"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED

TITLE--EFFECT OF ELECTRON IRRADIATION ON PARAMETERS OF GALLIUM ARSENIDE PULSED DIODES -U-

PROCESSING DATE--20NOV70

AUTHOR-(05)-BRUDNYY, V.N., VILISOV, A.A., VYATKIN, A.P., KRIVOV, M.A., MALYANOV, S.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ, 1970, 13(4), 109-13

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--GALLIUM ARSENIDE SEMICONDUCTOR, DIODE CIRCUIT, VOLT AMPERE CHARACTERISTIC, ELECTRON BOMBARDMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1473

STEP NO--UR/0139/70/013/004/0109/0113

CIRC ACCESSION NO--AT0130403

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/3 025

UNCLASSIFIED

CIRC ACCESSION NO--AT0150403 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ELECTRON IRRADN. ON VOLTAGE CURRENT (V-A), VOLTAGE CAPACITANCE, AND PULSE CHARACTERISTICS OF POINT CONTACT PULSED GAAS DIODES WAS STUDIED. THE DIODES WERE PREPD. FROM N TYPE GAAS WITH RESISTIVITIES OF 0.36 AND 0.9 OHM-CM, CARRIER CONCNS. OF (3-5) TIMES 10 PRIME15 AND (1-2) TIMES 10 PRIME15 CM PRIME3, AND MOBILITIES OF 4500 AND 5500 CM PRIME2 V SEC, RESP. AFTER ASSEMBLY COMPLETION, ELEC. FORMING WAS CARRIED OUT BY HALF PERIOD CURRENT PULSES IN THE FORWARD DIRECTION. THE DIODES WERE IRRADIATED BY 1.5-MEV ELECTRONS, AND CAPACITANCE MEASUREMENTS WERE MADE AT 10 MHZ. FROM THE V-A CURVES, IT CAN BE SEEN THAT BREAKDOWN VOLTAGE AND FORWARD RESISTANCE INCREASE, AND RECTIFICATION COEFF. DECREASES UNDER IRRADN. THE CHANGES ARE ATTRIBUTED TO AN INCREASE IN THE RESISTIVITY AT THE EXPENSE OF A DECREASE IN THE CONCN. OF CHARGER CARRIERS. CAPACITANCE DECREASES UNDER IRRADN., AND THE DEPTH OF THE CAPACITANCE MODULATION DECREASES AT THE COST OF CHANGES IN IMPURITY DISTRIBUTION IN THE SPACE CHARGE REGION (HIGHLY FORMED DIODES). THIS BEHAVIOR CAN BE EXPLAINED IN THE LIGHT OF THE THEORY DEVELOPED FOR P-N PLANE JUNCTIONS AND SCHOTTKY TYPE BARRIERS. FROM THE PULSE EXPTS., THE RECOVERY TIME (T SUBRECOV) UNDER IRRADN. INCREASES FOR SCHOTTKY BARRIERS (SLIGHTLY FORMED) AT THE EXPENSE OF INCREASING RC (R AND BAR C ARE MEAN VALUES OF RESISTANCE AND CAPACITANCE, RESP., IN THE SWITCHING PROCESS). FOR HIGHLY FORMED DIODES, BEHAVIOR OF T SUBRECOV UNDER IRRADN. IS GOVERNED BY A RELATION BETWEEN LIFETIME OF MINORITY CARRIERS (T) AND BAR RC.

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

3/3 025 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0130903

ABSTRACT/EXTRACT--AT LOW RADIATION DOSES, A DECREASE OF T SUBREDV CAN BE OBSD. AT THE EXPENSE OF T DECREASE, WHILE AT HIGH DOSES (SIMILAR TO 10 PRIME16 ELECTRONS-CM PRIME2) T SUBREDV ALWAYS INCREASES.

FACILITY: SIB. FIZ.-TEKH. INST. IM. KUZNETSOVA, TOMSK, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

KRIVOV, M.A., MALISOVA, Ye.V., MEL'CHENKO, E.N.

"Study of the Behavior of Gold in Gallium Arsenide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970, pp 817-821

Abstract: This article discusses the method of measuring the temperature dependence of the photoconductivity of gallium arsenide doped with gold when growing from a melt to determine the shallow acceptor level $E_p = 0.04$ electron volts which is the hole capture level and is related to the presence of gold in the given material. On the basis of a study of the temperature dependence of the Hall effect in samples doped with copper and gold, the proposition is stated that the given acceptor level arises from the interaction of copper and gold.

The temperature dependencies of the magnitude of the photosignal of gallium arsenide doped with gold and not doped with gold are presented in graphical form for two light intensities J_1 and J_2 ($J_1 > J_2$). On the basis of analysis of the experimental curves, the energy spectrum and type of deficiency levels are determined in the initial gallium arsenide samples and those doped with gold. The activation energy and ratio of the capture cross sections for the levels in the initial gallium arsenide and the doped gallium arsenide are presented in tabular form. The characteristics of samples doped with copper and gold are compared in a table and figure.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

KRIVOV, M.A., et al., Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970, pp 817-821

It is concluded that the introduction of gold into the samples of gallium arsenide leads to the occurrence of the $E_v + 0.04$ electron volt level which is observed in doped samples if the 0.02 electron volt level is present in the initial crystals. 2. The given level is the hole capture level in gallium arsenide. 3. Investigation of samples doped with copper and gold suggests that the $E_v + 0.04$ electron volt level is formed as a result of interaction of gold and defects arising from the presence of copper. 4. The presence of gold complicates the formation of the thermal acceptors in gallium arsenide.

2/2

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--13NOV70

1/2 035

TITLE--VOLT AMPERE CHARACTERISTICS OF GALLIUM ARSENIDE P-N TUNNEL JUNCTIONS IRRADIATED BY FAST NEUTRONS -U-

AUTHOR-(05)-ALEKSEYEVA, Z.M., BRUDNYY, V.N., KRIVOV, M.A., MALYANOV, S.V., KHOMCHUK, O.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(3), 146-9

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--VOLT AMPHERE CHARACTERISTIC, GALLIUM ARSENIDE PN JUNCTION, NEUTRON IRRADIATION, TUNNEL DIODE, FAST NEUTRON, RADIATION DOSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0139/70/013/003/0146/0149

PROXY REEL/FRAME--3005/1218

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--13NOV70

2/2 035

CIRC ACCESSION NO--AT0133215

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LIMITING RADIATION DOSES WERE STUDIED FOR EXPTL. TUNNEL DIODES PREPD. AT DIFFERENT TEMPS. FOR FUSION IN A VACUUM (500-650DEGREES), USING A GAAS BASE ALLOYED WITH ZN UNTIL A CARRIER CONCN. OF (5-6) TIMES 10 PRIME19-CM PRIME3 WAS REACHED. THE P-N JUNCTION WAS CREATED BY THE FUSION OF SN ON THE (111) SIDE, AND THE OHMIC CONTACT BY THE FUSION OF IN. AS THE RADIATION DOSE IS INCREASED, THERE IS A SMOOTH INCREASE IN THE EXCESS CURRENT. AT A DOSE OF 1 TIMES 10 PRIME16 NEUTRONS-CM PRIME2 THE CHARACTERISTICS CHANGE MARKEDLY; THE SEGMENT WITH A NEG. RESISTANCE DISAPPEARS ON THE RIGHT BRANCH. ISOTHERMAL HEATING AT 473DEGREES K BRINGS ABOUT THE APPEARANCE OF A "HILLY" STRUCTURE AT 0.9-1.1 V ASSOCD. WITH THE REARRANGEMENT OF GROUP DEFECTS AND PARTIAL ANNEALING OF THE DEFECTS INDUCED BY THE RADIATION. DIODES OBTAINED AT HIGH FUSION TEMPS. HAVE THE GREATEST RADIATION STABILITY. FACILITY: TOMSK. GOSUNIV., TOMSK, USSR.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

Acc. Nr: AP0034073

Abstracting Service: CHEMICAL ABST. 4-70

Ref. Code: UR 0078

71354r Surface and volume properties of melts of diagonal cross sections of Na, Zn-PO_4, O and K, Zn-PO_3, O reciprocal systems. Krivovyazov, E. L.; Voskresenskaya, N. K. (GSSR). *Zh. Neorg. Khim.* 1970, 15(1), 240-50 (Russ). Surface tension (σ) and d. of fused $Zn(PO_3)_2$-Na_2O; $Zn(PO_3)_2$-K_2O, $NaPO_3$-ZnO, and KPO_3-ZnO systems were detd. at $\leq 1111°$. In 1st 2 systems the plot of σ versus concn. shows a min., corresponding to complex formation which is more pronounced in the system of K_2O. The analogous graphs of ZnO systems show max. It is assumed that polyphosphate chains become shorter with increasing ZnO concn. reaching shortest length and simultaneously a max. σ at ~25-30 mole % ZnO.

RMJR

REEL/FRAME 19710716

18

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC (546.36'185+546.732'185):542.3

KRIVOVYAZOV, YE. L., DZHURINSKIY, V. F., RADHIMBEKOVA, KH. M., and VOSKRESENSKAYA, N. K., Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of Sciences USSR

"Density of Fused Cesium and Cobalt Metaphosphates"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 8, 1972, pp 1505-1506

Abstract: The authors used the method of hydrostatic weighing to measure the density of fused Cs and Co metaphosphates. Based on the data produced on the density of fused Cs and Co metaphosphates, using the method of least squares, the equations for density polytherms were calculated. The molar volumes of the Na, K, and Cs metaphosphates increase in that order at their melting points with increasing cation radius. The temperature coefficients of density for Na, K, and Cs metaphosphates are less than for the corresponding nonmolymerized simple salts. Even stronger compacting of structure can be expected for Zn and Co metaphosphates.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC 51

BERDICHEVSKIY, V. V., BORODIN, YU. M., KRIVOY, F. F., PELIPEY, L. N.

"Computer Algorithms for Obtaining the Summary Materials List"

V sb. Sistemotekhnika (Systems Engineering--collection of works), Kiev, 1971, pp 130-137 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V395)

No abstract

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--

1/2 012

TITLE--PHOTOLYSIS OF THIO DERIVATIVES OF BENZIMIDAZOLE -U-

AUTHOR-(02)-YELTSOV, A.V., KRIVOZHEYKO, K.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 635-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--UV IRRADIATION, PHOTOLYSIS, BENZIMIDAZOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0366/70/006/003/0635/0636

PROXY REEL/FRAME--1989/1256

--AP0107732 UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0107732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRRADN. OF THE ALC. HCL SOLNS. OF 1,3,DIMETHYLBENZIMIDAZOLE, 2,THIONE, 1,METHYLBENZIMIDAZOLE,2,THIONE, OR 1,METHYL,2,METHYLTHIOBENZIMIDAZOLE WITH UV LIGHT GAVE, RESP., 1,3,DIMETHYLBENZIMIDAZOLIUM CHLORIDE, 1,METHYLBENZIMIDAZOLIUM CHLORIDE, AND 1,METHYLBENZIMIDAZOLE WITHOUT REARRANGEMENT. FACILITY: LENINGRAD, KHIM.-FARM. INST., LENGRAD, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

[illegible] UNCLASSIFIED [illegible]

TITLE--VOLT [illegible] CHARACTERISTICS OF [illegible] ARSENIDE [illegible] JUNCTIONS IRRADIATED [illegible]

AUTHOR--[illegible]

[illegible]

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVEDA., [illegible]

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--VOLT AMPHERE CHARACTERISTIC, [illegible] ARSENIDE [illegible] JUNCTION, NEUTRON IRRADIATION, TUNNEL DIODE, FAST NEUTRON, [illegible]

[illegible]

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 035 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0133215

