

REEL # 31
SLYSH', V.I.

UNCLAS

PROCESSING DATE--16OCT70

UNCLASSIFIED

1/2 038

TITLE--LONG WAVE COSMIC RADIO EMISSION IN CIRBUNLUNAR SPACE -U-

AUTHOR--(02)-GRIGORYEVA, V.P., SLYSH, V.I.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKIE ISSLEDOVANIYA, VOL. I, MAR-APR. 1970, P. 284-289

DATE PUBLISHED-----70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--COSMIC RADIATION, RADIO EMISSION, LOW FREQUENCY, MAGNETOSPHERE, INTERPLANETARY SPACE, LUNAR ENVIRONMENT/(U)LUNA 11 LUNAR PROBE, (U)LUNA 12 LUNAR PROBE.

CONTROL MARKING--NO RESTRICTIONS

STEP NO--UR/0293/70/008/000/0284/0289

DOCUMENT CLASS--UNCLASSIFIED
REF/FRAME--1994/1750

6579

IFIED

PROCESSING DATE--16OCT70

UNCLASSIFIED

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038

ABSTRACT/EXTRACT--(U) GP-0-
ACCESSION NO--AP0115579

ABSTRACT. RESULTS OF MEASUREMENTS OF THE LOW FREQUENCY BACKGROUND COSMIC RADIO EMISSION AT 965 AND 200 K HZ CARRIED OUT ON THE ARTIFICIAL MOON SATELLITES LUNA 11 AND LUNA 12. IN THE CASE OF RECEPTION BY A SHORT DIPOLE ANTENNA THE RADIO EMISSION AT 200 KHZ IS ENTIRELY ATTRIBUTABLE TO SHOT NOISE OF THE INTERPLANETARY PLASMA, WHILE THE EMISSION AT 965 KHZ IS ONLY PARTLY ATTRIBUTABLE TO THIS FACTOR. THE RADIO EMISSION LEVEL IN THE ILLUMINATED REGION. A DECREASE IN THE BACKGROUND RADIO EMISSION INTENSITY AT LOW FREQUENCIES IS CONFIRMED. NO RADIO EMISSION FROM JUPITER AND OTHER SOURCES (EXCEPT THE SUN) WITH A FLUX GREATER THAN 10 TO THE MINUS 19TH W-SQ M-HZ IS NOTED. A SHARP INCREASE IN THE RADIO EMISSION IN THE TAIL OF THE EARTH'S MAGNETOSPHERE IS OBSERVED.

UNCLASSIFIED

16OCT70

319 SHANKOVA, V.A.

METALLURGICAL

ТОВА 61321, 20 ФЕВ. 74

METALLURGICAL FEATURES OF PLASMA-ARC MELTING OF HIGH-ALLOYED STEELS IN WATER-COOLED COPPER CRYSTALLIZER
Article by Ye. A. Nikonov, N. V. I. Lakovskiy, G. F. Jordanov, V. A. Pechenkinov, Moscow, ~~High-Temperature Processes and Metallurgical Technology Program Director~~ Institute of Metallurgy, Russian Academy of Sciences, Moscow, U.S.S.R.

The purpose of all modern special electroslag remelting processes is to reduce the concentration of impurities in the metal and produce a high quality ingot.

The means by which this goal can be accomplished are given. The number can be reduced to the following four [1]:

- 1) Inert gases and slags;
 - 2) Increase the temperature of the metal;
 - 3) Vacuum;
 - 4) Recrystallization of the metal.
- Plasma-arc remelting (PAR) is a process that makes it possible to use the largest number of means of refining metal.
- In this method, in contrast to electroslag (ESR), vacuum-arc (VVA) and electron beam (EB) remelting, the main technological agent for acting on the liquid metal is the gas phase.
- Research and industrial experience in the use of PAR show that of the many versions of the method the following four are most commonly used:
- 1. Refining remelting in an inert gas atmosphere.
 - 2. Remelting, combined with slag.
 - 3. Plasma-arc remelting with slag.
 - 4. Remelting, combined with nitrogen saturation of steel.

UDC 533.9

USSR

VAGNER, S. D., KAGAN, YU. M., ~~SLYSHOV, A. G.~~

"Electrical and Optical Measurements in a Pulsed Discharge in Helium. I"

Leningrad, Optika i Spektroskopiya, No 6, Dec 71, pp 876-880

Abstract: Plasma parameters directly before the beginning of de-ionization were measured in order to study the process of the afterglow of a helium discharge. A pulsed discharge in a cylindrical discharge tube of length 20 cm and diameter 10 mm with cylindrical cold electrodes was investigated. A pulsed generator supplying rectangular pulses of current of 20 usec duration with a repetition frequency of 70 Hz was used as a power supply. The measurements were made at current amplitudes in the pulse of 0.8, 3.2, and 3.6 and at helium pressures of 2, 5 and 10 torr. Two cylindrical probes of length 5 mm and diameter 0.2 mm oriented along the axis were inserted into the tube. The longitudinal electric field strength E and the electron temperature T_e were measured with these probes. The atomic spectrum and the continuous spectrum observed under these conditions were also measured

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USSR

VAGNER, S. D. et al, Optika i Spektroskopiya, No 6, Dec 71, pp 876-880

in addition to the probe measurements. The electron concentration, the atom concentration, E , and T_e were measured at the lower excited levels 2^1S_0 , 2^1P_1 , 2^3S_1 , and $2^3P^0_{12}$. The radial distribution of the intensities of the lines 5016, 7281, 3889, 5876, and 7065 Å was also measured. The absolute intensities were measured for several lines emitted from levels with major quantum numbers 3, 4, and 5, and the balance equation for these levels was tested. The energy difference between levels with the same major quantum number was not great and mutual transitions existed between them. A comparison between the number of excitation events and the sum of decay events shows that the difference in the majority of cases does not exceed several orders of magnitude. It is noted that with an increase in the major quantum number, the role of multistage ionization becomes predominant in comparison with the decay of levels through radiation.

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- 124 -

Ref. Code
UR0191

Acc. Nr. **AP0045164** Abstracting Service:
CHEMICAL ABST. *5-70*

91223a Adhesion of some polymers to metal substrates.
Cherkasskaya P. M.; Bilik, Sh. M.; Gurman, I. M.; Slyudikova
N. N. (USSR). *Plast. Massy* 1970, (1), 62-4 (Russ). Polymeric
adhesives, e.g., epoxy resin ED-5 (cured with polyethylene
polyamine (I)), epoxy compd. K-139 (cured with I), epoxy compd.
K-153, epoxy compd. K-156, and a polyurethane varnish UR-19,
were used for bonding bronze and steel plates and polymer films.
Bronze and steel plates were sandblasted and defatted prior to
bonding. Expts. were conducted with reinforced polymer PLD
and PLT films [PLD is a polyamide (II) plasticized with rubber
(III), and PLT a II-III-poly(vinyl chloride) copolymer], poly-
romellitimide (IV), 1,2-C₆H₄(NH₂)₂-1,3-C₆H₄(CO₂H)₂ (V) copoly-
mer, 3,3'-diaminodiphenyl sulfone (VI)-V copolymer, and
2-MeC₆H₄NH₂-V copolymer. The V-VI copolymer had the high-
est adhesion to bronze. Bronze and steel plates were best bonded
by K-139, and PLD, PLT, and IV films were bonded to bronze
and steel plates by K-139 and K-156. CKJR

LD

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REEL/FRA
ME 19780064

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UDC 541.49+547.241

USSR

TOROPOVA, V. F., CHERKASOV, R. A., SAVEL'YEVA, N. I., SIMUSAR', N. V.,
PUDOVIK, A. N.

"Investigation of Complex Compounds of Dithio Acids of Phosphorus with
Bivalent Nickel and Cobalt Ions, and Application of the Hammett Equation with
C_P Constants to the Complex-Forming Reactions"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1485-1489

Abstract: Complex compounds of dithio acids of phosphorus with bivalent
nickel and cobalt ions were studied. The composition and stability constants
of the complexes were determined in 90% ethanol-water solutions at an ionic
strength of 0.3 and a temperature of 25°C. It was shown that the stability
constants $\log \beta$ of the complexes conform to the Hammett equation with ρ^{P}
constants --- specific constants of the substituents associated with the
phosphorus atom in the dithio acid molecule. Correlation parameters are
compared for the reaction series of complex compounds of dithio acids of
phosphorus with ions of various metals.

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Acc. Nr: **AP0034212**

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code:
MR 0078

S

71248] Complexing in cupric nitrate-2-methylbenzothiazole-methanol and cupric nitrate-2-hydroxymethylbenzothiazole-methanol systems. ~~Slyusarenko, V. F. and Atemenko, M. I.~~ (Kiev. Tekhnol. Inst. Pishch. Prom. Kiev. USSR). Zh. Neorg. Khim. 1970, 15(1), 106-11 (Russ). - It is concluded spectroscopically that a 1:2 complex (I) having an instability constant of 4×10^{-3} , is formed between $Cu(NO_3)_2$ and 2-hydroxybenzothiazole (L) in MeOH solns. Absorption max. of I ($\sim 14,500$ and $10,800\text{ cm}^{-1}$) correspond to *d-d* transition and indicate distorted octahedral structure of I. I is more stable than an analogous complex of $Cu(NO_3)_2$ with 2-methylbenzothiazole-MeOH. HMJR

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Acc. Nr.: AP0047041

Ref. Code: UR0122

UDC 621.787.4-181.2

USSR

CHERNENKO, N. T., Engineer, BELKIN, M. YA., Candidate of Techni-
cal Sciences and SLYUSARENKO, V. N., Engineer

"Strengthening of Large-Scale Machine Components by Surface
Hardening" (Experience of the Staro-Kramatorsk Machine Tool
Plant imeni Ordshonikidze)

Moscow, Vestnik Mashinostroyeniya, No 1, 1970, pp 42-44

Abstract: Investigations on the efficiency of surface hardening
of large scale machine components, and on the effect of scale
factor for a wide variety of parts made of carbon and alloy steels,
are described. They were conducted jointly by the Staro-Kramo-
torsk Machine Tool Plant and the Central Scientific Research
Institute of Technology and Mechanical Engineering. The Techni-
ques of hardening by rolling used for each type of components are
presented. The efficiency of strengthening the machine compo-
nents with chamfers, press fits, key ways etc, and components

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Reel/Frame
19790480

AP0047041

subjected to alternating loads was substantiated by the results of tests, which are presented in tables, in the form of the endurance limit and the effective coefficient of stress concentrations. It is stated that the examples of the application of strengthening technology presented here give an idea of the incorporation of this progressive technology at the plant, while investigations are conducted, at present time, for substituting the hardening of large scale machine components by cold plastic deformations for the laborious thermal hardening. Original article has 2 tables.

87

4/2

19790481

UDC 546.185

USSR

SLYUSARENKO, Ye. I., MAKHAYLIK, S. K., GAMALEYA, V. F., and SHOKOL, V. A.,
Institute of Organic Chemistry, Ukrainian Academy of Sciences

"Derivatives of Isocyanatophosphoryl Dichloride and Diisocyanatophosphoryl Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,383-2,386

Abstract: The dialkyl esters of alkoxy-carbonylamido- and ureidophosphoric acids have contributed a number of substances with insecticidal and complexing properties; this suggested the synthesis the monoalkyl esters of these acids. Alcohols and aniline, and also alcohols in the presence of triethylamine and water, and triethylamine alone, react with isocyanatophosphoryl dichloride; this produced the monoalkyl esters of alkoxy-carbonylamido- and 3-phenylureidophosphoric acids. Alcohols, mercaptans, thiophenols, and aniline react with diisocyanatophosphoryl chloride to form the acid chlorides of bis(alkoxy-carbonylamido)-, bis[(alkylthio)carbonylamido]-, bis[(phenylthio)carbonylamido]- and bis(3-phenylureido)phosphoric acids. The hydrolysis of these substances yields free acids. Sixteen compounds were synthesized. Procedures of synthesis are given, along with some physical data on the esters.

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UDC 547.26'118

USSR

GAMALEYA, V. F., SLYUSARENKO, Ye. I., and DERKACH, G. I., (deceased)

"Derivatives of Isocyanates of Dialkylphosphoric Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 992-995

Abstract: Di- and triurethanes were synthesized by the reaction of diesters of isocyanatophosphoric acid with glycols and glycerines. This same group of diesters react with aminoalcohols to give the corresponding phosphorylated urethane ureas. Various specific compounds were synthesized by these reaction series; physical data are given.

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USSR

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UDC: 632.95

KONDRATYUK, V. I., SLYUSARENKO, YE. I., and DERKACH, G. I.

