PETROV, A.S.
COUNTRY OF INFO--USSR
SOURCE--RADIOTEKHNIKA, VOL. 25, MAR. 1970, P. 79-84
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--AMPLITUDE MODULATION, PARAMETRIC OSCILLATOR, ELECTRONIC
AMPLIFIER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1080 STEP NO--UR/0108/70/025/000/0079/0084
CIRC ACCESSION NO--AP0118230
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A REACTIVE MODULATION TYPE AMPLIFIER (MODERN AMPLIFIER) WHOSE PRINCIPLE OF OPERATION IS BASED ON THE AMPLITUDE MODULATION OF OSCILLATIONS EXCITED PARAMETRICALLY IN THE CIRCUIT AT AN OSCILLATOR FREQUENCY TWICE THE RESONANT FREQUENCY OF THE CIRCUIT. IT IS SHOWN THAT THE MAXIMUM FREQUENCY RESPONSE OF SUCH A AMPLIFIER CAN BE SHIFTED TOWARD HIGHER FREQUENCIES BY CHANGING THE AMPLITUDE OF THE EXCITED OSCILLATIONS. CIRCUIT OPERATION IS ANALYZED BY SOLVING A DIFFERENTIAL EQUATION FOR A CIRCUIT WITH THE NONLINEAR CAPACITY OF A SEMICONDUCTOR DIODE. IT IS SHOWN THAT THE PASSBAND OF THE PROPOSED CIRCUIT IS TWICE AS WIDE AS IN ORDINARILY USED CIRCUITS.

USSR

UDC 535.36

IVANOV, A. P., PRISHIVALKO, A. P., and NAUMENKO, YE. K.

"Scattering of Light by a Layer with a Different Degree of Dispersion"

Leningrad, Optika i Spektroskopiya, Vol 35, No 5, Nov 73, pp 902 - 905

Abstract: The passage of light through a suspension of particles in a medium is determined by the number, size, and nature of the particles. The degree of dispersion of the light-scattering material is characterized by a parameter $\rho = 2\pi a/\lambda$, where a is the radius of the particle and λ is the wavelength of light. Coefficients of reflection and transmission for plane-parallel layers can be calculated from this relationship, using the dual flow approximation of transmission theory. It is found that reflection is maximum and transmission minimum when ρ is in the range of 1 to 5. Within this range, the extremal points are reached at lower values for higher thicknesses.

This calculation is based on adding the radiation flows, since it has been shown that interference effects do not appear in a majority of cases; polarization effects

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IVANOV, A. P., et al., Optika i Spektroskopiya, Vol 35, No 5, Nov 73, pp 902-905

are ignored. Mie formulas were the basis for computer calculations to determine the coefficients of absorption and scattering, the probability of photon survival, and the scattering index of an elementary volume as a function of ρ .

The maximum reflection does not coincide with the minimum transmission but is shifted somewhat in the direction of larger particles. Since the curves do not have sharp extrema, this is not very significant in solving many practical problems.

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15(5)

30V/19-59-2-330/509

AUTHORS: Semenido, Ye.G., Ivanov, A.P., and Kaverina N.I.
TITLE: A Method of Stabilizing Poly-Isobutylene and Its Solutions in Oils
PERIODICAL: Byulleten' izobreteniy, 1959, Nr 2, p 62 (USSR)
ABSTRACT: Class 23c, 2. Nr 117532 (424369 of 15 May 1950)
Submitted to the Gostekhnika USSR. The method consists of using the following stabilizing additives: no more than 3% of salts or esters of fatty naphthene and sulfonaphthene acids, thiophosphates, sulfurated oils, or their mixtures.

Card 1/1

85265

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A152/A029

9.6130

AUTHORS: Enenshteyn, B.S., Ivanov, A.P., Ivanov, M.A.

TITLE: A Station for Frequency Electromagnetic Probing 7

PERIODICAL: Byulleten' izobreteniy, 1960, No. 16, p. 29

TEXT: Class 21g. 30₀₃. No. 131001 (642488/22, October 28, 1959). 1. This station for frequency electromagnetic probing consists of a generating and a receiving set, the former switching on a d-c electric motor generator and a bridge thyatron inverter, and the latter a set of equipment for measuring the amplitudes and phases of the component of an electro-magnetic field at the reception point, transmission of the pedestal phases and frequency being effected with the aid of radio links. The station has the following special features: in order to improve the noiseproof feature of the measuring channel, it contains several selective filters with an adjustable pass band, connected into the various stages of the amplification channel, a bilateral amplitude clipper with an adjustable limiting threshold, and finally a cathode oscillograph for selecting the optimum pass band and limiting threshold. 2. A station as specified in the preceding point, with the following special feature: in order to increase

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S/019/60/000/016/045/134
A152/A029

A Station for Frequency Electromagnetic Probing

its measuring accuracy, it contains a loop oscillograph for continuously re-
cording the amplitude and phase of the measured signal during a certain inter-
val of time, which makes it possible to obtain the averaged data of the results
of the measurement. ✓

Card 2/2

Ivanov A.P.

25(2)

SOV/19-59-7-264/369

AUTHORS: Ivanov, A.P. and Yafayev, A.G.

TITLE: A Power Head for Combined Machine Tools

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 7, p 54 (USSR)

ABSTRACT: Class 49a, 40₀₁. Nr 119051 (610474 of 24 October 1958). 1) The spindle of the above head is rotated by means of a pneumatic device. The spindle feed is controlled by means of a hydropneumatic drive. A guiding dog is applied for governing reciprocating movement of the spindle. This enables an automatic drilling of long stepped holes. The above dog operates the sliding air valve, by intermediary of a rotating rod. The latter is provided with adjustable rests. The rests may be secured on the rod at various angles. This permits multiple operating of the air sliding valve. 2) To obtain an automatic turn of the rod for every double stroke of the spindle by the angular pace of the rests' displacement, a fixed drum is incorporated

Card 1/2

SOV/19-59-7-264/369

A Power Head for Combined Machine Tools

co-axially with the rod. It has a circular saw-shaped groove, in which a cog slides, connected with the rod shifted during the idle move of the air valve.

Card 2/2

SOV/19-56-6-136/685

AUTHOR: Ivanov, A. P.

TITLE: A Device for Automatically Lifting the Coultter and Closing the Shares of a Snowplough (Prisposobleniye dlya avtomaticheskogo pod'yema nozha i zakrytiya kryl'yev plugovogo snegoochistitelya)

PERIODICAL: Byulletin' izobreteniy, 1958, Nr 6, p 34 (USSR)

ABSTRACT: Class 20h, 1₉. Nr 113879 (587890 of 17 Dec 1957)

Submitted to the Committee for Inventions and Discoveries at the Ministers Council of USSR. A device as specified in the title, provided with a searcher lever with a cam which actuates the air-distribution mechanism of the pneumatic drive of a snow plough when it contacts a pick-up installed in the path of obstacle, and closes the shares and lifts the coultter of the plough.

Card 1/1

AUTHOR: Ivancv, A.F.

SOV-19-58-2-305/551

TITLE: A Continuous-Action Machine for Compacting Semi-Finished Felt (Mashina dlya uplotneniya voylochnogo polufabrikata nepreryvnogo deystviya)

PERIODICAL: Bulletin' izobreteniy, 1958, Nr 2, p 70 (USSR)

ABSTRACT: Class 41A, 2. Nr 111425 (574935 of 17 June 1957). Submitted to the Committee of Inventions and Discoveries at the Council of Ministers of USSR. A machine for the continuous compacting of semi-finished felt, working by two super-imposed endless belts. To step up the work efficiency, the belts are made in the form of chain conveyers with plates heated by semiconductor elements.

1. Textiles--Processing 2. Machines--Design 3. Heating elements--Materials 4. Semiconductors--Applications

Card 1/1

ACCESSION NR: AP4032906

S/0286/64/000/008/0037/0037

AUTHOR: Gintsberg, S. A.; Ivanov, A. P.; Griz, V. Ye.; Kuchinskiy, V. N.; Diner, I. S.; Levin, S. Z.

TITLE: Method of corrosion protection of ferrous and nonferrous metals. Class C 23f, 228 750, No. 161833 (725498/23-4, 6 Apr 1961)

SOURCE: Byulleten' izobretaniy i tovarnykh znakov, no. 8, 1964, 37

TOPIC TAGS: anti-corrosion, corrosion inhibitor, corrosion protection, 4-4'-diaminodicyclohexylmethane

ABSTRACT: A method of corrosion protection of ferrous and nonferrous metals by treating their surfaces with amine salts. The distinguishing feature is a widened assortment of protected metals. Alicyclic or aromatic derivatives of high molecular weight of methane containing not less than two aminogroups, for example 4-4'-diaminodicyclohexylmethane are used as the amine salts.