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LIMITING RADIATION DOSES WERE STUDIED FOR EXPTL. TUNNEL DIODES PREPD. AT DIFFERENT TEMPS. FOR FUSION IN A VACUUM (500-650DEGREES), USING A GAAS BASE ALLOYED WITH ZN UNTIL A CARRIER CONCN. OF (5-6) TIMES 10 PRIME19-CM PRIME3 WAS REACHED. THE P-N JUNCTION WAS CREATED BY THE FUSION OF SN ON THE (111) SIDE, AND THE OHMIC CONTACT BY THE FUSION OF IN. AS THE RADIATION DOSE IS INCREASED, THERE IS A SMOOTH INCREASE IN THE EXCESS CURRENT. AT A DOSE OF 1 TIMES 10 PRIME15 NEUTRONS-CM PRIME2 THE CHARACTERISTICS CHANGE MARKEDLY; THE SEGMENT WITH A NEG. RESISTANCE DISAPPEARS ON THE RIGHT BRANCH. ISOTHERMAL HEATING AT 473DEGREES K BRINGS ABOUT THE APPEARANCE OF A "HILLY" STRUCTURE AT 0.9-1.1 V ASSOCD. WITH THE REARRANGEMENT OF GROUP DEFECTS AND PARTIAL ANNEALING OF THE DEFECTS INDUCED BY THE RADIATION. DIODES OBTAINED AT HIGH FUSION TEMPS. HAVE THE GREATEST RADIATION STABILITY. FACILITY: TOMSK. GOSUNIV., TOMSK, USSR.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

Acc. Nr: AP0034073 Abstracting Service: CHEMICAL ABST. 74-70 Ref. Code: 24R 0078

71354r Surface and volume properties of melts of diagonal cross sections of Na, Zn-PO_4, O and K, Zn-PO_4, O reciprocal systems. Krivovyazov, E. L.; Vorkresenskaya, N. K. (USSR). *Zh. Neorg. Khim.* 1970, 15(1), 246-50 (Russ.). Surface tension (σ) and d. of fused $Zn(PO_3)_2$-Na_2O; $Zn(PO_3)_2$-K_2O, $NaPO_3$-ZnO, and KPO_3-ZnO systems were detd. at ≤1111°. In last 2 systems the plot of σ versus concn. shows a min., corresponding to complex formation which is more pronounced in the system of K_2O. The analogous graphs of ZnO systems have max. It is assumed that polyphosphate chains become shorter with increasing ZnO concn. reaching shortest length and simultaneously a max. σ at ~25-30 mole % ZnO. HMR

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REEL/FRAME
19710716

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC (546.36'185+546.732'185):542.3

KRIVOVYAZOV, YE. I., DZHURINSKIY, V. F., RADHIKBEKOVA, KH. M., and Voskresenskaya, N. K., Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of Sciences USSR

"Density of Fused Cesium and Cobalt Metaphosphates"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 8, 1972, pp 1505-1506

Abstract: The authors used the method of hydrostatic weighing to measure the density of fused Cs and Co metaphosphates. Based on the data produced on the density of fused Cs and Co metaphosphates, using the method of least squares, the equations for density polytherms were calculated. The molar volumes of the Na, K, and Cs metaphosphates increase in that order at their melting points with increasing cation radius. The temperature coefficients of density for Na, K, and Cs metaphosphates are less than for the corresponding nonmelymerized simple salts. Even stronger compacting of structure can be expected for Zn and Co metaphosphates.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC 51

BERDICHEVSKIY, V. V., BORODIN, YU. M., KRIVOY, F. F., PELIPEY, L. N.

"Computer Algorithms for Obtaining the Summary Materials List."

V sb. Sistemotekhnika (Systems Engineering--collection of works), Kiev, 1971, pp 130-137 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V395)

No abstract

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--PHOTOLYSIS OF THIO DERIVATIVES OF BENZIMIDAZOLE -U-

AUTHOR-(02)-YELTSOV, A.V., KRIVOZHEYKO, K.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 635-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--UV IRRADIATION, PHOTOLYSIS, BENZIMIDAZOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1256 STEP NO--UR/0366/70/006/003/0635/0636

CIRC ACCESSION NO--AP0107332

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0107732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRRADN. OF THE ALC. HCL SOLNS. OF 1,3,DIMETHYLBENZIMIDAZOLE, 2,THIONE, 1,METHYLBENZIMIDAZOLE,2,THIONE, OR 1,METHYL,2,METHYLTHIOBENZIMIDAZOLE WITH UV LIGHT GAVE, RESP., 1,3,DIMETHYLBENZIMIDAZOLIUM CHLORIDE, 1,METHYLBENZIMIDAZOLIUM CHLORIDE, AND 1,METHYLBENZIMIDAZOLE WITHOUT REARRANGEMENT. FACILITY: LENINGRAD, KHIM.-FARM. INST., LENGRAD, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC: 621.372.532

KRIVOZUBOV, V. P., SOBOLEV, V. A.

"Nonlinear Distortions Caused by Three-Beam Reception on Open Flat Radio Relay Line Ranges"

V sb. Radioelektron. v nar. kh-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of works) Kuybyshev, 1970, pp 227-233 (from Ref-Radiotekhnika, No. 3, March 71, Abstract No. 3A222)

Translation: Nonlinear distortions and transient noise, caused simultaneously by reflections from layered, nonuniform tropospheres and from the intersecting underlying surface of the earth, are considered. The amplitude of the nonlinear distortions for the second and third harmonics is determined. It is shown that its maximum occurs in the region of interference minima. Four illustrations, bibliography of four. [illegible]

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR Electromagnetic Wave Propagation UDC: 621.371.33

KRIVOZUBOV, V. P.

"Experiments in Linear Distortion of FM Signals Caused by Radio Relay Lines Propagated Over Open, Flat Ranges"

V sb. Radioelektr n. v nar. kh-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of works) Kuybyshev, 1970, pp 254-259 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A256)

Translation: The distortions in FM signals over open ranges of radio relay lines 47.5 km long with a flat profile were measured. The basic cause of the substantial changes in signal amplitude is the interference of the direct wave with the wave reflected from the earth's surface. The fading achieved a depth of 36 dB. Bibliography of 3, three illustrations. V. Ch.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ZEOLITE CONTAINING METAL CATIONS -U-

AUTHOR-(05)-KARZHEV, V.I., PIGUZOVA, L.I., GONCHAROVA, N.V., SVIRINA, V.P., KRIVOZUBOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,078

REFERENCE--OTKRYTIYA, IZOBREET., PROM. OBRAZTSY, TOVARNYE ZNAKI, 1970 47

DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ZEOLITE, METAL ION, LANTHANUM COMPOUND, CHEMICAL PATENT, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0860 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136294

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136294

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ZEOLITE, CONTG. CATIONS OF GROUP VI AND VIII METALS AND LANTHANIDES INTRODUCED IN THE REACTION OF CATION EXCHANGE, IS PREPD. BY MULTIPLE SATN. OF SOLNS. OF SALTS OF THE CORRESPONDING METALS. AFTER EACH SATN., THE ZEOLITE IS THERMALLY TREATED AT 140-550DEGREES. THIS ZEOLITE HAS A HIGH DEGREE OF NA CATION SUBSTITUTION.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 612.41.014.46:615.276.2

KRIVSKIY, I. L., KHUNDANOV, L. L., and SHATALOVA, I. N., University of Friendship Among Peoples imeni Lumumba and Institute of Surgery imeni Vishnevskiy, Moscow

"Comparison of the Effects of Some Immunosuppressants on Some Hematopoietic Organs"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972, pp 47-52

Abstract: Changes in lymph nodes, bone marrow, and peripheral blood of dogs resulting from treatment either with a combination of the antimetabolite imuran and the antibiotic aurantin (an analog of actinomycin C) or with antilymphocyte serum were compared. The combined use of imuran and aurantin had a much greater toxic effect on lymphopoiesis and myelopoiesis than did the serum. These drugs sharply reduced the number of all cellular forms in lymph nodes and bone marrow, especially the undifferentiated ones, but lymphopenia in the peripheral blood was comparatively mild. Antilymphocyte serum, on the other hand, decreased the number of only the small lymphocytes in the lymph nodes while inducing marked lymphopenia in the peripheral blood.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

KRIVSKIY I. Yu.

Acc. Nr: AP0043764 Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 3, pp 810-816

ABSOLUTE MEASUREMENTS OF THE EXCITATION FUNCTIONS FOR KII LINES PRODUCED IN COLLISIONS BETWEEN K+ IONS AND HE ATOMS

Pop, S. S.; Krivskiy, I. Yu.; Zapesochnyy, I. P.; Baletskaya, M. V.

The absolute course of the excitation functions for the K II spectral lines λ = 3897.9; 4134.7; 4149.2; 4186.2; 4222.9 + 4225.7; 4269; 4305 – 4309.1; 4398.1; 4585 + 4595.6 and 4820.2 A and also for the He I line λ = 5875.6 A is measured for ion energies between 0.5 and 34 keV. The excitation functions for the K II lines have two peaks. Qualitatively the course of the excitation functions is the same for all K II lines studied. The maximal values of the excitation cross sections of the K II lines investigated vary between 0.25·10⁻¹⁶ and 2.9·10⁻¹⁶ cm² whereas the maximal value of the total excitation cross section for all measured lines in the visible range of the spectrum is 1.1·10⁻¹⁶ cm². The theoretical curves calculated by the Landau – Lifshitz formula satisfactorily agree with the experimental curves.

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REEL/FRAME 19770171

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC: 681.128.83

TYAN, Kh. S., SINYAVSKIY, Yu. P., KRIVTSANOVA, L. I., Kirgiz Scientific Research Institute of Water Management

"An Acoustic Liquid-Level Indicator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar 72, Author's Certificate No 329397, Division G, filed 29 Jan 70, published 9 Feb 72, pp 157-178

Translation: This Author's Certificate introduces an acoustic liquid-level indicator which contains a measurement tube with intermediate partial reflection, a tank circuit, electroacoustic transducers and transceiver sub-assemblies with a communications line. As a distinguishing feature of the patent, the device is designed for single reflection of a sonic pulse from the reflector, and for a stable autocirculation mode of operation. The fixed partial intermediate reflector is made in the form of a internal reflector with adjustable length, for instance in the form of a threaded piston. The feedback circuit includes a symmetric flip-flop connected at the input to a square pulse shaper, and at the output to a probing pulse shaper.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--CAPILLARY ARC METAL ION SOURCE -U-

AUTHOR-(02)-ILIN, B.N., KRIVTSOV, A.K.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, (2), 197-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--LEAD, ION SOURCE, ARC DISCHARGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1455 STEP NO--UR/0120/70/000/002/0197/0198

CIRC ACCESSION NO--AP0135126

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135126

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CAPILLARY ARC SOURCE WAS USED TO OBTAIN IONS OF METALS WITH LOW VOLATILITY. A CURRENT OF 1.5 MA PB IONS WAS OBTAINED WITH AN EXTN. VOLTAGE OF 4 KV AND DISCHARGE POWER OF 50 W. THE EFFECT OF THE SOURCE GEOMETRY ON THE ION CURRENT WAS INVESTIGATED.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 027 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--DEPOSITION OF THIN NICKEL, IRON FILMS DURING UNSTEADY STATE ELECTRODE REACTIONS -U-

AUTHOR-(03)-KHAMAYEV, V.A., KRIVTSOV, A.K., KOTOV, V.L.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 240-4

DATE PUBLISHED--------70

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

TOPIC TAGS--NICKEL ALLOY, IRON ALLOY, METAL FILM, ELECTRODEPOSITION, ELECTROLYTE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0846 STEP NO--UR/0153/70/013/002/0240/0244

CIRC ACCESSION NO--AT0132936

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 027 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132936