"Biological Activity of Methyl Phosphonic n-Chlorophenyl Ester N-carbalcoxyamides"

Fiziol. aktivn. veshchestva. Resp. mezhved. sb. [Physiologically Active Materials. Republic Interdepartmental Collection], No 2, pp 37-40, 1969, (Translated from Referativnyy Zhurnal Khimiya, No 3, Vol 2, 10 Feb 70, Abstract No 3 N614)

Translation: The insecticidal N-carbomethoxy-, N-carboethoxy- and N-carboiso-propoxyamides of methyl phosphonic acid n-chlorophenyl ester have high toxicity for mammals. The acute oral LD₅₀ of these compounds for mice and rats is between 14 and 22 mg/kg. The toxicity and anticholinesterase activity of these compounds is higher than those of avenine and K-20-35, similar in structure. The mitotic activity of the three N-carbalcoxyamides is weak.

P. V. Popov

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PROCESSING DATE--20NOV70

1/2 008 UNCLASSIFIED
TITLE--IF A COMPANY MUST BUILD A BRIDGE -U-

AUTHOR--(02)--SLYUSAREV, A., CHERKAY, P.

COUNTRY OF INFO--USSR

SOURCE--VOYENNY VESTNIK, NO 2, 1970, PP 90-92

DATE PUBLISHED--70

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

TOPIC TAGS--PREFABRICATED BRIDGE, MILITARY CONSTRUCTION, CONSTRUCTION
MACHINERY/(U)KGI AMPHIBIOUS TRACKED VEHICLE, (U)BAT ROAD CONSTRUCTION
MACHINERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/0204

STEP NO--UR/0016/70/000/DC2/0090/0092

CIRC ACCESSION NO--AP0134010
UNCLASSIFIED

PROCESSING DATE-- 20NOV70

UNCLASSIFIED

2/2 GC8
 CIRC ACCESSION NO--AP0134010
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SURVEYED SECTION OF RIVER
 SHOULD BE MARKED OFF, WITH MARKERS ON THE BRIDGE APPROACH AVENUES. THE
 COMPANY EXERCISE, IN ADDITION TO THE BRIDGE TRAIN, WILL REQUIRE: 1-2
 BAT ROAD LAYERS, A K-61 TRACKED AMPHIBIOUS PERSONNEL CARRIER, AND MAY
 ANPHIBIOUS RECONNAISSANCE VEHICLE, A TRUCK CRANE, TWO TO FOUR ICE SAWS,
 FOUR OR FIVE HALF TON HAND WINCHES, AT LEAST FOUR TO SIX CROWBARS (14-16
 CM IN DIAMETER AND 3 M. LONG), 20 TO 30 ICE BREAKING BARS, ONE OR TWO
 BULLDOCKS, PLUS SIGNALING DEVICES. A THOROUGH JOB SHOULD BE DONE ON
 THE SITUATION ELEMENTS ON THE BASIS OF WHICH PERSONNEL ARE SUPPOSED TO
 REACT TO ENEMY ACTION, REPAIRING DAMAGE AND WORKING WITH UNDERMANNED
 CREWS. THEY SHOULD NOT FORGET TO ESTABLISH A PERSONNEL WARMING
 FACILITY. RESCUE AND RECOVERY SHOULD BE PARTICULARLY WELL ORGANIZED.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

1/2 019

TITLE--FIRST FINE OF ROQUESITE IN THE USSR -U-

AUTHOR--(02)--YARENSKAYA, N.A., SLYUSAREV, A.P.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 18(5), 1138-41

DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--MINERAL DEPOSIT, GEOGRAPHIC LOCATION, X RAY ANALYSIS, SULFIDE, SILVER, GOLD, INDIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3004/1287

STEP NO--UR/0020/70/191/005/1138/1141

CIRC ACCESSION NO--AT0131742

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

2/2 019

CIRC ACCESSION NO--AT0131742

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ROQUESITE WAS FOUND IN DEEP HORIZONS OF A MIXED PYRITE BARITE COMPLEX ORE DEPOSIT. THE MINERALIZATION THERE WAS RELATED TO THE LATEST BORNITE TENNANTITE CHALCOCITE ASSOCN. WHERE ROQUESITE WAS PRESENT AS VERY THIN LAMINAL (0.003 TIMES 0.023-0.003 TIMES 0.07 MM) INCLUSIONS IN BORNITE. THE MINERAL HAD A GRAY COLOR WITH BLuish HUE SOMEWHAT LIGHTER THAN THAT OF SPHALERITE BUT DARKER THAN FAHLORE. IT POSSESSED A WEAK BIREFRINGENCE AND WEAK ANISOTROPY. ITS COMPN., DTD. BY X RAY MICRONAL., WAS RECALCD. INTO THE FORMULA, CU₁₀SN₂SO₄ S₂O₁₄. THE BORNITE TENNANTITE CHALCOCITE ASSOCN. IN THE DEPOSIT CONSISTED OF DISSEMINATIONS IN BARITE AND VEINLETS IN EARLY FINE AGGREGATE PYRITE ORES. EACH OCCURRENCE HAS ITS OWN COMPLEX OF RARE MINERALS: STROMAYERITE, IDALITE, GERMANITE, AG, AU, AND IN SULFIDES IN DISSEMINATED ORES AND BETERKHTIYE AND MINERALS OF THE STANNITE GROUP IN VEINLETS. THEREFORE, THE SEPN. OF IN AND SN MINERALIZATION DIFFERED IN SPACE AND PROBABLY IN TIME.

FACILITY: INST. GEOL. NAUK IM. SATPAEVA, ALMA-ATA, USSR.

UNCLASSIFIED

UDC 621.771:665.521.5

USSR

STARCHENKO, D. I., Doctor of Technical Sciences, SLYUSAREV, A. T., Candidate of Chemical Sciences, and KAPLANOV, V. I., Candidate of Technical Sciences

"Efficiency of TPS-K Lubricant in High-Speed Cold-Rolling of Steel Sheets"

Dnepropetrovsk, Metallurgicheskaya i Gornorudnaya Promyshlennost', No 5, Sep-Oct 70, pp 21-23

Abstract: Results are presented from tests conducted on the new TPS-K lubricant, which was developed jointly by the Zhdanov Metallurgical Institute and the Bryansk Pilot Petroleum and Oil Plant. The lubricant is being used successfully in thin sheet rolling of low-carbon and transformer steels, in wire and tube drawing from nonferrous metals, and in the production of bent profiles. Tests were conducted in the rolling of dry strips by dry rollers, and also in using the TPS-K lubricant with 5, 10, 20, 30, 40, 50, 75, and 100% concentration of surface-active substances. Similar tests were conducted for purposes of comparison using industrial 20 oil and palm and castor oils.

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Heat Treatment

UDC 669.14.018.58:621.78

USSR

LANKO, A. I., OBLEZIN, A. G., and SLYUSAREV, I. F., Novocherkassk Scientific Research Institute of Permanent Magnets

"Methods of Treating Ticonal Magnets"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 73, pp 71-72

Abstract: The magnetic properties of four-pole rotor magnets made of ticonal alloys were compared after heat treatment according to a mode currently used in industrial conditions and according to a newly proposed method. Chemical composition of the ticonal alloys was (in %):

| | Co | Ni | Al | Fe | Ti | Cu | S | Si | Nb |
|---------|----|------|-----|------|-----|----|-----|---------|----|
| Alloy 1 | 35 | 14.5 | 7.8 | 34.2 | 5.5 | 3 | 0.2 | - | - |
| Alloy 2 | 35 | 12.4 | 6.2 | 35 | 5.5 | 3 | 0.2 | 0.2-0.3 | 1 |

The existing method of heat treating ticonal magnets consists basically in heating the magnets to 1250°C with isothermal soaking in a molten aluminum bath (815°C) with an applied magnetic field of 4500-5000 Oe. The new method consists in soaking at 1250°C for 10 minutes and then placing the magnets

USSR

LANKO, A. I., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov,
No 1, Jan 73, pp 71-72

in a brass vessel situated between the four poles of the magnetizing unit with an applied magnetic field of 300 Oe, which is turned on for 6-7 minutes. As the magnets cool, they heat up the brass vessel which slows down the cooling rate of the magnets. The new method of magnet heat treatment yields magnets with higher and more stable magnetic properties than the current method. No differences in magnet structure were detected for the two heat treatment modes used. Magnets made using alloy 2 had the better properties.
2 tables.

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USSR

UDC 538.4

BUTSENIKS, I. E., SLYUSAREV, N. M., SHCHERBININ, E. V.

"Turbulent Pulsations in Free Boundary Layers with Even MHD Flow in a Pipe"

Riga, Magnitnaya Gidrodinamika, No 3, Jul-Sep 72, pp 135-138.

Abstract: This work presents the results of measurement of intensity of turbulent pulsations in a flow of an electrical conducting fluid under conditions such that the heterogeneity of the velocity structure occurs at the center of the flow. The components of the electrical field were measured as the fluid flowed through a square tube with two insulators and two conducting walls in a transverse magnetic field oriented diagonally across the tube. It is demonstrated that when there are free boundary layers in the flow, an increase in the magnetic field does not laminarize the flow, but rather increases the level of turbulent pulsations.

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USSR

BUTSENIYEKS, I. E., SLYUSAREV, N. M., SHCHERBININ, E. V.

"MHD Turbulence in Free Boundary Layers in a Square Cube"

7-ye. Soveshch. po Magnit. Gidrodinamike. T. 1. [Seventh Conference on Magnetic Hydrodynamics, Vol 1 -- Collection of Works], Riga, Zinatnye Press, 1972, pp 37-39, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 B57).

Translation: The pulsations of the electric field components e'_1 , e'_2 and e'_3 are measured as an electrically conducting fluid flows through a square tube ($29 \times 29 \text{ mm}^2$) with two nonconducting and two conducting (copper) walls in a transverse magnetic field oriented along diagonals of the tube, for $R = 17,200$ and $H = 190, 380, 520$, calculated on the basis of the half width of the channel.

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1/2 025 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--ON THE PHENOMENOLOGICAL THEORY OF SUPERFLUIDITY OF HELIUM NEAR THE
LAMBDA POINT -U-
AUTHOR--(02)-SLYUSAREV, V.A., STRZHEMECHNYI, M.A. S
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 5, PP 1757-1764
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HELIUM, LIQUID HELIUM, SUPERFLUIDITY, MATHEMATIC EXPRESSION,
PHASE TRANSITION, DIFFERENTIAL EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3001/2233

STEP NO--UR/0056/70/058/005/1757/1764

CIRC ACCESSION NO--AP0127595

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127595

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EQUATIONS DESCRIBING THE BEHAVIOR OF THE ORDER PARAMETER Φ IN SUPERFLUID HELIUM NEAR THE LAMBDA POINT ARE INVESTIGATED BY SCALING METHODS IN THE THEORY OF PHASE TRANSITIONS. RESTRICTIONS IMPOSED ON THE FORM OF THE EQUATIONS ARE FOUND. IT IS SHOWN THAT THE DIFFERENTIAL EQUATIONS FOR Φ ARE VALID ONLY FOR SOME CERTAIN VALUES OF THE CRITICAL PARAMETERS. FACILITY:
FIZIKO-TEKHNICHESKIY INSTITUT NIZKIKH TEMPERATURE, AKADEMII NAUK UKRAINSKOY SSR.

UNCLASSIFIED

USSR

UDC: 535.818.9

ADONINA, A. I., ANDRUSENKO, A. M., and SLYUSARSKIY, V. A.

"Prism Polarizers"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 14, No 1, 1971, pp 61-66

Abstract: In this paper, the authors consider the problem of the passage of an electromagnetic wave through a Dove [transliteration uncertain] prism or Fresnel rhombus with the multiple reflections taken into account. For the computations, they use the method of direct summation of the multiple reflections. The assumption is made that the cross section of the electromagnetic wave beam incident on the face of the prism or rhombus is much smaller than the area of that face. Dimensions of the device to be investigated are chosen such that the incident beam undergoes an integral number of reflections from the device's upper and lower bounds, with the beam in the Dove prism undergoing an odd number of reflections and the beam in the Fresnel rhombus undergoing an even number. The case in which the wave incident on the face of the device has a definite polarization is examined. Theoretical computations of the basic characteristics of elliptically polarized waves were made on an electronic computer.

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Acc. Nr.

AP0049304

Abstracting Service:

CHEMICAL ABST. F-70

Ref. Code

UR 0226

103090v Cermet contacts of silver-cupric oxide composition. Mikstevich, G. F.; Kornienko, V. P.; Namitokhy, K. K.; Smag, N. N.; Yudin, B. A. (Vses Nauch.-issled. Proekt.-Konst. Inst. Elektroapp., USSR). Parash. Mez. 1970. 10(1), 60-5 (Russ). The production of Ag-CuO contacts with fine-dispersed structural components is described. Comparative data are presented on the properties of contacts produced from a fine-dispersed charge, the charge being obtained by chem. methods, and contacts from the mixt. of comparatively large-size powders obtained by mech. mixing. Comparative results are also given for the wear resistance of the contacts during current flow.