ASSOCIATION: None

Card 1/2

USSR

RAYEVSKIY, A. V., MANELIS, G. B., NADGORNYY, E. M., and IVANOV, A. P., Institute of Chemical Physics, Academy of Sciences USSR, Moscow, and Institute of Solid State Physics, Academy of Sciences USSR, Chernogolovka, Moscow Oblast

"Whisker Crystals of Ammonium Perchlorate. Their Mechanical Properties"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 157-159

Abstract: In earlier work by Rayevskiy, Manelis, etal (DAN SSSR, 151, No 4, 886, 1963; 160, No 5, 1136, 1965) the assumption was made that dislocations play a significant role in the thermal decomposition of orthorhombic crystals of NH_4ClO_4 . In the present work, whisker crystals of NH_4ClO_4 were grown by utilizing the capacity of moist NH_4ClO_4 to creep during crystallization. Into a layer of moist crystals of NH_4ClO_4 placed in a beaker the open end of a glass cylinder closed on top was inserted. On the outer surface of the cylinder lengthwise rough strips with a width of 5 mm were ground to facilitate creeping. Outside of the beaker an open glass cylinder was placed to produce a humidity gradient. The arrangement was kept for several days at room temperature in a chamber with a constant humidity. Whisker crystals grew on the outer surface of the closed cylinder. The whiskers had a circular cross section, a tubular $1/2$

USSR

RAYEVSKIY, A. V., et al., Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 157-159

shape, a wall thickness of 1.5-10 μ , and an outer radius up to several tens of microns. The length of the whiskers was ≈ 50 mm. The whisker crystals had a tensile strength up to a level above 13 kg/mm² vs. ~ 0.5 kg/mm² for ordinary NH₄ClO₄ crystals and a higher elastic deformation up to the fracture point ($\sim 0.2-1\%$) than that of the latter. The tensile strength decreased with an increasing wall thickness, but did not depend on the outer radius. X-Ray diffraction measurements carried out by Yu. A. Sokolov showed that the whiskers grew in the direction of the z axis. Whisker crystals with similar properties were grown from NH₄ClO₄ containing ~ 1 mole % K₂MnO₄. The mechanical properties of the whisker crystals indicated that they were practically free of dislocations. (Submitted by Academician N. N. Semenov, 31 Jul 72).

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USSR

UDC: 77.018

IVANOV, A. P. and LOYKO, V. A.

"Mathematical Analysis of the Characteristic Curve of Photolayer Blackening"

Minsk, Zhurnal Prikladnoy Spektroskopii, No 2, 1973, pp 300-304

Abstract: In an earlier paper published by the authors named above (Vestny AN BSSR, ser. fiz.-mat. nauk, No 5, 1971, p 113) the characteristic curve for blackening of photographic material was computed for two limiting situations, when the dimensions of the photo emulsion grains are much larger or much smaller than the wavelength of the incident light. The present paper presents an analysis of the effects of various factors on the characteristic curve for coarse-grained emulsions. In this theoretical analysis the authors begin with an equation, derived in the earlier article, for the directional optical density. The meaning of the parameters in the equation is given. The authors assert that a similar mathematical analysis can be used for fine-grained photolayers.

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USSR

UDC 621.373.826:550.3

IVANOV, A. P., KARGIN, B. A., KUZNETSOV, S. V., and SKRELIN, A. L.

"Propagation of Short Light Pulses in the Upper Layers of the Atmosphere"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 333-336 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10D353)

Translation: Results are given of an analysis, by the Monte-Carlo method, of the radiation of a laser scattered back by the upper layers of a nonuniform atmosphere. The material obtained was used to estimate the signal/noise ratio in the observation of distant objects. Bibliography of one. A. L.

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USSR

UDC 621.373.826:621.396

ZEGE, E. P., IVANOV, A. P., KATSEV, I. L., KARGIN, B. A.,
KUZNETSOV, S. V., and MIKHAYLOV, G. A.

"Some Problems of Optical Pulse Radar in Natural Dispersing
Formations"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.
(Tenth All-Union Conference on the Propagation of Radio Waves;
Report Theses--collection of works) "Nauka," 1972, pp 337-341 (from
RZh--Radiotekhnika, No 10, 1972, Abstract No 10D440)

Translation: A method is given for computing the signal/noise ratio
of an optical radar system combining receiver and transmitter,
under the condition that the signal is propagated in a medium char-
acterized by the probability λ of photon survival. With increasing
distance between the object and the transceiver, the signal/noise
ratio follows the law

$$\gamma \sim \sqrt{\tau} \exp -(\gamma - i + \lambda)\tau,$$

where τ is the distance between the object and the radar and γ is
the eigenvalue of the characteristic equation. Bibliography of
five. A. E.

USSR

UDC 621.383.292

POTAPOV, A. M., MELAMID, A. YE., IVANOV, A. P.

"Effect of Temperature on the Parameters of the FEU-86 Photomultiplier During Storage"

Moscow, Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 181-183

Abstract: The variations in the basic parameters of the FEU-86 photomultiplier during storage were measured. The measurement procedure and results are presented. At a temperature of +50° C the parameters become sharply worse. At a storage temperature of +40° C no sharp variations in the parameters are observed. The sharpest changes in the parameters of the photomultiplier take place in the first 50 to 100 hours of storage, and the greater these variations, the greater the variations will be at the end of the storage period.

Absence of correlations between the variations in noise and anode sensitivity and, primarily, between the light noise and the anode sensitivity seems unlikely inasmuch as the variation in noise must be proportional to the variation in amplification (anode sensitivity). This is explained by the variation in sensitivity of the photocathode during storage and the occurrence of additional noise not connected with the photocathode noise (optical and ion feedback). The first cause is excluded since the variation in photocathode sensitivity after the measurements was no more than 20%. The absence of the

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POTAPOV, A. M., et al., Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 181-183

correlation must be attributed to the occurrence of additional noise. The absence of the correlation does not permit regulation of the anode sensitivity in the automatic gain control systems by the dark or light noise of the photo-multiplier.

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USSR

UDC: 536.2/3

IVANOV, A. P."Nonstationary Heat Mode in Dispersive Media"Minsk, Zhurnal Prikladnoy Spektroskopii, No 4, 1972, pp 709-713

Abstract: The kinetics of thermal processes occurring in dispersive media is described by the equation

$$\frac{\partial T}{\partial t} = \kappa \nabla^2 T + \frac{q}{c\rho},$$

where T is the temperature, t is the time, κ is the coefficient of thermal conductivity, ∇^2 is the Laplace differential operator, q is the amount of heat derived from internal sources per unit volume of the medium per unit time, c is the specific heat capacity, and ρ is the density of the medium. Numerical computation methods increase the possibilities of investigating nonstationary thermal phenomena through this equation only if q is known in terms of the temperature and the characteristics of the medium. This article obtains simple expressions for q in a plane-parallel light-dispersive layer of particular thickness illuminated uniformly over its surface on one or two sides. For the sake of simplicity, the author begins his analysis by considering the layer as a gray $1/2$

USSR

UDC: 536.2/3

IVANOV, A. P., Zhurnal Prikladnoy Spektroskopii, No 4, 1972,
pp 709-713

body absorbing the radiation of any wavelength by the same amount as any other. He then considers some more characteristic cases in which the layer is considered to be a black body. His gratitude is expressed to S. M. Reprintseva and N. V. Fedorovich for initiating this research.

2/2

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USSR

UDC 77.01.011

IVANOV, A. P., LOYKO, V. A., Institute of Physics, Academy of Sciences BSSR

"The Quantum Sensitivity of Photographic Emulsion Grains"

Minsk, Doklady Akademii nauk BSSR, No. 4, Apr 72, pp 308-310

Abstract: An approach to making a quantitative analysis of the probability of the development of a grain and hence judging the sensitivity of a photographic grain is presented. The quantum sensitivity of a grain is defined as the minimum number of photons which must be absorbed in order to obtain the capacity for development, i.e., to form a center from n_{\min} silver atoms. It is noted that a development center consisting of a certain number of silver atoms n_{\min} must be formed in one of the sensitivity centers (a trap) of the photographic grain for the development of the grain. It is noted that when there is one trap there is no difficulty in finding the conditions for blackening of the grain but if there are several traps in the grain, a determination of the quantum sensitivity is complicated since competition for photon capture occurs between the centers, i.e., probability processes are present. Under these

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USSR

IVANOV, A. P., LOYKO, V. A., Doklady Akademii nauk BSSR, No. 4, Apr 72,
pp 306-310

conditions one can only speak of the probability of the development of a grain P which has absorbed some given number of quanta i . An analytical expression is derived for $P_N(i)$, where N is the number of identical traps in a grain.

Graphs are presented showing P_N as a function of i for $r_{\min} = 2$ and 4 and $N = 1, 4, 10, 20$ and 100 . The graphs show that the probability P reaches a value equal to unity more rapidly for smaller r_{\min} and N . The greatest values of the probability for the development of the grain are achieved for small i considerably different from small r . It is noted that the data obtained can be used for a quantitative analysis of the probability of the development of a grain as a function of factors determining the maturity of the emulsion and also can be used for judging the sensitivity of a photographic grain.