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A THIN NI-FE ALLOY CONTG. 20-35 AT. PERCENT FE IS DEPOSITED FROM ELECTROLYTES CONTG. EITHER 2.5N NISO SUB4, 1N NA SUB2 SO SUB4, 0.4M H SUB3 BO SUB3, 1N HCL, AND 0.07M FE PRIME2 POSITIVE, OR 2N NICL SUB2, 0.4M H SUB3 BO SUB3, AND 0.1M FE PRIME2 POSITIVE AT 20DEGREES AND PH 2.0-2.5. ASCORBIC ACID, 0.7 G-L., IS ADDED TO OXIDIZE FE PRIME2 POSITIVE TO FE PRIME3 POSITIVE. USE OF A PULSED CURRENT OF PROPER WAVE FORM RESULTS IN INCREASING THE FE CONCN. IN THE ALLOY. FOR THE SAME C.D. IN THE RANGE 3-20 A-DM PRIME2, THE PERCENT FE IS A FEW PERCENT HIGHER WITH THE SO SUB4 PRIME2 NEGATIVE THAN WITH THE CL PRIME NEGATIVE ELECTROLYTE. AT 45DEGREES, THE FE CONTENT OF THE DEPOSIT IS LOWER THAN AT 20DEGREES. FOR THIN DEPOSITS OF ALLOY, THE VELOCITY OF DISCHARGE OF FE, NI, AND H IONS IS RELATIVE TO THE NATURE OF THE SUPPORTING MATERIAL. FACILITY: IVANOV. KHIM-TEKHNOL. INST., IVANOVO, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ANALYTICAL CHARACTERISTICS OF A CYCLOIDAL TYPE MASS SPECTROMETER MKH1203 -U-

AUTHOR-(05)-KUZNIN, A.F., KRIVTSOV, B.S., POLYAKOVA, A.A., RAFALSON, A.E., KHMELNITSKIY, R.A.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(2), 243-5

DATE PUBLISHED----------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MASS SPECTROMETER, ATOMIC MASS, QUANTITATIVE ANALYSIS, ERROR ANALYSIS/(U)MKH1203 MASS SPECTROMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1192 STEP NO--UR/0032/70/036/002/0243/0245

CIRC ACCESSION NO--AP0124846

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 014

CIRC ACCESSION NO--AP0124846

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE APP. HAS BEEN DESIGNED FOR A PERIODIC ANAL. OF THE COMPN. OF LIQ. AND GASEOUS SAMPLE IN THE RANGE OF 2-150 AT. MASS UNITS WITH A VAPOR PRESSURE LARGER THAN OR EQUAL TO 30 MM HG AT 100DEGREES. ITS USE IS ADVANTAGEOUS IN THE ANAL. OF MICROADMIXTS. AND IN THE ANAL. OF MIXTS. OF POLAR COMPDS.; HOWEVER, IT CAN BE USED ALSO FOR A RAPID ANAL. OF LIQS. AND FOR SOME KINDS OF ISOTOPIC ANAL. THE MKH1203 HAS A LOW BACKGROUND AND LOW SORPTION OF THE ANALYZED COMPDS. ON THE INTERNAL SURFACE. TO PUMP OUT CORPDS. WITH ORDINARY SORPTABILITY TO 0.01PERCENT OF THE INITIAL CONCN., TAKES, 3 MIN AND COMPDS. STRONGLY ADSORBED TO 0.2PERCENT OF INITIAL CONCN., 15 MIN. THE SENSITIVITY FOR AR IS 10 NEGATIVE PRIME4 AND 0.05PERCENT IN RECORDING THE MASS SPECTRA BY MEANS OF A VACUUM TUBE POTENTIOMETER AND LIGHT BEAM OSCILLOGRAPH, RESP. THE RELATIVE REPRODUCIBILITY OF THE MASS SPECTRUM OF C SUB4 H SUB10 WITHIN 1 MONTH IS 1PERCENT. THE RELATIVE ANAL. ERROR DEPENDS ON THE COMPN. OF THE ANALYZED MIXT. AND VARIES WITHIN 1-5PERCENT AT THE COMPONENT CONCN. OF LARGER THAN OR EQUAL TO 10 MOLE PERCENT. IN THE ANAL. OF MIXTS. CONTG. C SUB6 H SUB6, PHME, NONANE, TRICHLOROETHYLENE, AND ET SUB2 O, THE MAX. ERROR WAS SMALLER THAN 2PERCENT.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 577.391:547.963.3

STRAZHEVSKAYA, V. B., KRIVTSOV, G. G., KRASICHKOVA, Z. I., and STRUCHKOV, V. A., Institute of Biological Physics, Pushchino

"Changes in the Supramolecular DNA and Residual Protein Complex in the Thymus and Liver of Gamma-Irradiated Rats"

Moscow, Radiobiologiya, Vol 12, No 1, Jan/Feb 72, pp 19-25

Abstract: The thymus (radiosensitive) and liver (radioresistant) of male white rats were studied following 1 kr gamma-irradiation to determine the amino acid composition of residual protein (RP) in supramolecular DNA (SMDNA). An analysis showed that RP in SMDNA in the thymus and liver is a nonhiston acid protein. Following irradiation, there is a 2-fold increase of RP in the thymus which returns to normal after 6 hours. Basic amino acids increase simultaneously. In the liver, RP increases by 42% after irradiation; this effect continues and reaches 180% in 6 hours. There is an increase in acidic amino acids. The elastoviscosity of RP in both organs changes. The RP-SMDNA bond is strengthened but "breaks up" when treated with 0.5% dodecyl sodium sulfate. The interaction of RP with damaged DNA is nonspecific and particular to a metabolizing cell, as irradiation of T_2 phage did not produce an increase in 1/2

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

STRAZHEVSKAYA, N. B., et al., Radiobiologiya, Vol 12, No 1, Jan/ Feb 72, pp 19-25

RP. No clear correlation was established between RP content in DNA preparations and degree of elastoviscosity. RP might be a functional protein, since it correlates to the metabolic level in the cell. The authors conclude that the effect of iradiation on nuclear structures increases with the complexity of the biological system.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ISOLATION AND PROPERTIES OF CALF THYMUS DNA COMPLEX WITH RESIDUAL PROTEIN OF CHROMATIN -U-

AUTHOR-(02)-KRIVTSOV, G.G., BOGDANOV, A.A.

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 3, PP 422-427

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--THYMUS GLAND, DNA, PROTEIN, CHROMATIN, AMINO ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0186 STEP NO--UR/0463/70/004/003/0422/0427

CIRC ACCESSION NO--AP0120884

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120884

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CALF THYMUS DNA HAS BEEN FOUND TO FORM THE NATIVE COMPLEXES WITH RESIDUAL PROTEINS (ACIDIC NON HISTONE PROTEINS) OF CHROMATIN. THE AMINO ACID COMPOSITION OF THESE COMPLEXES AND THEIR STABILITY UNDER DIFFERENT CONDITIONS WERE STUDIED. THE COMPLEXES WERE SHOWN TO BE STABLE IN SOLUTION OF HIGH SALT CONCENTRATION AND IN THE PRESENCE OF HYDROGEN BONDS BREAKING AGENTS (4 M GUANIDINIUM CHLORIDE). AT THE SAME TIME IT IS POSSIBLE TO REMOVE THE RESIDUAL PROTEIN FROM THE CHROMATIN AFTER 0.5PERCENT SODIUM DODECYL SULFATE 1 M NACL TREATMENT. IT SUGGESTS THAT THE STABILITY OF THESE COMPLEXES IS DUE TO HYDROPHOBIC INTERACTIONS. SMALL FRACTION OF PEPTIDES WITH SPECIFIC AMINO ACID COMPOSITION WAS FOUND TO REMAIN COVALENTLY BOUND TO DNA AFTER REMOVING OF THE RESIDUAL CHROMATIN PROTEIN. FACILITY: LABORATORY OF BIOORGANIC CHEMISTRY, MOSCOW STATE UNIVERSITY. FACILITY: INSTITUTE OF BIOPHYSICS, ACADEMY OF SCIENCES, USSR, MOSCOW.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--20NOV70

1/2 017

TITLE--ALUMINUM NITRATE COMPLEXES -U-

AUTHOR-(04)-RESOLOVSKIY, V.YA., SHIROKOVA, G.N., KARELIN, A.", KRIVTSOV, N.V.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 622-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALUMINUM NITRATE, ALUMINUM COMPLEX, CESIUM COMPOUND, CHEMICAL DECOMPOSITION, HEAT OF SOLUTION, HEAT OF FORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0225 STEP NO--UR/0020/70/191/003/0622/0624

CIRC ACCESSION NO--AT0132497

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 017

CIRC ACCESSION NO--AT0132497

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDING A 4-8 FOLD EXCESS OF N SUB2 O SUB5, CONTG. HNO SUB3 IMPURITIES, TO AN EQUIMOLAR MIXT. OF CSNO SUB3 AND ALBR SUB3 AT MINUS 196DEGREES GAVE, ON WARMING UP SLOWLY AND REMOVAL OF VOLATILES IN VACUO, CS(AL(NO SUB3) SUB4). MIXING ALBR SUB3 WITH AN EXCESS OF DRY N SUB2 O SUB5 AT MOLAR RATIOS FROM 1:20 TO 1:30, REMOVING VOLATILES IN VACUO AFTER 12 HR AT 0DEGREES, ADDING A NEW PORTION OF N SUB2 O SUB5, AND STIRRING AT 0DEGREES GAVE NO SUB2 (AL(NO SUB3) SUB4). BOTH COMPDS. ARE CRYST., HYGROSCOPIC, SOL. IN H SUB2 O DECOMPG. INTO CS PRIME POSITIVE, AL PRIME3POSITIVE, AND NO SUB3 PRIME NEGATIVE. CS(AL(NO SUB3) SUB4) AT 100DEGREES FORMED NO SUB2 AND O. IT DECOMPD. COMPLETELY AT 300DEGREES GIVING CSNO SUB3 AND AL SUB2 O SUB3. NO SUB2 (AL(NO SUB3) SUB4), M. 85DEGREES, DECOMPD. AT 110-35DEGREES INTO AL SUB2 O SUB3, NO SUB2, AND O; ITS HEAT OF SOLN. IN H SUB2 O AT 25DEGREES IS MINUS 69.0 PLUS OR MINUS 0.1 KCAL.-MOLE AND ENTHALPY OF FORMATION H SUB298 EQUALS MINUS 238.4 PLUS OR MINUS 1.0 KCAL-MOLE.

FACILITY: INST. NOVYKH KHIM. PROBL., CHERNOGOLOVKA, USSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

Biochemistry

UDC 547.964.4+577.17

USSR

SHVACHKIN, YU. P., VDOVINA, R. G., POZNYAK, M. G., VOLUYSKAYA, IE. N., RYABTSEV, M. N., KRIVTSOV, V. F., GRACHEVA, A. K., KRASNOSHCHEKOV, S. P., NOVOSELOV, V. A., GRUZDEV, V. S., OLEYNIK, A. M., KALINKINA, Z. B., FEDOTOV, V. P., IVANOV, A. I., YUDAYEV, N. A.

"New Synthesis of Human Insulin"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 216-217

Abstract: Human insulin was synthesized on the basis of obtaining A and B chains by the solid phase method [R. B. Merrifield, J. Am. Chem. Soc., No 85, 2149, 1963; J. Stuart, et al., Tverdofazny sintez peptidov, Moscow, Mir, 1971] and subsequently combining the synthetic chains into the complete molecule of the biologically active hormone. Here, a new version of the synthesis is realized which permits exclusion of treatment of the chains with sodium in liquid ammonia which eliminates the danger of undesirable side reactions caused by this reagent [A. Marglin, et al., J. Am. Chem. Soc., No 88, 5051, 1966]. The A and B chains of human insulin were synthesized on an automated device using a spherical chloromethylated copolymer of styrene with 1% divinyl benzene as the insoluble carrier. All operations were performed in a nitrogen atmosphere. The derivatives of the L-amino acids used in the synthesis of the A and B chains are listed. The fluorohydrates of the chains were con-

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

SHVACHKIN, YU. P., et al., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 216-217

verted into S-sulfonates which exhibited no differences from the S-sulfonates of the corresponding natural chains of bull insulin. The synthetic A and B chains were recombined both with the corresponding natural chains and among each other. The resultant compounds had specific insulin activity of comparable magnitude to the previously synthesized insulin compounds [K. Lubke, et al., Adv. Enzymol., No 33, 445, 1970].