S. A. Mertol

pc

REEL/FRA

19801121

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UNCLASSIFIED

PROCESSING DATE--13NOV70

1/2 020

TITLE--PIEZOELECTRICITY OF QUARTZ AND QUARTZ RESONATORS -U

AUTHOR--(02)-SMAGIN, A.G., YAKOSLAVSKIY, M.I.

COUNTRY OF INFO--USSR

SOURCE--PIEZOELEKTRICHESTVO KVARTSA I KVARTSEVYYE REZONATORY, MOSCOW, ENERGIYA, 1970, 488 PP (SL:2383)

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--PIEZOELECTRICITY, RESONATUR, QUARTZ

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0028

STEP NO--UR/0000/70/000/000/0001/0488

CIRC ACCESSION NO--AM0133912

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 020

CIRC ACCESSION NO--AM0133912

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

ABSTRACT. TABLE OF CONTENTS: PREFACE 3.
 INTRODUCTION 5. CHAPTER I SOME IDEAS OF APPLIED CRYSTALLOGRAPHY AND
 CRYSTAL PHYSICS 9. II MAJOR PHYSICAL PROPERTIES OF MONOCRYSTALLINE
 QUARTZ 76. III RESONANT OSCILLATIONS OF PIEZOELECTRIC ELEMENTS 95.
 IV RADIOPHYSICAL CHARACTERISTICS OF OSCILLATING QUARTZ RESONATORS 136.
 V MEASURING ELECTRICAL PARAMETERS AND CHARACTERISTICS OF RESONATORS
 301. VI QUARTZ RESONATOR AS COMPONENT OF ELECTRONIC SCHEME 338. VII
 DESIGN OF PIEZOELECTRIC COMPONENT OF QUARTZ RESONATOR 413. LITERATURE
 482. THE BOOK WAS WRITTEN FOR A WIDE CIRCLE OF SCIENTIFIC WORKERS,
 ENGINEERS AND TECHNICIANS, WORKING WITH THE PREPARATION AND APPLICATION
 OF QUARTZ INSTRUMENTS, AND ALSO TEACHERS AND STUDENTS OF HIGHER
 EDUCATIONAL INSTITUTIONS.

UNCLASSIFIED

1/3 031 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--DETERMINATION OF DECELERATION IN BASE RADAR OBSERVATION OF METEORS
-U-
AUTHOR--(04)-GULMEDOV, KH.D., KVACHADZE, G.P., LAGUTIN, M.F., SMAGIN, D.M.
COUNTRY OF INFO--USSR
SOURCE--EZVESTIYA AKADEMII NAUK TURKMENSKOY SSR, SERIYA
FIZIKO-TEKHNICHESKIKH, KHIMICHESKIKH I GEOLOGICHESKIKH NAUK, NO 3, 1970,
DATE PUBLISHED-----70
SUBJECT AREAS--NAVIGATION, ATMOSPHERIC SCIENCES, ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--RADAR METEOR OBSERVATION, DECELERATION, ATMOSPHERE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0389 STEP NO--UR/0202/70/000/003/0122/0124
CIRC ACCESSION NO--AP0137485
UNCLASSIFIED

2/3 '031

UNCLASSIFIED

PROCESSING DATE--27NOV70

GIRC ACCESSION NO--AP0137485

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KHAR'KOV INSTITUTE OF RADIO ELECTRONICS, JOINTLY WITH THE INSTITUTE OF PHYSICS OF THE EARTH AND ATMOSPHERE ACADEMY OF SCIENCES TURKMEN SSR, IN 1968 COMPLETED WORK ON A BASE RADAR COMPLEX. THIS OUTFIT INCLUDES SIX HIGHLY STABLE TRANSMITTING SYSTEMS ORIENTED ALONG A WEST-EAST DIRECTION, APPROXIMATELY UNIFORMLY OVER A DISTANCE OF 42 KM. THE RECEIVING CENTER WITH A PULSED RANGE FINDER WAS SITUATED AT THE ASTROPHYSICAL OBSERVATORY AT VANNOVSKIY AND WAS SHIELDED BY MOUNTAINS FROM THE DIRECT WAVES OF THE TRANSMITTERS. THIS PAPER GIVES THE RESULTS OF DETERMINATIONS OF THE DECELERATION OF INDIVIDUAL METEORS IN THE EARTH'S ATMOSPHERE ON THE BASIS OF MEASUREMENTS MADE DURING APRIL-MAY 1969. ASSUMING A LINEAR APPROXIMATION OF THE CHANGE IN VELOCITY V WITH TIME, THE LEAST SQUARES METHOD WAS USED IN COMPUTING MEAN METEOR DECELERATION. FOR 84 METEORS REGISTERED IN THE MIDDLE SEGMENT OF THE TRAIL DECELERATION WAS MEASURED AT NOT LESS THAN THREE POINTS ALONG THE TRAIL AND WAS 33 KM-SEC^{-2} . THE MEASUREMENT RESULTS WERE EXAMINED FOR DIFFERENT VELOCITY RANGES: 25-35, 35-45, 45-55, 55-70 KM-SEC. A TABLE GIVES ALL PERTINENT DATA: N , NUMBER OF PROCESSED MEASUREMENTS, \bar{V} , MEAN VELOCITY, \bar{A} , MEAN DECELERATION, AND $\Delta \bar{A}$, MEAN SQUARE ERROR IN \bar{A} . THE DETERMINED DEPENDENCE OF ACCELERATION ON VELOCITY IS COMPARED WITH THE DEPENDENCE OBTAINED BY F. VERNIANI (SMITH CONTR. TO ASTROPHYS., 1966). IN BOTH CASES THE DEPENDENCE WAS THE SAME AND APPROXIMATELY LINEAR.

UNCLASSIFIED

3/3 031

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137485

ABSTRACT/EXTRACT--IF IT IS POSTULATED THAT MOST REFLECTION STATISTICS APPLY TO THE PART OF THE TRAIL WITH MAXIMUM IONIZATION (OR CLOSE TO IT), IT IS SHOWN THAT ONE CAN MAKE A THEORETICAL DETERMINATION OF THE LOSS OF VELOCITY WITH ALTITUDE FOR THE ENTIRE GROUP OF MEASURED METEORS. FOR 39 METEORS THE AUTHORS FOUND: \bar{V} EQUALS 54 KM-SEC; $\Delta V/\Delta H$ EQUALS 2.55 PLUS OR MINUS 0.17 KM; $\Delta V/\Delta H$ EQUALS 1.1 PLUS OR MINUS 0.1 KM-SEC. THIS MEAN VALUE OF LOSS OF VELOCITY WITH ALTITUDE IS AN ORDER OF MAGNITUDE GREATER THAN THE CORRESPONDING VALUE COMPUTED THEORETICALLY FOR POINTS ON A TRAIL CLOSE TO THE POINT OF MAXIMUM IONIZATION. FACILITY: INSTITUTE OF PHYSICS OF THE EARTH AND ATMOSPHERE, ACADEMY OF SCIENCES TURKMEN SSR; ASHKHABAD.

UNCLASSIFIED

173 028 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DETERMINING METEOR RADIANT AND ALTITUDE IN CONTINUOUS RADAR
OBSERVATIONS -U-
AUTHOR--(04)--GULMEDOV, KH.D., LAGUTIN, M.F., SMAGIN, D.M., KHANBERDYEV,
A.KH.
COUNTRY OF INFO--USSR
SOURCE--ASHKABAD, IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR, SERIYA
FIZIKO-TEKHNICHESKIKH, KHIMICHESKIKH I GEOLOGICHESKIKH NAUK, NO 2, 1970,
DATE PUBLISHED--70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, NAVIGATION
TOPIC TAGS--METEOR RADIANT, RADAR METEOR OBSERVATION, REFLECTED SIGNAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/0104 STEP NO--UR/0202/70/000/002/0076/0083
CIRC ACCESSION NO--AP0125926
UNCLASSIFIED

2/3 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125926

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS OF THIS ARTICLE PROPOSE A METHOD FOR DETERMINING THE RADIANT, DECELERATION AND ALTITUDE OF A METEOR DURING RADAR OBSERVATIONS IN A CONTINUOUS REGIME; IT REQUIRES USE OF NO ADDITIONAL ANGLE MEASURING DEVICES. THE INITIAL DATA WERE THE RESULTS OF ANALYSIS OF THE AMPLITUDE AND TIME CHARACTERISTICS OF REFLECTED SIGNALS. THE METHOD WAS DEVELOPED BY THE ASTROPHYSICAL LABORATORY IN THE PROGRAM OF JOINT RESEARCH BY THE KHAR'KOV INSTITUTE OF RADIOELECTRONICS AND THE INSTITUTE OF PHYSICS OF THE EARTH AND ATMOSPHERE ACADEMY OF SCIENCES TURKMEN SSR. USE OF THE CONTINUOUS OBSERVATION METHOD MAKES IT POSSIBLE TO COMPUTE METEOR VELOCITY WITH A HIGHER ACCURACY BECAUSE THE REFLECTED SIGNAL HAS DIFFRACTION OSCILLATIONS TO THE REFLECTION POINTS WHICH ARE LEAST SUBJECT TO WIND INFLUENCE. HOWEVER, USE OF CONTINUOUS RADIATION COMPLICATES DETERMINATION OF THE DIRECTION COSINES OF THE TRAIL. IN THE CASE OF A PULSED SYSTEM THE RATIO OF THE DISTANCE BETWEEN REFLECTION POINTS ON THE TRAIL TO THE DISTANCE SEPARATING TWO CORRESPONDING RECEIVERS AT THE EARTH'S SURFACE IS EQUAL TO HALF THE COSINE OF THE ANGLE BETWEEN THE DIRECTION OF THE TRAIL AND THE LINE CONNECTING THESE RECEIVERS. THIS OCCURS WHEN THE RECEIVERS ARE 5-3 KM FROM THE TRANSMITTER. WHEN USING THE CONTINUOUS RADAR METHOD THE DIRECT WAVE IS ATTENUATED BY PLACING THE RECEIVERS AT GREAT DISTANCES FROM THE TRANSMITTER. TENS OF KILOMETERS MAY SEPARATE THE EXTREME POINTS. FOR SUCH BASES THE DIRECTION COSINES OF THE TRAIL ARE DEPENDENT NOT ONLY ON THE SPACING OF REFLECTION POINTS ALONG THE TRAIL, BUT ALSO ON THE SPATIAL POSITION OF THE TRAIL.

UNCLASSIFIED

3/3 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125926

ABSTRACT/EXTRACT--IN COMPUTING THE ORBIT IT IS NECESSARY TO KNOW NOT ONLY THE VELOCITY VECTOR OF THE METEOR, BUT ITS DECELERATION AS WELL; THIS REQUIRES A MULTISTATION MEASURING SYSTEM FOR MEASURING APPARENT VELOCITIES AT SEVERAL POINTS ALONG THE TRAIL. THE ARTICLE DESCRIBES A COMPLEX FOR FIVE SPACED TRANSMITTERS AND A RECEIVING REGISTERING APPARATUS. FORMULAS ARE DERIVED AND AN EXAMPLE USED IN ILLUSTRATING THE METHOD FOR DETERMINING THE COORDINATES OF THE RADIANT FROM THE DIRECTION COSINES OF THE TRAIL. THE ARTICLE THEN DESCRIBES A SIMPLE PHASE METHOD FOR MEASURING THE ANGULAR COORDINATES OF A METEOR TRAIL BASED ON A DIRECT COMPARISON OF THE AMPLITUDE TIME CHARACTERISTICS OF THE REFLECTED SIGNALS. FACILITY: INSTITUTE OF PHYSICS OF THE EARTH AND ATMOSPHERE, ACADEMY OF SCIENCES TURKMEN SSR.

UNCLASSIFIED

USSR

UDC: 621.375.4.001

SMAGIN, I. I.

"Calculation of a Wide-Band Stage for Amplification of Harmonic Signals With Emitter Correction"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Technical Electrical Communications--collection of works), Moscow, "Svyaz", 1970, pp 45-48 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No. 1D91)

Translation: A method is proposed for calculating a stage with emitter correction by using graphs plotted by the author. Three illustrations, bibliography of two titles. Resumé.