2/2

- 50 -

Optics and Spectroscopy

USSR

UDC 77.018

IVANOV, A. P., and LOYKO, V. A., Institute of Physics, Academy of Sciences
Belorussian SSR

"Mathematical Description of Characteristic Density Curve of Photographic
Layers"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No
5, 1971, pp 113-119

Abstract: Using methods of statistics and scattering theory, the authors derive an equation for the characteristic curve of a photolayer for polydispersed fine-grain and coarse-grain emulsions, permitting a detailed analysis of density as a function of exposure for various parameter values of the photosensitive material. The attenuation index of developed layers of unit thickness is determined for fine particles (Rayleigh scattering) and for coarse particles with the use of methods of geometrical optics. The directional optical density is calculated from the known distribution of light in the layer. It is shown that the most important parameters on which the shape of the characteristic curve depends are constants of the particle size distribution function, the

1/2

USSR

IVANOV, A. P., and LOYKO, V. A., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No 5, 1971, pp 113-119

optical density of the layer, the relation of the attenuation indices for maximally developed and undeveloped material, and the minimum quantum number necessary for the development of grain having one photoelectron trap.

2/2

USSR

UDC: 531.01

IVANOV, A. P.

"Manifestation of the Elastic Properties of Sand Particles Under Normal Conditions and in a Vacuum"

Probl. osvoyeniya pustyn' (Problems in Utilization of Deserts), 1970, No 6, pp 16-23 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7A118)

Translation: The author points out the inapplicability of using the concept of the coefficient of restitution of the normal component of velocity in studying a number of problems on the motion of solid particles of irregular shape with systematic collisions against some surface. It is proposed in the indicated cases that the square root of the ratio of the total mechanical energies of the particles following and preceding an impact be used instead of the coefficient of restitution. Formulas are given for evaluating this coefficient of energy loss and the time of impact in different situations. Bibliography of 14 titles. I. I. Blekhman.

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USSR

UDC 535.36

NAUMENKO, Ye. K., IVANOV, A. P., and PRISHIVALKO, A. P.

"Limits of Applicability of Small Particle Approximations in Calculations of Light Attenuation and Scattering Coefficients"

Minsk, Zhurnal Prikladnoy Spektroskopii, (Journal of Applied Spectroscopy), (Journal of Applied Spectroscopy), Vol. 13, No. 5, Nov. 1970, p 898-903.

Abstract: Comparisons are made of the errors resulting from the use of exact and approximation equations for light attenuation and scattering problems and the conditions under which the approximation equations yield acceptably accurate answers. An approximation equation for absorption gives attenuation coefficients within an error of 5% for all scattering spheres having a characteristic dimension of $\rho < 0.2$. For larger spheres, the equation applies only to limited regions of diffraction index and absorption index values. When the absorption index is < 0.01 , a more exact equation is recommended because the approximation equation yields Rayleigh scattering coefficients with errors exceeding 5%. When the absorption coefficient is between 0.1 and 0.2 and the refraction index is between 1.01 and 1.1, the approximation equation can be used even when $1 < \rho < 3$. An equation is given for calculating the Rayleigh scattering coefficient when $\rho < 0.4$ with an error not exceeding 2 to 5%. Orig. art. has 4 figs. and 2 refs.

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Optics and Spectroscopy

USSR

IVANOV, A. P.; SKRELIN, A. L.

"Determination of the Index of Atmospheric Attenuation by a Method of Non-stationary Dispersion"

Minsk, Zhurnal Prikladnoy Spektroskopii; December, 1970; pp 1053-8

ABSTRACT: Three methods of measuring the index of atmospheric attenuation by means of an analysis of the behavior of a nonstationary dispersion are presented. The first method is based on a comparison of oscillograms of reflected light under conditions of clean and dirty air.

The second method suggests the possibility of using, with the given geometry of the experiment, the equation $I(t) \sim t^{-2} \exp(-\epsilon ct)$: where $I(t)$ is the accepted signal, t is the time, ϵ is the index of attenuation, c is the speed of light. For various ϵ 's values of t are found beginning with which -- with relative errors of 0.1, 0.2, 0.5, and 1.0 -- the effect of t^{-2} on the measurement of the index of attenuation can be ignored. ϵ was experimentally measured by means of these methods. These data practically coincided with data obtained on a stationary transmissometer.

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USSR

IVANOV, A. P.; et al, Zhurnal Prikladnoy Spektroskopii; December, 1970;
pp 1053-8

With the third method it is possible, by a process of concentration or dispersion of a vapor, to record the instant at which the index of attenuation attains a given predetermined value. In this method it is suggested that 3 receivers be located at various distances from the radiator so that the variation with time of the amplitude of the signals received by them will be different. This method can, for example, be used to record the visibility at airports.

The article includes 4 figures. There are 11 references.

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USSR

BOYKO, P. B., IVANOV, A. D.

"Effect of Polarization Properties of External Radiation on the Energy Characteristics of Light Reflected by a Turbid Medium"

Minsk, Zhurnal Prikladnoy Spektroskopii, February 1970, pp 358-361

Abstract: The effect of polarization properties of external radiation on the coefficients of diffused reflection R and the brightness ρ of light scattered by a medium was studied experimentally.

A wide range of incidence and scattering angles for various probabilities of the survival of a photon from the reflected object, in this case a layer of Mark FS-6 glass powder, was considered.

Results of the experiment give evidence that a difference exists between values of the energy characteristics obtained in the illumination of a medium by light polarized in the incidence plane and perpendicular to it, such that in the latter case the values of R and ρ are higher, as a rule. Rotation of the electrical vector in the direction of the incident light beam was found

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USSR

BOYKO, P. B., IVANOV, A. P., Zhurnal Prikladnoy Spektroskopii, February 1970,
pp 358-361

to be stronger the greater the absorption of the medium and the steeper the
angle of incidence.

The data obtained can be used for the analysis of R and ρ in the radia-
tion of a medium by light having an arbitrary degree of polarization.

The article includes 2 illustrations. There are 6 references.

2/2

USSR

UDC 535.361

I
KHAYRULLINA, A. YA. and IVANOV, A. P.

"Study of Light Field Fluctuations in a Turbid Medium"

Leningrad, Optika i Spektroskopiya, Vol. 28, No. 3, Mar 70, pp 513-517

Abstract: Fluctuations in a light field produced by a system of chaotically moving particles illuminated by a spatially coherent radiation source is studied. The particles are subject only to Brownian motion. It is noted that the intensity of a light field developed by a system of scattering particles is ordinarily determined without considering phase relationships of the summable waves, since consideration of wave properties is not essential in very many practical problems. Careful examination indicates, however, that in illumination of a medium with radiation having a high degree of spatial coherence, the light field formed through interference of scattered waves will be nonuniform in space and time variable. The nature of this granular structure is caused by optical and geometrical parameters and the respective positions of scattering centers, and the frequency of light field fluctuations is determined by the mobility of particles of the turbid medium. The intensity of the radiation field in some fixed direction in liquid and gaseous media will therefore vary in time due to the

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USSR

KHAYRULLINA, A. YA. and IVANOV, A. P., *Optika i spektroskopiya*, Vol. 28, No. 3, Mar 70, pp 513-517

variability of the phase relationships of the secondary scattering waves. The effect of the concentration of scattering particles on the nature of fluctuations in the light field intensity is analyzed.

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5915
CSO: 1862

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1/2 009
TITLE--INDAN -U-

UNCLASSIFIED

PROCESSING DATE--02OCT70

AUTHOR--(03)-MIRONOV, V.A., IVANOV, A.P., AKHREM, A.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,591

REFERENCE--OTKRYTIYA, IZOBRET., PRJM. OBRATZSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, CHEMICAL SYNTHESIS, ISOMERIZATION, AROMATIC
HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0021

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0113021

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AA0113021
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INDAN IS PREPD. BY CATALYTIC
DEHYDROISOMERIZATION OF SPIRO(4,4)NONA,2,4,DIENE AT 250-400DEGREES.