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 615.916:546

KRIVTSOV, V. S.

"Basis for the Limiting Admissible Concentration of Powdered Copper-Chromium-Barium Catalyst in the Air Around Work Areas"

V sb. Toksikol. i giliyena produktov neftekhimii i neftekhim. proiz-v (Toxicology and Hygiene of the Products of Petrochemistry and Petrochemical Production--Collection of Works), Yaroslavl', 1972, pp 122-124 (from RZh--Farmakologiya, Khimioterapevticheskiye Sredstva. Toksikologiya, No 3, Mar 73, Abstract No 3.54.649)

Translation: The DL_{50} of copper-chromium-barium catalyst (I; $BaCrO_4 \cdot CuO \cdot C_4CrO_4$) for rats was 17.5 g/kg (the means of administration is not indicated). The I poisoning caused the development of myxedema of the ZhKT [carotid glands?] and distrophic alterations in the liver and kidneys. The I had an expressed cumulative effect. Single intratracheal administration of I in the amount of 50 mg was accompanied by the development of hyperemia and pulmonary edema with interalveolar proliferation of the connective tissue elements. The I content in the air in a concentration of 200 mg/m^3 caused disturbance of the protein-forming

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

KRIVTSOV, V. S., Toksikol. i giliyena produktov neftekhimii i neftekhim. proiz-v, 1972, pp 122-124

function of the liver, an increase in the hydroxyproline content in the lungs, and alteration of the activity of a number of enzymes. The I concentration in the air of 6 mg/m^3 caused unstable and temporary changes of a functional nature. A concentration of 0.6 mg/m^3 was ineffective. An MPC of I in the air of production facilities of 0.03 mg/m^3 or no more than 0.01 mg/m^3 with respect to Cr content is recommended. USSR, Rostov, Medical Institute.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

BIOLOGY

Agriculture

USSR UDC 614.449.57:615.285.7]:576.895.77+595.771

KRIVTSOVA, Ye. N., MITROFANOV, A. M., KOZIN, N. P., TIMOFEYEVA, L. V., TULUPOVA, A. M., VINOGRADSKAYA, O. N., YERMISHEV, Yu. V., PLOTNIKOVA, A. S. and RYAZANTSEV, V. A., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, and Institute of Agricultural and Specialized Application of Civil Aviation

"Testing of Some Organophosphorus Compounds and Carbamates against Larvae of Aedes Mosquitoes (Culicidae) in Experiments with Aerial Spraying"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 5, Sep/Oct 70, pp 599-603

Abstract: The use of organophosphorus compounds and carbamates against mosquito larvae was tested in the Yakut ASSR, in the area of the villages of Novy, Aikhal, and Mirny, and the Udachnaya deposits. Water reservoirs were treated by aerial spraying from an AN-2 plane. The following pesticides were tested: bytex, methylnitrophos, trolen, sevine, and dipterex; DDT was used as the reference. Comparatively uniform marshy territories with occasional forests and bushes were selected. Bytex was shown to be especially effective as a larvicide, a dose of 40 g/hectare proving to be sufficient. Methylnitrophos

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

KRIVTSOVA, Ye. N., et al., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 5, Sep/Oct 70, pp 599-603

required a 100 g/hectare dose to be effective; trolen in doses 40 and 80 g/hectare reduced the density of mosquito larvae only insignificantly. Dipterex and sevin proved ineffective as larvicides, being significantly inferior to DDT. The effect of mosquito larvae eradication with organophosphorus compounds lasts for 7-14 days.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/3 025 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--FIELD TRIALS OF SOME OGRANOPHOSPHORUS COMPOUNDS IN CONTROL OF BLOOD SUCKING DIPTERA -U-

AUTHOR--KRIVTSOVA, YE.N.

K

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYE BOLEZNI, 1970, VOL 39, NR 1, PP 53-59

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MOSQUITO, INSECT CONTROL, DDT INSECTICIDE, ORGANIC PHOSPHOROUS INSECTICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/1957 STEP NO--UR/0358/70/039/001/0053/0059

CIRC ACCESSION NO--AP0103677

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/3 025 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OWING TO THE NECESSITY TO SEARCH FOR NEW DRUGS EFFECTIVE IN CONTROL OF BLOOD SUCKING DIPTERA, TRIALS WERE CARRIED OUT TO TEST THE EFFECTS OF DIFFERENT PESTICIDES ON LARVAE OF BLOOD SUCKING DIPTERA UNDER FIELD CONDITIONS. THE FOLLOWING DRUGS WERE TESTED: BYTEX, METHYLNITROPHOS, TRICHLORMETHAPHOS-3 (TRICHLOPHOS), TROLEN, CARBOPHOS, CYDIAL, NEXION, METATHION, DDVP AND DIBROM. DDT WAS USED AS A REFERENCE DRUG. IN THE SUMMER OF 1965 TRIALS WERE CARRIED OUT IN THE VICINITY OF BRATSK, THE IRKUTSK REGION. THE EFFECT OF SOME ORGANOPHOSPHORUS COMPOUNDS ON LARVAE OF BLACKFLIES WAS TESTED IN SMALL STREAMS FALLING INTO THE ANGARA RIVER, AND ON LARVAE OF MOSQUITOES OF THE GENUS ANOPHELES. BYTEX AND METHYLNITROPHOS WERE FOUND TO BE THE MOST TOXIC DRUGS CAUSING 100PERCENT DEATHS OF BLACKFLY LARVAE OF ALL INSTARS IN A DOSE OF 0.07 G-M PRIME3 AT 30 MIN. EXPOSURE, AND 100PERCENT DEATHS OF ANOPHELES LARVAE OF THE IVTH INSTAR IN A DOSE OF 0.04 G PER 1 M PRIME2. IN THE SUMMER SEASONS OF 1966 AND 1967 FIELD TRIALS WERE CARRIED OUT IN THE VICINITY OF THE VILLAGE NOVY, PIPE UDACHNAYA, THE YAKUT ASSR. AFTER THE MINIMUM DOSAGES PRODUCING 100PERCENT DEATHS OF LARVAE OF LOCAL SPECIES OF MOSQUITOES (AMONG WHICH THOSE OF THE GENUS AEDES WERE PREDOMINANT) HAD BEEN ESTABLISHED IN THE LABORATORY, TRIALS WERE CONTINUED IN THE FIELD. OWING TO THEIR UNIFORMITY, GEOLOGICAL EXCAVATIONS WERE SELECTED FOR THE TRIALS. -BYTEX IS FOUND TO BE MOST TOXIC FOR MOSQUITO LARVAE (LC SUB98,0.00025 G-M PRIME2).

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

3/3 025 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103677

ABSTRACT/EXTRACT--METATHION, METHYLNITROPHOS, CARBOPHOS, TROLEN, CYDIAL, NEXION ARE SUFFICIENTLY EFFECTIVE FOR MOSQUITO CONTROL (FOR THEM LC SUB98 MUNUS 100 VARIES FROM 0.002 TO 0.02 G-M PRIME2). TRICHLOPHOS, DDVF, DIBROM ARE THE LEAST TOXIC FOR MOSQUITO LARVAE IN NORTHERN AREAS OF THE COUNTRY. THE DURATION OF THE RESIDUAL ACTION OF ORGANOPHOSPHORUS DRUGS VARIED FROM 2 TO 3 WEEKS. DDT TESTED AS A REFERENCE DRUG WAS INFERIOR TO BAITEX AND SOME OTHER OPC IN ITS EFFECTIVENESSS BUT WAS MUCH BETTER THAN ALL OF THEM IN ITS PERSISTENCE.

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Acc. Nr: AP0049052 Ref. Code: UR0357

PRIMARY SOURCE: Vestnik Oftal'mologii, 1970, Nr 1, pp 42-43

EMETINE IN CHRONIC BLEPHAROCONJUNCTIVITES

P. K. Kripulchak

Summary

The following treatment was practised in handling out patients with persistent chronic blepharoconjunctivitis lasting for up to 8 years: intramuscular injection of a 1% emetine hydrochloride solution once a day and topical application of a 5% levomycetin (chloramphenicol) ointment — twice a day. The course of treatment lasted for 12 days. On 2—3d day both subjective and objective improvement was noted. Remote results were folowed up in 31 patients and 14 of them had no relapses for 2 years. In the course of one year 16 other patients had one recurrence of the disease and one patient suffered two relapses. In all these cases the course-wise treatment was repeated with good results. The patients tolerated quite well medication with a 1% emetine hydrochloride solution.

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REEL/FRAME
19800838

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 536.46:533.6

KRIVULIN, V. N., LOVACHEV, L. A., BARATOV, A. N., MAKIYEV, V. I.

"Study of the Effect of Acceleration on the Concentration Limits of Ignition"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 296-298 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B943)

Translation: Experimental results from a study of the effect of acceleration on the ignition limits of natural gas in air are presented. The experiments were conducted on a device that consisted of a rotating reaction vessel. It was established that under plane propagation along the acceleration vector the ignition limits are compressed and upon achieving an overload of 100 g_0 (g_0 = 9.8 m/sec^2) the hot mixtures lose the ability to propagate flames. At the same time the ignition limits are weakly dependent on the overload upon the propagation of flame counter to the acceleration vector. 6 ref. Authors' abstract.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 547.813+547.241

KRIVUN, S. V., VOZIYANOVA, O. F., and BARANOV, S. N.

"Pyrans and Salts of Pyrilium with Phosphorus-Containing Substitutions"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 91-95

Abstract: If pyrilium salts interact with sodium slats of dialkyl phosphites under the conditions of the Michaelis-Becker reaction, it is possible to use heteroaromatic cations with any anions. This interaction takes place under significantly milder conditions than previously reported (S. V. Krivun, et al., DAN SSSR, No 196, 600, 1971). This is more convenient and safer and leads to pure final products. Various pyrilium, flavilium and xanthilium salts lead to the corresponding pyranil phosphonates on interacting with sodium salts of diethyl phosphite. During oxygen hydrolysis, the pyranil phosphonates are converted into phosphonic acids. These phosphonic acids and phosphonates react with triphenylmethyl perchlorate to form the pyrilium salt with phosphorus-containing substitutions.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 547.813 + 547.241

KRIVUN, S. V., BARANOV, S. N., and VOZIYANOVA, O. F., Institute of Physical Chemistry, Acad. Sc. UkrSSR, Donetsk Branch

"Carbanions From Pyranylphosphonates. Synthesis and Reactions With Carbonyl Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 2, Feb 73, pp 359-365

Abstract: Phosphonates derived from some cyclic aromatic cations form colored active carbanions in the reaction with potassium tert-butoxide. Reacting these carbanions with carbonyl compounds yields alkylidene substituted derivatives of the appropriate rings. The latter and easily strong mineral acids, such as hydrochloric acid, forming new aromatic and heteroaromatic cations.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC 547.813

[redacted], VOZIYANOVA, O. F., and BARANOV, S. N., Donetsk Department of Physical and Organic Chemistry of the Institute of Physical Chemistry, Academy of Sciences of the UkrSSR; Donetsk State University

"Reactions of Pyranylidenephosphoran With Carbonyl Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 298-302

Abstract: Active phosphorans are synthesized by reacting potassium tert.-butoxide with phosphonium salts derived from salts of pyrylium and triphenylphosphine. The resultant phosphorans are reacted with various carbonyl compounds to give alkylidenepyrans. These pyrans combine with mineral acids to give the corresponding pyrylium salts. The structure of the salts is confirmed by IR-spectroscopy.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 547.813+547.241

KRIVUN, S. V., VOZIYANOVA, O. F., BARANOV, S. N.