1/1

Acc. Nr: **AP0044845**

Ref. Code:

UR 0497

PRIMARY SOURCE: **Klinicheskaya Meditsina**, 1970, Vol 48,
Nr 2, pp **126-129**

**SOME FEATURES PECULIAR TO THE ORIGIN AND COURSE
OF CHRONIC PANCREATITIS**

V. G. Smagin, O. I. Yakhonlova, L. N. Valenkevich

Summary

In order to elucidate the causes of chronic pancreatitis the authors examined 146 patients. The most frequent cause was the presence of previous chronic diseases of the biliary tract (60.2%). In 13,7 per cent of cases peptic ulcer preceded, in 13,7 per cent -- acute pancreatitis, in 4.1 per cent -- epidemic hepatitis, in 5.4 per cent -- cholecystectomy and in 2.7 per cent -- different operations in the abdominal cavity. In the study of the clinical picture special attention should be paid to the so-called latent form of chronic pancreatitis which is not always correctly diagnosed. This form of the disease was noted in 17.7 per cent of cases.

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REEL/FRAME
19771700

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02

UDC: 621.396.6.019.3

USSR

SMAGIN, Yu. Ye.

"Possibilities of the Matrix Test Method for Analyzing the Working Capacity of Radio Electronic Circuits"

V sb. Metody razrab. radioelektron. apparatury, No 1 (Methods of Development of Radio Equipment, No 1--collection of works), Moscow, 1970, pp 129-134 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7V269)

Translation: A comparison is made of the modeling methods which are most widely used in studying the working capacity of radio electronic equipment -- statistical tests, boundary tests and matrix tests. The author points out the advantages of the last method, which consists in determining the region of working capacity and the ratings of elements which give maximum separation between the operating point and the boundaries of the region. Consideration is given to the automaton principle for conducting tests. An installation used in conjunction with the "Promin" digital computer is described, as well as an installation of an improved type which has been developed. Two illustrations, bibliography of five titles. N. S.

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USSR

SMAGINA, Ye. M.

"Automation of Preparation of Programs Written in SSK and Algol-60 for Input to Minsk-22 M Digital Computer"

Vychisl. Sistemy [Computer System -- Collection of Works], Novosibirsk, 1971, No 46, pp 235-238, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V705).

NO ABSTRACT.

1/1

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SPECTROPHOTOMETRIC DETERMINATION OF IONIZATION CONSTANTS OF 6
PRIME,,2,7,DIHYDROXY,1,NAPHTHYL,AZO,1, METHYLANAASINE -U-
AUTHOR-(03)-SMAGLYUK, N.G., DZHIYANBAYEVA, R.KH., TALIPOV, SH.T.
COUNTRY OF INFO--USSR
SOURCE--UZB. KHIM. ZH. 1970, 14(2), 24-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--SPECTROPHOTOMETRIC ANALYSIS, IONIZATION, HYDROXYL RADICAL,
NAPHTHALENE, AZO COMPOUND, HETEROCYCLIC NITROGEN COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0926 STEP NO--UR/0291/70/014/002/0024/0028
CIRC ACCESSION NO--AP0137954
UNCLASSIFIED

2/2 018

CIRC ACCESSION NO--A0137954

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISSOCN. CONSTS. OF THE TITLE
 COMPD. (I) WERE DETD. AT 18DEGREES BY 3 METHODS. ABSORPTION SPECTRA
 (400-600 NM) OF 0.002M ETOH SOLN.S OF I AT PH 0.82-9.81 WERE MEASURED.
 ABSORPTION CURVES FORM 3 ISOSBESTIC POINTS. THE 1ST AT 450 NM DEPENDS
 ON THE SPLITTING OFF OF THE PROTON FROM N OF THE PYRIDINE RING. AT PH
 SMALLER THAN 0.82 (ABSORPTION MAX. LAMBDA SUBMAX. 420 NM), PH LARGER
 THAN 2.7 (LAMBDA SUBMAX. 460 NM), AND PH 1-2.2, PROTONATED MOL.S.,
 NEUTRAL MOL.S., AND A MIXT. OF BOTH OF THESE I MOL. TYPES ARE PRESENT IN
 THE SOLN., RESP. AN ISOSBESTIC POKNT AT 495 NM CORRESPONDS TO PROTON
 ELIMINATION FROM THE OH GROUP OF I NEPHTHALENE RING, NEARER TO THE AZO
 GROUP. AT PH 2.5-5 (LAMBDA SUBMAX. 460 NM), THE I MOL.S., ARE IN A
 NONDISSOCD. (H SUB2 A) STATE, AT PH 5.5-8 A MIXT. OF H SUB2 A AND I
 MOL.S. DISSOCD. TO THE 1ST STAGE (HA PRIME NEGATIVE) IS PRESENT, AND AT
 PH 8.3 LAMBDA SUBMAX. 470 NM), THE 1ST DISSOCN. STAGE OF I IS FINISHED.
 AN ISOSBESTIC POINT AT 440 NM IS CAUSED BY REMOVING PROTON FROM THE 2ND
 OH GROUP OF THE NAPHTHALENE RING. AT PH 8.6-9.8, A MIXT. OF HA PRIME
 NEGATIVE AND A PRIME2 NEGATIVE IDNS EXISTS IN THE SOLN. THE 2ND
 DISSOCN. STAGE OF I IS COMPLETED AT PH LARGER THAN 10 (LAMBDA SUBMAX. 480
 NM) BY THE FORMATION OF A PRIME2 NEGATIVE. THE MEAN PK VALUES OF I ARE
 1.69, 7.88, AND 8.88. FACILITY: TASHKENT. GOSUNIV. IM. LENINA,
 TASHKENT, USSR.

UNCLASSIFIED

USSR

UDC 543.80 : 543.53

LISOVSKIY, I. P., and SMAKHTIN, L. A., Physicochemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"Rapid Determination of Sodium in Organophosphorus Compounds by the Fast Neutron Activation Method"

Moscow, Zhurnal Analiticheskoy Khimii, Vol 25, No 8, Aug 70, pp 1629-1631

Abstract: The article describes a rapid method for the determination of sodium in organophosphorus compounds according to the reaction $^{23}\text{Na}(n, p)^{23}\text{Ne}$. The fast neutron source is an NG-100 neutron generator. Maximum flux $\sim 5 \cdot 10^8$ neutrons $\cdot \text{cm}^{-2} \cdot \text{sec}^{-1}$. The neutron generator is equipped with an electromagnetic shutter. The samples are irradiated in thin-walled polyethylene ampoules, which are moved between the neutron source and the measuring instrument by compressed air. The spectra of the irradiated samples are taken on a scintillation detector consisting of NaI(Tl) well-crystal and an FEU-49 photomultiplier. Results are given for sodium determination in three paral-

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USSR

LISOVSKIY, I. P., and SMAKHTIN, L. A., Zhurnal Analiticheskoy Khimii, Vol 25, No 8, Aug 70, pp 1629-1631

1el specimens of $\text{NaOP}(:\text{O})(\text{OC}_6\text{H}_5)(\text{OC}_9\text{H}_{18})$. The average analysis time per specimen was 3-4 min. No corrections were made for self-shielding of specimens and standards during fast-neutron irradiation or for gamma-ray quantum absorption during measurement. The results show that it is possible to determine isotopes with a photopeak energy close to 0.51 Mev against a background of positron emitters in a well-crystal.

The authors thank I. K. RUBTSOVA for providing the specimens and A. B. DZEMITKEVICH for mounting and adjusting the neutron flux monitor.

2/2

Analytical Chemistry

USSR

UDC 543.253

LISOVSKIY, I. P., and SMAKHIN, L. A., Physicochemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"Simultaneous Determination of Phosphorus and Chlorine in Organophosphorus Compounds by the Fast Neutron Activation Method"

Moscow, Zhurnal Analiticheskoy Khimii, Vol 25, No 8, Aug 70, pp 1625-1628

Abstract: The article describes a method for the simultaneous determination of phosphorus and chlorine in organophosphorus compounds by using fast neutron activation. An NG-160 neutron generator was used as the fast neutron source. Maximum fast neutron flux was $\sim 5 \cdot 10^8$ neutrons/cm²-sec⁻¹, but a smaller flux was used for irradiation. The neutron flux was turned on and off by means of an electromagnetic shutter with vertical arrangement of the electromagnet axis. The samples and standards were irradiated in threaded ampoules of stainless steel Kh18N10T, moved between the neutron generator and measuring instrument by compressed air. Irradiation, movement of ampoules, time delay be-

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USSR

LISOVSKIY, I. P., and SMAKHTIN, L. A., Zhurnal Analiticheskoy Khimii,
Vol 25, No 8, Aug 70, pp 1625-1628

tween the end of irradiation and the beginning of measurement and the recording of the spectra were effected automatically. The phosphorus and chlorine content of a specimen was calculated by comparing the number of pulses in the photopeaks of the specimen and standards. The influence of chlorine on the results of phosphorus determination was studied.

The authors thank I. K. RUBTSOVA for providing the specimens.

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USSR

UDC 61.4.834 - 804.4

SMAKOV, M. M. and GUSAKOV, A. F.

"Apparatus for Detecting Toxic and Explosive Gasses in the Atmosphere in Industrial Installations"

Moscow, Khimicheskaya Promyshlennost', No 3, 1971, pp 230-234

Abstract: New instruments designed for detection of toxic and explosive gasses in air of the chemical and petrochemical production plants are reviewed. The most commonly used are thermochemical gas analyzers based on measuring the heat effect of the gas burning over a catalyst. The process occurs on a heated platinum wire which serves both as a catalyst and a sensor. Advantages and disadvantages of this instrument are listed and several instruments are described. This type of instrument is usually used in monitoring of explosive atmospheres. The instruments used to determine toxic components are generally based on photocolometric, photometric, ionization, radioisotopic and polarographic principles. Representative instruments designed to detect microconcentrations of chlorine, H_2S , CO , NH_3 , nitrogen oxides, SO_2 and HCl are discussed in detail.

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USSR

UDC 51:330.115

VOROB'YEV, A. F., LATUSHKO, N. A., SMAKOTINA, T. A.

"Mathematical Economics Formalization of Storage Problems"

Tr. Mosk. Ekon.-Statist. In-ta, [Works of Moscow Economics and Statistics
Institute], No 3, Part 2, 1970, pp 39-48, (Translated from Referativnyy
Zhurnal Kibernetika, No 5, 1971, Abstract No. SV579).

No Abstract.

1/1

172 008
UNCLASSIFIED
TITLE--DIAMIDE BASED COMPLEX SALT -U- PROCESSING DATE--27NOV70
AUTHOR--(05)-GORBONS, YE.P., YEGOROV, V.F., SMALIY, N.I., GALUSHKA, V.P.,
MASTEROV, A.P.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 264,377
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)
DATE PUBLISHED--03MAR70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL PATENT, NITRATE, NITRITE, UREA, COMPLEX COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1448
CIRC ACCESSION NO--AA0126979
STEP NO--UR/0482/70/000/000/0000/0000
UNCLASSIFIED

2/2 008
CIRC ACCESSION NO--AA0126979
ABSTRACT/EXTRACT--(U) GP-0-
E.G. CA NITRITE, AND UREA.
CA NITRITE IS 4-1:1.

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. COMPLEX SALTS BASED ON A DIAMIDE,
THE MOLAR RATIO OF UREA TO CA NITRATE PLUS

UNCLASSIFIED

USSR

SMAL'KO, A. A., Odessa

UDC: 62-501.2.621.311

"Elements of the Theory of Gas Turbine Installation Layouts"

Moscow, Izv. AN SSSR: Energetika i Transport, No 3, May/Jun
72, pp 135-140

Abstract: The author considers selection of a characteristic parameter for gas turbine installation layouts which would be used to classify the possible layouts. It is shown that four basic layouts can be combined to give all possible gas turbine installations which can be classified by one-to-one mapping on a number scale. The economic efficiency and operating stability of gas turbine installations under partial loads are characterized by simple equations. The number of gas turbine installations which are operationally stable is limited. The region of cycle parameters in which the use of a given layout is most effective is defined.

1/1

Acoustical and Ultrasonic

UDC: 534.232

USSR

BELYAKOV, I. I., SMARYSHEV, M. D., Leningrad

"Emission Impedance and Coefficient of Concentration of a One-Dimensional System of Rings on an Infinite Rigid Cylinder"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 2, Apr-Jun 72, pp 183-191

Abstract: A one-dimensional periodic system of $2\nu + 1$ rings arranged with period d on the surface of an infinite rigid cylinder of radius a is considered. The oscillatory velocity of the surface of the rings is described by a separable function of the variables ϕ and z in the cylindrical system of coordinates. Linear phase distribution of the rate of oscillations $v_n = v \exp(inkd \cos \theta_0)$ is assumed which ensures compensation in direction θ_0 relative to the axis of the cylinder.