UNCLASSIFIED

89

1/2 025 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STUDY OF LIGHT FIELD FLUCTUATIONS IN A TURBID MEDIUM -U-
AUTHOR--(02)-KHAYRULLINA, A.YA., IVANOV, A.P.
COUNTRY OF INFO--USSR
SOURCE--LENINGRAD, OPTIKA I SPEKTROSKOPIYA, VOL. 28, NO. 3, MAR 70, PP
513-517
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
TOPIC TAGS--BROWNIAN MOTION, PARTICLE SCATTER, COHERENT LIGHT, TURBIDITY

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1450 STEP NO--UR/0051/70/028/003/0513/0517
CIRC ACCESSION NO--AP0136777
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136777

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FLUCTUATIONS IN A LIGHT FIELD PRODUCED BY A SYSTEM OF CHAOTICALLY MOVING PARTICLES ILLUMINATED BY A SPATIALLY COHERENT RADIATION SOURCE IS STUDIED. THE PARTICLES ARE SUBJECT ONLY TO BROWNIAN MOTION. IT IS NOTED THAT THE INTENSITY OF A LIGHT FIELD DEVELOPED BY A SYSTEM OF SCATTERING PARTICLES IS ORDINARILY DETERMINED WITHOUT CONSIDERING PHASE RELATIONSHIPS OF THE SUMMABLE WAVES, SINCE CONSIDERATION OF WAVE PROPERTIES IS NOT ESSENTIAL IN VERY MANY PRACTICAL PROBLEMS. CAREFUL EXAMINATION INDICATES, HOWEVER, THAT IN ILLUMINATION OF A MEDIUM WITH RADIATION HAVING A HIGH DEGREE OF SPATIAL COHERENCE, THE LIGHT FIELD FORMED THROUGH INTERFERENCE OF SCATTERED WAVES WILL BE NONUNIFORM IN SPACE AND TIME VARIABLE. THE NATURE OF THIS GRANULAR STRUCTURE IS CAUSED BY OPTICAL AND GEOMETRICAL PARAMETERS AND THE RESPECTIVE POSITIONS OF SCATTERING CENTERS, AND THE FREQUENCY OF LIGHT FIELD FLUCTUATIONS IS DETERMINED BY THE MOBILITY OF PARTICLES OF THE TURBID MEDIUM. THE INTENSITY OF THE RADIATION FIELD IN SOME FIXED DIRECTION IN LIQUID AND GASEOUS MEDIA WILL THEREFORE VARY IN TIME DUE TO THE VARIABILITY OF THE PHASE RELATIONSHIPS OF THE SECONDARY SCATTERING WAVES. THE EFFECT OF THE CONCENTRATION OF SCATTERING PARTICLES ON THE NATURE OF FLUCTUATIONS IN THE LIGHT FIELD INTENSITY IS ANALYZED.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EFFECT OF POLARIZATION PROPERTIES OF EXTERNAL RADIATION ON THE
ENERGY CHARACTERISTICS OF LIGHT REFLECTED BY A TURBID MEDIUM -U-
AUTHOR-(02)-BOYKO, P.B., IVANOV, A.P. I
COUNTRY OF INFO--USSR
SOURCE--MINSK, ZHURNAL PRIKLADNOY SPEKTROSKOPII, FEBRUARY 1970, PP 358-361
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--LIGHT POLARIZATION, LIGHT REFLECTION, LIGHT SCATTERING,
POWDERED GLASS, ENERGY SPECTRUM, ELECTRIC FIELD, LIGHT
TRANSMISSION/(U)MARK FS6 GLASS POWDER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1409 STEP NO--UR/0368/70/000/000/0358/0361
CIRC ACCESSION NO--AP0125049
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125049

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF POLARIZATION PROPERTIES OF EXTERNAL RADIATION ON THE COEFFICIENTS OF DIFFUSED REFLECTION R AND THE BRIGHTNESS RHO OF LIGHT SCATTERED BY A MEDIUM WAS STUDIED EXPERIMENTALLY. A WIDE RANGE OF INCIDENCE AND SCATTERING ANGLES FOR VARIOUS PROBABILITIES OF THE SURVIVAL OF A PHOTON FROM THE REFLECTED OBJECT, IN THIS CASE A LAYER OF MARK FS-6 GLASS POWDER, WAS CONSIDERED. RESULTS OF THE EXPERIMENT GIVE EVIDENCE THAT A DIFFERENCE EXISTS BETWEEN VALUES OF THE ENERGY CHARACTERISTICS OBTAINED IN THE ILLUMINATION OF A MEDIUM BY LIGHT POLARIZED IN THE INCIDENCE PLANE AND PERPENDICULAR TO IT, SUCH THAT IN THE LATTER CASE THE VALUES OF R AND RHO ARE HIGHER, AS A RULE. ROTATION OF THE ELECTRICAL VECTOR IN THE DIRECTION OF THE INCIDENT LIGHT BEAM WAS FOUND TO BE STRONGER THE GREATER THE ABSORPTION OF THE MEDIUM AND THE STEEPER THE ANGLE OF INCIDENCE. THE DATA OBTAINED CAN BE USED FOR THE ANALYSIS OF R AND RHO IN THE RADIATION OF A MEDIUM BY LIGHT HAVING AN ARBITRARY DEGREE OF POLARIZATION.

UNCLASSIFIED

UDC 669.295:536.42

USSR

IVANOV, A. S., and TOMSINSKIY, V. S., Perm Polytechnic Institute

"Decomposition of Alpha"-Martensite in Titanium VT16 Alloy"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 1, 1973, pp 102-108

Abstract: A study of the processes of the martensitic alpha"-phase decomposition in VT16 alloy was conducted by high-temperature x-ray diffraction analysis. It was shown that the temperature of the alpha'-beta transformation depends on the concentration of alloying elements in the alpha'-phase. In the process of heating there is observed decomposition of the alpha'-phase into the alpha- and beta-phases and further diffusion decomposition of the unstable beta-phase. Thus in the alloy with an initial state of (alpha"+alpha+beta) the alpha" phase disappears at a temperature below 200°C. In samples having the (alpha"+alpha) composition, the beta-phase appears at 300°C and in samples consisting of only the alpha"-phase -- at 450°C. A further increase of temperature leads to redistribution of the alloying elements in the beta-phase with the formation of enriched and depleted regions in which equilibrium alpha- and beta-phases are then formed. The process of beta-phase decomposition starts above 400°C and is finished at 500°C. Six figures, two tables, and six bibliographic references.

1/1

USSR

UDC 616.28-008.1:613.644

IVANOV, A. S., Krivoy Rog Oblast Specialized Clinical Hospital

"Ear Changes in Mill Operators of Ore Dressing Plants in the Krivoy Rog Basin Resulting From Exposure to Noise and Vibration"

Kiev, Zhurnal Ushnykh, Nosovykh i Gorlovykh Bolezney, No 4, 1972, p 105

Abstract: Physical and audiometric examinations of 124 persons exposed to noise at intensities of 102 to 112 db and general vibration at frequencies of 13 to 76 Hz revealed a variety of disorders and hearing loss, the magnitude generally a function of the length of time on the job. Almost half complained of insomnia, increased irritability, periodic clogging of the ears, hearing loss, vertigo, and tinnitus. Despite good patency of the auditory tubes, the light reflex was altered or absent in over 90% of the mill operators. Hyperemia of the tympanic membranes was detected in 51% and general opacification in 64%. Congestion of the blood vessels along the manubrium mallei was pronounced in 25% and slight in 30%. Perception of pure tones at a frequency of 4000 Hz was impaired. Only 18% of those with 5 to 10 years' experience could hear tones below 20 db and none with more than 10 years' experience could do so. The perception of sounds at a frequency of 250 Hz was similarly impaired. An inverse relationship was observed between the length of time on the job and the number of workers able to hear whispered
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USSR

IVANOV, A. S., Kiev Zhurnal Ushnykh, Nosovykh i Gorlovykh Bolezney, No 4,
1972, p 105

sounds: The mill operators also showed a higher incidence of neurologic,
gastrointestinal, muscle-joint, and other diseases than did the control
workers (those not exposed to noise or vibration).

2/2

USSR

UDC 669.295:669.017.3

IVANOV, A. S., and TOMSINSKIY, V. S., Perm' Polytechnic Institute

"X-Ray Structural Phase Transformations in VT14 Titanium Alloy During Heating"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 6, Jun 72,
pp 1239-1242

Abstract: The roentgenostructural analysis method was used for the investigation of the change of parameters of the crystalline lattice and the quantitative correlation of α - and β -phases in heating and cooling processes of VT14 titanium alloy. A continuous decrease up to room temperature of lattice parameters of α - and β -phases takes place when cooling; the β -phase, in comparison with the same temperatures at heating, remains more enriched with alloying elements and the α -phase becomes correspondingly impoverished. The latter explains the predominance of β -phase when cooling. At heating up to 400°C, in the annealed VT14 alloy practically no redistribution of alloying elements takes place. In the 400-500°C temperature interval, the activation of diffusion processes produces a sharp redistribution of alloying elements and a decrease of concentration heterogeneity, connected with the structural heterogeneity of the annealed alloy. At temperatures higher than 500°C, a gradual redistribution of alloying elements in α - and β -phases takes place in accordance with the diagram of state. Four figures, five bibliographic references.
1/1

USSR

UDC: 632.95

SIMONOV, V. D., IVANOV, A. V., ZAYNAGABUTDINOV, S. A., KRASHE-
NINNOKOVA, O. S., Ufa Affiliate of the All-Union Scientific
Research Institute of Chemical Agents for Plant Protection