"Phosphonic Acids and Their Esters Based on Aromatic Cations"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 58-62

Abstract: The isomerization of trialkylphosphites by the Arbuzov reaction is widely used to synthesize allyl and acetophosphonic acids and their esters [A. B. Arbuzov, Reaktsii i metody issledovaniya organicheskikh soyedineniy, No 3, 7, 1954]. The theoretical possibility of the interaction of triethylphosphite with pyridine [A. K. Sheykman, et al., ZhOKh, No 40, 700, 1970] and pyryl [O. F. Voziyanova, et al., ZhOKh, No 40, 1905, 1970] salts has been proved recently. A detailed study of the interaction of triethylphosphite with pyrylium salts demonstrated that chlorides, bromides or iodides of the pyrylium cations with free γ-positions are capable of reacting with phosphite by the Arbuzov reaction with the formation of esters of pyranylphosphonic acids. The latter are converted by acid hydrolysis to pyranylphosphonic acids. On interaction with hydride-ion acceptor, phosphonic acids and their esters are converted to the corresponding pyrylium salts. The tropylium and cyclopropenylium salts react analogously.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 547.241

VOZIYANOVA, O. F., BARANOV, S. N., KRIVUN, S. V., Donetsk Branch of Physico-Organic Chemistry, Institute of Physical Chemistry, Academy of Sciences Ukrainian SSR

"Pyranylphosphinic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1905-1906

Abstract: Reaction of 2,6-di-p-bromophenylpyrylium bromide with triethylphosphite at 100°, followed by hydrolysis with concentrated HCl, yields the respective pyranylphosphinic acid, m.p. 181°, which on boiling with triphenylmethyl perchlorate converts to the pyrylium salt m.p. 257° in which the phosphonium acid radical is in position 4. Under analogous conditions, 2,6-diphenylpyrylium bromide gives pyranyl phosphinic acid which crystallizes with one molecule of water and melts at 248°. Other 2,6-substituted pyrylium salts will react with triphenylphosphite under above conditions.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 547.813+547.241

KRIVUN, S. V., BARANOV, S. N., and VOZIYANOVA, O. F., Donets Department of Physicoorganic Chemistry of the Institute of Physicochemistry, Ukrainian SSR Academy of Sciences

"Arbuzov Rearrangement in the Series of Aromatic Cations"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 3, 21 Jan 71, pp 600-602

Abstract: It had been shown that pyrylium chlorides, bromides and iodides with no substituent in the γ-position react with triethyl phosphite and form, by rearrangement, the corresponding esters of pyranylphosphonic acid. These products are viscous, not distillable, and difficult to crystallize. They were hydrolyzed to the corresponding acids. Pyranylphosphonic acid crystallizes with one molecule of hydrate water. The pyrylium perchlorates of this and similarly prepared phosphonic acids are yellow crystals and are easily hydrolyzed. Several pyrylphosphonic acids were so transformed into the corresponding pyridines for identification purposes. 2,6-Diphenylpyranylphosphonic acids was prepared from 2,6-diphenylpyrylium bromide. Similarly prepared was the thia analog, as well as the 2-phenylbenzylpyranyl- and 2-phenyl-5,6,7,8-tetrahydrobenzopyranylphosphonic acids.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CYCLOPROPENYL, AND CYCLOHEPTATRIENYLPHOSPHONIUM SALTS -U-

AUTHOR-(04)-DULENKO, V.I., SEMENOV, N.A., BARANOV, S.N., KRIVUN, S.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 701

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CYCLIC GROUP, ORGANIC PHOSPHORUS COMPOUND, POLYNUCLEAR HYDROCARBON, PERCHLORATE, BROMIDE, BORON FLUORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0885 STEP NO--UR/0079/70/040/003/0701/0701

CIRC ACCESSION NO--AP0124548

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124548

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION PPH SUB3 WITH I (X EQUALS CLO SUB4, BF SUB4 OR BR) AFTER BRIEF HEATING IN A POLAR SOLVENT SUCH AS MENO SUB2, MECN, OR CHCL SUB3, GAVE 100PERCENT II. THE CHARGE TRANSFER TOWARD THE P ATOM IN II TENDS TO STABILIZE THE PERCHLORATE AND REDUCES HYGROSCOPICITY OF THE BROMIDE. USE OF THESE SALTS FOR WITTIG REACTIONS SHOULD AFFORD A ROUTE TO ALKYLIDENE DERIVS. OF CYCLOHEPTATRIENE AND CYCLOPROPENE, WHEN EITHER TROPYLIUM OR I IONS ARE USED IN THE ABOVE REACTION, RESP. FACILITY: DONETS. OTD. INST. FIZ. KHIM. IM. PISARZHEVSKOGO, DONETSK, USSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

Acc. Nr: AP0047669 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR 0032

104859q Determining lattice spacing in textured material. Vorob'ev, G. M.; Krivushenko, V. (Dnepropetrovsk. Gos. Univ., Dnepropetrovsk, USSR). Zavod. Lab. 1970, 36(1), 35-8 (Russ). Conditions for producing x-ray patterns of Si-Fe samples by means of the reverse x ray technique are considered. The samples must have a sharp texture and large grains. An attachment to the KROS-1 camera is described which gives the sample a zero position and a rotation motion within a given interval. J. Hejduk

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19791245

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 008 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SPECTROPHOTOMETRIC DETERMINATION OF PEUCEDANIN -U-

AUTHOR-(02)-KRIVUT, B.A., PERELSON, M.YE.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PRIR. SOEDIN. 1970, 6(1), 3-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PROCESSED PLANT PRODUCT, CHROMATOGRAPHIC SEPARATION, SPECTROPHOTOMETRIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1989 STEP NO--UR/0393/70/006/001/0003/0006

CIRC ACCESSION NO--AP0137168

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 008 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137168

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE DETN. OF PEUCEDANIN (I) (M. 109DEGREES) IN CRYST. POWDER, DISSOLVE 1 MG I IN 25 ML ETOH. ADD 10 ML ETOH TO 2 ML OF THIS SOLN. AND MEASURE THE ABSORBANCE IN 1 CM QUARTZ CELL AT 298 MMU. E PRIMEIPERCENT SUB1CM FOR PURE I WAS 401 PLUS OR MINUS 1.5. TO DET. I IN THE ROOTS OF PEUCEDANUM MORISONI: EXT. 1 G CRUSHED ROOTS IN SOXHLET APP. 3-3.5 HR WITH MEOH. EVAP. THE EXT. TO THE DRYNESS AND DISSOLVE AGAIN IN 10 ML MEOH. CHROMATOGRAPH 0.01-0.03 ML OF THIS SOLN. ON THE SILICA GEL KSK-THIN LAYER IN PETROLEUM,ETHER,ET SUB2 O (1:2). EXT. THE SILICA GEL LAYER CONTG. I (R SUBF 0.49) 12 HR IN 10 ML ETOH. MEASURE THIS SOLN. AFTER FILTRATION IN 1 CM CELL AT 298 MMU. USE THE ELUATE OF PURE SILICA GEL LAYER AS THE BLANK. THE MEAN REL. ERROR OF THE DETN. WAS SMALLER THAN 2PERCENT. FACILITY: VSES. NAUCH.-ISSLED. INST. LEK. RAST., BITTSA, USSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 546.76+546.74+546.27

CHEPIGA, M. V., KRIVUTSKIY, V. P., and KUZ'MA, YU. B., L'vov State University imeni Ivan Franko

"The Cr-Ni-B System"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 6, Jun 72, pp 1059-1064

Abstract: An investigation was made by x-ray and microstructural methods of the Cr-Ni-B system in the whole interval of concentrations. The investigated specimens, made from metal powders (purities: electrolytic chromium 99.5%, nickel 99.9%, and boron 99.3%), were placed in Al_2O_3 crucibles, heated in a vacuum furnace up to 1400°C, slowly cooled to 800°C, sealed in quartz ampoules, and annealed for at least 300 hrs at 800°C. The isothermal profile of the Cr-Ni-B system at 800°C is shown. A very low intersolubility of borides and the existence of two ternary compounds were established: Cr_3NiB_6 (rhombic structure of the V_2B_3 type, a=3.034±0.003 Å; b=18.11±0.02 Å; c=2.956±0.003 Å) and $Cr_2Ni_3B_6$ (rhombic structure of the V_5B_6 type, a=2.971±0.003 Å; b=20.34±0.02 Å;

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CHEPIGA, M. V., et al., Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 6, Jun 72, pp 1059-1064

c=3.011±0.003 Å). Both compounds have a crystalline structure, and are the first representatives of these types among the ternary compounds. One illustration, three tables, sixteen bibliographic references.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC 541.49:547.558.1:547.355.9

NESMEYANOV, A. N., PEREVALOVA, E. G., KRIVYKH, V. V., KOSINA, A. N., FRAND-BERG, K. I., and SHYSLOVA, E. I., Moscow State University imeni M. V. Lomonosov

"Triphenylphosphine Complexes of Benzyl- and Vinylgold"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 653-654

Abstract: Alkyl and aryl compounds of monovalent gold are stable only in the form of triphenylphosphine complexes. The benzyl compound was synthesized according to the reaction

$$C_6H_5CH_2MgCl + Cl\,Au \cdot P\,(C_6H_5) \longrightarrow C_6H_5CH_2Au \cdot P\,(C_6H_5)_3$$

The yield was 85% in toluene and 40% in tetrahydrofuran. The nmr spectrum of the product indicated a proton signal in the phenyl group (in the range of 6.9-7.3 m.d.) and two signals from the methylene group (in the range of 2.54 to 2.76 m.d.). By using the double nuclear magnetic resonance of H^1-P^{31}, it was shown that the interaction of the protons from the methylene group with phosphorus caused peak splitting. The vinyl compound was obtained from the reaction

$$CH_2 = CHMgBr + Cl\,Au \cdot P\,(C_6H_5)_3 \xrightarrow[50^\circ]{THF} CH_2 = CH\,Au \cdot P\,(C_6H_5)_3$$

The yield was 90%. 1/1

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 669.24:669.017.3

KRIVENKO, V. I., and POTAPOV, L. P., Institute of Metal Science and Metal Physics, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Mechanism of Initial Ordering in Ni-Mo Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 2, Feb 72, pp 436-440

Abstract: Structural transformations in a Ni alloy containing approximately 18 at% Mo were studied by auto-ionic microscopy at 78°K. The presence of a heterogeneous mechanism of nonordered to ordered transition after annealing at 800°C for 30 minutes was experimentally confirmed. At 700°C there was observed a structure analogous to the earlier stages of ordering after a one-hour anneal where auto-ionic microphotographs revealed individual regions of the Ni_4Mo phase on a background of the unordered f.c.c. lattice with clearly defined interface boundaries which corresponded to the assumptions on the nucleating mechanism of transformation. Microphotographs of the sample alloy taken after the alloy had been quenched from the single-phase region and annealed for 1-500 hours at 600°C showed that little change for the first 1-6 hours of annealing. After 6-10 hours of annealing the photographs revealed

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USSR

KRIYENKO, V. I., and POTAPOV, L. P., Fizika Metallov i Metallovedeniye, Vol 33, No 2, Feb 72, pp 436-440

a less chaotic distribution of visible parts on the auto-ionic microphotographs. Nothing is stated about ordering in Ni-Mo alloys between 10 and 500 hours of annealing at 600°C except that the structure resulting from 500 hours of annealing is heterogeneous. Two figures, 7 bibliographic references.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

UDC 547.341.07

ALEKSANDROV, V. N., and KRIZHECHKOVSKAYA, N. I.