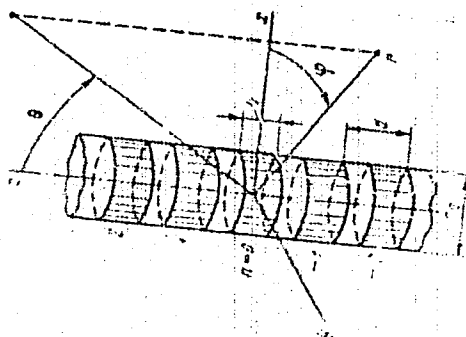
$$\xi_n(a, \phi, z) = \begin{cases} v_n f(\phi) F(z), & |z - nd| < \frac{h}{2} \\ 0, & \text{for other } z. \end{cases}$$

Approximate expressions are derived for the emission impedance and coefficient of concentration for such an antenna system, assuming that the im-

USSR

BELYAKOV, I. I., SMARYSHEV, M. D., Akusticheskiy Zhurnal, Vol 18, No 2,
Apr-Jun 72, pp 183-191

pedances of a ring are equal in finite and infinite systems. A procedure
is offered for refining the approximate formulas. Data are given on cal-
culation of the emission impedance and coefficient of concentration of a
cylindrical cophased ring lying in an infinite rigid cylindrical screen
for various ring diameters and heights.



USSR

UDC 576.895.7

SMATOV, Zh. S., and ISIMBEKOV, Zh. M., Institute of Zoology, Academy of Sciences Kazakh SSR, and Semipalatinsk Zooveterinary Institute

"New and Little-Known Species of Bloodsucking Midges (Diptera, Ceratopogonidae) in Kazakhstan"

Alma-Ata, Izvestiya Akademii Nauk Kazakhskoy SSR, No 4, Jul/Aug 71, pp 61-65

Abstract: A detailed description of two entirely new species and two species new for Kazakhstan is presented: *Culicoides sublatifrontis* Smatov et Isimbekov sp. n. has no spots on wings. Females were collected in Semipalatinskaya Oblast, Kazakh SSR in May 1965 from horses. *Culicoides brevifrontis* Smatov et Isimbekov, sp. n. -- belongs to the *circumscriptus* group. Females were collected in Semipalatinskaya Oblast from horses in August 1969. *Culicoides gutsevichi* Sen et Das Gupta has no spots on wings. Females and males were collected in Semipalatinskaya Oblast in 1966, 1967, and 1968 from men, and from horses in 1969. Females of *Culicoides homochrous* Renza. were collected in Semipalatinskaya Oblast in 1965, 1966, and 1967 from men. The specimens are kept in the Zoological Institute of the Academy of Sciences USSR in Leningrad. The following changes in the nomenclature are proposed: the name *Culicoides turanicus* Gusevich et Smatov to replace *C. kasachstanicus*, and the name *Culicoides alatavicus* Gutsevich et Smatov to replace *C. fuscus*.

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Water Treatment

USSR

UDC 551.463:352.13/.14:537.311

MASHOVETS, V. P., PUSHKOV, L. V., SMAYEV, V. N., FEDOROV, M. K., and FEDOTOV, N. V.

"Density, Viscosity and Electroconductivity of Sea Water at Temperatures Up to 300-350°"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 46, No 8, Aug 73, pp 1865-1868

Abstract: Investigation of density, viscosity and electroconductivity of sea water at various temperatures $d = d_0 + 0.0105 c^{1/2}$, where d_0 = density of pure water at a given temperature and c = salinity of sea water (weight-%). The logarithm of the viscosity of sea water ($\lg \eta_{sw}$) is related to the logarithm of the viscosity of pure water ($\lg \eta_{H_2O}$) by $\lg \eta_{sw} = 0.913 \lg \eta_{H_2O} - 0.00597$. The electronegativity increases with temperature reaching a maximum at 250°. The curve in the temperature range 10-160° can be described by the equation $x = 0.027 + 10^{-3} t$, where x = conductivity, t = temperature.

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USSR

UDC 615.849.1.015.25.015.45:612.82

SMAYLENE, A. A., and SLAVCHEVSKAYA, N. M., Chair of Pharmacology and General Toxicology, Leningrad, Sanitation-Hygiene Medical Institute, Leningrad, Ministry of Health USSR

"Action on the Central Nervous System of Alkyl Derivatives of Cysteamine and Cystamine and of Some Aminoalkyldisulfides"

Moscow, Farmakologiya i Toksikologiya, Vol 33, No 3, May-Jun 70, pp 271-275

Abstract: The pharmacological activity of cysteamine, cystamine, 2-dimethylaminoethanol HCl ($\text{HSCH}_2\text{CH}_2\text{NMe}_2\cdot\text{HCl}$) (I), 2,2'-bis-(dimethylamino)diethyldisulfide HCl ($\text{Me}_2\text{NCH}_2\text{CH}_2\text{SSCH}_2\text{CH}_2\text{NMe}_2\cdot 2\text{HCl}$) (II), N-carboxymethyl-2-aminoethanol HCl ($\text{HSCH}_2\text{CH}_2\text{NHCH}_2\text{COOH}\cdot\text{HCl}$) (III), 2,2'-(carboxymethylamino) diethyldisulfide HCl ($\text{HOOCCH}_2\text{NHCH}_2\text{CH}_2\text{SSCH}_2\text{CH}_2\text{NHCH}_2\text{COOH}\cdot 2\text{HCl}$) (IV), guanidylcystamine HBr ($\text{H}_2\text{N}(\text{HN}=\text{CNHCH}_2\text{CH}_2\text{SSCH}_2\text{CH}_2\text{NHC}(\text{=NH})\text{NH}_2)\cdot 2\text{HBr}$) (V), s-beta-aminoethylisothiurea HCl ($\text{H}_2\text{NCH}_2\text{CH}_2\text{SC}(\text{=NH})\text{NH}_2\cdot 2\text{HCl}$) (VI), 1-thio-2-aminopropane HCl ($\text{MeCH}(\text{NH}_2)\text{CH}_2\text{SH}\cdot\text{HCl}$) (VII), and 2,2'-diaminodipropyldi-sulfide HCl ($\text{MeCH}(\text{NH}_2)\text{CH}_2\text{SSCH}_2\text{CH}(\text{NH}_2)\text{Me}\cdot 2\text{HCl}$) (VIII) was studied in experiments on mice. Introduction of Me groups into cysteamine and cystamine increased the toxicity, while introduction of COOH into cysteamine (Compound III) reduced it. In doses of 20 and 50 mg/kg, all com-

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SMAYLENE, A. A., et al., Farmakologiya i Toksikologiya, Vol 33, No 3, May-Jun 70, pp 271-275

pounds tested except VI had a depressing effect on the motor component of the orientation reaction. In a dose of 100 mg/kg, all compounds tested had this effect. All ten compounds enhanced the action of barbamy and chloralhydrate. None of them prevented convulsions produced by corazole (phenylenetetrazole). Cysteamine, cystamine, I, II, IV, V, and VIII in a dose of 50 mg/kg and all ten compounds in a dose of 100 mg/kg delayed the onset of strychnine convulsions. Cystamine, IV, V and VII reduced the lethality from strychnine administered in a dose of 1.65 mg/kg, which otherwise had a 100% lethal effect. I and II reduced from 100 to 40-50% the lethality that resulted from the administration of 20 mg/kg nicotine. All compounds tested delayed the onset of arecoline convulsions, but increased their intensity and duration. The compounds studied depressed the central nervous system, but did not exhibit a pronounced activity as anticonvulsants.

2/2

USSR

UDC: 537.226.33

SEGALLA, A. G., SMAZHEVSKAYA, Ye. G., FEL'DMAN, N. B.

"Investigation of the Kinetics of Polarization of TsTS-27 Ferroelectric Ceramic"

Elektron. tekhnika. Nauchno-tekhn. sb. Radiokomponenty (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, Vyp. 5, pp 100-106 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V471)

Translation: A study is made of the kinetics of polarization of TsTS-27 ferroelectric ceramic at temperatures of 20-140°C, as well as the effect of preliminary heat treatment (quenching) on the rate of the polarization process and the magnitude of the piezoelectric activity. It is shown that measurement of the parameters of the piezoelectric ceramic in the process of polarization permits determination of the time needed for reaching maximum polarization, and also that quenching of a ferroelectric ceramic in the TsTS system appreciably accelerates the process of polarization and increases piezoelectric activity. Resumé.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DESCRIPTION OF TRIPLE COLLISIONS IN THE THEORY OF STRONG INTER
CHANNEL COUPLING -U-
AUTHOR--(03)--AMIRKHANDY, I.V., ~~SMEDARCHINA, Z.K.~~, KHRISTOVA, YE.K.
COUNTRY OF INFO--USSR
SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 3, PP
392-404
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--NUCLEAR MODEL, NUCLEAR REACTION, THREE BODY PROBLEM, BOUNDARY
VALUE PROBLEM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0999 STEP NO--UR/0646/70/003/003/0392/0404
CJRC ACCESSION NO--AP0124658
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124658

ABSTRACT/EXTRACT--(U) GP-0- ABSTPACT. ONE OF THE DIFFICULTIES IN THE DESCRIPTION OF REACTIONS WITH THREEFREE PARTICLES AT THE BEGINNING OR THE END OF THE PROCESS IN THE FRAMEWORK OF MULTI,CHANNEL FORMALISM IS A CORRECT FORMULATION OF THE BOUNDARY CONDITIONS. A METHOD OF AVOIDING THIS TROUBLE IS SUGGESTED. FACILITY: OB'YEDINENNYI INSTITUT.
FACILITY: YADERNYKH ISSLEDOVAN Y.

UNCLASSIFIED

USSR

UDC: 621.315.592

GEORGITSE, Ye. I., IVANOV-OMSKIY, V. I., KOLOMIYETS, B. T.,
MAL'KOVA, A. A., and SMEKALOVA, K. P., A. F. Ioffe Physico-
Technical Institute, Leningrad

"Interaction of Hot Electrons and Phonons in $Cd_xHg_{1-x}Te$ "

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp
1283-1287

Abstract: Experiments are described for investigating the photoconductivity and photomagnetic effect in several $Cd_xHg_{1-x}Te$ alloys for the purpose of studying the peculiarities of heating electrons by light as well as the interactions of phonons and photoelectrons. The specimens, in which $0.15 \leq x \leq 0.24$, were n-type and were investigated at temperatures of 10 and 80° K in magnetic fields of up to 18 kOe. To avoid heating of the electron gas by the stationary field, the photoconductivity was measured in electric fields of no more than 0.1 V/cm intensity; all measurements were made under conditions of weak light signals $\Delta n \ll n_0$, where n_0 is the concentration of balanced electrons. Spectra for the photoconductivity and the photomagnetic effect are plotted and a table of parameters for various combinations of the $Cd_xHg_{1-x}Te$ formula is presented.

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USSR

GEORGITSE, Ye. I., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1283-1287

The method by which the measurements were conducted is explained in an earlier article (Ye. I. Georgitse, et al, FTP, 5, 1971, p 1765). The assistance of I. P. Polushchuk, graduate of Tbilisi University, is acknowledged.

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Photoelectric Effect

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USSR

UDC 621.315.592

GEORGITSE, YE. I., IVANOV-GMSKIY, V. I., KOLOMIYETS, B. T., MAL'KOVA, A. A.,
SHEKALOVA, K. P.

"Fluctuations of the Photoconductivity in a Magnetic Field and the Photomagnetic Effect of $Cd_{0.20}Hg_{0.80}Te$ Alloy"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 455-457

Abstract: A study was made of photoconductivity in a transverse magnetic field and the photomagnetic effect of $Cd_{0.20}Hg_{0.80}Te$ alloy at $10^{\circ} K$. The oscillatory nature of the spectra with a period depending on the magnetic field intensity was detected. The fluctuations of the photoelectric phenomenon are caused by quantum oscillations of optical absorption. The g -factor and effective mass of the electrons were estimated. Graphs are presented showing the photoconductivity spectra of the alloy for different magnetic field intensities. The oscillation period with respect to energy in the photoconductivity and photomagnetic effect spectra increases with the magnetic field. Therefore, they do not pertain to the phonon oscillations. The presence of oscillation peaks in the field functions indicates that the oscillations are caused by quantization of the energy spectrum of the electrons in the magnetic field. The oscillation period $\Delta 1/H$ is not constant, and, consequently, the oscillations cannot be

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GEORGITSE, YE. I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 455-457

considered Shubnikov-de Haas or Gurevich-Firsov. It is proposed that the fluctuations of the absorption coefficient in the magnetic field are responsible for the observed peculiarities. The correspondence of the minimum photoconductivities to the maximum photomagnetic effect indicates the relation of the oscillations of the photoelectric phenomena of the alloy to the quantum oscillations of the optical absorption coefficient. Correspondence of the estimates of the g-factor and the effective electron mass with published data confirms the correctness of the assumptions with respect to the nature of the observed fluctuations. However, considering the measurement taken in non-polarized light, the results obtained do not permit a more complete analysis of the energy spectrum of electrons in a magnetic field.