"A Method of Making Tetrachloroglutaconic Acid and Tetrachloro-
-4-Cyclopentene-1,3-Dione"

USSR Author's Certificate No 345125, filed 14 Sep 70, published
9 Aug 72 (from RZh-Khimiya, No 10, May 73, abstract No 10N583P
by N. V. Lebedeva)

Translation: Tetrachloroglutaconic acid (I) and tetrachloro-4-cyclopentadione-
-1,3 (II) are synthesized by reacting octachlorocyclopentene (III) or hexa-
chlorocyclopentene with Cl_2 in HSO_3Cl at $100-150^\circ C$. Example: Cl_2 is bubbled
through a mixture of 1 mole of III and 4 moles of HSO_3Cl at a rate of 30
1/hr with the application 1 of heat at $145^\circ C$ for 10 hours; after cooling the
reaction mass is poured over ice and filtered, giving 0.455 mole of I,
melting point $107-8^\circ C$ (chloroform). An organic layer (127 g) is treated with
200 g or 100% H_2SO_4 , the mixture is held for 7 hours at $105^\circ C$, poured over
1/2

USSR

SIMONOV, V. D., et al., USSR Author's Certificate No 345125, filed 14 Sep 70,
published 9 Aug 72

ice and filtered, yielding 0.4 mole of II, melting point 64-5°C (heptane).
Compounds I and II can be used as fungicides, herbicides, and also in the
synthesis of unsaturated self-quenching polyester resins.

2/2

- 37 -

USSR

UDC: 532.522.2

VOJCHKOV, V. V., IVANOV, A. V., KISLYAKOV, N. I., REBROV, A. K., SUKHNEV, V. A., and SHARAFUTDINOV, R. G.

"Low-Density Jets from a Sonic Nozzle at Large Pressure Drops"

Moscow, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 64-73

Abstract: Experiments are described for the observation of low-density gas dynamic jets using electron-beam analysis and the Pitot tube. A full description of the apparatus and the experimental method is given in earlier papers on which the present article is based (A. K. Rebrov, et al, Vliyaniye razrezkennosti na strukturu svobodnoy strui azota -- Effect of Rarefaction on the Structure of a Free Nitrogen Jet -- PMTF, No 1, 1971, and others). These experiments used sonic nozzles consisting of openings in a thin wall with a ratio of wall thickness to opening diameter of less than 0.05. With a Reynolds number greater than 200 at the nozzle opening, the effect of the boundary layer in the nozzle can be neglected and the flow factor of the nozzle can be taken equal to unity. Nitrogen, air, and carbon dioxide at a drag temperature of 300° K were used as the operating gases. The purpose of the experiments was to study the structure of longitudinal and transverse gas

1/2

USSR

UDC: 532.522.2

VOLCHKOV, V. V., et al, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 64-73

dynamic parameter distributions in the initial part of the jet, and set up a detailed picture of the jet flow for Reynolds numbers reduced to values corresponding to the dispersion modes for which the local mean free path of the molecules is commensurate with the flow dimensions.

2/2

- 143 -

USSR

UDC 51

ZHIDKOV, YU. I., and IVANOV, A. V.

"Optimization of Computer Algorithms With Respect To Time and Accuracy Criteria"

V sb. Avtomatiz. upr. prom. predpriyatiyami (Automated Control of Industrial Enterprises -- Collection of Works), Kiev, "Tekhnika," 1972, pp 33-40 (from RZh-Matematika, No 3, Mar 73, Abstract No 3V608 from authors' abstract)

Translation: The problem of optimizing computer algorithms is considered in two formulations: it is required to assure minimum time for realization of the algorithm with prescribed error in the results; it is required to obtain maximum accuracy of results with fixed solution time. Optimization is achieved by selecting the number of repetitions of the computation cycles for the mathematical functions making up the algorithm.

1/1

USSR

IVANOV, A. V.

"Asymptotic Behavior of Estimates of Least Squares in the Case of a Non-linear Regression"

Teoriya Veroyatnostey i Mat. Stat. Mezhd. Nauch. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 70-74 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V320 by the author).

Translation: Conditions of asymptotic normality of consistent estimates of least squares of nonlinearly embedded parameters of a regression function are given.

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UDC 519.2

USSR

IVANOV, A. V.

"Consistency of the Nonlinear Regression Estimates"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1972, vyp. 6, pp 74-82 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V175)

Translation: Based on the paper reviewed previously (RZh-Matematika, 1971, 11V275), the author proves the consistency of the least squares estimate for the parameter α by observations of the process

$$x(t) = g(t, \alpha) + \varepsilon(t), \quad t \in [0, T],$$

where $\varepsilon(t)$ is a stationary ergodic process with a zero mean, and $g(t, \alpha)$ is a continuous function which satisfies the conditions:

a) For some $\delta > 0$ and a compact set K

$$\phi_T(\alpha, \alpha_0) \geq 4r(0) + \delta$$

for all $\alpha \in K$ and $T > T_0$ where α_0 is the true value of the parameter, $\alpha_0 \in K$, and

$$\phi_T(\alpha, \beta) = (1/T) \int_0^T |g(t, \alpha) - g(t, \beta)|^2 dt;$$

1/2

- 20 -

USSR

IVANOV, A. V., Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb., 1972, vyp. 6, pp 74-82

b) $\phi_T(\alpha, \beta)$ for $T \rightarrow \infty$ approaches the continuous function $\phi(\alpha, \beta)$ uniformly in $K \times K$, where $\phi(\alpha, \alpha_0) = 0$ when and only when $\alpha = \alpha_0$.

Sufficient conditions are proposed for satisfaction of a) and b), and a number of examples are investigated.

2/2

USSR

UDC 632.95

SIMONOV, V. D., IVANOV, A. V., and TSYPLENKOV, A. A.

"A Means of Obtaining Tetrachloromuconic Acid"

USSR Author's Certificate No 307079, filed 8 Sept 69, published 10 Sept 71
(from Referativnyy Zhurnal -- Khimiya, No 10(II), 1972, Abstract No 10K586
by T. A. Belyayeva)

Translation: Tetrachloromuconic acid (I), melting point $20\frac{1}{2}$ - 6° , is obtained by oxidation of decachloro-1,5-hexadiene (II) or decachloro-2,4-hexadiene concentration H_2SO_4 at 110 - 115° for 4-5 hours. A mixture of 42,7g II and 200 g 93.3% H_2SO_4 is kept for 4-5 hours at 110° , the reaction mass is poured into water at 20 - 30° (volume of water = 0,5 the volume of the reaction mass), filtered, and the precipitate is washed with $CHCl_3$, obtaining 23 g I, which is dissolved in ether and purified with activated carbon. The solution is then dried over H_2SO_4 , evaporated and the residue is recrystallized from a mixture of ether and benzene. Molecular weight of the dimethyl ester of I is 306.

1/1

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USSR

UDC 532.522.2

AVDUYEVSKIY, V. S., IVANOV, A. V., KARPMAN, I. M., TRASKOVSKIY, V. D., and YUDELOVICH, M. Ya.

"The Structure of Turbulent Underexpanded Jets Discharging Into a Flooded Space and a Concurrent Stream"

Moscow, Izvestiya Akademii Nauk, SSSR, Mekhanika Zhidkosti i Gaza, No 3, 1972, pp 15-29

Abstract: The results of an experimental investigation of the geometric structure of the initial sector of underexpanded jets are presented, and consideration is given to the principal features of flow in the mixing zone on the boundary of a greatly underexpanded jet during a turbulent flow regime along the entire length of the initial sector of the jet. A concurrent supersonic stream exerts an essential qualitative and quantitative influence upon the configuration of the initial sector of underexpanded jets. The most essential feature of a jet in the concurrent stream consists in "degeneration" of the central shock wave at Mach numbers of the concurrent stream $M_\infty > 2$. The transverse and longitudinal dimensions of the initial sector of an underexpanded jet in a concurrent stream with numbers $M_\infty > 1.5-2$ decrease with the increase of M_∞ . The established features of the structure of concurrent jets

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USSR

AVDUYEVSKIY, V. S., et al., Izvestiya Akademii Nauk, SSSR, Mekhanika Zhidkosti i Gaza, No 3, 1972, pp 15-29

make it impossible, in the general case, to substitute the concurrent jet by an equivalent flooded jet. Approximate relationships are presented, which make it possible to take into account the influence of a concurrent stream upon the basic characteristic dimensions of the initial sector of the jet. The characteristic regions of flow in the compressed viscous layer of an underexpanded jet are isolated. The self-similarity of fields of the gas-dynamic parameters is established. Data are presented on the position of the mixing zone in the space, the total-head profiles, the statistical pressure, and the dimensionless excess stagnation temperature in greatly underexpanded jets. 14 figures. 3 tables. 8 references.