"A Method of Making Diesters of Alkylphosphonic Acids Which Contain the Tert-Butyl Group in the Alkyl Radical"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 27, 1970, Soviet Patent No 279616, Class 12, filed 7 May 69, p 29

Abstract: This Author's Certificate introduces a method of making diesters of alkylphosphonic acids which contain the tert-butyl group in the alkyl radical. As a distinguishing feature of the patent, a dialkyl halide phosphate is interacted with an alkylmagnesium chloride which contains the tert-butyl group.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INFLUENCE OF PRIMARY ALCOHOLS ON THE REDUCTION OF WATER EVAPORATION BY 1,OCTADECANOL AND BETA OCTADECYLOXYETHANOL MONOLAYERS -U-

AUTHOR-(02)-KRMOYAN, T.V., POGHOSYAN, R.K.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 3, PP 377-380

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALCOHOL, EVAPORATION, SOLVENT ACTION, WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1590 STEP NO--UR/0069/70/032/003/0377/0380

CIRC ACCESSION NO--AP0125212

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

2/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125212

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EVAPORATION RESISTANCE OF CONDENSED MONOLAYERS OF 1,OCTADECANOL, BETA OCTADECYLOXYETHANOL AND A SAMPLE OF COMMERCIAL OCTADECANOL HAS BEEN STUDIED AT 25DEGREESC USING PRIMARY ALCOHOLS AS SPREADING SOLVENTS. THE ALCOHOLS FROM METHANOL TO PENTANOL INCREASE THE EVAPORATION RESISTANCE OF MONOLAYERS BY 50PERCENT. THE BEHAVIOR OF 1,OCTADECANOL IS, HOWEVER, ENTIRELY DIFFERENT WHEN 1,DECANOL AND 1,DODECANOL ARE USED AS SPREADING SOLVENTS. THE LAST TWO SOLVENTS MENTIONED COVER THE WATER SURFACE AND COMPLETELY HINDER THE FORMATION OF A MIXED MONOLAYER WITH 1,OCTADECANOL, WHICH HAS A VERY LOW RATE OR SPREADING. FIELD TESTS ARE DESCRIBED, WHICH CONFIRM THE FAVORABLE INFLUENCE OF LOW MOLECULAR WEIGHT PRIMARY ALCOHOLS.

FACILITY: INSTITUT ORGANICHESKOY KHIMII, EREVAN.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR

BAZILENKO, O. K., KROCHAK, B. Ya.

"Optimal Thresholds for Rejection of an Information Transmission Line"

Materialy Seminara po Kibernet. AN MoldSSR, Mold. Territor. Gruppa Nats. Kom. SSSR po Avtomat. upr. [Materials of a Seminar on Cybernetics, Acad. Sci. MoldSSR, Moldavian Territorial Group, National Committee of the USSR on Automatic Control], 1972, No 46, pp 3-14 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V467 by E. Gabidulin).

Translation: Certain methods of testing information transmission lines in order to detect defects are studied.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 621.373.029.7

KOSHEL'KOV, V.A., KROCHIK, G.M.

"Concerning Use Of A Four-Approach Helix As The Sorting System Of A Maser"

Radiotekhnika i elektronika, Vol XVII, no 5, May 72, pp 1095-1098

Abstract: The results are presented of a calculation of the structure of the electrostatic field of a four-approach spiral, and its advantages over known sorting systems are shown. Use of a four-approach spiral for sorting can lead to a reduction of the generation threshold of a beam-type maser, to an increase of its power, and also to an increase of the sensitivity of a spectroscope to the active molecular beam. 3 fig. 6 ref. Received by editors, 7 April 1971.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC 621.314.58

KROGERIS, A.F., RUTMANIS, L.A., DREYMANIS, YA. P.

"Determination Of The Number Of Switchings Of Power Elements Of A Converter With Various Methods Of Frequency Conversion"

V sb. Poluprovodniki i ikh primeneniye v elektrotekhn. (Semiconductors And Their Application In Electrical Engineering--Collection Of Works), No 4, Riga, "Zinatne," 1970, pp 187-202 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B454)

Translation: A method is given for determining by analytical and graphic means the number of switchings of power elements with various methods of frequency conversion; the method is characterized by a composite function for determination of the moments of commutation. The possibility is shown of decreasing the number of switchings in the event of the use of any existing instantaneous values of the input voltages for formation of the output voltage of the converter. 5 ill. 1 tab. 3 ref. I.R.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC: 539.4:624.011

TAMPLOV, F. F., KROKHALEV, V. G.

"Sandwich Panels Using a Corrugated Metal Frame and a Polymer Filler"

V sb. VI Soveshchaniye-seminar po obmenu opytom str-va v surovykh klimat. usloviyakh, 1970. T. 4, vyp. 1 (Sixth Seminar and Conference on Exchange of Experience in Construction Under Severe Climatic Conditions, 1970--collection of works, Vol. 4, No 1), Krasnoyarsk, 1970, pp 55-62 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4V767)

Translation: The paper describes a structural design for a sandwich panel using a corrugated plate as the lower sheathing, a polymer filler, and a pyramidal sheet as the upper sheathing. Five test specimens measuring 3.6 x 2 m were made for experimental study. The outer and inner sheets of the panels were made from galvanized steel. The panels were loaded by standard 20 kg cast iron weights. The load was applied by stages. The displacements and fiber deformations were measured by deflectometers and electronic strain gauges. Z. L. Gil'gur.

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Surgery

USSR

UDC 616.12-089-059:616.12-008.315-021.6

KROKHALEV, Yu. S., ZORIN, A. B., and ZHURAVLEV, Yu. N., Surgical Clinic for Advanced Training of Physicians imeni P. A. Kuprianov, and Chair of Anesthesiology and Reanimation, Military Medical Academy imeni S. M. Kirov

"Exclusion of the Circulation Five Times in an Open Heart Operation Performed Under Conditions of Hypothermia"

Moscow, Grudnaya Khirurgiya, No 4, 1970, pp 105-106

Abstract: The authors operated on a 22-year-old male for an interatrial septal defect with anomalous drainage of the pulmonary veins. The patient was chilled to 32°C just before surgery. Cardiac arrest occurred five times, once after the oxygen supply temporarily creased, and four times after the defect was repaired. When the circulation was restored after the defect was sutured, the orifices of both venae cavae dropped part way into the left atrium. The circulation was halted four times to eliminate the complication and ensuring metabolic disturbances. The blood loss was replenished with transfusions of the patient's own blood (from the chambers of the heart) and bank blood. Despite postoperative cerebral edema and other complications, the patient made good progress and was discharged in satisfactory condition 28 days after the operation, without any neurologic disorders. Follow-up examination 5 months later revealed no adverse

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KROKHALEV, Yu. S., et al, Grudnaya Khirurgiya, No 4, 1970, pp 105-106

developments. The patient was leading a normal life, including participation in sports.

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USSR UDC: 621.375.82

BOYKO, V. A., KROKHIN, O. N., SKLIZKOV, G. V.

"Investigation of the Parameters and Dynamics of a Laser Plasma"

Moscow, Issledovaniye parametrov i dinamiki lazernoy plazmy. Fiz. in-t AN SSSR. Lab. kvant. radiofiz. (cf. English above. Physics Institute of the Soviet Academy of Sciences. Quantum Radiophysics Laboratory), Preprint No 121, 1972, 132 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D1108 by E. B.)

Translation: The authors make a survey of experimental research dealing with the interaction between laser emission and the surface of a target. As a rule, the experiments described are done with sharp focusing of the beam onto a massive target. A study is made of the parameters of the hot phase of the jet: i.e., the plasma which is directly heated by the laser emission close to the surface of the target. An investigation is made of the variation of the main parameters of the plasma (temperature, density, linear dimensions, lifetime, effective charge of ions) with space and time and their relations to the characteristics of laser emission. A considerable portion of the experimental data obtained on the laser jet relate to the mode of gasdynamic motion where the density of the hot plasma is no greater than 10^{20}-10^{23}. From the standpoint

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USSR

BOYKO, V. A., et al., Issledovaniye parametrov i dinamiki lazernoy plazmy. Fiz. in-t AN SSSR Lab. kvant. radiofiz, Preprint No 121, 1972, 132 pp.

of thermonuclear applications the most promising is the mode of thermal conduction with inertial plasma containment, which is achieved with a heating pulse duration of 10^{-9} sec and flux densities of 10^{15}-10^{16} W/cm^2. The plasma thus formed has a temperature of several kev and a density of 10^{23}, which satisfy conditions of thermonuclear fusion. Possible trends in research to achieve the mode of thermal conduction are considered. Bibliography of 172 titles.

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KROKHIN, O.N.

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FPDS 01618

2 April 1974

Biblio

STUDY OF THE PARAMETERS AND DYNAMICS OF A LASER PLASMA

[Book by [redacted] and G.V. Sklizkov; Issledovaniye Parametrov i Dinamiki Lazernoy Plazmy; Preprint No 121, 1972, Order of Lenin Physics Institute imeni P.N. Lebedev Laboratory of Quantum Radiophysics, signed to press 14 September 1972, 132 pages]

1. Introduction

The problem of heating a material to thermonuclear temperatures by means of powerful thermonuclear laser emission [1] stimulated numerous studies of a plasma formed both when irradiating the surface of the condensed material in a vacuum-laser flare and for optical breakdown in the gases — a laser spark.

In addition to the thermonuclear applications, prospective applications of a laser plasma have also arisen, such as, for example, its use as the source of multicharged ions for spectroscopic research of astrophysical interest, for acceleration equipment when studying the formation of new super-heavy elements, and so on.

The interest in a laser plasma increases as higher and higher temperatures are reached. This has become possible as a result of the rapid progress in laser engineering: in recent years, the power of lasers has increased on the average by an order a year. The peculiarity of a laser plasma is the high rate of energy generation essentially greater than in pulse units. Now the energy release power is more than 10^{12} watts, the energy density in the plasma is $\sim 10^7$ joules/cm^3, the specific energy release rates $\sim 10^{17}$ watts/cm^3. For comparison, let us present the corresponding figures for the most powerful devices of the "plasma focal point" type $\sim 10^9$ watts, $\sim 10^4$ joules/cm^3, $\sim 10^{11}$ watts/cm^3, and the specific energy consumption of explosives $\sim 10^4$ joules/cm^3.

Recently, a large number of both theoretical and experimental studies have been published on the subject of laser plasmas. The experimental studies of the physical conditions existing in a laser flare can be now separated somewhat provisionally into two steps. The basic result of the first step (1964-1967) is establishment of the fact of the existence of a dense and relatively hot plasma near the target surface capable of emitting ions with an energy of ~ 1 kev, the formation of severe shock waves in the atmosphere surrounding the

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UDC: None

BASOV, N. G., BOYKO, V. A., ZAKHAROV, S. M., KROKHIN, O. N., MIKHAYLOV, Yu. A., SKLIZKOV, G. V., and FEDOTOV, S. I.

"Mechanisms of Neutron Generation in a Laser Plasma"

Moscow, Pis'ma v ZhETF, vol 18, No 5, 5 September 1973, pp 314-317

Abstract: This letter gives the results of experiments performed to investigate the mechanisms which give rise to neutrons in laser plasmas. The experiments here described proved that, depending on the experimental conditions, both hot and cold neutrons are produced. The measurements involved were conducted in a variant of the sharp focusing of a single-channel laser on a massive CD_2 target, as well as in spherically symmetrical irradiation of CD_2 particles measuring about 100 μ in diameter by the output of a multichannel laser. Both methods were discussed in earlier papers by the first-named author above, et al (Pis'ma v ZhETF, 13, 1971, p 691; 15, 1972, p 589; ZhETF, 62, 1972, p 203). Results of both types of measurement are separately examined. Some of these cast doubt on the assertion of previous researchers that the appearance of fast ions is connected with acceleration in the critical density region.