1/2 028 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MOBILITY OF ELECTRONS IN INTRINSIC MERCURY TELLURIDE AND IN N TYPE
MERCURY TELLURIDE -U-
AUTHOR-(04)-IVANOVOMSKIY, V.I., KOLOMIYETS, B.T., OGORODNIKOV, V.K.,
SMEKALOVA, K.P.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 264-9
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--MERCURY, TELLURIDE, ELECTRON MOBILITY, ELECTRON SCATTERING,
CRYSTAL IMPURITY, PHONON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/1865 STEP NO--UR/0449/70/004/002/0264/0269
CIRC ACCESSION NO--AP0118822

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0118829

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. DEPENDENCES OF COND. R AND THE HALL MOBILITY, R SIGMA, OF N HGTE ARE DETD. IN A WIDE RANGE OF TEMPS. AND IMPURITY CONCNS. THE R SIGMA IS MEASURED IN WEAK MAGNETIC FIELDS (SIMILAR TO 03) AND R IS WEAK ELEC. FIELDS SIMILAR TO 10 MV-CM. WITH THE AID OF THE 2 BAND THEORY OF COND. IT IS SHOWN THAT AT THE EXISTING HIGH RATIO OF ELECTRON TO HOLE MOBILITY (50-100) THE VALUES OF R AND R SIGMA CORRESPOND TO THE CONC. AND HALL MOBILITY OF THE ELECTRONS, RESP. THE INCREASE OF N SUB3 TO SIMILAR TO 10 PRIME19-CM PRIME3 LEADS TO A DROP IN MOBILITY BY 2 DECADES. THERE IS NO VARIATION OF R SIGMA IWTH TEMP. FOR STRONGLY DOPED CRYSTALS UP TO 77DEGREESK ABOVE WHICH IT DECREASES SLIGHTLY. IN PURE SAMPLES R SIGMA DECREASES IRREGULARLY WITH TEMP. FROM 10 PRIME6 CM PRIME2-V SEC AT 20DEGREESK TO SIMILAR TO 3 TIMES 10 PRIME4 CM PRIME2-V SEC AT 130DEGREESK. THE THEORETICAL R SIGMA-N SUB3, DEPENDENCE LIES ABOVE THE EXPTL. WHICH IS DOPED SAMPLES AND ON HOLES FOR THE PURE ONES. ACCOUNTING FOR THE SCREENING EFFECT BY VALENCE ELECTRONS THE ELECTRON MOBILITY IN HGTE AT 4.2DEGREESK IS ESTD. AS (1-3) TIMES 10 PRIME6 CM PRIME2-V SEC. ELECTRON SCATTERING ON OPTICAL PHONONS IS ALSO SIGNIFICANT AT 100-300DEGREESK, WHILE ACOUSTIC PHONONS HAVE NO EFFECT IN THE SCATTERING PROCESS.

FACILTY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC: 534.222.2

SMEKHOV, C. D., YALOVIK, M. S.

"Experimental Study of Relaxation Processes Behind a Shock Wave Front in Nitrogen"

Nauchn. tr. In-t mekh. Mosk. un-ta (Scientific Works. Institute of Mechanics of Moscow University), 1970, No 3, pp 5-32 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B179)

Translation: An experimental determination of the time of relaxation of vibration energy of the nitrogen molecule, the rate constants for dissociation upon collisions with various particles, and the rate constants for associative ionization of nitrogen. Use was made of the method of absorption spectroscopy in the vacuum-ultraviolet region of the spectrum, registration of emission of the first negative system of the N_2^+ molecule, and microwave probing of the ionized gas. The measurements were done in the nonequilibrium region behind the shock wave front. Bibliography of 32 titles. Resumé.

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СИМЕКHOVA, G.P.

SPRS 59208
6.93

4

MI-9. STUDY OF THE HOMOGENEITY OF THE COMPOUND ZnS_{1.5} AND ALLOY'S BASED ON IT
 prepared by E. P. Smolovskiy, A. G. Braginitskiy, A. N. Popkov, G. N. Simkhnova,
 M. V. Novikova, II Symposium on Progress in Research and Development in Physics, Chemistry,
 Metallurgy, Krasnodar, 1974, p. 135.

A study was made of the effect of the method of obtaining ZnS_{1.5} crystals on the magnitude of microhardness. The advantage of the method of horizontal directional crystallization by comparison with the vertical method was demonstrated. The microhardness of ZnS_{1.5} measured on the vertical method was with block dimensions of 3 × 3 mm is 400 kg/mm². The results of studying microstructure and the microhardness of the alloy based on ZnS_{1.5} demonstrated the presence of two-phase regions in the ZnS_{1.5} and Si and ZnS_{1.5}-ZnS₂ sections and the region of limited solubility from the ternary compound side to 12 per-

Aerosols

USSR

UDC 614.841.12

SMEJKOV, G. I., POPOV, B. G., and LAVROV, N. V., Academician of the Uzbek
SSR Academy of Sciences

"Mechanism of Spark Ignition of Aerosols"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 4, 1971, pp 876-877

Abstract: The study of the process of ignition of two-phase systems by spark discharges is complicated by the absence of a clear explanation of the mechanism of development of the spark discharge channel. This paper contains a study of the process of ignition of a polystyrene aerosol with a fractional composition of 0-75 μ by condensed spark discharges. The study was made on high-speed movie shots taken by the SKS-1M camera. Sample film strips are presented.

The described method of high-speed photography permitted isolation and estimation (with respect to duration) of three stages in the process of spark ignition and flame development in aerosols: reaction in the volume of the mixture, the frontal flame propagation phase and the turbulent combustion phase. The results indicate the similarity of the nature of 1/2

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SMEIKOV, G. I., et al, Doklady Akademii Nauk SSSR, Vol 196, No 4, 1971,
pp 876-877

development of the flame nucleus with a spark ignition initiator and in
dust-air mixtures just as in homogeneous gas and air media.

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1/5 029 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--ON THE FUTURE OF SCIENCE -U-
AUTHOR--SMELKOV, YU. S
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, ZNANIYE SILA, NO 1, 1970, P 60
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--HUMAN MEMORY, MOLECULAR BIOLOGY, BASIC SCIENCE PLANNING,
CYBERNETICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PS OXY REEL/FRAME--1990/1164 STEP NO--UR/0004/70/000/001/0060/0060
CIRC ACCESSION NO--AP0109281
UNCLASSIFIED

2/5 029

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0109281

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WE ARE USED TO BOOKS ON POPULAR SCIENCE, THE AUTHORS OF WHICH PAINT THRILLING PERSPECTIVES OF SCIENTIFIC PROGRESS. HERE, HOWEVER, IS A BOOK WRITTEN BY SOME OF THE GREATEST SCIENTISTS IN THE COUNTRY AND IN THE WORLD. IN IT MUCH MORE IS SAID OF UNSOLVED PROBLEMS THAN OF THRILLING PROSPECTS. IN DESCRIBING HIS VERY INTERESTING (EVEN FOR NONSPECIALIST) EXPERIMENTS IN THE RESEARCH OF THE MOLECULAR BASIS OF MEMORY, THE SOVIET BIOLOGIST V. RYZHKOV, SAID "IN CONCLUDING THIS SECTION OF OUR ARTICLE, WE SHOULD MAKE ONE PARADOXICAL, AND PERHAPS SOMEWHAT DISAPPOINTING REMARK. UNFORTUNATELY, ALL THE EXPERIMENTS ON ANIMALS AND MAN WHICH WE ARE DISCUSSING DO NOT RENDER IT POSSIBLE TO EXPLAIN THE FORMATION OF ENGRAM IN NERVE CELLS". HE CONCLUDED THE ARTICLE WITH THESE WORDS: "WITHOUT A DOUBT WE ARE NEARING THE TIME FOR THE DEVELOPMENT OF A THEORETICAL BIOLOGY SIMILAR TO THEORETICAL PHYSICS. ALTHOUGH ATTEMPTS HAVE ALREADY BEEN MADE TO CREATE A THEORETICAL BIOLOGY, THEY ARE ONLY THE INITIAL ATTEMPTS. IT SEEMS TO US THAT THE PROBLEMS WHICH WERE EXAMINED IN THIS ARTICLE ARE LYING AT THE THRESHOLD OF THE SCIENCE OF THE FUTURE, THEORETICAL BIOLOGY. "ATTEMPTS," "THRESHOLD," "WE ARE APPROACHING," THIS AND NO MORE. IT GOES WITHOUT SAYING THAT WE ARE NOT TALKING ABOUT RESTRICTING THE FLIGHT OF SCIENTIFIC IMAGINATION. SCIENCE SHOULD UNDERSTAND ITS DISTANT GOALS AS DISTINCTLY AS IT UNDERSTANDS ITS TASKS FOR THE NEXT WORKING DAY.

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1/5 029

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PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0109281

ABSTRACT/EXTRACT--WHILE FACING THE VERY SAME PROBLEM, FRANCOIS JAKOB, THE FRENCH BIOLOGIST, ASKED: "WILL IT BE POSSIBLE TO SOME DAY ACCURATELY DEFINE IN THE LANGUAGE OF PHYSICS AND CHEMISTRY THE TOTALITY OF THOSE PHENOMENA FROM WHICH ARISE THOUGHT, FEELING AND DECISIONS"? HE ANSWERED: "TODAY IT IS EASY TO DOUBT THIS, BUT TO PERMIT A PROPOSAL SUCH AS THIS IS TO CLEARLY LOSE THE POSSIBILITY OF SOLVING THE PROBLEM". IN THEIR REFLECTIONS ON THE PROSPECTS FOR SCIENCE, THE AUTHORS DETERMINE THE PRINCIPAL POSSIBILITIES AND PATHS OF DEVELOPMENT ON THE BASIS OF WHAT HAS BEEN ACHIEVED AND DEVELOPED TODAY. SINCE THE AUTHORS ARE SOME OF THE BEST SPECIALISTS IN THEIR FIELDS, ACADEMICIANS, PROFESSORS, WINNERS OF NOBEL AND INTERNATIONAL PRIZES, THEIR THOUGHTS ON THE SUBJECT ARE ACCURATE AND COMPETENT. HOWEVER, THE VERY LONG RUN PROSPECTS ARE NOT CLEAR FOR SUCH A RAPIDLY DEVELOPING SCIENCE AS MODERN PHYSICS. IN THE ARTICLE "CAN PHYSICAL SCIENCE BE BROUGHT TO A CONCLUSION"? A. KOMPANEYETS STATES TWO POINTS OF VIEW, WHETHER THE NUMBER OF TYPES OF INTERACTIONS, THE STUDY OF WHICH IS THE SUBJECT MATTER OF PHYSICS, IS FINITE OR INFINITE. HE SUMMARIZES, "WHICH OF THESE SHOULD BE GIVEN PREFERENCE, IS, IN OUR TIME, STILL A QUESTION OF FAITH". THE ARTICLE BY THE SWEDISH SCIENTIST KH. AL'VEN ENTITLED "ANTIMATTER AND COSMOLOGY" FORMS A NATURAL TRANSITION BETWEEN THE ARTICLES ON THE PROBLEMS OF THE PHYSICS OF ELEMENTARY PARTICLES AND THOSE ON THE PROBLEMS OF SPACE PHYSICS. THE TRANSITION FROM THE PHYSICS SECTION TO THE BIOLOGY SECTION WAS SOMEWHAT LESS SMOOTH.