2/2

- 16 -

USSR

SIMONOV, V. D., GAZIZOV, R. T., IVANOV, A. V.

"Synthesis of Cyclical Perchlorinated Pentenes"

Dokl. Neftikhim. Sektsii. Bashkir. Resp. Pravl. Vses. Khim. O-va im. D. I. Mendeleyeva, [Works of Petrochemical Section, Vashkir Republic Administration of All-Union Chemical Society imeni D. I. Mendeleyev], Vol 6, 1971, pp 317-319. (Translated from Referativnyy Zhurnal Khimiya, No 4, Moscow, 1972, Abstract No 4N684 by T. A. Belyeva).

Translation: A method is developed for production of octachlorocyclopentene (I) initiated by chlorination of hexachlorocyclopentadiene (II) or octachloro-1, 3-pentadiene in a medium of HSO_3Cl (III). Cl_2 is passed (22.3 l/hr) through a mixture of 81.9 g II and 140 g III at about 20° for 5 hrs. The temperature of the reaction mixture is $40-45^\circ$. It is cooled to $+10^\circ$ and I is filtered off, mp $37-8^\circ$. 8.16 g of hexachlorofulvene is treated with 26.4 g III at $0 \pm 2^\circ$ for 80 minutes, producing 10 g of perchloromethylene- Δ^3 -cyclopentene.

1/1

USSR

SIMONOV, V. D., ~~IVANOV, A. V.~~ GAZIZOV, R. T., NEDEL'CHENKO, V. M., KHRENOVA,
N. N.

"Method of Producing Octachlorocyclopentene"

USSR Author's Certificate No 303312, filed 6/01/69, published 28/06/71.
(Translated from Referativnyy Zhurnal Khimiya, No 4, Moscow, 1972, Abstract No
4N591P by T. A. Belyaeva).

Translation: Octachlorocyclopentene (I), intermediate product for synthesis
of pesticides, is produced by chlorination of hexachlorocyclopentadiene (II)
or octachloropentadiene in a medium of chlorosulfonic acid (III) at a tempera-
ture of 40-45°. Cl₂ gas is passed through a mixture of 81.9 g II and 140 g
III for 5 hr at 40-45°, gas temperature about 20° (2.3 l/hr). It is then cooled
to 10°, filtered, the precipitate is washed with water, dried in air, producing
I, m. p. 37-8°. III is returned to the process.
1/1

USSR

UDC: 681.327.11

DMITRIYEV, V. I., ~~IVANOV, A. V.~~, Moscow Power Engineering Institute

"A Device for Correcting Errors in Parallel Readout of Binary Information"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292175, Division G, filed 3 Nov 69, published 6 Jan 71, p 135

Translation: This Author's Certificate introduces a device for error correction in parallel readout of binary information. The device contains a reproduction module, a circuit for mod-2 contraction along a line, adders and buffer shift registers. As a distinguishing feature of the patent, the design is simplified and error correction is made more effective by using a circuit for mod-2 contraction along the diagonal, AND and NOT logic circuits and memory cells. The input of the first memory cell is connected through the AND and NOT logic circuits to the output of the circuit for mod-2 contraction along a line, and the output of each memory cell is connected to one of the inputs of the AND circuits. The second inputs of the AND circuits are connected to the output of the circuit for mod-2 contraction along the diagonal. The outputs of the AND circuits are connected to one of the inputs of the adders, and simultaneously through the NOT circuits to the inputs

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USSR

DMITRIYEV, V. I., IVANOV, A. V., USSR Author's Certificate No 292175

of the other AND circuits, which are connected to the outputs of the preceding memory cells, whose outputs are connected to the inputs of the following memory cells. The other inputs of the adders are connected to the corresponding inputs of the circuit for mod-2 contraction along the diagonal.

2/2

- 65 -

UDC 537.533.2+537.534

USSR

NEMCHENOK, R. L., IVANOV, A. V., KARPOV, A. A.

"Emission Properties of the Au-BaO System"

Tr. Leningr. politekhn. in-ta (Works of Leningrad Polytechnical Institute),
1970, No 311, pp 51-55 (from RZh-Fizika, No 12(I), Dec 70, Abstract No
12Zh631)

Translation: The properties of the Au-BaO system were studied by external photo-effect and thermoemission methods. The measurements were conducted in sealed devices in a high vacuum ($p < 5 \cdot 10^{-9}$ mmHg). It was shown that for surface concentrations $n_{\text{BaO}} > 1 \cdot 10^{15} \text{ cm}^{-2}$ the BaO film has photoelectric properties of thick oxide coatings and, in particular, sensitivity to ultraviolet radiation. The nature of the changes in emission properties of the Au-BaO system to $T = 1200^\circ\text{K}$ does not indicate chemical interaction of the BaO film with Au. Authors abstract.

1/1

USSR



UDC: 621.391.2:621.396.96

IVANOV, A. V. and ZUBKOVICH, S. G.

"Probability Distribution Laws for Radar Signal Amplitudes in Fully Polarized Reception"

Moscow, Radiotekhnika i Elektronika, No 5, 1970, pp 960-966

Abstract: A great deal of attention is now being given to the problem of using the polarization characteristics of radar signals for improving information obtained from observation of the target. Such problems as detection, selection, automatic target tracking, can be qualitatively solved to a better extent by including devices in the radar system which provide fully polarized reception of reflected signals. The purpose of this paper is to investigate the probability distribution of the full amplitude, the square of the amplitude, and the sum of the amplitudes of the orthogonally polarized signal components of a fluctuating radar target. The

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USSR

IVANOV, A. V., et al, Radiotekhnika i Elektronika, No 5, 1970,
pp 960-966

authors first find the formulas for the signal amplitude and the amplitudes of the signal's orthogonal components produced by its polarization on reflection from the target. They then take up the class of fluctuating radar targets which take the form of a combination of many elementary reflectors. It is assumed that the elements of the statistical dispersion matrix most fully describing the reflection characteristics of the target are stationary and stationarily connected processes.

2/2

Acc. Nr: **AP0047238**

Ref. Code:

PRIMARY SOURCE: Urologiya i Nefrologiya, 1970, Nr
PP **31-37**

UR 0606
1

INDICATIONS AND SEQUENCE OF ROENTGENOVASOGRAPHIC EXAMINATION OF
THE KIDNEYS

Yu. A. Pytel, A. V. Ivanov,

Summary

The paper is based on experience of application of abdominal aortography, selective renal arteriography, inferior cavography, and selective renal venography in 190 patients with various urological diseases. The authors suggest a definite order of vasographic investigations in patients with neoplasms of the kidneys, chronic pyelonephritis and hydronephrosis. They consider that any vasographic examination of the kidneys should start from abdominal aortography. Application of renovasographic methods in rationally elaborated order considerably increases the diagnostic possibilities of each method and reduces the percentage of errors.

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REEL/FRAME
19790745

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USSR

I

AVDUYEVSKIY, V. S., IVANOV, A. V., KARPMAN, I. M., TRASKOVSKIY, V. D.,
YUDELOVICH, M. Ya.

"The Flow in a Supersonic Viscous Underexpanded Jet"

Moscow, Mekhanika Zhidkosti i Gaza, No 3, 1970, pp 63-69

Abstract: An experimental investigation is made of the flow at the initial sector of an underexpanded supersonic jet flowing out into the immersed space and the concurrent stream at Mach numbers $M_\infty \leq 10$. The determining effect of viscosity upon the nature of flow in the jet is established. The basic rules governing the flow are defined. In addition, the results of investigation of the basic dimensions of the initial sector of a turbulent underexpanded jet flowing out into the immersed space are set forth in detail.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--PREPARATION OF ACRYLIC ESTERS OF 2,4,DINITROPHENOL -U-

AUTHOR--(02)--GITIS, S.S., IVANOV, A.V. I

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 151,345

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(4)

DATE PUBLISHED--06JAN70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ACRYLATE, ORGANIC NITRO COMPOUND, PHENOL, CHEMICAL PATENT,
AROMATIC ETHER, PHENYL ETHER, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0727

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0111920

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AA0111920

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACRYLIC ESTERS OF
2,4,DINITROPHENOL CONTG. REACTIVE GROUPS ON THE PHOH NUCLEUS WERE PREPD.
BY TREATING 2,2 PRIME, 4,4 PRIME, TETRANITRODIPHENYL ETHER WITH THE
CORRESPONDING K PHENOLATE IN THE COLD IN SOLNS. OF ORG. SOLVENTS.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--STABILITY OF RECTANGULAR SANDWICH PLATES DURING COMBINATION LOADING

-U-
AUTHOR--IVANOV, A.V.