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USSR UDC 543.46 + 621.375.325

BASOV, N.G., ZARIETSKIY, A.R., ZAKHAROV, S.D., KROKHIN, O.N., LEBEDEV, P.G., MATVEYETS, YU.A., SENATSKIY, YU.V., FEDOTIMOV, A.I.

"Achievement Of Powerful Light Pulses At 1.06 And 0.53 Micron Wavelengths and Their Use For Plasma Heating. I. Experimental Study Of The Processes Of Radiation Reflection During Laser Heating Of Plasma At Two Wavelengths"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), 1972, pp 65-74

Abstract: The experimental results are presented of calorimetric, temporal, spectral and polarization measurements of radiation reflected back from plasma which is heated by nanosecond laser pulses with a wavelength of 1.06 and 0.53 micron with fluxes at targets of various materials exceeding 10^{14} watt/cm^2. The results discussed represent the first attempt to study laser heating of plasma which is produced at solid targets in the green region of the spectrum. It is found that plasma absorption of the heating light at a 0.53 micron wavelength is three times greater than at a 1.06 micron wavelength. The authors express their appreciation to V.B. Rozanov for discussion of the results of this work. 3 fig. 19 ref. Received by editors, 25 Oct 1971.

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BOROVICH, B. L., ZUYEV, V. S., KROKHIN, O. N. (Lebedev Physics Institute, USSR Academy of Sciences)

"Photochemical Dissociation Waves"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, April 1973, pp 1184-1189

Abstract: Photochemical dissociation waves in an absorbing molecular gas are studied on the basis of the solution of the transfer functions of the radiation and balance of the number of particles. The analysis is carried out for light of arbitrary spectral composition and any directivity and by taking into account the real molecular absorption bands. The analytic expressions obtained allow one to evaluate the velocity and width of the waves and the effective frequency band used for various shapes of the absorption bands. The possibility of stationary propagation of photochemical dissociation is investigated. Conditions for the appearance of inverse population of levels when one of the photodissociation products is in the excited state are analyzed. It is shown that the conditions for inversion differ qualitatively in the regions of fixed and stationary wave propagation.

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KROKHIN, O.N.

JPRS 57757
18 Dec 72

ACHIEVEMENTS OF QUANTUM ELECTRONICS

(Conference in Canada)

[Article by Doctor of Physical and Mathematical Sciences, [illegible] Krokhin; Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol [illegible], No 10, October 1972, pp [illegible]]

The Seventh International Conference on Quantum Electronics, held in Montreal on 8-11 May, attracted many specialists from almost all countries of the world. The program of the conference retraced questions of laser physics, nonlinear optics of laser applications, controlled thermonuclear synthesis, optical electronics and spectroscopy.

In spite of the fact that on the whole the level of the discussed scientific results in each of these directions of quantum electronics was rather high, still, on a general background, perhaps, the results of investigations of new types of high-pressure gas lasers and work on "laser thermal poison" were distinguished.

In the past year in a number of countries -- the USSR, the USA, and Australia -- new carbon dioxide lasers with a high pressure of the working medium (more than 1 atmosphere) have been created. In principle, work has already been done on high-pressure CO_2 lasers for several years. The method of excitation of such lasers is relatively simple -- a powerful pulsed discharge in passed through the working gas. However, at high pressures the discharge proves to be spatially unstable -- streamers form, that is, separate narrow channels along which current flows. That fact, in spite of the fact that a technology has now been worked out which substantially improves homogeneity, makes that method insufficiently effective, as the excitation does not take place in the entire volume of the gas. In new types of high-pressure gas lasers the medium is excited

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BASOV, N. G., IVANOV, YU. S., KROKHIN, O. N., MIKHAYLOV, YU. A., SKLIZKOV, G. V., and FEDOTOV, S. I., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Neutron Production in Spherical, High-Power Laser Irradiation of a Target"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 10, 20 May 72, pp 589-592

Abstract: The authors recorded the neutron yield during the heating of a solid, deuterated polyethylene target subjected to spherical irradiation by a multibeam laser. It was found that the results significantly exceed those obtained during strong focusing. The size of the heated target was approximately equal to the focal spot diameter, and the heated mass was determined by the particle mass. The scheme for focusing nine laser beams on the target was similar to one previously described by the authors. The neutrons were recorded by three scintillation detectors placed at various distances from the target. Recoil-proton nuclear photoemulsions were used for the quantitative measurements. Assuming isotropism of the neutron escape from the plasma, the number of neutrons per burst was found to be equal to $3 \cdot 10^6$.

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BASOV, N. G., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 10, 20 May 72, pp 589-592

The authors thank V. G. LARIONOVA and L. I. IVANOVA for assistance in processing the photoemulsions, and V. M. GROZNOV, A. A. YEROKHIN, N. N. ZOREV, and N. V. NOVIKOV for assisting in the work.

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BASOV, N. G., BOYKO, V. A., GRIBKOV, V. A., ZAKHAROV, S. M., KROKHIN, O. N., and SKLIZKOV, G. V., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Gas Dynamics of a Laser Plasma in the Process of Heating"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1(7), Jul 71, pp 154-161

Abstract: One of the two well-known approaches to the problem of heating plasma to thermonuclear temperatures by irradiating it with a laser is the method in which a substantial portion of the energy of the laser is converted into the energy of directed, gas-dynamic movement. In the present article, an attempt is made for the first time to measure the distribution of the density and speed of movement of the plasma, to evaluate the pressure of the plasma during the process of heating. A multimode, Q-switched laser and a carbon target were used, and measurements were made by slit scanning of an interferogram on an image converter. It was found that the maximum pressure (10^6 atmospheres) and temperature occur at the beginning of the laser pulse. At later times, the profile of the density is elevated, and the area of the

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BASOV, N. G., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1 (7), Jul 71, pp 154-161

plasma in which absorption takes place draws back from the target and increases. The mass of the gas heated directly by the laser beam also increases. The temperature in the hot portion drops, and an increasingly greater part of the radiation energy is converted directly into the kinetic energy of the disintegrating substance. In this manner, by varying the dependence of the dispersion of the radiation on time, it ispossible to shift the maximum pressure and to achieve optimal utilization of the laser's energy when heating plasma under real conditions.

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Magnetohydrodynamics

UDC 621.378.9:533.9.02

USSR

BASOV, N. G., ZAKHAROV, S. D., KROKHIN, O. N., KRYUKOV, P. G., SENATSKIY, Yu. V., TYURIN, Ye. L., FEDOSIMOV, A. I., CHEKALIN, S. V., SHCHELEV, M. Ya.

"Studies of a Plasma Formed by Ultrashort Laser Pulses"

Moscow, Kvantovaya Elektronika, No. 1, 1971, pp 4-28

Abstract: Experimental studies of processes occurring in the high-temperature heating of a plasma by focusing ultrashort laser radiation on the surface of lithium deuteride are described. Studies of plasma heating with laser radiation of duration 10^{-11}-10^{-12} sec were begun in 1968 at the Laboratory of Quantum Radiophysics of the Physics Institute imeni P. N. Lebedev. Fast neutrons were recorded upon focusing these pulses on the surface of a lithium deuteride target, indicating the rise of conditions for a thermonuclear db-reaction and for obtaining a plasma of high temperature and density. Subsequent research raised the following questions: how does absorption of energy by a solid occur if the laser radiation is concentrated in a pulse with a duration of several picoseconds? How is the strong reflection of laser radiation from the target explained? What are the possibilities of raising ion temperature, and consequently neutron yield, in

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BASOV, N. G., et al, Kvantovaya Elektronika, No. 1, 1971, pp 4-28

heating a plasma with ultrashort pulses? Shadow photographs of the plasma with illumination by ultrashort pulses and the recording of plasma dispersion with the aid of an electron-optical converter are described. The same electron-optical converter was used to study the change in the reflection of laser pulses with time, and x-ray measurements were made of the electron temperature of the plasma. A review of the basic experimental data indicates that the results are from laser pulses consisting not of one, but of several subpulses. Experiments show that the interaction of each subpulse with the target is not the same but a function of the previous history and repetition time of the subpulse relative to the beginning of the process. Heating of the plasma occurs as follows: one of the first subpulses incident on the target ionizes it to a depth approximately equal to the wavelength of the laser radiation. When the value of n_e becomes comparable to the value of n_{cr}, the remaining part of the subpulse is reflected. Heating of the plasma to a temperature of several electron-volts occurs simultaneously with ionization. As a result, the plasma formed is slowly dispersed. All subpulses incident on the target at this stage will be reflected until the particle density drops, as a result of dispersion, to a value corresponding to n_{cr}. At this time high-temperature heating of the plasma is possible. It is thus established that reflection of ultrasonic pulses arises in plasma regions where the electron density is close to critical. Other subjects discussed in the article include plasma radiation and heat conductivity, the effect of laser radiation pressure, and electron-ion relaxation in a plasma formed by a powerful ultrashort laser pulse.

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USSR UDC 621.373

GASOV, N. G., KROKHIN, O. N., and SKLIZKOV, G. V., order of Lenin Physics Institute imeni P. N. Lebedev

"Investigation of the Heating and Scattering Dynamics of a Plasma Formed by High-Power Laser Beam Focussed on a Substance"

Moscow, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika (Works of the Order of Lenin Physics Institute imeni P. N. Levedev, Academy of Sciences USSR: Quantum Radiophysics), Vol. 52, 1970, p 171-236

[Note: This volume of the "Trudy", just as volume 31, is devoted to quantum radiophysics, specifically to state-of-the-art reviews in the three main trends in quantum electronics: injection lasers, interaction of high-power laser beams with substances, and the theory of laser dynamics. Another review in the same issue, by Yu. V. Afanas'yev and O. N. Krokhin, also deals with the interaction of laser beams with metals and other solids.]

Abstract: The authors review and summarize recent literature on dense, high-temperature plasmas generated by laser pulses striking solid targets. They note that the kinetic processes occuring during the heating of substances by focussed

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GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

Q-modulated lasers have not been adequately explained. Moreover, contradictory data have been reported on the ion energy and on the mass of the heated substance. Heated plasmas have inhomogeneous structure, and density distributions of the vaporized substance in space and time have not been measured directly. The front of a plasma generated by a giant laser pulse can have a temperature of several hundred ev and advances at the rate of $>10^7$ cm/sec, thereby acting as a shock piston on the surrounding gas. Theoretically, sufficient energy can be injected into a plasma to heat it to thermonuclear temperatures. The heating and expansion processes of laser-generated plasma eruptions from opaque solids are studied experimentally and theoretically. A spherical model of plasma expanding from a small laser-irradiated spot is used and gasdynamic equations are derived in analytical form. Plasma expansion dynamics were recorded with high-speed shadow photography. The target was irradiated by a neodymium laser that had a single rod 15 x 240 mm pumped by four IFP-5000 lamps. Kerr cells were used as shutters for sychronization. The energy of the laser was >20 joules and pulse length was <15 nsec. The experimental equipment, shown in a diagram, included gas and ruby lasers in series to supply synchronized flash illumination, and a Mach-

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GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akademii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-230

Zender interferometer was used to record the high-speed interferograms. Equipment and procedural errors are estimated. Shadographs were taken of a laser pulse having a front of ~ 4 nsecond striking a carbon target inside a vacuum chamber, showing that an opaque plasma eruption first spreads rapidly (3×10^6 cm/sec), followed by a complete standstill. Interference rings indicate large refraction gradients. The opaque region then disintegrates. In the later stages there is graphic evidence of streaming behind the target surface. If the shutter is removed, the laser heats the target and a vapor develops in a spherical area equivalent to the diameter of the laser spot and in 100 microsec expands to a distance of 1cm from the target surface. When the giant pulse strikes this dense cloud, a shock wave spreads into the cloud with the speed of 1.4×10^7 cm/sec in the direction of the beam and 1.2×10^7 cm/sec at right angles. Cloud densities up to 10^{18} cm^{-3} are obtained for lead, ebonite, organic glass, teflon, and aluminum foil. The formation and the behavior of the expanding spherical shock waves are discussed in detail. Expansion is found consistently to be faster in the direction of the incident beam, and turbulence grows in severity as the pressure in the vacuum chamber increases. For 5-micron thick aluminum foil a forward-moving spherical shock forms when the power is 3 joules, but at