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC. ACCESSION NO--AP0109281

ABSTRACT/EXTRACT--WE FIND HERE, IN THE ARTICLE BY F. JAKOB WHICH WAS MENTIONED, THE WORDS: "ALL MODERN PROGRESS SUPPORTS THE IDEA THAT EVERY BIOLOGICAL PHENOMENA CAN, IN THE FINAL ACCOUNT, BE REDUCED TO IDEAS TAKEN FROM PHYSICS AND CHEMISTRY". THE ARTICLE "THE FUTURE OF BIOLOGICAL AND MEDICAL CYBERNETICS" INTRODUCES US TO THE SECTION CONCERNED WITH PROBLEMS OF COMMUNICATION AND INFORMATION. THE FEELING OF CLOSE COMMUNICATION IN SCIENCE, THE UNITY OF KNOWLEDGE AND THE INTEGRATED STUDY OF NATURE ARE CREATED. THERE ARE ALSO ARTICLES DEDICATED TO THE APPLICATIONS OF SCIENTIFIC ACHIEVEMENTS: "LONG DISTANCE TRANSMISSION AT SUPER HIGH VOLTAGES" BY A. SARKISOV, "WORLD VIEWS AND GLOBAL COMMUNICATION" BY M. KAPLANOV. THEY DISCUSS THE ACHIEVEMENTS OF THE IMMEDIATE FUTURE, THE BASIS OF WHICH ARE THE PRESENT ACHIEVEMENTS OF SCIENCE. THE ANNUAL BOOK IS CONCLUDED BY ARTICLES ON THE PROSPECTS FOR THE HUMANITIES, WHICH IN THE WORDS OF THE AUTHORS OF THE ARTICLE "ARCHAEOLOGY TOMORROW" B. RYBAKOV AND B. KOLCHIN" MIGHT FUNDAMENTALLY CHANGE THEIR METHODOLOGY AS THE RESULT OF THE SCIENTIFIC REVOLUTION OF THE MID 20TH CENTURY". THE NEWEST MATHEMATICAL METHODS IN THE ANALYSIS OF ARCHAEOLOGICAL MATERIALS AND ANCIENT TEXTS, PHYSICAL AND BIOLOGICAL METHODS FOR DATING RELICS FROM ANTIQUITY WILL SERVE ONE PURPOSE: TO COMPLETELY AS POSSIBLE RECONSTRUCT THE MANY CENTURY PROCESS OF WHICH WE AND OUR CULTURE ARE THE RESULT. IT IS NOT WITHOUT REASON THAT THE BOOK OPENS WITH ARTICLES ON THE PROSPECTS FOR THE SOCIAL SCIENCES: "THE OCTOBER REVOLUTION AND THE PROSPECTS FOR SOCIAL PROGRESS" BY YU. FRANTSEV, AND "THE FUTURE OF MANKIND AS AN OBJECT OF SCIENTIFIC RESEARCH" BY I. BESTUZHEV LADA.

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UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0109281

ABSTRACT/EXTRACT--THE BOOK DOES NOT HAVE AN ANNOTATION INDICATING THAT IT IS ADDRESSED TO A "WIDE CIRCLE OF READERS". THE FUNCTION OF SUCH AN ANNOTATION IS PERFORMED BY THE TITLE ITSELF, FOR SCIENCE AND ITS FUTURE ARE TODAY OF INTEREST TO PERHAPS THE WIDEST CIRCLE OF READERS.

UNCLASSIFIED

89

USSR

UDC 543.52:546.791+546.841

ANOSOV, V. V., GAVRILOV, N. I., SMELKOVA, T. P.

"Simultaneous Radiometric Determination of Uranium and Thorium in Sulfate Solutions"

Moscow, Atomnaya Energiya, Vol 31, No 6, Dec 71, pp 633-635

Abstract: A method is developed for simultaneous determination of uranium and thorium in sulfate solutions by gamma spectrometric measurement without complicated chemical processing of the specimens. The standard for gamma-emission by uranium is a solution of uranyl nitrate in weak hydrochloric acid, and the thorium standard is prepared by dissolving thorium in sulfuric acid. The sensitivity threshold for 100-cc specimens with a measurement time of 10 minutes in each spectrometer channel is 0.015 g/l for uranium, and 0.01 g/l for thorium when the measurements are made in the 93 and 238 keV regions of the gamma spectrum, and 0.04 g/l for uranium and 0.01 g/l for thorium when measurements are made in the

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USSR

ANOSOV, V. V., et al., *Atomnaya Energiya*, No 6, Dec 71, pp 633-635

185 and 238 keV regions. The divergence between radiometric and chemical analysis of uranium and thorium for specimens with a uranium content of 0.1-1.4 g/l and thorium of 0.08-0.5 g/l is no more than $\pm 10\%$ when radioactivity is measured in the 93 and 238 regions of the spectrum. The results of radiometric determination are not affected by the presence of zirconium, rare earths or other elements which complicate chemical analysis. Radiometric determination with a single-channel analyzer is approximately four times as productive and considerably less expensive when compared with chemical determination. One figure, one table, bibliography of three titles.

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- 57 -

USSR

UDC 621.65/.68.621.3.078.

SMEL'NITSKIY, S. G., Candidate of Technical Sciences, BULKIN, A. Ye., Candidate of Technical Sciences, PANOV, V. I., Candidate of Technical Sciences, Gusarov, O. P., Engineer, and TYUGAYEV, V. A., Engineer, Moscow Power Engineering Institute, Heat and Electric Power Plant-22, Moscow Regional Administration of Power System Management

"Electric Automatic Control and Protection System of OVPT-500-Type Turbopump Feeder Unit"

Moscow, Teploenergetika, No 6, Jun 73, pp 33-36

Abstract: A new electric system of automatic control and protection with complete elimination of hydraulic members was installed on the turbopump feeder unit No1, OVPT-500 type, of the Heat and Electric Power Plant-22 of Moscow Regional Administration of Power System Management. The system is mainly based on typical automation means used in technological processes in electric power plants. The working of the system is discussed by reference to its functional circuit, the diagram of control mechanism, and the power supply diagram of electromagnets of friction drives. The described system considerably simplified the operating conditions of the turbopump feeder unit, in particular its remote control. Five figures, four bibliographic references.

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- 145 -

1/2 020

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--THERAPEUTIC RESULTS IN PATIENTS WITH PEMPHIGUS TREATED WITH

CORTICOSTEROIDS AND INTERFERON APPLICATIONS -U-

AUTHOR--(02)--SMELOV, N.S., MIZONOVA, T.P.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 6, PP 61-62

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN DISEASE, CORTICOSTEROID, INTERFERON, DRUG TREATMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0468

STEP NO--UR/0206/70/000/006/0061/0062

CIRC ACCESSION NO--AP0132683

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132683

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

ABSTRACT. INTERFERON WAS USED FOR 18

PATIENTS WITH DIFFERENT FORMS OF PEMPHIGUS IN WHOM TREATMENT WITH

CORTICOSTEROID DRUGS HAD FAILED TO RESULT IN THE HEALING OF ALL THE

EROSIONS. UNDER THE EFFECT OF INTERFERON IN 8 PATIENTS EROSIONS WERE

COMPLETELY EPITHELIZED, IN 7 PATIENTS CONSIDERABLE IMPROVEMENT WAS

ACHIEVED, AND IN 3 PATIENTS ONLY INSIGNIFICANT TEMPORARY IMPROVEMENT WAS

OBSERVED. FACILITY: OTDEL DERMATOLOGII TSENTRAL'NOGO

NAUCHNO-ISSLED. KOZHNO VENEROLOGICHESKOGO INSTITUTA, MOSKVA.

UNCLASSIFIED

Acc. Nr: AP0047334

Ref. Code: UPO206

PRIMARY SOURCE: Vestnik Dermatologii i Venerologii, 1970,
Nr 1, pp 27-30

S

THE IMPORTANCE OF ELECTROENCEPHALOGRAPHY AS AN INDICATION FOR
PROPER SELECTION OF PATIENTS WITH ITCHING DERMATOSES FOR SONICA-
TION TREATMENT

N. S. Smelov, A. P. Khrunova, A. S. Bezzabotnov, V. S. Angelova, V. I. Makovoz

Summary

Clinico-laboratory observations demonstrated the efficacy of sonication in treat-
ment of patients with itching dermatoses. Detection of an inhibition process according
to EEG is a contraindication to sonication treatment. This permits to recommend elec-
troencephalographic examination to be used for proper selection of patients for treatment.

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REEL/FRAME
19790858

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Explosives and Explosions

3

USSR

UDC 542.91:547.722

NIKOLAYEVA, A. D., MATYUSHIN, YU. N., PAPEKIN, V. I., SHELLOV, V. S.,
VULIDOROV, V. V., BULIDOROVA, T. I., and APIN, A. YA., Institute of Chemical
Physics, Acad. Sc. USSR

"Synthesis and Study of the Detonation Properties of 3-Methyl-4-nitrofuroxane"
Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 72,
pp 965-967

Abstract: A safe and simple synthesis of 3-methyl-4-nitrofuroxane (MNF) has been developed. The synthesis is based on the reaction of sodium nitrite mixed with H_2SO_4 with a solution of metacrylic acid in dichloroethane at 50° . MNF can also be obtained in a 24% yield from a mixture of acetone, nitroacetone, and nitropropylene treated with a mixture of nitrogen tetroxide and nitric acid. Experimentally the thermochemical and detonational properties of MNF have been determined: heat of combustion $\Delta H_{comb}^\circ = 403.7 \pm 0.2$ kcal/mole; enthalpy of the formation of MNF $\Delta H_f^\circ = 24.1 \pm 0.2$ kcal/mole. The detonation rate with a 1.60 g/cm³ density of the charge was found to be $D_{1.6} = 7450$ m/sec. With charge densities 0.64 and 1.64 g/cm³ the heats of explosive detonation of MNF were 1180 and 1330 kcal/kg respectively. MNF is a crystalline material, m.p. $67-68^\circ$; it has high thermal stability and can be recrystallized from hot water.

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Nuclear Physics

USSR

UDC 539.125.523.3+539.125.523.43

SMELOV, Vladislav Vladimirovich

Lektsii po Teorii Perenosa Neytronov (Lectures on Neutron Transport Theory), Moscow, "Atomizdat", 1972, 176 pp

Abstract: The book can be considered an introduction to the theory of an important class of equations in contemporary physics -- transport theory. An attempt is made to present the fundamentals of neutron transport theory in maximally accessible form, but at the same time observing reasonable mathematical rigor. The single-velocity theory is first outlined, and then the theory which accounts for energy dependence. A considerable place in the book is given over to mathematical formulation of problems in both exact and approximate presentations. All this is done on the basis of a precise explanation of the physical meaning of the processes studied. A formulation is given for the conjugate problem describing the behavior of the importance function of a particle with respect to a given functional. The elements of perturbation theory are also formulated. Consideration is given to certain questions involved in the problem of neutron thermalization. Thirty-one illustrations, bibliography of thirty-three titles.

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USSR

SMELOV, V. V., Lektsii po Teorii Neytronov, Moscow, 1972

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SMELOV, V. V., *Lektsii po Teorii Neytronov*, Moscow, 1972

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4/4

Acc. No.

AP0041350

Abstracting Service:
CHEMICAL ABST

4-70 Ref. Code:

UR 0456

84863f Radiation-chemical synthesis of prussic acid under
 flow conditions. Drantiev, B. G.; Popov, V. N.; Smelova
 Yu. N. (Inst. Khim. Fiz., Moscow, USSR). *Khim. Fiz.* 1970, 4(1), 86-7 (Russ). Gaseous mixts. of $NH_3 + CH_4$, $N_2 +$
 CH_4 , $NH_3 + C_2H_6$, $N_2 + C_2H_6$, and $N_2 + C_2H_2$
 were purified, dried, heated at 20-250° and passed at a rate of
 400-900 l./hr through a reactor (vol. = 9.2 l.), irradiated using
 an electron accelerator ($E_e = 600$ keV, $\sim 10^{18}$ eV cm^{-2} sec^{-1} , time
 of the contact of gas with irradiation zone 82-36 sec). Yields are
 given for the reaction products.
 J. Panchartek

REEL/FRA
19751212

1/2 042 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--POSSIBLE USE OF REINFORCED THREADS AS WARPS -U-
AUTHOR--(03)-ROMANOVSKIY, V.I., SMELSKAYA, I.F., KABANOVA, Z.P.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. TEKST. PRZH. 1970, (1), 55-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--ADHESION STRENGTH, SYNTHETIC FIBER, NATURAL FIBER, WEAR
RESISTANCE, COMPOSITE MATERIAL, FABRIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0792 STEP NO--UR/0324/70/000/001/0055/0057
CIRC ACCESSION NO--AP0124461
UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124461

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADHESION STRENGTH (SIGMA) BETWEEN THE INNER THREAD CORE OF SYNTHETIC FIBERS AND THE OUTER FLAX FIBER COVERING INCREASES WITH THE TWIST CONST. (ALPHA) OF THE COVERING. THE OPTIMUM ALPHA IS 2.2. SIZING THE COMPOSITE THREADS WITH A SOLN. OF STARCH, CHLORAMINE, BORAX, OP-10, AND GLYCEROL IN WATER INCREASED SIGMA BY 18-24PERCENT. SUCH COMPOSITE THREADS CAN BE USED AS WARP IN WEAVING CANVAS FOR BAGS OR TARPULINS ON STD. LOOMS. THE WEAR RESISTANCE OF THESE FABRICS DEPENDS LARGELY ON SIGMA. FACILITY: KOSTROM. TEKHNOL. INST., KOSTROMA, USSR.

UNCLASSIFIED

USSR
Automata

USSR

UDC 621.317.757

MINTS, M. YA., SMELYAKOV, V. V., and GHINKOV, V. N.