I

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA TVERDOGO TELA, JAN.-FEB.
1970, P 105-114

DATE PUBLISHED-----70

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

TOPIC TAGS--STRUCTURE STABILITY, SANDWICH PLATE, BIBLIOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0176

STEP NO--UR/0484/70/000/000/0105/0114

CIRC ACCESSION NO--AP0054972

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--A0054972

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF EQUATIONS FOR DETERMINING THE CRITICAL LOADS OF RECTANGULAR SANDWICH PLATES UNDER COMBINATION LOADING (SIMULTANEOUS APPLICATION OF NORMAL AND TANGENTIAL FORCES), USING THE BUBNOV METHOD. THE CRITICAL LOADS ARE INVESTIGATED FOR PLATES WITH TWO OPPOSITE EDGES FREELY SUPPORTED, ONE EDGE FREELY SUPPORTED AND THE OTHER CLAMPED, AND BOTH EDGES CLAMPED. GRAPHS SHOWING THE DEPENDENCE OF THE CRITICAL LOAD PARAMETER ON THE RATIO BETWEEN THE SIDES OF PLATES UNDERGOING PURE SHEAR ARE PRESENTED. CERTAIN FORMS OF STABILITY LOSS ARE ILLUSTRATED.

UNCLASSIFIED

L/2 031 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--PROBLEM OF A RADAR SIGNAL'S AMPLITUDE PROBABILITY DISTRIBUTION
RULES DURING FULLY POLARIZATIONAL RECEPTION -U-
AUTHOR-(02)-IVANOV, A.V., ZUBKOVICH, S.G.
COUNTRY OF INFO--USSR
SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, MAY 1970, P. 960-966
DATE PUBLISHED--MAY70
SUBJECT AREAS--NAVIGATION
TOPIC TAGS--PULSE AMPLITUDE, RADAR SIGNAL ANALYSIS, RADAR ECHO
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0264 STEP NO--UR/0109/70/015/000/0960/0966
CIRC ACCESSION NO--AP0124026
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--30GCT70

CIRC ACCESSION NO--AP0124026

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE PROBLEM OF USING THE POLARIZATIONAL PROPERTIES OF AN ECHO SIGNAL TO INCREASE THE INFORMATION CONTENT OF RADAR OBSERVATIONS. TO EVALUATE THE EFFICIENCY OF A RADAR STATION WITH FULLY POLARIZATIONAL RECEPTION, IT IS NECESSARY TO KNOW THE STATISTICAL CHARACTERISTICS OF THE ECHO SIGNAL PARAMETERS WITH ALLOWANCE FOR ITS POLARIZATION. ONE DIMENSIONAL DIFFERENTIAL RULES ARE CONSTRUCTED FOR THE PROBABILITY DISTRIBUTION OF THE TOTAL AMPLITUDE, ITS SQUARE, AND THE SUM OF THE AMPLITUDES OF ORTHOGONALLY POLARIZED COMPONENTS OF A RADAR ECHO FROM A FLUCTUATING TARGET. MATHEMATICAL EXPRESSIONS ARE GIVEN FOR PRACTICAL CALCULATIONS OF THESE RULES WITH ANY DEGREE OF ACCURACY.

UNCLASSIFIED

7172 022 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--PHOTOMETRIC DETERMINATION OF THE TOTAL CONTENT OF TRI AND
TETRANITRODIPHENYL SULFONES IN 3,3 PRIME DINITRODIPHENYL SULFONE -U-
AUTHOR--(04)--KAPINSKIY, A.YA., BRONSHTEYN, E.A., GITIS, S.S., IVANOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(2), 155-8 (RUSS)

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOTOMETRIC ANALYSIS, BENZENE DERIVATIVE, AROMATIC NITRO
COMPOUND, SULFONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2144

STEP NO--UR/0032/70/036/002/0155/0158

CIRC ACCESSION NO--AP0125727

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--20NOV76

CIRC ACCESSION NO--AP0125727

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TOTAL AMT. OF TRINITRODIPHENYL SULFONE (I) AND TETRANITRODIPHENYL SULFONE (II) IN 3,3 PRIME DINITRODIPHENYL SULFONE (III) CAN BE DETD. AFTER DISSOLVING A 0.01 G SAMPLE IN 7 ML ME SUB2 CO AND ADDING 3 ML SOPERCENT AQ. NH SUB4 OH. THE ABSORBANCE OF THE COLORED SOLN. (ABSORPTION MAX. 605 AND 520 NM FOR I AND 520 AND 610 NM FOR II) WAS MEASURED 20-30 MIN AFTER ITS PREPN. IN 2 CM CUVETTES. BY USING THE ABOVE METHOD IT WAS FOUND THAT III CONTAINS 0.3-0.4PERCENT OF THE TRI AND TETRANITRODIPHENYL SULFONES.
FACILITY: VES. NAUCH. ISSLED. PROEKT. INST. MONOMER., TULA, USSR.

UNCLASSIFIED

USSR

UDC 621.372.831.1(088.8)

I
IVANOV, A. YA., POLINOV, YU. S.

"Device for Joining Waveguide Sections"

USSR Author's Certificate No 250233, Filed 14 Mar 68, Published 21 Jan 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B148P)

Translation: The proposed device consists of two waveguide sections to which flanges are soldered. The latter are hinged on a pin on which plates with grooves are fastened perpendicular to its axis. A metal tape is rigidly connected to the moving flange. The lateral edges of this tape enter into the grooves of the plates. At the same time, the point at which the sections are joined is protected on all sides from dust and dirt. The electrical contact between the waveguide sections is realized with the help of contact gaskets with clasps. To seal the joint packing rings are inserted in the grooves. The design of the device permits the mutual arrangement of the joined waveguide sections to be varied, for example, during transportation of them. There are two illustrations.

1/1

Acc. Nr: APO054298

7

Ref. Code: UR 0660

PRIMARY SOURCE: Neyrofiziologiya, 1970, Vol 2, Nr 2, pp 216-224
PATHWAYS OF THE CAT SUPERIOR CERVICAL GANGLION

V. I. Skok and A. Ya. Ivanov

The A. A. Bogomoletz Institute of Physiology Academy of Sciences,
Ukrainian SSR, Kiev

Summary

Pathways in the cat superior cervical sympathetic ganglion were studied by the recording of action potentials of ganglionic nerves evoked by the stimulation of other nerves of the ganglion. Intracellular recording was also used. Stimulation of the cervical sympathetic nerve evoked action potentials in all other ganglionic nerves; transmission in opposite direction was absent.

Stimulation of cervical sympathetic nerve evoked orthodromic responses in ganglion neurons whereas stimulation of internal carotid nerve evoked antidromic responses in these neurons. Many neurons responded to single orthodromic stimulation by several EPSPs with different latencies.

Conclusion: was made that all fibres of cervical sympathetic nerve terminate in the ganglion synaptically, and that preganglionic fibres with large differences in threshold and conduction velocities may converge on the same neuron.

11

REEL/FRAME
19831436

2 MK

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USSR

UDC: 621.528:621.59

GORIN, V. P., SHUMSKIY, K. P., LEONOV, V. V., ~~IVANOV, A. Ye.~~, ZAKHAROV, V. S., SIVUSHCHKOV, B. P., KUPRIYANOV, V. I., RODIONOV, A. Kh., BARANOV, V. S., SHTRAKHMAN, A. Ya.

"A Cold Trap"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332253, Division F, filed 9 Jan 69, published 14 Mar 72, pp 136-137

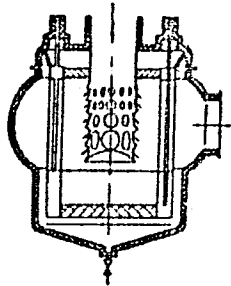
Translation: This Author's Certificate introduces a cold trap for vacuum pumps. The device contains a thermally insulated housing with fittings for connecting it to the exhausting vacuum pump and to the space being evacuated. Located in the housing are optically opaque cryogenic panels cooled by a liquid coolant such as nitrogen. As a distinguishing feature of the patent, the effectiveness of the trap is improved by making the cooled panels in the form of a vertical annular louvred screen with cooling tubes on the faces and collectors for the upper and lower shields located in the cavities of the louvred screen. The screen and shields taken together form a closed nonhermetic chamber which accommodates a dis-

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USSR

GORIN, V. P. et al., USSR Author's Certificate No 332253

tributor pipe coaxial with the annular screen and passing through the upper shield. The lower end of the distributor pipe is closed off, and holes are made in the side wall which have a diameter increasing downward along the flow of the gas-vapor mixture. The flow channels between the louvres in the vertical screen increase in cross sectional area toward the periphery, and the upper and lower shields are made with a greater hydraulic drag than the vertical screen.