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GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-230

6 joules the beam punctures the foil and the shock spreads in both directions along the beam. Experiments were conducted on colliding shock waves. Two beams were focussed on target surfaces placed at 90 deg to each other. Increased density and velocity were observed at the intersection of the shocks. Changing the angle of incidence of the beam does not alter the direction of the plasma eruption, which remains normal to the target surface. The motion of luminous shock fronts was studied for carbon and lithium deuteride targets. Luminosity is sufficiently bright for photography above 0.2 mm Hg pressure. The luminous front velocity decreases as pressure increases. The shock front moves ahead and away from the luminous front. As the pressure rises, the luminous wave forms much quicker, and at pressures of $\sim$20 mm Hg formation is practically instantaneous. The maximum velocity of 200 km/sec is reached in air at $\sim$1 mm Hg. The distribution of electron density is measured and the total mass of heated plasma is determined. From the crater in the target, typically $\sim$0.5 mm dia, approximately 10^{-5} of material is evaporated. But this means that at 6 joules each atom receives only 7.5 ev, which is too little to explain the speed of the shock wave. Therefore, interferograms were made and electron density was plotted

4/6

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GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

on a graph for different directions with respect to the laser beam. The electron density is found to be spherical and the mean energy per atom is 350 ev if half the energy is assumed to be available for heating. The electron density distribution in the shock wave is investigated in detail. Pressures on the target surface as well as the concentration and conductivity of the plasma in a transverse magnetic field were measured. The system used permits measurement of the plasma temperature and allows the assumption that electron and ion temperatures are approximately equal. A transverse magnetic field of 1.2 koe has no effect on the plasma jet, at least up to 2 cm from the target. In general, giant focussed laser pulses of 10^9 to 10^{12} watt/cm^2 evaporate a small spot on a solid target and heat the erupting plasma, which is spherical and elongated in the direction of the incident beam. Comparison of measurements indicates that the jet quickly reaches a constant value and the ion energy at the edge reaches several kev. This large ion energy results from the gasdynamic acceleration of the mass at the periphery. Upon reaching a maximum size during the pulse, the spherical plasma collapses. Analysis of shadographs indicates the existence of a dense neutral gas near the surface of the target that forms within ~ 100 nsec after termination of the laser pulse. Density of the substance in the jet decreases from 2 x 10^{19} to 10^{17} to 10^{17} cm^{-3} in the interval of 0.5 to 3 mm from

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GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

the target. In the interval from 3 to 14 mm from the target, density drops from 10^{17} to 10^{12} cm^{-3}. It was found that considerable mass is ejected from the irradiated spot by a recoil mechanism when the pressure of the laser pulse is removed. This material is ejected with a velocity of $\sim 2 \times 10^{4}$ cm/sec. The possibility of using various target geometries to produce several shock waves to collide holds promise as a method of reaching higher plasma densities and temperatures. The high-speed multiple-frame shadow photography developed for the experiments is a powerful method for studying high-speed discharges and other processes. Also, the method permits study of the properties of high-density, high-pressure, and high-temperature process in substances without resorting to large-size high-pressure and high-temperature chambers. The authors thank V. A. Gribkov, N. A. Boyko, N. V. Morachevskiy, and S. I. Fedotov for data-gathering assistance and V. I. Frolov and B. V. Kruglov for help in constructing the experimental equipment. Orig. art. has 44 figs., 4 tables, and 73 refs.

6/6

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UDC 533.916

USSR

BASOV, N. G., Academician, BOYKO, V. A., DROZHBIN, Yu. A., ~~ZAKHAROV, S. M.~~, KROKHIN, O. N., SKLIZKOV, G. V., and YAKOVLEV, Y. A., Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR, Moscow

"Investigation of the Initial Stage of the Gas-Dynamic Dispersion of a Laser Jet Plasma"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

Abstract: Since previous experiments study the radiation spectra and gas-dynamic parameters of a plasma in large time intervals exceeding the length of the laser pulse, the present study covers the dynamics of the motion and the kinetics of ionization processes in a laser plasma with a high time resolution. It is noted that the gas-dynamic motion of a plasma accompanying the high-temperature heating of condensed material with focused laser radiation has been investigated because of the importance of the possible use of a laser plasma for thermonuclear fusion, as a source of multicharged ions for spectroscopic studies of astrophysical interest, for accelerator technology, etc. The study of the dispersion of a plasma during the action of a laser pulse and at distances r from the surface of the target comparable with the diameter d of the focusing spot of the laser radiation made it possible to trace different phases of the motion of the material,

1/4

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USSR

BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

including the initial stage of heating and the "freezing" of the ionization state of the plasma. The radiation of a neodymium laser with an energy of 10 j and a half-length of 15 nsec was focused with a 5-cm lens on the surface of a carbon target in a vacuum of 10^{-6} torr, and the structure of the dispersing plasma was investigated on the basis of its luminosity. Space-time diagrams of ion dispersion were obtained from analysis of the data (see Fig.); for $r \leq 1$ mm the plasma emits a continuous spectrum in the visible region (lines are observed only at distances $r \geq 1$ mm). As the distance increases to 10 mm, a break is observed in the luminosity of ions CVI and CV from the target. The regions occupied by ions of different charges partially intersect, although there are no discontinuities in the density of material in the plasma. The following model of the gas-dynamic motion of the heated matter is constructed from an analysis of the experimental data: The plasma moves from the region of heating ($r < d$), where the electron temperature $T_e \sim 120$ ev on the basis of measurements of the recombination x-radiation, into the vacuum perpendicular to the surface with a velocity $u \sim 6 \cdot 10^6$ cm/sec. In this region the velocity of the plasma is close to the speed of sound and the ion temperature corresponding to this

2/4

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USSR

BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 191, No 6, 21 Jun 70, pp 1248-1250

velocity is $\sim$125 ev. A considerable acceleration of the plasma is observed at distances $r \leq 1$ mm. The velocity here is several times greater than the initial. The effect of "freezing" is obtained, since the density drops as $u^{-1}r^{-2}$ along the trajectory of the ion and the recombination time becomes much greater than the characteristic dispersion time. In one process the freezing of the maximum degree of ionization occurs several nanoseconds after the beginning of the motion of the "elementary volume" of the plasma. This freezing process also occurs for the remaining ions. The laminar structure of the jet which is observed in photographs is explained on this basis. The energy lost by the plasma contained in the region $r < d$ to radiation in the range 20-100 Å over a time of 40 nsec is estimated to be about 0.5 joule.

3/4

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

USSR UDC: 621.385:530.145-6:53

BASOV, N. G., ZAKHAROV, S. D., KROKHIN, O. N., KRYUKOV, P. G., SENATSKIY, Yu. V., CHEKALIN, S. V., FEDOSIMOV, A. I., SHCHELEV, M. Ya.

"Investigation of Heating of a Plasma Formed by Ultrashort Laser Pulses"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 8, pp 48-52 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D464)

Translation: In order to form a plasma, ultrashort pulses of emission from a neodymium glass laser operating under conditions of self-synchronization of modes on a wavelength of 1.06 μ were focused on a target of LiD in a vacuum. The period between pulses was 15 nsec. The individual laser pulse is not simple, but rather consists of a series of peaks, the interval between them and the number of peaks varying from flash to flash. The overall pulse duration reaches 10 nsec, the duration of an individual peak being in the range of 10^{-11}-10^{-12} s. The output energy is ~0.1 J. The diameter of the focal spot on the target is $2 \cdot 10^{-2}$ cm. Heating of the plasma was studied by the methods of shadow photography and schlieren photography. A. K.

1/1

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

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UDC 539.23

USSR

SVIRSKIY, L. D., BELIK, Ya. G., KROKHIN, V. P., and GORDIYENKO, Ya. I., Khar'kov

"Spraying NiO With Argon Plasma"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 71, pp 56-59

Abstract: The possibility of producing layers of NiO by spraying it with argon plasma was experimentally investigated. According to thermodynamic calculation data, bunsenite (NiO) can be reduced to metallic Ni by heating over 2460 °C in an argon plasma jet. X-ray structural analysis of sprayed layers revealed the presence of NiO and ~10 wt % metallic Ni. By petrographic investigation of the composition and structure of sphere-like drops originated by spraying and forming the layer, the concentration tendency of Ni and the relative grouping of NiO and metallic Ni on the surface layer could be established. The mutual contacting of NiO and metallic Ni in the volume of sphere-like drops is explained with the help of rapid motion-picture filming of the spraying process. Three illustr., seven biblio. refs.

1/1

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--04DEC70

1/2 016

TITLE--NITROGEN CONTAINING BIS HETEROCYCLIC SYSTEMS. IV. SYNTHESIS AND STRUCTURE OF 5,HYDROXY,AMINO,1,BENZAZOLYLPYRAZOLES -U-

AUTHOR-(05)-GARNOVSKIY, A.D., KOLODYAZHNYY, YU.V., GRANDBERG, I.I., ALIYEVA, S.A., KROKHINA, N.F.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (5), 660-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HETEROCYCLIC OXYGEN COMPOUND, PYRAZOLE, THIAZOLE, DIPOLE MOMENT, ORGANIC SYNTHESIS, MOLECULAR STRUCTURE, HYDRAZINE ORGANIC COMPOUND, HYDROXYL RADICAL, AMINE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605012/E02 STEP NO--UR/0409/70/000/005/0660/0663

CIRC ACCESSION NO--AP0140304

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610015-3

UNCLASSIFIED PROCESSING DATE--04DEC70

2/2 016

CIRC ACCESSION NO--AP0140304

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

5,HYDROXY,1,(BENZAZOL,2,YL)PYRAZOLES (I) WERE PREPD. BY REFLUXING A MIXT. OF 0.05 MOLE APPROPRIATE HYDRAZINE AND 0.05 MOLE RCOCHR PRIME1 CO SUB2 R PRIME2 OR PHCH SUB2 C(:NH)CHPHCN (II) IN 50 ML TERT BUOH, [illegible] SUB2 O, AND 5 ML ACOH 12 HR. THUS PREPD. WERE THE FOLLOWING I (X, R PRIME1, R PRIME2, Y, PERCENT YIELD, AND M.P. GIVEN): PH, H, OH, S, 76, 201DEGREES; PH, CH SUB2 PH, PH, OH, NH, 63, 224DEGREES; AND CH SUB2 PH, PH, OH, NCH SUB2 PH, [illegible]. REFLUXING EQUIMOLAR AMTS. 2,HYDRAZINOBENZOTHIAZOLE, II, AND 30PERCENT HCL IN ISO PROH GAVE 60PERCENT 5,AMINO,4,PHENYL,3,BENZYL,1,(BENZTHIAZOL,2,YL)PYRAZOLE (III) (R EQUALS CH SUB2 PH, R PRIME1 EQUALS PH, R PRIME2 EQUALS NH SUB2, Y EQUALS S), [illegible] 163DEGREES. DIPOLE MOMENT AND IR STUDIES SHOW THAT I EXIST BOTH IN THE CRYST. FORM AND IN SOLN. MAINLY IN HYDROXY AND AMINO FORMS, WHICH ARE STABILIZED BY INTRAMOL. H BONDING. FACILITY: ROSTOV.-NA-DONU GOS. UNIV., ROSTOV-ON-DON, USSR.

UNCLASSIFIED

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