"A Digital Automation for Monitoring Linear Quadrupoles"

USSR Author's Certificate, Class G O s 15/46, No 317068, filed 13 Sep 68, published 22 Nov 71 (from RZh-Avtomatika Telemekhanika i Vychislitel'naya Tekhnika No 3, Mar 73, Abstract No 3 A 391)

Translation: A digital automaton is proposed for monitoring linear quadrupoles. It contains a sinusoidal oscillator, a control unit, an analog-code converter, multiplier devices, flip-flops, recording and integrating counters, and "AND" circuits. To extend the functional capabilities and improve the speed of the device, it includes a delay element and a constant coefficient input switch, with the control unit connected through the delay element to the constant coefficient input switch, one of the multiplier devices, and the recording counter, as well as with the setting inputs of the control flip-flops; the other inputs of the latter are connected to the AND gates of the integrating counters, while the output of one of the flip-flops is connected to the constant coefficient input switch in the other multiplier apparatus. One illustration.

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USSR

UDC: 62-55

MINTS, M. Ya., SMELYAKOV, V. V., CHINKOV, V. N.

"Digital Analyzer of Frequency Characteristics"

USSR Author's Certificate No 281907, filed 16 Dec 68, published
11 Mar 71 (from RZh-Avtomatika, telemekhanika i vychislitel'-
naya tekhnika, No. 12, 1971, Abstract No. 12A147F)

Translation: The invention is concerned with the area of frequency characteristics analysis for automatic control systems. Known frequency characteristic analyzers, containing sinusoidal signal oscillators, an analog-code converter, shapers, 2 multipliers, integrating counters, have high method errors when investigating nonlinear systems. The proposed device differs from these instruments in that the analog-code converter is connected to the input of both multipliers, the input of one converter is connected to the signal shaper output through an integrator, the input of the other converter is connected directly to the output of the shaper. Made in this way, the device yields greater accuracy in researching nonlinear systems. Resume

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USSR

UDC: 621.317.757

MIWTS, M. Ya., SMELYAKOV, V. V., CHINKOV, V. H.

"An Automatic Digital Machine for Checking Linear Two-Terminal Pair Networks"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 30, Oct 71, Author's Certificate No 317068, Division G, filed 13 Sep 68, published 7 Oct 71, p 175

Translation: This Author's Certificate introduces an automatic digital machine for checking linear two-terminal pair networks. The device contains a sinusoidal signal oscillator, a control module, an analog-code converter, multipliers, flip-flops, registration and integration counters, and AND circuits. As a distinguishing feature of the patent, the functional possibilities of the device are extended and speed is increased by adding a delay element and an input selector for constant coefficients. The control module is connected through the delay element to the input selector for constant coefficients which feeds one of the multipliers and the registration counter, as well as to the set inputs of the control flip-flops. The other inputs of these flip-flops are connected to the

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USSR

MINTS, M. Ya., USSR Author's Certificate No 317068

AND circuits of the integration counters, and the output of one of the flip-flops is connected to the input selector for constant coefficients which feeds the other multiplier.

2/2

- 39 -

1/2 024 UNCLASSIFIED
 TITLE--VERY LOW FREQUENCY SINE WAVE GENERATOR -U- PROCESSING DATE--11SEP70
 AUTHOR--SMELYAKOV, V.V., CHINKOV, V.N. S
 COUNTRY OF INFO--USSR
 SOURCE--U.S.S.R. 262988
 REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NO 7, 4 FEB
 DATE PUBLISHED--04FEB70
 SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
 TOPIC TAGS--VERY LOW FREQUENCY, SIGNAL GENERATOR, PATENT, QUARTZ CRYSTAL,
 ELECTRONIC OSCILLATOR, TRANSISTORIZED CIRCUIT, ELECTRIC MEASURING
 INSTRUMENT
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1992/1084 STEP NO--UR/0482/70/000/000/0000/0000
 GIRC ACCESSION NO--AA0112210
 ZZZZZZZZZZ UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--1155970

IRC ACCESSION NO--AA0112210

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

ABSTRACT. THIS AUTHOR'S CERTIFICATE

INTRODUCES AN OSCILLATOR WHICH GENERATES SINUSOIDAL OSCILLATIONS OF VERY LOW FREQUENCY. THE UNIT CONTAINS A QUARTZ OSCILLATOR, FREQUENCY DIVIDERS WITH CONSTANT AND VARIABLE DIVISION COEFFICIENTS, A PHASE INVERTER AND A CODE ANALOG CONVERTER. IT DIFFERS BECAUSE THE OPERATIONAL AND METROLOGICAL QUALITIES OF THE DEVICE ARE IMPROVED BY ELIMINATING THE EFFECT OF THE INVERSE CURRENTS OF THE TRANSISTORS AND REDUCING TEMPERATURE AND TIME DRIFT WHILE SIMULTANEOUSLY SIMPLIFYING THE CIRCUIT. THE CODE ANALOG CONVERTER CONTAINS TWO PARALLEL CHANNELS, ONE WHICH IS BASED ON PNP TRANSISTORS WHILE THE OTHER IS BASED ON NPN TRANSISTORS. IN ADDITION, THE UNIT INCORPORATES TWO RECTIFIERS, A CONTROL FLIP FLOP, AN INVERTER AND AN OR CIRCUIT. THE INPUT OF THE FIRST CODE ANALOG CONVERTER CHANNEL IS CONNECTED THROUGH THE INVERTER AND RECTIFIER TO ONE OF THE OUTPUTS OF THE FREQUENCY DIVIDER WITH FIXED DIVISION COEFFICIENT. THE SECOND OUTPUT OF THIS FREQUENCY DIVIDER IS CONNECTED TO THE INPUT OF THE SECOND CODE ANALOG CONVERTER CHANNEL, AND THE OUTPUTS OF BOTH CHANNELS ARE CONNECTED TO THE COMMON LOAD IMPEDANCE, AND THROUGH THE OR CIRCUIT TO THE CONTROL FLIP FLOP WHOSE OUTPUTS ARE CONNECTED TO THE RECTIFIERS OF BOTH CODE ANALOG CONVERTER CHANNELS.

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UNCLASSIFIED

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UDC 621.373.42

SMELYAKOV, V. V., CHINKOV, V. N.

"Very-Low Frequency Sine-Wave Generator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 7, 4 Feb 70, pp 47-48, Patent No 262988, Filed 13 Sep 68

Translation: This Author's Certificate introduces an oscillator which generates sinusoidal oscillations of very low frequency. The unit contains a quartz oscillator, frequency dividers with constant and variable division coefficients, a phase inverter and a code-analog converter. It differs because the operational and metrological qualities of the device are improved by eliminating the effect of the inverse currents of the transistors and reducing temperature and time drift while simultaneously simplifying the circuit. The code-analog converter contains two parallel channels, one of which is based on PNP transistors while the other is based on NPN transistors. In addition, the unit incorporates two rectifiers, a control flip-flop, an inverter and an OR circuit. The input of the first code-analog converter channel is connected through the inverter and rectifier to one of the outputs of the frequency divider with fixed division coefficient. The second output of this frequency divider is connected to the

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USSR

SMELYAKOV, V. V., et al., Otkrytiya, Izobreteniya, Promyshlennyya Obratzsy, Tovarnyye Znaki, No 7, 4 Feb 70, pp 47-48, Patent No 262988, Filed 13 Sep 68

input of the second code-analog converter channel, and the outputs of both channels are connected to the common load impedance, and through the OR circuit to the control flip-flop whose outputs are connected to the rectifiers of both code-analog converter channels.

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Entomology

USSR

UDC: 632.934

VASECHKO, G.I., KUZNETSOV, M.V., SMELYANETS', V.P., GUZNYENOK, N.MH., Ukrainian Scientific Research Institute of Plant Protection, Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"Insecticidal Properties of Some Components of Essential Oils."

Kiev, Doklady Akademii Nauk Ukrainskoy SSR, Seriya B, No 3, 1970, pp 275-278

Abstract: Essential oils with insecticidal properties are wide spread in the vegetable kingdom. Insecticidal properties of essential oils in wild, five-leaved grapes (which are almost never attacked by insects), conifers, grains and legumes, mint, etc. were determined. Oils were extracted and their active components isolated by chromatography. The LD 50 of oils with respect to insects was determined. Five insecticides were effective against the Colorado beetle, and many insecticides against larvae of Tribolium destructor, among which colamine (ethanolamine), obtained from germinating seeds, is rather effective. A substance synthesized by germinating rye seeds forms the basis for one of the least harmful and most powerful insecticides, fozalon.

1/1

METALLURGY

J885 61331, 26 Feb. 74

(2)

SOME PROBLEMS IN THE APPLICATION OF PLASMA HEAT SOURCES IN MODERN METALLURGY
Article by R. M. Smolenskii and A. M. Kravtsov, *Plazmennyye
Protsessy v Metallurii i Tekhnologii Spetsializirovannoi Metallurgii*, Novosibirsk,
1973, pp 143-151

The increasingly rigid requirements that are being imposed on build-
ing materials and especially metals and alloys in connection with the devel-
opment of new technology has stimulated the development of new furnaces,
melting equipment, capable of performing with sufficient intensity the devel-
opment of melting and refining in controlled media and in a vacuum. The
extensive application of vacuum arc and induction furnaces, furnaces for
electric slag remelting, is widely known. Electronic melting installations
are now being adopted by the industry.

One of the most important requirements on such sources of heating
for the metallurgy of high-quality metals is to achieve high concentrations
of energy in the working space.

Also very important is the simplicity of the equipment and of the
entire complex of metallurgical installations, which unquestionably shortens
the time of their introduction to and adoption by the industry.

The heat sources and installations that are now being developed and
put into industrial operation are melting and reduction systems, which
low-temperature plasma as the heat source.

Of the numerous modifications of plasma systems, the ones most com-
monly used in metallurgy are DC and industrial frequency plasmatrons, which
use an electrical arc discharge, confined between special electrodes, which
electrodes discharge, excited within the working gas itself.

The stated arc and high-frequency plasmatrons generate high-enthalpy
and high-temperature gas streams, which may be used for melting, refining
and for carrying out other processes.

(2)

In the opinion of the authors, one of the most promising applications of plasma heating in metallurgy is volumetric heating of metal in the thermal reduction stage.

If the process of carbothermal reduction of metallic oxides in the high-temperature gas stream is examined, then it becomes clear that the requirements on the energy and gas-dynamic characteristics of the plasma of the installation and numerous special requirements of the plasma-process.

The most important of the basic properties of plasmatrons for industrial application is the continuous service life, which in consideration of the requirements of continuity of the technological process and performance at least 100-200 hrs.

The following parameters of plasmatrons are of key importance: 1. Kind, flow rate and pressure of the plasma-producing gas, which are determined by the requirements of a given reduction process.

2. Power of the plasmatron, determined by the specific energy consumption of the process and productivity of the metallurgical installation.

3. Specific enthalpy and mean mass temperature of the gas jet at the exit from the nozzle of the plasmatron, insuring the required concentration of energy in the working space for maintaining the process in the steady state mode of operation of the metallurgical installation.

It will discuss what we think are the two most promising areas of industrial application of plasma carbothermal reduction of metals:

1) Nonferrous metals and 2) rare metals. It is known that the energy consumption of the reduction process for the first group of metals is 1-2 kW hrs/kg, and the required enthalpy of the gas jet at the exit from the plasmatron nozzle is 5-20 kcal/g [1]. For a gas jet with the given enthalpy level, and in consideration of the requirements of the process of plasma reduction, hydrogen, carbon dioxide and natural gas may be used as the working gas for nonferrous metals.

The power and number of the plasmatrons and the gas flow rate depend on the required productivity of the installation.

The energy consumption of the process is 5-10 kW hrs/kg for the second group of metals, and the required nozzle exit flow enthalpy is 50-100 kcal/g as the heating agent. Experience in the development and adoption of plasma outport electrodes, and consequently the service life of a plasmatron is determined by the mean mass temperature of the gas jet at nozzle exit. For hydrogen this critical temperature is 4000-4500 K [2,3].

Such high flow enthalpies can be achieved only when hydrogen is used as the heating agent. Experience in the development and adoption of plasma outport electrodes, and consequently the service life of a plasmatron is determined by the mean mass temperature of the gas jet at nozzle exit. For hydrogen this critical temperature is 4000-4500 K [2,3].

USSR

UDC: 620.178.7

KOLODYAZHNYI, A. V., SMELYANSKIY, V. A., Khar'kov

"Experimental Study of the Stress State of an Elastic Beam under Transverse Impact"

Kiev, Problemy Prochnosti, No 7, Jul 73, pp 116-118.

Abstract: Results are presented from experimental study of stresses and displacements in an elastic prismatic beam under transverse impact by a solid body. A method of experimental study of the stress state and the influence of wave processes on the parameters of the stress-strain state of the elastic system under transverse impact are presented.

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