2/2

- 182 -

USSR

UDC 536.46

IVANOV, B. A., MELIKHOV, A. S., ROZOVSKIY, A. S., Balashikha

"Combustion of Materials in Liquid Oxygen"

Novosibirsk, Fizika gorenija i vzryva, Vol 8, No 4, 1972, pp 593-595

Abstract: Solid nonmetallic materials (plastics, fiberglass, and so on) are widely used in the oxygen industry, but in contact with liquid oxygen they form heterogeneous systems capable of ignition from various random sources and intense combustion. A study was made to measure the apparent combustion rate of standard representatives of the nonmetallic materials -- polytetrafluoroethylene, polymethylmethacrylate, textoline and KAST-V fiberglass -- as a function of the specimen diameter, pressure and temperature of the liquid oxygen. The combustion rates of all the materials increase with an increase in pressure almost by a linear law. The temperature of the liquid oxygen has a noticeable effect on the combustion rate. The linear dependence of the combustion rate on pressure is retained for all the investigated diameters, but the slopes of the curves decrease with an increase in diameter. A photograph of a burning specimen of textolite in liquid oxygen under a pressure of 1 kg/cm^2 shows that the combustion takes place in a gas bubble formed during evaporation of the liquid oxygen. Thus, some of the laws of combustion of solid nonmetallic materials in gaseous oxygen will also apply in liquid oxygen. The increased
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USSR

IVANOV, B. A., et al., Fizika gorenija i vzryva, Vol 8, No 4, 1972, pp 593-595

combustion rate of polytetrafluoroethylene in liquid oxygen is connected with intensification of the mass exchange processes as a result of boiling and evaporation of the liquid oxygen at the liquid-gas bubble interface and also pulsations of the bubble walls.

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- 65 -

Acc. Nr:

AP0038022

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 14-25

TURBULENT HEATING OF IONS IN A SKIN
HIGH FREQUENCY DISCHARGE

Dubovoy, L. V.; Ivanov, B. A.; Chernobrovin, V. I.

The ion energy spectrum in a high frequency discharge with a skin current is measured by corpuscular diagnostics techniques. The shape of the spectrum indicates the existence of two groups of ions in the experiments. The main group has a temperature $T \sim 50$ eV and a smaller group possesses a temperature $T \sim 700$ eV, the mean electron temperature in the plasma being ~ 100 eV. Both ion groups can be described by a Maxwellian energy distribution function. An analysis of the results shows that the plasma during the initial discharge stage is collisionless and heating of electrons as well as ions is of a turbulent nature. The results of the experiments are in satisfactory agreement with the theory which predicts plasma heating due to excitation of ion-acoustic microinstability in the skin layer region.

REEL/FRAME
19731063

19

CEJ

USSR

UDC 542.91+661.718.1

IVANOV, B. E., KUDRYAVTSEVA, L. A., Institute of Organic and Physical Chemistry
~~Imeni A. Ye. Arbutov~~, Academy of Sciences, USSR

"Formation of Oxaphospholane Derivatives During Condensation of Phosphonate
Esters with Formaldehyde"

Moscow, Izvestiya Akademiyi Nauk SSSR, Seriya Khimicheskaya, No 5, May 70.
pp 1180-1181

Abstract: Derivatives of oxaphospholanes are formed by condensation of the
esters of 2,2-dicarbethoxy-, 2-cyano-2-carbethoxy- and 2-acetyl-2-carbethoxy-
ethyl-phosphonic acids, when heated with formaldehyde with continual removal
of ethyl alcohol.

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USSR

UDC 629.7.036.54-66:536.46

IVANOV, B. I., IZMAYLOV, YE. M., NARKUNSKIY, S. YE., NIKONOV, A. P., and PLESHAKOV, V. F.

"Limit Conditions for the Propagation of Combustion Along Metal Specimens in Gaseous Oxygen"

Moscow, Goreniye i Vzryv -- Sbornik (Combustion and Explosion -- Collection of Works), Nauka, 1972, pp 148-152 (from Referativnyy Zhurnal -- Aviatsionnyye i Raketnyye Dvigateli, No 2, 1973, Abstract No 2.34. 148. Resume)

Translation: Measurements are made of the propagation rate of combustion and the minimum oxygen pressure at which the propagation of combustion takes place, for cylindrical specimens of steels Kh18N9T and 3Kh13, copper-containing iron, and low-carbon steel. The oxygen pressure was varied from 1 to 400 technical atmospheres, the velocity of the external stream of oxygen was varied from 0 to 100 m/sec, the diameter of the specimen varied between 1.2 and 6.0 mm. The experimental data are in good agreement with a model in which combustion on the surface of a liquid drop of metal is controlled by the diffusion of oxygen through a gas, and confirms the assumption of independence of the limit (minimum)

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- 31 -

USSR

IVANOV, B. I., et al., Goreniye i Vzryv -- Sbornik, Nauka, 1972, pp 148-152
(*From Referativnyy Zhurnal -- Aviatsionnyye i Raketnyye Dvigateli*, No 2, 1973,
Abstract No 2.34. 148. Resume)

density of the heat flux required for the maintenance of combustion from the
pressure, the specimen diameter, and the velocity of the gas stream. 4 figures.
6 references.

2/2

UDC 77

USSR

AVRAMENKO, L. F., VILENSKIY, YU. B., IVANOV, B. M., OL'SHEVSKAYA, I. A.,
POCHINOK, V. YA., SKRIPNIK, L. I., FEDOROVA, L. N., FEDOROVA, I. P.

"Synthesis of Tetrazoles, Triazoles, Triazenes, and Azo Compounds and a Study of
Them as Additives to Silver Halide Photographic Emulsions. I. Synthesis, Struc-
ture, Chemical Properties, and Photographic Activity"

Uspekhi nauchn. fotogr. (Advances in Scientific Photography), 1970, Vol. 14,
pp 5-11 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1333)

Translation: Data on the synthesis, structure, and properties of over 300 organic
compounds intended for stabilizing and defogging or depressing additives in AgHal
emulsions are presented; in certain cases these substances were also optical
sensitizers. Among the 40 tetrazoles not all were stabilizers of the photoemul-
sions; there was also established a difference in the chemical behavior in similar
reactions. This duality is explained by the existence of azido-tetrazole tauto-
merism in many condensed tetrazoles; stabilization is caused by adsorption by ions

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USSR

of the AgHal lattice of these azido forms in which there is an increased electron density on the heterocyclic N atom. Many stabilizers were observed among the triazoles, and not only condensed triazoles; among these many could be converted into cyanin dyes by combining stabilizers and optical sensitizers. It is shown that it is necessary for a stabilizer that three N atoms enter into the ring, as in triazoles: a considerable number of stabilizers of AgCl-emulsion was also found among the triazenes. These compounds are simultaneously optical sensitizers, defoggers, and depressers; in AgBr-emulsions only the last two properties are retained, in view of differences in the formation of ion-dipole compounds of AgCl and AgBr lattices with a polar triazene molecule. Of the azo compounds only nonsymmetric substances with heterocyclic radicals were photographically active. 31 references.

USSR

UDC 77

AVRAMENKO, L. F., VILENSKIY, YU. B., ~~IVANOV, B. M.~~, OL'SHEVSKAYA, I. A.,
POCHINOK, V. YA., SKRIPNIK, L. I., FEDOROVA, L. N., FEDOROVA, I. P.

"Synthesis of Tetrazoles, Triazoles, Triazines, and Azo Compounds and a Study of Them as Additives to Silver Halide Photographic Emulsions. II. Photographic Study of Material"

Uspekhi nauchn. fotogr. (Advances in Scientific Photography), 1970, Vol. 14, pp 12-23 (From *RZh-Fizika*, No 12(1), Dec 70, Abstract No 12D1334)

Translation: Three indices are introduced to evaluate quantitatively various types of photographic activity of materials synthesized previously: (see *RZh-Fizika*, No 12(1), Dec 70, Abstract No 12D1333): stabilizing, depressing, and defogging effects and certain combinations of these parameters in the kinetic curves for sensitivity and fogging in the second aging before and after introduction of the substances tested. If the substance was at the same time an optical sensitizer, the value of the depressing index was negative. Besides the testing of substances in AgCl- and AgBr(I)-emulsions, the kinetics of their adsorption by AgHal, the absorption spectrum in solution and after adsorption by AgHal, and the sensitization spectrum was studied. A correlation

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was found for condensed

tetrazoles between the stabilizer and the irreversible adsorption of material and between the depressing and defogging agents and reversible adsorption; irreversible adsorption on a small portion of the AgHal surface was sufficient for total stabilization. The same was true for the stabilization of triazenes. Depression of fogging was apparently always associated with the slowing down of the appearance of reversibly adsorbed substances, although in many cases there simultaneously occurred desensitization or slowing down of aging. Certain connections were established between photographic activity and the structure and substitutes in molecules of triazoles and optical sensitizers on the basis of their quaternary salts and also in molecules of heterocyclic azo compounds. The formation of iono-dipole or coordinated compounds of the material with AgHal was necessary for stabilization, which requires the coincidence of their dipole distances; the latter partially explains the differences in the behavior of materials in AgCl- and AgBr(I)-emulsions. One must take into account, however, that in view of the large homeopolarity of the bond in AgBr, even in AgCl, the latter requires more polar stabilizers. 12 references.

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